

R E A C H I N G N E W H O R I Z O N S



**ENVIRONMENTAL PROTECTION
ENVIRONMENTAL REPORT 2011**



TABLE OF CONTENTS

LETTER OF DEPUTY CHAIRMAN OF ОАО ГАЗПРОМ MANAGEMENT COMMITTEE	3
INTRODUCTION	4
ENVIRONMENTAL PROTECTION MANAGEMENT	8
Environmental management system	8
Environmental targets and programs	9
Financing of environmental protection	12
Regulatory framework of gazprom rational nature use and environment protection	15
ENVIRONMENTAL PERFORMANCE AND ENERGY SAVING	17
Air protection	17
Water use and protection of water resources	28
Production and consumption waste management	32
Land protection and liquidation of the accumulated environmental damage	36
Protection of biodiversity	39
Energy saving	41
PREVENTION OF NEGATIVE ENVIRONMENTAL IMPACT	46
Projects environmental assessment	46
Industrial environmental monitoring and control	47
State environmental control	49
SCIENTIFIC AND TECHNICAL FRAMEWORK OF ENVIRONMENTAL PROTECTION	50
Research and development	50
Deployment of the best available environmental protection technologies and equipment	55
GAZPROM KEY PROJECTS AND ENVIRONMENTAL PROTECTION	62
ENVIRONMENTAL PROTECTION COOPERATION	65
Participation in regional environmental projects and programs	65
International cooperation	67
Information disclosure	69
CONCLUSION	73
GLOSSARY	74
ADDRESSES AND CONTACTS	76

LETTER OF THE DEPUTY CHAIRMAN OF OAO GAZPROM MANAGEMENT COMMITTEE



Dear readers!

On behalf of the OAO Gazprom Management Committee I'm presenting you our corporate Environmental Report 2011, which provides the information about the *Gazprom Group* rational nature use and environmental performance.

Based on the corporate Environmental Policy *Gazprom* pays a great attention to the environmental aspects of its activities and works hard to minimize the environmental impact and improve the use of natural resources through numerous corporate programs of research and development, technical modernization and reengineering.

Gazprom continues to broaden the practical use of the most progressive or so called "best available" technologies for development and implementation of gas production and transmission projects, which ensures the environmental security and energy efficiency of the company's production complexes.

The issues of environmental security and rational nature use are the integral component of the cooperation agreements signed between *Gazprom* and local authorities of the Russian Federation. The *Gazprom Group* companies intensively participate in environmental programs; provide support to the territories of traditional nature use and the special protected areas.

The OAO Gazprom multistage environmental management system brings together highly qualified expertise and meets all the efficiency criteria in this area. In the reporting year the *Gazprom* environmental management system was certified under the international standard ISO 14001:2004.

The complex approach towards the efficient use of natural resources and environmental security enables *Gazprom Group* to achieve its environmental targets, minimize environmental risks and the corporate social responsibility.

Deputy Chairman of
OAO Gazprom Management Committee,
Chairman of Coordination Committee
for Environmental Protection and Energy Efficiency

A handwritten signature in blue ink, consisting of a large, stylized 'V' followed by a cursive 'A' and 'M'.

V.A. Markelov

INTRODUCTION

The Environmental Report 2011 provides information about the *Gazprom Group* activities in the Environmental Policy implementation, including the current performance and measures undertaken to mitigate the impact on air, water bodies and land. The Report will present data on environmental management and funding of fundamental studies and production complex technical modernization aimed at ensuring the environmental security of operating facilities.

The environmental data performed by the production activities were formally collected from *Gazprom Group* companies' and exposed to an accurate processing. The Report provides the data performed in total by *Gazprom Group*, *Gazprom* (including the retrospective analysis of 5 years) and single *Gazprom Group* companies, which contribute much to the analyzed scope of activities.

Hereinafter the term OAO Gazprom refers to the heading company of *Gazprom Group*, i.e. Open Joint Stock Company Gazprom with its 100% subsidiary companies and organizations. The term *Gazprom Group* or *Group* hereinafter refers to the companies incorporated by OAO Gazprom itself and additional group of subsidiary companies. The term *Gazprom Neft Group* or *Gazprom Neft* hereinafter likewise stands for the company of Open Joint Stock Company Gazprom Neft and its subsidiaries. The term *Gazprom energoholding* stands for the company of Limited Liability Company of Gazprom energoholding and its subsidiaries (Open Joint Stock Companies of OAO Mosenergo, OAO OGC-2, OAO OGC-6, OAO TGC-1 and OAO Murmanskaya TETS).

The list of OAO Gazprom subsidiary companies and organizations, which have reported on their environmental protection activities, is given below:

ООО Gazprom добыча Astrakhan	ООО Gazprom invest Vostok
ООО Gazprom добыча Krasnodar	ООО Gazprom invest Zapad
ООО Gazprom геологоразведка	ЗАО Gazprom invest Yug
ООО Gazprom добыча Irkutsk	ООО Gazprom transgaz
ООО Gazprom добыча Kuznetsk	ООО Nizhny Novgorod
ООО Gazprom добыча Nadym	ООО Gazprom transgaz Samara
ООО Gazprom добыча Noyabrsk	ООО Gazprom transgaz
ООО Gazprom добыча Orenburg	Saint-Petersburg
ООО Gazprom добыча Urengoy	ООО Gazprom transgaz Saratov
ООО Gazprom добыча Yamburg	ООО Gazprom transgaz Stavropol
ООО Gazprom transgaz Volgograd	ООО Gazprom transgaz Surgut
ООО Gazprom transgaz Yekaterinburg	ООО Gazprom transgaz Tomsk
ООО Gazprom transgaz Kazan	ООО Gazprom transgaz Ufa
ООО Gazprom transgaz Krasnodar	ООО Gazprom transgaz Ukhta
ООО Gazprom transgaz Makhachkala	ООО Gazprom transgaz Tchaikovsky
ООО Gazprom transgaz Moscow	ООО Gazprom transgaz Yugorsk
ООО Gazprom energo	ООО Gazprom PHG
ООО Gazprom liquefied natural gas	ООО Gazprom pererabotka
ООО Gazpromavia	ООО Novo-Urengoy gas and chemistry complex
ООО Gazpromtrans	ООО Gazprom sotsinvest
ООО Gazflot	ЗАО Yamalgazinvest
ООО Gazprom mezhregiongaz	

OOO Gazprom nefte shelf	OOO Gazprom podzemremont
OOO Gazprom dobycha shelf	Urengoy
OOO Gazprom podzemremont	OOO Gazprom tsentrremont
Orenburg	OAO Gazprom space systems

Gazprom Group will stand for OAO Gazprom (all above mentioned subsidiaries) and the following companies:

ZAO Purgaz	OAO Daltransgaz
OAO Tsentrgez	Sakhalin Energy Investment
OAO Regiongazholding	Company Ltd (or Sakhalin Energy)
Zapsibgazprom	OOO SeverEnerzia
Vostokgazprom Group	ZAO Kaunasskaya HPS
Gazprom Neft Group	OAO Severneftegazprom
OOO Gazprom energoholding and	OAO Gazpromtrubinvest
its Open Joint Stock Companies:	
OAO Mosenergo	
OAO OGK-2	
OAO TGC-1	
OAO Murmanskaya CHP	





ENVIRONMENTAL PROTECTION MANAGEMENT

Environmental Management System

The *Gazprom Group* environmental management system (EMS) is a vertical highly developed structure, which integrates various environmental management units ranging from OAO Gazprom Management, subsidiaries and other companies to environmental units of affiliated companies.

OAO Gazprom Environmental Policy and the incorporated companies' own environmental policies define strategic targets in terms of environmental protection, considering all activities specifications and principle of environmental impact minimization. The implementation of environmental policies enables the companies to meet all environmental requirements, monitor and prevent pollution and continuously improve the environmental performance.

In 2011 OAO Gazprom environmental management system was successfully certified under the international standard ISO 14001:2004.

The certification audit was provided by the independent accredited entity Det Norske Veritas. The audit of the companies covered by the EMS showed the high qualification and competence of employees in environmental management and their readiness to continuously improve it. The EMS covers all the subsidiaries operating in production, transmission, processing and storage of natural gas and condensate. The positive results of the certification prove OAO Gazprom total compliance with all the international environmental standards.

The environmental management systems, certified under the ISO 14001, are deployed in the *Gazprom Group* energy companies, such as OAO Mosenergo, OAO OGK-2, OAO TGC-1; *Gazprom Neft Group* companies – OOO Gazpromneft – Smazochnye Materialy, OOO Gazpromneft-ONPZ, OOO Gazpromneft-MNPZ; dependent companies Open Joint Stock Companies of OAO Tomskneft, OAO Sakhalin Energy and others.

In October 2011 the *Gazprom* Board of Directors reviewed the corporate Environmental Policy and approved it for the use in all *Gazprom Group* companies. Thus the company fulfilled the instruction of the Russian President as of June 6, 2010 (subpart "I" point 1 of the List of instructions № Pr-1640) about the necessity to support decisions on mechanisms of volunteer environmental responsibility in joint stock companies partially owned by the state.

The supreme element of the OAO Gazprom EMS is the Management Committee of OAO Gazprom. The complex management of the environmental protection is performed by the Coordination Committee of *Gazprom* for environmental protection and energy efficiency, which was established by the Order of OAO Gazprom № 280 as of October 17, 2007. The Committee ensures the complex approach and coordinates environmental protection activities of the OAO Gazprom subsidiaries. The Committee's scope of work includes:

- in-depth assessment of the environmental performance;
- complex management of environmental protection, energy saving and energy efficiency;
- coordination of interaction with state authorities and public organization.

The Coordination Committee membership envisages the major part of OAO Gazprom Management Committee and heads of OAO Gazprom profile departments. The protocol decisions generated by the Committee are the basis for the company's decision-makers in environmental protection, energy saving and energy efficiency.

OAO Gazprom Directorate of Energy-Saving and Environment of the Gas transmission, underground storage and utilization Department coordinates the implementation of the OAO Gazprom Environmental Policy and decisions of the Coordination Committee and Management in the company's subsidiaries.

In 2011 the Coordination Committee for environmental protection and energy efficiency held a number of sessions dedicated 11 issues, including:

- *Gazprom Group* environmental performance in 2010 work on the economy of fuel energy resources and energy efficiency improve in subsidiaries;
- Draft of Comprehensive Environmental Program of OAO Gazprom for 2011–2014;
- Possibilities of using gas compressing units energy by-products for heat and power generation;
- Environmental security of the South Stream pipeline;
- Strategic environmental assessment of Northwest Arctic exploration;
- Green technologies of drill waste landfilling, neutralization and utilization.

Gazprom Group pays a great attention to preventive environmental measures, considering them a factor sustainable achievement of the corporate environmental targets. OAO Gazprom Environmental Inspection and environmental expertise system has been put in place for a number of years. The high-tech systems of industrial environmental monitoring and control have been functioning in the corporate system. The environmental research and development projects have also been an integral part of the management system.

In order to raise the environmental competence and awareness of employees OAO Gazprom held a number of training courses for managerial and executive personnel. In 2011 *Gazprom Group* trained 4,677 employees, including 3,814 from OAO Gazprom.

Upon the results of traditional contest for environmental divisions and specialists of OAO Gazprom the 2011 winners became:

OAO Gazprom best environmental service

- Environmental Protection Unit of OOO Gazprom transgaz Saratov

OAO Gazprom best environmental specialist

- G.V. Nemytova – Chief Engineer of Environmental Protection Unit, OOO Gazprom transgaz Saratov
- E.Sh. Pikulskaya – Head of Environmental Protection Unit, OOO Gazprom transgaz Tomsk
- V.P. Spirin – Deputy Principal Engineer – Head of Environmental Protection Unit, OOO Gazprom dobycha Astrakhan

Environmental Targets and Programs

According to OAO Gazprom Environmental Policy the underlying principle of the company's business is "sustainable development construed as intensive economic growth accompanied by maximal conservation of natural resources and preservation of a favorable natural environment for future generations". Thus the corporate strategic targets are:

- minimization of the negative environmental impact per unit;
- efficiency improve of natural and energy resources use;
- involvement of the company's entire personnel in minimization of environmental risks, improve of environmental management system and environmental performance of the production.

Based on the Manual on the identification of environmental aspects in the environmental management system of OAO Gazprom, the environmental aspects in were defined for the subsidiaries. The main aspects in 2011 were methane emissions resultant from gas pipeline repair and nitrogen oxide emissions from compressor station operations, waste water discharge and waste landfilling.

The Environmental Policy implementation and OAO Gazprom EMS deployment in 2010 resulted in approval the Corporate environmental targets, which refer to the environmental aspects of the company's profile activities and the environmental performance in 2008. Based on the annual ranking of the environmental aspects the subsidiaries develop and implement programs of environmental protection measures, aimed at achieving of the corporate-wide targets.

Compared to the year of 2010 the following targets were achieved:

- methane emissions reduction – 8 %;
- lowering of the payment for exceeding the allowed environmental impact – 34 %;
- lowering of the share of disposed waste – 25 %
- increase in production did not result in an increase in own process use;
- nitrogen oxides emissions in gas transport per unit – unchanged;
- launch of the environmental management system in consistency with the ISO 14001 requirements – in progress upon schedule.

In order to keep the supportive environment and sustainable proenvironmental development, the Comprehensive Environmental Program of OAO Gazprom was endorsed for 2011–2015.

The Comprehensive Environmental Program of OAO Gazprom was developed to meet the main provisions of the Russian Ecological Doctrine, Strategy of National Security of the Russian Federation through 2020, State Program of the Russian Federation “Energy Saving and Increasing Energy Efficiency through 2020”, Concept of Long-term Social and Economic Development of the Russian Federation through 2020, Energy Strategy of Russia through 2030, the OAO Gazprom Environmental Policy based on the analysis of the current environmental status in Russia, significant environmental aspects of the OAO Gazprom subsidiaries' activities, as well as the international corporate practice of environmental management in the oil and gas industry.

The Program ensures the succession of major approaches and principles, on-going and outlook programs in use in the *Gazprom* sectors of production, transmission, storage and processing of natural gas, oil and gas condensate. The Program specialty is the reference to the environmentally effective measures, undertaken within a block of programs in OAO Gazprom and its subsidiaries. Some of these programs have been continuously implemented, others have been planned to be approved over the period of 2011–2015.

The Program target and objectives fully meet the essential principles, targets and objectives of the state strategic guidelines in environmental policy and the OAO Gazprom strategic targets of development. The Program scenario conditions are determined for the 10-year period of the company's development.

TARGETS OF THE COMPREHENSIVE ENVIRONMENTAL PROGRAM OF OAO GAZPROM FOR 2011-2015:

- reduction of overall pollutant emissions;
- reduction of nitrogen and carbon oxide emissions from gas turbine units per unit of fuel gas;
- lowering of waste and under-treated water discharge into surface water bodies;
- lowering of production and consumption waste disposal;
- liquidation of accumulated environmental damage;
- lowering of the payment for exceeding the allowed impact as an integral indicator of the negative environmental impact total payment;
- deployment of the environmental management systems certified under the international standard 14001 in 28 subsidiaries.

Development of the program measures system was based on the state legislation in environmental protection, resource saving and environmental security, the environmental obligations of OAO Gazprom stipulated by the corporate Environmental Policy, which is linked with the approved and pending corporate programs of OAO Gazprom and its 100 % subsidiaries in the sectors of production, transmission, storage and processing of natural gas, oil and gas condensate, as well as the auxiliary service incorporated companies. The Comprehensive Program includes proposals and recommendations of research and development, innovation and projection institutes.

The program measures are systemized in accordance with the respective scope of categories: environmental impact regulation; air protection; water protection; waste handling; protection of land and earth interior; liquidation of accumulated environmental damage; environmental monitoring and control; deployment of environmental management system; regional and international cooperation.

The Program brought together the most priority measures and investment projects, which are to ensure the environmental security and resource saving in OAO Gazprom over the period of 2011–2015, as well as the achievement of the corporate target of the gas industry proenvironmental sustainable development.

All the categories are ranked by the environmental risk significance for the industrial activities of OAO Gazprom subsidiaries in compliance with the corporate-wide methodology of ranking the priority investment projects in OAO Gazprom over a 10-year period.

The first priority group contains measures and projects, which result in irregularity of environmentally secured operations of OAO Gazprom facilities in case of failure or avoidance in the short term through 2015.

The second priority group contains measures and projects, which do not result in such catastrophic consequences in case of failure or avoidance in the short term. Nevertheless, the environmental risks remain high.

The third group contains measures and projects, which result in negative consequences in case of failure or avoidance in the present long term. However, this group implies a probability of neutralizing negative consequences in case of the given projects implementation under the future Comprehensive Programs of the OAO Gazprom facilities technical reconstruction and modernization.

Besides the environmental and economic benefits the design and implementation of the Program is highly significant for the society.

The implementation of the Comprehensive Environmental Program of OAO Gazprom involves the EMS of OAO Gazprom and its subsidiaries, greening of major process operations and technologies, modernization and re-engineering of main production assets for environmental protection, as well as environmental protection resource saving measures.

The Program foresees the following monitoring scope:

- implementability: streamline of the program measures implementation from the beginning to the end of the Program (deployment of the final output);

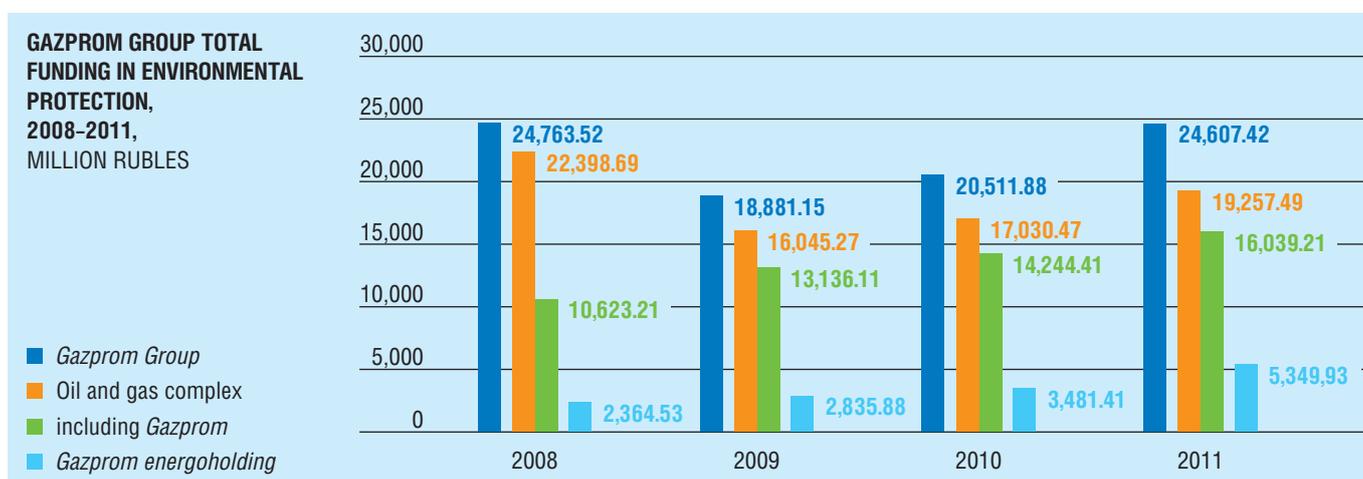
- efficiency: monitored by the regular assessment of the Program target values.
The major coordination and the progress control is fulfilled by the Functional Customer, which is the Gas transmission, underground storage and utilization Department.
The anticipated results of the Comprehensive Environmental Program of OAO Gazprom for 2011–2015:
 - minimization of the negative environmental impact (per unit of product);
 - efficiency increase in use of non-renewable natural resources and energy sources;
 - involvement of the company’s entire personnel in minimization of environmental risks, improve of environmental management system and environmental performance of the production;
 - lowering of the environmental risks;
 - enhancement of budgeting and financial assets use in environmental protection;
 - innovative modernization of the main production assets, particularly aimed at environmental protection;
 - improve of the environmental situation in the regions of operation;
 - contribution of OAO Gazprom in the proenvironmental development the Russian national economy;
 - promotion of the image and improve of OAO Gazprom market competitiveness as the ecologically responsible corporation.

Financing of Environmental Protection

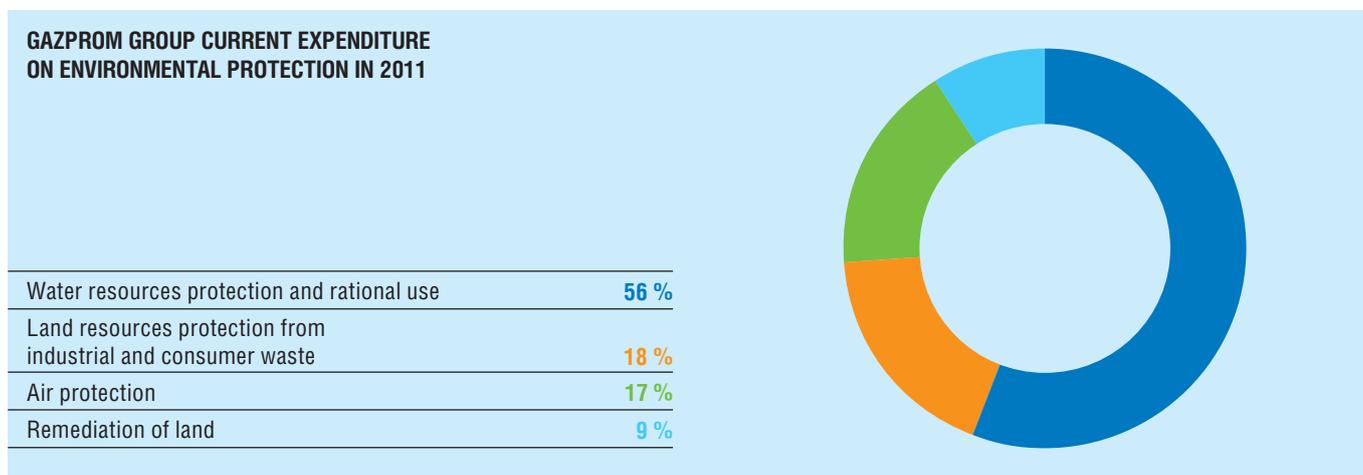
Every year *Gazprom Group* increases its environmental funding. In 2011 the funding made as high as 24.607 billion rubles, which was 4.1 billion rubles (or 20%) more than in 2010. OAO Gazprom shared over 65 % of this amount. The capital investments of *Gazprom Group* directed at environmental protection and efficient nature use grew by 26.4 %, the cost of production assets overhaul repair increased by 107 %.

GAZPROM GROUP INVESTMENTS IN ENVIRONMENTAL PROTECTION, MILLION RUBLES				
	2008	2009	2010	2011
Current environmental expenditure				
<i>Gazprom Group</i>	17,162.25	10,376.47	10,289.84	11,232.71
companies of the oil and gas complex	15,514.83	8,362.69	8,799.84	9,535.51
Incl. OAO Gazprom	6,598.10	6,141.97	6,577.51	7,411.36
<i>Gazprom energoholding</i>	1,647.42	2,013.78	1,490.00	1,697.20
Costs of overhaul repair of environmental protection production assets				
<i>Gazprom Group</i>	1,428.77	962.68	1,243.22	2,571.76
companies of the oil and gas complex	1,028.30	782.74	1,093.98	1,412.83
Incl. OAO Gazprom	879.68	728.15	1,068.08	1,395.24
<i>Gazprom energoholding</i>	400.47	179.94	149.24	1,158.93
Fixed capital investments aimed at environmental protection and rational use of natural resources				
<i>Gazprom Group</i>	3,493.70	6,323.59	7,744.44	9,785.71
companies of the oil and gas complex	3,326.53	6,117.28	6,490.84	7,764.61
Incl. OAO Gazprom	2,497.99	5,649.77	6,171.90	6,840.75
<i>Gazprom energoholding</i>	167.17	206.31	1,253.6	2,021.1

The fee for a negative impact on the environment				
<i>Gazprom Group</i>	2,678.80	1,218.41	1,234.38	1,017.24
companies of the oil and gas complex	2,529.33	782.56	645.81	544.54
Incl. OAO Gazprom	647.44	616.22	426.92	391.86
<i>Gazprom energoholding</i>	149.47	435.85	588.57	472.7
Total funding				
Total, <i>Gazprom Group</i>	24,763.52	18,881.15	20,511.88	24,607.42
companies of the oil and gas complex	22,398.69	16,045.27	17,030.47	19,257.49
Incl. OAO Gazprom	10,623.21	13,136.11	14,244.41	16,039.21
<i>Gazprom energoholding</i>	2,364.53	2,835.88	3,481.41	5,349.93

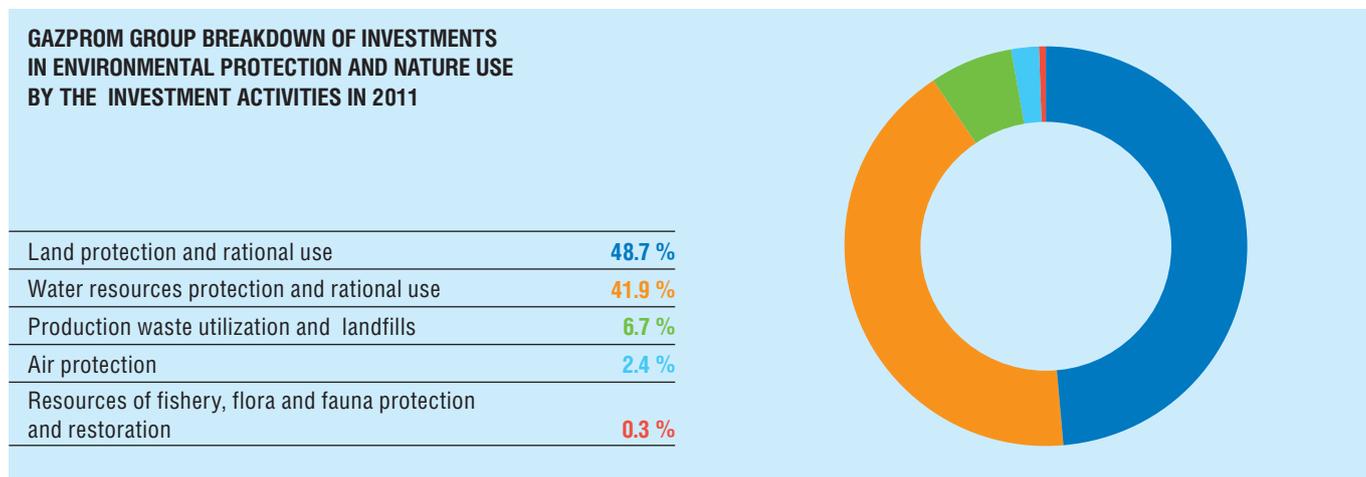


For the reporting period the current costs of *Gazprom Group* comprised environmental protection and rational use of water resources – 6,302.61 million rubles, air protection – 1,950.1 million rubles, land protection from production and consumption waste – 2,023.81 million rubles, land reclamation – 956.2 million rubles.

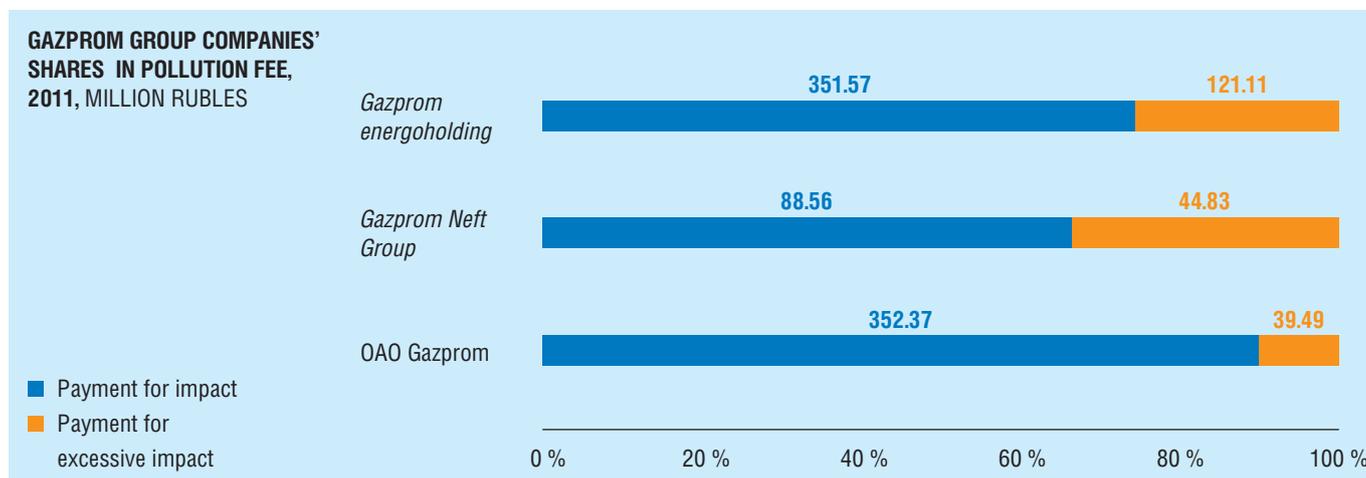


Investments made into the environmental protection of the OAO Gazprom 100 % subsidiaries in 2011 were directed at: protection and rational use of water resources – 2,864.12 million rubles; air protection – 165.94 million rubles; land protection

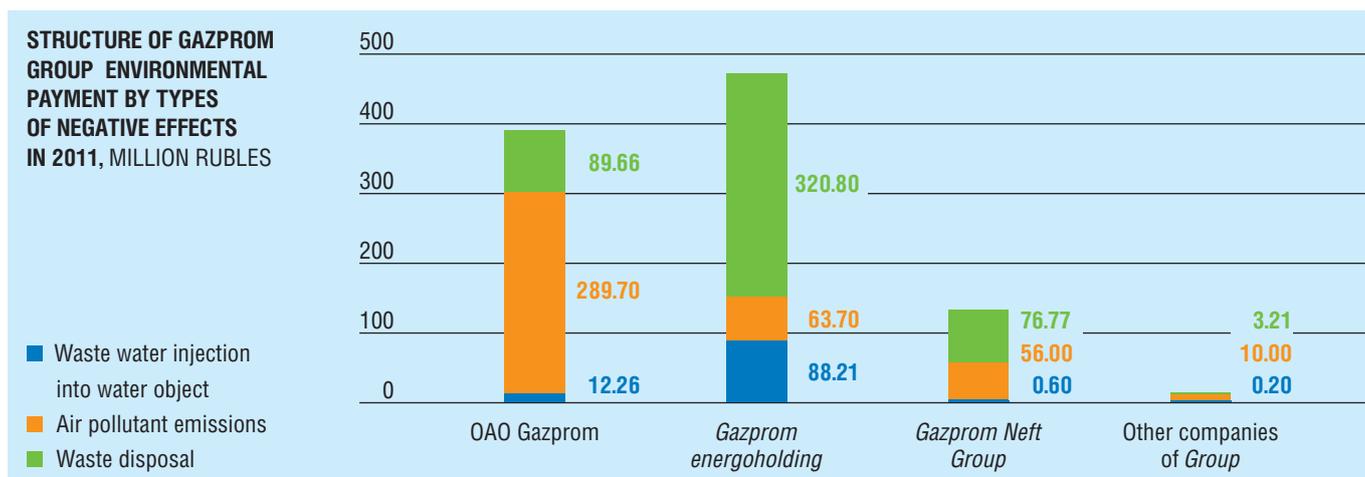
from waste (construction of facilities and sites for waste disposal) – 459.31 million rubles; conservation and reproduction of fishing and protection of flora and fauna – 16.93 million rubles. Due to the implementation of the OAO Gazprom major investment projects the biggest share of funding was allocated for the protection and rational use of land resources – 3,334.46 million rubles.



In the reporting year the amount of environmental negative impact payment of *Gazprom Group* made 1,017.242 million rubles, of which 213.47 million rubles (17.6 % lower than in 2010) referred to the payment for exceeding the allowed impact. This performance improve was mainly achieved by the timely approval of prolonging of ecological permits.



In 2011 the majority of the environmental negative impact payment was shared by the waste landfilling – 490.44 million rubles. *Gazprom Group* paid 419.44 million rubles and 101.27 million rubles for the air pollution and waste water discharge respectively to the national economy budgets at different levels.



The amount of environmental negative impact payment made by the *Gazprom* subsidiaries amounted to 391.86 million rubles, which was 34.8 million rubles (or 8.2 %) less than in 2010. The decrease was resultant from the reduction of the payment for exceeding the allowed impact (excess impact payment) by 20.7 million rubles (or 34.4 %).

Regulatory Framework of Rational Nature Use and Environment Protection

Gazprom Group develops and improves the base of environmental protection corporate standards. At present the base comprises approximately 90 standards which refer to “Guidelines for the design, construction and operation of OAO Gazprom facilities. Environmental protection at OAO Gazprom facilities”.

In 2011 *Gazprom* endorsed:

- STO Gazprom 2-1.19-567-2011 “Guidelines for the design, construction and operation of Gazprom facilities. Corporate environmental reporting”;
- STO Gazprom 2-1.19-568-2011 “Guidelines for the design, construction and operation of Gazprom facilities. Environmental protection at OAO Gazprom facilities. Industrial environmental control in earth and land protection. The procedure of organization and execution”;
- STO Gazprom 2-1.19-621-2011 “Guidelines for the design, construction and operation of OAO Gazprom facilities. Rules and requirements of land (earth) remediation under the pollution resultant from Gazprom facilities operations”;
- STO Gazprom 2-1.19-628-2012 “Guidelines for the design, construction and operation of OAO Gazprom facilities. Monitoring and inventory of pollutant emissions from OAO Gazprom facilities”;
- STO Gazprom 102-2011 “Greenhouse gas emissions inventory”;
- STO Gazprom 104-2011 “Manual on forming passports of typical kind of production and consumption wastes of Gazprom subsidiaries”;
- STO Gazprom 107-2011 “Time and costs restrictions of environmental work execution”;
- STO Gazprom 3.2-3-016-2011 “System of restrictions and recommendations for the use of resources, equipment and forming production stock in OAO Gazprom. Methodology for determining normative process losses of natural gas, condensate and oil at OAO Gazprom processing facilities”.

The most significant environmental aspects (pollutant and carbon dioxide emissions) for OAO Gazprom subsidiaries are those, which are directly associated with energy efficiency and resource saving. In this regard in 2011 the documents listed below were endorsed. These documents are both economically efficient and environmentally beneficial:

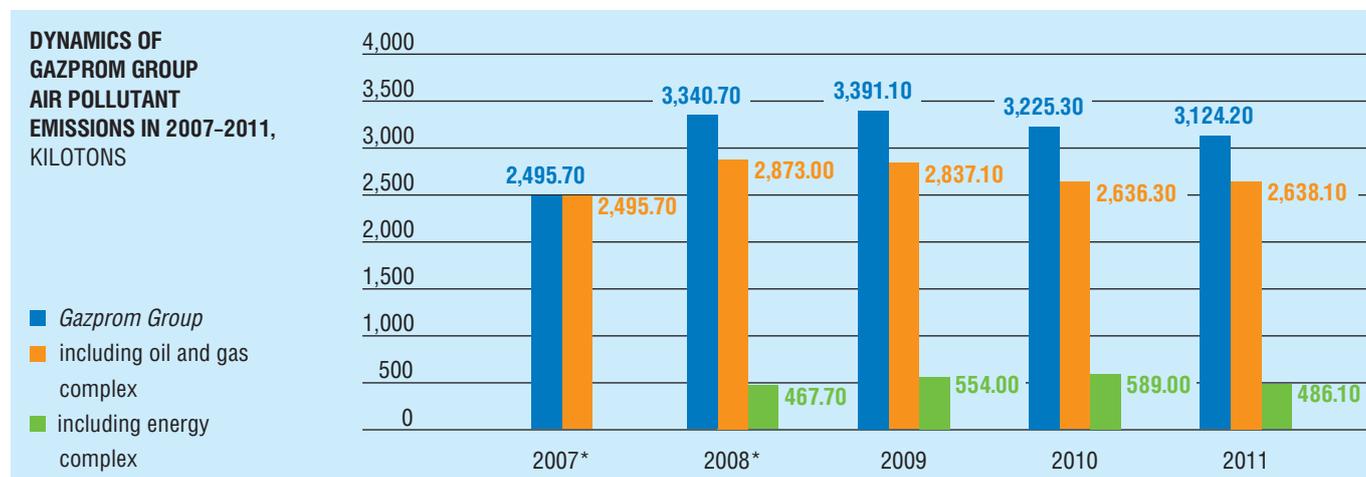
- STO Gazprom 2-1.20-535-2011 “Guidelines for the design, construction and operation of OAO Gazprom facilities. Energy efficiency target values and indicators for OAO Gazprom subsidiaries operating in gas production, transmission, storage, processing and distribution”;
- STO Gazprom 2-1.20-601-2011 “Guidelines for the design, construction and operation of OAO Gazprom facilities. Methodology of energy saving effect determination for fuel energy resources for own process needs in gas pipeline transmission”;
- STO Gazprom 3.2-3-017-2011 “System of restrictions and recommendations for the use of resources, equipment and forming production stock in OAO Gazprom. Methodology of allowed values determination for gas consumption on own process needs of OAO Gazprom processing facilities”;
- STO Gazprom 3.3-2-024-2011 “System of restrictions and recommendations for the use of resources, equipment and forming production stock in Gazprom. Methodology of allowed values determination for own process needs gas and gas process losses of pipeline transmission“;
- R Gazprom 3.0-2-019-2011 “System of restrictions and recommendations for the use of resources, equipment and forming production stock in OAO Gazprom. Methodology of additional energy generation efficiency determination for thermal by-products utilized at gas transmission facilities”;
- R Gazprom 3.2-2-020-2011 “System of restrictions and recommendations for the use of resources, equipment and forming production stock in OAO Gazprom. Methodology of allowed value determination for own process needs heat energy at processing facilities”.

ENVIRONMENTAL PERFORMANCE AND ENERGY SAVING

Air Protection

In 2011 the *Gazprom Group* total pollutant emissions from stationary sources were amounted to 3,124.20 thousand tons, including oil and gas complex emissions – 2,638.10 thousand tons; emissions of *Gazprom energoholding* – 486.10 thousand tons.

GAZPROM GROUP IMPACT ON THE AIR, KILOTONS				
	2008	2009	2010	2011
Pollutant emissions	3,340.7	3,391.1	3,225.3	3,124.2
including major pollutants:				
carbon oxide	785.5	645.8	666.8	687.2
nitrogen oxides	339.4	335.3	377.4	372.6
sulfur dioxide	248.6	249.1	296.1	260.9
hydrocarbons (including methane)	1,712.4	1,859.8	1,589.1	1,491.1



* In 2007 performance the oil and gas complex was represented by OAO Gazprom, in 2008 the performance of OAO TGC-1 and Sakhalin Energy was out of reporting boundaries.

OAO Gazprom subsidiaries share 82 % of the oil and gas complex emissions, 14 % refer to the *Gazprom Neft Group* companies, the rest 4 % is represented by other oil and gas companies (ZAO Purgaz, OAO Tomskgazprom, Sakhalin Energy, OAO Severneftegazprom and others).

The *Gazprom Group* aggregated descending trend of emissions was not so smooth on the subsidiary scale. The total emissions grew by 150.0 thousand tons in the production sector due to the output increase. The energy sector managed to cut the total emissions by 103.7 thousand tons, which was mainly resultant from OAO OGK-2 emissions reduction by 93.0 thousand tons (nearly 20 %) due to the power energy generation decrease by 3.2 %.

In 2011 *Gazprom Group* managed to capture 6.6 % of the total amount with gas treatment systems. It is noteworthy that capturing averagely reduced emissions of particulate matters decreased by 26.4 %, sulfur dioxide by 30.4 %.

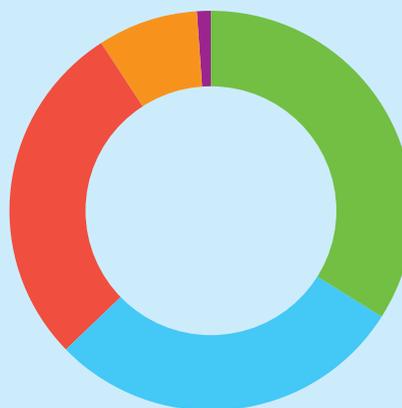
The energy sector facilities capture averagely 61 % of all emissions. For instance, the OGK-2 gas treatment systems reduce the total emissions by 47 %, capturing 89 % of particulate matters, 37 % of sulfur dioxide (in some companies the treatment efficiency reaches 99 %).

The *Gazprom Group* major pollutants are hydrocarbons (primarily methane), carbon oxide, nitrogen oxides, sulfur dioxide, which comprise 90 % of pollutant emissions.

In the pollutant emissions breakdown of *Gazprom Group* 95.3 % of hydrocarbon (methane) emissions is represented by OAO Gazprom subsidiaries operating in production, transmission, storage and processing of natural gas and condensate. The particulate matter emissions mostly refer to the *Gazprom* energy sector, the majority of volatile organic compounds (VOC) emissions take place in oil production and refinery (84.4 and 68,6 % respectively in *Gazprom Group*).

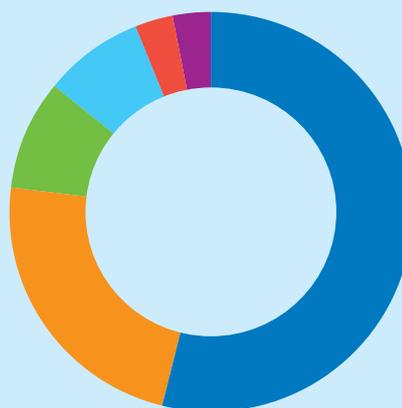
**COMPONENT STRUCTURE
OF ENERGY COMPLEX GAZPROM GROUP
AIR POLLUTANT EMISSIONS, 2011**

Sulphur dioxide	34 %
Nitrogen oxides	29 %
Particulate matters	28 %
Carbon oxide	8 %
VOC, hydrocarbons and other	1 %

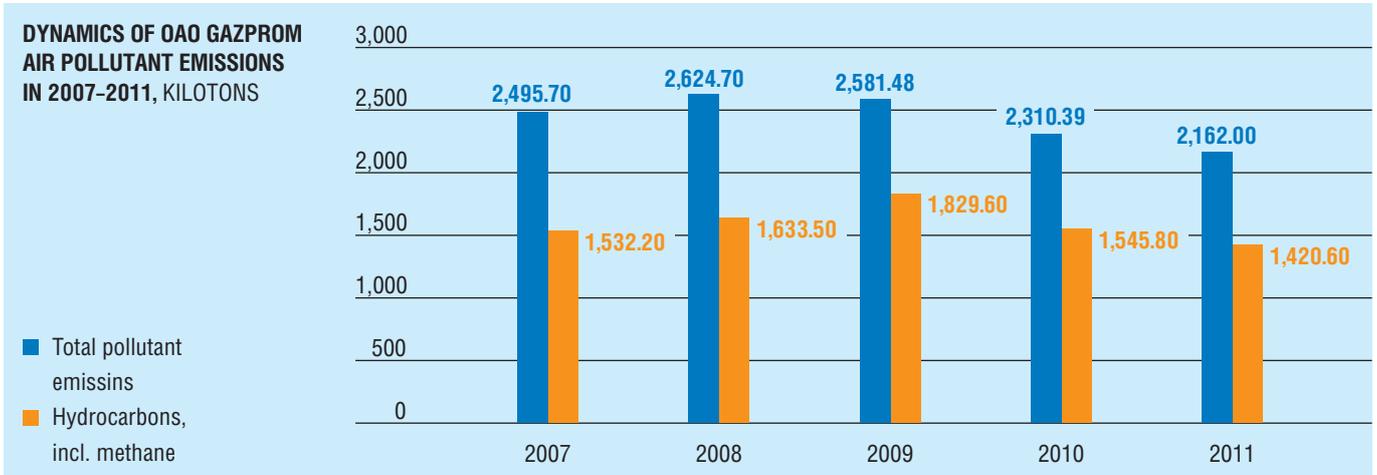


**COMPONENT STRUCTURE
OF OIL AND GAS COMPLEX GAZPROM GROUP
AIR POLLUTANT EMISSIONS, 2011**

Hydrocarbons	54 %
Carbon oxide	23 %
Sulphur dioxide	9 %
Nitrogen oxides	8 %
Particulate matters	3 %
VOC and other	3 %



In 2011 the OAO Gazprom pollutant emissions from stationary sources decreased by 6.4 % if compared to 2010 and made 2,162 thousand tons.

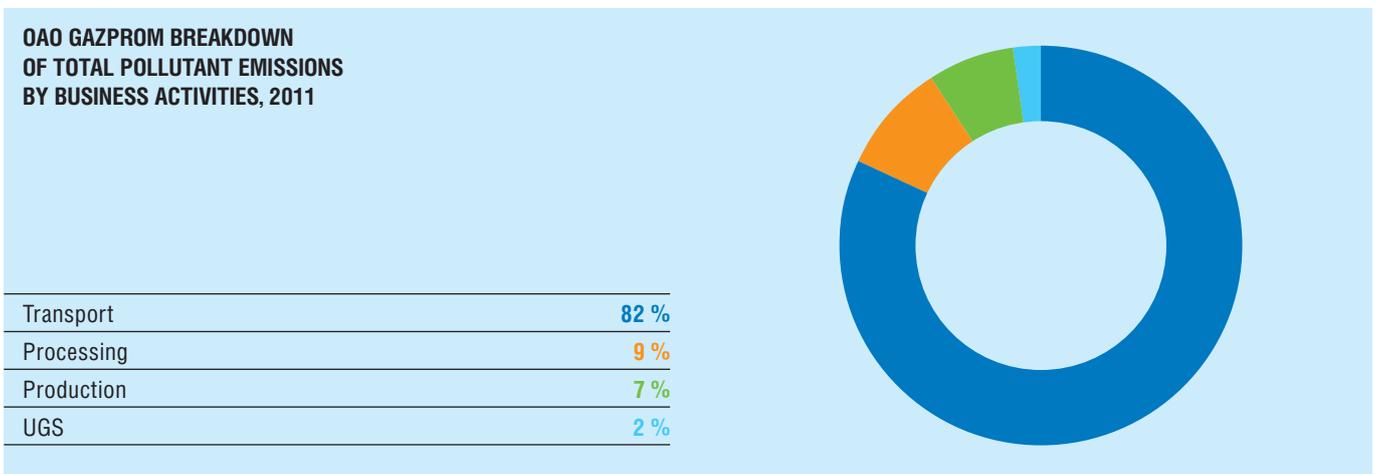


Approximately 98.6 % of the OAO Gazprom emissions is represented by four main gas industry typical pollutants: methane (65.7 %), carbon oxide (19.9 %), nitrogen oxides (9.8 %) and sulfur dioxide (3.2 %).

In 2011 OAO Gazprom allocated 19 % of environmental protection funding for the air protection.

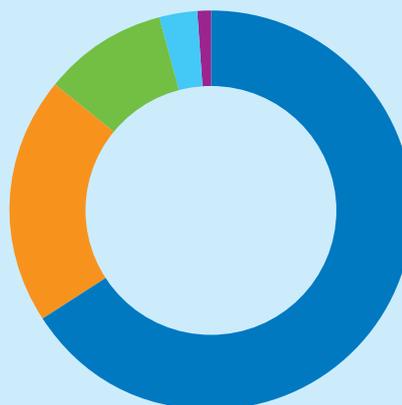
In 2011 the gas production sector reduced pollutant emission by 28% against a 10 % increase of the output. The reason for that was the avoided emissions from gas flaring by means of utilization of associated petroleum gas (APG) at OAO Gazprom dobycha Urengoy, which implied the operation of gas compressor stations.

The gas transmission facilities managed to lower pollutant emissions by 4.7 % against the pipeline throughput capacity by 3.4 % (by 53,751.1 billion m³•km), which was caused by lower natural gas venting from pipelines under repair. The gas inflow and outflow at underground gas storages increased by 5.3 %, but the emissions decreased by 8.5 %.



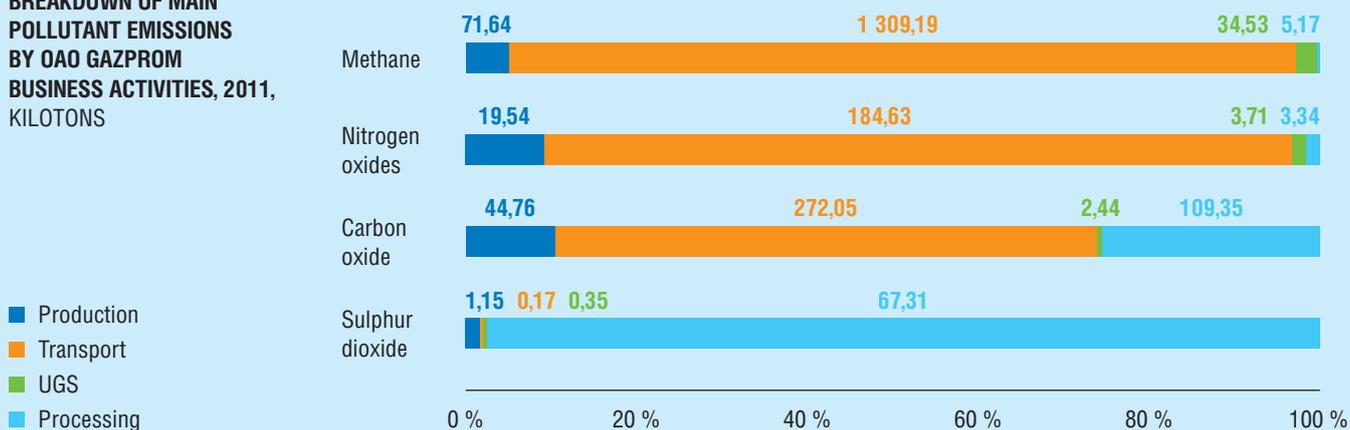
COMPONENT STRUCTURE OF ОАО ГАЗПРОМ POLLUTANT EMISSIONS, 2011, % OF THE AMOUNT

Methane	66 %
Carbon oxide	20 %
Nitrogen oxides	10 %
Sulphur dioxide	3 %
Other pollutants	1 %



Pipeline transmission sector is the OAO Gazprom major emitter, which covers as much as 92 % of all methane emissions.

BREAKDOWN OF MAIN POLLUTANT EMISSIONS BY ОАО ГАЗПРОМ BUSINESS ACTIVITIES, 2011, KILOTONS



Greenhouse Gas Emissions

In 2011 the OAO Gazprom greenhouse gas emissions made 133.4 million tons of CO₂-equivalent, which was 3.8 million tons less than in 2010. The carbon dioxide emissions grew by 5.7 million tons, and the methane emissions from process operations and repair decreased by 9.5 million tons of CO₂-equivalent (by 0.5 million tons, i.e. 0.65 billion m³), including a 0.1 million m³ decrease resultant from gas vented for repair and other process operations.

The carbon dioxide emissions growth referred to the fuel gas consumption increase for the growth of natural gas production (513 billion m³ – in 2011, 509 billion m³ – in 2010) and pipeline throughput capacity (1,623 trillion m³•km – in 2011, 1,571 trillion m³•km – in 2010).

The corporate climate policy is consistent with the Energy Strategy of Russia through 2030 and Environmental Doctrine of the Russian Federation. The OAO Gazprom activities meet the complex plans of the Climate Doctrine of Russia, which implies development and introduction of state programs of air impact mitigation actions.

The *Gazprom* corporate system of greenhouse gas emissions inventory meets all national and international standards and requirements.

The OAO Gazprom greenhouse gas emissions mitigation measures provide for achievement of the emissions 15–25% reduction target through 2020 against the 1990 level announced by the Russian Federation at the 15th session of the Conference of the Parties to the UNFCCC.

Participation in activities of international organizations. In 2011 within the preparation for the World Gas Congress to be held in Malaysia in 2012 (Kuala Lumpur), OAO Gazprom took a great part in developing an industrial guideline “Reduction of greenhouse gas emissions”, which contain the best practices for the entire gas production chain.

Gazprom Group presented data on the Nord Stream contribution into the environmental protection and greenhouse emissions reduction in Europe; documents for the high-level Panel Report of the UNO General Secretary on global sustainability “Resilient people, resilient planet: a future worth choosing” to the UN Conference Rio+20 (2012).

In the framework of the cooperation with Roshydromet *Gazprom Group* participated in the work of international bodies of the United Nation Convention on Climate Changes. *Gazprom Group* held a side-event at 34th Session of the UNFCCC Subsidiary Bodies June 14, 2011, Bonn, Germany dedicated to Corporate Greenhouse Gas Inventories in the Russian Federation: the Experience of the Gas Sector.

Development of guiding document in compliance with international accords. OAO Gazprom has endorsed a set of guiding documents, which ensure the compliance with international requirements of the UNFCCC. The greenhouse gas emissions is based on over 10 guiding documents, which regulate the emissions accounting and monitoring and design of the emissions reduction project. The corporate standard STO Gazprom 102-2011 “Greenhouse gas emissions inventory” was endorsed to unify the procedure of greenhouse gas emissions accounting and assessment in all OAO Gazprom subsidiaries. This standard was developed in compliance with the international requirements of the UNFCCC to be the main tool of the corporate and state reporting.

Greenhouse gas emissions studies. Since 1992 *Gazprom Group* has conducted numerous studies of major greenhouse gas emissions (carbon dioxide and methane) in the gas industry. The Company has identified the following priority directions: development of the corporate system of monitoring, accounting for the greenhouse gas emissions inventory, including methane, from all process and fugitive sources for OAO Gazprom at large and differentiated by subsidiaries, as well as the development of greenhouse gas emissions reduction measures.

The OAO Gazprom international cooperation with foreign companies within scientific and technical programs continued. In 2011 the technical dialogue “Optimization of compressor station operations reducing fuel gas losses and emissions” with GDF SUEZ involving OOO Gazprom VNIIGAZ and OOO Gazprom transgaz Samara specialists was finalized with the expertise exchange on field measurement and detection studies of methane leaks from process equipment, including wet and dry compressor seals.

The technical dialogue with E.ON Ruhrgas on “Methods of assessment, control and reducing CO₂ emissions at production and transmissions facilities” was completed. In 2011 a technical workshop was held on the CO₂ emissions reduction and possibilities to application the OAO Gazprom positive experience in deploying of the greenhouse gas emissions assessment program complex the E.ON Ruhrgas facilities.

The project “Capitalizing on methane capturing in the Russian gas sector: economical and environmental benefits” implemented by *Gazprom* within the grant issued by the US Environmental Protection was completed. The project was aimed at determining the potential of greenhouse gas emissions reduction, estimating of the corporate emissions accounting and assessment system and development of greenhouse gas emissions reduction in the oil and gas company.

In a tight cooperation with OOO Gazprom VNIIGAZ OOO Gazprom dobycha Yamburg developed a corporate information and analytical system with a database to serve the

Inventory of greenhouse gas emissions accounting and monitoring of ООО Газпром добыча Ямбург. The system was included into the National Registry of digital calculation models (software) and the National Registry of databases.

Information disclosure. Every year OAO Gazprom submits the results of the quantitative assessment of annual greenhouse gas emissions to Roshydromet for preparing the national greenhouse gas emissions inventory of the Russian Federation to meet the requirements of the national legislation and requirements of the UNFCCC.

OAO Gazprom has been participating in the international investment Carbon Disclosure Project (CDP) on regular bases and has presented data on measures undertaken to reduce greenhouse gas emissions to international financial institutes and investors for their review and support decisions of their investment policies. As a result OAO Gazprom has obtained an access to the global database of climate change information submitted by other businesses worldwide, which has enabled strategic studies and analyses of other oil and gas companies' experience. In 2011 upon the data submitted and further estimate *Gazprom* was recognized as the CDP Best Respondent of Russian companies.

OAO Gazprom Neft, in addition to projects of the APG utilization improve in 2011 under the program of nature restoration and environmental program the company made an inventory of the industry major greenhouse gas emissions (carbon dioxide and methane) along with other pollutants. The greenhouse gas emissions mitigation measure from energy generation are renewing of oil heaters and yearly repair operations.

Gazprom energoholding also undertakes climate mitigation measures. All the **OAO Mosenergo** power stations have been obliged to report overall carbon dioxide and other greenhouse gas emissions since 2001 on year bases in accordance with the corporate guideline (RD 153-34.0-02.318-2001 "Guidelines on calculation of greenhouse gas emissions from heat and power stations and boilers" as of December 20, 2007). In 2011 *Gazprom energoholding* was working on using the flexibility mechanisms of the Kyoto Protocol to attract investments into deploying advanced energy technologies, which improve the environmental performance. "Collection and preliminary assessment of the information for the JI "Construction of combined cycle gas turbines and implementation of energy saving in the OAO Mosenergo subsidiaries" was completed. Mosenergo signed trilateral agreement on carbon units operations with the Project Operator and Emission Reduction Units Buyer. The actual greenhouse gas emissions of OAO Mosenergo subsidiaries in 2011 amounted to 42.132 million tons, which was 1.454 million tons lower than in 2010.

Utilization of Associated Petroleum Gas

A great contribution into the greenhouse gas emissions reduction is made by the *Gazprom* activities in the flared APG decrease.

The Decree of the Government of the Russian Federation as of January 8, 2009 № 7 set the flared APG target value of 5 % of the gas produced in 2012 and further years. In order to meet the provisions of the decree *Gazprom Group* continued implementation of investment projects on the APG rational utilization on fields.

In 2011 the *Gazprom Group* APG average utilization rate made 68.5 %, which was 4.5 % higher than in 2010. OAO Gazprom performed 86 % in 2011 and 82 % in 2010. It is worth mentioning that ООО Газпром добыча Оренбург, ООО Газпром переработка and ООО Газпром добыча Уренгой utilize 100 % of the APG. *Gazprom* добыча Уренгой launched 2 compressor stations running on the APG, which enabled to elevate the utilization rate up to 95 %.

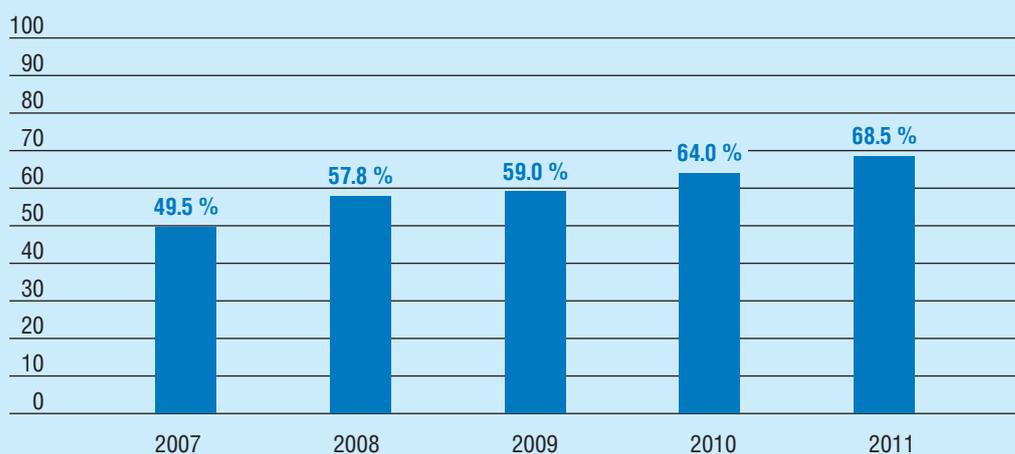
In 2007–2011 *Gazprom Group* increased the APG utilization by 19 %.

The APG utilization improve in OAO Gazprom refers to the launch of project units on Tomskgazprom fields in the III quarter of 2011: a 500 million m³/year gas compressor station, 206 km pipeline and 7.5 MW gas turbine station for power energy generation. The implementation of the OAO Tomskgazprom investment project will result in the APG utilization improve by over 95 % on *Gazprom* fields in 2012 and further years.

In 2011 OAO Gazprom Neft was implementing a medium term program “Associated petroleum gas utilization and efficiency improve”, which resulted in utilization increase up to 60.4 % (against 55 % in 2010). *Gazprom Neft* is anticipated to perform a 95 % APG efficiency by 2014, which will enable a 95 % efficiency in *Gazprom Group* at large.

In order to fulfill the instruction of the Russian President as of November 15, 2011 № Pr-3399 OAO Gazprom completed the project design document for “Associated petroleum gas utilization at the Urengoy oil-gas condensate field” and further operations with carbon units. The APG project design document was developed in compliance with the updated legislation; the investment policy statement was prepared and reviewed by the accredited independent entity. The project design document was submitted to Sberbank of Russian on December 6, 2011. As per the Order of the Ministry of the Russian Federation as of January 20, 2012 № 20 the project was approved and included in the list of the projects jointly implemented under the article 6 of the Kyoto Protocol to the United Nations Convention on Climate Change.

DYNAMICS OF USING ASSOCIATED PETROLEUM GAS OF GAZPROM GROUP IN 2007-2011



Reduction of Vehicle Fleet Impact on Air

The activities of *Gazprom Group* make a significant contribution to the greening of the motor complex in Russia by promoting the production of motor fuel, construction of gas filling stations and production of gasoline and diesel fuel that meet international standards of Euro-3 and Euro-5.

Currently, of all the motor fuel mix and technologies natural gas provides the most environmentally friendly exhaust emissions from motor vehicles. The switch of cars from gasoline to natural gas causes the 5 times lowering of average emissions hazardous substances, and twice the noise impact.

The world market of natural gas vehicles (NGV) is developing rapidly. The number of vehicles that use methane as a fuel is coming close to 15 million. According to the forecast of the Working Group “Natural Gas Vehicles” of the International Gas Union, the growth of NGV will make 50 million units by 2020, and more than 100 million units by 2030.

At the end of 2011 there were more than 19 thousand compressed natural gas filling stations (CNG FS) in the world.

The concept of long-term socio-economic development of the Russian Federation until 2020, considers promoting the use of natural gas as motor fuel as one of the

priorities of oil and gas industry and increase national competitiveness. The appropriate legal framework is now being developed.

Gazprom Group is actively working on development of the Russian NGV sector, switching vehicle fleet to natural gas and is the ultimate leader of the national gas fuel market. *Gazprom Group* is working with suppliers of gas filling equipment with state and municipal government, economic, and scientific centers, international organizations and foreign partners, creating new infrastructure facilities across country. This work is based on the provisions of the Federal Law № 261 FZ as of November 23, 2009 “On energy saving and energy efficiency improve and on amendments of various legal acts of the Russian Federation”, as well as the instruction of the Russian President № Pr-1923 as of June 27, 2011.

In September 2011 the agreement on expanding the use of natural gas as a motor fuel was signed with the administration of Nizhny Novgorod region. Such agreements were signed earlier with the administrations of Kaluga, Orel, Tambov regions.

In November 2011 as a result of an auto caravan “Blue Corridor” the framework agreements and protocols on gas motor fuel promotion were signed between the *Gazprom Group* transmissions subsidiaries and regional or municipal administration in Yekaterinburg, Chelyabinsk, Orenburg, Samara, Saratov, Tambov.

In December 2011 OAO Gazprom signed the Agreement on the use of natural gas as a motor fuel with a bus manufacturer ООО IPG Volga Bus. The Agreement aims to develop the natural gas vehicle market by means of potential customers supply with batch equipment. The implementation of this agreement will allow *Gazprom Group* to increase CNG sales through CNG FS, which meets the corporate strategic objectives.

249 CNG FS are in operation in 58 regions of Russia, out of which 207 CNG FS are operated by *Gazprom Group*. In 2011 over 360 million m³ of CNG was demanded.

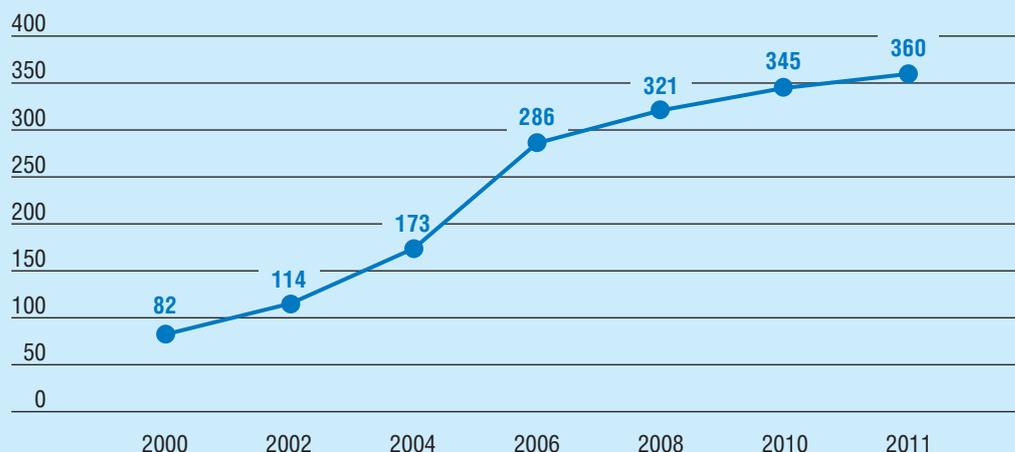
For quite a long time *Gazprom Group* has held sessions with the Government of Moscow on the city transport gasification. In February 2011 the Government of Moscow approved the decision of municipal transport gasification.

Gazprom Group continued developing the gas filling infrastructure at its own expense. In September 2011 *Gazprom Group* made the decision on additional financing of *Gazprom* transgaz Stavropol of 1.533 billion rubles for construction of gas filling station facilities and natural gas vehicles services by 2014. A gas filling station is under construction Kaliningrad as a part of the LNG complex at a gas distribution station (GDS).

Gas filling capacities are being intensively promoted in the regions of Western Siberia and Far East. In September 2011 the Chair of the OAO Gazprom Management Committee approved of funding allocation to ООО Gazprom transgaz Tomsk for CNG FS in construction Gorno-Altaysk and Petropavlovsk-Kamachatsky. In latest year CNG FS were built in Tomsk and Bratsk. Within the framework of the long term target program “Gasification of Bratsk city in 2011–2015” the administration developed and approved the city program “Gasification of vehicles in Bratsk in 2011–2015”. *Gazprom* is working on plans and measures of gas supply and gasification through 2020 jointly with the authorities of the Far East Federal District.

At present the Russian NGV fleet comprises 86 thousand units.

DYNAMICS OF CNG MARKETING IN THE RUSSIAN FEDERATION, 2000-2011, MILLION M³



In order to promote the *Gazprom* initiatives for the implementation of gas fuel together with non-profit partnership National Natural Gas Vehicle Association holds annually Exhibition GasSUF, International Scientific and Practical Conference “Gas in motors” and auto caravans “Blue Corridor”.

The auto caravans involve natural gas vehicles of serial manufacture (trucks, buses and cars made in Russia and abroad). In the cities along the route, they arrange scientific and practical seminars with participation of heads of local administrations, representatives of the automotive industry, academic experts and exhibitions of Natural Gas Vehicle Technology. Specialists from OOO Gazprom VNIIGAZ measured the composition of exhaust gases, which confirm the ecological purity of CNG as motor fuel.

Caravans held within “Blue Corridor”:

- 2008 – St. Petersburg – Novgorod – Tver – Moscow;
- 2009 – Rostov-on-Don – Krasnodar – Novorossiysk – Sochi;
- 2010 – the Moscow – Ryazan, Penza, Togliatti, Ulyanovsk, Naberezhnye Chelny, Kazan, Nizhny Novgorod;
- 2011, June – Prague – Greifswald;
- 2011, October, November – Yekaterinburg – Ufa – Saratov – Volgograd – Moscow.

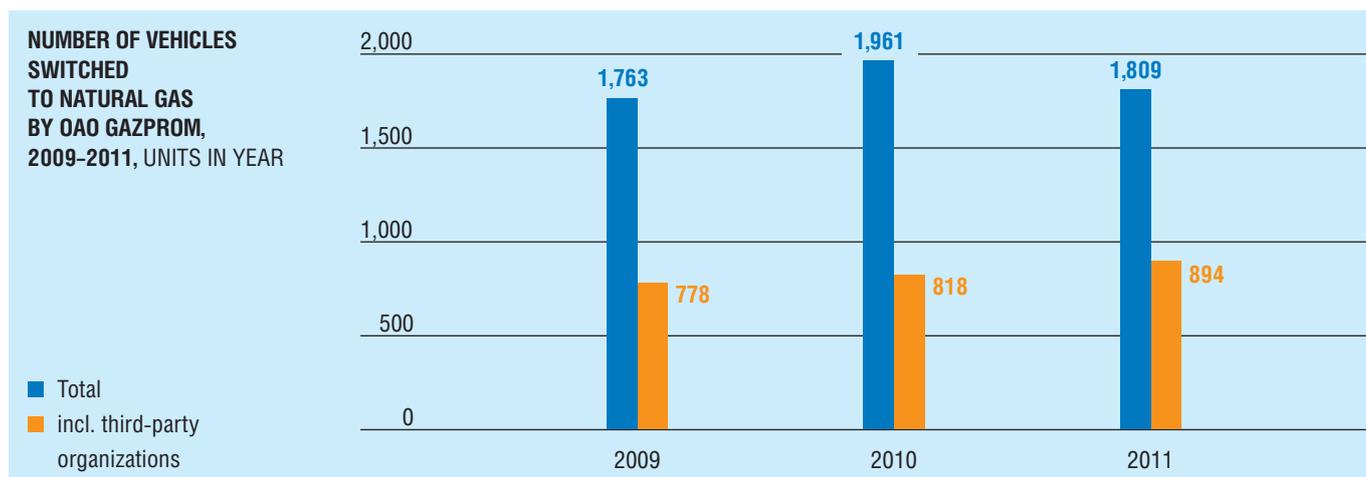
The Universiade in the Republic of Tatarstan, the upcoming Olympics in Sochi, the World Football Championship open new opportunities and build a favorable ground for the gas motor fuel expansion.

The Organizing Committee of the Olympics 2014 received proposals on the complex gasification of the Sochi transport infrastructure (including vehicles, railway and marine transport). The construction of four CNG FS is planned in Krasnodar Krai.

OAO Gazprom is currently developing the program of own vehicle fleet gasification. The program is expected to result in increase the NGV share in own fleet up to 30 %. In 2011 1,809 vehicle units were switched to natural gas, including 894 units owned by other organizations.







Gazprom Neft Group, operating the biggest oil refinery capacities in Russia, considers it a short term prospect to develop the market of gasoline and diesel fuels, which would meet the requirements of the international standards Euro-3 and Euro-5. The modernization of the Omsk oil refinery enabled a significant improve of the output environmental friendliness. The entire assortment fully meets the technical regulation approved in the Russian Federation “On requirements to land, air and marine transport benzene and diesel fuels”. The content of environmentally hazard substances in these fuels, such as metallic additives or methanol, is considerably lowered. In addition these fuels have a very low content of sulfur compounds, aromatic hydrocarbons and benzol. In 2011 OAO Gazpromneft-ONPZ (Omsk OR) produced 4.1 million tons of vehicle fuels. The share of high-octane fuels made 86 %. In summer 2011 the Omsk OR started the output of fuels under the 5th emissions class (Euro-5).

ООО Gazprom pererabotka started the output of the diesel fuel under the Euro-5 standard. The early production of this fuel was launched in the affiliated facility – Surgut condensate stabilization plant. Considering the increased demand for this fuel of the process transportation in the region, the use of this fuel will result in an improve of the air quality and the health of the population.

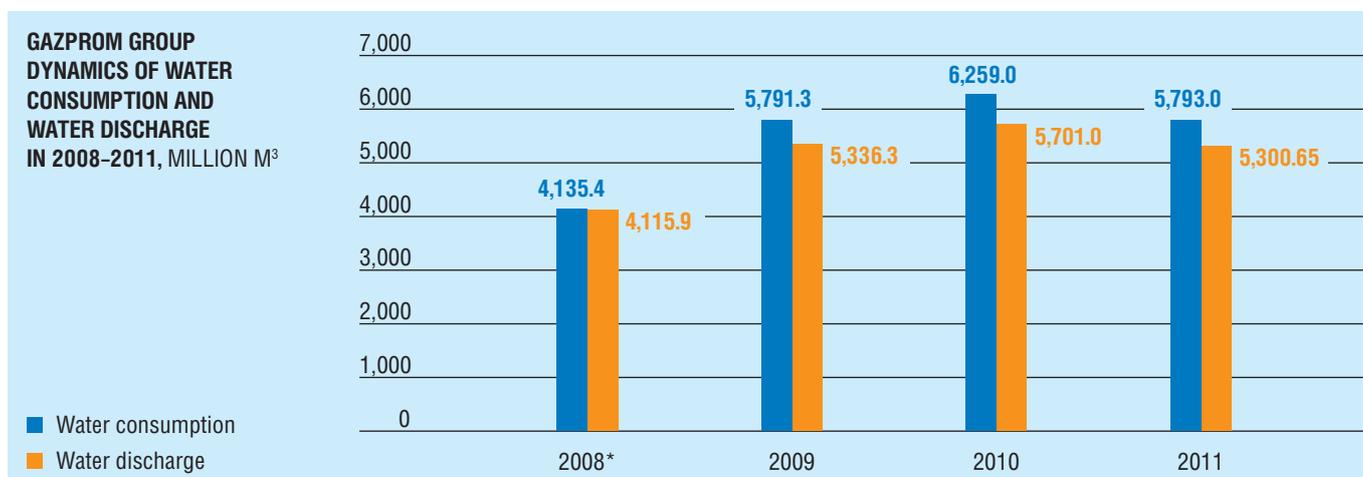
Water Use and Protection of Water Resources

In 2010 the *Gazprom Group* companies withdrew (received) 5,793 million m³ of water and 97.4% of it was used for own needs, 2.6 % was directed to other consumers. The *Gazprom Group* water discharge in 2011 made 5,300.65 million m³.

AGGREGATED FIGURES OF GAZPROM GROUP WATER USE IN 2011, MILLION M ³	
Total water intake	5,793.00
including water from natural sources	5,572.42
Own needs	5,643.19
including process needs	5,550.79
Water discharge	5,300.65
including surface discharge	5,257.71
of them normatively clean and normatively treated	5,096.23

The breakdown of *Gazprom Group* water consumption is similar to the water discharge: the major volume is traditionally shared by *Gazprom energoholding* – in 2011 the water intake amounted to 5.633,3 million m³, the water discharge – 5,222.1 million m³ (97.2 and 98.5 % of the total respectively). The shares of OAO *Gazprom* and the *Gazprom Group* other oil and gas companies of the total water consumption were small – nearly 1 %.

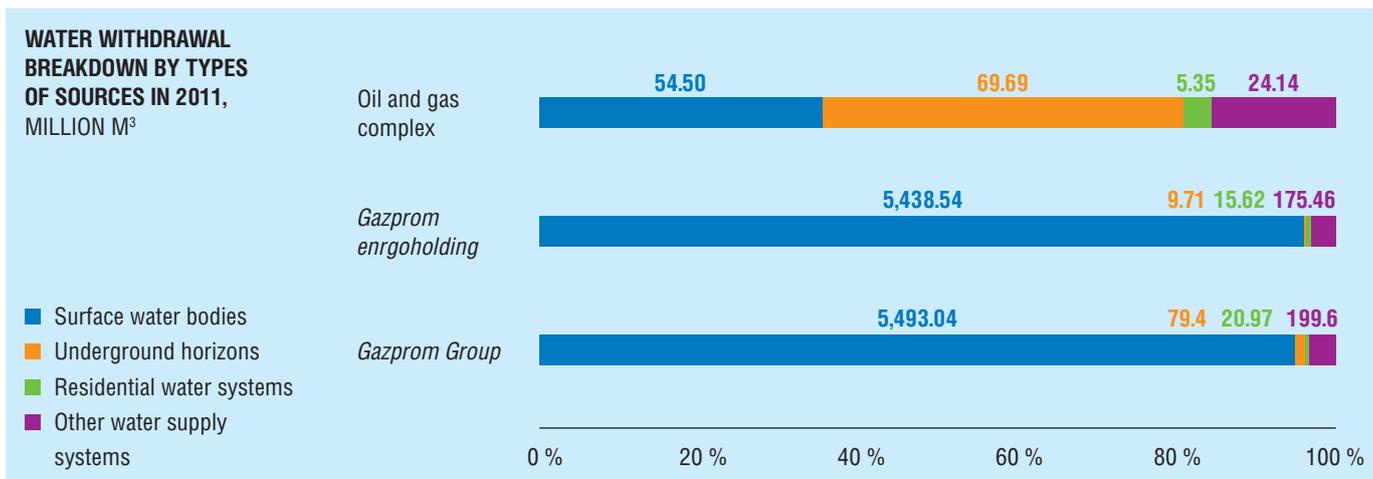
In general the *Gazprom Group* water withdrawal and discharge in 2011 were 7.5 and 7 % lower respectively than in 2010. This was caused by the power generation decrease in *Gazprom energoholding*, the most water-intensive companies if *Gazprom Group*, as well as a number of measured aimed at water use improve.



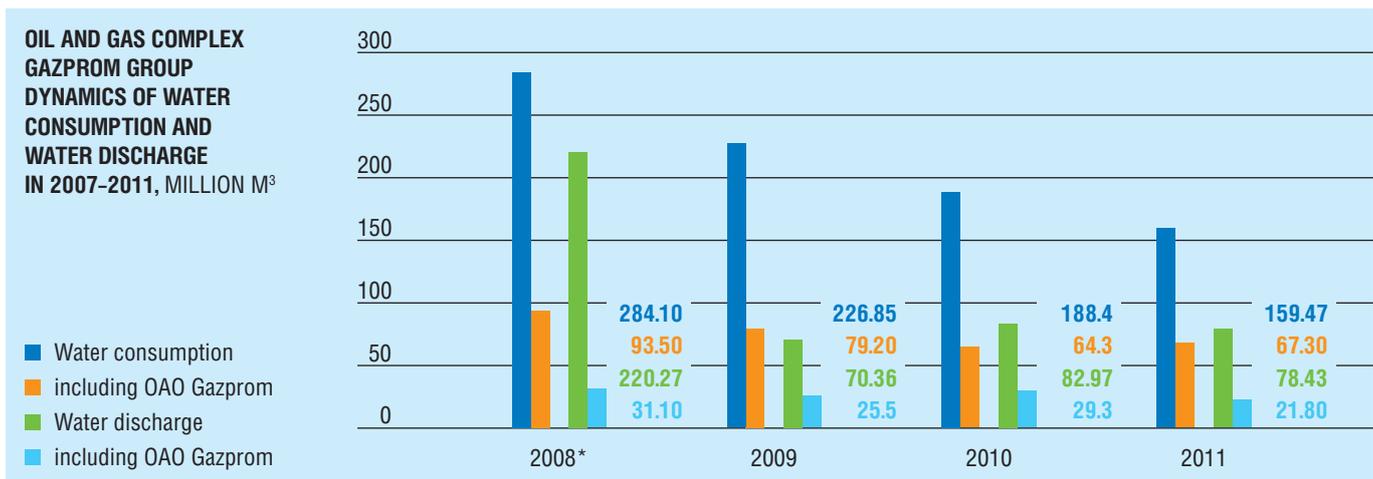
* Excluding OAO TGC-1 and Sakhalin Energy.

The surface water bodies are the major water sources of the *Gazprom energoholding* power stations. The *Gazprom Group* oil and gas complex mainly uses subsurface water sources and water supply systems.

The volumes of normatively clean and normatively treated waste water discharged into surface bodies made 97 % *Gazprom Group* water discharge.



* Excluding OA0 TGC-1.



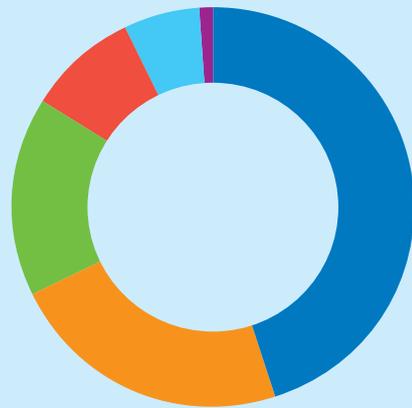
* Excluding OA0 TGC-1.

In 2011 the OAO Gazprom total water withdrawal (from water bodies and household water supply systems) was 4.7 % higher than in 2010 and amounted to 67.3 million m³ against 64.3 million m³. This was caused by the increase of the special subsidiaries water intake in OOO Gazprom energo from other organizations supply systems. Along with it, the water use from own needs was 3.2 million m³ lower due to the water saving measures in place.

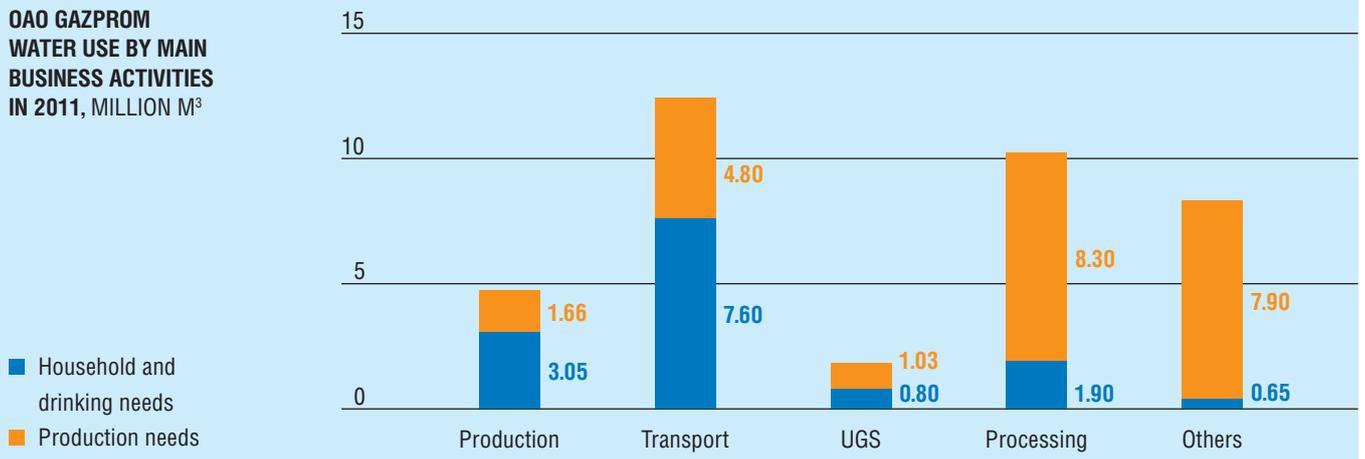
In 2011 the *Gazprom* water consumption breakdown changed due to the conveyance of ownership over heat and water supply and discharge units to Gazprom energo, which lead to the water consumption share decrease of gas transmission subsidiaries (from 35 to 23 %) and gas and condensate processing subsidiaries (from 24 to 16 %). The OOO Gazprom energo share rose up to 45 % against 21 % in 2010.

GAZPROM WATER CONSUMPTION BREAKDOWN BY BUSINESS ACTIVITIES IN 2011

Gazprom energo	45 %
Transport	23 %
Processing	16 %
Production	9 %
UGS	6 %
Others	1 %



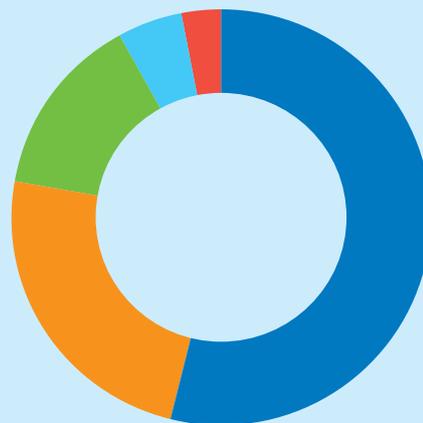
OAO GAZPROM WATER USE BY MAIN BUSINESS ACTIVITIES IN 2011, MILLION M³



Also the water consumption decrease was resultant from water discharge, including discharge into surface water bodies by 1.48 million m³.

ОАО ГАЗПРОМ WATER DISCHARGE BREAKDOWN BY DRAINAGE IN 2011

Surface water objects	54 %
Filtration fields, sewage farm	24 %
Underground horizons	14 %
Relief	5 %
Storage lagoon	3 %



One of the ways of water management is implementation of systems of water sequential reuse and water recycling. In 2011 OAO Gazprom water turn over supply (sequential reuse) made 279.8 million m³, water recycling – 0.5 million m³.

In 2011 56 % of current costs and 42 % of investment in *Gazprom Group* were shared by environmental protection and natural resources rational use. The waste water treatment facilities with a capacity of 1,880.1 thousand m³ per year were put into operation.

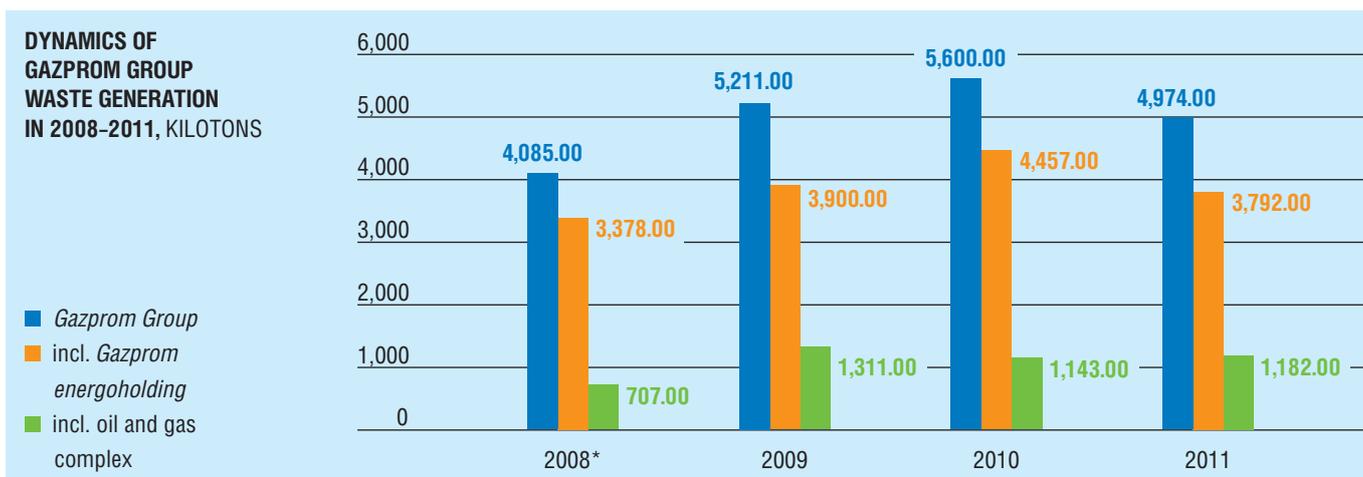
Production and Consumption Waste Management

Production and consumption waste management is among the most significant environmental aspects associated with great environmental risks. In this regard, *Gazprom Group* is striving to implement the most modern practices and technologies of waste utilization and minimization.

In 2011 the *Gazprom Group* companies generated in 4,974. thousand tons of production and consumption waste, which was 626 thousand tons (11 %) lower than in 2010. The main contribution to the waste generation was made by energy companies of *Gazprom energoholding* – 76 % waste generated (the majority was presented by the ash and sludge (ASW) from solid fuels combustion in power plants, IV–V class of hazard). The share of the total annual waste generation in the oil and gas complex was approximately 24%.

Against the waste performance of 2010 an insignificant increase in the *Gazprom Group* amount of waste generated in 2011 (3.5 %) was mainly observed due to an increase of the drilling waste in production subsidiaries of OAO Gazprom and *Gazprom Neft Group*.

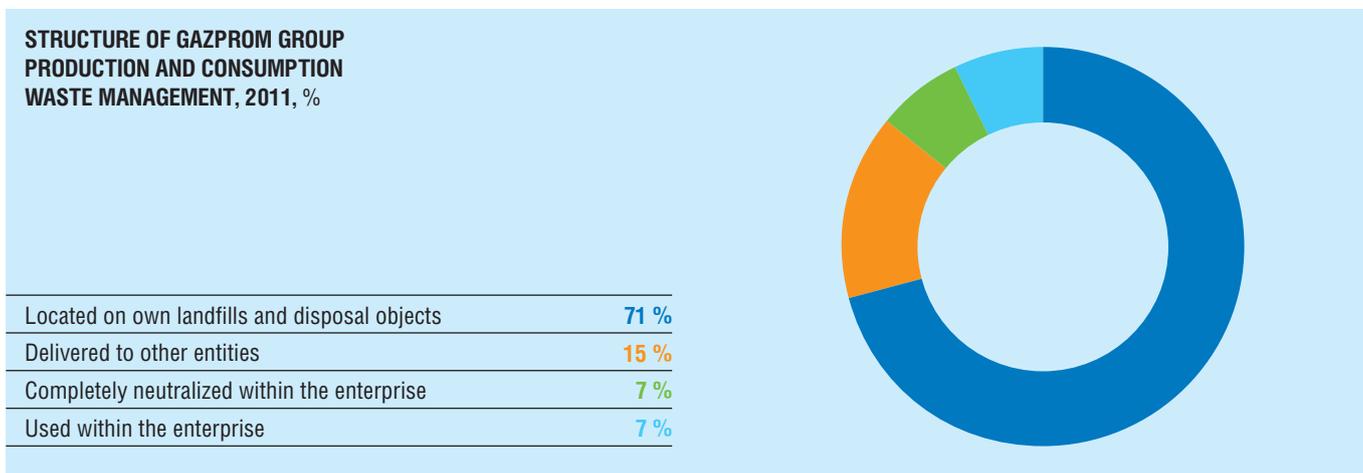
The general waste decrease was resultant from the *Gazprom energoholding* power generation cut, which lead to a lower generation of ASW from large power stations running on coal.



*The statistics of 2008 excluded the performance of OAO TGC-1, Sakhalin Energy.

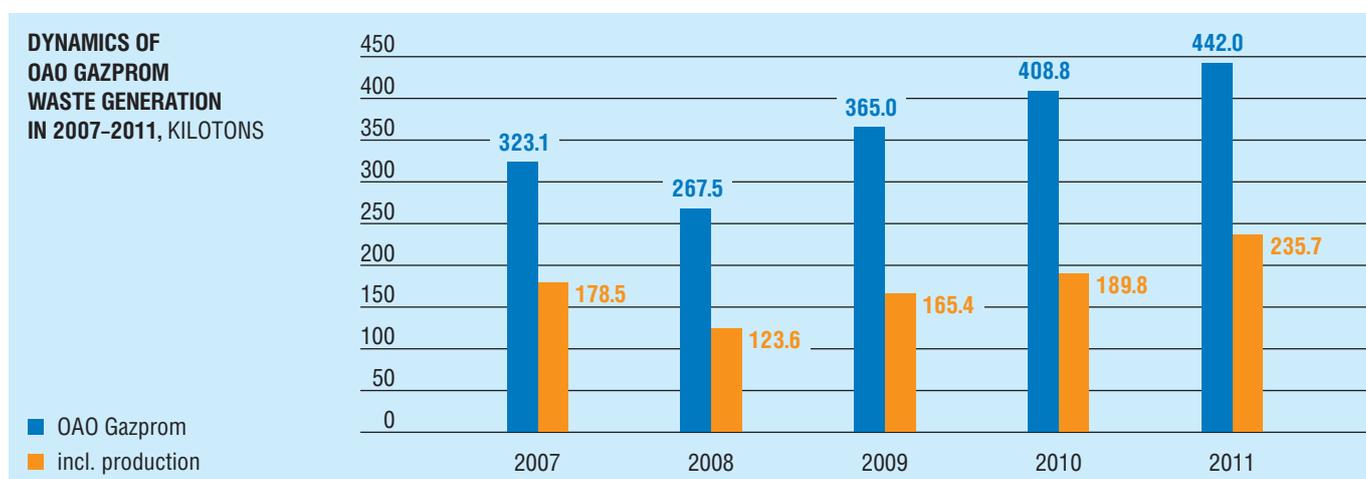
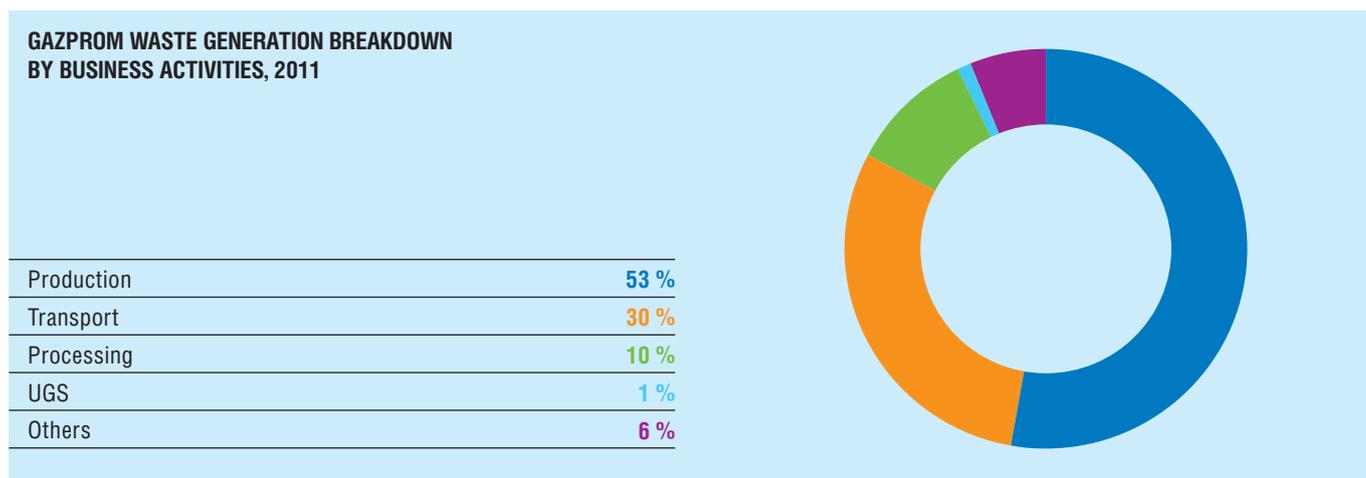


In 2011 *Gazprom Group* industrial facilities transferred 631 thousand tons of waste to other organizations, landfilled and disposed – 2,880.7 thousand tons. The bulk of waste placed on its own landfills and disposal was covered by the ASW of power generating companies – 84.7 %. The amount of waste utilized in 2011 grew by 28 % against 2010, 26 % was transferred to organizations specialized in utilization, neutralizations and landfilling.



In 2011 OAO Gazprom subsidiaries generated 442 thousand tons of waste, which was 33 thousand tons (8.1 %) more than in 2010. The waste of the IV and V class of hazard together shared 91 % (401.6 thousand tons) of this amount.

The general waste trend is determined by the drilling waste, which covers 30 % of OAO Gazprom total amount. Against 2010 in 2011 major contribution of the waste increase in OAO Gazprom was made by the production subsidiaries due to drilling operations (OOO Gazprom dobycha Yamburg, OOO Gazprom dobycha Nadym, OOO Gazprom dobycha Noyabrsk). The production subsidiaries amounted to 135.5 thousand tons of drilling waste, 97 % of which comprised waste of the IV class of hazard.



OAO Gazprom subsidiaries waste turnover amounted to 466.9 thousand tons of waste (including 17 thousand tons at the beginning of the year and 7.2 thousand tons, received from other companies). Out of this amount 218.3 thousand tons was transferred to third parties, 187.5 thousand tons was landfilled or disposed, 50.4 thousand tons was utilized and neutralized in-situ.

In 2011 OAO Gazprom reduced the amount of waste accumulated by the end of the period by 8 % against the year 2010, increased the amount of waste transferred by 7 %.

Drilling Waste Handling

Utilization of large-tonnage drilling waste from wells construction and operation is the main challenge of the *Gazprom Group* oil and gas complex.

To face this challenge the companies are catching up with the pitless drilling. In 2011 OOO Gazprom dobycha Noyabrsk was using this method on the Yety-Purov

field, with the subsequent waste processing into a construction material using domestic patented technologies. Over 10 thousand tons of waste was processed. The new product was used as road slope for strengthening to avoid subsidence and costs of additional sand. *Gazprom Neft Group* subsidiaries also broadly use the well pitless drilling.

Oil Contaminated Waste Handling

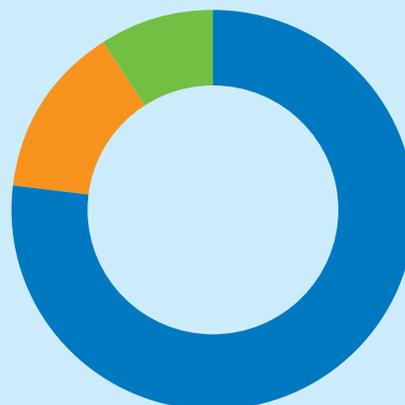
One of the biggest challenge the *Gazprom Group* companies have to deal with is oil sludge waste, which mainly refer to the III class of hazard.

In 2011 *Gazprom Group* accounted for 73.9 thousand tons of oil contaminated waste, out of which 50.7 thousand tons was generated in 2011, 22.5 thousand remained from previous periods and 0.7 thousand tons received from other organizations. The bulk of this amount is shared by *Gazprom Neft Group*.

The oily waste in *Gazprom Group* is represented by slurry of oil treatment plants, sludge treatment tanks and pipelines of oil and petroleum products, floating film of oil traps.

**STRUCTURE OF GAZPROM GROUP
OILY WASTE GENERATION IN 2011**

Oil and gas complex	77 %
OA0 Gazprom	14 %
<i>Gazprom energoholding</i>	9 %



**STRUCTURE OF GAZPROM GROUP
OILY WASTE MANAGEMENT IN 2011**

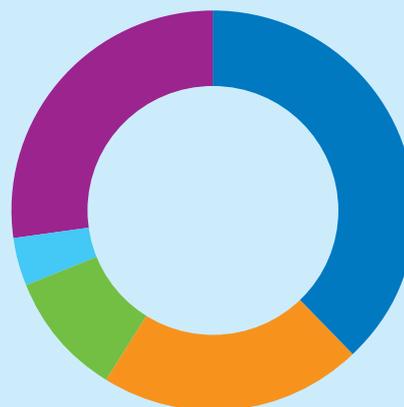
Delivered to other entities	50 %
Accumulated waste by the end of the year within the enterprise	21 %
Located on own landfills and disposal objects	18 %
Used and completely neutralized within the enterprise	11 %



In 2011 OA0 Gazprom subsidiaries accounted for 9.85 thousand tons of oil sludge waste, out of which 71.5 % (7 thousand tons) was generated in 2011, 21.3 % (2.1 thousand tons) remained from previous periods and 7.1 % (0.7 thousand tons) was received from other organizations. The main oily waste contributors in OA0 Gazprom are transmission and processing subsidiaries, as well as the subsidiaries of OOO Gazprom energo.

DISTRIBUTION OF OIL SLUDGE OAO GAZPROM BY BUSINESS ACTIVITIES IN 2011

Transport	38 %
Production	21 %
Processing	10 %
UGS	4 %
Others (Gazprom energo)	27 %



The majority of oily waste is transferred for utilization and neutralizations. In 2011 the waste utilized and neutralized in-situ amounted to 7.9 thousand tons (10.7 %), 37 thousand tons (50.1 %) was transferred to other organizations, 13.6 thousand tons (18.4 %) was landfilled and disposed.

In 2011 Gazprom Group utilized and neutralized over 7.9 thousand tons of oil contaminated waste.

Gazprom facilities apply different methods of oily waste neutralization and processing, which depend on the waste composition and application feasibility. For instance, OOO Gazprom dobycha Nadym has organized collection and thermal neutralization of oily waste using installations “Forsazh”, which enabled the neutralization of 7.737 tons of waste. There are technologies of hydrocarbon extraction from pipeline treatment sludge, vessels, containers, tanks, hydronators in use. Hydrocarbons are extracted as an end product. In 2011 Medvezhinskoe gas production unit utilized 0.282 tons of sludge.

Land Protection and Liquidation of the Accumulated Environmental Damage

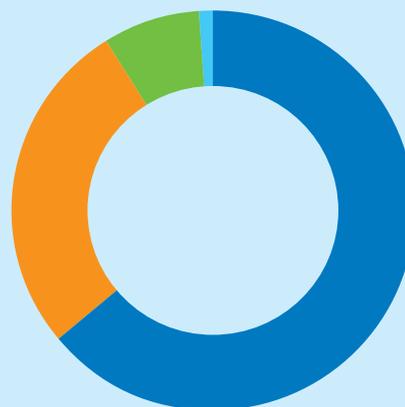
The technologies of land use in *Gazprom Group* ensure protection and restoration of land fertility and sustainability of the earth environmental functions.

The land and earth protection in *Gazprom Group* is achieved by means of the negative impact scale minimization and disturbed land rehabilitation. The project requirements determine the work of technical and biological rehabilitation, timely recycle of the land in use, restoration and return of territories to the economy.

In 2011 *Gazprom Group* disturbed territories amounted to 76.5 thousand hectares and 78.8 thousand hectares by the end of the period, most of this territories were shared by *Gazprom Neft Group* (51.9 thousand hectares), which was caused by the increase in putting new capital project facilities into operation in oil production facilities. The territories disturbed by the energy generation facilities (sludge pits) made 669.8 hectares by the end of the period, or less than 1 % of the *Gazprom Group* land damage.

**DISTRIBUTION OF GAZPROM GROUP
LANDS DISTURBED IN 2011
(END OF THE REPORTING PERIOD)**

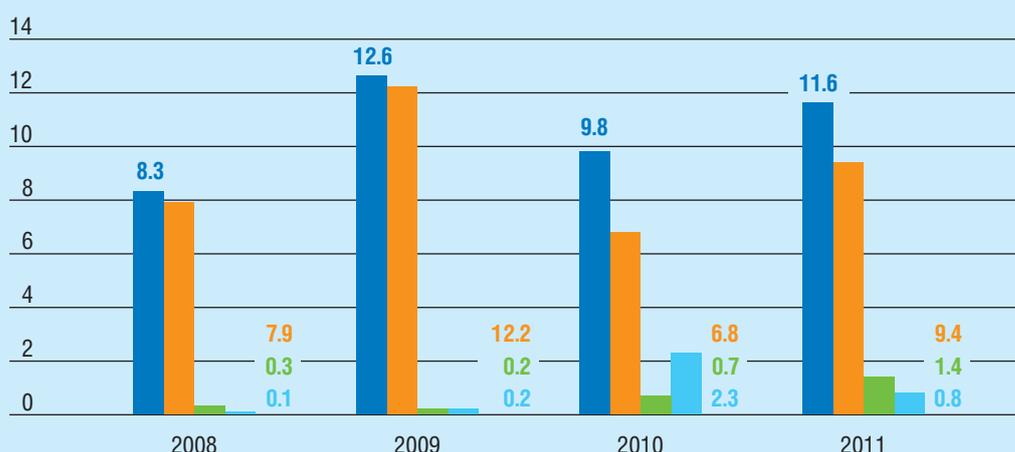
<i>Gazprom Neft Group</i>	66 %
OAQ Gazprom	28 %
Other companies of oil and gas complex	5 %
<i>Gazprom energoholding</i>	1 %



In 2011 *Gazprom Group* rehabilitated 11.6 thousand hectares of disturbed lands, out of which 81 % was rehabilitated by OAO Gazprom. The land rehabilitation for farming shared 60 %, forestation – 27 %, water bodies and other purposes – 13 %.

**DYNAMICS OF
OIL AND GAS COMPLEX
GAZPROM GROUP
LAND REHABILITATION
IN 2008-2011, THOUSAND HA**

■ Total
■ OAO Gazprom
■ *Gazprom Neft Group*
■ Other companies of oil and gas complex



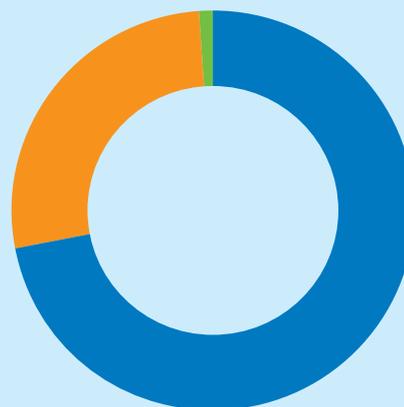
In 2010 and 2011 *Gazprom Neft Group* intensified the rehabilitation work. This was enabled by the additional funding under the program of disturbed land rehabilitation and development of new available technologies of oil contaminated lands remediation, neutralization of drilling sludge while sludge pits remediation. The *Gazprom Neft Group* rehabilitation made 214.77 million rubles in 2010 and 231.95 million rubles in 2011.

In order to protect from negative anthropogenic impact or prevent land degradation, OAO Gazprom permanently monitors and a controls territory of temporal use, accounts damaged and rehabilitated lands, as well as provides research and development efficient technologies of land restorations.

In the reporting period *Gazprom Group* disturbed 11.9 thousand hectares of lands, out of which 8.1 hectares – OAO Gazprom subsidiaries.

A big part of this amount – 5.9 thousand hectares was shared by OAO Gazprom transmission subsidiaries due to construction and repair of gas main pipelines. In the reporting year production subsidiaries rehabilitated 2.5 thousand hectares, gas transmission subsidiaries – 6.8 thousand hectares. The majority of the subsidiaries fully rehabilitated the year land damage, and a number of subsidiaries managed to rehabilitate the land damage remained from the previous period.

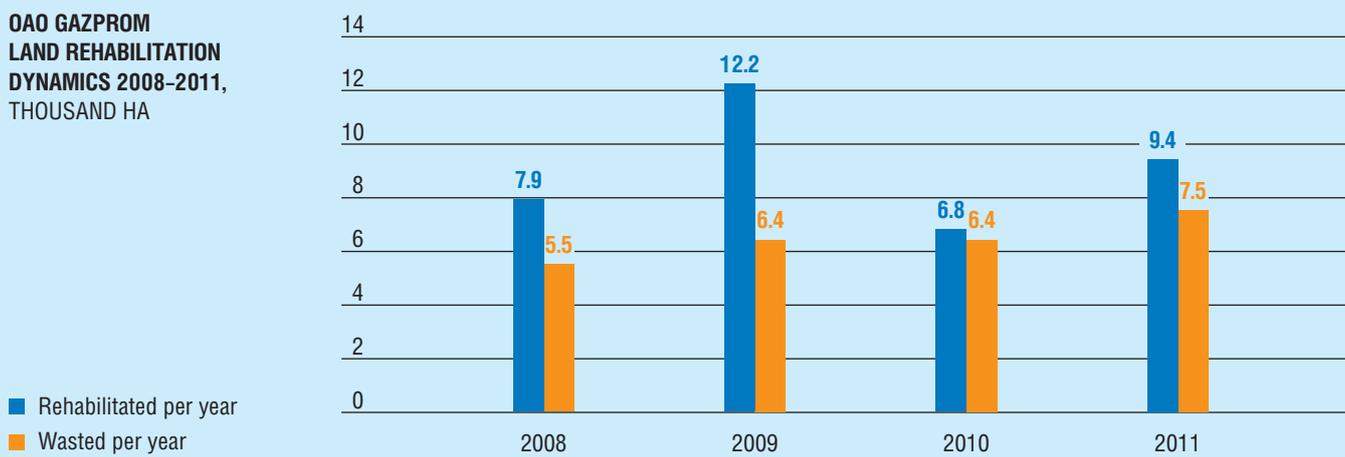
**BREAKDOWN OF DISTURBED LANDS
BY OAO GAZPROM BUSINESS ACTIVITIES
(DURING THE REPORTING PERIOD), 2011**



Transport	72 %
Production	27 %
UGS and processing	1 %

In 2011 the land rehabilitation increased: in *Gazprom Group* – by 18 %, in *OAO Gazprom* – by 38 %.

**OAO GAZPROM
LAND REHABILITATION
DYNAMICS 2008-2011,
THOUSAND HA**



Under the corporate industrial environmental monitoring and control OAO Gazprom inspects the disturbed land and ensures conformity with different types of indicators such as: pedological, geobotanical, agrochemical and others. For instance, in the reporting period OOO Gazprom dobycha Nadym monitored sediment beds and soils on oil gas and condensate the fields of Yamsovey (Yareyskaya site), Medvezhie (in the area of the production site GP-1) and others. OOO Gazprom dobycha Orenburg, OOO Gazprom dobycha Irkutsk, OOO Gazprom transgaz Yekaterinburg provided a laboratory control the rehabilitation efficiency.

OOO Gazprom dobycha Nadym and OOO Gazprom dobycha Yamburg undertook broad scale measures on biological and technical rehabilitation of lands (flowlines, clusters of operational, exploration and observation wells).

OOO Gazprom transgaz Ukhta carried out rehabilitation work in the area of Sosnogorsky LPC of gas main pipelines using biopreparations for oil contaminated soils, oil contaminated pits around the 203, 205 km points of the linear pipeline section with the further rehabilitation, as well as in the area of Mikunsk LPC on the quarry “Mikun”.

In 2011 OAO Severneftegazprom rehabilitated quarries on the territory of 180 hectares and drilling sites – 8.4 hectares.

In the reporting year *Gazprom Neft* rehabilitated oil contaminated territories of 134.89 hectares (including OC Slavneft, OAO Tomskneft EOC). The company rehabilitated 138 sludge pits. The rehabilitation was implemented under the previously

developed land rehabilitation projects based on all factors (extent of contamination, soil type, state of the indigenous biocoenosis, weather conditions) involving specialists from profile organizations. The oil content in soils was monitored at every stage of the project implementation involving accredited laboratories, which enabled the most effective fulfillment of the planned measures. The quantitative chemical analysis, made after the biological and technical rehabilitation, proved the considerable decrease of the territory oil contamination.

In 2010–2011 on the territory of the subsidiary “Muravlenkovsneft” OAO Gazprom-neft-Noyabrskneftegaz implemented the corporate-wide Strategic program of oil contaminated lands rehabilitation, drilling sludge pits rehabilitation, processing (neutralization) of oil sludge, accumulated during the industrial operations.

ZAO Gazprom Neft Orenburg rehabilitated and restored the fertility of lands disturbed during the construction of well flowlines and roads, as well as conducted radiological monitoring of the soil.

OAO Gazprom Neft aims to removal of all sludge pits in the operational regions by 2013. In 2011 the company rehabilitated 138 sludge pits on the fields of YNAD, Khanty-Mansiysk Autonomous District – Yugra and Tomsk regions. Starting from the year of 2011 all new sludge pits are to be rehabilitated soon after the drilling operations are completed.

Gazprom energoholding subsidiaries are rehabilitating lands allocated for the ash-disposal areas of coal power stations. In 2011 the scope of work, provided by the OAO OGK-2 subsidiary Troitsk GRPS Plans of actions for 2008–2010 on lowering the negative environmental impact of the ash-disposal area, located on the lake Shobarkul, in terms of bringing the technical state under the project indicators.

Accidents and Incidents

In 2011 *Gazprom Group* registered 40 accidents and incidents, including 20 with environmental consequences, out of which *Gazprom Neft Group* – 9 accidents (of them 8 with environmental consequences), OAO Gazprom – 30 accidents and incidents (of them 12 with environmental consequences – mainly emissions of methane or combustion products). Along with it the territories, polluted as a result of accidents in *Gazprom Group* (17.25 hectares), decreased by 58.4 % against 2010. The losses of oil and other petroleum products in *Gazprom Group* (10.24 tons) and losses of natural gas (4.7 thousand tons) were also lower than in the previous year.

Out of the 12 accidents registered in OAO Gazprom 9 accidents were registered at gas transmission facilities and 3 accidents at processing facilities.

Protection of Biodiversity

Under the corporate Environmental Program *Gazprom* makes a great contribution into international, national and local programs of flora and fauna protection in the regions of operations.

Gazprom strives to improve the environmental security of its operations, based on the preventative principles towards the conservation of natural objects and natural complexes, which especially important when it comes to an impact on nature special protected areas.

The ecosystem of the FSI Sochi National Park is daily monitored. OOO Gazprom sotsinvest implements additional measures on environmental impact minimization, such as conservation of big mammals’ migration routes and sustaining the resilience of the biodiversity on the territory of the Caucasian Biosphere Reserve. In order to eliminate any anthropogenic disturbance of the ungulates and brown bears during

migration and hibernation, the construction work time around the reserve territory was restricted. The projects of the Red Book species conservation were continued. In 2011 over 3,000 flora species were replanted, including relict species, and over 240 fauna species were resettled.

During the construction around the course and high-water bed of the river Achipse and the river feeders a number of measures was undertaken to protect the fishery and sustain the water quality. The ground unload in the spawning areas was prohibited and some additional supporting construction for the fish spawning and migration was executed. In order to avoid any damage to soil and ground and fauna disturbance, the technologies in use enable to eliminate the soil losses and erosion; only indigenous species are used in planting; all operations are significantly restricted during the bating and reproduction and in the migration areas, conserving the indigenous flora.

In 2011 during the construction of the pipeline Sakhalin – Khabarovsk – Vladivostok **ООО Газпром инвест Восток** instructed to have 25 million juvenile fishes of the calico and silver salmon settled in the breeding rivers of the Far East. The fishes were provided by the fish breeding plants in Primorye, Kamchatka and Khabarovsk regions. The total investment into the fish breeding made over 100 million rubles. In the wildlife reserve “Aistiny” the company provided for the nesting of the Far East stork, included in the International Red Book. The wild animal rehabilitation center “Utyos” was provided with a financial aid. This center is unique for the protection and sustaining the indigenousness of the Siberian tiger inhabitation and population. At present Siberian tigers, bear cubs and roedeer affected by human actions are being treated in the center.

Under the UNDP/GEF project “Conservation of Wetland Biodiversity in the Lower Volga Region” in association with the TV-channel “7+” **ООО Газпром добыча Астрахан** in 2011 prepared an anthology of scientific popular films “Nature and human” for the ecological education for school and preschool studies. The Astrakhan state natural biosphere reserve received a financial aid of 500 thousand rubles, Astrakhan regional division of the All-Russian nature protection society was provided with 100 thousand rubles.

In 2011 **ООО Газпром трансгаз Ухта** signed a partnership agreement with the Yugyd va National Park and “Innovation Center of the Komi Biology Institute NF of UD of RAS” in order to implement the project “Strengthening Protected Area System of the Komi Republic to Conserve Virgin Forest Biodiversity in the Pechora River Headwaters Region”. The agreement foresees the use of the Gazpromavia patrol helicopters for the monitoring of environmental state of natural complexes and accounting of wild animals in the National Park, as well as for enabling the fauna protection by landing inspectors and raiding of operative antipoacher groups.

ООО Газпром трансгаз Томск continued the restoration projects for environment damaged by the company’s operations. In 2011 a festival of kids’ craft “In the nature harmony” was held. The water basin was treated in the Amur high-water bed near the lake feeders of Mylka and a lake in Khabarovsk. Larches and pines were planted in Petropavlovsk-Kamchatsk and on Sugun peninsula nearby the lake of Tandovo in Novosibirsk region.

ООО Газпром переработка participated in the action “Keep and save”: in Saigatini of Surgut in KMAD – Yugra Surgut condensate stabilization plant provided for the founding of a cedar garden by planting 800 trees, Lunniy township of Surgut 200 trees of fir and cedar were planted, in Solnechniy township and the village of Saigatino 340 trees were planted. Gazprom pererabotka signed an agreement with the Yugyd va National Park, which foresees a financial aid of 423 thousand rubles for the treatment of the Podcherie river course and the river feeders in the breeding areas of the white-fish and European grayling.

ООО Газпром добыча Надым in 2011 provided a financial aid of 19.578 million rubles to meet the agreement with the Administration of Nadym District, company

“Nydinskoye” and association “Yamal to descendants!”, as well as to address the requests of Administration of Purov, Krasnoselkup and Tazov Districts.

OOO Gazprom neft shelf was executing the industrial environmental monitoring and control, including the monitoring of biota, in the operations area of the Pirazlomnaya offshore ice-resistant stationary platform.

In the reporting year **Sakhalin Energy** continued to participate in the charityware “Sakhalin Salmon Initiative” of wild salmon conservation, as an important element of the island sustainable development.

AO TGC-1 signed an agreement with the World Wildlife Fund (WWF), which aimed to determine the interaction framework between the energy sector and environmentalists in terms of promotion of the ecological education, prevention of environmental degradation and protection of biodiversity in Murmansk region. The drafted education programs and projects were aimed at enhancement of the company’s environmental standards.

Energy Saving

Gazprom Group has been stepwisely implementing the policy of energy saving and energy efficiency enhancement of industrial processes, which is based on the systematic approach using mechanisms of medium and long term planning.

The following important 2011 milestones of energy efficiency and energy saving enhancement in OAO Gazprom subsidiaries are worth mentioning.

- The Board of Directors (decision dd. April 19, 2011 № 1795) and the Management Committee of OAO Gazprom (Decree as of April 14, 2011 № 36) reviewed and endorsed the Concept of Energy Saving and Energy Efficiency Improve in OAO Gazprom in 2011–2020, which was endorsed by OAO Gazprom Approval dd. December 28, 2010 № 364, as well as the Program of Energy Saving and Energy Efficiency Improve in 2011–2013, approved by the Deputy Chair of OAO Gazprom Management Committee A.G. Ananekov on December 30, 2010.
- The target values of energy saving and energy efficiency of *Gazprom* were approved. In order to fulfill the decision of OAO Gazprom Board of Directors as of March 23, 2010 № 1553 the use of fuel energy resources per unit of own process needs was reduced by 1.2 %.
- The company continued to implement the policy of monetary stimulation of the personnel, involved in production, transmission, storage and processing of gaseous and liquid hydrocarbons, who ensure energy resources saving in compliance with the Provisions of monetary stimulation of gas and energy resources saving in OAO Gazprom subsidiaries, endorsed by the order of OAO Gazprom as of May 13, 2011 № 83.
- In 2011 OAO Gazprom Board of Directors and Management Committee set objectives on further improve of energy resources use and issued instructions on development of additional projects of energy efficiency improve.

The on-going Program of energy saving and energy efficiency improve in OAO Gazprom in 2011–2013 ensures the implementation of management decisions, which are based on the control of the production energy efficiency, energy saving performance through the economical impetus of a single employee and the entire subsidiary.

The Program priorities are:

- improve of energy saving and energy efficiency of OAO Gazprom in all business activities based on modern requirements and legal framework;
- setting targets values of energy saving and energy efficiency improve under the state and corporate requirements;

- planning and implementing energy saving measures, stipulated in programs of facilities reconstruction and development in gas production, transmission, processing and underground storage;
- implementing energy saving measures, ensuring the major reductions of fuel energy resources used for own process needs in OAO Gazprom based on previous programs performance;
- implementation of advanced innovative technologies in all OAO Gazprom business activities;
- lowering (sustaining) the use of fuel energy resources per unit of own process needs;
- ensuring a partial offset of deployed capacities in gas production through a steady lowering of the production facilities energy-intensity down to an economically feasible rate;
- decrease of energy resources losses and hazardous emissions by means of increasing the efficiency of existing energy units and equipment;
- development of types and methods of subsidiaries motivation in energy saving and energy efficiency improve.

According to the Concept the overall potential of energy saving through 2020. Amounts to 28.2 million t.c.e (incl. 25.7 billion m³ of natural gas). According to the Program of energy saving in OAO Gazprom in 2011–2013 the projected overall saving of FER will reach 6.4 million t.c.e.

SUBSIDIARIES PERFORMANCE OF OAO GAZPROM ENERGY SAVING PROGRAM IN, 2011			
Type of activity	Natural gas, million m³	Power, thousand KW•h	Heat, Gcal
Production of gas, condensate and oil	269.30	3,920.96	26,886.97
Gas transmission	2,100.10	166,154.00	48,596.00
Underground gas storage	10.90	2,475.30	0.00
Processing of gas, condensate and oil	9.90	21,596.98	27,369.00
Total	2,390.20	194,147.26	102,851.97
Total, thousand t.c.e.	2,724.8	63.1	14.7

Under the Program in 2011 OAO Gazprom subsidiaries performed the savings of 2.8 million t.c.e

The consumption of FER per unit of gas main pipeline throughput capacity made 34.1 kg c.e./million m³•km, which was less than the value set for OAO Gazprom by the Federal Tariff Service on March 31, 2011 N^o 88-e “On setting requirements to programs of energy saving and energy efficiency improve of natural monopolies entities, providing services on gas pipeline transmission”, which was 36.88 kg c.e./million m³•km.

OAO Gazprom is steadily expanding the use of self-contained power supply units for linear and remote consumers. The emphasis herein is made on cooperation with Russian developer and manufacturers on design and deployment of 30 KW energy units (including the use of renewable and unconventional energy sources). The following measures are hereunder implemented.

- OOO Gazprom dobycha Yamburg, OOO Gazprom transgaz Yekaterinburg, OOO Gazprom transgaz Saint-Petersburg, OOO Gazprom transgaz Stavropol tested and operated 0.3–20 KW turbo expander units.

- 2.5 KW solar modules were used to supply a OOO Gazprom transgaz Stavropol gas distribution station.
- project design of a modular power supply generator (MPSG) for integration of a 3 KW wind power unit as a power source into the existing model range of modular generators and testing the unit at OOO Gazprom transgaz Stavropol facilities.
- design and manufacture of a 10 KW pilot fuel cell power unit based on a solid-polymer electrolyte battery with a fuel processor for testing in Gazprom transgaz Tomsk.
- As per OAO Gazprom order a 5 KW hydro fuel cell power unit was designed. As a result of the qualification tests the initial data were approved for installing the unit on a MPSG operated by an Affiliated Open Joint Stock Company Electrogaz.
- A 1 KW solid oxide fuel cell power unit was tested. OOO Gazprom transgaz Yekaterinburg is planning to have one unit installed.
- The second stage of a Sterling energy unit qualification tests was completed at OOO Gazprom transgaz Tomsk. The unit was recommended for use at other facilities of OAO Gazprom.

Gazprom Group intends to implement pilot projects on use of secondary energy resources.

Gazprom Group pays a great attention to the use of heat and power generation based on use of secondary energy resources (SER) of gas compressor units (GCU) at compressor stations (CS).

At present *Gazprom Group* uses SER for heat generation without any fuel combustion by installing heat exchangers at most of CS. The maximal effect can be achieved, in case the Unified Gas Supply System facilities operate the appropriate process equipment to utilize the exhaust heat of GCUs and turbo expander units.

OAO Gazprom profile divisions are researching the issue of possibilities to implement pilot projects on deployment of energy generation equipment running on SER in OAO Gazprom subsidiaries.





PREVENTION OF NEGATIVE ENVIRONMENTAL IMPACT

Projects Environmental Assessment

In strict compliance with the international and Russian legislation companies of *Gazprom Group* assess the environmental impact of planned economic activities at all stages of design – from investment concept to the construction projects.

Environmental assessment of projects comprises a number of stages, the most important of which are Environmental Impact Assessment (EIA) and environmental expertise.

The EIA made by the *Gazprom Group* companies is based on the engineering and environmental studies in the areas of proposed construction. The study scope examines of the environmental components state (air, surface and groundwater, soil and vegetation, wildlife and mineral resources), the level of anthropogenic impact. The study results provide estimate of the projected impacts of planned economic activity and possible changes in the environment and related implications for society. The obtained data are the basis for developing design solutions based on the selection of the most environmentally and economically feasible option among available alternatives. In the development projects that affect interests of other countries, EIA is carried out in a transboundary context, in compliance with the Espoo Convention.

Since 1994 OAO Gazprom projects have been subject to an internal corporate expertise in prior to the submission of project design documentation for the state expertise. Corporate expertise aims to improve the quality of the OAO Gazprom project materials.

The procedure of the corporate expertise is regulated by the standard – STO Gazprom 2-2.1-031-2005 “Regulations on the expertise of project design documentation in OAO Gazprom”. The Directorate of Energy-Saving and Environment of the Gas transmission, underground storage and utilization Department is designated as the focal point of the corporate environmental expertise.

In 2011 the corporate environmental expertise envisaged 272 scopes of work and technical requirements of reconstruction, modernization and design projects; 224 project notifications and design documents on reconstruction, modernization and construction.

The following meaningful project scopes of work, notifications and project design documents were reviewed and approved:

- feasibility study of the Shtokman gas condensate field (GCF) gas transmission methods and routes from the Volkhov CS to the pipeline system of Serpukhov – Leningrad, Belousovo – Leningrad in the operation area of the Valday CS, Saint-Petersburg;
- the UGSS expansion to ensure the South Stream gas supply;
- the overall feasibility study of the South Stream project. Stage 2. “Expansion of Russia – Turkey pipeline capacities in the operation area of Izobilnoye – Dzhubga”;
- development of the Kirinskoye OGCF;
- development of the oil and gas mid-carboniferous deposit on the Orenburg OGCF;
- expansion of the cenomanian deposit of the Zapolyarnoye OGCF;
- CS reconstruction of the CAC pipeline system in the operation area of OOO Volgogradtransgaz;
- CS reconstruction of the Northern Caucasus – Center pipeline system on the section of Privolnoye – Mozdok;
- reconstruction of the Kaluzhskoye UGS;
- reconstruction of OOO SeverGazprom gas metering stations.

In addition the Directorate reviewed and approved project scopes of work, notifications and project design on construction of the Olympic facilities, such as the cableway “Psekhako-C” with the ski piste C1, combine complex for cross-country skiing and biathlon, mountain Olympic village, motor-drive way (the Psekhako mountain chain). The following documentation of construction was reviewed and approved within the project “Gazprom mountain touristic center”:

- multipurpose artificial water basin;
- electrical substations;
- passenger cableway “Psekhako II-M”;
- Reception complex “Achipse” for welcoming official representatives, etc.

Industrial Environmental Monitoring and Control

In accordance with Russian legislation and the corporate guidelines all *Gazprom Group* companies are subject to a regular industrial environmental monitoring (IEM) and production environmental control (PEC).

The PEC is deployed in every single subsidiary of *Gazprom Group*.

OAO Gazprom established the special corporate unit – **OAO Gazprom Environmental Inspection** as a part of Gazprom gaznadzor. In addition to the unit major function of control over the subsidiaries and subcontractors compliance with the national and corporate environmental legislation and rules, it also provides audits of the subsidiaries EMS, methodological assistance in environmental protection of OAO Gazprom subsidiaries.

In 2011 the OAO Gazprom Environmental Inspection conducted 621 searches in 76 subsidiaries, including: 7 gas production subsidiaries, 17 gas transmission subsidiaries, 17 subsidiaries of OOO Gazprom PHG, 5 gas chemical processing plants, 30 other affiliated organizations (OOO Gazprom regiongaz, OOO Gazpromavia, OOO Gazpromtrans, OOO Gazprom LNG etc.). The inspection covered activities and operations of customers and general subcontractors, involved in major projects of construction, reconstruction and overhaul repair of the UGSS, such as: OOO Gazprom invest Zapad, OOO Gazprom invest Vostok, OOO Stroigazkonsulting, OOO Stroigazmontazh, OOO Gazprom tsentremont.

Also in compliance with the approved “Inspection schedule in 2011” 209 selective inspection searches were executed jointly with the OAO Gazprom production and transmission subsidiaries to confirm the compliance with the national environmental legislation on air protection, which additionally covered 192 affiliates of 7 producers, 17 gas transmitters, 11 subsidiaries of OOO Gazprom PHG, as well as 6 subsidiaries of OOO Gazprom pererabotka. The inspection results and recommendations on the environmental system improvements were delivered to the management boards of the inspected organizations.

In order to ensure the environmental security of the *Gazprom Group* facilities under construction and operation, the company imposes strict environmental requirements to the subcontractors. For instance, *Gazprom Neft Group* indicates and outlines the requirements and determines the associated liability for non-compliance with the national legislation in the subcontractor agreements. The third-party organizations access to the company’s assets for building and construction, hook-up and commissioning, repair and other kinds of work is provided in accordance with the instruction governing the requirements for environmental protection. The regular inspection of the projected environmental measurements implementation is executed under the PEC. The subcontractor is required to be licensed in hazardous waste handling to provide the respective services.

In the last few years the number of violations and fines identified by the state inspection says much for the efficiency of the OAO Gazprom PEC.

The *Gazprom* IEM system has a high level of technical equipment, which includes stationary and mobile laboratories, meteorological and aerological control posts, automated control posts and monitoring wells.

Gazprom has operated and integrated the automated IEM systems in its facilities into the dispatch control. In some cases the IEM systems, which provide a current environmental status assessment, are integrated into the regional environmental monitoring systems.

The corporate IEM system is designed to monitor: process pollutant emissions, air quality within the sanitary protection zone and settlements, noise impact, quality of underground and surface waste and drinking water, geological and soil cover status. The rules, procedures and peculiarities of the IEM system operation are regulated by the industrial guidelines and legal acts.

Development of automated IEM systems is provided by the project design documentation of gas pipeline construction: Yamal – Europe, SRTO – Torzhok, North-European Gas Pipeline (section of Gryazovets – Vyborg), Altai, Pochinki – Gryazovets, Bovanenkovo – Ukhta, Minsk – Vilnius – Kaunas – Kaliningrad, as well as the development of the Bovanenkovo, Yamburg and Zapolyarnoye OGCF and the Shtokman GCF (investment feasibility).

ООО Gazprom dobycha Astrakhan in 2011 launched a mobile environmental laboratory for the operative monitoring of the air quality in the area of the Astrakhan gas chemical complex within the sanitary protection zone and in the adjacent settlements. The laboratory is equipped with a measurement complex, which determines the presence and concentration of nitrogen oxides, sulfur dioxide and sulfur hydrogen, hydrocarbons, methane and carbon monoxide in the air, as well as a meteorological station. For an accurate positioning of the study and application of the measurement data in geoinformation systems the laboratory is equipped with the Global Positioning System (GPS). The mobile environmental laboratory will enable an operative air quality management. The automated workstation processes the measurement data and delivers it to the monitoring center of Gazprom dobycha Astrakhan on-line. In addition the laboratory data will be available for the Astrakhan regional environmental control and the emergency control and operation center of the Russian EMERCOM in Astrakhan, which will notify the population about the current environmental status by means of LED panels installed in mass populated places.

In 2011 **ООО Gazflot** executed environmental monitoring of the continental shelf of the Kharasavey licensed site, located in the Kara sea basin, monitored the Kirinsk perspective site and the West Kamchatka subsoil plot of the Okhotsk Sea shelf.

The Program of **ООО Gazprom нефть shelf** industrial environmental monitoring and control for the IRSP “Prirazlomnaya” was coordinated with the Federal State Unitary Scientific & Production Company for Marine Geological Prospecting Company “SEVMORGEО”, Dvina-Pechora Unit of the Russian Fishery Agency, the Federal Fishery Agency. In 2011 OOO Gazprom нефть shelf executed the environmental monitoring on the licensed site of Prirazlomnoye oil field in South-West of the Barents Sea (Pechora sea). The monitoring was based on the approved standard methodology and scheme of environmental monitoring. The monitoring was being executed during the dumping of the IRSP “Prirazlomnaya”, i.e. the maximal environmental impact. The hydrochemical indicators were determined for the monitored area: content of oxygen, biogenic substances, biochemical oxygen demand and the pH balance, as well as the granulometric content and pH balance of bottom sediments. The monitoring covered the content of aliphatic hydrocarbon, metals, polyaromatic hydrocarbons and other pollutants in the water, bottom sediments and biota of the Pechora Sea. The overall concentration of suspended substances in water is low in the area of the licensed site of the Prirazlomnaya oil field in the Pechora Sea, and it remained within the maximal allowed value in fishery (MACfish) for the continental shelf marine zone with the

depth of over 8 meters – 10 mg/l. At the end of September 2011 the concentration of synthetic surface-active substances was considerably below the MACfish – 100 mkg/l. The results of the monitoring prove the insignificant rate of the total water pollution in the studied area of the Pechora Sea. The observed rate of water pollution is not anticipated to significantly affect the state of hydrobionts in this marine area under the same anthropogenic environmental intensity. The study resultant data on the species and population density of ichthyofauna in the studied area matches with the baseline.

AO Gazprom space systems developed a complex technology of a linear pipeline diagnostics, which enables to obtain accurate information and monitor the environmental state, landscape resilience to impact of pipeline operations and maintenance, state of protected areas, as well as zone and map the location around the pipeline. It is especially effective for hard accessible locations. While developing this technology, in the last three years OAO Gazprom space systems has executed diagnostic studies of over 7.000 km of OAO Gazprom pipelines. The technology identifies and analyses anthropogenic and natural impacts on the pipeline, as well as enables to develop appropriate recommendations on minimizing the environmental impact.

In order to minimize the human or nature related costs *Gazprom* uses advanced air space methods of the UGSS technical state monitoring.

In 2011 **AO Gazprom space systems** executed direct inspection of the OAO Gazprom transgaz Tchaikovsky pipelines using unmanned air vehicles, which were equipped with digital photo and long-range infrared video systems. The inspection was aimed at identification of high environmental risk locations – operation malfunctions of the pipeline. At the requests of OAO Samotlornftegaz and OAO TNK-Nizhnevartovsk OAO Gazprom space systems executed qualification tests of pipeline monitoring using unmanned air vehicles for detection of petroleum leaks, control of oil contaminated land remediation, identification of unauthorized landfills and driveway littering with slashes and waste metal, detection of wood fires.

In 2011 *Gazprom Group* spent 1,307.7 million rubles on industrial environmental control and monitoring.

Gazprom energoholding permanently monitors the air quality within the sanitary protection zone of its all subsidiaries. **AO Mosenergo** uses automated system of environmental monitoring, installed on the energy boilers of the affiliated companies. This technology enables to monitor of the pollutant substances concentration in exhaust gases on-line and undertake regulative measures on emissions mitigation. The environmental monitoring data are delivered to the State Nature Protection Budgetary Institution Moscomonitoring of the Moscow Department of Nature Use and Environmental Protection.

State Environmental Control

In 2011 as a result of 288 state inspections of production facilities *Gazprom Group* found 383 violations of environmental legislation of the Russian Federation, most of which was associated with delayed matching permits. Almost all the violations have been corrected in a timely manner. Payments of fines amounted to 4.627 million rubles, including payments to subsidiaries of OAO Gazprom – 0,561 million rubles, *Gazprom Neft Group's* oil – 2.835 million rubles, *Gazprom energoholding* companies – 0,826 million rubles, OAO Sakhalin Energy – 0.405 million rubles.

SCIENTIFIC AND TECHNICAL FRAMEWORK OF ENVIRONMENTAL PROTECTION

Research and Development

Implementation of technical and technological innovations, solving present environmental problems of industrial activity in the *Gazprom Group* subsidiaries is based on researches of leading Russian scientific organizations, which enumerate industry research and design institutes, such as VNIIGAZ, NIIgazekonomika, Podzemgazprom, VNIPIgazdobycha, Promgaz, SevKavNIPIgaz, TyumenNIIgiprogaz, Giprogaztsentr, Giprospektgaz. *Gazprom Group* subsidiaries have long-standing scientific relations with the Russian Academy of Science, Moscow State University n.a. M.V. Lomonosov, Tyumen State University, Russian State University of Oil and Gas n.a. I.M. Gubkin, etc.

ОАО Газпром continued the research under the agreement signed with the administration of Yamal-Nenets Autonomous District on the scientific and technical cooperation in 2010–2012 on exploration of the Yamal oil and gas fields, which greatly provide for the favorable environment and improve of social and economical development in the district.

In the reporting year ООО Газпром VNIIGAZ set up another comprehensive environmental and technical expedition “Yamal-2011”. The expedition also involved a number of specialists from other leading institutions: the Institute of Environmental Geoscience RAS (Moscow), State Hydrological Institute, “GU SHI (St. Petersburg), SibNATs” (Tyumen), etc.

The expedition was aimed at obtaining the accurate data on the present state of ecosystems on the Yamal peninsula, which the methodological guidelines on the environmental impact minimization in hydrocarbon production and transmission will be based on. The study was executed in two main directions:

- programs and technologies development for rehabilitation of disturbed and contaminated lands in the Bovanenkovo field area operated by ОАО Газпром;
- comprehensive dynamic assessment of natural and climatic, geocryological and anthropogenic conditions, which affect the hydrocarbon production and transmission on the Yamal peninsula and the Kara Sea basin in the ОАО Газпром operation area.

The expedition included a broad range of studies on Kharasavey and Bovanenkovo OGCF, such as meteorological, hydrological and hydrochemical studies; assessment of land contamination and results of the pilot sites rehabilitation in 2010; assessment of the waste handling schemes; measurement of the physical environmental impacts and impact on employees.

In 2011 a number of studies provided by the scope of work under the Program of scientific and technical cooperation of ОАО Газпром and the Government of the Yamal-Nenets Autonomous District in 2010–2015 were started. The studies are aimed at environmental protection and improve of the district population living standard. They include: “Analysis of the existing scheme of production and consumption waste handling in Yamal and Taz regions, research and development solutions and innovative methods of the waste utilization”; “Development of scientific and technical solutions and advanced, innovative schemes of drinking water treatment in Yamal and Taz regions”.

In 2011 ООО NPC Подземгидроминерал developed a Technical guideline of designing fine cleaning installations of methanol content water flows from gas condensate fields and methanol recovery, as well provided a feasibility study of methanol-

intensive water fine cleaning. NPC Podzemgidromineral analyzed modern practice of alternative and renewable energy sources for energy saving purposes and deployment. The analysis included a feasibility study of renewable energy sources deployment in the most prospective regions of Russia for energy saving purposes and determination of the most economically efficient areas of unconventional and renewable energy sources (geothermal, solar etc.) involvement in the fuel-energy balance of Russian regions in case of the equivalent amount gas substitution.

OOO TyumenNIIgiprogaz conducted hydrogeological studies of underground disposal of waste water on the production sites of STF GF-1 and STF GF-2 on the Bovanenkovo OGCF. TyumenNIIgiprogaz was supervising the project of waste water injection into the cenomanian absorbing horizon on the Yamburg OGCF. The site development of the 1A Achimovsky deposits was put in progress on the Urengoy field involving a completion of a start-up complex (20 wells). The following studies were conducted: development of sanitary protection zones for water supply sources on Bovanenkovo and Kharasavey fields, project development of the artesian wells construction for water supply of OAO Gazprom facilities, environmental feasibility of development projects, industrial technical operation, investment projects, as well as supervision of the OAO Gazprom field development projects in Western Siberia.

OAO SevKavNIPIgaz was developing an environmental guiding document aimed at regulating environmental protection activities in well construction, which resulted in STO Gazprom “Environmental protection during construction of wells”. Within the study “Monitoring of hydrogeological parameters and state of input wells bottom-hole area of the Kanevskoye GPU. Chemical and analytical studies of the injected effluents and fluids” SevKavNIPIgaz monitored injections of water flows on new fields in Krasnodar Krai, and hydrogeological, gas chemical and hydrodynamical parameters of the producing deposits and upper UGS horizons, as well as UGS impact on geological environment and waste water injection.

OOO Gazprom dobycha Astrakhan executed the 2nd stage of the R&D Program “Development of methodological guidelines for calculation of dust sulfur emissions from the sulfur production, storage, loading-unloading and transportation” to assess the dust emissions and corrected the calculations with the data obtained from the field measurement study.

OOO Gazprom dobycha Krasnodar. In order to improve the IEM system by means bioindication the company made a retrospective and prospective assessment of the geoecological situation in operation area within the research and development on “Assessment of geoecological situation in the operation areas of Gazprom dobycha Krasnodar.

OOO Gazprom dobycha Yamburg. In accordance with the R&D Program “Retrospective and prospective assessment of geoecological situation in the operation area of OOO Gazprom dobycha Yamburg based on the set criteria” using international approaches the company conducted studies on adaptation and pilot tests of calculation and analytical system with the OOO Gazprom dobycha Yamburg greenhouse gas emissions database; developed methodological recommendations on criteria determination and application for retrospective and prospective assessment of geoecological situation in hydrocarbon production areas of Northern territories (guiding document R Gazprom dobycha Yamburg).

Within the research and development on “Development of scientific methodological framework of environmental safe hydrocarbon field exploration in Ob-Taz Bay area. Technologies and long-term forecast of atmosphere and hydrosphere state” the company prepared proposals on offset measures to be included in the investment feasibility study and projects of oil, gas, condensate fields development, as well as a list of basic requirements to development of projected oil, gas, condensate fields of OOO Gazprom dobycha Yamburg in the Ob-Taz bay area, aimed at minimizing the negative impact on fishing resources. In addition the company made a forecast of projected

environmental consequences as result of accidents and assessment of each event probability with an impact on fishing resources in the YMAD during the development and operation of the following fields: Ob, Kamennomyssk sea, Tchugoriakhinskoye, Aderpayutinskoye, Tota-Yakhinskoye, Antipayutinskoye. Gazprom dobycha Yamburg also made a comprehensive assessment of modern social and economic standards in Taz bay area and a comprehensive assessment of natural conditions including the analysis of negative environmental impact types and sources in the on-shore and off-shore bay area of the fields: Ob, Kamennomyssk sea, Tchugoriakhinskoye, Aderpayutinskoye, Tota-Yakhinskoye, Antipayutinskoye.

ООО Gazprom transgaz Volgograd developed and deployed a complex automated program of collection, processing and systemizing of environmental impact data. The program performed an analysis of environmental parameters of industrial operations to support organizational, technical and information decisions on environmental protection.

ООО Gazprom transgaz Yekaterinburg designed a mobile complex unit for LNG and regasified natural gas supply. The active regasifier design was based on the forced CNG regasification through a direct heating of natural gas combustion products. The second passive regasifier ensures the unit operation without the forced regasification under positive external temperatures and gas rate up to 500 m³. The unit process equipment is installed on two semi-trailers. The maximal capacity in terms of regasified gas is up to 2,000 m³. The company also developed recommendations on the use of “Mobile complex unit for liquefied and regasified natural gas supply”.

This development enabled a stable and regular gas supply of consumers during maintenance services of the pipeline facilities, as well as a pipeless gas supply of consumers not covered by the pipeline network living in low density territories, supply of towns hugely distant from each other and areas with a low developed energy and transportation infrastructure. The application of this unit enables a substitution of fuel oil and coal, mostly used in boiler houses of towns, which in its turn will make the emissions of nitrogen and carbon oxides, sulfurous anhydride 1.2–3.5 times as low and eliminate emissions of black carbon and coal ash.

In 2011 **ООО Gazprom transgaz Tomsk** within the research and development on “Development of recommendations and technical requirements to pipeline monitoring systems for damage registration, pipeline technical state changes identification, detection of the transmitted product leakage and assistance of turbine internal machinery (TIM)” developed and submitted for further approval the Technical requirements to pipeline monitoring systems for registration of damages, pipeline technical state changes, leaks and assistance (locating) of TIM and STO Gazprom transgaz Tomsk “Recommendation on creation of an effective pipeline monitoring system for registration of damages, pipeline technical state changes, leaks and assistance (locating) of TIM”.

ООО PodzemGazprom within the R&D of 2011 developed guiding documents, which regulate the monitoring of degrading impact on environment during construction and operation of underground gas storages in salt caverns and permafrost formations” – R Gazprom “Identification, assessment and rehabilitation of lands, exposed to the salt solution impact during construction and operation of UGS” and R Gazprom “Environmental monitoring of underground storages of FLM and frilling waste disposal, constructed in underground reservoirs in permafrost formations”. PodzemGazprom undertook a number of optimization measures in environmental management of gaseous and liquid hydrocarbon underground storage facilities in design, construction and operation by means of using advanced geoinformation and landscape geochemical technologies under the research and development “Development of technologies set for information, map and field support of environmental protection activities within the impact of gaseous and liquid hydrocarbon underground storages of ОАО Gazprom”. The company managed to develop general provisions of landscape-geochemical studies in salt caverns UGS facilities for determining the territorial environmental monitoring

and a typical environmental geoinformation system (EcoGIS) for salt caverns UGS (Volgograd UGS case study).

Gazprom Neft Group is developing methodological guidelines for design, development and operation of sludge pits for processing of drilling sludge into a pedogenic formation; developing and studying criteria of self-recovering pits installation, which need reclamation or sludge processing. The company is studying to restrict maximal values of oil content in the soil of household territories, including drinking water horizons and fishery, as well as maximal allowed rate of petroleum content in bottom sediments of surface water bodies in the Yamal-Nenets Autonomous District.

In particular, *Gazprom Neft Group* provided research and development for “Comparative efficiency analysis of existing bioreagents use for determining the optimal oil sludge bioreclamation technology”, compared the efficiency of biopreparations, assessed the state of flora on salted territories, which were and were not treated with the humates; analyzed results of field studies. As a result of the R&D on “Development of new technological solutions and efficient measures for oil contaminated lands” the company developed a rule for assessment of the oil contaminated land state and selection of the optimal rehabilitation technologies, based on the landscape and geochemical peculiarities of the studied site and associated costs of the site rehabilitation. This work resulted in technological solutions and effective measures for oil contaminated lands rehabilitation.

In order to reduce costs of sludge pits rehabilitation and improve rehabilitation quality the company executed the study “Development of new technological solutions of drilling sludge neutralization for the sludge pits rehabilitation”. Hereunder *Gazprom Neft Group* assessed efficiency of modeling parameters and environmental safety of drilling sludge using the vegetation experiment (assessment of flora phototoxicity, adaptability, pollutant conversion to the biomass and improve of the drilling sludge properties affected by the flora) and developed the Technical guideline for drilling sludge neutralization for the sludge pits rehabilitation, as well as technical specifications, which comprise of the requirements to the resultant drilling sludge.

In order to reduce the environmental consequences and costs of feasible approaches application in design and deployment of drilling sludge handling and increase the exposure of large-tonnage waste to natural processes, cut rehabilitation costs, ensure the compliance with the national waste handling legislation and decrease the environmental risks the R&D was accomplished on “Development of methodological guidelines for design development and operation of sludge pits for processing of drilling sludge into a pedogenic formation”. The study resulted in type identity of existing sludge pits by rehabilitation methods.

The research and development on “Development and feasibility study of criteria for self-recovering sludge pits, which need no sludge processing or oil contaminated land rehabilitation” provided for the collection of data and classification of sludge pits by the self-recoverability efficiency (rate contamination, pit lifetime, flora growing rate and resilience).

OAo Gazprom Neft ordered field and laboratory studies for substantiating the correction of regional (Khanti-Mansi Autonomous District–Yugra) values of maximal remaining oil content in the soil of household territories, including drinking water horizons and fishery.

In order to meet the national environmental legislation, determine the environmental impact of gas production and processing in 2011 **ZAO Purgaz** executed environmental monitoring on the Gubkin gas field. The monitoring provided the necessary and enough data on assessment of anthropogenic impact on major environmental components around the field. Purgaz assessed the negative environmental impact and the appropriate mitigation potential.

Gazprom Group has got an efficient system of research and development management, profound expertise in development of innovative environmental protection, resource saving and energy efficient technologies.

Gazprom Prize in Science and Technology

In order to stimulate the development and deployment of new technologies, OAO Gazprom has established a corporate annual prize in research science and technology. The prize is awarded for research and development in natural gas production, transmission, storage and utilization, which resulted in creation or improvement but efficient utilization of new technical pieces, gauges, equipment and materials. Only OAO Gazprom subsidiaries can apply for the prize.

The contest results are reviewed and approved by the OAO Gazprom Management Committee. The prize laureate wins a monetary award, diploma and a badge of honor. The organizations, which present their results of research and development, also receive a diploma. The first place prize winners receive special badges of honor and diplomas. *Gazprom* awards 10 prizes every year. Normally most of scientific and technical works nominated for the award should reflect a direct or indirect ecological efficiency.

In 2011 OAO Gazprom awarded the following environmental efficient projects in research and development.

- **Development and introduction of technical solutions complex on improve of oil production technologies and effective utilization of associated petroleum gas on the Urengoy OGCF**

Supervisor – G.A. Lanchakov;

O.P. Kabanov, V.A. Stavitsky, R.S. Suleymanov (ООО Gazprom добыча Urengoy), R.L. Kurilkin, V.V. Tcherepanov (ОАО Gazprom); V.N. Maslov (ООО Tyumen-NIIgiprogaz); Z. Manasir (ООО Stroigazkonsulting)

The technical solution complex was developed for a cyclic use of compressed APG as working agent in gas lifting wells. The technological schemes are based on innovative solutions on the APG treatment and compressing, automated control of technological processes, optimization of compressor units operations and environmental monitoring. The technology implementation on the Urengoy OGCF ensured the stable operation of the gas lifting system, additional supply to the pipeline transmission system, reduction of pollutant emissions, 95 % efficiency of the APG utilization.

- **Elaboration of the program for complex development of the Yamal Peninsula and its offshore areas**

Supervisor – Yu.V. Ilatovsky;

Z.N. Dvoryadkina (ООО Gazprom VNIIGAZ); V.A. Zaika, V.V. Ilyushin, R.M. Libman, V.V. Savchenko, S.V. Safronova, K.F. Fatrahmanov (ОАО Gazprom); I.D. Artyukhova, A.M. Brekhuntsov (ОАО SibNAC)

The feasibility of exploration measures for the Yamal peninsula hydrocarbon resources is proved. Never before the industrial planning of exploration of an oil and gas region had implied the harmonization principles of industrial development and traditions of the indigenous northern peoples under the comprehensive exploration of on-shore and off-shore fields. The implementation of this program will ensure construction, reliable and safe operation of facilities, maximal ecosystem security and traditional way of life of the indigenous population.

The elaborated program for complex development of the Yamal Peninsula and its offshore areas was approved by the Order of the Russian Ministry of Energy as of September 10, 2010 №441 within the Program for complex exploration of the hydrocarbon resources in Yamal-Nenets Autonomous District and Northern areas of Krasnoyarsk Krai.

■ **Development, manufacture and introduction of import-substituting equipment with a view to upgrade domestic production capacities for submerged crossings drilling as well as landslide prevention and response in OOO Gazprom transgaz Krasnodar**

Supervisor – V.G. Geraskin;

Yu.I. Bakanov, S.V. Bachalov, S.A. Zhvachkin, A.A. Kislun, N.I. Kobeleva, G.Kh. Nosach, S.P. Suslikov, S.N. Shsbarov (OOO Gazprom transgaz Krasnodar); A.M. Proskuryakov (OAO Gazprom)

A complex of special import-substituting equipment (horizontal directional drilling unit) for a pipeline construction without tranches was developed. The equipment set has got no technical disadvantages compared to the imported pieces, but it is averagely 1.5 times as cheap. This complex ensures an efficient construction and reconstruction of pipeline pathways, underground communication laying, as well as a construction of underground water withdrawing and blocking facilities for prevention and liquidation of landslides.

Deployment of the Best Available Environmental Protection Technologies and Equipment

Environmental security of the *Gazprom Group* activity is largely determined by the intensity of technological and technical solutions application in the basic industrial process, so one of the most effective tools to manage the impact on the environment and one of the *Gazprom Group* priorities is the modernization of production assets and energy efficiency improve based on the best available technologies and practices.

In 2011 OAO Gazprom introduced technical and technological solutions aimed at mitigation of pollutant emissions (including decrease in the gas use for own process needs and gas process losses), reduction of CS noise impact etc; continued the implementation of low emission combustion chamber on GCU with the nitrogen range of 50 mg/Nm³, which corresponds with the best foreign achievements. In order to reduce the discharge of undertreated waste water *Gazprom* built new and upgraded existing sewage treatment facilities; caught up with switching the corporate vehicle fleet to the NGVs.

OOO Gazprom dobycha Nadym mitigated the methane emissions by 2,480.625 tons (8.2 %); reduced nitrogen oxides (NO_x) emissions per unit of the fuel gas by 13 %.

Under the measures of methane emissions mitigation down to the process optimal rate the technology of fluid removal from the well bottom hole using plunger lifts was implemented on the wells № 318, 502, 503 168 mm columns. The maintenance service included shut-off valve and blocking components sealing to reduce fugitive emissions from the pressurized process installations and pipelines. As a result of the maintenance services provided in the workshops of the gas and condensate production sites “Yubileyny” and “Yamsoveysky”) the methane emissions and leaks were reduced by 100.644 thousand m³.

Under the NO_x per unit emissions reduction a resource saving technology was implemented for the well column heating after a long down time or conservation. In 2011 after the scheduled down time the Yamburg OGCF capacities of 105 wells were launched using this technology, which enabled the saving of 63,779.163 thousand m^3 of natural gas. The use of this technology on the Yurkharovskoye OGCF for the capacities of 99 wells saved 57,567.875 thousand m^3 of natural gas.

The improved well study technology “Function of Influence” was introduced. In 2011 this technology was used for 49 wells of the Yamburg OGCF and 48 wells of the Yurkharovskoye OGCF, which enabled to avoid combusting 4,167.94 thousand m^3 and 3,670.560 thousand m^3 of natural gas respectively.

The modified technology of drillhole measurement study within geophysical surveys of 54 wells on the Yamburg OGCF, and 43 wells on the Yurkharovskoye OGCF in 2011 saved 2,928.216 and 2,393,040 thousand m^3 of natural gas respectively.

ООО Gazprom dobycha Noyabrsk applied the technology of pitless drilling for the Yety-Purov field, which ensured further processing of 10.65 thousand tons of waste (drill sludge, waste drilling mud, and drilling waste water) into the construction material using national patented technologies. The material was used in HFU pits and road slope for strengthening to avoid subsidence and additional costs.

The following measures provided for the gas savings in 2011:

- drillhole study of well under non-stationary filtration (without gas venting into the air) – application of gauges and meters, which are able to gather the well operation conditions without venting (gas savings made 15,203 thousand m^3);
- renewal of retrievable air-gas channels on centrifugal compressors of booster stations on Vyngapursky and Komsomolsky production sites. The renewal of 8 channels on the former (2 of were renewed in advance in 2010) and 4 channels on the latter saved 81.034 thousand m^3 of natural gas);
- modification of the pipeline flow lines at booster station Shop-2 – installation of the CGTU jump-over line exit to the 3rd compression stage (gas saving made 1,987.2 thousand m^3).

ООО Gazprom dobycha Orenburg continued mitigating emissions and leaks of greenhouse gases (methane) by means of process equipment modernization, which implied the application of shut-off valves with a better seal performance and preventative repair of worn out equipment. The ongoing program of gas production sites modernization provided the replacement of compressor pipes, blow-off preventing units and underground equipment of 40 wells on the Orenburg OGCF.

The company put the GPP second and third start-up units under reconstruction. The installation of treated waste water collector and construction of 3rd category treatment block was started.

ООО Gazprom dobycha Orenburg tested and calibrated the technology of sulfur hydrogen gases utilization during exploration, intensification and repair of wells. The technology test was based on the mobile separation unit provided by “Geo-Test”. The unit performed a 95 % efficiency of sulfur hydrogen removal. The unit was also tested using an experimental and real gas of a pilot horizontal flare, which consists of a dual zone burning unit with an inside coaxial burner. This design ensures a constantly high efficiency of gas burning. The test have proved technical and environmental efficiency of the technology, which enables an overall increase of a well output by reducing the exploration period, which in its turn lowers the environmental impact and operation costs.

Under the program of industrial environmental monitoring improve 14 gas analyzers were supplied for measuring sulfur hydrogen and sulfur dioxide. In order to increase the accuracy of data obtained 9 automated monitoring posts were equipped with new gas analyzers.

ООО Gazprom dobycha Yamburg intended to reduce methane emissions and reconstructed facilities on the Yamburg OGCF (retrofitting of oil compressor seals with gas dynamic seals at booster stations 2, 3, 4, and 6). Considering the jointly applied

methods, project applicable maximal allowed emissions from the Yamburg OGCF updated since 2008 and the calculations of flash gas emissions from booster station GCUs, the reconstruction enabled to achieve the process optimal methane emissions and make them three times as low (nearly 31 % emissions reduction).

OOO Gazprom transgaz Volgograd. In addition to the methane emissions reduction measures taken under the Program of environmental protection measures in Gazprom transgaz Volgograd in 2011, most of the company's affiliated units were working on lowering gas venting during pipeline sections isolation and venting for repair purposes and others. This work allowed natural gas per billion $\text{m}^3 \cdot \text{km}$ reduction from 2.441 tons in 2010 to 0.933 tons in 2011. The company implemented projects aimed at reduction of carbon dioxide emissions and nitrogen in Sokhranovsk and Kalinin LPUMG (Rostov region), such as installation of low emissions combustion chambers PST-GTK-10i at a GCU GTK-10i.

OOO Gazprom transgaz Kazan undertook environmental protection measures, including reconstruction of 4 gas regulating units; renewal of compressor and oil coolers of CS Arskaya of the pipeline "Urengoy-Center 1"; reconstruction of a GCU at CS Arskaya of the pipeline "Yamburg-Western Border". These projects provided for deployment of GCUs № 1 and 3; 15 affiliated units replaced 155 obsolescent heating boilers. The following measures aimed at methane emissions reduction were undertaken:

- pipeline purging during preventative repair shifting the gas compressor unit and pipeline operation hours at the station (this allowed a methane emission reduction of 3,048 thousand m^3);
- hot-tapping technology use on distribution grid, which saved 17.5 thousand m^3 of gas;
- maximal marketing of gas remained in section isolated for repair, which reduced methane emissions by 500 thousand m^3 ;
- use of gas for own process needs during maintenances at CS Arskaya, which enabled to avoid 209.6 thousand m^3 of methane;
- gas forwarding to adjacent pipeline for repair (methane reduction of 1,272.9 thousand m^3);
- pipeline linear section pumpdown from the discharge unit to the suction unit of LPU MG (578.77 thousand m^3).

OOO Gazprom transgaz Krasnodar has been introducing new technologies, which enable to reduce methane emissions. A new unit has been designed for methane utilization during regular maintenances. This program has allowed a 60 % methane emissions reduction during pipeline repair. The GCU operation modes have been recalibrated, which reduced NO_x per unit emissions by 60 %. In order to reduce the amount of waste water discharges into surface water bodies, the company recalibrated the water treatment units operation modes (84 % reduction of contaminated and undertreated waste water discharge). Also waste sorting was organized, which allowed metallic waste transfer for utilization and reduction of disposed waste.

OOO Gazprom transgaz Makhachkala reduced the gas losses from pipeline sections under preventative repair by means of pipeline pumpdown to the lowest possible pressure; the decreased gas temperature in the exit from the GDS resulted in a decrease in fuel gas consumption. The organized waste sorting allowed a 5.3 % reduction of disposed waste.

OOO Gazprom transgaz Stavropol executed a set of activities to reduce methane emissions during operation and overhaul repair of industrial facilities, which provided for 10.6 thousand tons of methane emissions avoided, i.e. 11.9 % of total methane emissions, 5.5 % of process methane emissions and a 1.3 % reduction of the before-after venting ratio for the pipeline sections under repair, which proves the total compliance with the target values of 2011.

The operation modes of booster stations 1 and 2 were optimized via maximal utilization of the pore pressure in Khadumsk horizon on the SS UGS, GTS flows were also

regulated, which allowed the saving of 52,384.1 thousand m³ of fuel gas and stabilize per unit nitrogen oxides emissions at the process optimal rate, set by the environmental target values.

The company deployed an automated monitoring of gas losses at gas filling stations and redesigned the filling station of “Kavkazavtogaz” facilities, which lead to a 15 % reduction of methane emissions.

ООО Gazprom transgaz Surgut provided an overhaul repair of treatment facilities “Biodisk-350” of the Novy-Urengoy LPU MG; treatment facilities were constructed in the operation area of some LPU MG; the company expanded fleet of NGVs.

ООО Gazprom transgaz Tomsk, in accordance with the measures approved by the General Director to reach Environmental Target Values of the company in 2010–2012 and target values of *Gazprom*, 20 gas filters at 3 CS were replaced with new design scrubbers with condensate drainage; the company replaced 25 STD 4000-2 GCUs at 3 CS with oil compressor seals EGPA 4,0/820-56/1,26-R and 20 GCUs were replaced dry seals GCUs; implemented the pipeline pumpdown technology for the pipeline sections under repair. The pipeline pumpdown resulted in the gas savings of 25,242.9 thousand m³ (62.1 million rubles).

ООО Gazprom transgaz Ufa was implementing a number of projects aimed at reduction of natural gas emissions, including: gas evacuation from pipeline sections under repair and forwarding to consumers; GDS process cleaning without gas venting; optimizing the CS and pipeline operation modes, regulating number and periods of scrubbers venting; detection and removal of gas losses along the pipeline. The mentioned measures resulted in the natural gas saving of 27.272 million m³.

ООО Gazprom transgaz Ukhta reduced pollutant emissions by means of pipeline pumpdown; GDS disposition terminals were equipped with pressure regulators; the GCU GTK-10 combustion chamber was replaced with GTK-10 iR.

ООО Gazprom transgaz Yugorsk reduced methane emissions from pipeline by means of implementing a number gas saving measures: gas forwarding to the adjacent pipeline for repairs and utilization for own process needs of compressor workshops; optimizing gas flow distribution, centralized operation control of major and secondary facilities. The GCU GTK-10-4 regenerators were renewed and some GCUs were reconstructed for NO_x emissions reduction. In order to reduce pollutant discharges treatment facilities the overhaul repair was provided.

ООО Gazprom pererabotka optimized process operation modes of waste water treatment facilities at booster stations of the Vyktiulskoye production unit.

ОАО Gazprom space systems launched own complexes and technologies of air space monitoring of the *Gazprom* facilities and gas infrastructure.

ОАО Gazprom Neft, based on the unified environmental policy principle aimed at compliance with environmental safety requirements, efficient planning and high integrity of environmental measures along the entire production chain, implemented a complex of organizational and engineering measures on enhancing the environmental performance. The systemization of environmental protection activities of the subsidiaries in 2011 OAO Gazprom Neft executed Programs of environmental safety, which comprised of measures on rationalizing the natural resources use and ensuring environmental protection.

The company developed and approved “Gas Program”, which focused on the APG utilization efficiency increase in *Gazprom Group* facilities up to 95 %. In 2011 the APG of the Vyngapurovskoye fields, was additionally processed at the Vyngapurovskaya CS, which enabled to reduce the rate of APG flaring.

As a result of the environmental and economic feasibility study of light petroleum vapor recovery unit (VRU) application at petrol stations in subsidiaries, ZAO Gazprom Neft-Severo-Zapad developed and designed a prototype of local high-performance absorption-desorption VRU for a petrol station. The regular modernization of oil refinery capacities enabled *Gazprom Neft Group* subsidiaries to substantially enhance

the refining processes, improve environmental performance and characteristics of the output.

As a result of the first phase modernization of the OAO Gazpromneft-ONPZ facilities a number of 125 m³/h utility fluid treatment units were launched. The unit technology scheme is based on the use of electrical chemical synthesis of the oxidant solution, which is integrated into the new process of ion selective diaphragm electrolysis. This technology brings together high economic efficiency and operation safety. The quality of the treated utility fluids is matches with the parameters of the process water. The treatment facilities of OAO Slavneft Mendeleyev YaNPZ and the cooling tower of OAO Slavneft-YaNOS were reconstructed and repaired. These measures enabled to optimize the subsidiaries water balance and reduce the water withdrawal. All *Gazprom Neft* companies strive for lower water consumption by means of water reinjection into the wells maintaining the oil deposit pressure and oil and water cooling recycles.

The improve of the drilling waste processing efficiency is the main challenge of the OAO Gazprom Neft companies, as this is the major waste generated during production and exploration operations. The company studied the efficiency of existing bioreagents for oil sludge remediation, in order to determine the optimal technology of oil sludge bioremediation.

OAO Mosenergo has been implementing the Program of environmental security improve, which includes development of guidelines for environmental monitoring, waste utilization and implementation of environmental protection measures. In 2011 under the contract with an international corporation SWECO the environmental audit of the OAO Mosenergo power stations was executed, which based on the best international experience of generating companies resulted in a list of measures, recommended to be implemented at each TPP of OAO Mosenergo. In accordance with the Investment program in 2011 a set of environmental protection measures was implemented to reduce emissions, noise impact of OAO Mosenergo facilities.

OAO OGC-2 implemented a big range of measures, including installation of low toxic burners at Surgut GRES-1 within the gas supply reconstruction.

Under the “Plan of actions of OOO Troitskaya GRES in 2010–2011 on reduction of environmental impact from the ash-disposal area, located nearby the lake of Shobarkul in terms of bringing the technical state under the project indicators” the following was executed: dust capture via planting perennial grass on the territory of 105 hectares; technical reclamation of sections 1 and 2 on the territory 64 hectares; repair of dumps and ash hydroremoval systems; cleaning of dredging pump buckets, year-round environmental monitoring of the ash disposal area and dust pipelines.

The Stavropol GRES Novotroitsk water reservoir was treated by means of hydro-mechanization. The Novomichurinsk water reservoir of Ryazanskaya GRES was bioremediated.

OAO TGC-1 reconstructed and provided reengineering of process and storm water treatment facilities, deployed the system of water zero-discharge recycled supply and acoustic suppression systems.





GAZPROM KEY PROJECTS AND ENVIRONMENTAL PROTECTION

Issues of environmental security in the *Gazprom* key projects refer to the company's priorities. Project solutions provide maximal mitigation of all business and other activities on the environment during both construction and operation of facilities.

The “Nord Stream” project. In 2011 the main construction of the Russian sector of the pipeline “Nord Stream” was successfully completed: shore facilities in the Bay Port area, on-shore and off-shore pipeline, hydraulic tests of strength and operation of the first line. The pipeline is designed and constructed using proven environmentally sound technologies assimilated to the peculiarities of the Baltic region.

The environmental and social monitoring program of the entire pipeline route implemented by Nord Stream AG includes the study of physical, chemical, biological and social economic environment, as well as satellite monitoring. Safety Standards and environmental and social monitoring program will ensure involving of all companies and stakeholders at the project key stages, including construction, commissioning and operation, use of the unified approach to environmental protection. The results of monitoring executed in the Russian territorial off-shore and on-shore area in the Portovaya bay in 2011 proved the pipeline “Nord Stream” zero, minimal, short-term and local impacts from construction on the environment. Monitoring results identified no project-related cross-border impact in the exclusive economic zone of Finland and Russian.

The pipeline Sakhalin – Khabarovsk – Vladivostok. In September 2011 the pipeline was launched. Environmental safety of the construction was provided by: minimizing the transmission route in the areas of high exogenous process risk and specially protected areas, which are not restricted by law; use of high-strength pipes for the route sections in areas of complicated engineering and geological conditions (at crossings of active tectonic faults in the offshore areas, etc.) as well as the use of modern technologies and equipment for wastewater treatment and implementation of bank strengthening measures on water crossings, preventing dangerous exogenous processes, rehabilitation of lands in construction area. During the construction geotechnical and environmental monitoring was executed.

The pipeline Dzhubga – Lazarevskoe – Sochi. The pipeline was constructed under all environmental regulations and international requirements, and involved state-of-the-art practices and technologies of environmental impact minimization. Thus, a significant reduction of impact on the most vulnerable ecosystems of the coastal zone was achieved by selection of the optimal method of coastline crossing – directional drilling. Marine pipeline construction technique minimized degradation of agricultural and forest lands, and lands of special protected areas. Construction schedule considered the seasonal life cycles of the indigenous fauna, the pipeline is constructed without affecting the landscape. Engineering and construction solutions of the offshore area intended to minimize any impact on the Black Sea ecosystem: the in prior to the construction the route was determined based on the peculiarities of the seabed.

The “Yamal” Megaproject. The implementation of “Yamal” megaproject in 2011 moved on to the final stage. The entire work has been completed on schedule in compliance with the project design solutions that prevent sewage discharge into water streams and providing for the reduction of greenhouse gas emissions. A number of measures have been taken in waste safe disposal, protection of biodiversity, special technical solutions were developed for sustaining the local geology. The Specialized Information System “SIS-Yamal” was deployed to identified the best environmentally efficient solutions for the construction and operation of industrial facilities.

Prirazlomnoye gas condensate field. In 2011 space area monitoring of the "Prirazlomnaya" platform transportation and installation did not identify any violations of standards, technical and environmental safety requirements. Air space picturing provides data on the wind, oil pollution, glacial and navigation conditions. Operational satellite monitoring can become self-sufficient and even the main source of information to ensure oil and gas operations on the Arctic shelves. The complete design of the oil platform "Prirazlomnaya" installed on the Pechora Sea shelf included the shaft berm for protection of the Arctic marine environment.

The Shtokman gas condensate field. Compliance with the Russian and international environmental standards, environmental concerns and prevention of adverse impact on marine and terrestrial ecosystems of the Arctic area is one of the basic project priorities for the Shtokman GCF construction and operation.

Dozens of researches were conducted under the Shtokman project to facilitate necessary decisions on design of the field facilities. On February 15, 2011, in the village Teriberka the project stakeholders discussed the project documentation materials the onshore start-up facilities, which stand for the project first phase, including the section "The list of environmental protection measures", and the EIA.

All vessels and platforms that will be involved in the Shtokman development fully meet international conventions on environmental protection, which eliminates polluted waste water discharge from vessels. Special diesel ship installations, boats, hydraulic machines will minimize air pollution; the construction will consider the life cycles of the indigenous flora and fauna; gas pipelines routes will be selected against the protected areas and territories.

The project "Sakhalin-2". The technologies in use on platforms "Molikpaq", PA-B and LUN-A were designed to exclude contamination of the Okhotsk Sea with drilling waste from drilling and during the offshore platform operations. The pipelines were projected to be buried 5 meters lower the surface seabed to protect the marine sections of pipelines from damage by ice floes in shore connections.

The compressor station in the area of ground pipeline system is equipped with a nitrogen oxides suppression system. The Sakhalin river crossings were designed to avoid any impact on the migration routes of salmon during the breeding season; the permanent seismic monitoring will be executed to minimize accident risks of earthquakes along the pipeline route.

The Shell energy-efficient liquefaction technology is implemented at the "Sakhalin-2" LNG plant. The key element of the plant security system is the flare unit that enables to eliminate emissions of non-inflammable hydrocarbon gas. The design of LNG storage cryogenic tanks provides the primary vapor recovery and use as a fuel. Twin-hull LNG tankers with high-performance energy-efficient motors will be used for the product transportation.

The project provided a constant geo-ecological monitoring of the onshore pipeline and processing facility, the environmental monitoring of ships, offshore pipelines, platforms and offshore LNG facilities. The program of environmental monitoring and minimizing the impact on gray whales has been implemented, and agreed with the Advisory Group on the Conservation of Populations of these animals.

The experience in environmental safety gained as a result of the project "Sakhalin-2", can be applied to the implementation of other analogous projects of oil field development in Russia and abroad.

Overseas Exploration Projects of Gazprom. ZAO Gazprom zarubezhneftegaz, being the operator of OAO Gazprom is implementing projects on exploration and development of oil and gas fields and forming of oil and gas industry outside the Russian Federation. These projects include geological exploration:

- on the shelf of the Socialist Republic of Vietnam, the block 112 (including expansion area), and blocks 129–132. The project provided the environmental protection measures and monitoring of the seawater contamination with petroleum products

in the areas of well construction and geophysical researches. At this stage a liquidated damage was paid to the Vietnam Department of Fishery. The project total environmental protection costs made 3.15 million rubles in 2011;

- in the Republic of Uzbekistan (Shahpahtinsky license block). A notification about the environmental impact of project on explorative drilling was drafted, as well as the notification about the environmental impact of the working project of exploratory wells construction. The remediation of the soil after the wells construction was performed. Total environmental protection costs in 2011 made 1.99 million rubles.
- in the Republic of Tajikistan and engineering and environmental survey was held, which resulted in a notification about the environmental impact of the license areas of Sarikamysh, Sargazon, Rengan and West Shaambary. Total environmental protection costs in 2011 made 1.5 million rubles.

ENVIRONMENTAL PROTECTION COOPERATION

Participation in Regional Environmental Projects and Programs

Gazprom Group companies strive for boosting the economic development and solving social and environmental problems of the operational regions and have cooperation agreements with the Russian authorities in the federal subjects. These agreements provide for a range of measures on development of social and environmentally friendly industrial infrastructure in the regions of operation, development of an integrated environmental monitoring system, reduction of the current anthropogenic impact, conservation of natural objects and complexes, providing conditions for traditional land use and for unique culture of indigenous peoples.

In 2011, OAO Gazprom and the Government of the Yamal-Nenets Autonomous District signed a program of scientific and technical cooperation, which envisages joint measures on developing the resource base, boosting environmental safety and social economic development of the Yamal region. The program includes a set of measures on the geological exploration of perspective areas, assessing the economic efficiency of processing the by-product and associated gas in the Yamal-Nenets, developing protection measures to ensure maximal protection of ecosystems for the integrated development of Yamal fields, creating a highly efficient system of water supply in the Yamal and Taz districts, developing a program of switching municipal vehicles to NGVs, forming the concept of integrated development of the Yamal-Nenets Autonomous power supply.

As part of long-term cooperation of **OOO Gazprom dobycha Yamburg** signed a general agreement with the Administration of the Taz district for the period 2011–2015, which focuses on the environmental protection cooperation. The environmental aspects of the cooperation are also reflected in the Social Partnership Agreement, signed in 2011 with the municipalities of Nadym and Purov districts. In 2011 **OOO Gazprom dobycha Nadym** made a significant event in the construction of environmental protection facilities and implementation of new technologies to ensure the environmental protection during development of the Yamal Peninsula fields. Investment costs of the environmental facilities construction and reconstruction made 977.738 million rubles.

OOO Gazprom dobycha Urengoy cooperated with the government of the Yamal district during the program for complex development of the Yamal Peninsula and its offshore areas in terms of compensation of damage caused to natural resources during construction and operation of facilities and move of housing during development of hydrocarbon deposits.

Within the cooperation of OAO Gazprom with the Government of the Vologda region in 2011, **OOO Gazprom transgaz Ukhta** completed construction of two landfills for the construction solid waste disposal in Babaevo (municipal district Babaevsky) and in Kaduy settlement (Kaduysky municipal district). OOO Gazprom transgaz Ukhta subsidiaries were intensively cooperating with local authorities. The joint efforts resulted in an event “River ribbon” to protect the rivers and lakes of Komi Republic, green the city Pechora, eliminate unauthorized landfills in the Kotlas area.

OOO Gazprom dobycha Astrakhan and **OOO Gazprom VNIIGAZ** participated in the development of “Integrated Program for the Development of Oil and Gas Complex

in the Astrakhan region”, aimed at sustainable development of hydrocarbon reserves. The Company is involved in a number of investment projects of OAO Gazprom on improve of the environmental situation in the Astrakhan region.

In 2011 the Ministry of Natural Resources, Ecology and the Orenburg region authorities initiated a multilateral agreement with **ООО Gazprom dobycha Orenburg** on environmental security in the operation areas of the Orenburg gas-chemical complex. The agreement aims to ensure environmental security of the region, as well as to improve operational cooperation in cases associated with adverse impact on the environment. In general, the company has been actively involved in the complex regional target programs and projects related to improving the environmental situation in the Orenburg region.

ООО Gazprom Transgaz Stavropol in association with the Ministry of Industry, Energy, Transport and Communications of Stavropol region in 2011 implemented a target program “Use of CNG in the Stavropol region as motor fuel in 2011–2013”. The program included a presentation of batch motor vehicles KAMAZ, held under the slogan “Caring for environment, caring for Future!”. The Gazprom Transgaz Stavropol subsidiaries have been participating in regional and municipal programs on environmental protection in the Stavropol Krai.

ООО Gazprom Transgaz Tomsk annually expands to create the conditions for the development of a CNG FS network. Around 130 vehicles were switched to NGVs in 2011 in Novokuznetsk. The new service station in Kemerovo switched 40 vehicles; in the cities of Tomsk and Novosibirsk – 70 vehicles switched to NGVs, including 11 KAMAZ trucks running on natural gas.

Sakhalin Energy Investment Company has been cooperating with the Government of the Sakhalin Region and the Regional Council of the indigenous peoples authorized representatives under the project “Sakhalin-2”, which provides the “Development plan of the indigenous peoples in the Sakhalin Region”. The five-year “Assistance plan in 2011–2015” is the second phase of implementing the strategy of improving the living standards of northern indigenous peoples of the Sakhalin Region.

The plan was based on the principle of “free, prior and informed consent” (FPIC), stipulated in the UN Declaration on the Rights of Indigenous Peoples (2007), which makes the plan the first successful example of the principle application by an industrial company for the society. The Plan actions cover two main directions: Social Development Fund and the Program of the traditional economic activities support. “Sakhalin Energy” annually provides the funding of 312 thousand dollars for these purposes.

As a result of a nationwide competition of the corporate charity programs efficiency, “Corporate Charity – 2011” this project received the second prize and the top award in the nomination “The best program, revealing the policy of corporate charity and social investment principles”.

OAO Gazprom Neft normally signs social and economic agreements with regional authorities of the Russian Federation and municipal entities in the regions of operation. The agreements include mutual obligations; describe the principles of cooperation in solving social and environmental problems of the region. In 2011 *Gazprom Neft* signed the social and economic agreements with 14 authorities in nine federal subjects of Russia.

The General Agreement on Cooperation with the Government of the Yamal-Nenets Autonomous District in 2011–2013 foresees joint actions aimed at creating favorable conditions to ensure compliance with environmental legislation and protect interests of indigenous communities of the northern territories whilst implementation of geological exploration and development of mineral resources in the region. This agreement was expanded by enclosure of the administrations of Krasnoselkup and Nadym districts in YNAD.

The agreement with the Government of the Ugra (Khanty-Mansiysk Autonomous District) is aimed at stimulating investments in the region and creates favorable conditions for further geological study. The parties agreed to jointly implement environmen-

tal programs and projects on development of scientific and technological potential of the region.

In the reporting year the OAO Gazprom Neft subsidiaries implemented measures on prevention and liquidation of emergency situations, creation of material reserves for emergency liquidation. Gazprom Neft-Noyabrskneftegaz won the 2nd prize in the competition “The best civil defense and emergency training facilities of the YNAD organizations”.

OAO OGK-2 participates in the Intergovernmental Cooperation Commission the Russian Federation and the Republic of Kazakhstan under the Subcommittee of Energy Cooperation and the Subcommittee of Regional and Cross-border cooperation.

An OAO OGK-2 subsidiary Serovskaya GRES in 2011 signed an environmental protection cooperation agreement in with the Government of Sverdlovsk region, which aims to address environmental problems of the complex, strategic development of the Sverdlovsk region; implement medium-and long-term programs that provide measures to reduce the negative environmental impacts of Serovskaya GRES. Environmental protection measures of Serovskaya GRES are included in the program “Environment and Natural Resources of Serovsky urban district in 2012–2014”.

In the last few years Stavropol GRES has been a member of the Environmental Council of the Ministry of Natural Resources and Environmental Protection of the Stavropol Krai.

International Cooperation

In 2011, OAO Gazprom was cooperating with international organizations, intergovernmental bodies, leading foreign companies and research centers on energy efficiency and environmental protection.

Based on agreements with foreign oil and gas companies and in accordance with the programs of scientific and technical cooperation OAO Gazprom takes advantage of environmental protection and energy efficiency in the form of technical dialogues with E.ON Rurgaz, BASF / Wintershall, GDF SUEZ, Gasunie, the Agency of Natural Resources and Energy Ministry of Economy, Trade and Industry of Japan, China National Petroleum Corporation.

Preparing for the World Gas Conference in Kuala Lumpur (Malaysia, 2012), in 2011 the International Gas Union (IGU) OAO Gazprom developed an industry guideline “Greenhouse Gas Emissions Reduction”, which covered the best practices for the entire gas production chain.

The representatives from OAO Gazprom and subsidiary companies made presentations environmental protection and energy efficiency at the International Gas Research Conference 2011 (19–21 October 2011, Seoul, Korea).

Preparing the high-level Panel Report of the UNO General Secretary on global sustainability “Resilient people, resilient planet: a future worth choosing” to the UN Conference “Rio+20” (2012) OAO Gazprom made a presentation about the gas pipeline “Nord Stream” as the great contribution in environmental protection in Europe. The presentation noted the submarine natural gas pipeline “Nord Stream”, commissioned in 2011, ensures the reduction of carbon dioxide emissions in the EU by replacing coal. The pipeline “Nord Stream” meets the national requirements on environmental protection and protection of the marine environment, international environmental standards, including the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, 1991). The Nord Stream operator is plans to invest about 40 million euros into the program of environmental and social monitoring. The monitoring data will contribute to the plan of action of the Baltic Sea Commission the, which is aimed at restoring the quality of the Baltic Sea marine environment in 2021.

In the framework of the European Business Congress OAO Gazprom implemented a number of projects on environmental protection. In 2011, the Committee sessions of “Industry and Construction” and “Ecology and healthcare” reviewed energy efficient and innovative technologies in production, transmission and distribution of gas, as well as energy supply by means of local and non-conventional energy sources.

Under the Cooperation Agreement between the Federal Service for Hydrometeorology and Environmental Monitoring, OAO Gazprom representatives participated in the international conference of the Framework Convention on Climate Change (UNFCCC) United Nations. Within the 34th session of the subsidiary bodies of the UNFCCC and the Kyoto Protocol (June 14, 2011, Bonn, Germany), *Gazprom* held a side-event “Corporate Greenhouse Gas Inventories in the Russian Federation: the Experience of the Gas Sector”, which was dedicated to the experience of developing greenhouse gas emissions inventory in the gas industry (from the wellhead to the consumer). The reports were made by representatives from the Roshydromet Institute of Global Climate and Ecology, Russian Academy of Sciences, OAO Gazprom, OOO Gazprom VNIIGAZ and OOO Gazprom dobycha Yamburg. The joint research studies of German and Russian experts on greenhouse gas emissions measurement and reduction were presented as well as the emissions data of the largest gas transmission companies in Germany – Open Grid Europe GmbH, which is a foreign partner of *Gazprom*.

The side-event concluded OAO Gazprom system of corporate greenhouse gas emissions inventory is a good example of the corporate responsibility for environmental protection and climate, which meets national and international requirements. The corporate inventory data are used in the national greenhouse gas inventory of the Russian Federation. OAO Gazprom actions on greenhouse gas emissions reduction ensure the capability of the Russian Federation in reducing the national greenhouse gas emissions by 2020 by 15–25% compared to 1990 levels, as announced at the 15th session of the Conference of the Parties to the UNFCCC.

In 2011, *Gazprom* paid special attention to cooperation on the development of the key international projects “Nord Stream”, “South Stream”, Eastern Gas Program, the Shtokman field.

In Brussels *Gazprom* made a presentation of the project “South Stream” before representatives of the EU governments, the European energy agencies and departments, experts and mass media. In addition to the growing trends of the gas demand, the role of natural gas as a key energy resource for the sustainable development of Europe, the presentation covered environmental issues of the pipeline construction and operation and the role of natural gas in greening of the EU energy and transport.

Under the coordination of the Ministry of Economic Development of Russia OAO Gazprom cooperated on the “partnership for modernization” with French, Dutch and German companies.

Based on respective agreements *Gazprom* continued the scientific technical cooperation with foreign oil and gas companies: signed the work plans with Gasunie, held a joint workshop with GDF SUEZ on the detection of methane leaks from process equipment (OOO Gazprom transgaz Samara, Syzran), successfully completed the technical dialogues with E.ON Ruhrgas, GDF SUEZ and the Agency of Natural Resources and Energy, Ministry of Economy, Trade and Industry of Japan on environmental protection and energy efficiency.

In 2011 *Gazprom* launched a new three-year program of scientific and technical cooperation with BASF / Wintershall: the parties held talks on energy efficiency, the preparations of the microbiological agent “Bioros” use for the biodegradation of petroleum products and rehabilitation of oil contaminated lands in Wintershall.

In order to implement the Agreement on strategic cooperation with the Foundation “Group” Project Delta”, the first meeting of the Joint Steering Committee, which outlined the main directions of cooperation for 2011–2013 and held meetings of expert groups was held to discuss: technologies of wells drilling and permafrost field

development in, underground gas storage, natural gas transmission, energy efficiency and environmental protection.

Within the grant “Capitalizing on methane capture in the Russian gas sector: economic and environmental benefits” a *Gazprom* subsidiary OOO Gazprom VNIIGAZ participated in the development of the Russian Methodological guidance of methane emissions accounting, harmonized with international (UNFCCC, EPA) and Russian practical approaches for the Wildlife Fund (WWF).

At the invitation of the U.S. Environmental Protection Agency representatives from OOO Gazprom VNIIGAZ participated in a technical workshop on prevention of methane emissions.

Information Disclosure

In accordance with Russian law *Gazprom Group* companies form and submit reporting on the environmental performance of industrial activities, the correspondent measures and the funding to the state executive authorities of the Russian Federation. These data are used for the preparation of annual reports on the Environmental Protection in the Russian Federation, as well as statistical and analytical documents.

Gazprom Group has traditionally paid considerable attention to improving the transparency of activities in environmental management and environmental protection.

The transparency provisions are stipulated in the Code of Corporate Conduct and in the Environmental policy of OAO *Gazprom*. The increase of information transparency is ensured by the annual meetings of the *Gazprom* steering committees and major reporters of national and regional mass media. Information about the environmental aspects of the *Gazprom Group* companies is provided by the annual corporate reports, and regularly covered in the federal, regional and corporate media for supervisory authorities, as well as stakeholders and public.

On the corporate official web portal (www.gazprom.ru) in the section “Environmental Protection” OAO *Gazprom* publishes the details of environmental protection policy, environmental aspects of perspective and ongoing projects, environmental protection activities, ecological safety and environmental management.

The *Gazprom* Annual Report includes sections covering the issues of environmental protection and energy saving. Since 1995, the company has been publishing annual Environmental Reports, and since 2010 – corporate sustainable development report, which in the section “Security” provides broad information about the company's strategy and tactics in the field of environmental management, environmental protection, climate change.

In the last few years many companies of *Gazprom Group* published sustainable development reports, which make a considerable emphasis on environmental security and environmental protection.

Gazprom regularly addresses the public inquiry and provides the full media coverage of the activities on the gasification of Russian regions, the implementation of the Eastern Gas Program, the international project “Nord Stream”, “Sakhalin-2” and “Sakhalin-3”, “South Stream”, the Shtokman field, on-going projects in the Sochi region.

ZAO Yamalgazinvest in 2011 participated in public hearings on assessing the environmental impact included in the design documentation of facilities, which are projected on the territory of the Arkhangelsk, Vologda and Yaroslavl regions, the Komi Republic, Yamal-Nenets Autonomous District, Khanty-Mansi Autonomous District – Ugra.

To ensure the compliance with the Russian legislation, as well as transparency and availability of wells construction data in the municipal areas of Sakhalin, Kamchatka and the Yamal-Nenets Gazflot held a public hearing on the following construction projects:

- Individual working draft of the exploration well drilling (construction) № 2 on the South Kirinsky field in the Sea of Okhotsk with the SSDU “Doo Sung”;
- Individual working draft of the exploration well drilling (construction) № 1 on the Mynginskoye and Kirinsky block shelf of Sakhalin;
- Individual working draft of the exploration well drilling (construction) № 1 on the primary structure of the West-Kamchatka region using a self-elevating floating drilling rig;
- The collaborative working draft of exploratory wells drilling (construction) within the marine part of Kharasa-veyskoye deposits in the Kara Sea, based on self-lifting floating drilling rig “Amazon”.

ООО Gazflot specialists presented the prospects of development of deposits in the Kara Sea and the Okhotsk Sea shelf to the indigenous population, and Sakhalin, Kamchatka Krai, Yamal-Nenets Autonomous District.

Gazprom subsidiaries use different ways and forms of information dissemination. For example, **ООО Gazprom sotsinvest** held a special press-cross to highlight the environmental activities in construction of the Olympic sports and infrastructure facilities in Sochi. This event provided all media representatives with information materials: background information on the construction of Olympic facilities and the environmental performance of *Gazprom* in Sochi, the presentation of the Caucasian State Nature Biosphere Reserve.

Sakhalin Energy Investment Company Ltd provided weekly broadcast of the corporate program “Energy”, which covered such aspects of environmental protection activities as program of tagging the Okhotsk-Korean population of gray whales, air monitoring in the village Prigorodny, ornithologists workshop, organization of soil monitoring, monitoring of animal and plant species (trout, Steller's sea eagles and pink orchids along the route of onshore pipeline system), the results of the competition “Salmon, Live on” within the “Sakhalin Salmon Initiative”.

ООО Gazprom dobycha Irkutsk released the album Baikal National Park, which contains materials about the company and the corporate priorities in the environmental protection. A charity project of environmental education of students was implemented as an activity on the Day of Baikal.

The most important element of transparency is the participation of *Gazprom Group* in international, national and regional forums, congresses and conferences. In 2011 information on the environmental aspects of *Gazprom* was presented at the IX Environmental Forum on adequate issues of improving state policy on environmental protection, the international forum on waste management, environmental technology and renewable energy WasteTech 2011, as well as the International Conference “Engineering protection of areas and public safety: the role and objectives of Geocology, Engineering Geology and Exploration” (EngeoPro-2011), on the Yamal gas international forum “Gas and gas chemistry”, at the VII All-Russian environmental conference, the exhibition “Ecology of Russia-2011”.

On December 7–8, 2011 II International Conference “Environmental Security in the gas industry” (ESGI-2011) was held by *Gazprom* and **ООО Gazprom VNIIGAZ**, exhibition within the conference. The conference was attended by over 200 delegates, including representatives from the *Gazprom* companies, the government of the Yamal-Nenets Autonomous District, institutes of the Russian Academy of Science, scientists, experts from leading international oil and chemical corporations – BASF AG, Wintershall GmbH (Germany), Statoil, DNV (Norway) and others. The conference was introduced by the Deputy Chairman of *Gazprom* V.A. Golubev, Deputy Chairman of Russian State Duma, the President of the RGS V.A. Yazyev.

A roundtable was held with representatives of environmental non-governmental organizations under the ESGI-2011 to discuss issues of environmental safety in development of offshore fields. The event was attended by heads and specialists of the relevant departments of *Gazprom*, OOO *Gazprom VNIIGAZ*, *Gazprom* *neft shelf*, OOO *Gazflot*, OOO *Gazprom dobycha shelf*, OOO *Gazprom dobycha Nadym*, OOO *Gazprom dobycha Yamburg*, OOO *Gazprom dobycha Urengoy*, OOO *Gazprom Transgaz Tomsk*, OOO *Gazprom invest Vostok*, Ecological and Analytical Center of Gas Industry, as well as representatives from nongovernmental public organizations: WWF Russia, Greenpeace Russia, Bellona, Sakhalin Environment Watch. The participants exchanged views on issues of environmental security in development of offshore fields such as Prirazlomnoye, Kirinskoye, as well as the West Kamchatka subsoil.

OOO *Gazprom Neft*. In 2011 the second environmental conference of *Gazprom Neft* was held “Influence of changes in the system of state regulation of natural resources on the industrial activities of companies”. The conference was attended by the participation of representatives from federal executive environmental authorities, environmental managers and specialists from affiliated organizations. In the reporting year thematic conferences on industrial, fire and environmental safety were arranged. The conferences was attended by representatives of state regulatory authorities, representatives of other oil companies, manufacturers and suppliers.

In 2011 on the First Regional Environmental Forum in the Omsk region the information about the environmental aspects of activities of OAO *Gazpromneft-ONPZ* and the measures taken to ensure environmental safety was provided.

OOO *Gazprom Space Systems* participated in the 5th International Forum and Exhibition of Unmanned Vehicle Systems Control, Navigation and Communication, “Unmanned multipurpose vehicle systems” (UVS-TECH 2011). The company presented and exhibition stand of data collected from the surveys of gas pipelines – highly detailed photo plans and anaglyph stereo images included into the thematic geographic information system and survey reports.

Information about the environmental aspects of **OOO *Gazprom dobycha Astrakhan*** was published in the newspaper “Puls of Aksaraisk”, local TV-channel “7 +” in the program “Human and Nature”. Since January 2011 OOO *Gazprom dobycha Astrakhan* has organized weekly television series of “About the nature and weather”, and submission of information on the environmental situation in the area around the Astrakhan gas complex. In OOO *Gazprom dobycha Astrakhan* traditionally invites to the annual meeting of the extended wrap-up activities on environment and natural resources the authorities, environmental protection, prosecution, Sanitary and Epidemiological Surveillance, media, public organizations. The results of environmental activities broadcast in mass media.

In 2011, ***Gazprom dobycha Nadym***, based on the Environmental Policy, provides public access to environmental information, using publications and informational messages. Thus, in the reporting year the company published a magazine about environmental activities, dedicated to the 40th anniversary of the Company and competition on the best design of ecological stand “40 years in harmony with nature” for all subsidiaries. The Company issued 38 covers and information messages, reflecting the work on environmental protection in television studio and on local TV Channel of Nadym.

OOO *Gazprom dobycha Nadym* is a permanent member of the Yamal Innovation Forum in Novy Urengoy. At the inter-regional exhibition “Construction, Energy, Environment, Housing and Public Utilities. Innovations to the Far North”, which was held in November 2011, *Gazprom dobycha Nadym* was awarded the Gold Medal in the category “Innovative research and development and technology”.

Contribution of **OOO *Gazprom dobycha Yamburg*** in environmental protection was systemized in the social report, published in a special booklet. The information about the environmental aspects of the company in 2011 was covered in a number of presentations, including: “The concept of integrated development of hydrocarbon re-

sources of the Ob and Taz Bays and the adjacent land”, “Strategic priorities for sustainable development of ООО Gazprom Yamburg”, “Operating results of ООО Gazprom dobycha Yamburg in 2010 and plans for 2011”.

In 2011, **ООО Gazprom dobycha Yamburg** issued a booklet “For the Welfare of Russia”, devoted to 25th anniversary of the industrial gas flow from the Yamburg OGCF and the 10th anniversary of the industrial gas flow from the Zapolarny OGCF, a leaflet about the Yamburg OGCF, a leaflet “Environmental Policy of ООО Gazprom dobycha Yamburg”.

In the framework of the event “Natural gas – the cleanest fuel!” **ООО Gazprom Transgaz Stavropol** distributed special calendars among gas filling points customers and placed promotional information with environmental content on public transport.

Based on the environmental policy principle of an open demonstration of the environmental performance in 2011 **ООО Gazprom pererabotka** conducted an environmental quiz for children “Taiga and inhabitants” in school health camps in Surgut and Surgut district, dedicated to the International Year of Forests. At the first Yamal environmental conference in New Urengoy the report “Environmental activities of Gazprom pererabotka. Problems to be solved at the level of the Russian Federation and local governments” was presented.

ООО Podzemgazprom an industrial subsidiary Astrakhan Podzemgazprom interacts with the regional office of the All-Russian Society for Nature Conservation – Head of the labor protection, industrial and environmental safety Department of the subsidiary is a member of the Society Presidium. In 2011, Astrakhan Podzemgazprom held an open meeting on the issue of radiation and environmental safety of the “Vega” facilities with representatives of state and public organizations, the Office of Rospotrebnadzor and Rosprirodnadzor in the Astrakhan region, the Service of Natural Resources and Environment of the Astrakhan region, Aksaraiskaya prosecution, Astrakhan regional branch of the All-Russian Society for Nature Conservation, Public House of the Astrakhan region, Krasnoyarsk Veterans Council). The meeting included the site visits, a demonstration of the subsidiary operations, demonstration of measurements in the presence of all participants in the meeting, as well as informing participants about the regularly scheduled activities at the site of radiation and environmental protection of the object. The results of the meeting were published in the media, as well as reported on TV channels, reflected the company’s activities and the radiation and ecological situation at the facility in a positive way.

ОАО ОГК-2. In 2011 information about project on reconstruction of the ash dump Serovskaya GRES (OGK-2 subsidiary) was posted on six websites. Within the public discussions of the EIA the “Ural Regional Center of Social Technologies “Expert” Fund conducted a public responding survey of opinion in Serovsky and Sosvinsky urban districts. The conclusion were compiled in a survey of public opinion.

In 2011 **ОАО Mosenergo** became a laureate of the Moscow Government Prize in environmental protection. In the nomination “The best project implemented with the use of environmentally friendly and energy-saving technologies” ОАО Mosenergo was awarded the second place and a diploma “For a significant contribution to the environment of Moscow city”. Annual reports on environmental and environmental aspects were posted on the website of Mosenergo and covered in the media, including newspaper “Rossiyskaya Gazeta”, “Moskovsky Komsomolets”, Moskauer Deutsche Zeitung, “FEC. Development Strategy” (Journal of the Russian Ministry of Energy) and “Nauka & Zhizn” magazines, an Internet publication Russland Aktuell, etc., and are also reflected in the reports RIA “Novosti”.

CONCLUSION

The implementation of international standards for environmental management, high level of compliance with the requirements of the Russian legislation and international law, the priority of environmental security of production and achievement of the corporate environmental goals are the basis of the *Gazprom* responsible approach to environmental protection, stipulated by the provisions of the Environmental policy of *Gazprom*. The annual realistic achievement of environmental goals and commitments fulfilled by *Gazprom* proves the actual performance and significant financial investments in environmental protection.

Based on the environmental programs and environmental action plans, *Gazprom Group* undertakes measures on systemic reduction of adverse impact on environment – reduction of emissions and discharges of pollutants, and minimizes wastes and disturbed territories.

Deployment of innovations in the business practice is the basis for the development of *Gazprom*, considering the uniqueness and vast magnitude of ongoing projects.

Gazprom Group has set the following strategic directions of the environmental protection, which have got a significant environmental effect for the Russian Federation countrywide:

- energy and resource saving;
- best available technologies implementation for modernization and operation of new production facilities;
- development of motor fuels production with improved environmental performance; and the development of motor fuel market;
- participate in scientific research and practical actions for restoration of natural systems, biodiversity, protection of the marine environment;
- prevention of accidents and incidents with environmental impact and full compensation of environmental damage;
- development and implementation of corporate programs, participation in regional and federal programs to ensure environmental safety;
- improvement of the environmental management systems.

Responsible attitude of *Gazprom Group* to the problems of environmental security and rational use of natural resources provides for strengthening the rights of citizens for a healthy environment and maintains the ecosystem balance, creates the conditions for sustainable development of Russia.

GLOSSARY

APG – associated petroleum gas – mixture of gases and non-hydrocarbon and hydrocarbon vapors coming from oil wells and oil separation.

Biodiversity (biological diversity) – diversity of living organisms in all spheres including onshore, marine and other water ecosystems, which determine their ecological complexes.

Booster compressor station – gas production site station which provides for the gas compression to prepare it in accordance with the project quantitative and qualitative indicators of the given field and projected pressure of gas main pipeline.

CHP – cogeneration heat and power plant.

CNG – compressed natural gas.

CNG FS – compressed natural gas filling station.

CS – compressor station.

EIA (Environmental impact assessment) – identification, analysis and accounting of direct and indirect effects of environmental impact of projected economic or other activity aimed at supporting the decision about the possibility of implementation.

EMS – environmental management system.

Environment – combination of natural, natural and anthropogenic and anthropogenic objects.

Environmental Approval (Environmental expertise) – establishment of relevant documents and (or) the documentation of the planned in connection with the implementation object of ecological examination economic and other activities, the environmental requirements established by technical regulations and legislation on environmental protection, in order to prevent the negative effects of such activities on the environment.

Environmental Audit – independent, comprehensive, documented compliance assessment of economic and other activities requirements, including standards and regulatory documents in the field of environmental protection requirements of international standards and make recommendations to improve such activities.

Environmental control – system of measures of prevention, identification and avoidance of environmental legislation violation, ensuring the conformity of entities and economic facilities with the requirements, including norms and guiding documents in environmental protection.

Environmental damage – negative change in environment caused by pollution which resulted in degradation of natural ecosystems and deficit of natural resources.

Environmental management – part of the corporate management system, which has a well designed structure, aimed at achieving objectives enumerated in the environmental policy.

Environmental monitoring – complex system of observing the environmental state, assessment and projecting of changes in environment under natural and anthropogenic factors.

Environmental protection requirements (also – nature protection requirements) – conditions, restrictions or their combination applicable to economic and other activities, which are set by laws, other legal acts, environmental norms, state standards and other guiding documents on environmental protection.

Environmental risk – probability of an event that may cause negative environmental effect associated with economic or other activities, natural and anthropogenic catastrophic situation.

Energy saving – implementation of legal, organizational, scientific, production, technical and economic measures aimed at efficient (rational) use (spending) of fuel energy resources and involving renewable energy into the process. Energy saving is an important objective in conservation of natural resources.

Environmental security – nature and paramount human values exposure to threats of negative impact initiated by economic and other activities natural and technogenic catastrophic situations.

EP (environmental protection) – activity aimed at preservation and restoration of nature environment, rational use and reproduction of natural resources, prevention of negative impact initiated by economic or other activity and liquidation of its effects (also – nature protection).

FER – fuel energy resources.

HPS – heat and power station.

JI project – joint implementation project

Gazprom Group, the Group, Gazprom – OAO Gazprom refers to the heading company of *Gazprom Group*, i.e. Open Joint Stock Company Gazprom with its 100% subsidiary companies and organizations. This report refers to the list of subsidiaries, based on the environmental reporting principle endorsed by OAO Gazprom.

GCF – gas condensate field.

GCU – gas compressor unit.

GDS – gas distribution station.

GHG – greenhouse gases – are assumed to cause the global warming effect. The greenhouse gases are the following (in the order of Earth warming potential): water steam, carbon dioxide, methane, ozone, sulfurylfluoride, halocarbons and nitrogen oxide.

GTS – gas transport system.

LNG – liquefied natural gas.

LPUMG – linear production unit of main gas pipeline.

MAC – maximum allowable concentration

Natural complex – complex of functionally interconnected natural objects, which have common geographic and other correspondent features.

Natural object – natural ecosystems, landscape and their components, which sustained their properties.

Natural resources – environmental components, natural, natural and anthropogenic objects, which are or can be involved in economic or other activities as energy sources, manufacturing and consumption as well as have consuming value.

Negative environmental impact – economic or other activities, which initiate negative.

OEC – operational environmental control

OEM – operational environmental monitoring

OGCF – oil gas condensate field.

Pollutant – pollutant substance – a substance or mixture which initiates negative environmental impact in case it amount and/or concentration exceeds the preset limit values for chemicals, radioactive components and others and microorganisms.

Quality of environment – state of the environment specified with a number of indicators such as physical, chemical, biological and others.

R&D – research and development

SDPS – state district power station.

SPA – special protected area. A part of land, water and air space territory of a great value for nature protection, science, recreation, health and others, which is subject to a special protection regime and fully or partially subtracted from the lands available for business activities as per the decision of governmental authorities. Special protected areas refer to the national endowments.

UGS – underground gas storage.

UGSS of Russia – Unified Gas Supply System of Russia

VOCs – volatile organic compounds

Waste allocation object – a facility specifically designed allocation of waste (landfill, sludge storage, tailing pond, rock dump etc).

Waste management – activity on waste collection, accumulation, utilization, neutralization, transporting and allocating.

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