GAS MARKET INTEGRATION: FOR A SUSTAINABLE GLOBAL GROWTH

By: Chairman of the Management Committee, Gazprom
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Growth dynamics and structure of energy consumption

Dynamics of world energy consumption, million TOE.

Structure of world energy consumption, %

- Natural gas
- Coal
- Oil
- RES (wind, solar, tidal power, geothermal energy, biomass, hydro)
- Atom
The potential of hydrocarbon energy

Forecasts of global gas demand, billion cubic meters

Forecast of gas production by 2035, billion cubic meters

- Russia
- USA
- China
- Iran
- Qatar
- Cabada
- Algeria
- Australia
- Saudi Arabia
- Turkmenistan

- Conventional gas
- Unconventional gas

- The International Energy Agency (New Policies Scenario 2011)
- The International Energy Agency (Current Policies Scenario 2011)
- The International Energy Agency (Gas Scenario 2011)
- U.S. Department of Energy (Reference Case 2011)
- CERA (Global Redesign Scenario 2011)
- Energy Research Institute of Russian Academy of Sciences 2012
The development of global trade in natural gas

OECD – North America

OECD – Europe

Countries outside the OECD – Europe/Eurasia

OECD – Pacific Region

Middle East

Africa

Export, billion cubic meters

Import, billion cubic meters

Volume of international trade in gas by pipelines

Volume of international trade in LNG

IEA data, Petroleum Economist
Alternative sources of natural gas

Global structure of unconventional gas resources, trillion cubic meters

- **Shale gas**: 200-225 trillion cubic meters
- **Gas of low-permeable reservoirs**: 380-550 trillion cubic meters
- **Coal-bed gas**: 380-420 trillion cubic meters

Global gas production by types, billion cubic meters

- **Conventional gas**
- **Low-permeability gas reservoirs**
- **Coal-bed gas**
- **Shale gas**

Expert assessment by Gazprom VNIIGAZ
International gas trade from 2010 to 2011

Dynamics of international gas trade, billion cubic meters

World exports by regions of the world, billion cubic meters

- International gas trade
- By pipeline
- LNG

- Africa
- Europe
- Near East
- Asia
- Oceania
- CIS
- North America
- Latin America

- +4.2%
- -23.2%
- -4.3%
- +10%
- +4.2%
Regional gas pricing

- Average import gas price in Europe, USD/thousand cubic meters
- Spot gas price in the U.S. (Henry Hub), USD/thousand cubic meters
- Import gas price in Japan, USD/thousand cubic meters
- Perspective projects

USA
Europe
Japan

Perspective projects
Price formation in the gas market

Dynamics of LNG prices in Japan, USD/million Btu

- Japanese Crude Cocktail
- LNG (Japan)

Dynamics of oil and gas prices in Europe, USD/million Btu

- Russian gas at the border of Germany
- Russian gas at the border of France
- Russian gas at the border of Hungary
- Russian gas at the border of Italy
- Brent

Dynamics of oil and gas prices in the U.S., USD/million Btu

- Henry Hub
- WTI
Price formation in the gas market

Hotelling rent

Price (USD/barrels, USD/thousand cubic meters)

Limitation of production capacities

Supply curve (cost of delivery)

Demand curve

Price, based on the costs (Cost +) of production and delivery

Ricardo rent

Price, based on replacement cost (the cost of consumption of alternative energy resources)

Production volume

(million barrels/day, million cubic meters/year)

Dynamics of price integration of the world gas market
Development of Gazprom's resource base

Commissioning of the Yamal Peninsula fields and the shelf

<table>
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<th>Expected production, billion cubic meters/year</th>
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<td>2015</td>
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<td>116</td>
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Gazprom's transportation projects

Nord Stream gas pipeline

- Capacity: 55 billion cubic meters/year

South Stream and Blue Stream gas

- Capacity: 63 billion cubic meters/year (South Stream)

Gas balance in Europe, billion cubic meters

Europe's inter-regional gas trade, billion cubic meters

- Imports from the Middle East
- Imports from Africa
- Imports from the CIS
- Imports from Latin America
- Imports from North America
- Gas production in other EU countries
- Gas production in Norway
- LNG import
- Gas import through pipelines
Gazprom in the LNG sector

Volumes of Gazprom Group's transactions with LNG, thousand tons
The strategy of relying on conventional natural gas resources

Distribution of conventional and unconventional gas by regions in the world, trillion cubic meters

The structure of Russia's unconventional gas resources, trillion cubic meters

Expert assessment by Gazprom VNIIGAZ
Gazprom's global supplies of pipeline gas and LNG

Ratio of supply volumes of pipeline gas and LNG, billion cubic meters

Global gas supplies, billion cubic meters

- Russia: 262.1
- CIS and Baltic states: 148.1
- Europe: 70.2
- America and APR: 1.93

Perspective routes:

- Gas through pipelines
- LNG
- Perspective routes
Natural gas – an environmentally and technologically optimal solution

Cost of building 1 kW of electric power of various types of power plants, thousand dollars.

Relative content of toxic components in exhaust gases of motor vehicles

![Graph showing cost of building 1 kW of electric power of various types of power plants, thousand dollars.](image)

![Graph showing relative content of toxic components in exhaust gases of motor vehicles.](image)
Thank you for your attention!