

# **DIVERSIFICATION OF NATURAL GAS SUPPLY SOURCES FOR RUSSIAN REGIONS**

## **Programme Committee C (Developing Markets)**

### **Topic 8.B. Developing natural gas markets: How issues including security of supply, alternative fuels, pricing and technological improvements interact for a sustainable development**

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The report provides a brief description of the current status and development prospects for gas supply and distribution in Russia. The regional gas-supply networks are the backbone of the nation's fuel-and-energy complex and a guarantor of socio-economic development in Russia and in its regions and national energy security. The strategy for further development of regional gas supply and distribution makes provision for reliable and stable supplies of energy resources to the consumers, meeting the growing consumer demand for natural gas, gas efficient application and utilization.

Over the last years Gazprom has been playing an increasingly important role in the energy sector of Russia's regions. Implementing specific investment projects, the company demonstrates modern scientific and methodological approach to developing and further improvement of regional fuel and energy supply networks, gas supply and distribution systems, and to applying modern construction technologies, technical solutions and equipment.

The methodology used by Gazprom is based on an integrated, systemic approach to setting up an integrated regional gas, heat and electricity market, and to improving both the efficiency of gas utilization and environmental situation.

The responsibility for R&D support in the field of gas supply and distribution for Russia's regions was delegated by Gazprom to Gazprom promgaz – the industry's leading scientific research center. To substantiate decisions on gas supply and distribution in the Russian regions, the company works on a number of mutually-agreed and interrelated documents – Energy Strategy, General Gas Supply and Distribution Schemes, construction and reconstruction programs for gas supply and distribution facilities, as well as selects the most economically-efficient and energy-viable projects.

The growing demand for energy is fueled by overall economic development of Russia's regions and the national manufacturing sector, and by the need to ensure a comfortable living environment for Russian citizens. Despite the achievements in the field of efficient use of energy resources and energy-savings, market demand for energy in Russia and its regions is expected to grow further. For a majority of Russia's regions, natural gas remains one of the basic types of fuel.

To meet the growing demand for natural gas, it will be necessary to address in the nearest future a complex of tasks related to finding new sources of natural gas supply, expanding the volume of supplies for regional distribution, increasing the efficiency of gas utilization and lowering environmental risks.

Accordingly, the documents substantiating prospective development of gas supply to Russia's regions and gas distribution for consumers and transport use, view the following components as potential sources of gas supply:

- Supply of pipeline natural gas;
- The use of technology for small-tonnage production and distribution of liquefied natural gas (LNG);
- The use of compressed natural gas (CNG) and adsorbed natural gas (ANG);
- The use of non-conventional sources of gas supply such as coal-bed methane, products of underground coal gasification, bio-gas, etc.

The Russian Federation has certain experience in implementing small-tonnage LNG pilot projects for gas supply and distribution to industrial, municipal and domestic consumers in the Leningrad and Sverdlovsk Regions, pilot industrial production of methane from coal beds in the Kemerovo Region, the use of CNG for supply and distribution to municipal-domestic consumers and for transport needs in more than 50 Regions.

Russia possesses the necessary technologies and relevant equipment for applying them in gas supply and distribution investment projects.

Alternative sources of gas supply can be generally used:

- for autonomous gas supply to remote facilities located far away from regular gas-supply sources (the Unified Gas Supply System of Russia);
- for gas supply for inefficient consumers (vis-à-vis the pipeline construction cost), or consumers deemed inefficient from the economic point of view or due to geographic or other nature-related conditions;
- as a provisional measure pending construction of a gas network pipeline (being the technology which is less capital-intensive and the most mobile);
- as a back-up fuel;
- to accommodate peak seasonal loads (in autumn and winter).

Potential alternative gas-supply resources in Russia are estimated at 23.5 billion m<sup>3</sup> for LNG, 1.6 billion m<sup>3</sup> for CNG, more than 80 billion m<sup>3</sup> for coal-bed methane and 75 billion m<sup>3</sup> – for bio-gas.

Specific gas supply and distribution technology is selected on a case-by-case basis, taking into account the existing economic and geographical conditions in the region, availability of raw materials and efficiency of use of the fuel in question.

Another source of gas for supply and distribution projects relates to existing and prospective resources of liquefied petroleum gas (LPG).

The existing infrastructure of LPG supply and distribution gives ground for believing that LPG, in addition to the traditional use for cooking, will be increasingly supplied for utilization in boiler-houses, those with low and medium-power boilers in particular.

A more widespread use of LPG in today's economic situation, provided proper coordination with natural gas use, will result in considerable natural gas savings on the domestic regional market. Recovered oil-dissolved gas (ODG) becomes an additional source of LPG. A ban on ODG flaring during petroleum processing will yield some 5 billion m<sup>3</sup> of this fuel annually.

Therefore, a complex analysis of gas supply and distribution solutions as proposed under prospective development projects for regional gas supply and distribution networks allows to meet the need in required energy resources to the maximum, minimize energy-supply network construction costs, and reduce investments in construction and reconstruction works.

General gas supply and distribution schemes developed for 68 constituent entities in the Russian Federation make up a gas supply and distribution investment program based on alternative sources of gas supply, complete with technical and economic calculations demonstrating economic efficiency of the proposed gas-supply projects, recommendations on Russian-made and imported equipment, and a pricing policy.

With the gas supply and distribution network nearing completion, given the continuing implementation of large-scale energy-supply projects in Eastern Russia and constrained capacity of the Unified Gas Supply System affecting economic development of constituent territories, alternative technologies for gas supply and distribution to consumers become a very promising solution.

The report provides examples of investment projects using alternative sources of gas supply in a number of Russian regions.

It identifies a number of issues hampering the use of alternative sources of gas supply: the need for regulatory and methodological base for alternative gas-supply projects, legislative support, for technology and equipment improvement. The paper indicates interest to the practice of foreign countries and organizations in addressing similar issues.