

NEI-NO--807  
NO9705259

*CONF-96 08193--10*



**ONS CONFERENCE 1996  
27-30 AUGUST  
STAVANGER. NORWAY**



NO9705259

Paper no. C2

Session:

NATURAL GAS IN A CHANGING MARKET

Paper title:

«Russian gas in the west European market»

Speaker :

Boris A Nikitin  
Gazprom, Russia

**MASTER**

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

## **DISCLAIMER**

**Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.**

## **Russian Gas on the European Market**

B.A.Nikitin

Russia is one of few countries in the world that meets its own needs in gas and exports gas to the other countries of the world.

The specific weight share of the Russian gas reserves in the world balance amounts to 35.4%.

In 1995 596.9bln.m of gas was produced in Russia including 559.5bln.m at the Gazprom enterprises. Export of gas to Europe in 1995 equated 117.0bln.m.

### **The Resource Basis of the Gas Industry**

The resource basis of Russia is characterised by a high degree of the reserve concentration in individual regions and big fields which creates favourable conditions for the development of its production. Thus 20 unique fields contain 36trn.m of gas or 75% of the proved reserves of the country. These fields which include such known throughout the world fields as the Urengoy, Yamburg, Medvezhiye, Orenburg and others provide 93% of the national gas production.

The Gazprom Russian Joint Stock Company is working now on 120 fields with 25trn.m of the explored reserves and among them 70 fields which are being developed now.

The main area in Russia providing gas production is Western Siberia and first of all the northern area of the Tyumen region. The resources potential of the area allows in the visible future to preserve its leading status in the fuel and energy complex.

Most of the produced gas comes from the Senoman deposits of the Nadym-Pur-Tazov region and the deposits are characterised by good reservoir parameters, high well productivity, low condensate content ( to 3g m ) and low depth of occurrence ( to 1300m ).

In 1996-1998 it is anticipated to start developing the Yubileinoe, Yamsovey and Khavutin fields with total annual production 40bln.m of gas. In 1998 gas production in the Zapolyarnoye will commence producing in 2005 90bln.m a year.

The continental shelf in Russia which area amounts to 3.9mln.km has a high oil and gas potential. In accordance with the prognosis estimates it contains 66bln.t. of hydrocarbon resources.

The subsurface resources of the Arctic shelf and first of all the Barents, Pechora and Kara seas as well as offshore area of the Far East seas possess the highest hydrocarbon potential.

Geological exploration has mainly been concentrated in the Okhotsk (offshore Sakhalin ), Barents, Pechora and Kara seas and to a small degree in the Baltic, Caspian and Azov seas.

24 oil and gas fields have been discovered in these areas with recoverable reserves volume to 500mln.t. of oil with condensate and about 4.7trln.m of gas.

A big number of discovered prospects and structures prepared for exploration drilling, high degree of efficiency of geological exploration achieved offshore Russia give the ground to anticipate further strengthening of the resource basis of hydrocarbons in the nearest future.

Offshore arctic seas 9 oil and gas fields were discovered, including such unique fields as the Shtockman gas and condensate field, in the Barents sea, the Rusanov and Leningrad fields in the Kara sea. In the Pechora sea big oil fields the Prirazlomnoye and Varandey-more were discovered. The exploration works on the above listed fields is going on.

The Shtockman field is the most prepared for the development. It was discovered in 1988 and it is located in the central part of the Barents sea at the water depth 280-360m, 650km to the north east of Murmansk.

The offshore oil fields development on the Arctic shelf of Russia is first of all connected with the Prirazlomnoye oil field located within the Pechora sea at 20m water depth.

Additional preparation and development adjacent to the field prospects which are located in the Pechora sea by using the infrastructure in the most optimal way will be required to put the Prirazlomnoye field into production. This first of all means the development of the Vrandey-more.

Putting into production new fields will facilitate the achievement of further planned incremental production of oil and gas in the regions.

Because of that gradual development of the frontier areas, including preparation of reserves for commercial production should be started in the nearest future.

The development of the gas reserves of the Shtockman gas bearing area which is estimated more than 3.2trln.m will depend on the need to increase incremental gas production in the region and the need to maintain plateau gas production levels at the Shtockman field.

2 gas condensate fields were discovered in the Kara sea: the Rusanov and Leningrad fields.

The development of these fields should be co-ordinated with the development of the Bovanenkov and Kharasavey fields on the Yamal peninsular envisaging the opportunity to use their communication facilities. In addition to the Rusanov and Leningrad marine fields it is anticipated to explore the continuation of the offshore fields of the Ob and Tazov bay.

27 fields were discovered at the Yamal peninsular. Maximum production level at the Yamal peninsular can be to 180-200bln.m.

In general it is planned to produce 665-670bln.m of natural gas a year with incremental production of 20-25% by the year 2010 at the enterprises of RAO Gazprom.

### **Analysis of the European Gas Market**

The analysis of the processes of development of the European gas market has shown that by the year 2010 a considerable increase in gas consumption as compared with mid 90-ties is expected. According to the estimates of different research which has been carried out recently the demand for gas in Western Europe can reach by the year 2010 from 375 to 500bln.ma year. The wide range of the gas demand estimates is facilitated by a number of factors. The world trade, international relations and environmental policy influence the economic development, including the industrial production, capital investments and the well-being of consumers. Price policy as well as changing relations in the European gas system is of considerable importance for the development of gas market in the future.

The decisive factor in the growth of the demand for gas according to the widely accepted point of view will be its utilisation in power production and in industry and domestic sector. In this case it is very important to take into consideration how different analysts define the role of energy consuming industrial production in Western Europe. Thus in some of the prognosis it is envisaged to put almost all energy consuming production outside the boundaries of Europe.

As a result of the environmental advantages of natural gas and comparatively small capital investments for gas utilisation it could have been expected that its share in general energy balance will increase by the year 2010. The demand for primary energy products for power production for industrial and public needs is met mainly due to coal and nuclear energy production and the share of natural gas amounts to only 7%.

Gas played a minor role in this sector. By the year 2020 more than a half of the expected growth of the additional demand for gas can be from the power production industry. In this case its share will be increased twofold, but it will still have the third place after coal and nuclear energy.

In general modern power producing gas stations with existing level of prices for energy products have considerable advantages both from the economical and environmental point of view as compared with power stations running on other types of fuel.

The replacement of nuclear energy at the power production stations will first of all facilitate the increase of utilisation of gas at the power stations. Almost all Western European countries have banned the construction of new nuclear power stations. Some of the countries such as Italy, for example, have already put out of production the existing nuclear power stations while others are planning to do this.

In general the volume of natural gas utilisation in power production can be increased threefold by the year 2010. The share of natural gas in final energy consumption in household and domestic sector amounts to 28%. It is expected that the consumption of natural gas in this field will also increase due to the lesser use of hard fuel and fuel oil. Natural gas component in energy consumption in industry now equates to 23%. What will be its progress like? And it should be also emphasised that this development may happen even if there is some minor decrease of the general energy consumption in industrial sector. At the same time it should be taken into account that the continuing process of replacement of one type of energy products by others will also facilitate the growth of volumes of its use in industry from 107bln.m in 1992 to 160bln.m in 2010.

The main source of gas supply in the Western European countries is their own gas production meeting at present almost 70% of the general demand of the Western European countries. The most important gas producers are the Netherlands, Great Britain and to a greater and greater extent Norway. In addition to the above-mentioned countries Germany and Italy should be mentioned.

At present together with its gas production gas supply from Russia and Algeria countries plays an important role in meeting demand for gas in Western Europe.

According to our estimates gas production in Europe will be increased to 360bln.m in 2000, but then in the future due to the limitations of gas reserves it can be considerably decreased.

Taking into account gas production and contracted additional volumes of Russian and Algerian natural gas ( including prolongation of contracts ) the increase in gas demand to 530bln.m in 2010 could be met by gas supply of 350bln.m according to our estimates. The deficit in the Western European market in this case is expected to amount to 180bln.m.

Due to the political and environmental reasons it is expected that such countries as Nigeria, Katar and some others can be only temporary gas suppliers. The greatest growth of supplies can be expected from Algeria and Norway. The Netherlands also play a special role. There are different scenarios of gas production development in this country, including pessimistic ones. By the year 2010 it can go down 20% of its current level.

Norway also is one of the leading countries among the West European gas producers. Due to the low gas consumption in Norway ( gas is used only in the production industry and it is expected that in the future it will be used in small volumes in industry and in power production ), almost all produced gas is exported. As a result the contribution of this country in gas supply of Western Europe is a considerable one. Taking into account the gas transportation capacities and their expected development as well as existing gas reserves, gas production in 2010 can exceed 60bln.m

Algeria should also be considered as an important gas supplier. Gas supply from Algeria to Europe started as far back as 1964. Due to the new policy of the Algerian Government allowing foreign participation in gas exploration and production further growth of its reserves can be anticipated.

Export from Algeria to Western Europe with taking into account all concluded and potential contracts, expected rates of development of gas transportation systems and gas liquefaction capacities, political and economical situation in the country can exceed 50bln.m in 2000 and its further growth can be expected.

### **Projects for Russian Gas Supply to Europe**

On the basis of the available prognosis for natural gas sales the possibilities for new contracts before the year 2000 are not very big as the contracted volumes exceed the growth of demand for gas. The chances in the market by the year 2010 are much better.

While planning the Russian gas supply it had been taken into account that more than 50% of deficit which in 2010 will amount to 75bln.m will be for Germany, Great Britain, France and other countries. Gas supply to Italy were also taken into account as the deficit demand for natural gas in this country in 2010 can be the greatest one.

Analysis of the resource possibilities has shown that additional sale of Russian gas in Germany, Italy and other countries of Western Europe can amount to 30-400bln.m a year. Thus the share of Russian gas could increase considerably here. Taking into account diversification of supply it could have been acceptable for Western Europe and could have provided an opportunity for additional supply.

Political changes in Eastern Europe after 1990 had resulted in the dramatic slump in the production. The revenues from trade in the world market due to the low competitiveness of the Eastern European industry could not make up for the losses of these countries which they incur in the result of the collapse of the trade and economic links between the former members of the Council for the Mutual Economic Assistance. As a result the consumption of

primary energy products in Eastern Europe reduced considerably. Taking into account the increasing efficiency in energy utilisation and the expected growth of economy it can be said the level of consumption in 2010 can only exceed slightly the same parameter of the year 1990.

The structure of energy consumption in the future will be only slightly changed. The share of coal due to environmental reasons will decrease considerably and the share of oil as a result of growth of the number of vehicles will go up. However, as a result of the shortage of hard currency its component in industry will be reduced. Speaking in general, oil consumption in 2010 will slightly exceed the level of 1990.

Utilisation of natural gas as well as its share in energy balance will be considerably increased. In this case the fact that Russian gas supply ( unlike oil supply ) is often carried out on the basis of compensation contracts plays its role. In general natural gas consumption can increase almost 40% by 2010. Almost half of the demand for natural gas in Eastern Europe was met due to its own gas production, mainly in Romania. The only source of import was Russian gas which met 50% of demand. The efforts of some Eastern European countries to diversify natural gas supply are not economically efficient in the future. Taking into account the existing gas transportation and need for considerably big investments for gas supply, for example, from Norway one can come to conclusion that Russian gas supply to meet the demand for gas in these countries is very perspective.

Additional demand for natural gas in Eastern Europe is expected by the end of 90-ties. Summarising the situation in Eastern and Western Europe and comparing it with prognosis for Western Europe one can come to a conclusion that there is no principle difference: the existing difference has almost no impact on the structure of consumption of primary energy products. Both in Eastern and Western Europe additional gas demand is expected by the year 2000 though in Eastern Europe it can appear considerably earlier. According to our estimates additional demand for gas in 2010 will amount to 130 - 230bln.m in countries of Western and Eastern Europe.

### **International Co-operation**

RAO Gazprom encourages integration in the development of gas industry in the world as a whole and in Europe in all directions, including the creation of independent price basis without tying it up to the oil price, mutual reservation and insurance of gas supply as well as other issues. Russian Joint Stock company Gazprom understanding the growing importance of natural gas in the development of economy of the European countries is undertaking all necessary actions for further development of Russian gas industry and export potential and it is ready for co-operation on the mutually profitable basis.

The strategy of RAO Gazprom in increase of Russian gas supply envisages its participation in gas sale in the market of the countries-buyers through the JV and joint stock companies which will enable to increase the efficiency of gas export and receive profit.

The first step in this direction has already been done: jointly with German company Vintershal AG the trade company was set up and system of gas pipelines was created for distribution of Russian gas which is in joint ownership.

Similar commercial structures were also set up in Finland and some other countries of Eastern and Western Europe which at the end will facilitate the strengthening of mutual energy safety of Russia and Europe.

Now RAO Gazprom is finalising the preliminary estimates of economic efficiency and feasibility of participation in joint projects in Belorussia, Latvia, Poland, Hungary, Turkey and Italy.

RAO Gazprom is actively co-operating with many foreign firms and companies in issues of increase of the level of engineering work and production performance of the RAO Gazprom facilities, cost reduction and carrying out energy saving policy.

In particular the Italian companies Cham and Nuovo Pione have carried out inspection of the technical state of the linear part and gas compressor stations in some parts of the northern system of trunk pipelines of Russia and proposals for its up-grading have been made.

Gas de France jointly with Gazprom enterprises have carried out the work for reconstruction of gas equipment in the Vladimir tractor factory which enabled to reduce gas consumption at this plant to one third. On the basis of the results obtained the programme, organisation and economical mechanism for the expansion of works in gas saving are being prepared now.

A number of other projects are also under development, for example for training managers and employees of Gazprom enterprises, technical and economical research of problems of gas extraction, transportation and processing of ethane containing gases in Western Siberia and etc.

The principle importance of similar projects is to provide an opportunity on the basis of joint work of Russian and Western experts to study and to learn modern methodological approach towards the solution of technical, economical and organisational problems emerging in gas industry in the conditions of market economy. The Feasibility study of the Jamal-Europe gas transportation system has been developed taking into account the prognoses development of the European gas market and high potential of the possibility to increase reliability and flexibility of gas supply due to the creation of new capacities. The opening of new corridor for Russian gas export will not only enhance the reliability of gas supply and will require relatively big investments.

The system of gas pipelines Yamal-Europe is designed within the same energy corridor with gas pipelines of ESG Russia which will allow to use the whole system of ESG, including the underground gas storage facilities to provide high degree of reliability of Russian gas supply for export. This fact is known in the European gas market and it will undoubtedly increase the competitiveness of Russian gas.

The chosen route of pipeline envisages the connection of the Yamal-Europe system of gas pipelines with such large Western European trunk pipelines as MEGAL and TENP (Germany), to the Gasuny system ( Holland ) and Transgaz ( Chech Republic ) and others. The connection with gas pipelines Midal and Stegal will enable to increase its load and reliability and to use the possibilities for underground gas storage Reden and other underground gas storage facilities which are planned to be built in order to regulate the irregularities in gas consumption.

In December 9, 1994 9 oil and gas companies, including RAO Gazprom united their efforts for practical implementation by the year 1998 of the project of connection of the gas transportation system of Great Britain with continental Europe which is named Interconnector.

The implementation of project will enable to connect into one system gas transportation and gas distribution pipelines of countries of Continental Europe and Great Britain and it will provide for reliable and flexible gas supply of European industrial and domestic consumers.

The contribution of Russia in gas supply of the countries of Western Europe has been considerable and in the future it has prerequisites for further growth. This fact as well as the tendency for integration of Russia into the European Community is the ground for Russian participation in the Interconnector project the final aim of which is to facilitate and strengthen the energy safety of our common European home.

The activity of the Commission of the European Union is of crucial importance in the formation and development of the European market of natural gas. The project of the gas pipeline system Russia-European Union is defined as one of the priority projects in the main trends of the formation of Trans-European energy system developed by the Commission and submitted to the Parliament and Council of Ministers of the European Union.

We encourage this approach and are of the opinion that political and financial support of this project by the Commission can play a crucial role in its successful implementation.

To sum up it should be noted that RAO Gazprom is open for mutually profitable co-operation with all European countries and will continue its active participation in the solution of the problems of development of the European gas market and in strengthening mutual understanding and trust with all leading companies of Europe.