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Russia's Gazprom in the Domestic and European Markets, 1990s - early 2000s

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INTRODUCTION

Russia has the largest reserves of conventional natural gas in the world that is about a quarter of the total. Although Russia also has significant reserves of oil and is a leading producer, its natural gas reserves are significantly higher those of oil. Natural gas is believed to be an important fuel of the 21st century, due to the extensiveness of the natural gas reserves and its quality as a relatively clean fuel.

In recent years, natural gas significantly strengthens its position as an energy source in the world economy. Thus, between 1975 - 2001 years, the share of natural gas in the global energy mix has increased from 17.7% to 23.7%. This growth took place in a tough competition with other fuels, and, above all, with liquid fuel. According to some estimates, the share of natural gas can reach 30% in primary energy consumption in the world, by the middle of this century. This trend prevails, and the various factors of economic, technological and environmental patterns enhance its effect. It is fairly well known the crucial role that natural gas played in the restructuring of the energy base of industries, including ferrous and nonferrous metallurgy. Historically, occupying the first place in the world proven reserves of natural gas, Russia is also its largest exporter.

Moreover, in the main export market of Russia - in Western and Central Europe - natural gas production is forecast to decline by opening new export opportunities. Despite the mid-term positive outlook for gas, in 2009 the demand for gas declined as a result of the financial and economic crisis. This decline coincided with new flows of gas, including liquefied natural gas (LNG) and unconventional gas in the United States that put pressure on volumes and prices in some markets. The demand prospects in the long term seem even more uncertain with respect to the medium-term, mainly due to the growing role of renewable energy sources.

Since the Soviet era, Russia has been one of the largest producers and exporters of the natural gas. Starting from the 1960s, the domestic gas market expanded, and the main question for Russia was how develop and export the resources to meet domestic and foreign needs for natural gas while also satisfying socio-economic priorities. After the collapse of the Soviet Union, energy exports were the main export products in the foreign exchange markets. These revenues have, to some extent, directed the economy into a single product economic structure as it happened in many energy-exporting countries. Russia struggled with the idea that it should change its focus from energy revenues towards incomes from the modern sectors such as telecommunications and information technology. However, the development of Russian gas reserves can provide economic stability and capital to invest in new sectors. In addition, the energy gives Russia an important role in international affairs. Moreover, Russia may be

encouraged by Europe and possibly by China to develop its resources for satisfying their energy needs. Therefore, the main decision-makers in the government considered that if used effectively, mineral and energy resources could provide the basis for Russia's integration into the world economy and can offer the means to modernize the military and industrial complex of Russia. For this reason, the management of the domestic resource base plays a crucial role in the future of the Russian State.

However, during the 1990s the privatization of the energy sector induced by the introduction of market notions based on the concepts of Western economic model in Russia, led to the government's loss of control over the management of the resource sector and windfall profits flowed mostly to the private sector. The gas sector remained rather centralized because of the strong political lobby to keep it together. Both the rigidity of pipeline transport and the importance for the domestic market had increased its continued centralized institutionalization. The rapid development of export markets during the economic downturn in 1990s and the clean gas properties held promises for future significance. Thus, gas holds promise for Russia to be a tool for economic growth and diversification as it was oil.

Gazprom, as a government-controlled company, has come to embody Russia's awareness of its role as a significant future gas supplier with global aspirations. Gazprom holds a dominant position in Russian gas production, although the role of the independent producers is increasing. In addition, Gazprom owns the Russian united gas transmission system (UGTS), and since 2006 it officially has a monopoly over existing and potential gas exports of Russia. However, Gazprom should possibly share its position with other independent gas producers.

For its exports and foreign exchange earnings, Gazprom is highly dependent on the European markets. The “pipeline” orientation towards Europe is an inheritance of more than half a century of gas developments in Russia, in the CIS and Central Europe and the Western European exchange markets. Given the central role of Gazprom in gas exports, this study takes essentially the view of Gazprom as its perspective, with a focusing on its position in the domestic and European markets during the 1990s and early 2000s.

The politico-strategic implications of Russia's energy policy and decisions are required to have a lasting impact on the energy balance in Europe, in general, and its gas balance, in particular; with all its geo-economic and also geopolitical consequences. A multi-disciplinary investigation into the formation of Gazprom and its activity in 1990s can help to shed some light on the economic and political logic of the strategy, its crucial role for the Russian economy and relationship with Europe. This is a question that deserves further research and academic inquiry. Given the above, this study presents a concentrated effort to achieve the following research objective:

To identify, estimate and extrapolate the Gazprom's strategy considering the Russia's domestic natural gas market, Russia's gas exports and export market behavior, with a focus on the Western European market during the 1990s and early 2000s.

In order to pursue this objective, the following research specifies questions to understand the complexity of the gas energy strategy during the 1990s and early 2000s:

1. What are the different institutional and theoretical aspects and appropriate valuation tools in relation to the natural gas market development?
2. What is the historical and institutional background with respect to European and Russian natural gas market development?
3. What is the role of Gazprom on the domestic natural gas market?
4. What is the European export policy of Russia and Gazprom?
5. What is the role of Gazprom in the Russia-EU energy dialogue?
6. How can it be evaluated and extrapolated the Gazprom's export policy with respect to Russia-EU energy dialogue, based on the case of the Nord Stream pipeline project?

Answers to these questions may provide with further insights into both the political and the economic-strategic importance of Gazprom in the Russian-European cooperation, in the field of natural resources.

The study is organized into nine chapters, directed to answer the different research questions.

Chapter 1 of this study outlines the theoretical underpinnings for the development of natural gas market and aims to explore the first research question. The bedrock for the theoretical basis of this chapter approaches towards the models for natural gas market including the evolutionary model, the dynamic market theory's model and others. Chapter 2 provides a comprehensive overview of the European gas market development. Chapter 3 deals with the general organization of the gas market in Russia and Gazprom as its leading actor. In addition, it is an examination of the legal framework in relation to the Gazprom's monopolistic position on the domestic energy market during the 1990s. The purpose of the Chapters 2 and 3 is to examine the second research question. Chapter 4 provides an overview of the historical and institutional development of the natural gas industry in Russia and the formation of Gazprom as a company. There is also a review of political changes and reforms during the 1990s that had an impact on the gas industry and Gazprom. Chapter 5 is an examination of the Gazprom's role for Russian economy. Chapter 6 deals with the relationship between Gazprom and independent natural gas producers regarding also the legislative regulations of their cooperation. Chapters 4, 5 and 6 answer the third study question. Chapter 7 aims to discuss the fourth one, dealing with the Russian

natural gas export policy and the European strategy of Gazprom. It also analyses various scenarios for development of the export policy of Russia and Gazprom's collaboration with the European companies. Chapter 8 provides an overview of the Russia-EU energy dialogue during the 1990s early 2000s. It examines the case of gas supplies to Europe and pipeline projects and aims to explore the fifth research question. The last one is examined in the Chapter 9 giving the development of the Nord Stream pipeline project as an example of the Russia-Europe cooperation.

The methodology applied in this study consists of a two-fold, multi-disciplinary approach. First, a descriptive method is used to gather all the necessary facts, figures and other relevant information through reviews of literature and statistical information. This method is mainly applied in the research. Secondly, a quantitative model is used to analyze scenarios for Russian export policy towards European natural gas markets. Such two-fold, multi-disciplinary framework is required to examine international relations and (political) economy in order to explain the real-world complex issues in the gas market and the interaction between Gazprom, governments and markets.

The previous explanation implies that the empirical research has two main orientations. An important part is a descriptive institutional nature. The multi-disciplinary nature of the research is highlighted by a combination of the use of different disciplines, in particular market-economic, financial-economic, legal- and politically-oriented.

This study reports on a research of the institutional and strategic decisions of Russia and Gazprom could possibly make in respect of their position in the relevant export markets. In particular, there is a concentration on potential capacity expansions of Gazprom in the light of Russia's desirable gas export strategy during the 1990s and early 2000s, given its socio-economic constraints. These capacity expansions could be seen for Gazprom, and Russia, as a way to secure their position in the changing gas market.

Chapter 1. Main directions in the development of the natural gas market

Currently, natural gas supplies around a quarter of the world's total commercially traded primary energy requirements. In domestic households, industry and power plants a continuous, steady growth of gas consumption has gradually transformed natural gas into an important source of energy. The main drivers in this development are its technical and economic advantages. It is clean, versatile and easily controllable fuel, which does not require any on-site storage. Further increase in gas consumption is expected to emerge, as a consequence of its relatively low carbon contents, compared to coal and oil products. On this basis, gas is generally considered the form of energy that will be a “bridging fuel” to a sustainable energy system.

Unlike other main sources of energy, like oil and coal, gas is not traded on an actual world market. This is because gas is available to its consumers by means of complex production and transport systems, moved from the remote fields to its users. The geographical reach of these pipeline transportation and distribution systems is an essential precondition for supply and demand to develop.

Traditionally, the development and exploitation of these systems have posed a significant challenge, because of the great risks and uncertainties involved. Huge investments have to be committed to facilities that – once constructed – have only one purpose and destination and no alternative. In addition, producers, transporters and consumers are tied up into a relationship of heavy mutual dependency. In response to these characteristics and specific local setting of systems, a variety of contractual relationships and organizational structures has been established to reduce the involved risk and establish the terms of trade for a longer period so the producers', as well as the consumers' investments, would not be jeopardized.

This has resulted in the development of truly regional gas markets, in different parts of the United States (US) and later in continental Europe, the UK, Japan, the Soviet Union and Latin America. Each market has its own structure, its characteristic institutional framework and role for governments and local authorities and eventually its revenues, in terms of the economics of supply and demand.

Over the 1980s, a gradual shift in economic thought began to take shape, examining the regulating role of the state and the need to control markets, in general. It was argued that the state would never be able to coordinate the economy more efficiently than the market. The government could never acquire and process the necessary information to do so while the state failures would undermine the economic efficiency. Moreover, in the process of planning, government ran a serious risk of being captured by interest groups, or by political deadlocks. The arguments for restructuring were reinforced with a request to merge national and regional

markets for goods. The theory of international trade argued that economic welfare would be heightened by allowing production to take place in the most efficient place or country. As countries widely differ in their energy resource endowments, so national (energy) markets should integrate to a certain extent that the process of production and trade of energy would be no longer confined to national territories. To accomplish this, national trade regimes should withdraw existing barriers to trade while the physical infrastructure efficiently transport energy between and within countries, such as pipelines, ports, and railways, should be developed.

Gradually, in the several gas consuming regions, the processes of structural and regulatory change were undertaken. Again their development was influenced by local, economic and (geo) political circumstances. This had an effect on the timing of these processes, the velocity with which they evolved and the structural models chosen to reform the gas supply systems into actual gas markets.

The use of natural gas on a large scale is a relatively recent, 20th century, phenomenon. Much earlier, however, gas was already used in local systems as so-called “town gas” produced in coke works, sometimes associated with steel mills, or in gas manufacturing plants. In part, however, it involved natural gas, supplied from small-scale underground gas reservoirs, supplying nearby villages and cities. In the United States, the first recorded considerable use of natural gas was in 1821, in Fredonia, New York. In Russia, the first use of natural gas was associated with the production of oil in Baku, in 1871¹.

It was not until the 1920s that developments in welding technology facilitated the construction of steel pipes, capable of handling higher pressures. This allowed the development of much larger systems over extended areas, through which actual systems of wells could be connected with consumers attached to local distribution systems, and in which depleted fields could be replaced by newly found deposits. In the United States, the evolution of “long distance” gas took off in 1925. Elsewhere, it would take until the end of the 1950s until these systems would unfold. In Europe, the greatest gas discoveries in the Netherlands, in 1959, marked the start of the development of a natural gas system over the 1960s, stretching out to Germany, Belgium, France, Switzerland and Italy. The United Kingdom followed slightly later, in 1967, following the discovery of significant fields in the North Sea. In the Soviet Union, the large-scale use of gas originated in the 1950s, too².

The developed systems normally involve the following segments: production of gas, pipeline transportation, distribution and trading, and supply. The production segment involves exploration, drilling, production, and accumulation of gas from the wellheads, to move it to the

¹ Correljé A.F., *Markets for Natural Gas*, Encyclopedia of Energy, Boston: Elsevier Academic Press, 2004, pp. 799-808.

² Ibid

transmission pipelines. Gas transmission involves long distance, high-pressure gas pipeline transportation from producers to consumer markets. Trading refers to resale of natural gas in the wholesale and retail markets. Natural gas distribution consists of the operations necessary to deliver natural gas to the end users, including low-pressure pipeline transportation, supply of natural gas, metering, and marketing activities vis-à-vis the several types of customers.

Traditionally, a significant challenge has been the establishment and management of these integrated systems of production, transportation and distribution. The main characteristic is a great involved risk. Huge, specific investments have to be made in facilities that have only one purpose: produce gas and transport it from a field to the consumers attached to the system. If either the consumers decide to turn to alternative fuels, or if the gas supplier stops producing, the system becomes useless and the sunk capital invested - worthless. Thus, the system ties producers and consumers up into a relationship of heavy dependency. Each side has to face the risk that the other side will drop out, for whatever motive, or that prices will go up or down to an inadmissible extent. For producers, the former implies a volume-risk, in the sense that sunk investments in exploration and production become worthless as they will not be able to sell gas; for consumers it may mean that their gas-fired appliances and equipment will fail to perform. The price risk implies that, because of the tight relationship between them, either producers or consumers are able to put pressure on the other side to sell gas at either too high, or too low, prices³.

In a growing market, a key challenge over time is to maximize capacity utilization of the system, as well as revenue, to cover high fixed costs, including an acceptable level of profit. The main instrument to achieve these goals is a supply portfolio that dynamically balances the sales to these several (sub) markets, as a function of the relative prices that these markets will bear and the capacity available in the system. In the energy market, gas has to compete with other fuels. Depending on the sector of use involved fuels, like coal, city gas and fuel and heating oil are substitutes for natural gas.

Main sectors with specific characteristics are domestic households, commercial market (involving also public use in schools, hospitals, etc.), large industry and electricity production sector. In each of these sectors, the use of gas for purposes of space or process heating, hot water supply or as a feedstock, involves particular patterns of demand in respect of the load factor and daily and seasonal swing factors. Gas for domestic and other space heating purposes, particularly, is a subject to an enormous seasonal load variance. The electricity sector is a dynamic market, which relatively easily switches from one source of energy to another. A

³ Mulhern J.H. "Complexity in Long-Term Contracts: An Analysis of Natural Gas Contract Provisions", *Journal of Law, Economics, and Organization*, No.2, 1986, pp. 105-118.

cyclical pattern develops over time. The highly profitable market for domestic households' hot water supply and cooking is normally associated with sales in the space-heating segment, driven by the cold season. It is uncertain, often, to what extent short-term and interruptible sales to industry may be used to fill-up the capacity in the summer.

This cyclical pattern is particularly significant for gas marketing in systems where, normally, a constant, close-to-supply, or wellhead, capacity production of gas is required for geological and technical or economic reasons. It is also crucial for planning of transmission capacity distribution and storage systems, used to transport gas from a wellhead to areas of consumption and to individual consumers. The pattern imposes extremely stringent requirements for coordination of marketing and planning, and investments in production, transport and storage capacity. Depending on particular regional circumstances, these aspects may be more or less relevant, but, in general, they do induce a great degree of risk and, thus, reduce suppliers' and consumers' appetite to invest much.

A crucial spatial element in the evolution of the supply systems over the second part of the 20th century is a phenomenon that, by and large, the distance, over which gas is to be transported from the production location to centers of consumption, is increasing. As a principle, gas exploration, development of reserves and their eventual production take place, as close as possible to the centers of consumption. Transport is expensive, and it reduces the elasticity of gas supply, to meet the daily and seasonal variation in demand. In a represented way, the gas resources development should evolve in a pattern of concentric circles, around the center(s) of consumption.

Certainly, this pattern is not entirely consistent with what it is actually observed. Old fields keep up production because they are huge, and technological development facilitates a “second life”, or for reasons of national resources policy. Nevertheless, most of the ‘Greenfield’ gas production will take place further and further away, calling for longer pipelines and more compressors to move gas through these pipelines. It will also involve other countries. Furthermore, in many places large volumes of gas are produced in joint-production, dissolved in crude oil. The characteristics of the joint-production of gas and oil traditionally yielded large difficulties in coordinating output and their marketing. Often, the commercialization of these volumes of gas has been uneconomic as oil production took place far away from the potential customers. The cost of gas transporting by pipeline was prohibitive, so it was flared. At the beginning of the 2000s, however, the expected shortages in gas in some markets, like the US (before the shale gas production grew rapidly and in 2008, it made a jump of 71% over the

previous years⁴), it seemed that the falling cost of Liquefied Natural Gas (LNG) transport and handling and environmental considerations could change this perspective. Of course, if the oceans are to be crossed, the whole concept of supply through pipelines is to be abandoned, and LNG is the only option. Therewith, geographical patterns of gas supply may experience radical changes over the near future.

In response to these characteristics, a variety of contractual relationships have been established between gas producers, transporters and consumers. In these contracts, the volume and price risks were reduced, by fixing prices and by establishing specific terms of trade for a longer period so that the producers', as well as the consumers' investments, would not be jeopardized. Often it involved a role for public entities, taking ownership and management of these systems. These factors have resulted in the development of truly local gas markets, each with its own market structure, its characteristic institutional framework and role for governments and local authorities and finally its specific outcome, in terms of the economics of supply and demand.

Traditionally, in the US system, strict state and federal regulation had to stabilize a market with predominantly private firms. In Europe, a variety of national arrangements were unified within an international system of trade and supply. This Europe-wide system was highly coordinated, under the aegis of a few governments of gas producing countries and a limited number of gas producing oil companies. In the UK, a single state-owned distribution company, British Petroleum purchased all gas from private and public offshore producers and supplied it to consumers. Japan imported Liquefied Natural Gas (LNG) under long-term contracts, between buyers' consortiums of Japanese gas and power companies and foreign suppliers. In the Soviet Union, the planning bureaucracy stabilized the natural gas market. In Latin America, stabilizing regulatory arrangements were established in the countries, namely, Argentine, Chile, Venezuela, in which gas was developed as a significant source of energy.

Different analysts explain the changes of gas markets institutional structures with the so-called evolutionary model emerged in the late 1980s. A significant contribution to the development of this model was made by the Norwegian researchers like J. Estrada, A. Moe, K.D. Martinsen⁵, the Americans P.W. MacAvoy⁶ and A.Juris⁷. Among Russian specialists involved in this issue, there were A. Konoplianik⁸ and V. Kriukov⁹.

⁴ EIA, Independent Statistics and Analysis, *Shale Gas Production*, http://www.eia.gov/dnav/ng/ng_prod_shalegas_s1_a.htm

⁵ Estrada J., Moe A., Martinsen K. D. *The Development of European Gas Markets: Environmental, Economic and Political Perspectives*, London: F. Nansen Institute, 1995.

⁶ McAvoy P.W. *The Natural Gas Market: Sixty Years of Regulation and Deregulation*, New Haven, Conn.: Yale University Press, 2000.

The evolutionary model identifies four stages in the development of the gas industry's organizational structure: “initiation - growth - development - competitive market” (see Table 1.1). In this model, it is assumed that, with the gas consumption development and infrastructure expansion, the progressive development of the gas industry organization proceeds from less advanced forms as a monopoly to more advanced ones as competitive forms by increasing the multiplicity of suppliers, customers and delivery routes. There is a gradual disintegration of the gas supply chain and reduction of the role of government regulation. This process is accompanied by a transition from long-term contractual relationships in the immature markets to more flexible short-term contracts, and, ultimately, for example, like in the oil industry, binding to the exchange price quotations. In general, this model is largely based on the prerequisite that gas markets should be developed by analogy with the oil ones with a certain lag.

Table 1.1. Four-stage model of the gas market development.

	Initiation	Growth	Development	Competitive market
Demand	Small market	Heavy growth	Slow down	Saturation
Infrastructure	Limited subjects	Start of integration	Well-developed system	Full development – trade centers
Gas markets institutional structure	Few players	Growth of players' number	Many players	A number of players is enormous
	Vertically integrated monopoly	Vertically integrated monopoly (usually state-owned)	Major consumers have a choice of supplier	Disintegration of supply system
	Insignificant state intervention	Overregulation	Third-party access to	Right of choice for all consumers

⁷ Juris A. *The Emergence of Markets in the Natural Gas Industry*, The World Bank Group, Working Paper No. 1895, March 1998, http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/1998/03/01/000009265_3980429111452/Rendered/PDF/multi_page.pdf

⁸ Konoplianik A. “Ot monopolii k konkurentsii” (“From monopoly to competition”), *Neft' i kapital* (Oil and Capital), No. 3, 2002.

⁹ Kriukov V. *Institutsional'naiia struktura neftegazovogo sektora. Problemy i napravleniia transformatsii*. (The institutional structure of the oil and gas sector. Problems and directions of the transformation.), Novosibirsk: Izdatel'stvo IEiOPP SO RAN, 1998.

			infrastructure	
				“Gas-to-gas” competition
Type of contract	Long-term contracts for the exhaustion	Long-term contracts “take-or-pay”	Development of forward contract market	Short-term contracts and spot transactions
Method of pricing policy	Production costs	Oil formula binding	Alternative fuels formula binding	Binding to exchange quotations

Consequently, it is concluded that the transition to competition is preferable and inevitable. However, with all conveniences and clarity, this model does not reflect the real processes taking place.

The reason is that the evolutionary model does not take into account the fundamental features of gas markets, which differentiate them from the oil ones. In the gas sector, the share of transportation costs is extremely high: it reaches 70-80% while the industry is characterized by particularly high capital intensity. In addition, the investment cycle is on average 8-10 years. In this regard, the gas supply is inelastic: with a price increase, producers cannot quickly extend the output; the decision to do this should be taken previously. Also, due to the necessity of such long-term and great investments, the issue of money back guarantees and sales warranty raises. The most important condition for this is stability. According to the new institutional economic theory, the optimal form of organization in such conditions is vertical integration, or its nearest substitute - long-term bilateral contracts.

At the first stage of the gas market development, the infrastructure represents some disconnected pipelines running between a gas field and a city or a large gas consumer. The institutional structure of the market is a local vertically integrated monopoly, providing sales assurance and investment repayment at the expense of long-term franchise agreements. The competition does not exist because of the fragmented network. The state regulation in this period is insignificant.

In the first phase, only local markets developed. Examples: the United States 1880-1930, the UK 1930-1948.

In the absence of government regulation, the rapid gas demand growth inevitably led to monopolies inflating prices: therefore a crisis of high prices rose. It should be noted that the transition from one stage of the gas market development to the other took place all the time in a result of the accumulating contradictions that caused another crisis, and the state had to use

political will to resolve them. The dissemination of Keynesian doctrine of state regulation affected the choice of a new market model, which led to the introduction of strict administrative regulation.

The second stage is a strong government intervention. By 1920-1930s, in the industry, new technologies came into service, which helped to create reliable pipelines. In 1925, it was built the first 200-km pipeline in Louisiana. Since then, the market is expanding rapidly. The institutional structure of the market is either, as at the first stage, a fully vertically integrated company (often a state), or monopoly in transportation and distribution with independent, but tightly controlled production. In this period, the state regulates the sale prices from manufacturers, provides direct administrative regulation of prices and tariffs¹⁰.

Guarantees of investment repayment and sales are provided by the vertical integration or with the long-term contracts such as “take-or-pay” with different formulas of pricing: “cost plus”, binding to the oil or to several alternative fuels. Examples: the United States 1938-1978, Russia 1942-present, Canada until 1985, the United Kingdom until 1986, Japan before 1998.

At this stage, the country markets are developing, and it identifies significant differences in institutional arrangements, which, at the same time, the evolutionary model ignores. The specific environmental conditions largely determine the institutional gas industry structure in a specific country, while the main role is played with:

- Dimensions of fields that define the size and number of firms operating in the area of production: in the U.S., the vast majority of gas fields were small, and in the extractive sector before the process of liberalization there were more than 8,000 companies; in the UK the production was implemented approximately by 40 large firms from a lesser number of relatively small fields.
- Distance of deposits from customers. The distances between fields and major areas of consumption, as well as a degree of diversification of gas supplies from different sources, determine the extent and structure of gas transmission system in each country: in the U.S., the production and consumption of gas are mainly within the same state, thus creating competing pipelines. In the UK, the deposits are located close to the places of consumption in one region (North Sea): so the competition is inefficient, and just one transmission system operator operates. In Russia, the major part of gas is produced at a considerable distance from the places of consumption while the main gas producing region is linked to the

¹⁰ McAvoy P.W. *The Natural Gas Market: Sixty Years of Regulation and Deregulation*, New Haven, Conn.: Yale University Press, 2000, p. 6.

major area of consumption just with three gas transmission systems. Thus, there is no uniform pattern of development for all countries.

The state regulation for a long time (about 40-50 years) provided the necessary stability of the gas industry. Just at this stage, there has been a basic infrastructure development. But possessing a powerful lever of influence on the economy, as a regulated natural gas industry, the state runs to extremes:

- Either hold too low gas prices to stimulate the growth of other sectors of the economy, which over time causes a shortage of gas due to lack of investment (the U.S. in 1970s, massive power cut, limiting the gas use in power plants; Russia - limits on gas¹¹).
- Or, overprice gas for subsequent redistribution of monopoly profits for social needs. This raises a problem of high gas prices and dissatisfaction of consumers, whose products become less competitive (the EU).
- Or the one and the other: low prices for producers, higher ones for consumers (the United Kingdom).

In all cases, market participants have no incentive to improve the efficiency of the gas industry. Taken together, these factors lead to the next critical situation. Historically, it coincided with a change in the government regulation paradigm. In the early 1980s, there was a transition to liberal doctrine, the striking example of which there was the policy of the Reagan's and Thatcher's governments, which provided for a sharp reduction of government regulation in all sectors (not only in the gas industry). All this has led to government decisions on deregulation of the industry.

The third, transitional, stage began, and it is liberalization. At this time, the infrastructure is mature, with its excess capacity. As part of the evolutionary model, it is presence of extensive infrastructure that provides a multiplicity of choice between suppliers and customers. It is considered the objective prerequisite for the transition to a competitive gas market organization. This happens because the basic infrastructure formation is complete and investments have been paid off.

At this stage, there is a fundamental change in the institutional market structure: renunciation of the government regulation of producer prices, privatization and division of the company's gas transportation activities, conducting large-scale deregulation of large consumers, introduction of a third-party access to networks.

¹¹ The excess demand for gas took the form of restrictions and rationing of supplies: limits on gas: as it happened with the controlling of the natural gas prices in the middle of the 70-s, which resulted to a shortage of gas, when industrial gas consumers reduced their consumption and some factories were forced to close. (*Bol'shaia entsiklopediia nefi i gaza* (The Great Encyclopaedia of oil and gas), <http://www.ngpedia.ru/id471466p1.html>).

The development of competition leads to the emergence of spot markets and development of short-term contracts; even so, long-term contracts retained, the timing of which is gradually reduced, and binding to alternative energy sources is replaced by binding to the spot market prices¹². Examples: the United States 1984-1995, the UK 1985-1998, the EC 1998-present, Argentina 1992-1998, Japan 1998-present.

The evolutionary model predicted the coming of the fourth stage: competitive market. It can be conceded with some reservations that its formation occurred in the United States in 1995-2003 (in some states) and in the UK in 1998-2001. Its features include:

- Competition at all levels of supply chain, reduced margins and pricing;
- Market structure: disintegration of supply chain - release of all consumers onto the competitive market - even small consumers have the right to choose a supplier: in addition to physical delivery markets of natural gas, financial markets are developing (futures, options), which serve as a guideline for pricing on all other contracts.
- Government regulation is minimized; it is assumed that the effect of “invisible hand” ensures the efficiency of markets.

Initially, the results of introducing competition seemed to be very successful: there was a significant decrease in the gas prices (in the U.S. between 1988 and 1995 the wholesale prices have fallen by 26%; in the UK, in 1990-1999, the average gas prices for industry - by 45% and for residential customers – by 20%), increased volumes of gas consumption. The liberalization has attracted a large number of buyers and sellers; it has led to the development of new services. However, the recent events have cast doubts on the success of deregulation. In 2000-2003, on these markets there was a shortage of gas, accompanied by more than twofold increase of average prices. At the same time, the price volatility sharply increased, and the possibility of price manipulation in the stock exchange has led to speculation in the transport capacity of the system, which is especially apparent in the California crisis¹³. The industrial consumers suffered worst from high and unstable natural gas prices; in the U.S. in 2002, the demand from this sector fell by 23% compared with 1997. Many works were transferred to other countries. The gas crisis struck the power industry, as long as the most part of new power plants, in these countries, was built with the account of cheap gas.

How can this crisis be explained, with its contradictions to the evolutionary model predictions? The analysis of the deregulation effects shows that these events have a logical

¹² Estrada J., Moe A., Martinsen K.D. *The Development of European Gas Markets: Environmental, Economic and Political Perspectives*, London: F. Nansen Institute, 1995, pp.178-199.

¹³ The **California electricity crisis**, also known as the Western U.S. Energy Crisis of 2000 and 2001 was a situation in which California had a shortage of electricity caused by market manipulations and illegal shutdowns of pipelines by Texas energy consortiums.

nature. The assumption of evolutionary model that, at the third stage, the full development of infrastructure has reached, and there is no need for large-scale investments; it does not take into account several factors:

1. Excess production and transportation capacity created during the period of state regulation and ensured the decline in prices during liberalization of 2000 was over;
2. There is a significant increase in demand (including the demand caused by the low gas cost), and it becomes necessary to supply the ever-increasing volumes of gas; at the same time, there is a transition of these countries with developed gas markets into the phase of declining production. In this connection, there is a need to increase imports from distant sources and establish an appropriate infrastructure.
3. The energy demand in the developing countries is growing. The major part of the increasing demand for energy results in rapid growth of Asian economies, especially in China and India. The projected energy demand in developing Asian countries will grow an average rate of 3.7% per year, far higher than in any other region.
4. In addition, there is deterioration of the existing infrastructure established during the period of regulation. Thus, in the U.S., “The Report of a New Energy Policy”, as one of the main problems, referred to the need for modernization and expansion of energy infrastructure, including upgrading and construction of new pipeline systems and gas processing plants, which are largely obsolete.

Thus, the industry has a need for large investments into gas production and transportation, but it turned out that the competitive market is not able to provide it.

The deregulation of the natural gas industry increases a competition among producers and leads to lower prices and margins, which discourages investment. As a result, in the U.S. by 1999, the investments have fallen by 30%, and the drilling of new wells has decreased by 40%. All of the major projects have been postponed, due to lack of funding. The reduced investments have led to a lack of production and transportation facilities. Simultaneously, the low prices have caused an increase in demand: there was a shortage of gas, and prices rose. But because of the inelasticity of supply, producers were not able to respond to this price rising with a production increase. The U.S. Department of Energy concluded that the competitive gas markets would

continue to be prone to cyclical fluctuation of supply and strong and unpredictable price surges¹⁴.

The main problem is in the fact that not only the spot markets become unpredictable, but also the prices for long-term contracts related to spot market prices. With lack of guarantees, existing in long-term contracts such as “take-or-pay”, this creates significant price and volume risks. (The principal issue is that, during liberalization, there is a changeable short-term market that becomes a determining factor in setting the gas price, despite the fact that its volume is low. Consequently, prices under long-term contracts become unpredictable because, in this case, they are adjusted in relation to the spot market prices. This increases the capital formation and reduces the incentive for long-term investments into the industry development that causes uncertainty in the production and export volumes. Thus, the short-term and spot markets without any long-term perspective create a significant price and volume risks for “take-or-pay” contracts needed the long-term investments and stability.) As a result, the cost of attracting capital into industry increases and incentives for long-term investment destroy since gas producers do not have a guarantee on investments' return, so important for the gas industry. This transfers the investments from long-term projects' direction (such as construction of LNG terminals, gas pipeline from Alaska) on short-term projects (re-entry wells and small fields). According to producers, natural gas production remains low for as long as the market does not find a way to accumulate huge financial resources for investment and guarantee their return. The given analysis concentrates on facts that were crucial and did not depend on the recent transformations in the gas market development taken place after the crisis and the growth of shale gas production.

As a result, the liberalization does not lead, ultimately, either to a stable gas production or development of transmission infrastructure, or long-term customers' win from price declines. In addition, the analysis of recent trends in competitive markets reveals new patterns:

- In competitive markets in the U.S., the UK, the EU countries, there are active processes of vertical integration and concentration (for the accumulation of investments, access to end markets with the highest added value, reduced risk through diversification). The integration takes place actively between electricity and gas industries. First of all, the large size allows companies to accumulate investments for the implementation of major gas projects with a huge capital-intensive. The integration provides both increased investments by consolidating business, and enhancement to attract loan capital because the financial institutions more willing (and with a lower interest rate) accredit large well known companies with a diversified stable business in

¹⁴ McAvoy P.W. *The Natural Gas Market: Sixty Years of Regulation and Deregulation*, New Haven, Conn.: Yale University Press, 2000, pp.56-60.

different regions. It can be confirmed by the wave of mega-mergers: BP Amoco and its merger with Arco, Exxon/Mobil, Total/Fina/Elf - they all, at the same time managed to diversify their natural gas investment opportunities, and created a large capital base for major gas projects.

The second incentive for integration is that the vertical integration reduces the risk by diversifying markets and activities; it increases the overall financial stability of the company.

The third significant benefit of integration is reducing transport costs and increase margins, which is vital for companies in liberalized markets; they are usually characterized by a profit reduction at all levels of the gas supply chain. A good example is a situation on the gas market in the U.S. in the most competitive segment, trading. Even here, with the complication of the gas market structure, marketing companies have been forced to increase their size to satisfy the diverse requirements of their clients in a sharply reduced margin with a minimum cost. If, in 1994, the 10 largest marketing companies in the United States provided 42% of daily consumption of gas sale, then in 1996, after the merger of several leading players, only four companies did the same volume of sales. To increase the margin, the most effective way is vertical integration between upstream and downstream, which, on the one hand, prevents the double “marginalization” (i.e. creation of two successive increments), making the company more competitive and, at the same time, by entering the markets with the highest value-added profits, a vertically-integrated company's return is higher than the sum of disintegrated companies' profits.

A special area to maximize the added value is the integration between electricity and gas industries. This phenomenon is known as convergence. Most strongly at the present time, this process is among European energy companies. A striking example was the merger of VEBA AG and VIAG AG in Germany, which resulted in the newly formed company E.ON that became the third largest electricity company in Europe, owning a number of natural gas enterprises. Soon, a new energy group E.ON carried out a big deal: the purchase of a German gas giant, Ruhrgas. In Belgium, there is a process of merging of electricity and gas units Tractabel, Elestrabel and Distrigaz. In the UK, RWE acquired in 2002, one of the largest gas traders - company Innogy.

As another result of liberalization, it should be noted an active process of globalization of energy companies. Liberalization gives companies an opportunity to expand their activities beyond national borders. Experts expect that, in the future in the European markets, just 2-3 very large companies engaged in natural gas business will dominate. For example, Ruhrgas took a leading position in gas markets in the Baltic States; it has a stake in the gas industry in Sweden and Finland. A large German energy company RWE has won the privatization tender and acquired 97% of Czech Transgas AS.

Thus, free competition between many companies quickly leads to the fact that unregulated vertically-integrated companies come to the place of former national monopolies.

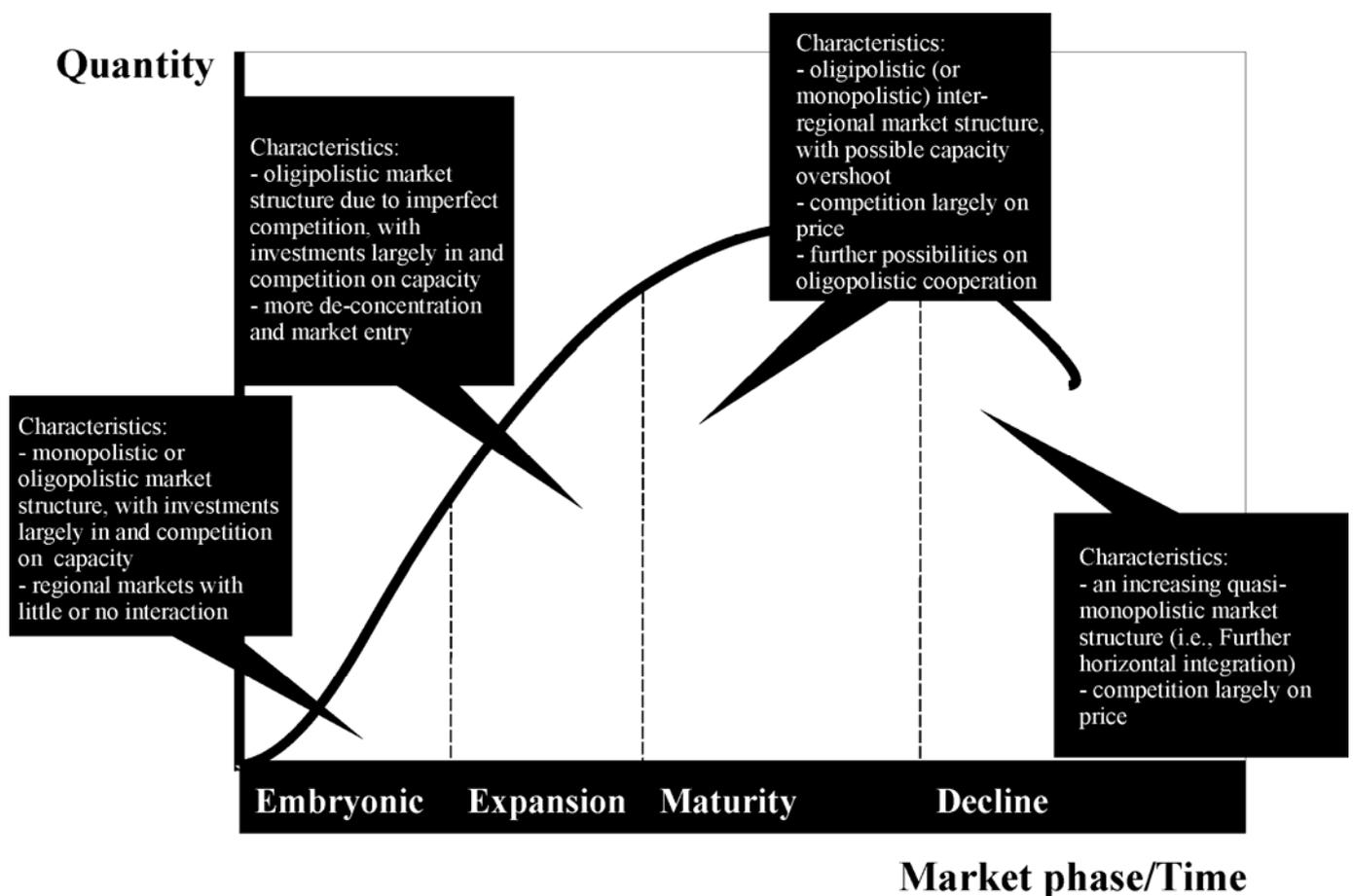
- There is increased demand for long-term contracts. In the context of high unstable natural gas prices more and more consumers are willing to guarantee an uninterrupted supply at a predictable cost. In the U.S., the share of short-term contracts is gradually reduced from 80% in the late 80s, up to 25-30% in the late 90s. Suppliers also want to ensure a possibility of transportation by means of long-term contracts. Thus, in the UK until recently, the auctions on volume of entry capacity on the short-term basis were a main market mechanism for admission of gas suppliers to the national transportation system. In January 2003, the system of short-term auctions was reformed: for the first time it was introduced the long-term auctions with a proposal to sell access rights to the transmission system for certain gas volumes up to 15 years.
- In the condition of a gas shortage, and threats to energy security, the state once again reinforces its role. The U.S. Congress debated on granting tax privileges and state guarantees for loans for the construction of a pipeline project in Alaska, and the UK government is actively seeking ways to ensure the supply of the country after 2005, not trusting the resolution of this issue to market forces.

Thus, the processes taking place in recent years in the natural gas markets give a reason to believe that the concept of the evolutionary model is not confirmed. Rather, it can be found the optimal combination of government regulation that provides expansion of the industry's key assets, and competition that ensures the effectiveness of their use. And this is happening against the background of a gradual market expansion from local to national, then transcontinental, and finally to intercontinental: in LNG trade.

There is no single model that can capture the totality of all significant market changes. The so-called dynamic market theory, developed by De Jong H.W.¹⁵ (1989, originally 1972) argues that all these market parameters are constantly changing in scope and value in a long-term market cycle. This cycle, pertaining to any given product, is divided into four key stages of development: it begins with an embryonic phase of development, followed by expansion and maturity and finally ends in a decline.

¹⁵ Jong de, H.W. *Dynamic Market Theory*, Leiden: Stenfert Kroese, 1989, pp. 76-126.

The essence of the dynamic market theory is based on the relationship between the product life cycle and the paradigm of structure-behavior-result: Firms behave as a function of the market structure, and to a certain extent, markets are influenced by individual firm behavior. In other words, the paradigm emphasizes that the conditions of supply and demand in a particular industry define its market structure. This can pertain to various players in the gas market: from consumers to producers, from public to private entities. Each phase of market development has different characteristics and problems, which compel players of the market to adapt their strategies to newly arising market situations. According to De Jong, firms with market power can influence market conditions, the latter also is a function of the different market cycle phases. Specifically, in markets with strong oligopolistic tendencies such as the gas market, a dynamic market approach is well-suited to analyze how players in such market setting would interact since they are few. Especially when it comes to the natural gas market, the approach is indeed helpful in qualitatively analyzing a market, strongly characterized by product homogeneity, binding capacity barriers, high barriers to entry, low price flexibility as well as necessary economies of scale.



Source: based on De Jong, 1989.

Ultimately, static models do not capture industry and market dynamics, though they help clarify strategic behavior and the incentives firms may have in cooperating or not. Strategic behavior, in general, takes place in dynamic contexts, not static ones. Indeed, structural developments in the markets are above all dynamic in nature (De Jong 1989). A dynamic market theory is a helpful qualitative tool to explain the dynamics of the market as it shifts from one phase to another and as the players of the market move from one form of behavior to another. Market conditions change, shift from one phase of evolution into another as circumstances change, e.g., in terms of costs, technological know-how, economies of scale, entry into the market by new players or market structure, etc.

As such, for the oil market was shown to be dynamic, with differing levels of concentration amongst market players having a major impact on the leeway for cooperation, prices, market liquidity and other market parameters. For companies, operating in industries such as those involving natural resources, managing the value chain in a dynamic process is central to their survival and continuity. The interregional or global gas markets, as it has been a case for the oil market since its very beginning, are characterized by dynamic circumstances, though revolving around different players and more rigid structures than the case for the oil market is. The gas market is, by comparison, in different phases of evolution than the oil market is, and so the circumstances are different, as well. The difference between the oil and gas markets lies also in the inherent differences between oil as a liquid and natural gas as a gaseous substance and their transportation.

The different sequential phases in the dynamic theory need not abruptly end as a new one begins. Instead, they gradually roll over into one another as the market situation and characteristics shift gradually over time. Some factors are more constant than others, but they can change and show different characteristics throughout the evolution of the market. The concept of market development relates to the sequence of different market situations, which may arise in the growth cycle. The forces associated with market developments affect market situations to the effect of metamorphosing each from one into another. The underlying logic of importance to this discussion (i.e., with respect to natural gas as a commodity) is a notion of dynamic market in which consuming regions become increasingly interlinked as growth and demand rise, in addition to fluidity (as opposed to rigidity) in a dynamically oligopolistic market (both at regional and global levels). The endurance of each phase of market development or evolution is not specific in this regard, but in the gas industry each phase can last as long as several decades.

Looking at the interregional gas market for a dynamic market vantage point, one can witness it experiencing a maelstrom of evolutionary cycles, in which producer and consumer countries are struggling to formulate their strategies, in order to heighten their positions in an

ever-changing market. LNG has made possible the globalization of the gas market by interlinking different demand centers and opening up new venues for commercial opportunities while pipelines continue to play a regional role, depending on consuming and supplying regions in question. The interregional gas market is not only in transition but also in the expansion with emerging trends such as increasing – though still rather limited – liquidity of LNG trade and entry of new regional and intraregional market players, both public and private. Specifically for the European market, the sub-regional markets are also in different phases in terms of the growth cycle. The Northwestern Europe is more or less a mature market, although the northwest European import market is in expansion due to declining local production. Most of the countries in the other main sub-regional market within Europe, South-Southeast Europe, are located in an expansion phase.

An essential feature in De Jong's dynamic market approach is an idea that firms are influenced by the market structure, compelling them to use various strategies. Throughout the process, companies change, adapt to the new equilibrium and are again affected by new imbalances. The strategies, in turn, have an effect on their environment; finally changing it and the cycle begins again. The degree of competition (on the scale of monopoly to perfect competition) is directly relevant to the “gravity” of this effect. In the specific case of national gas firms, the convergence and divergence of the strategies of national gas firms and gas strategies at a government-level may lead to tension between management of national gas firms and decision-markets at a governmental level.

It is inevitably a certain point, that, with the changing nature and direction of gas flows, the producers need to take into account the impact of all these different supply allocation decisions on different (sub) regional and interregional market structures. With the uncertainties in such transition, from one phase to the other, firms must adapt to new circumstances. Conversely, strategies of gas firms with strong market power in terms of price and volume can affect market structures. The way falls into two basic categories in which firm behavior can be coordinated: either companies behave as rivals and compete, or they cooperate, trying to exercise some form of joint control over market processes in the value chain. Following this distinction, De Jong identifies three coordination principles, which firms tend to follow throughout the evolution of the market.

- a) Control: mergers and acquisitions. Companies can choose to obtain assets further down along the value chain via vertical integration. Gazprom's acquisitions in downstream Europe in the form of storage, stakes or complete ownership of utilities are prime examples. This form of trying to attain control of assets can materialize independently of whether companies actually compete or cooperate. Other forms of M&As, with the

exception of vertical integration, are horizontal and diagonal integration. In the oil and gas sectors, gas producers and sellers moving into oil production and sales and power generation is one example of diagonal integration. These M&As can help deal with smaller potential competitors in order to neutralize their possible effect on market share. Particularly, players with a comparatively small production capacity but also low supply costs (for example, due to their proximity to the market) and thus low economies of scale, they are potential M&A targets. On the other hand, smaller players may want the security of stable cash flows, resulting in cooperation with a dominant player in the market.

- b) Firms behave as rivals: direct competition. Firms can choose for a competitive model or strategy, in which, for example as they integrate vertically, they set up direct subsidiaries to penetrate the market further and sell directly to end consumers and thus invest in 'new' projects or Greenfields by establishing a whole new subsidiary organization. The examples of Gazprom and Sonatrach are cases in point.
- c) Joint ventures or collusion. Firms can be driven to cooperate by looking for ways to collude and avoid competition. This can result in the cartels or consortia, which does not include setting up some separate organization while syndicates, joint ventures and/or common subsidiaries or investments do include separate organizations, which can be jointly owned by the firms choosing to cooperate. Shared investments are those made together with rivals whose market-level impact may be very large in terms of production capacity and may have any level of supply costs and associated economies of scale. Particularly, those with large reserves are likely to have economies of scale benefits upstream, but might also need to incur significant transportation costs to bring gas into the market. Since shared investments are made together with other players, they are not wholly owned, i.e., they are jointly owned, and thus to the extent possible, they serve purposes other than deterrence.

According to De Jong, cartels are agreements between producers, which enable them to affect the market to their advantage. Both private and government-owned firms can participate in forming a cartel. Profit sharing, application of sales quota, exchange of statistical information and policy on battling non-cartel members can be agreed upon. Limiting competition, monopolistic pricing, supply restrictions are all goals, which are attributable to the cartels.

The energy sector can be of strategic importance to an energy or gas-exporting country, central to its national interests. These include the development of the economy, having a fund for future generations, etc. In general, governments of gas exporting country delegate to their national gas firms the task of maximizing the value of a country's gas reserves for their export

markets. This is also the case for Russia. Given this task, new investments should only be made if they add value. In other words, they should have a return in excess of the opportunity cost of capital, or should create or sustain economic rents. It can be argued that Gazprom's investment strategy is potentially driven by a long-term view, in which politico-strategic and economically strategic investments play a significant role. In this context, it has to weigh export growth strategies and market structure changes with respect to their competitors against conservation policies and domestic requirements.

In order to capture the full value creation in an uncertain and competitive environment, it is sufficient the traditional corporate finance valuation approach of investments, which assumes that all operating decisions are set in advance. Valuation tools from corporate finance theory can be integrated with the ideas and principles of strategic management theory and industrial organization to value investments under market uncertainty and competition. Such integrated approach can be adequate in assessing long-run competitive advantage and strategic adaptability. The issue of value creation as far as strategic planning is concerned that it pertains to both internal and external factors (e.g., position vis-à-vis competitors). From corporate finance theory, one can make a distinction between the value from assets in place and from growth opportunities. Generally, assets in place can be valued through a regular (static) discounted cash flow approach, whereas growth opportunities need to be valued via dynamic approach: a real-option approach. Therefore, a combination of strategic planning and corporate finance incorporates not only the static value of measurable cash flows, but also managerial flexibility value and strategic value components of investments.

According to the resource-based theory, which is part of strategic management theory, companies should invest in resources or capabilities in pursuing market opportunities in a dynamic environment. That means that these investments should focus on obtaining a distinctive advantage. Resources are firm-specific assets, which are basic inputs in the production process. According to Barney J.B.¹⁶ and Grant R.M.¹⁷, the resources should have three key features so as to add value:

1. Resources should be distinctive, scarce and relevant to establish a competitive advantage.
2. Resources should be sustainable and difficult to imitate in order to maintain a competitive advantage.

¹⁶ Barney J.B. "Strategic Factor Markets: Expectations, Luck and Business Strategy", *Management Science*, Vol. 32, No. 10, October 1986, pp. 1231-1241.

¹⁷ Grant R.M. *Contemporary Strategy Analysis: concepts, techniques, applications*, 2nd edition, Cambridge, Mass: Blackwell, 1995.

3. The firm should be able to appropriate added value or economic rents, which result from the resources.

Just as in many industries, gas companies must develop strategies in anticipation of market developments that are dynamic. Because of the complexity of the interregional gas market, primarily, it can be focused on Cournot-type¹⁸ quantity competition, where suppliers are assumed to compete in quantity or gas volume rather than in gas prices. In order to deliver new volumes to market and thereby potentially capture additional market share, suppliers must build additional capacities in gas transport. For a firm with growth opportunities, infrastructure sets the stage and creates the strategic context in which the firm can thrive and preserve its continuity. This is certainly true in the gas market.

Because few investment opportunities exist in a vacuum, they must be considered in their strategic and competitive context. In order to ascertain the overall value of gas transport infrastructure, account must be taken of both uncertainty of demand and possible competition through strategic-economic approach. Developed by Smith A.¹⁹ and Trigeorgis L.²⁰, the real-option game model is a two-stage entry deterrence model that captures, from an incumbent's perspective, both the aspect of potential entry and the prevailing uncertainty in the gas market demand. This real-option game, as the name suggests, also discounts the overall value of gas transport infrastructure to the beginning of the game as a function of market revenues at the end of the second phase. The three theoretical building blocks to this real-option game approach include:

- The direct cash flow of value through the discounted cash flow (DCF) approach;
- The managerial flexibility value through the real-option approach; and
- The strategic value obtained through the use of game theoretical concepts (combined with real-option analysis).

The standard DCF approach is a static approach to investment projects because it assumes that all operating decisions are set in advance and because it defines an investment decision as a “now or never” choice. In an uncertain, changing situation, however, an option to invest in the future could also be valuable, as an alternative to direct cash inflows. In situations involving newly available market information the ability to anticipate creates additional value. The value of flexibility in projects is covered in corporate finance by the real-option approach.

¹⁸ **Cournot competition** is an economic model used to describe an industry structure in which companies compete on the amount of output they will produce, which they decide on independently of each other and at the same time. It is named after Antoine Augustin Cournot (1801–1877) who was inspired by observing competition in a spring water duopoly.

¹⁹ Smith A., *The Wealth of Nations*, New York: Prometheus books, 1991.

²⁰ Trigeorgis L., “The Nature of Option, Interactions and the Valuation of Investments with Multiple Real Options”, *Journal of Financial and Quantitative Analysis*, Vol. 28 No.1, 1993, pp. 1-20.

Such real-option offers the management board of the firm; managerial flexibility in the process of decision-making concerning investment projects, also after the initial investment has been made.

The next step in finding a framework that takes into account both uncertainty in dynamic markets and rival behavior is adding a game-theoretic component. Doing so will shift this theoretical discussion from one involving merely market uncertainty (in terms of demand or price) to one also involving decisions made by an external player, a potential competitor or market entrant. This effectively adds one more layer of uncertainty, namely the risk of a negative impact on profits due to a loss in market share to competitors. In an oligopolistic market (as the gas market is), a player could influence, for example, market outcomes through strategic investments vis-à-vis the competition. These investments cannot be analyzed using a static NPV approach²¹ and/or the common value from competitive investment action.

Having said that, the international gas market is currently undergoing a serious transformation: one that pertains to economies of scale, trading patterns, pricing, concentration of production, and vertical integration of major firms in the business, etc. The dynamic market theory argues that all these elements are constantly shifting and valuing in a long-term market cycle. This cycle, pertaining to any given product, is divided into four main stages of development: it begins with an embryonic phase of development, followed by expansion and maturity and finally ends in a decline. Each phase of market development has different characteristics and bottlenecks, which compel players of the market to adapt their strategies to the newly arising market situation. De Jong recognizes the possibility that companies with market power can affect market conditions as do the different market development phases. Depending on the phase of market development these firms operate in, they are likely to interact in different ways, by competing or colluding. Collusion and cooperation may include a range of forms of cooperation, from tacit collusion to explicit agreements. Attempting to control value chain through M&A is another possibility from an organizational perspective.

Strategies of firms acting in the market have to anticipate on these dynamic market developments. In most gas exporting countries, governments delegate to their national gas firms the task of maximizing the value of the country's gas reserves for their export markets. Capturing new market opportunities (e.g., to generate a profit stream in excess of the opportunity cost of capital) are based on the exploitation of scarce firm-specific, internal resources and dynamic capabilities. In order to capture full long-run value creation in an uncertain and competitive

²¹ **NPV** is a central tool in discounted cash flow (DCF) analysis, and is a standard method for using the time value of money to appraise long-term projects.

environment, the static valuation approach of investments, which assumes that all operating decisions are set in advance, is insufficient.

According to Smith and Trigeorgis, valuation tools from corporate finance theory can be integrated with the ideas and principles of strategic management theory and industrial organization to value investments under market uncertainty and competition. The combination of traditional corporate finance and strategic planning can be adequate in assessing long-run competitive advantage and strategic adaptability. Such a combination incorporates not only the static value of expected cash flows (via the discounted cash flow method), but also flexibility (option) value (via the real-option approach) and strategic value components (via concepts of the game theory). For vertical integrated firms, it is exclusive ownership of the capacity of infrastructure, which ensures that the infrastructure investments may be seen as an option today in order to expand commodity trade in the future. Such strategic investments may alter the conditions of future competition in a manner that is favorable to them (e.g., entry deterrence).

Thus, in the development of gas markets, the process of natural evolution is imposed by revolutionary transformations undertaken by the governments in accordance with the prevailing ideology, which determines the degree of state intervention in the economy. Thus, there are two trends of development: natural evolution of markets as the integration of gas transmission systems from local to national, and then cross-country and induced state changes associated with the change in the degree of state regulation of the industry. In the first three stages of the gas market development, there was a strengthened state regulation under the influence of Keynesian theory, based on the necessity of state intervention in the economy.

Examined in this chapter the general models of the gas market development, the following chapters 2 and 3 will proceed with the application of this models to the European and Russian gas markets and analysis of their development.

Chapter 2. Development of the European gas market

Energy plays a crucial role in the economy of importing and producing countries. The development of the gas market has always been closely linked with the general issues of policy and energy development in general. The increasing markets internationalization has led to the emergence of integral interconnection between the goals of economic policy and sequential chances of commercial activity development. This is evidenced, for example, by the deal of “gas-for-pipe”. In 1970, the German gas company, Ruhrgas signed a contract for the supply of Russian natural gas for 20 years. At the same time, the Soviet Union signed an agreement with another German company, Mannesmann, to supply large diameter steel pipes to Russia. With a consortium of banks, the agreement was signed on transaction lending. The famous agreement “gas-for-pipe” was truly a pioneering step in the era of confrontation between East and West. Its conclusion contributed to the new “Ostpolitik” of the German government. In 1973, the Russian gas for the first time crossed the Czech-German border near Waidhaus.

The gas industry in the EU was largely formed after the discovery of the largest deposit of Groningen (The Netherlands) in the late 1960s, and then it received a strong impetus with gas deliveries from the Soviet Union (mid-1970s), Algeria, and later - Norway. Some countries, like Germany and Italy, developed their own gas resources, but in all European countries (with the exception of Denmark and Norway), the import of gas plays an important role in gas supply²².

The dependence on import, especially with the division of Europe during the Cold War, as well as the complexity of such capital-intensive industries has led to a high state role in shaping of the industry's structure. At the national level, the monopolistic structures have been created to provide gas import and development of gas transportation systems (Gaz de France in France, SNAM in Italy, Distrigas in Belgium, etc.).

The share of gas in the European energy balance has achieved 22%, and gas consumption is at the level of 400 Bcm per year²³.

According to the BP statistical review²⁴, in the Western, Central and Eastern Europe (excluding Russia and CIS countries), it is consumed at the average 500 Bcm of natural gas per year (in 1996, it was 416.80 Bcm, in 2000 – 455.70 Bcm, and in 2005 - 601 Bcm). From Russia to these countries, the export of gas was increased from 109 Bcm in 1990 to 130 Bcm in 2000²⁵ (i.e. about a quarter of consuming gas). Most European countries are in short supply of gas

²² Stern J., “Traditionalists Versus The New Economy: Completing Agendas For European Gas Markets to 2020”, *RIIA Briefing Paper*, No.26, 2001, p. 2.

²³ *Energy Balances of OECD Countries*. Paris: International Energy Agency, 2005/2006, p. 98.

²⁴ BP, *Statistical Review of World Energy*, June 2007, p. 27.

²⁵ *Gazprom v tsifrah 1996-2000*, (Gazprom and statistics 1996 – 2000), Moscow: Gazprom, 2001, p.30.

because their own gas production is very low: in 1996, it was extracted 164.60 Bcm and in 2005 205.10 Bcm (except of Norway)²⁶. Norway, the Netherlands, Britain and Russia have redundant reserves of gas (it was estimated the total production of these countries 758.80 Bcm in 1996 and 833.40 Bcm in 2005)²⁷. The main exporters of gas to Europe are Norway, Algeria and Russia. In addition, liquefied natural gas (LNG) is exported to Europe²⁸.

Table 2.1. Major Consumers of Russian gas in Europe.

Country	Bcm
Germany	32.6
Austria	4.9
Italy	20.2
Finland	4.64
France	11.15
Hungary	8.03
Slovakia	7.52
Poland	7.51
Czech Republic	7.46
Bulgaria	3.32
Romania	2.87
Yugoslavia	1.65
Greece	1.52
Croatia	1.17

Source: Gazprom v tsifrakh (Gazprom and statistics) 1996 – 2000, Moscow: Gazprom, 2001, pp.30-31.

During the gas market development in Europe, in the 1990-s, a national gas company-monopolist arose almost in every country. Typically, these companies own main gas pipelines and storages in their countries. They buy gas from companies-exporters at the borders of their countries for the first wholesale price (for the valuation it can be taken at the level of \$100 per 1,000 cubic meters of gas²⁹). In addition, they often lead gas production in the country or buy

²⁶ Ibid, p.24.

²⁷ Ibid, p.24.

²⁸ BP, *Statistical Review of World Energy*, June 2007, p. 27.

²⁹ The figures are given to show how the gas price changes, they are not applied to any particular company. Komlev S., “Rynok gaza: Logika tseny” (Gas market: logic of the price), *Vedomosti*, 20.11.2004, p. 7.

gas from domestic producers of gas. Then they transport it using their gas mains and sell it for the second wholesale price (for the assessment, it can be taken at the level of \$150-200 per 1,000 cm) to large gas consumers (primarily energy companies and petrochemical companies), and gas distribution organizations for following sale to medium and small gas retail consumers. The difference between the first and second wholesale prices exceeds the cost of pumping and storage of the gas volumes.

From the standpoint of use, natural gas is an extremely convenient form of fuel for heat and power engineering. There is no need to build storage tanks, the problems of ash disposal do not raise; the level of harmful emissions is low (all of this it is extremely important for private householders and small municipal boiler houses). At the beginning of the 2000s, in the European energy mix, as noted above, natural gas was 22-24% and this percentage is growing³⁰.

In the late 1990s, many countries, the major consumers of natural gas reform their gas industry. The general trend was the liberalization of the gas market, aimed at the emergence (intensification) of competition for different types of activities (from the gas production to its sale to final consumers). In many countries, the monopolistic vertically integrated companies under government's pressure were divided legally into separate companies. There was a separation of potentially competitive activities from activities within the scope of natural monopolies.

The state regulation has long provided the necessary stability for the gas industry and contributed to the active development of infrastructure. However, the regulatory body has difficulties to determine the optimal level of gas prices, which, on the one hand, would provide the natural gas monopoly with sufficient repayments to maintain and expand production and development of gas pipeline network, on the other hand, it would force the company to improve efficiency and reduce costs. In practice, a monopolistic company usually has no incentive to improve the efficiency of industry. In addition, with such a powerful lever of influence on the economy, as a regulated natural gas industry, a state eventually fell into one of the extremes:

- Either it kept too low gas prices to encourage growth in other sectors of the economy. In this situation, the gas company must pay the social and political commitments for their monopoly advantages and close ties with the state. After a certain time, this practice leads to a shortage of gas due to a lack of investment as happened, for example, in the U.S. in 1970s. When the mass cutoff started, including public facilities, and it was introduced a legislative restriction on the use of gas power plants.

³⁰ Stern J., *Security of European natural gas supplies the impact of import dependence and liberalization*, http://www.riia.org/pdf/research/sdp/Sec_of_Euro_Gas_Jul02.pdf.

- Or overestimated the gas price for subsequent redistribution of monopoly profits for social needs. This approach leads to higher prices for gas and displeases customers, whose products become less competitive, what happened, for example, in the EU.

It is essential to emphasize that until the 1980s in the U.S., Canada, the UK, France, Belgium, the Netherlands, Japan and other countries, the direct government control was carried out not only in the gas industry, but also in many other sectors of the economy: all sectors of public use (electricity, gas, transport, communications, water, telecommunications, etc.), the prices were also regulated for a range of agricultural products, and in France it was done for a large range of industrial products.

The transition to the liberal model has led to simultaneous failure of regulation in most of these industries, which causes doubt on the hypothesis that the transition to free competition is a result of the natural gas industry development. If this were the case, the transition to competition in the gas industry would not coincide with the deregulation of other industries and would not have occurred almost simultaneously in many countries with different gas industries. In this situation, there is an induced change in the institutional structure of the gas industry. There was a revolutionary change of strict government regulation with competition, intended for ensuring the efficient use of previously created fixed asset sector³¹.

At the early 2000s, the basic principles and conditions for the deregulation of gas markets in these countries were as follows:

- Renunciation of the state regulation of producer prices and prices in wholesale gas markets, while a state continues to regulate retail prices for domestic consumers and prices of transport services;
- Privatization of state holdings and separation of natural monopolies and potentially competitive activities of gas transmission companies (i.e., separation of transporter and supplier), while maintaining strict regulation of the natural monopoly segment, which includes tariff regulation;
- Providing major consumers with a choice of supplier;
- Promotion of new participants' entry into the potentially competitive segments of the market;
- The introduction of non-discriminatory third party access to gas transmission systems for consumers, producers, traders and suppliers,

³¹ Palacio L. de, *Energy Market Liberalization: Pitfalls and Benefits*. World Economic Forum, New York, 3 February, 2002, p. 2.

leading to a system in which the participants of the gas market have the opportunity to buy gas directly from producers. Third party access to the main gas pipeline networks suggests that the owner of transport assets is only a transport company that provides a set of appropriate transport services that are not associated with subsequent gas sales. The access for transportation assets is necessary; they are overland and underwater pipelines, distribution networks, receiving liquefied natural gas terminals, storages, etc. Accordingly, the parties, which are obliged to grant access, may be gas transmission companies, distribution companies, and, more rarely, gas producers. The main problem with regard to access a third party is a lack of incentive to allow access on a nondiscriminatory basis if the owner can simultaneously act as a gas supplier³².

With deregulation, natural gas flows remain virtually unchanged, but the financial transactions involved a larger number of participants.

As part of a widespread, “four-stage model” of evolution and development of gas markets, which became the ideological base of liberalization, the presence of a ramified configuration of gas transportation network, advanced information and control systems at all stages of the gas chain is an objective prerequisite for the transition to a competitive gas market structure.

The increased competition fundamentally changed the forms of interaction between business units: structure and duration of gas contracts changed. Liberalization has led to the development of short-term classical contracts. The policy of open access and separation of gas transmission companies' functions, in terms of gas oversupply, led to the appearance of short-term gas supply at dumping prices. This has stimulated rapid development of short-term gas trading, leading to further reduce prices at the market with oversupply.

At this stage of the gas market development (early 2000s), three types of contracts coexist: short-term (delivery within one calendar month), medium (delivery within 1 to 12 months) and traditional long-term (delivery for more than one year).

The advantage of short-term gas supply contracts, at this stage, is that they allow consumers to ensure the unforeseen needs, sufficient flexibility to achieve physical balance between supply and demand in the short term, and, most importantly, allow achieving lower costs due to the constant search for the cheapest source of gas supply.

³² Arensten M.J., Künneke R.W., *Natural reforms in European gas*, Amsterdam: Elsevier, 2003, pp.125-137.

Long-term contracts, while reducing the risks of supply and price risks, do not provide sufficient flexibility in the coordination of demand and supply of gas in rapidly changing conditions on the gas market. With the liberalization of the gas industry in Britain, which was accompanied by lower prices, these contracts have brought a number of significant losses to companies that concluded them.

Before entering into contracts for supply bilateral deals were used in which buyers and sellers agreed on the conditions of supply through decentralized bilateral negotiations. Thus, in the UK short-term gas trading began in 1989-1990 as two-direction market between producers and suppliers. With increasing trade volumes, the effectiveness of bilateral relations began to fall as the conduct of trade imposes high transaction costs.

This led to the emergence of a new class of participants: traders who carry out deals on purchase/sale of natural gas on behalf of other market participants. Buyers and sellers of natural gas free from the need to bargain, they aggregate supply and demand, and balance them with the corresponding large-scale contracts while diversifying price and supply risk of individual contracts. These risks often arise when market participants with different characteristics of supply and demand try to sign a contract on a bilateral basis. As marketing companies can combine their contracts in a portfolio, they find easier a compromise in such situations.

In addition to the natural gas marketing and price risk management, it was spread such activities, associated with the minimization of transaction costs of the natural gas sale, as transportation marketing, service delivery, storage service, etc.

With increasing trade volumes, market participants are beginning to feel the need for concentration of trading in one or more shopping centers in order to reduce transaction costs. Then trading develops into the spot market, where there are manufacturers, suppliers, buying and selling natural gas to balance their portfolios gas distribution companies, large consumers and producers of electricity, buying gas for its own use. On the spot market, contracts for delivery conclude at a fixed price for a fixed period (from one day to one year as immediate delivery, and forward).

The spot market for natural gas has the following functions:

- Aggregate demand and supply to determine demand and supply curves of the system. It also contributes to increased competition among market participants.
- Simplifies the fixing of natural gas market price due to the transparency of pricing.
- Reflect increasingly short-term marginal costs of the development of competition in the spot market price for gas, i.e. the real economic value

of gas at a particular time and at a particular point of the market area that favors economic efficiency of the industry.

- Allows optimizing the portfolio of gas contracts and risk management: market participants are able to buy gas from different sources and then ship it in different directions, which allow combining supply routes in a few centers, diversifying risks of delivery. In addition, the spot market provides participants with an opportunity to reduce price risk.
- Acts as a “last hope” for the volume risks: if one of the parties could not buy or sell a volume of gas specified by the long-term contract, the other side knows that it can temporarily shift to the spot market³³.

The UK's model shows that the spot market for gas is usually formed in areas with a high concentration of buyers and sellers, for example, in the gas network centers so-called “hubs” located close to major cities or areas of gas production. It should be noted that spot markets are not created by special decision of the governing bodies, but arose spontaneously.

In the UK, these centers were originally onshore terminals Fergus and Bacton at the entrance to the main gas transmission system, where producers deliver their gas from fields in the North Sea. Their trade volume was initially small: at Bacton terminal, for example, 35-40 transactions were bargained per month.

In 1997, in the UK, a standardized short-term contract was introduced that replaced a variety of contracts, increasing the efficiency of spot markets. The introduction of the so-called market “in system” has created a one-stop trade point for these types. In the late 1990s, more than 90% of contracts were concluded for the gas supply. In 2003, the number of spot transactions amounted to about 40 trades per day.

In the continental Europe between 1998 and 2003, hubs were also developing: for example, in Zeebrugge, Belgium, in Baumgarten, Austria and in Bund on the border with Germany, the Netherlands. The volume of spot trading in these centers was small, and the prices were still higher than that for the supply of long-term contracts because of a lack of free gas: it was mostly related to long-term contracts.

Sustainable gas supply is an essential element of the many European countries' economy and; therefore it is a key factor in regional geopolitics. Issues of gas supply are given particular attention at all possible political levels. The Energy Charter Treaty³⁴ (came into force in 1998)

³³ Estrada J., Moe A., Martinsen K.D. *The Development of European Gas Markets: Environmental, Economic and Political Perspectives*, London: F. Nansen Institute, 1995, pp.178-199.

³⁴ Energy Charter Secretariat, *Energy Charter Treaty and related documents. A legal framework for international energy cooperation*, 1991, <http://www.ena.lt/pdfai/Treaty.pdf>.

and the Gas Directive³⁵ (1998) are demonstrations and results of this special interest, establishing a multilateral framework for cross-border co-operation.

The key regulations of the Gas Directive are:

1. Cancellation of exclusive rights and non-discrimination of market participants.
2. Third Party Access (TPA) to the objects of gas transportation and gas supply to the so-called “acceptable” consumers and the gradual opening of the market. The criteria of “acceptability” are defined on the basis of a minimum amount of annual gas consumption, and they should decline gradually. Access should be provided based on the criteria of objectivity, transparency and non-discrimination.
3. Publication of tariffs or main commercial conditions for TPA.
4. Division of activities, services, and accounts for activities, transparency of companies' operations and reporting.
5. Introduction of effective dispute resolution mechanisms and establishment of regulatory authorities (regulators).
6. The principle of “subsidiarity” presents general rules on organization of activities in the gas sector; it defines only basic measures for the creation of new market structures, but the detailed elaboration of the Directive's regulations is left to the participating country's choice.
7. The principle of “reciprocity”, under which each member state may apply the regulation of the market openness to the other country insofar, the other country makes it.
8. Conditions of renunciation of the Directive's regulations, including the TPA, and special conditions for emerging markets.

The Directive requires division of activities, services and accounts, that is sharing administrative arrangements various services (such as auctions for open access to pipeline systems and storage facilities, free purchase/sell rights to power systems/supply facilities, reservation of unused capacity for contracts creating a secondary market of available facilities, etc.) and financial and accounting activities of enterprises in the gas industry.

In order to avoid discrimination, cross-subsidies and financing, and other distortions of competition processes, integrated companies in the gas sector have to prepare separate reports on activities in the fields of transport, distribution, purchasing and storage, as well as where it is necessary and possible, consolidated reports on activities not related to the gas business, so as if these activities were carried out by individual companies. All internal reports should include a

³⁵ Directive 98/30/EC of the European Parliament and of the Council of 22 June, *Official Journal* L204, 21/07/1998 P.0001 - 0012

balance sheet and a report about profits and losses for each activity. When it is considered access to the system, the same for gas transport and distribution (Article 16³⁶), and access is based on a single tariff for trunk pipelines and gas distribution, reports on these activities can be combined (Art. 13³⁷). Thus, the publication of separated reports is not required, but for their check, competent authorities allowed, in particular, related to resolving disputes.

Enterprises, and above all, integrated ones, get as owners/operators of gas supply system the commercially significant information in the provision of TPA to the system or when negotiating such access. They are not allowed to misuse this information, in particular, to breach the confidentiality of commercially necessary information. In the integrated companies, it should be provided a condition of restricted information received by some units from other departments that could use this information for competitive advantage.

In point of possible disputes on the Directive's application and mechanisms for their resolution, it is provided as follows:

- The EU Member states should ensure such conditions that the parties can friendly carry on negotiations and do not abuse their positions.
- There must be effective mechanisms to avoid the abuse of dominant position by any party during the negotiations.
- The EU Member states must designate an independent body to resolve disputes that arise in the negotiation and/or refusal of access.
- The Dispute Settlement Body should submit its conclusions without delay and, if possible, within 12 weeks.
- It reserves the right of appeal to the courts of general jurisdiction and commercial arbitration.

On 10 August 2000, each EU Member State should ensure compliance with the minimum requirements of the Gas Directive of 20% at the opening of the national gas market. It had to be brought the legislation in compliance with the Directive's regulations, including as a minimum the determination:

³⁶ Member States opting for a procedure of regulated access shall take the necessary measures to give natural gas undertakings and eligible customers either inside or outside the territory covered by the interconnected system a right of access to the system, on the basis of published tariffs and/or other terms and obligations for use of that system. This right of access for eligible customers may be given by enabling them to enter into supply contracts with competing natural gas undertakings other than the owner and/or operator of the system or a related undertaking. (Directive 98/30/EC of the European Parliament and of the Council of 22 June 1998 concerning common rules for the internal market in natural gas. *Official Journal L 204, 21/07/1998 p. 0001 – 0012*).

³⁷ Integrated natural gas undertakings shall, in their internal accounting, keep separate accounts for their natural gas transmission, distribution and storage activities, and, where appropriate, consolidated accounts for non-gas activities, as they would be required to do if the activities in question were carried out by separate undertakings, with a view to avoiding discrimination, cross-subsidisation and distortion of competition. These internal accounts shall include a balance sheet and a profit and loss account for each activity.

Where Article 16 applies and access to the system is on the basis of a single charge for both transmission and distribution, the accounts for transmission and distribution activities may be combined.

- What authority will regulate the rules of national gas market functioning?
- What will be the mode of third-party access to national systems of gas supply: controlled, negotiated or hybrid?
- What will be the degree of domestic gas market opening in the initial stage, what is the minimum extent of the opening and growth rates of this market liberalization at each stage?

It should be noted that the existing contracts, agreements and arrangements such as “take-or-pay” may be grounds for denial of access to the system/facility supply.

In terms of modes and mechanisms for access to gas supply systems and facilities, it is considered a regulated third party access and negotiated option of access, as well as a hybrid mode of access. The EU countries have adopted different solutions of the mode of access, including Germany that stopped at the negotiating access. The experience has shown that this method is in general, difficult to implement the principle of the TPA and the development of competition.

The EU created the basic decision-making mechanisms for the implementation of the Directive:

- Follow-up Group was set up – a group to finalize and implement the Gas Directive's regulations;
- Bilateral and multilateral meetings of the EU Member States are held;
- There are more international contacts at various levels, both in the EU and outside;
- European Gas Regulatory Forum was established;
- In 1995 Gas Executive Summit was formed;
- Council of European Energy Regulators (CEER) was created;
- In 1999-2001, implementation of a series of required studies was commenced;
- Issues of relationships and collaborative supply systems are considered as key points to create a single market for gas. It is supposed to carry out researches on this issue, for which a special working group was created in the EU gas industry - Eurogas.

On March 2002, the Barcelona summit of the EU noted that the implementation of the Directive on the practical level met with considerable obstacles and supreme efforts are needed to develop a single EU gas market. For these purposes, it is provided:

- Preparation of new decisions to market development before the end of 2002, and adoption in the spring of 2003 the corresponding measures (so-called “second Gas Directive”).
- Full opening of gas markets to competition (except for the population's gas supply) by January 2004.
- Legal department of transportation and distribution of production and supply of gas
- Provision of TPA on transparent and published tariffs under the supervision of the regulator.
- By the end of 2002 a decision on the taxation of energy.

Comparing the changes in the EU gas sector with the situation in the gas industry in the United States and Great Britain, it should be noted the following:

In the period of late 1990s and early 2000s, the EU paid more attention to the problem of constructing a single gas market, rather than separate national markets. This problem actually had no precedent, and it was difficult both technologically and institutionally. In addition, the construction of a pan-European market under new rules meant a competitive environment formation to which many of the traditional industry players did not feel ready. Hence, there was a desire to delay the re-organization, first of all to win time required for the formation of alliances, mergers, acquisitions, etc.

For the first time, the liberalization was implemented in a region, critically dependent on imported gas supplies, and at the same time without any serious consultation with external gas suppliers.

The EU has not yet created the conditions for such crucial elements of a fully liberalized market, as standard contracts, availability of natural gas trading centers (“hubs”), exchange infrastructure.

To understand the goals and objectives of the Directive, it is essential to examine the context of antitrust and general market legislation of the EU.

The main legislation, dealing with the competition and the formation of common markets issues, is: the Treaty establishing the European Community in 1957 (Treaty of Rome), including Art.8 pt.1 (the development of domestic market³⁸), Art.30-36 (elimination of quantitative restrictions³⁹), Art.37 (prevention of the state-owned enterprises monopoly⁴⁰), Art.52-66 (right

³⁸ Art.8 pt.1 “The common market shall be progressively established during a transitional period of twelve years.” *The Treaty of Rome*. 25 March, 1957.

³⁹ Art.36. “The provisions of Articles 30 to 34 shall not preclude prohibitions or restrictions on imports, exports or goods in transit justified on grounds of public morality, public policy or public security; the protection of health and life of humans, animals or plants; the protection of national treasures possessing artistic historic or archaeological

of establishment⁴¹ and freedom to provide services⁴²), Art.85-86 (competition issues⁴³), Art.90 (rules for granting of competitive exclusion⁴⁴), the Maastricht Treaty on European Union in 1992, first of all Art.129 (Trans-European energy networks), as well as specific regulations of the Treaty of Amsterdam in 1997 and the Treaty of Nice 2001.

Energy resources are subject of the Treaty of Rome trade regulations in 1957. The main provision is free movement of goods in common domestic market. “Quantitative restrictions on imports (exports) and all measures having equivalent effect shall, without prejudice to the following provisions, be prohibited between Member States.” (Art.30, 34). The measures having equivalent effect shall be determined as follows: all trading rules adopted in the legislation of the Member States which may directly or indirectly, immediately or potentially hinder intra-Community trade should be considered as measures having equivalent effect to quantitative restrictions. This formulation was tested in the European Court of Justice in accordance with the rule of reasonableness. This rule says that all regulations are enforced on the basis of mutual recognition. In addition, if any goods or services are up to the quality of one country involved in the trade, they will be or shall conform to such requirements in the other. At the same time, there are grounds for the exclusion provided for Art.36, primarily for public safety.

The judicial decisions of the European Commission's cases against Greece, Italy, the Netherlands, France, Spain and others, which were adopted in 1980, provided that the national monopolies on exports and imports hindered the movement of goods, in this case, gas, and

value; or the protection of industrial and commercial property. Such prohibitions or restrictions shall not, however, constitute a means of arbitrary discrimination or a disguised restriction on trade between Member States.”

⁴⁰ Art.37 pt.1 “Member States shall progressively adjust any State monopolies of a commercial character so as to ensure that when the transitional period has ended no discrimination regarding the conditions under which goods are procured and marketed exists between nationals of Member States.”

⁴¹ Art.52. “Within the framework of the provisions set out below, restrictions on the freedom of establishment of nationals of a Member State in the territory of another Member State shall be abolished by progressive stages in the course of the transitional period. Such progressive abolition shall also apply to restrictions on the setting up of agencies, branches or subsidiaries by nationals of any Member State established in the territory of any Member State.”

⁴² Art.59. “Within the framework of the provisions set out below, restrictions on freedom to provide services within the Community shall be progressively abolished during the transitional period in respect of nationals of Member States who are established in a State of the Community other than that of the person for whom the services are intended.

The Council may, acting unanimously on a proposal from the Commission, extend the provisions of this Chapter to nationals of a third country who provide services and who are established within the Community.”

⁴³ Art.85. “The following shall be prohibited as incompatible with the common market: all agreements between undertakings, decision by associations of undertakings and concerted practices which may affect trade between Member States and which have as their object or effect the prevention, restriction or distortion of competition within the common market...”

⁴⁴ Art.90, pt.2. “Undertakings entrusted with the operation of services of general economic interest or having the character of a revenue-producing monopoly shall be subject to the rules contained in this Treaty, in particular to the rules on competition, in so far as the application of such rules does not obstruct the performance, in law or in fact, of the particular tasks assigned to them. The development of trade must not be affected to such an extent as would be contrary to the interests of the Community.”

directly influenced the work of operators in other countries of the EU and relevant foreign trade monopolies should be abolished. The recent decisions have been executed.

Art.37 provides “Member States shall progressively adjust any State monopolies of a commercial character so as to ensure that when the transitional period has ended no discrimination regarding the conditions under which goods are procured and marketed exists between nationals of Member States.”

This prevents the use of its monopolistic position in order of misrepresentation terms of trade. The European Commission can issue legally non-binding recommendations, determining what types of discrimination can be considered on the basis of Art.37, Pt.6: “With effect from the first stage the Commission shall make recommendations as to the manner in which and the timetable according to which the adjustment provided for in this Article shall be carried out.”

On the basis of Art.52-66, it establishes the right to form institutions and ensured freedom of services within the Member States. In particular, Art.52 determines that restrictions on freedom of institutions established by representatives of a Member State on the territory of another Member State are eliminated; the same applies to the provision of services (Art.60). The limitations are associated with policies and public safety.

The ensuring competition is based on compliance with Art.85 and Art.86. They also, according to Art.90, apply to public enterprises or companies that the Member States have given special or exclusive rights. Art.85 Pt.1 prohibits “as incompatible with the objectives of the common market: all agreements between undertakings, decision by associations of undertakings and concerted practices which may affect trade between Member States and which have as their object or effect the prevention, restriction or distortion of competition within the common market”. The issue of violation of competition in each case is decided by the court.

Art.86 provides “Any abuse by one or more undertakings of a dominant position within the common market or in a substantial part of it shall be prohibited as incompatible with the common market in so far as it may affect trade between Member States.”. Some companies providing energy supply services may try to avoid the action of Art.85 and 86 asking for an exception from the provisions of Art.90. This article provides general exceptions to the rules of competition “in so far as the application of such rules does not obstruct the performance, in law or, in fact, of the particular tasks assigned to them”. But at the same time, the development of trade in the application of such measures should not be affected enough to contradict the interests of the Community.

The Association Agreements allow non-Member States to integrate with the EU through the process without a full membership. In accordance with Art.210 of the EC Treaty, it has a “corporate privilege” to enter into such agreements (based on the procedures of Art.238). There

are following types of agreements: the Agreement on Partnership and Cooperation (signed by the countries of Central and Eastern Europe and the CIS), the European association agreements (with the Czech Republic, Poland and Hungary) and the European Economic Agreement (EFTA countries). The formers offer regulations for trading on the MFN basis. The European agreements provide for preferential trade between the EU and a State that is a party to the agreement by means of free trade of goods. The European economic agreements provide, in addition, integration of the EU legislation into the legal system of other countries. Thus, there has been a convergence of the EU legislation of these countries, including in the energy sector.

The mandate for the Common Market's creation, agreed in 1957, has been repeatedly reaffirmed and developed by Member States. Since the mid-1980s, an accelerated formation of the single market has been made. The legislative formation of main parameters was completed in the early 1990s, when qualitatively new conditions were created for removing non-tariff barriers to trade in goods and services, investments and free movement of persons, although to varying degrees in different fields.

The peculiarity of energy primarily appears in the fact that the EU Member States continue to ensure that key questions remained in their purview, and resisted attempts by the European institutions to extend their competence. The contradictions in this respect have been from the beginning of the integration processes in the Western Europe. Indeed, two of three fundamental contracts (an agreement on the European Coal and Steel Community expired on July 2002 and Euratom) are devoted to energy. However, in the Treaty establishing the European Economic Community, the Member States have decided not to lay the foundations for a common energy policy.

The attempts to include a section on energy in the Maastricht and Amsterdam Treaties have been unsuccessful. In the Amsterdam Treaty, Energy is only mentioned in the Preamble. Moreover, there are deviations. For example, according to the Maastricht Treaty, decisions at Community level on measures to develop oil reserves (based on the Treaty of Rome) must be adopted unanimous, not a qualified majority as it was beforehand.

On this occasion, President of the European Commission, Romano Prodi, addressing the European Parliament on 3 October, 2000, said that one cannot, on the one hand, condemn the lack of effective and united European actions, and, on the other, be satisfied by the weakness of the tools at the Community's disposal for implementation of such actions⁴⁵. This statement reflects the fact that the practical work on coordination of energy policy, and, in the late 1990s

⁴⁵ Address given by Romano Prodi (Strasbourg, 3 October 2000), <http://europa.eu.int/rapid/pressReleasesAction.do?reference=SPEECH/00/352&format=HTML&aged=1&language=EN&guiLanguage=fr>.

and early 2000s, on the creation of a common internal energy market of the European Union while it is moving forward, it does not always proceed consistently and in all types of energy.

For example, until recently, the EU oil market has not attracted attention from the European institutions. It was believed that this market was quite competitive, and it was functioning without problems for the security of energy supply. During 2001, the oil prices increase has led the European Commission to formulate the issue on improving the system of oil reserves and oil infrastructure⁴⁶.

However, the main efforts are aimed at creating a single internal market in electricity and natural gas. For all the differences (technical, economic, geopolitical), the processes of electricity and gas sector restructuring are interrelated and synchronized. These reforms, directed at enhancing the security of the EU energy supply, are carried out in two main areas: markets opening to competition and merger of national markets into a single EU internal market. As the Commission Vice-President Loyola de Palacio responsible for transport and energy highlighted on her official visit to Portugal in October 2002, that they were in the process of creating a single European market, rather than fifteen liberalized markets. The final stage of the EU internal gas market formation is characterized by unification of markets opening to competition through the creation of missing links in the network of energy systems.

The formation of a competitive common natural gas market of the European Union can be divided into three stages: formation of the natural gas transport networks, definition of the common rules for the internal gas market, and creation of the common energy market and its opening.

The first phase ended with the adoption in May 1991 by the Council's Directive 91/296/EC⁴⁷ on transit of natural gas pipeline networks.

The directive sought to:

- Develop an energy strategy on reliable and uninterrupted transit and gas supplies.
- Develop a network of gas transmission, involving in it of new regions as supply (Iran, North Africa) as consumption (Turkey, Greece and Albania).
- Diversification of sources to increase energy independence and energy security.
- Harmonization of the gas transit regime through the European countries.

⁴⁶ EC, *European Energy and Transport: Scenarios on High Oil and Gas Prices*, Luxembourg: Office for Official Publications of the European Communities, 2006, p. 14.

⁴⁷ Council Directive 91/296/EEC of 31 May 1991 on the transit of natural gas through grids// *Official Journal* L 147, 12/06/1991 p. 0037 – 0040.

- Introduction of a non-discriminatory competition for energy transit to increase producers' profitability and lower gas prices for consumers, including those due to transportation costs.
- Facilitate settlement of disputes.

The second phase, during which a number of documents in the gas field were adopted (and “allied” to the power industry), was notable due to the Directive of the European Parliament and the Council 98/30/EC on 22 June 1998, concerning common rules for the internal market in natural gas.

The beginning of the third stage can be dated to March 2000, when in Lisbon, the European Council called for the accelerated opening of national energy markets and the creation of a common energy market. On 13 March 2001, the European Commission adopted a series of measures aimed at the full opening of electricity and gas markets by 2005. The Commission's main proposals are contained in two documents: the Commission's Report the European Parliament and Council on the completion of the internal energy market formation and the Proposal for a Directive of the European Parliament and Council on amending the Directives 96/92/EC⁴⁸ and 98/30/EC⁴⁹ concerning common rules for functioning of internal markets in electricity and natural gas. These measures have been proposed to the European Council held on 23 and 24 March 2001 in Stockholm. They include, among other things, accelerated completion of internal energy market, conditions of fair and effective competition, more complete account of environmental protection and energy security. These proposals are examined and discussed by the Community legislative bodies: the Council of Ministers and the European Parliament.

The Directive of the European Parliament and Council 98/30/EC, concerning common rules for internal natural gas market (Gas Directive), was adopted on 22 June, 1998 and entered into force on 10 August, 1998. In accordance with the Directive, it was given two years for Member States on adoption of national laws, regulations and administrative provisions necessary for its implementation. In practice, four countries have missed the deadline (August 2000). Luxembourg and Portugal have completed the introduction of standards required by the Directive into national law until early 2001. Germany has done it incompletely, but France has not complied with the Directive's requirements at all. In connection with these violations of the Community law, the Commission was forced to start procedures against Germany and France.

The Gas Directive set sufficiently flexible targets for gas market opening to competition and organization of the market. In most countries, the implementation of minimum requirements

⁴⁸ Directive 96/92/EC of the European Parliament and of the Council of 19 December 1996 concerning common rules for the internal market in electricity// *Official Journal* L 027 , 30/01/1997 p. 0020 – 0029.

⁴⁹ Directive 98/30/EC of the European Parliament and of the Council of 22 June 1998 concerning common rules for the internal market in natural gas// *Official Journal* L 204 , 21/07/1998 p. 0001 – 0012.

for the market opening is carried out ahead of schedule. The two countries have formally fully liberalized their gas markets (the UK and Germany). Finland formally opened 90% of its market. Austria fully opened its market for natural gas in 2002, Spain and Italy did it in 2003 (now the markets are open, respectively, by 78% and 65%), the Netherlands - in 2004 (51%), Sweden - in 2007 (47%), Belgium - in 2010 (59%). Denmark and France have no plans to open fully their markets. They stated that they liberalize them in 2008, respectively 43% and 33% (as a minimum). The ultimate goal (without specifying the date) for Ireland is to open the gas market by 81%, Luxembourg - 75%, while Greece and Portugal (temporarily granted the opportunity to meet the Directive's requirements due to the fact that their gas markets in their infancy) - 33%. According to the latest official estimates, currently 79% of gas demand in the EU is formally open to competition⁵⁰.

The experience in implementation of the Directives 98/30/EC and 91/296/EEC, as well as the Directive on electricity, led to the need for the European Commission to propose changes to the existing system of rules for the organization and functioning of the EU gas sector. In March 2001, the Commission presented a proposal to amend the Directive on Electricity (96/92/EC) and the Directive on Gas (98/30/EC).

Reaffirming the principles of subsidiarity and proportionality, in its project the Commission attempts to extend the competence of the Community on energy issues, which some EU member states persistently resist. In particular, the Commission argues that the measures proposed by the new directive, are minimal and do not go beyond what is necessary to achieve the stated goal: to create a fully functioning competitive internal market for gas (and electricity).

In the same direction, the argumentation is founded in other areas. Thus, the Commission concluded that, at this stage, the main obstacles to the creation of the EU internal gas market are linked to access to network systems and differences in the levels of gas market opening in the Member States. In order to overcome these obstacles, above all, it must be ensured the greater independence of transport and distribution network operators, the same mode of access to gas systems, the greater independence of national regulators, as well as facilitation of access to storage facilities and expansion of the circle of subjects entitled to access to gas systems. Put forward in this regard in December 2001 by the Commission initiatives in the area of energy infrastructure, the political objective is explicitly recognized the increased interest in these issues at all levels, especially given the fact that the insufficient infrastructure in energy market can no longer be regarded as a national or bilateral issue.

⁵⁰ Haase N., *European Gas Market Liberalization: Are Regulatory Regimes Moving towards Convergence?* Oxford: Institute for Energy Studies, 2008, p.47.

In the specific proposals, the European Commission followed two approaches. The proposals of “quantitative” nature involve a gradual granting all purchasers of natural gas the right to choose their suppliers to ensure that they receive the benefits of market opening to compete and would be in equal starting conditions. It is proposed to set a deadline of the market opening for non-domestic consumers: January 1, 2004. The market should be fully opened not later than January 2005.

The “qualitative” approach is aimed at improving structural characteristics of the gas market and ensuring of equal access to the market. Among its main areas there is separation of the gas companies in the field of transport (transmission) and distribution. It is proposed that the transport (transfer) was carried out by subsidiaries, legally and functionally separated from other activities related to management of transport (transfer) networks. A similar approach is proposed for operators of gas (and electricity) distribution networks.

Another set of “qualitative” nature issues includes a third-party access (TPA) to networks. Given the importance of non-discriminatory access to networks and non-discriminatory tariff-setting to ensure competition, the Commission proposes to impose published and regulated tariffs. The Member States should establish independent regulatory bodies, authorized to establish and/or approve tariffs and conditions for access to gas and electricity transport (transmission) and distribution networks. It is also proposed that applications for access should be treated quickly, usually within two weeks.

The vast majority of gas supplies to the EU countries is based on long-term contracts (30 years) such as “take-or-pay”.

Table 2.2 Summary statistics from 1990s to 2000s⁵¹.

	Europe
Observations	132
Contract duration (years)	
Mean	19.01
Max.	39
Min.	2
Standard Deviation	8.22
Yearly contracted volume (Bcm)	
Mean	2.83

⁵¹ Neumann A., Hirschhausen von Ch., *Long-Term Contracts for Natural Gas – an Empirical Analysis*, Spain, Barcelona: 9th ISNIE Conference, 2005, p.10.

Max.	16.00
Min.	0.15
Standard Deviation	2.82

Until recently, the gas supply is unequivocally regarded as long-term business in which risks are shared between producers and buyers. Because of long-term planning, related, particularly, with a considerable duration of field development and growth of transmission infrastructure, the major part of the expected increase in demand for gas is contracted in advance and covered by existing contracts such as “take or pay”. Therefore, in the most EU Member States, the existing “take-or-pay” contracts will meet the growing demand for gas back in the next 5-10 years.

In consideration of the important role of long-term “take-or-pay” contracts, the Directive 98/30/EC recognizes the EU Member States' right to monitor the implementation of such contracts in order to follow the operational situation with gas supplies (Preamble).

“(24) Long-term contracts will continue to be an important part of the gas supply of Member States and should be maintained as an option for gas supply undertakings in so far as they do not undermine the objectives of this Directive and are compatible with the Treaty, including competition rules. It is therefore necessary to take them into account in the planning of supply and transportation capacity of gas undertakings⁵²”.

The transition from markets of national monopolies to internal common market has radically changed the situation for participants in the gas business, threatening the market share of traditional suppliers, working under the terms of “take-or-pay” contracts. (For example, Gazprom had to revise its contracts with the European companies on the gas supply⁵³) Of course, the pace of the market opening is reduced by its inertia, restrictions such as obligations under existing contracts, including demand side (e.g., compensation contract, which a prospective qualified buyer had previously concluded). In addition, the positions of traditional major gas suppliers are supported by solid marketing means, and limited amounts of “new” gas⁵⁴.

Under the optimistic scenario, the dynamic nature of the EU gas market (rapid growth in demand, the emergence of new markets and new gas companies), a new energy policy and

⁵² Directive 98/30/EC of the European Parliament and of the Council of 22 June 1998 concerning common rules for the internal market in natural gas, *Official Journal* L 204 , 21/07/1998 p. 0001 – 0012.

⁵³ *Godovoi otchet OAO Gazprom za 2003 god.* (Annual report of Gazprom for 2003), 2004, pp.78-80.

⁵⁴ Stern J. *Traditionalists versus the New Economy: Completing Agendas for European Gas Markets to 2020*, RIIA Briefing Paper, No. 26, 2001, p. 4.

environmental protection, the connection of gas networks and the completion of the internal competitive gas market, all these parameters can lead to a growth in gas demand, which would be compensated for the “old” suppliers to reduce their market share.

However, it is possible that the downward pressure of competing on the gas price, the appearance of new dynamic companies, new forms of gas trading and risk management will make the “old” company to stand closer. These traditional providers related with the long-term “take-or-pay” contracts terms may find themselves in a situation where they will be forced to sell gas at prices higher than that of new competitors.

In a liberalized gas market, the suppliers, who execute the contract such as “take-or-pay”, have four main lines of defense:

- **The first line:** despite the fact that these contracts are never drawn up with the expectation of market liberalization, it is possible to maximize flexibility of tools incorporated in such contracts. As a rule, “take-or-pay” contracts provide an opportunity to vary the volume of supplies in order to insure against the uncertainty of market development, seasonal and weather fluctuations in demand.

- **The second line** attempts to solve the pricing problem by the least restrictive of competition means. For example, they may seek alternative gas markets in other geographic areas of the EU internal market.

- **The third line:** in the process of adaptation of traditional suppliers to the new conditions, it is possible a revision of existing “take-or-pay” contracts. It means more flexible price terms, shorter term of contract, flexible approach to the volume of delivering gas (up to the possibility of new negotiations) and, in general, bringing the “take-or-pay” contract terms in line with the regulations of the Directive, especially with the rules of competition.

- **The fourth line:** if all of the above measures have failed, the providers might use features of “transition regime”, provided by the Directive 98/30/EC, which contains detailed rules and procedures in this regard.

The Directive 98/30/EC prescribes gas companies conclude or renew the long-term “take-or-pay” contracts with caution so as not to impede the opening of the gas market.

The project of the European Commission to amend the Directive 98/30/EC had no new proposals in regard to the long-term “take-or-pay” contracts. At the same time, it should be noted that the Commission has stopped the unconditional criticism of the long-term gas supply contracts. In this respect, it was indicative the recognition of L. de Palacio that the security of gas supplies was provided primarily through long-term contracts between producers and suppliers. She is convinced that such contracts must and will continue to remain an important part of the gas market after its opening. However, these long-term contracts had to become more flexible

and compatible with the rules of competition, allowing, for example, reselling gas to another country. In addition to the long-term contracts, the emerging flexible short-term gas contracts and spot markets were also important for better risk management⁵⁵.

These ideas are developed in the report of the Commission to the Council and European Parliament on European energy infrastructure. It emphasizes, in particular, that despite the importance of long-term contracts, it is necessary to ensure that gas sale corresponds to the Gas Directive and the norms of competition in the Community. The Commission should implement measures to ensure that artificial restrictions on gas supply contracts do not create barriers to free movement of gas and competition. The EC included some of these obstacles such the gas producers' agreements on joint sales that reduce choice for consumers, the territorial clauses forbidding the resale of gas, the restrictions that prohibit gas purchasers to use gas for other purposes in addition to its own consumption.

In the given chapter, it was described the development of the European natural gas market, that is necessary for the following analysis of the EU-Russian cooperation in this sector (see chapters 9-12). But proceeding this, firstly it is crucial to describe the development of the Russian gas industry, including the organization of the gas market, that will be examined in the following chapter.

⁵⁵ Palacio L. de, *Energy Market Liberalization: Pitfalls and Benefits*. World Economic Forum, New York, 3 February 2002.

Chapter 3. The organization of the gas market in Russia

The gas market of the Russian Federation (the system of gas supply to consumers and its institutional framework) is a key element of the resource supply system for the economic development of the country. It is necessary to examine its structure and application of the gas market theories described in the Chapter 1, before the assessment of Gazprom's monopolistic position in the sector.

In the period between 1990 and 2000, the natural gas production in Russia was at the level of 550-650 Bcm⁵⁶. The average annual consumption (including the gas consumption for technological needs) reached 410⁵⁷ Bcm, or more than 70% of the total volume of gas produced in the country. Since 1998, the scale of the domestic market has been stable and has a tendency to some growth (1.6-1.7% per year). Gas takes 50% of the primary energy resources in the country and in the long-term outlook it will remain the dominant energy source of the national economy.

The raw material base of natural gas, the explored and expected reserves, is adequate and reliable for long-term supply of the domestic market and export needs. The current explored reserves of natural gas (recoverable reserves of category A+B+C1⁵⁸) are about 47 trillion cubic meters, including Western Siberia - about 35 trillion cubic meters (74%). The gas resources, upcoming for the development (C2⁵⁹ category reserves and resources of category C3+E1⁶⁰), are estimated at 100 trillion cubic meters, including Western Siberia - about 51 Bcm (northern

⁵⁶ Rosstat, *Analiticheskii biulleten', Neftegazovaia i neftepererabativaiushchaia promyshlennost': tendentsii i perspektivy* (Analytical bulletin, oil and gas and oil-refining industry: tendencies and prospects), Moscow: RIA Novosti, No.1, 2002, p.44.

⁵⁷ Ibid, p.49.

⁵⁸ Novatek, *Classification of Reserves*, <http://novatek.ru/en/press/reserves/>.

Explored reserves are represented by categories A, B, and C1.

Category A reserves are calculated on the part of a deposit drilled in accordance with an approved development project for the oil or natural gas field.

Category B represents the reserves of a deposit (or portion thereof), the oil or natural gas content of which has been determined on the basis of commercial flows of oil or natural gas obtained in wells at various hypsometric depths.

Category C1 represents the reserves of a deposit (or of a portion thereof) whose oil or natural gas content has been determined on the basis of commercial flows of oil or natural gas obtained in wells (with some of the wells having been probed by a formation tester) and positive results of geological and geophysical exploration of non-probed wells.

⁵⁹ **Category C2** reserves are preliminary estimated reserves of a deposit calculated on the basis of geological and geophysical research of unexplored sections of deposits adjoining sections of a field containing reserves of higher categories and of untested deposits of explored fields.

⁶⁰ **Category C3** resources are prospective reserves prepared for the drilling of (i) traps within the oil-and-gas bearing area, delineated by geological and geophysical exploration methods tested for such area and (ii) the formation of explored fields which have not yet been exposed by drilling.

Category E1 represents conservation gas.

areas). This volume of reserves has been sufficient to provide annual gas production of 700 Bcm for 80-100 years⁶¹.

The natural gas resource base is characterized by high concentrations of explored reserves in major gas fields. 75% of total natural gas reserves (35.2 trillion cubic meters) is concentrated in 21 fields (2.7% of 786 open fields with individual stocks more than 500 Bcm), yet 22% of total reserves (11 trillion cubic meters) - in 118 fields (15% of open fields with reserves of 30-500 Bcm). There are 7 largest fields: Urengoy, Yamburg, Zapolyarnoye, Bovanenkovo, Kharasaveyskoye, Shtokman, Astrakhan; and they concentrate the total reserves of 24.8 trillion cubic meters (53% of the total gas reserves).

Map 3.1 Russian main gas production fields.



In Russia, the main gas producing region remains Nadym Purtazovsky region of the Western Siberia, which accounts for 92.5% of gas production of JSC Gazprom and 81% of national gas production. In the Gazprom's system, three basic Cenomanian fields – Urengoy (156 Bcm or 30%), Yamburg (161 Bcm or 31%) and Medvezhie (32 Bcm or 6%) – provide 68% of gas. The gas volumes from other Cenomanian deposits, developed by Gazprom such as Jubileynoye, Yamsoveyskoye, Vyngapurovskoye, Komsomolskoye, Vyngayakhinskoye, West Tarkosalinskoye deposits, account for about 17% (89 Bcm). Cenomanian gas is the cheapest in

⁶¹ Viakhirev R. eds., *Rossiiskaia Gazovaia Entsiklopediia* (Russian Encyclopedia of gas), Moscow: Bol'shaia Rossiiskaia Entsiklopediia, 2004, p. 124.

terms of costs per unit for exploration, development and production, but its time is coming to an end because it has already passed the peak of his explored resources⁶².

In Russia, including the major gas consuming regions, there is a sufficiently large volume of gas resources. Only in the European part of Russia there are about 185 small natural gas fields (with the reserves of less than 40 Bcm) with total reserves of about 420 Bcm (categories A+B+C1+C2).

Thus, in the long-term outlook, the domestic gas market is provided with a sufficient volume of gas resources.

The basis of the technological infrastructure of the gas market is a Unified Gas Supply System of the Russian Federation that includes a unified system of high pressure gas pipelines (transmission system), a centralized control system of the gas flows and a system of underground gas storages. It forms a reserve to cover seasonal fluctuations in the market demand. The owner of the Unified Gas Supply System is Gazprom.

The gas market consists of gas producers, Gas-Selling Utility companies, gas distribution companies, infrastructure operators and consumers. It is segmented to some extent, due to the natural territorial isolation of the Unified Gas Supply System in some regions of gas production (deposits of the Republic of Sakha-Yakutia, the Taimyr Autonomous District, Kamchatka and Sakhalin).

Gas producers in the Russian Federation are Gazprom and its subsidiaries and affiliates, independent of Gazprom gas producers operating in the Unified Gas Supply System, and manufacturers, producing gas within the regional gas supply systems, isolated from the Unified Gas Supply System. Gazprom and its affiliated companies hold licenses to develop the main share of natural gas reserves. They own 157 licenses to develop 80 properties with gas reserves in categories A+B+C1 for 26.8 trillion cubic meters of gas, C2 for 5 trillion cubic meters of gas. The companies independent from Gazprom have licenses for the development of 14.2 trillion cubic meters (Tcm) of gas, or more than 30% of its reserves, including oil companies - 10.7 Tcm of gas, or 23% of its reserves. 5.9 Tcm of gas is in unallocated fund reserves⁶³.

The high degree of monopolization of the gas production sphere by Gazprom, largely due to the concentration of gas reserves in some main gas fields and the structure of licenses for their development, determines the nature of the functioning and development of the gas market in the Russian Federation and its monopolistic structure. However, the market is characterized by a number of processes associated with a probable reduction in the share of Gazprom in gas production in the future. First, the share of independent gas producers in the distribution of gas

⁶² Viakhirev R., *Neftegazovyi Complex Rossii* (Russian oil and gas complex), Moscow: Eksklusiv Press, 1997, pp.110-112.

⁶³ Ibid, pp.110-112.

reserves is much higher than the current production (30% vs. 7%) and deposits of Gazprom reduce their production that indicates the objective prerequisites for the growth of the independent gas producers' share in production in the near future. Second, the possibility of independent companies to invest in new fields is quite high due to:

- Availability of free capital for investment and potential economic interest in the development of the gas business (which is a positive trend in development of inter-branch flow of capital);
- Lack of need to divert profits to pay for a significant debt burden.

The prospective alignment of the business environment also plays its role, due to the appreciation of gas production value from new fields of Gazprom.

Thus, in the long-term planning, it should be expected the maintenance of a high degree of the gas production monopoly with a slight reduction of its level and the emergence of stronger competitive centers in the gas production.

Simultaneously with the gas production activity, Gazprom owns and operates the market infrastructure. The company possesses the gas transmission system, the supervisory control of gas flows, and the system of underground gas storage facilities. On the one hand, it allows the company to act as a guarantor of reliability of gas supply to consumers of the Russian Federation and coordinate production, technology and commercial processes of gas supply. On the other hand, the ownership of market infrastructure creates additional prerequisites for the strengthening of its power, which may represent some difficulties regarding the implementation of projects by independent gas producers to develop gas production and expand their presence in the gas market.

Despite the fact that, there are 17 affiliated companies as part of Gazprom that operate natural gas pipelines, as well as a Central Planning Administration (CPA) that performs the functions for managing gas flows in the system.

A specialized trading subsidiary company of Gazprom, LLC Mezhregiongaz, and controlled by its structure, Regiongaz, specializing in servicing specific areas, act as the dominant part in the gas supply to Russian consumers. Mezhregiongaz was established in 1997, during the domination of mass non-payment and non-monetary forms of payment in the domestic gas market, and during 1997-2001, it could normalize the pay system of Russian consumers for gas by the use of rigid centralization of marketing policy. (In 62 regions of the Russian Federation, Mezhregiongaz created its subsidiaries for implementation of the direct activity with consumers⁶⁴.)

⁶⁴ *Konsolidirovannaia Otchetnost' OAO Gazprom za 2001 god*, (Consolidated statements of Gazprom for 2001), Gazprom, 2002, p. 13.

The share of independent gas sales organizations is low: some of them are affiliated or act on the basis of agreements on cooperation with Gazprom (for example, oil and gas company Itera carries out the implementation of gas to customers located in the Sverdlovsk region). The independent gas producers, generally oil companies, sell gas primarily in the production areas (Tiumen' Region), and; therefore, the level of market concentration in the sale in major gas consuming regions (the European part of Russia and the Urals) is still higher than in gas production, and close to 100%.

The distribution sector takes a significant part in the chain of gas supply. In Russia, there are over 320 organizations that operate pipelines of medium and low pressure, as well as some of the leading gas consumers not connected to the mains through the pipe-bends system. In fact, the gas distribution organizations and large industrial enterprises, which operate distribution pipelines, occupied a reliable gas supply to the majority of Russian consumers. Prior to 1998-1999, the Gazovye Raspredelitel'nye Kompanii - Gas Distribution Organizations (GDO) were the main sellers of gas to end users.

The dependence of GDO on Gazprom was increased, due to a smaller capacity of GDO to overcome the problems of payments in 1994-1999, the worst management, and, as a consequence, the unstable financial condition. Gazprom conducted successive operations through affiliates to consolidate control over GDO through the so called special structure: JSC Regiongazholding, which now effectively controls 70% of GDO. On the one hand, the increasing concentration of control over the GDO helped to stabilize the financial condition of the latter, and develop the gasification of regions, on the other hand, it led to a strengthening of monopolistic tendencies in the gas market.

The Russian market is supplied with gas imported from Central Asia gas producing countries such as Turkmenistan, Kazakhstan, and Uzbekistan. Purchases of imported gas and its resale on the Russian market are made mostly by Gazprom, but in the future, it is likely to increase the role of independent agencies, procuring natural gas imports for supplies to Russian consumers. The potential for gas imports to the Russian Federation in 5-7 year term is 30-35 Bcm of gas per year⁶⁵.

To the late 1990s, the main consumer of Russian gas was the power industry, which consumed about 140 Bcm of gas (about 40% of domestic gas consumption). (For example, only JSC Mosenergo consumed 21 Bcm of gas per year, or more than 70% of the total gas production by independent producers). Gas demand from electric power companies was growing primarily as a result of economic factors (low prices and a number of other advantages compared to

⁶⁵ Sudo M., Kazankova E., "Energeticheskiie Resursy. Neft' i Prirodnyi Gas. Vek Ukhodiashchii", (Energy resources. Oil and Natural Gas. Passing century), *Rossiiia v Okruzhaiushchem mire* (Russia and Surroundings), Moscow: Publishing House MNEPU, 1998, pp. 101-118.

alternative fuels) and also because of inefficient system of rate target of fuel gas flow. A large proportion was burned in the basal part of the chart loads at stations with steam cycle, which efficiency factor does not exceed 30%. In the European part of Russia, in thermal power plants, it was fired in this way for about 30 Bcm of gas per year.

The wasteful model of natural gas consumption is typical also for other groups of gas consumers. This applies to the metallurgical industry (8% of domestic gas consumption or 28 Bcm), the agrochemistry and petrochemistry (7%, or 24.5 Bcm), the domestic sector (14%). The municipal boiler plants are also characterized by a low efficiency factor of gas usage: on average it does not exceed 30%.

In the Russian Federation, the gas supply is governed, in addition to following:

- The standard norms of civil law;
- The Federal Law “On Gas Supply in the Russian Federation”⁶⁶;
- The Federal Law “On natural monopolies”⁶⁷; and
- The Rules of gas supply in the Russian Federation, approved by the Government of the Russian Federation of February 5, 1998 № 162.

Despite the fact that it is objective the need for special rules for gas trade, the Rules of gas supply in many respects are a document that limits the scope of several civil-legal relations and market institutions, expand the use of administrative legal relations within the gas market and grant a number of regulatory functions of trade to Gazprom and the Production and Supervisory Control Center (PSCC – Tsentral'naiia Sistema Dispetcherskogo Upravleniia, TsSDU⁶⁸). The main element of non-market relations in gas supplies is a system of setting limits on gas supplies to its customers, all under the jurisdiction of Gazprom to penalties for their abuse. The supply limits are motivated by the decrease in gas production of Gazprom, but their reduced size is much larger than the real gas shortage (the analysis shows that, in 2001, the limit reduction was more significant when the company's gas production decreased at 11.2 Bcm⁶⁹).

Gazprom has a centralized system of planning and organization of gas supply, which significantly reduces the role of market factors in formation of supply and demand. There are no organized gas trading platforms (with the exception of the trading platform at Mezhhregiongaz

⁶⁶Federal'nyi Zakon (Federal Law) “*O Gazosnabzhenii v Rossiiskoi Federatsii*” (On gas supply in the Russian Federation), 31.03.1999, No 69-FZ.

⁶⁷ Federal'nyi Zakon (Federal Law) “*O Estestvennykh Monopoliakh*” (On natural monopolies), 17.08.1995 No 147-FZ (ed. 25.06.2012).

⁶⁸ **Production and Supervisory Control Center (PSCC – Tsentral'naiia Sistema Dispetcherskogo Upravleniia, TsSDU)** is a control organization that regulates the modes of operation and coordinates the gas industry objects in production and transportation, the storages of all gas producers, including independent ones that use UGSS infrastructure, in particular transport system. It deals with the balance (annual, monthly, daily and hourly) and the distribution of gas, both in Russia and abroad.

⁶⁹ “O Kontseptsii Razvitiia Rynka Gaza v Rossiiskoi Federatsii” (“On concept of market development in the Russian Federation”), *Doklad MERT v Pravitel'stvo* (Report of the Ministry of Economic Development of the Russian Federation to the Government), MERT, 2002, pp.8-9.

that has been working on an experimental basis from September 2002). There is also no public information about the parameters of demand and supply, and the results of transactions. The market is sufficiently closed: it is dominated by bilateral relations between Gazprom and the gas consumers. In such circumstances, for participants it is very difficult to predict the volume and dynamics of supply and demand.

In the period of the 1990s, there were no long-term relations on gas supplies in the market and because of the marketing policy of Gazprom that preferred contracts with validity of one year. The short-term contracts were used to control the permanently changing situation on the domestic market with its non-payments. Meanwhile, the long-term gas supply contracts could be a potent tool to create guarantees for investment projects on construction of gas consuming industries (power plants, metallurgical, chemical, oil and petrochemical companies, heating systems). In fact, they were necessary as for gas producers, to invest in developing new gas fields, as to who were interested in forming long-term guaranteed market for the goods. Actually, Gazprom considered necessary the long-term contracts concluding them with the importing gas countries because the domestic market could not guarantee the same investment that external did. So, using the short-term contracts, the company was able to change its policy on the domestic market

The Production and Supervisory Control Center (PSCC) of Gazprom is an operator of technology market, providing reliable functioning of the Unified Gas Supply System. According to the Rules of gas supply, the PSCC has functions of decision-making about modes of transportation, supply and gas extraction, introduction of gas supply limitation schedules for buyers, order of their limitations and corresponding change of daily volume of transmitting gas to customers⁷⁰.

The implementation of these functions has a significant impact on business performance indicators of the gas trade. However, the rules for the mode of transportation, supply and gas extraction, introduction of graphical limitations are governed by the internal documents of Gazprom while the PSCC is not a juridical entity, and it has no contractual relationship with the subjects of the gas market, and it cannot be considered as a center responsible for compliance with the order of the mode of transportation, supply and gas extraction.

The capacity of underground gas storages is about 53 Bcm, and according to the technical characteristics, all storage facilities are used during periods of seasonal peak and designed to smooth out seasonal fluctuations in demand associated with an increase in gas consumption during the autumn-winter period. Meanwhile, at the foreign markets the peak gas storage

⁷⁰ Viakhirev R., Makarov A., eds., *Strategiia Razvitiia Gazovoi Promyshlennosti Rossii* (Strategy of the Russian gas industry development), Moscow: Energoatomizdat, 1997, pp. 106-115.

facilities are used for balancing the gas market. The presence of such storages is essential to form the operational reserve in the gas supply system, and to avoid the restrictions for customers as a result of fluctuations in gas supply and demand.

The lack of peak storage facilities could be solved by attracting investments, in the first place, from the market participants (the unit costs of putting into operation of 1 Bcm from one deposit are from 50 to 100 million U.S. dollars). Especially at the beginning of the 2000s, that gas storage services are commercialized and represent one of the technological elements of the gas supply system, which can be transformed into a separate group of functions and have fee-based nature⁷¹.

The independent organizations' access to the transmission system of Gazprom is governed by the Federal Laws “On Gas Supply in the Russian Federation”, “On natural monopolies” and the Regulation on independent organizations access to the gas transmission system of Gazprom, approved by the Government of the Russian Federation of July 14, 1997, №858. The rules contained in these documents guarantee any organization in the Russian Federation the right of access to free facilities (that is not used by Gazprom) to transport gas to Russian consumers. The access is based on the Gazprom's decision on acceptance of a quotation made by an applicant, just in case if the latter keeps the certain terms; even, so Gazprom is entitled to a denial of service (clause 12 of the Provision on independent organizations access to the transportation system).

As it was mentioned in the Report of the Ministry of Economic Development, the main access problem with the transmission system is an information insufficiency⁷². There is no standardized information about the utilization of gas transportation facilities. Lack of clear sales or distribution principles among market participants, permissive access principle, and lack of Gazprom objective economic incentives for development of a system for independent gas producers, all of these points pose serious obstacles for independent producers to business development in gas production and increase the risk of investment projects on gas production.

The transmission system gives a priority to the extracted gas from its own deposit and its supply into the system, and development of new domestic and foreign markets. In this situation, Gazprom has no objective incentives to build new pipelines and increase maneuverability of the gas transportation system in the interests of independent gas producers, and development of competition in the domestic market. Such economic interest could arise in the functioning of the transmission system as a separate profit center, for which it would be profitable to provide gas

⁷¹ “O Kontseptsii Razvitiia Rynka Gaza v Rossiiskoi Federatsii” (“On concept of market development in the Russian Federation”), *Doklad MERT v Pravitel'stvo* (Report of the Ministry of Economic Development of the Russian Federation to the Government), MERT, 2002, p.10.

⁷² *Ibid*, p.10.

transportation services both to Gazprom, and to independent producers. In this case, the solutions for development and optimization of the system would be balanced and would be dictated by commercial parameters associated merely with the transportation of gas, but not with the market situation of its production and sales⁷³.

Thus, the proper functioning and development of the transmission system of Gazprom is not only in the interests of the company, but also in the interests of all gas market participants. It requires giving a public nature to access to the transmission system, which would be based on the principles of civil law and restrictions of the “permissive” access to the system that Gazprom has.

The research studies made in the 1990s identified two main scenarios significantly differing from each other for the dynamics of gas demand in the domestic market. The first scenario is based on the assumption of inertial changes in gas prices, relatively low consumer properties of gas and lack of serious economic incentives to gas conservation and fuel competition. The second one involves the incorporation of significant pressure mechanisms on demand through the price signals from the liberalization of prices and bringing them to a more appropriate level to the real relation of supply and demand for gas⁷⁴.

In the case of the first scenario, the growth in gas demand under different scenarios of socioeconomic development could be 3-4% per year and exceed the resource capacity of the gas market in the preservation of the decline rate of Gazprom's gas production of (reduced version) or its stabilization and moderate growth of independent producers (4-5% per year). The volume of the internal market (taking into account the gas flow for the technological needs of the supply system) can be up to 455 Bcm per year as early as 2005 with the trend towards further growth. It is threatened by the crisis, gas shortages and resource constraints for the development of a number of gas consuming industries.

In the second scenario, associated with some reduction in demand under the impact of rising prices, resource constraints can be avoided. Demand growth would occur within a 1-1.5% per year (taking into account the overall growth of production in the country), with the largest gas consumers' investments in a decrease in the gas capacity production, thus laying a basis for preventing a rapid rise in demand for gas in the future. The volume of gas consumption in the domestic market would not exceed 430 Bcm per year, with the expected stabilization of Gazprom's gas production and the possible increase in the rate of growth independent producers; it can be suggested that there is no prospect of resource constraints in the domestic gas market.

⁷³ Ibid, p.14.

⁷⁴ Kriukov V., *Institutsional'naia struktura neftegazovogo sektora. Problemy i napravleniia transformatsii*. (The institutional structure of the oil and gas sector. Problems and directions of transformations), Novosibirsk: Izdatel'stvo IEiOPP SO RAN, 1998, pp. 45-47.

In their researches at the end of the 1990s, R. Viakhirev and his colleagues defined that the analysis of the status and trends of the Russian gas market development can be concluded in a number of principal factors limiting the development of the market, minimization and elimination of which is to become a public policy objective of the gas market. These factors include:

1. Potential resource constraints in the domestic market as a result of the ongoing activities of non-market incentives for growth in demand resulting from a policy of price control. Threat of energy conservation economy in the preservation of the existing character of demand.
2. Unnecessary regulation of the market, excessive administrative interference in the activities of its members, high regulatory risks, constraining investment in gas production and market infrastructure.
3. Inequality of economic conditions in the area of gas production due to the progressive difference in cost of gas production in various fields and complexity of gas production conditions from new fields. The lack of economic interest in the development of gas fields with a more expensive cost of production.
4. High degree of the market monopolization and trend toward increased market concentration in the gas supply chain. Rules of behavior are not regulated for actors responsible for managing the technological infrastructure of the market.
5. Lack of long-term relationships on the market impairing predictability of the business and investment planning: a major threat to the investment interests of both producers and consumers.
6. Closed trade nature causing difficulty in identifying the real balance of supply and demand and formation of the objective price.
7. Absence of a public nature in relation to access to the trunk gas pipeline infrastructure, “permissive” access nature. Gazprom, owner of the infrastructure has no incentives to develop and improve its maneuverability of the transmission system for independent gas producers and the development of competition in the domestic market⁷⁵.

The configuration of the Russian gas industry was formed as a result of incorporation and privatization of enterprises in 1992, when three main sets of decisions were taken:

⁷⁵ Viakhirev R., Makarov A., eds., *Strategiia Razvitiia Gazovoi Promyshlennosti Rossii* (Strategy of the Russian gas industry development), Moscow: Energoatomizdat, 1997, pp. 106-115.

- The unity of the assets of the Russian Unified Gas Supply System, UGSS, (Presidential Decree on June 1, 1992 №538 “On ensuring of the Unified Gas Supply System's activity”);
- The incorporation of Gazprom company and the introduction of 100% capital of enterprises in their authorized capital, consisting of the UGSS's property (Presidential Decree on November 5, 1992 №1333 “On transformation of the state gas company Gazprom into the Russian Joint Stock Company Gazprom”);
- The incorporation and privatization of enterprises and associations operating gas facilities (gas distribution companies) (Presidential Decree on December 8, 1992 №1559 “On privatization of state enterprises, associations and organizations of the Russian gas industry and on transforming them into joint stock companies).

As a result of these operations, a structure of enterprises was established, mainly preserved until now. Saving the UGSS as a property complex, contributed to the nominal capital of Gazprom, eliminated the de-monopolization of the gas industry due to the scenario of oil and electric power industries. Later, as a result of successive privatization of its stocks, the state's share of Gazprom (since 1998, Open Joint Stock Company) had fallen to 38.5%. Small and medium-sized enterprises of gas distribution were transformed into joint stock companies (more than 500), independent of Gazprom and subsequently privatized; they are operating as gas distribution companies to date⁷⁶.

In 1997, the Presidential Decree was approved (on April 28, 1997 №426) “On main regulations of the structural reforms in the spheres of natural monopolies”. It contained the first post-reform plan, the basis of which was an attempt to analyze some problems of the gas industry operation (indivisibility of potentially competitive and natural monopolistic activities, as a part of Gazprom; lack of cost transparencies; simplified regime of price regulation in isolation from the financial situation and costs of Gazprom; imperfection of the access order of independent organizations to the transmission system; need for territorial differentiation of gas prices, depending on the actual costs of its transportation and elimination of cross-subsidization). The purpose of structural reform in the gas industry was declared the formation of conditions for more efficient gas supply to Russian consumers by:

- Strengthening state regulation in the transportation of gas;
- Promotion of competition in potentially competitive activities and a gradual weakening of state control;

⁷⁶ Ibid.

- Improving contractual relations in the gas market.

The measures of structural reform mainly focused on improving pricing, introduction of the gas transportation tariffs, territorial price differentiation and reduce cross-subsidization, deepening of the legal regulation of contractual relations in the gas market and creation of an interdepartmental committee to address issues of access to the transmission system of Gazprom. In the third phase of structural reforms (1999-2000), it was expected segregation within the Gazprom's departments of gas transportation from gas production organizations.

The implementation of many measures of structural reform, specified by the Presidential Decree of April 28, 1997 №426, did not happen. To some extent, this was a consequence of the August financial crisis in 1998. A significant role played the complexity of the reorganization of Gazprom and its subsidiaries (divisions). As a result, for example, it was not implemented the decisions of the Russian Government on the formation within Gazprom one or more gas transmission companies (Decree of the Russian Federation on July 16, 1998 №952), on consideration of the Gazprom's Board of Directors proposals for conversion of gas production, transmission and supply organizations into independent centers, with independent control and their own accounts (Decree of the Russian Federation on July 30, 1998 №1033).

Adopted on March 1999, the Federal Law “On Gas Supply in the Russian Federation” largely conserved the structure of the gas market, and its participants, existing since the early 1990s, although the regulations of this Law were interpreted ambiguously and did not allow clear conclusions to determine the functions of supply chain members, gas market and its configuration.

Based on the policy objectives of the Russian gas market and evaluation of current market conditions, the Russian and international experience of reforming gas industry, the tasks of strategy to ensure its sustainable development represented the organization of the Russian gas market by the following:

1. Ensuring sustainable and reliable gas supply to consumers of the Russian Federation.
2. Development of competitive elements in the gas market, where competition is economically rational as a principal tool to improve the economic efficiency and quality of the gas market subjects: gas supply chain members.
3. Elimination of distortions of the gas market hindering the industrial development of gas companies. Removal of administrative restrictions and expansion of market mechanisms use.
4. Providing conditions for the realization of investment opportunities for all stakeholders in the gas market, primarily independent natural gas producers, for which the development is associated with a number of additional problems

5. Increased trade openness. Creation of trade areas, determination status and principles of operation for the subjects. Increased transparency of information characterizing supply and demand in the market. Development of long-term relationships and market instruments⁷⁷.

According to the investigations of A. Shastitko, Russian economist and General Director of the Bureau of Economic Analysis, during the late 1990s the implementation of goals and objectives of the gas market development policy in the Russian Federation must be based on the following principles:

- Development of market relations in the gas industry and elements of competition in those areas where it is economically rational;
- Maximizing predictability of the regulatory regime in relation to gas suppliers; maximizing regulatory measures of state regulation and phasing renunciation of outdated regulatory mechanisms;
- Alignment of business environment conditions in the gas market, taking into account the various conditions of gas production from new and old fields, the problem of using “old” and “new” capital;
- Ensuring the regime of “green corridor” (most-favored nation treatment) for development of independent gas producers, with free capital for economically efficient investment in new gas fields;
- Preservation in the long term the Unified Gas Supply System as a single technological complex that includes a system of gas pipelines of a high pressure system, gas flow control system and existing storage facilities systems, providing opportunities for the development of the UGSS through construction and connection to the UGS of new actors with any form of property, receiving the status of market infrastructure;
- Functioning of market infrastructure by the same rules for all market participants;

⁷⁷ Shastitko A., eds., *Problemy Razvitiia Gazovoi Promishlennosti Rossiiskoi Federatsii i Strategiia Gosudarstvennogo Regulirovaniia Otrasi* (Problems of the Russian Gas Industry Development and Strategy of the Government Regulation of the Sector), Moscow: Biuro Ekonomicheskogo Analiza, 2001, pp. 103-114.

- Provision of adaptation period to gas consumers for adaptation to changing conditions of the gas market functioning;
- A “social contract” with Gazprom to protect socially sensitive categories of consumers against market risks;
- Providing consumers with the right to choose their gas supplier;
- Development of mechanisms to hedge the possible volatility of the gas market in the form of long-term relations between its participants and system of gas reserves in underground storage.

Due to the specific nature of the Russian gas industry, the principles of markets organization, used to build an economic model for other types of energy resources (oil, coal, electricity) are not applicable to the gas market. In this respect, the main role in the medium term will continue to play a major gas producer, Gazprom, with conservation of the monopolistic market structure. However, according to A. Shastitko, in the early 2000s, the share of Gazprom in the market may be reduced; it is permissible also some decline in gas production of the company (subject to availability of other sufficient sources of gas supply to meet the needs of the domestic market).

However, A. Shastitko said that the role of independent gas producers grows with substantial investment opportunities and ensured higher proportion of gas resources compared with the current share of their gas supply to the market. With respect to independent gas producers, it should be provided the most-favored nation treatment (which consists in removing the existing restrictions), allowing them to sell freely gas to consumers at any price, providing payback in a reasonable time and market income on investments in developing gas fields. Independent gas producers may also be provided with access to the distribution of revenues from gas exports in proportion to the gas volume delivered by the system of gas pipelines (including the preservation of the principle of a single counterparty under long-term gas supplies for export).

The system of the Russian gas market regulation should be revised due to the A. Shastitko's conclusions. The State must ensure the transition from policy to protect consumers by regulating the total gas price to apply measures to promote competition in the centers of production, storage and marketing of natural gas (where it is applicable), and measures to enhance antimonopoly control and improve trade openness. Price regulation should be localized to the socially sensitive sectors of the gas consumption and, in the long term, it should be disaffirmed with the conservation of natural monopoly activities' management (gas transportation and dispatching services). Thus, market conditions should be created to ensure the

reduction of dependence of natural gas trading on social functions and monopolistic factors; a fair system of gas trade should be created based on market principles⁷⁸.

The functioning of market infrastructure should provide stable, predictable and non-discriminatory conditions for economic activities of all market participants. First of all, it is necessary a clear definition of the functions of market infrastructure in the system and its operation in the supply chain as a whole. The technological infrastructure should include:

- A system of gas-main pipelines (transmission system) and a system of supervisory control of gas flow;
- A system of underground gas storage.

At the legislative level, (through amendments to the Federal Law “On Gas Supply in the Russian Federation”), it is necessary to determine that gas transportation system and system of supervisory control of gas flows are infrastructure of common use, of which service provision does not have a nature of private service of one participant in the market: the owner of infrastructure, but public nature. It is essentially a legal definition of property's categories belonging to the market infrastructure, the status of infrastructure's operators, policies and procedures to provide infrastructural services. The order of access to the transmission system needs to undergo changes, which apply to free use of this system. It should be clearly defined a procedure and form of information disclosure on the availability of transport capacity.

The development of gas transportation system, in the future, may be carried out not only on the basis of the commercial interests of Gazprom, but in order to ensure delivery to the system of gas produced in the fields of independent gas producers, including the involvement of private investors under equity ownership. There is a need of legislative vested rights for independent producers to access to the transportation system and their functioning within the UGSS⁷⁹.

The development of gas storage system is a basis of market resistance to fluctuations in supply and demand. This area is in need of rapid commercialization and admission of any entities for construction of new underground gas storage facilities on the terms agreed upon with the owners of the technological infrastructure of the market. Service of gas storage should be a separate kind of services, prices of which are free from regulation for new storage facilities constructed by independent investors. The described above suggestions of A. Shastitko were not realized and the gas market development took the other way examined below.

By the end of 1990s, it became clear to the officials, that there was a necessity of reforming organization and functioning conditions of the gas industry due to certain reasons,

⁷⁸ Viakhirev R., Makarov A., eds., *Strategiia Razvitiia Gazovoi Promyshlennosti Rossii* (Strategy of the Russian gas industry development), Moscow: Energoatomizdat, 1997, pp. 153-167.

⁷⁹ Ibid.

among which are: a high degree of government involvement in the companies' affairs, actual subsidy of a number of other CIS countries' economies, the monopolistic nature of Gazprom. As a result, Gazprom, that had the unique role of economic development and the existing political regime in Russia, started to malfunction.

Unfavorable objective conditions combined with political and practical factors. In fact, because of its dual nature, Gazprom remained a non-market, although extremely important element of the Russian economy. The conditions of its expanded development were less favorable than other businesses.

At the same time, it was formed Gazprom's strategy for long-term satisfaction of the gas demand in Russia. The key areas were recognized⁸⁰:

- The necessity to build its own production (primarily, deposit development in the Ob - Taz bay and the Yamal fields);
- Collaborating with independent gas producers in the development of 193 fields with small gas reserves (totaling 900 Mcm) and providing greater opportunities for independent producers;
- Gas consumption saving (Gazprom assesses the potential in this area up to 100 Bcm per year);
- Improving of the external market efficiency.

Successful completion of these changes was important, but not yet sufficient condition for recovery of the gas industry and its effective participation in the economic development of Russia. There was a need to rebuild the organization and functioning conditions of the gas industry as a whole.

The Government, the State Duma, Gazprom and other interested organizations began discussing both domestic and external aspects of this strategic issue. In autumn 2001, the Russian President instructed the Government and Gazprom to develop the concept of reforming the national market. On 11 February, 2002, there were hearings on this issue in the State Duma, which were attended by representatives of the Federal Energy Commission, Ministry of Economic Development, Ministry of Energy, Gazprom, Rosgazifikatsiya, non-Gazprom gas producers, regional gas distribution companies and large gas consumers. The Government has decided to fully examine the concept of gas market reforming by the end of 2002⁸¹.

The existing gas market to a certain degree was presented as consisting of two sectors: a sector regulated by Government authorities and the Federal Energy Commission, and an

⁸⁰Popov N., Veber N., "Sistema Upravleniia Gazovoi Otrashi" (System of the Gas Industry Regulation) *Gazovyi Bizness* (Gas Business), N 2, March-April, 2007, pp. 14-15.

⁸¹ Baranov V., *Nezavisimye Proizvoditeli i Perspektivy Razvitiia Gazovoi Otrashi Rossii* (Independent Producers and Prospects of the Russian Gas Industry Development), Moscow: ASMO-Press, 2004, pp. 116-120.

unregulated one. Despite the fact that since 1995, formal regulations allowed independent organizations to sell gas at different prices; their gas was included in general balance, developed by the Ministry of Energy. This led to the fact that the basic economic parameters of free sector were influenced, directly or indirectly, with administrative measures. The important point was the fact that Gazprom supported the idea of market, which consists of two sections.

Obviously, the improvement of conditions of Gazprom's functioning was a part of a broader reform, opening the gas market to competition, with the equal conditions for all participants, including Gazprom.

The Federal Energy Regulatory Commission would like to have an unregulated sector in the total federal wholesale gas market (e.g., FOREM's model in power industry⁸²). Independent gas producers, as well as Gazprom, should have direct access to wholesale gas. As buyers have to act regional gas distribution companies, wholesalers and large end users of gas. Over time, the share of the regulated price sector would be reduced and, in the end, only serve the population, community and government organizations⁸³.

According to the report of the Ministry of Economic Development, an important role in the progress of market relations should play gas exchange. It could be a step towards the establishment of internal and external gas market profitability, which would help to lessen the worsening conflict of interests between Gazprom and independent producers.

Producers outside of Gazprom's system become more prominent members of the gas market. In 2001, they accounted for approximately 11% of total Russian gas production, and in 2003 for 13%. It is estimated that under the right conditions in 10-15 years, independent organization could increase its gas production to 200 Bcm.

Solving key problems of independent producers' access to major pipelines, there were two main approaches under discussion: radical and compromise. The supporters of radical measures insisted on isolating a transport company from Gazprom's unified system and creation of access regime like oil transportation system, based on Transneft. The company was to be a Russian state-controlled organization responsible for the national oil pipelines. Transneft transported about 93% of the oil produced in Russia. Gazprom did not agree to this option for technological reasons. Unlike oil transportation, gas transportation was more difficult (compressor stations, underground gas storage, centralized control of production and transportation). In addition, according to Gazprom, with reforming the gas sector it should be

⁸² The federal (national) wholesale market of electric power (capacity) - **FOREM** (Federal'nii (obshcherossiiskii) optovyi rynek elektricheskoi energii (moshchnosti) is the purchase and sale of electric energy (power) implemented by its subjects within the Unified Energy System of Russia.

⁸³ "O Kontseptsii Razvitiia Rynka Gaza v Rossiiskoi Federatsii" ("On concept of market development in the Russian Federation"), *Doklad MERT v Pravitel'stvo* (Report of the Ministry of Economic Development of the Russian Federation to the Government), MERT, 2002, p.13.

maintained the integrity of the UGSS. In practical terms, this meant the preservation property of the UGSS and Supervisory Control under Gazprom's running through which it would continue to carry out continuous monitoring of all UGSS activities.

As it was mentioned above, an important task of the Russian natural gas market is to create a natural gas exchange. It is appropriate to examine this key issue for the industry in more detail.

Gas trading platforms and exchanges were considered as natural tools for creating a free gas market. However, there were controversies on this issue. For example, the Energy Commission's Chairman⁸⁴, A. Zaderniuk believed that the exchange was possible after the approval of the gas reform concept. Viakhirev also supposed that it should be the first step towards a liberalized market, but to do this Gazprom should remove the administrative restrictions.

There was only one law governing exchanges: Federal Law №2383-1 “On Commodity Exchanges and Exchange Trade” of 20 February 1992 (amended on 24.06.92, 06.19.95 and from 20.04-93). The laws on the independent gas producers also had an indirect influence.

The main regulations of the law “On Commodity Exchanges and Exchange Trade” were as follows:

- Work of Commodity Exchanges was licensed;
- Council of the Exchange determined the maximum number of participants;
- Each member had no more than 10% of the votes in the General Assembly;
- Foreign juridical and physical persons, who were not members of the exchange, might participate exclusively through stock brokers;
- Brokers were juridical persons with appropriate licenses.

There was also a restriction on the supply of goods to the exchange of no more than 35% of the total traded volume. Viakhirev believed that Gazprom, according to this rule, will be able to deliver to the exchange no more than half of the independent producers' gas released into the transport system.

Other documents regulating the exchange activities were:

- Civil Code (Article 432-444,447-449);
- Federal Law № 69-FL of March 31, 1999 “On Gas Supply in the Russian Federation”;
- “Gas Supply Regulations” (approved by the Government February 5, 1998);

⁸⁴ **Federal'naia Energeticheskaia Komissiia – FEK** - The Energy Commission of the Russian Federation is a federal executive authority and it acts as a single tariff authority competent to regulate tariffs for the products (services) of natural monopolies in the energy sector and transport (rail and road transportations, services of transport terminals, ports and airports).

- “The regulation of Gazprom's access to the gas transportation system, approved by Russian Government's Decree of 14 July 1997;

- “Basic provisions on the formation and state regulation of gas prices and tariffs in Russia” approved by Russian Government's Decree № 328 dated May 22, 2002.

The general course of economic reform answered to the main purpose of antitrust law: development of market relations and increasing competition. It is important that the need to monitor compliance with the antimonopoly legislation was taken into considerations in both elaboration of reform programs and in their implementation. The package of measures should be aimed at both suppression and prevention of violations of antitrust laws. It is not only about the transformations of existing traditional market players (e.g., Gazprom), but also the creation of conditions for independent market participants, not integrated with the existing traditional market players⁸⁵.

These issues were reflected in the Energy Strategy of Russia until 2020 (approved by the Government of the Russian Federation № 1234-r of 28.08.03), according to which the purpose of developing the gas markets provides:

- Gradual increase in gas prices in the domestic market; transition to the sale of gas at market prices for the self-financing of market; objective assessment of consumer gas properties;
- Transition from regulation of wholesale gas price to establishment of single tariff for its transportation for all gas producers;
- Provide consumers with gas adaptation period to adjust to the changing conditions of the functioning of the gas market;
- Protection of sensitive social categories of consumers from sharp fluctuations in gas prices;
- Infrastructure development of the domestic market to passage to selling gas at market prices;
- Creating conditions for the development of independent gas producers;
- Non-discriminatory access to the gas pipeline system of all market participants;
- In the medium term, maintaining a single gas supply system as a single technological infrastructure complex, its development through the

⁸⁵ Iazev V., “*Razvitie Rossiiskogo rynka gaza: tsenoobrazovanie i perspektivy birzhevoi trgovli*” (“The Russian gas market development: pricing and prospects of exchange trade”), Pervaia mezhdunarodnaia konferentsiia (1st International Conference), Moscow, 2003, p.6.

construction and connectivity of new objects of any form of ownership (including equity based);

- Creating the conditions for a competition in those segments of the gas market, where it is possible and economically feasible (sales, production and storage of gas in underground storage), which will provide in future cost savings, improved efficiency and quality of services provided by market entities.

The practice of applying competition law shows that one of the most common violations of the antimonopoly legislation is an abuse of a dominant position (30% of the total number of identified in 1999-2002 violations of antitrust laws). About 80% of them were put by natural monopolies. The largest proportion is in power industry (about 31%), communications (17%) and rail transportation (11%). The share of abuse in gas markets is about 8% of the total number of identifying in 1999-2002 in the goods market, or about 40 of annually suppressed violations.

The improvement will contribute to the development of market relations in the gas markets, including through the development of competition.

However, the real development of the natural gas market greatly differed from the planned statements and measures.

The Russian gas market in its present state does not have a developed market infrastructure and competitive environment. Its characteristic feature is a very high degree of government regulation. The peculiarity of the Russian gas industry functioning is also the fact that many of the state control functions are still run by the largest company-monopolist: Gazprom, which, according to the independent producers' view, is abnormal, because it reinforces the dominance of this company and leads to numerous distortions and a reduction of the economic efficiency of the gas industry as a whole.

It is not developed an unregulated segment of the market in which gas is a subject of buying and selling on the free choice of the market prices. This segment of the market does not have a competitive impact on the regulated segment of the gas market.

Independent producers own approximately 30% of licenses for the development of gas reserves and have the right to sell it at free market prices, but their share in the total production and supply of gas to the market is a little over 12%. At a time when most of the gas is sold to consumers in the regulated sector of the natural gas market, the possibility of using this right for independent producers is limited⁸⁶.

⁸⁶ Pusenkova N., "Rossiiskii Gazprom v gazpromovskoi Rossii" ("The Russian Gazprom in the Gazprom's Russia"), *Istoria novoi Rossii* (History of the Modern Russia), Vol.2, S.Petersburg: Norma, 2011, pp. 20-21.

For full functioning of the gas market, the basic infrastructure elements and market institutions have not been established; they should contribute to its formation. Gas sales on the trading floors are at an early stage. It has not developed an insurance system that provides guarantees of the sale, and other structures that may use market instruments to manage risks associated with emergencies in the gas market. There is no established mechanism to attract Russian investors in the gas business. The rules of behavior for participants of an unregulated segment of the gas market are not developed.

The undeveloped market infrastructure in the Russian gas market is due to the lack of necessary financial and economic conditions for the development of fully competitive market.

Under the influence of negative factors in the Russian gas sector, there has been a very dangerous trend of deficit forming in the domestic gas market, while the country has a large stockpile.

Formation of the gas market has to solve the following problems:

- Elimination of gas market distortions, hampering development of gas production companies, removal of administrative restrictions and expansion of market-based mechanisms;
- Establishment of the optimal structure of fuel and energy balance; rational use of natural gas and gas saving in all sectors of the economy;
- Creating an enabling environment for development of new fields, construction and operation of new facilities for transport, storage and distribution of gas, stimulating new gas producers;
- Increased trade openness, trade areas and determination of the principles of interaction with the market infrastructure subjects. Increased transparency of information that characterizes supply and demand in the market. Developing long-term relationships and market instruments;
- Phasing out of cross-subsidies in the gas sector⁸⁷.

The most important condition for the development of the gas market in Russia is renunciation of the state regulation of wholesale prices and a gradual transition to the state regulation of tariffs in the field of natural monopoly on gas transportation.

Analyzed the organization of the Russian gas market, the next chapter will examine the history of the gas industry development, the impact of political changes and Gazprom's formation as a monopolistic company.

⁸⁷ Viakhirev R., Makarov A., eds., *Strategiia Razvitiia Gazovoi Promyshlennosti Rossii* (Strategy of the Russian Gas Market Development), Moscow: Energoatomizdat, 1997, pp. 254-277.

CHAPTER 4. The impact of political changes and challenges to reform Gazprom

To assess the specificities of the Russian gas sector management, it is necessary to define its historical development within the centralized Soviet economy, as well as within the tough financial structure of both production and consumption. The Russian gas sector has a geographical disadvantage because most of the lucrative markets are located far away from the production areas. About 80% of the Russian gas reserves are in the Western Siberia, where it has been proved the existence of many super giant gas fields. In the early 1970s, the gas discovery was at its highest point, although, in prospective, more offshore reserves will be found in the Arctic. The extremely hostile environment of that region makes exploration for more gas reserves comparatively unattractive. In any case, there is little incentive to go further at the moment since nearly 60% of the known gas reserves are not currently produced⁸⁸.

By the beginning of the Soviet era, the domestic gas production had significant technical and technological perspectives. However, the process of its future development had been difficult and controversial. In 1920 - 1930 years, the gas industry did not become independent and remained in the shadow of the oil industry. The most part of the 1920s, the Soviet capabilities in the gas business development were limited as financially and technically, as physically, but by the early 1930s, the attention to natural gas increased due to the industrialization started in the USSR. At the beginning of the 1930s, the Soviet economy consumed 10-15 million cubic meters (Mcm) annually, but within a decade, this figure had grown to 3.4 billion cubic meters (Bcm)⁸⁹. On the one hand, the Soviet government took certain measures to improve the production of synthetic and natural gas. On the other hand, until the mid-1950s, the gas value was underestimated by the government.

During the Stalin's last years (1945-1953), the energy consumption grew by more than 9 percent per year. The underlying causes were strong industrial growth in combination with inefficient use of energy. However, the share of gas in the Soviet energy mix remained limited (2 percent, or 9 Bcm, in 1953) due to the dominant positions of coal and, to a lesser extent, of oil, during this period.

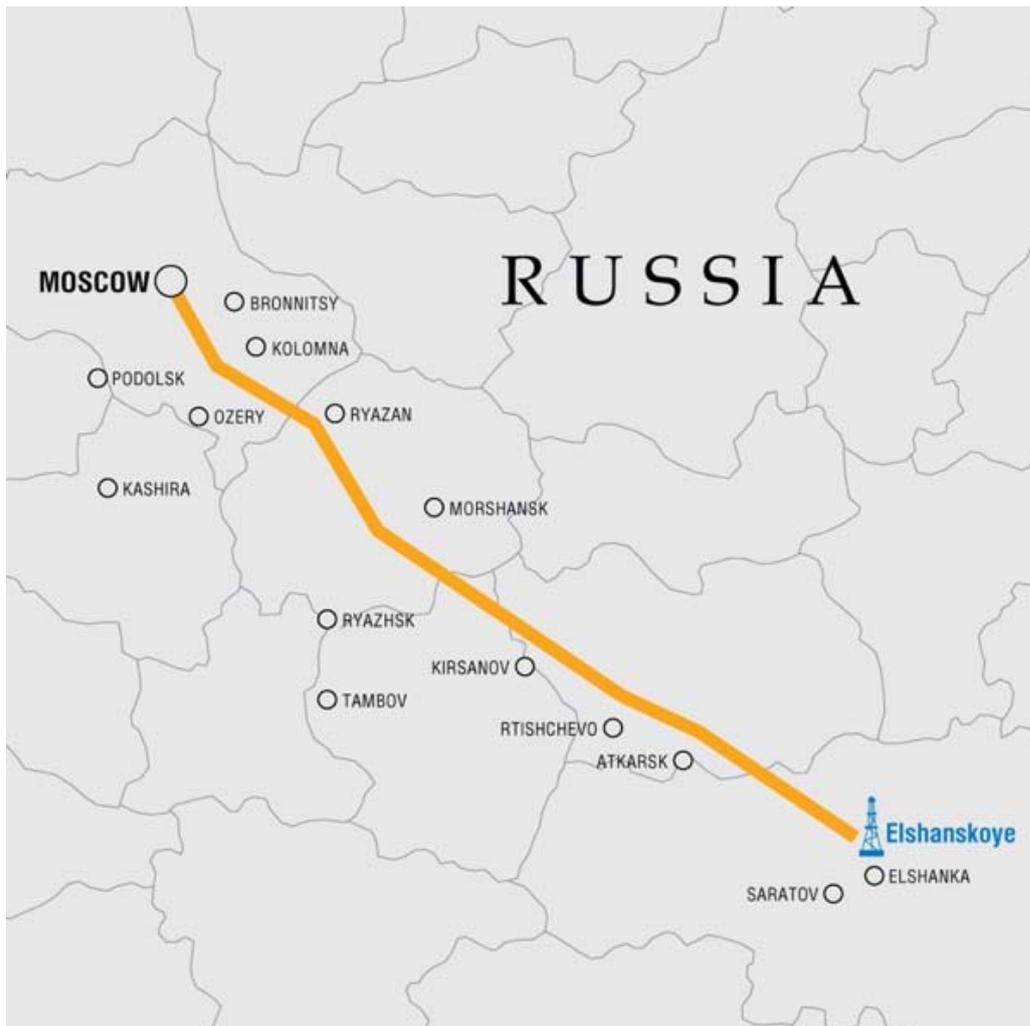
In 1942, gas fields were discovered in the Kuibyshev region and around the same time the development of gas field was commenced near the Elshanka River, largely to the benefit of the industry in Saratov, situated at the southeast of Moscow. In 1943, the first long-distance

⁸⁸ Viakhirev R., Makarov A., eds., *Strategiia Razvitiia Gazovoi Promyshlennosti Rossii* (Strategy of the Russia Gas Market Development), Moscow: Energoatomizdat, 1997, p. 56.

⁸⁹ Belyi A., "Trends of Russia's gas sector regulation", *Oil, Gas, Energy Law Intelligence*, 2011, № 11, <http://www.crninet.com/2011/a4a.pdf>.

pipeline (160 km) began to be used between Buguruslan and Kuibyshev. Substantial transportation of gas started three years later with the construction of the 843 km-long gas pipeline between Saratov and Moscow. In the 1950s, other gas fields were linked to the gas system around Moscow. Until the mid-1950s, gas production in the Soviet Union was largely limited to the Saratov region and Ukraine⁹⁰.

Map 4.1 Saratov – Moscow gas pipeline.



Source: Official Gazprom's site. <http://www.gazprom.com/about/history/events/60years/>

Under Khrushchev, the position of gas gained weight, although at first oil was preferred due to the flexibility with which it could be used in industry. In his first five-year plan (1956-1960), Khrushchev formulated the goals to overtake and surpass the American economy within 25 years. He intended to make it through the modernization of economics, in which modern fuels

⁹⁰ Victor N., *Gazprom: gas giant under strain*, Stanford: Program on Energy and Sustainable Development, Working Paper No. 1, 2008, p. 9.

received an significant place because of their flexible and efficient implementation. The increased demand for gas by the Soviet heavy industry needed to be met with a new production from the gas fields in the Soviet republics of the Caspian region (mainly Turkmenistan). In order to connect the gas fields to the markets around Moscow and elsewhere, in 1959 the North Caucasus Center gas pipeline was brought into use; in the 1960s, it was followed by a corridor from Central Asia and the Bukhara-Ural pipeline⁹¹. Moreover, in the early 1960s gas was being used from the Ukrainian Soviet Republic, in particular the Shebelinsky gas field. This turned the satellite republics in the Caspian region and Ukraine into relevant areas of gas production and transportation for the Soviet Union.

In the eighth five-year plan (1966-1971), the importance of the Western Siberian gas reserves, located to the east of the Ural Mountains, was recognized by the then-ruling Soviet leader Brezhnev. In the same period, some gas fields were also discovered in Orenburg (north-west of Kazakhstan), followed by the discovery of the others on the Yamal Peninsula at the beginning of the 1970s (including the Bovanenko and the Kharasevey fields). From the end of the 1970s, with the development of gas fields in the Nadym Pur Taz (NTP) District in the Western Siberia, the center of gravity of the Soviet gas sector shifted. The geography of the Soviet product portfolio changed because the gas production in the eastern regions of Ural Mountains exceeded the production in the west part of the Mountains. In this period, the Soviet Union became a net exporter of natural gas. Up until the mid-seventies, it was even a net importer due to imports from Afghanistan and Iran⁹².

By the time of this so-called “Siberian period”, the permanent state sponsorship of oil during the preceding 15 years had finally been paid off, catapulting oil to the top of the Soviet primary energy supply⁹³. However, the gas development was proceeding more slowly, in part because the infrastructure requirements for gas made it harder to manage, and in part because gas was not seen as uniquely qualified for any specific industrial application, different from oil with its uses in petrochemicals and transportation.

Because of the location in a permafrost area, the development of giant gas fields in the NTP region required new technologies, which at that time were available only in the West. Owing to the increasing demand for natural gas in Europe, combined with an improved political climate, Europe was involved with technical and financial realization in new gas projects. In

⁹¹ Åslund A., *Russia's capitalist revolution. Why market reform succeeded and democracy failed*, Washington DC: Peterson Institute for International Economics, 2007, p. 45.

⁹² Stern J., “Soviet and Russian gas: the origins and evolution of Gazprom's export strategy”, in Mabro R. and Wybrew-Bond I., *Gas to Europe: the Strategies of Four Major Suppliers*, Oxford: Oxford University Press/Oxford Institute of Energy Studies, 1999, p. 139.

⁹³ Victor N., *Gazprom: gas giant under strain*, Stanford: Program on Energy and Sustainable Development, Working Paper No. 1, 2008, p. 13.

addition, the increasing gas exports provided extra hard currency revenues, with which the Soviet Union could support new industrial projects.

In 1973, after the energy crisis, the emerged situation forced the Soviet Union to seek new fields of fuel. Such deposits were found in Western Siberia. As a result, there were significantly increased export opportunities, and after some time, Europe was put in a network of pipelines from the Soviet Union. In the 1970s, the gas supply was the basic principle of trade between the European countries and the USSR, and the emerging prospects of large-scale exports led to the creation in 1973 of the Soviet foreign trade association Soiuзgazexport (in 1991 it joined the Gazprom's group). The long-term contracts for exports and the growing volume of fuel purchased in the USSR were accompanied by the construction of a network of pipelines and major trans-European energy systems.

The development of new gas fields and the related trade with the West led to a budding integration of the Soviet Union in the world economy. However, there were no cooperation and communication between the planning ministries and the state corporations required to manage the increased complexity of trading. The problems surrounding economic planning, in combination with low productivity and product quality due to insufficient price incentives, led to stagnation during Brezhnev's later years. In order to address these problems, Gorbachev launched economic reforms in the twelfth five-year plan (1986-1990). With his glasnost and perestroika, he respectively introduced openness and social-economic reforms in order to create a socialist market economy⁹⁴. Nevertheless, the centrally guided system no longer proved tenable as a result of external and internal factors, like the declining export revenues because of decreasing oil and gas prices and devaluation of dollar in 1985 subsequent to the Plaza Agreement⁹⁵.

By the end of Brezhnev's period, with the development of the Western Siberian gas fields, the Soviet Union became the largest gas producer, followed by the US. In the period between 1970 and 1991, the Soviet annual gas production increased by an average of 4.6 % per year, from 185 Bcm in 1970 to 406 Bcm in 1980 and 756 Bcm in 1991. The gas revenue grew from \$0.2 billion in 1975 to almost \$4.1 billion in 1985. In sum, the Soviet Union received nearly \$15 billion from oil and gas exports in 1985⁹⁶.

⁹⁴ Viakhirev R., Makarov A., eds., *Strategiia Razvitiia Gazovoi Promyshlennosti Rossii* (Strategy of the Russian Gas Market Development), Moscow: Energoatomizdat, 1997, pp. 10-15.

⁹⁵ The **Plaza Accord** or **Plaza Agreement** was an agreement between the governments of France, West Germany, Japan, the United States, and the United Kingdom, to depreciate the U.S. dollar in relation to the Japanese yen and German Deutsche Mark by intervening in currency markets. The five governments signed the accord on September 22, 1985 at the Plaza Hotel in New York City.

⁹⁶ Viakhirev R., *Neftegazovii Kompleks Rossii* (Russian Oil and Gas Complex), Moscow: Ekskluziv Press, 1998, p. 37.

From 1948 to 1956, the Main Department of Oil and Natural Gas Industry (Glavnoe Upravlenie Neftegazovoi Promyshlennosti – Glavneftegaz) was responsible for the production, transportation and sales of natural gas. It was run by the Ministry of Oil Industry (Minnefteprom). In 1956, this segment was reorganized into the Head Department for Gas Industry under the Council of Ministers of the Soviet Union (Glavgaz). In 1963, it was established the State Production Committee of the Gas Industry; in 1965, it was placed under the supervision of the Ministry of Facilities Construction for the Oil and Gas Industry (Minneftegazprom) that was separated in 1972. As an effect, the gas export within this ministry came under Soizugasexport. As a result of Gorbachev's reforms in 1989, the Ministries of Oil and Gas Industries were merged into one ministry. The state company Gazprom (the name “Gazprom” is an acronym of the Russian word for “gas industry” – Gazoviia Promyshlennost'), which fell under the responsibility of the Ministry of Gas Industry, became responsible for the production, distribution and sales of gas within and outside the Soviet Union. In 1989, Gazprom gained control over 160,000 (km) of gas pipelines and 350 gas compressors, which connected 270 field facilities, thousands of gas fields and two dozen underground gas storages⁹⁷. Due to the disintegration of the Soviet Union, in 1991 Gazprom lost about a third of the pipeline capacity and a fourth of the original Soviet compressor capacity.

During the Soviet period, the government continued to control all gas production in the different Soviet republics. This made relatively easy the coordination of production in different gas fields in the Soviet republics and the construction of gas pipelines within the Soviet system.

After the peaceful dissolution of the Soviet Union, in December 1991, Boris Yeltsin became President of the Russian Federation; he understood that the Soviet Union was no longer politically reliable. In the process of defining new Russia policy, the emphasis was placed on economic reforms and on reorganizing the former Soviet states by means of the CIS. Western values were adopted for foreign policy, though conflicts and lack of communication between the various ministries meant that a uniform foreign policy was lacking during the Yeltsin years.

Starting in January 1992, the so called “shock therapy” was used to propose radical market reforms based on neo-liberal concepts, led mainly by Yegor Gaidar and Anatoly Chubais. Yegor Gaidar was a Soviet and Russian economist, politician and author and was the Acting Prime Minister of Russia from 15 June 1992 to 14 December 1992. He was best known as the architect of the controversial shock therapy reforms, which brought him both praise and harsh criticism. Anatoly Chubais was a Russian politician and business manager; he was responsible for privatization in Russia as an influential member of Boris Yeltsin's administration.

⁹⁷ Gazprom, 60th anniversary of first gas main in Russia, <http://www.gazprom.com/about/history>.

The “shock therapy” is expressed in rapid privatization of state property, deregulation of prices and exchange rate of ruble, and in renunciation of the planned management of economy, budget subsidies to the sector of the national economy and population, etc. The cornerstone of the reforms was the release prices from the state control. The supporters argued that it would lead to a balance of price and demand to revive the economy. The price growth since January 1992 surpassed all expectations. In the monopolistic nature of the economy and goods shortage that led to a sharp decrease in consumer demand, as well as the depreciation of ruble in the accounts of enterprises and deposits in the Savings Bank. Russians lost all of their savings, in 1992, the prices increased 36-fold, the hyperinflation developed⁹⁸.

The combination of price growth with the opening of borders, the import provisions and convenience goods from abroad contributed to the saturation of the consumer market, withdrawal of money and stabilization of the market. However, the low competitiveness of domestic products caused the sales decline, and hence the production of Russian enterprises. The position of Russia in the world economy weakened significantly: its share in total world's GDP declined from 3.6% in 1990, to 1.7% in 1997⁹⁹.

In the spring of 1992, the vast majority of the Russian population was totally against the methods of the so-called “gaidaronomiki” (economic policy of Gaidar). All significant political forces of the country were against the taken socio-economic policy, so in December 1992 Gaidar was dismissed from the post of Acting Premier. The forms and methods of economic reforms were actually adjusted in the direction of greater social protection of the population only in the 1993-1994 with coming of the new Prime Minister, Viktor Chernomyrdin, who was the former Minister of the Gas Industry of the Soviet Union and from 1989 headed the state company Gazprom.

Although several goals of the shock therapy were achieved in milder forms, such as privatization, price regulation and market's opening, radical reforms failed to appear and were slowed down by the strong industrial lobby. This allowed Russian managers of state enterprises to continue withdrawing funds from the system. By 1992, this rent-seeking behavior even accounted for 80-90% of the Russian GDP. The gradual reforms, the shortcomings in the way of inflation were handled, and the rent-seeking behavior was the cause of the hyperinflation and the financial crisis in 1993¹⁰⁰.

⁹⁸ Federal'nyi Portal (Federal Data Portal), *Sotsial'no-Ekonomicheskie preobrazovaniia v 90-e gody*, (Social and Economic Reforms in the 1990s) (<http://protown.ru/information/hidden/3712.html>).

⁹⁹ Bezborodov A., eds., *Otechestvennaia Istorii Rossii Noveishego Vremeni* (The Russian Domestic Modern History, 1985-2005. Moscow: RGGU, 2007, pp. 403-455.

¹⁰⁰ Åslund A. *Russia's capitalist revolution. Why market reform succeeded and democracy failed*, Washington DC: Peterson Institute for International Economics, 2007, pp. 156-215.

The energy sector was also restructured during Russia's transitional process at the beginning of the 1990s. The first official energy policy was defined in 1992, as part of the shock therapy, stating among other things that the efficiency of the energy industry was to be increased, and the first phase of privatizing the energy sector was to start.

During the Soviet era, the responsibility for the oil sector was shared by various ministries. In 1987, regional administrators were given greater powers, through state enterprises. In September 1991, the Russian Ministry of Fuel and Energy was transformed into the public limited company Rosneftegaz – Russian gas and oil.

In 1989, the responsibility for the Soviet gas industry was placed with Gazprom, as a state enterprise. Although the gas contracts with Western gas companies initially remained under government control in 1990, through Soiuzgazexport, they were subsequently returned to Gazprom. In response to the state's retention of the export market, Gazprom temporarily created its own division and strategy, with Zarubezhgaz. After the Soviet Union's collapse, the key views of how to institutionalize the gas industry appeared:

- Gazprom's management wanted an integrated public limited company over all former Soviet states;
- The independent republics favored individual entities (i.e., fragmentation); and
- The economic reformers within the government advocated breaking up the gas industry, based on the oil sector's model¹⁰¹.

Eventually, the assets were divided between Belarus (1.5 percent), Ukraine (9.5 percent) and Russia (89 percent), with the government retaining full ownership. The nature of industry, where the control of the value chain yielded benefits, and the strong political lobby of management prevented the gas industry from being broken up¹⁰². Within the Kremlin, the lobby for Gazprom was reinforced by Victor Chernomyrdin's appointment as a Deputy Prime Minister for Energy in May 1992 (he was later appointed Prime Minister). His protégé, Rem Viakhirev succeeded Chernomyrdin at Gazprom. In November 1992, Gazprom was transformed into a Russian joint-stock company.

In the 1990s, Gazprom kept a stabilized position in the general economic collapse, and it only slightly reduced production due to a recession of demand for gas in Russia. Its principal subsidiaries operated in the Western Siberia: Urengoygazprom, Yamburggazdobycha, Nadymgazprom, Surgutgazprom, Zapsibgazprom, Tyumentransgaz; and in the old gas areas: Kubangazprom, Orenburggazprom, Astrakhangazprom and Severgazprom.

¹⁰¹ Stern J., "Soviet and Russian gas: the origins and evolution of Gazprom's export strategy", in Mabro R. and Wybrew-Bond I., *Gas to Europe: the Strategies of Four Major Suppliers*, Oxford: Oxford University Press/Oxford Institute of Energy Studies, 1999, pp. 135-201.

¹⁰² Ibid.

The most significant asset of Gazprom was Unified Gas Supply System (UGSS). It is the largest processing complex in the world, which includes extraction, processing, transportation, storage and distribution of gas. The UGSS provides a continuous supply of gas from the “wellhead to the gas stove”¹⁰³. It consists of 155 thousand km of gas pipelines, 268 compressor stations with a total capacity of 44.8 million kilowatt, 6 plants for processing gas and gas condensate, 24 underground gas storages (UGS). Its vulnerability is a relatively small capacity of storage facilities (just only 54 Bcm). In addition, due to lack of money, the UGSS was slowly updated and expanded: at the end of the 1980s, Gazprom had built 10 thousand kilometers of new pipelines per year, by the mid-1990s it had been cut down to only 1.3 thousand km.

By the mid-1990s, Gazprom's reserves accounted for 32 Tcm of gas (83% of the Russian stock), with 79% situated in the western Siberia. The company gave 94% of gas country production. In 1995, Medvezhie, Urengoy and Yamburg fields supplied 75% of natural gas. But in the 1990s, these three pillars of Gazprom entered into the stage of declining production.

Despite financial difficulties at this period, Gazprom was exploiting new fields, including West Tarkosalinskoye (15 Bcm per year), Kharvutinskoye (30 Bcm), Yamsoveyskoye (20 Bcm) and the western part of Komsomolskiy field (5 Bcm). But they were not enough to sustain production growth in the future. A lack of money did not cover the exploration industry needs to expand its resource base. In 1998, for example, the increase in gas reserves amounted only by 22% of production per year (Table 4.1) that later it would threaten the shortage of gas. In the 1990s, the natural gas industry has survived through the fields discovered during the Soviet era, when no one calculated the funds invested in exploration.

Table 4.1. Substitution of natural gas reserves in Russia in 1996-2000

	1996	1997	1998	1999	2000
Growth of gas reserves, Bcm	180	398	338	210	450
% of annual production	30	70	22	35	77

Source: IEA. Energy policy of Russia, Review. Paris, 2002 p. 40

From 1991 to 2000 the Russian gas industry has lived as “a state within a state”¹⁰⁴. The State authority was too devoted to the gas monopoly that the privatization did not affect the Gazprom's activity even if it was in the interest of the company's management. “But the

¹⁰³ Pusenkova N., “Rossiiskii Gazprom v gazpromovskoi Rossii” (The Russian Gazprom in the Gazprom's Russia), *Istoriia novoi Rossii* (History of the Modern Russia), Vol.2, S.Petersburg: Norma, 2011, p. 421-465.

¹⁰⁴ Viakhirev R., Makarov A., eds., *Strategiia Razvitiia Gazovoi Promyshlennosti Rossii* (Strategy of the Russian Gas Market Development), Moscow: Energoatomizdat, 1997, p. 23.

authorities' love was not free – wrote Viakhirev - Gazprom has properly to pay money for covering the budget deficit and financing political campaigns”¹⁰⁵.

It is necessary to retrace year by year history of relations between Gazprom and authorities, as well as its position in the global market. Only then it would be possible to understand how changes in political circles influenced on the Gazprom's policy.

In 1991, it was worked out a plan of gas unification of the Russian, Ukrainian and Byelorussian infrastructures. The State Gas Company Gazprom hoped to retain control over the most valuable part of economics in the former Soviet Union. In the first place, it was a gas transmission system of the cross-border republics. However, the union broke down, and Gazprom exclusively remained the Russian enterprise.

In late spring of 1991, Gazprom attempted to penetrate the European gas market, where it exported about 100 Bcm of gas per year. Cooperating with the German chemical company BASF, Gazprom was going to participate in privatization of the Berlin Company, Verbundnetz Gas AG. Prior to the unification of Germany it had all the gas distribution network of GDR. Gazprom planed to buy 25.1% of shares in Verbundnetz Gas AG and thereby reduce their dependence on Ruhrgas, which dictated the price to Gazprom at the conclusion of export contracts. This idea was warmly supported by the Russian Government and the Chairman of State Foreign Economic Commission, Stepan Sitaryan, appealed to the Minister of Economy of FRG, Helmut Hausman, to provide necessary assistance to the Russian company. But the Germans refused to Gazprom even the right to participate in the tender. Thereby Ruhrgas bought the shares of Verbundnetz Gas AG.

In September, 1991, Gazprom made retaliatory measures: it created with the German company Wintershall two joint ventures: WIEH (to purchase gas) and Wingas (to transport it). They still pay less for the Russian gas than Ruhrgas does¹⁰⁶.

In 1992, Yegor Gaidar's government attempted to introduce elements of competition into the gas industry. In February, for the first time it was suggested to set up independent production companies that supply gas to the transportation system controlled by the center. The Minister for Fuel and Energy, Vladimir Lopukhin tried to put this idea into practice and this made an enemy with Viktor Chernomyrdin, a staunch supporter of keeping Gazprom as a single company.

In April, 1992, the government passed a resolution authorizing Gazprom to leave 38% of foreign currency earnings abroad. And in May, Yegor Gaidar managed to check the documentation of Gazprom for the state of foreign currency accounts and transactions on them.

¹⁰⁵ Ibid.

¹⁰⁶ Ivanova E., “Gazovaia promishlennost'” (Gas Industry), *Kommersant Vlast'*, N 47, 27.11.2001, p.7.

In late May, 1992, Gazprom demonstrated its lobbying capabilities. Immediately after the audit of the accounts, the Minister Vladimir Lopukhin, the Gaidar's follower was dismissed, and Viktor Chernomyrdin took his place while elevated to the rank of Deputy Prime Minister for Fuel and Energy Complex. On 30 May, Viktor Chernomyrdin passed the power over Gazprom to his deputy and old friend from Orenburg, Rem Viakhirev. The next day, President, Boris Yeltsin signed two decrees: № 538 “On Providing a Unified System of Gas Supply” and № 539 “On the Development of New Gas Fields on the Yamal Peninsula, in the Barents Sea and on the Sakhalin Island's Shelf”. The entire gas market, in accordance with these decrees, passed under the Gazprom's control and the property complex of the country's natural gas passes into the concern's economy. Thus, the privatization was not put into effect on the natural gas market.

“The Russian State Committee of State Property Management for effective economic running of the Unified Gas Supply System's property: ... should sign a contract with the state gas concern Gazprom for the organization of economic managing of the UGSS, in terms of its property's transfer to the full management of the state gas giant Gazprom¹⁰⁷”.

With the decree № 539, Gazprom got without a competition licenses for the gas fields in the most prospective areas. By 1995, Gazprom held licenses for 81 deposits, which accounted for 68.5% of all gas reserves in the country. Gazprom was given the exclusive right for the gas supply for export to the intergovernmental agreements. 45% of foreign currency, received from these supplies, remained at its disposal, the turnover of these transactions exempts from duties.

In July, 1992, the government borrowed \$8.7 billion from the Western Europe for the development of Gazprom. The government recommended Central Bank to allow Gazprom open accounts in the foreign banks for paying off its debts. Established by Gazprom, Imperial Bank bought at the Central Bank the share holding of East-West United Bank. It was a former Soviet foreign bank in Luxembourg, through which the payment for all gas exported to Europe and much of the oil exported by Rosneftegaz¹⁰⁸ was made.

In November, Boris Yeltsin signed a decree № 1333 “On the transformation of the state gas company Gazprom into Russian joint-stock company (RAO) Gazprom”. According to this decree, the extractive and transport companies of the gas industry were converted into subsidiaries of Gazprom with its absolute control. The auxiliary and service companies acquired the status of affiliated corporations with Gazprom's share more than 51%.

The initial distribution of the Gazprom's shares was following:

¹⁰⁷ Presidential Decree of 01.06.1992 № 538 “On Providing a Unified System of Gas Supply”, http://www.lawrussia.ru/texts/legal_178/doc17a690x930.htm.

¹⁰⁸ **Rosneftegaz** is a Russian company, which manages the state assets in the oil and gas industry. It is an owner of 75.16% shares of Rosneft, and 10.74% shares of Gazprom. Full name is Open Joint Stock Company Rosneftegaz. 100% of Rosneftegaz's shares are state-owned.

- 40% are fixed by the state property until 1999 with the right of Gazprom to vote with 35% of this package (Gazprom could vote using just 35% of package);
- 28.7% are set for vouchers sales;
- 15% are for the employees of Gazprom;
- 10% are reserved for subsequent sale on foreign stock exchanges;
- 5.2% are for the population of the Yamal-Nenets Autonomous District (Yamal);
- 1.1% is transferred to Rosgazifikatsiya¹⁰⁹.

The next day, after the resignation of Yegor Gaidar, December 14, Viktor Chernomyrdin was appointed Prime Minister. He was confirmed by the VII Congress of People's Deputies of Russia as Chairman of the Government of the Russian Federation.

In January 1993, the Ministry of Energy was headed by Yuri Shafranik, former Head of the Tyumen Oblast Administration. On his initiative, on 1 February, the domestic gas price was increased by 3.6 times.

In February 1993, for the first time, Gazprom cut the gas off for Ukraine by reason of nonpayment. The supply's cutoff lasted a day. Ukraine's gas debt already exceeded 138 billion rubles, but to Moscow's threat of cutoffs Kiev answered to close the pipeline through which Russia supplied gas to the Western Europe.

In March 1993, Gazprom launched a substantial project to develop gas fields on the Yamal Peninsula. Its main part was a construction of transit gas pipeline Yamal-Western Europe (the laying cost of first two pipelines was estimated at \$ 30 billion only within the CIS). On 22 March in Warsaw, Rem Viakhirev and the First Deputy Minister of Foreign Economic Relations, Oleg Davydov signed an agreement that the transit pipeline to the Western Europe passed through Poland, bypassing Ukraine.

In July 1993, Gazprom took a second attempt to penetrate into the German market. In Bonn, the Russian government delegation, led by the Prime Minister, Viktor Chernomyrdin had talks on access of Russian goods to European market and attraction German investments in Russia. Gazprom signed an agreement with Wintershall to build in Germany two gas pipelines and storage. The estimated annual revenue from these projects was about DM1.7 billion.

In November 1993, Boris Yeltsin signed a decree establishing a specific stabilization fund for Gazprom. On the development of gas supply, Gazprom was allowed to deduct the fund up to one third of its premiums to the state gas prices for consumers. The decree provided Gazprom with unprecedented privilege: the funds, allocated to the stabilization fund group, were not included in the tax base.

¹⁰⁹ **Rosgazifikatsiia** was established in 1992 to manage the state share of gas distribution companies. The state had 74.54% of its shares, the rest divided between about fifty regional gas companies and individual persons. www.rgaz.ru/

In March 1994, Gazprom stopped supplies of Russian gas to Ukraine: its debt was more than 1 trillion rubles. Gazprom needed a quick solution to the debt's problem like assignment for the Russian side the property rights in the Ukrainian gas pipelines and industrial plants. However, on 10 March, during the Russian-Ukrainian talks it was agreed that Gazprom continues to supply gas to Ukraine. The Ukrainian side pledged in a month to submit a schedule of repayment of its debt for Russian gas. However, the graph had not been represented, but for political reasons, the gas for Ukraine was not cut off.

At that time, the State Property Committee approved two orders of Anatoly Chubais, to regulate the timing and sequence of Gazprom shares' sale at voucher auctions: the auctions would be closed, and just a physical person, registered in a region where the auction is held, would have the right to buy shares of Gazprom. Anatoly Chubais, who always managed to make a public sale of shares in enterprises for vouchers, was powerless in the case of Gazprom.

The units of Gazprom did the main part of the auction. This order excluded not only the large independent investors' participation in privatization, but also it allowed senior Gazprom's managers to control the number of bidders. Thus, the distribution of shares was not out of control of the Gazprom managers. Subsequently, the “gas generals” would be able to concentrate the main holding of shares in the hands of their related structures.

In April 1994, company Itera appeared at the Russian gas market. Registered in 1992 in Florida, Itera engaged in food supplies to Turkmenistan. Being unable to pay its debts, this country offered Itera a license to export 4 Bcm of gas. The company got the government letter of commitment thanks to the close relationships of the corporation's president, a former athlete cyclist, Igor Makarov with Vice-Prime Minister of the Turkmen government, Valery Otchertsov. (In 1996, Otchertsov left his post and became President of one company within the group.) With the letter of guarantee, Igor Makarov went to Gazprom and convinced the first Company's Deputy, Viacheslav Sheremet, to allow the company Itera to deliver the Turkmen gas to Ukraine. Since then, Itera and Gazprom co-operated in many markets, the latter even handed over a number of fields to Itera.

In August 1994, Gazprom signed a contract with German engineering companies Linde and Salzgitter-Gruppe and chemical concern BASF on construction a gas-chemical complex in New Urengoy to produce polyethylene and ethylene: materials that Russia imports. BASF, with which negotiations were conducted over a year, agrees to deliver to Gazprom technology and

technical support¹¹⁰. However, their joint project had not been realized. BASF had lost more than DM1 billion, and in 1999, it froze the project.

In early August 1994, Gazprom appointed London investment bank Kleinwort Benson the advisor in the sale of 9% of its shares to foreign investors. On 12 August, for the first time after summing up the voucher auction, the shares of Gazprom appeared in the secondary market. On 30 August, the Finance Company, Russian Brokerage House SA & Co proceeded to quotation of shares of Gazprom. The price of shares' purchase was 14 thousand rubles. Its shares immediately received only one-way quote: brokers could just buy the Gazprom's stock, without selling them on the open market.

In October 1994, in Warsaw, Europol Gaz¹¹¹ and Gazprom renewed the negotiations for the construction of the Polish section of the Yamal-Western Europe gas pipeline. The main issue about the lending of the project was again not resolved. Poland tightened the negotiations, not wishing to embroil with Ukraine.

From the 1st of February 1995, Gazprombank¹¹², the authorized depository of the company had to start distribution of the documents certifying the ownership of shares. At that time, the stock market of Gazprom was estimated at \$70 million. In February, Gazprom bought 10% of the international consortium Interconnector, which included eight leading oil and gas companies in the Western Europe and the USA. Interconnector must build on the bottom of the North Sea; it was a pipeline connecting the British Isles with the continental Europe. Its expected capacity was of 20 Bcm per year, and it came into operation by the 1st of October, 1998. The total project cost was 440 million pounds sterling.

In February 1995, Prime Minister Viktor Chernomyrdin finally signed with the Polish Prime Minister Włodzimierz Cimoszewicz a protocol on the construction of Polish section of the Yamal-Western Europe gas pipeline, which would pass also through Belarus. It was planned that 50% of the Russian gas would be delivered to the Western Europe through Belarus, and not through Ukraine.

In early March 1995, Viktor Chernomyrdin, increased from 15 to 25% excise tax on the gas explored by Gazprom: it was necessary to find a new source of budgetary replenishment. That caused, for the first time, the cooling of relations between Viktor Chernomyrdin and Rem Viakhirev.

¹¹⁰ Proshin L., "Gazprom diversifitsiruet proizvodstvo. Sibir' budet bogata ne tol'ko gazom, no i polietilenovoi plenki" (Gazprom diversifies production. Siberia will be rich not only with gas but also with polyethylene film), *Kommersant*, №145 (613), 05. 08.1994, <http://kommersant.ru/doc/85862>.

¹¹¹ **Europol Gaz** was founded by Gazprom, Polish Gurnstvo Naftove Gazownistvo (GNG) and Gaz Trading on 23 September 1993 for realization of Yamal Europe Pipeline project.

¹¹² **Gazprombank** is a Commercial Bank of the gas industry, founded in July 1990.

In April 1995, Gazprom experienced another failure on the East German market. In Berlin, it was officially announced a signing of the last significant agreement connected with privatization in the industrial complex of the former GDR. The Federal Commission for privatization of remaining industry in the GDR had announced the transfer of 80% shares of the East German chemical industry, Olefinchemie-Verbund, to the ownership of the U.S. Dow Chemical Company.

In July 1995, Gazprom transferred its foreign currency accounts from Vneshtorgbank and Imperial Bank into Gazprombank. According to the official comments, “Gazprombank was our bank, so the decision on its financial reinforcement should not confuse anyone”¹¹³. Due to another point of view, Gazprom did it as a result of the failure to get control over these two banks. The struggle for running Imperial Bank carried out between Gazprom and LUKoil. They owned almost equal shares of Imperial Bank: approximately 12%. Over the past three years, a struggle for hegemony over the Bank was between Gazprom and LUKoil, and, the Chairman of the Board, Sergey Rodionov expertly maneuvered between the two giants and managed to maintain his position. In the first half of 1995, there were rumors that the relationship between Gazprom and management of Imperial had deteriorated and that the gas company was thinking about leaving the bank¹¹⁴.

In July 1995, in Helsinki Gazprom and European Bank for Reconstruction and Development signed the protocol on cooperation until 2000: Gazprom's bank would invest about \$700 million annually.

In September 1995, the supporter of tight fiscal policy, Vice-Premier Anatoly Chubais sought to eliminate the stabilization fund of Gazprom and promised to investigate how this fund was spent. The company experts agreed that the stabilization fund's issue was ultimately a question of distribution of financial resources between the industrial and public sector. By eliminating the stabilization fund, the state seemed to take money out of it by raising the excise tax¹¹⁵. Thanks to the reserves of the gas giant, the government hoped to solve the dual task: to fill the budget revenue and ease the plight of industries in one way or another connected with the consumption of gas that was almost the entire national economy¹¹⁶.

¹¹³ Andrianov A., “Valutnye scheta Gazproma. Gazprombank mozhet stat' mestom sbora gazodollorov” (Currency Accounts of Gazprom. Gazprombank can become a gas-dollars collecting place), *Kommersant*, N117 (835), 27.06.1995.

¹¹⁴ Pelehova I., Loginov M., “Reorganizatsiia soveta banka Imperial. Novii predsedatel' okazalsia khorosho zabytim starym” (Re-organisation of the Imperial Bank's Council. New President is a well-forgotten old one), *Kommersant*, N192 (1150), 12.11.1996.

¹¹⁵ Serov A., “Regulirovanie estestvennykh monopolii. Gazprom pochuvstvoval raznitsu” (Regulation of the natural monopolies. Gazprom perceived the difference), *Kommersant*, N157 (875), 29.08.1995.

¹¹⁶ Serov A., “Regulirovanie estestvennykh monopolistov. Poslednii klapn” (Regulation of the natural monopolists. Last valve), *Kommersant*, N155 (873), 25.08.1995.

In June 1996, buying a substantial part of shares Gazprom became a shareholder of NTV (Independent Television Channel), owned by the MOST group. During the presidential election campaign, 1996, NTV actively supported Boris Yeltsin who was later elected for a second term. General Director, Igor Malashenko entered the campaign staff of Yeltsin and correspondents Vadim Glusker and Alim Iusupov focused on creating a positive image of the candidate. The "reward" for the support of Yeltsin's victory in the election was pledged all the live broadcast of the fourth channel to NTV. Malashenko was invited to head the presidential administration.

In October 1996, a tax scandal erupted between the government and Gazprom. For failing to pay the taxes, some accounts of its certain subsidiaries were arrested, e.g., it was confiscated the property of the Urengoi-gazprom in the amount of 76.3 billion rubles. According to Viakhirev, the government threatened to sell a part of fixed assets and inventory holdings of Gazprom at auction if the company did not pay taxes. This happened just at the moment when Gazprom was going to make a public offering to foreign investors to purchase a package of its shares.

In December 1996, Gazprom created a trading subsidiary Mezhhregiongaz. It had become Gazprom's accounting department, dealing with the settlements with Russian gas consumers. Mezhhregiongaz centralized all cash flows: it buys the gas from transport companies and sold it to consumers, getting solid money.

In February 1997, an international scandal erupted around the shares of Gazprom. The Regent GAZ Investment Company (RGIC – subsidiary of Regent Pacific) from the Cayman Islands had sold its shares at \$200 million to the Western investors announcing that they were guaranteed with the securities of Gazprom. So the company tried to circumvent the rigid separation of domestic and foreign shares market of Gazprom and to make its game for almost fourfold difference in market value of these shares. Rem Viakhirev immediately demanded the leadership of the Regent GAZ liquidate the company. And a week later the Regent GAZ announced to self-dissolution, after buying shares from its shareholders.

In March 1997, in Frankfurt on the Main a group of Western banks, led by Germany's Dresdner Bank, and Gazprom signed an agreement to provide a syndicated loan of \$2.5 billion for the project of the Yamal-Western Europe gas pipeline.

In March 1997, Nizhny Novgorod's Governor, Boris Nemtsov became Vice-Premier. In parallel, he headed the Ministry of Energy, succeeding the Chernomyrdin's supporter Peter Rodionov, who became the Deputy Chairman of Gazprom. The first Boris Nemtsov's promise was to "restore order" in Gazprom, and he threatened to "divide" it. But Gazprom passed ahead of the Vice-Premier and on 26 March it announced a restructuring. But this was not a restructuring Boris Nemtsov insisted on. All drilling enterprises would be combined into a

specialized company Burgas, and extractive and transport companies would be released from the gas distribution function, which Mezhhregiongaz would occupy. Gazprom also promised to sell non-core assets like service units, farms, resorts and sanatoriums.

In April 1997, it was signed a contract for the purchase of 32.5% of the Latvian state gas distribution company Latvijas Gaze's shares to foreign investors. They were divided equally between Gazprom, the German consortium of Ruhrgas and Preussen Elektra.

On 10 April 1997, Prime Minister, Viktor Chernomyrdin took a two-day vacation. Using this, Anatoly Chubais and Boris Nemtsov persuaded the Russian President to break a trust agreement with Rem Viakhirev to manage 35 % of the state-owned shares of Gazprom. Boris Nemtsov said that the shares had been transferred without any competition and free of charge for trust managing, and the State had not received a penny from the transaction. Boris Yeltsin signed a decree depriving Rem Viakhirev of managing of the state-owned shareholding. But, returning from the vacation, the prime minister blocked the decree. In May, Boris Nemtsov and Rem Viakhirev agreed on a new draft of the decree, under which the head of Gazprom remained a trustee of the 35% of the company's state-owned shares, but he deprived of the right to vote independently.

In November 1997, Gazprom, LUKoil and the Anglo-Dutch Company Shell signed a memorandum of understanding. According this document, they intended to participate in the privatization of Rosneft. However, the privatization did not take place.

In January 1998, it was founded a new holding company Gazprom-Media, which united all the media owned by Gazprom. A former first Russian President's assistant, Viktor Iliushin headed it.

On 23 March 1998, Viktor Chernomyrdin was dismissed. Sergei Kiriienko became Prime Minister, and Sergey Generalov headed the Ministry of Energy. It was rumored that the former Prime Minister directed Gazprom. Rem Viakhirev commented: "Chernomyrdin is too normal to do that"¹¹⁷. The former Prime Minister was preparing to become a deputy of State Duma of the Yamalo-Nenets Autonomous District. Rem Viakhirev refused to fund in its entirety the election campaign of Viktor Chernomyrdin.

In June 1998, Deputy Ministry of the State Property, Aleksandr Braverman made a sensational statement that the government was going to sell some state-owned shares of Gazprom. Strictly speaking, the initiative to reduce the issue of state-owned shares (40% of the share capital) belonged to Gazprom. More than two months earlier, the company had made a proposal to the government to sell a part of state-owned stock to foreign partners: the Anglo-

¹¹⁷ Victor N., *Gazprom: gas giant under strain*, Stanford: Program on Energy and Sustainable Development, Stanford University, 2008, p. 56.

Dutch Shell and Italian ENI. Negotiations for the sale of shares and their price, Gazprom took upon itself: the corporation intended to persuade the partners to purchase approximately 3% for \$1 billion. According to the agency Prime-TASS, Alexander Braverman said the government plans to sell 5.87% shares of Gazprom for about \$600 million. That meant sell them in three or four times lower than the price proposed by the company (but it was not known if Gazprom could bargain on such favorable conditions)¹¹⁸.

In late July 1998, Boris Yeltsin signed a decree on the sale of 5% of the Gazprom's state-owned shareholding. It was planned to gain for them \$1.6 billion. The auction was held in late December, and it was sold only 2.5% of the monopoly's shares. Ruhrgas bought them for \$660 million, which were used for repayment of Russia's external debt.

In January 1999, Rem Viakhirev's son Iuri Viakhirev headed the most profitable Gazprom's subsidiary, Gazexport.

That same month, the gas monopoly sold to Itera the controlling interest of the Urengoy gas production enterprise, Rospan. Along with the stake, Itera received a license for the main gas fields: Novy Urengoy and East Urengoy. Itera also handed control of the gas company Purgaz, which developed Gubkin deposit in the Yamalo-Nenets Autonomous District. Later, Gazprom held an additional emission in its subsidiary, Zapsibgazprom, without buying shares, and reduced its stake from 51 to 37%. The South Russian gas field, for which Zapsibgazprom had a license, also passed later under the Itera's control.

In May 1999, Sergei Stepashin became Prime Minister. On 25 May, the Ministry of Energy was led by Viktor Kaliuzhnyi. He unsuccessfully tried to get on the committee of directors of the gas monopoly. Kaliuzhnyi was always at war with Gazprom. It was his idea to combine Gazprom and RAO UES and to establish a ministry on their basis.

In January 2000, at the meeting with the Surgutgazprom's employees Rem Viakhirev made a sensational statement of the forthcoming Gazprom's division. "We divide the company into two groups: those who make money and those who help them, - he said. - As the gas-producing enterprises and export divisions make money, they will remain under Gazprom's rule, and all ancillary departments (transport, service) will withdraw and sell". On the same day, the stock market of the company had fallen off: their quotes fell by 8%. Two weeks later, the Acting President Vladimir Putin said that Gazprom "will not be divided"¹¹⁹.

In February 2000, the board of Gazprom's administration announced the principal provisions of its work program with the company's shares until 2003. The top news: Gazprom

¹¹⁸ Sapozhnikov P., Samoiloova T., "Gazprom na prodazhu" (Gazprom for sale), *Kommersant*, N111 (1514), 24.06.1998.

¹¹⁹ Nemtsov B., Milov V., *Putin i Gazprom* (Putin and Gazprom), <http://www.nemtsov.ru/?id=705498>.

planned to sell to foreign investors further 6% of the shares and requested the government to increase the number of stock exchanges, where the company's securities could turn over.

In April 2000, the National Association of Securities Market Participants (NAUFOR) admitted Gazprom, a nonprofessional participant of securities market, into its circle. The membership of the gas concern in the association it had nothing to do with the extension of its activities. Otherwise, Rem Viakhirev could lose their license for managing the state shares.

In early April 2000, between Rem Viakhirev and Viktor Chernomyrdin once again there was a conflict: because of the production project of large-diameter pipes for Gazprom in Russia, which the company previously purchased abroad. The price was \$1 billion a year. All the steel plants of the country entered the field for a lucrative order. Viktor Chernomyrdin lobbied Nizhni Tagil Metallurgical Works (during the election campaign, the Head of the company, Iskander Makhmudov supported Chernomyrdin); Rem Viakhirev supported Oskol Electric Plant, of which Gazprom controlled 60% of the shares.

On 28 April 2000, Gazprom refused to accept a part of the shares of TNT-Network, JSC Publishing House Seven Days and Media MOST for repayment the debt of the holding company Media-Most. Gazprom said that it needed not the separate shares, but the control over the entire holding. Vladimir Gusinskii¹²⁰ automatically lost the status of the company's first-person in the case of a voluntary transfer of the holding's controlling stock. He argued that Gazprom behaves in this way, not on its own initiative, but of the Kremlin's will. The war between Media MOST and Gazprom ended with the fact that the first persons of both companies resigned. Just the Kremlin was a winner.

On 15 June 2000, in Berlin Rem Viakhirev said, that he defined his successor as a chairman of the company. In the same month, a new chairman of the company's committee of directors was elected at the meeting of shareholders of Gazprom. Viktor Chernomyrdin was replaced by the Deputy Head of the Presidential Administration, Dmitry Medvedev.

As it was mentioned above, once the process of transition from command to the market economy started in 1992, a Joint Stock Company of the gas sector Gazprom was created and proposed for a partial privatization. The head of Gazprom at the time, Victor Chernomyrdin refused to part production from transport and insisted on the vertically integrated structure of the company. Curiously enough, when he became Prime Minister, he carried out most of restructuring and privatization reforms in other economic sectors. Nevertheless, he firmly

¹²⁰ **Vladimir Gusinskii** is Russia's former media magnate, the owner of the news resource NEWSru.com. In 1992, he founded a public limited company MOST, which brought together 42 companies (including security companies MOST security service and STO) and Most-Bank. Gusinskii founded NTV, co-founded the newspaper Today, Seven Days, magazine Results.

believed that the gas sector should be largely exempted from a restructuring from production, transportation and distribution.

At the start of Russia's transitional period (1989-1995), the Gazprom's management did not succeed in retaining full control over the Russian value chain. The management of key gas facilities fell to other Russian companies. The foreign companies such as Royal Dutch Shell, ExxonMobil and BP also gained access to Russian gas reserves, by means of PSAs¹²¹ (mostly associated gas). Gazprom was granted an exemption from export taxes, some import tariffs and VAT, in exchange for a number of privileges relating to the gas export, among other things, and some obligations, such as an agreement to continue the traditional loss-generating supplies to Russia and other CIS states¹²². In addition, midway through the 1990s the Gazprom's administration was attracted by profitable trade through intermediaries, primarily between Turkmenistan and Ukraine.

In 1992, the Russian legislators introduced the concept of “natural monopoly”, which means a sector, where a competition is counter productive. It was particularly appealing that then the entire gas sector was defined as a natural monopoly. Such approach meant that natural gas sector, in general, represents a segment of the economy, where a competition is unnecessary. Such a definition contradicts a general description of natural monopoly, where a network, and not the sector per se, is specifically considered as a natural monopoly.

Following the economic crisis, in 1993 Boris Yeltsin wished to reform further the economy, but encountered stubborn resistance from the State Duma, which resulted in the threat of a coup. In the autumn of 1993, after military involvement, Boris Yeltsin succeeded in acquiring more power, by means of a new constitution, and replaced a number of radical reformers with professional industrialists such as Victor Chernomyrdin and Oleg Soskovets, in order to start a process of stabilization¹²³. As early as in August 1992, the reformer, Anatoly Chubais had reached a compromise with the managers of state enterprises for continuing the privatization. With the system of voucher privatization, as it was known, the managers relinquished a large part of their quasi-ownership in exchange for legal guarantees of a smaller part of the ownership. The secondary trade in vouchers was stimulated at a later point by the fact that many Russians failed to sell their vouchers. In the autumn 1994, the position of the managers of state enterprises was weakened by the drop in the values of commodity exports owing to the fall of the ruble (27%) and the continued inflation. Chubais unsuccessfully tried to

¹²¹ **Production Sharing Agreements** (PSAs) are a common type of contract signed between a government and a resource extraction company (or group of companies) concerning how much of the resource (usually oil) extracted from the country each will receive.

¹²² Åslund A. *Russia's capitalist revolution. Why market reform succeeded and democracy failed*, Washington: Peterson Institute, 2007, pp. 23-27.

¹²³ Ibid.

push through reforms, using credit support from the IMF (approximately 2 percent of the Russian GDP) and other measures such as reducing the budget deficit and liberalizing large numbers of prices.

The voucher privatization of the oil sector in 1992 meant that it was essentially the managers of state enterprises and government bodies that acquired the shares. Foreign parties were not permitted to own more than 15 % of the shares. The privatization gave rise to new enterprises; for example, Sidanko, Onako and Slavneft were formed in 1994, causing Rosneft's share in production to drop to 4 percent. Like the managers in the oil sector and elsewhere, as it was described above, Gazprom's management auctioned the vouchers in order to privatize part of Gazprom (in 1993-94). In 1994, over 30 % of the shares were held by private parties, while 15 % of the shares had been sold directly to Gazprom employees (mainly managers) and the remainder was government-owned (40 percent) or held by Gazprom (10 percent)¹²⁴.

In 1995, the Russian government carried out the second phase of privatization, so called a shares-for-loans scheme, in which a large part of government shares in certain joint stock companies (including five of Russia's oil companies) was sold by auction to a group of Russian commercial banks. The successful bidders were required to hold shares in trust for a maximum of three years in return for providing loans to the government to reduce its budget deficit. At any time, the government could buy its shares back¹²⁵. In a series of auctions, the stakes of the companies were transferred into trust accounts and thereupon they were sold to insider banks for a fraction of their market value. The stakes often went to the companies providing the loan tenders for the state, and through the loans-for-shares scheme, the assets estimated at more than \$25 billion were privatized and sold for just \$1.2 billion.

The second, shares-for-loans stage of privatization was being introduced just at the moment when the Russian budget deficit had climbed to 20% of GDP and the state was out of cash. The cash shortage offered an opportunity for fresh investment. New economic actors entered the oil sector: Mikhail Khodorkovsky of Yukos, Boris Berezovsky and Roman Abramovich of Sibneft¹²⁶.

To the gas industry it was applied just the first phase of the privatization scheme. Gazprom did not go through the shares-for-loans stage, for several reasons. First, Chernomyrdin and the company did not want to lose control over the gas sector or introduce new competition that might weaken the government control. Second, the internal gas prices were too low, and the

¹²⁴ Stern J., *Soviet and Russian gas: the origins and evolution of Gazprom's export strategy*, in Mabro R. and Wybrew-Bond I., *Gas to Europe: the Strategies of Four Major Suppliers*, Oxford: Oxford University Press/Oxford Institute of Energy Studies, 1999, pp. 135-201.

¹²⁵ Stern J., *The future of Russian gas and Gazprom*, New York: Oxford University Press, 2005, pp.34-45.

¹²⁶ Victor N., Sayfer I., *Gazprom: the struggle for power*, in Victor D., Hults D., Thurber M., *Oil and Governance: State-Owned Enterprises and the World Energy Supply*, Cambridge: Cambridge University Press, 2011, pp.655-701.

sector considered too valuable to the economy to introduce market dynamics. Even after the 1998 crises, when the Russian government has been looking for more cash, Russian President, Boris Yeltsin approved the sale of only a further 5% of the Gazprom's stake. Although the foreign ownership of Gazprom's stock was allowed to increase from its former limit of 9% to 14%, only a 2.5% was sold to Ruhrgas for \$660 million (the goal of this action was to establish a close liaison with the German company).

As a result, of the new reforms in 1994, young entrepreneurs and bankers – more widely known as oligarchs – succeeded in generating more economic and political influence. The lack of financial resources led to further privatization, using the loans-for-shares program, with oligarchs in particular, acquiring control over the large enterprises in exchange for loans. They also helped Yeltsin win a second term in office, in exchange for political and economic support after his re-election¹²⁷.

Moreover, the loans-for-shares program launched the privatization of the oil sector, allowing the oligarchs and Western energy companies – albeit to a minor extent because of the partial exclusion of foreign operators – to acquire oil interests. However, an unfavorable economic climate for banks and the lack of proper competition (for example because of restrictions on the auction) meant that the auction of a part of the oil sector generated less than the government had expected.

Despite a number of proposals to deregulate the gas industry, Gazprom was excluded from the loans-for-shares program, largely because of the political lobby. Yet Itera's position as an intermediary became stronger and stronger, and as the 1990s progressed it became the second largest producer of gas after Gazprom, in part, thanks to its close political and other ties with Viakhirev and Ukrainian politicians. This allowed Itera and several politicians to withdraw billions of dollars from Gazprom's profits¹²⁸.

After Boris Yeltsin had achieved a new turn in office, the reformers called for new reforms in order to stimulate a “normal” market economy. However, that process was opposed by the oligarchs. The conflicts between the various sides helped to bring about the financial crash of August 1998. In addition, the Russian fiscal and monetary policies were weak, owing among other factors to tax evasion, substantial expenditure for maintaining a high exchange rate for the ruble and the first war in Chechnya¹²⁹. Furthermore, as a result of the financial crisis in Asia in 1997 and 1998, which caused the demand and prices for energy to drop, the Russian

¹²⁷ Åslund A. *Russia's capitalist revolution. Why market reform succeeded and democracy failed*, Washington: Peterson Institute 2007, pp. 23-27.

¹²⁸ Victor N., Sayfer I., *Gazprom: the struggle for power*, in Victor D., Hults D., Thurber M., *Oil and Governance: State-Owned Enterprises and the World Energy Supply*, Cambridge: Cambridge University Press, 2011, pp.655-701.

¹²⁹ Åslund A. *Russia's capitalist revolution. Why market reform succeeded and democracy failed*, Washington: Peterson Institute 2007, pp. 23-27.

export income from gas and oil fell, and led with the subsequent devaluation of the ruble, also caused problems for the Russian government with its interest payments and repayments of government bonds. This caused instability in the banking system and created difficulties for the oligarchs.

The effect of the financial crisis and the low oil prices had a downward impact on the profitability of the oil sector, which meant that the export markets could no longer compensate the losses on the Russian market. Borrowings of foreign capital increased the Western influence. At the same time, a process of consolidation took place following the privatization process and profitable divisions were demerged and transferred abroad. The consolidation made the oil sector more attractive to investors and made it possible to reduce tax liabilities.

The gas market's management lost some of its political protection when Chernomyrdin was no longer Prime Minister in 1998. The Gazprom's management then proposed large-scale asset partition, which led to a part of company's assets transferred to Itera and other companies that had close ties with the Gazprom's direction. In addition, the prices in the industrial sector were liberalized and Gazprom's tax evasion was addressed by tackling barter agreements and increasing tax rates. Until 1997, the state ownership remained at 40 percent. In June 1998, Gazprom became a Russian open joint-stock company (Otkrytoe Aktsionernoe Obschestvo – OAO), and, the same year, Ruhrgas of Germany acquired a 2.5 percent interest in Gazprom, which was later increased¹³⁰.

As a consequence of the financial crisis, a number of fiscal and regulatory reforms were implemented quite quickly, although significant reforms were not implemented until Vladimir Putin became Prime Minister in 1999 and shortly afterwards President. In the same year, the effective policy of OPEC, combined with the recovery of the global economy, caused oil prices to start rising again in March 1999. The premise of the higher oil prices allowed Putin to increase his control over strategic sectors such as the energy sector. The higher oil prices also generated more export income. Although Putin was still working with the Yeltsin's “family” during his first period in office, he soon put forward former Komitet Gosudarstvennoj Bezopasnosti's (KGB) members and technocrats from his period in St. Petersburg. For the gas sector, Putin started to become actively involved in implementing reforms in Gazprom's management, in response to the corruption there. In 2001, for example, Putin had Viakhirev replaced by Dmitry Medvedev and Alexey Miller. As a result of the financial crisis in 1998, foreign investors managed to increase

¹³⁰ Stern J., *Soviet and Russian gas: the origins and evolution of Gazprom's export strategy*, in Mabro R. and Wybrew-Bond I., *Gas to Europe: the Strategies of Four Major Suppliers*, Oxford: Oxford University Press/Oxford Institute of Energy Studies, 1999, pp. 135-201.

their share in Gazprom to 10.31% in 2000. The Russian government also owned 38.37% of the shares¹³¹.

During the 1990s, the struggle over Gazprom's reform did not subside. The company defended its integrity. The main direction of the proposed reforms was partition of the potentially competitive sectors (gas production) from the monopoly (gas transport). But gas pipelines belonging to Gazprom were a reliable guarantee of structural integrity of the company. And its preservation was probably the main priority of the monopoly. At first, failed attempt by the government of Yegor Gaidar. Then, the allocation of the transmission system of the Gazprom was advocated by the IMF, the oil companies (who wish to obtain guarantees of access to gas pipelines), and several cabinet members, especially Boris Nemtsov.

¹³¹ Ibid.

CHAPTER 5. The natural gas industry, Gazprom and its role for the Russian economy

In the 1990s, the Russian gas industry in general and Gazprom in particular went down in the list of leading multinational companies in the world, especially due to the continuing decline of the Russian economy. It was, therefore, essential for the industry, suffering the decline as well, to overcome the crisis. It became possible in the next decade, during the subsequent rise of Russian economy.

What were the problems that the gas industry and Gazprom faced?

The most challenging was a problem of the industry disintegration by reason of the misunderstood market requirements and incorrectly applied mechanisms.

Indeed, the only way to ensure the effectiveness was a competition, in a broad sense of the word, after the destruction of the administrative system of the Soviet centralized economic management along with its principles, the so-called manpower policy and the party-administrative responsibility for effectiveness of the “entrusted sector of economy”. However, the organization of competition in the supposed natural monopoly, which gas industry was required to the UGSS (Unified Gas Supply System), was one of the most complex and open problems.

The second fundamental issue of the industry was a nonpayment crisis. In the 1995-1996 period, this problem had a clearly defined political point, when at the interests of the two election campaigns - the parliamentary and presidential ones - it was decided, on the one hand, the freezing of prices (which in theory should help to overcome the crisis), but on the other, a reduction of consumers, disconnecting them from the supply because of nonpayment. The result of these measures had been an extremely disastrous: on the 4th of April 1996 the customers did not pay more than 40% of gas used during the preceding year and in consideration of the economic conditions they could not do it. Consequently this process gave rise to arrears in budget financing the defense industry, social services, payment of agricultural products, etc. The system of the state tariff regulation of gas, as a result of natural monopoly, demonstrated its associated risks, when in late 1995 - early 1996 the prices were frozen for political reasons. The inefficiency of the system, which set rates according to the concept of cost plus normal profit, was recognized around the world. It inevitably led to the costs rise and to the full reduction of the normal profit. From international experience, it is known that both of these drawbacks are eliminated with the introduction of competition in gas production and transportation, at least at the level of domestic cost accounting. But the competition threatened the integrity of the UGSS and the loss of its associated effects; in particular, it required a much greater reserve capacity

than it had been previously incorporated into the existing system. It was necessary to evaluate and weigh up all “pros” and “cons” to propose a program of improvement as the organizational structure, as the market relations in the Russian gas industry.

But along with the political causes, the problem of nonpayment had a purely economic reasons related to issues of pricing and taxation of the gas industry. The price of gas exported abroad was formed mainly by market forces; for the neighboring CIS countries, it was different (as well as the volume of nonpayment): established under the strong influence of political factors, and fixed by the state, domestic gas price was one of a few measures of one or another economic policy.

The fact was that the natural gas provided about half of production and consumption of energy in Russia, and largely determined competitive prices for coal and oil, as well as electricity and heat (i.e., all energy prices, except for crude oil and light oil). A low cost of energy (along with cheap labor) was essential for competitiveness, practically, of all other sectors of Russian economy, whose structure (a particularly high percentage of energy intensive industries) and industrial foundation (high-energy technology and equipment) were formed over decades because of use of artificially reduced energy price (in 2-3 times), that did not pay off in the 1980s, even the full cost of production.

Under these conditions, the development of effective pricing policy in the gas industry and connected with it, fiscal one was not a problem of the industry, but economics in general. It could be only resolved through a profound analysis of the dynamics of production costs and, in particular, the investment component.

The solution was closely related to another major problem: the solvent demand for gas. During the years of economic crisis, despite two years of artificial restriction of gas prices and set of defaults (which also means nearly double reduction of the official gas price), the demand for gas in Russia decreased by about 15%, while deliveries to CIS countries in 1992-1995 declined by 32%.

The problem of domestic gas market was closely connected with gas export to CIS and other countries. The Russian natural gas markets in Europe and neighboring countries were expected to increase but in the highly competitive environment with other suppliers of gas already present in these markets. The development an effective strategy in Russian traditional markets and the establishment of new markets for natural gas network (especially in the Far East) were extremely difficult and also vitally crucial task of the Russian gas industry, primarily Gazprom, as the monopolistic gas exporter.

The reverse side of the demand and export problems was the manufacturing capabilities of the gas industry, including

- Further growth and exploration of reserves;
- Development of new fields, and entire regions to compensate for used stocks and to increase production;
- Reconstruction and development of gas transmission and distribution systems;
- Building of new storage facilities to improve reliability and flexibility of supply and intensification of the gas saving; etc.

Although less than in 1960 – 1980s due to a significant reduction in growth, the variety and complexity of the possible ways of solving these problems still remained high owing to the need of development of more and more difficult regions, like Yamal, Eastern Siberia and others and, due to the extracting conditions, especially on the shelves of Okhotsk and Barents Seas.

Thereupon, a new problem arose, that was the most effective ways and means of technological change. For decades, the scientific-and-technological advance in the domestic gas industry was going in the direction of concentration on production processes: expansion of unit output of wells, gas treatment plants and, more importantly, diameters of gas pipelines and power of pumping units. The possibilities in this direction had been largely exhausted as early as the 1980s. In circumstances of stagnation or severe deceleration in growth, it was necessary to change the priorities of scientific and technological progress: from the volume characteristics of the technology and equipment to the qualitative ones and the intensification of production processes to improvement of the managing systems of gas supply and consumer demand.

In this context, the problem of environmental protection gained a significant role. For many years the failures of its solution kept the development of gas fields on the Yamal peninsula off, and with great urgency, it would rise at the development of continental shelves of Arctic seas. The environmental issues more clearly emerged from the local into the global ones. In particular, the conventional gas leak had already moved from the usual negligence into the category of the global threat of climate change of the planet; because methane has an extremely powerful greenhouse effect, contributing to the overheating of atmosphere.

Along with the examined above, more or less familiar production problems, the Russian gas industry faced with the extraordinary problems of adaptation to the market environment.

The main one was an issue of improving the organizational structure of the industry, which had several key aspects. First of all, it was increasing of flexibility and effectiveness of management of all industry levels without losing the integrity of the Unified Gas Supply System (primarily gas transportation). The extraordinary task was also improving the efficiency of foreign trade, subject to local peculiarities and all sorts of nuances, like a selective access to end users and to complex transactions such as gas-energy and petrochemical projects. This would be promising for the entire Russian economy, but a highly complex organizational and legal task:

the formation on the basis of gas companies of one or some industrial and financial groups that provided orders and financial support for a few closely related sectors of the economy that were directly or indirectly involved into the gas industry.

Another major issue of the gas industry and the entire Russian national economy was the development of an effective dividend policy. As a capital-intensive sector of the economy, the gas industry should have reliable estimates of the actual value of principal assets and a strategy to create and manage the dividends. All this was particularly critical under a huge underestimation of basic assets of the industry and emerging trends in the dividend policy.

The foresaid does not exhaust all the problems of Russian gas industry. But it is more than enough to be seriously concerned with searching ways for an effective solution. So far as these issues related to all key aspects of the functioning and development of the industry, they had a general nature and require development of an integral strategy.

Naturally, the strategy of the gas industry development was one of the main components of the energy strategy. Therefore, the system of the growth goals, challenges and methods of its solution significantly coincide the strategy of the gas industry developing with the energy policy. This applied to the social role of energy, increasing the economic and environmental efficiency of energy supply, guaranteeing of the national security and other key issues of interaction between energy and society.

With the general issues of the content of common energy policy and strategy development of the gas industry, they have fundamental differences and peculiarities associated with purposes, methods and techniques for achieving them.

The results clearly show the tremendous vitality and effectiveness of the Russian gas industry and its core component, Gazprom; their ability adequately respond to a wide range of possible changes in external conditions and to the actions of the state as a regulator of natural monopolies.

The industry could solve problems caused by exceptional difficult passage of the Russian economy from a centrally planned to a market economy, and it can secure a worthy place among the largest energy companies in the world, not only on the volume-production figures, but also on the national economic indicators and commercial efficiency¹³².

The emerged economic and political realities made unworkable, the established in the Soviet non-market economy strategy of long-term planning for the gas industry development. This had many reasons, but above all, there was a need for a much broader understanding of the concept of “development” than was accepted in the past.

¹³² Belyi A., “Trends of Russia's gas sector regulation”, *Oil, Gas, Energy Law Intelligence*, 2011. № 11 <http://www.crninet.com/2011/a4a.pdf>.

The development in the planned economy was generally interpreted in the technological aspect and especially like the typical for production industry: the growth of potential output; for example, the increase in annual gas production. Moreover, the dynamics of production in the next five years was prescriptive. Certainly, this was accompanied by a forecast of a number of characteristics of structural changes in the industry (e.g., development of new extractive regions), a forecast of required state investment program and an action plan of scientific and technological progress. But a number of important, mostly economic, problems of the gas industry remained beyond the formation of prospects for the industry development. These problems included:

- Structure and development of ownership forms of the economic entities operating in the sector;
- Forecast of the consumer demand for different categories of consumers in different regions of Russia and abroad, and the elasticity of demand on the gas price;
- Analysis of different forms of cooperation between producers and consumers in the domestic and foreign markets and their impact on the industry development;
- Evolution of the rules of interaction between the economic players and the state structure of governance and management;
- Forecast of the financial situation of economic entities in terms of sustainability of their development, including the creation of logical volumes and sources of investment;
- Regulation of stock price and level of dividends paid to shareholders.

The main difference from the previous system of central planning was that economic actors, and above all, the industry leader such as Gazprom had to create their own program of development without any assistance. It was not just about a forecast of development (in the central planning system, these procedures had been worked out, if not perfectly but acceptably), but about the ability to make a right choice for the long term perspective between the desire to maximize economic short-and long-term effectiveness of the company (which means, first of all, the proper distribution of profit to reinvestment and payment of dividends) and the need to reduce political, social and economic risks, i.e., ensure its sustainability in the foreseeable future.

The desire for a stable long-term “life” was postulated as a goal for economic entities' behavior. There was a fundamental change in the basic concept. The purpose of the industry development was not formed out of it, as in the command economy, but it was initially presented in the program of the industry. While a function of government authorities was in the formation of right economic conditions, under which the desire of each gas company to a stable long-term

“life” was not contrary to the interests of other Russian economic entities, like natural gas consumers, federal and regional financial institutions¹³³.

When developing a strategy for decision making under uncertainty, it should be clearly separated the external economic conditions and the possible courses of action.

The external conditions were formed with carried out socio-economic policy, world energy market, capital markets and general role of Russia in a new geopolitical situation.

The role of the Russian gas industry, and specifically Gazprom, was highly significant in the situation inside the country and even in the geopolitical arena. However, the mentioned above external conditions determined not only the direction of its development, but also they might depend on the goal-directed behavior of Gazprom. In reality, the strategic actions were not an internal affair of individual companies, but formed by an interaction of, at least, four key participants in the gas market:

- State authorities of Russia, in particular, the Federal Energy Regulatory Commission;
- Economic entities of the gas industry (Gazprom, associated petroleum gas producers, new potential producers of natural gas);
- Financial community, including shareholders and investors;
- Gas consumers (domestic gas consumers in the various economic sectors and from the different Russian regions, gas consumers outside of Russia).

Their cooperation was carried out through an exchange of natural and cash flows (sale of gas to customers, payment of taxes and rents to the state, regulatory impact, etc.) in the relevant legal and regulatory fields. It is especially noteworthy for analysis because it was the natural and cash flows between gas market participants that determined the “game rules”.

The rules, which affected the cooperation of the gas market participants, include into two key elements:

- 1) Rules of gas price and tax formation on the domestic Russian market and
- 2) Antimonopoly policy and state regulation.

It is clear that the rules of pricing and taxation were essential at the whole issue of market relations. The Russian gas industry was not an exception, but it had the following key features.

First, the major part of the Russian gas industry was concentrated in Gazprom, which owned nearly all natural gas pipelines and 94% of gas production. During the economic crisis, the maintenance of the gas industry within a one vertically integrated structure, of course,

¹³³ Ibid.

provided stability and reliability of gas supply. But for the same reason, Gazprom fell under the definition of “natural monopoly”, and; therefore, the price of gas should be directly regulated by the state. This statute was contained in the Federal Law “On natural monopolies”:

“Supervisors of natural monopolies may: establish rules for application of prices (tariffs) for goods (works, services) of natural monopolistic subjects¹³⁴.”

Second, Russia was characterized by a particularly large share of gas in total energy balance, which had no analogue in the world, and this central role of gas was guaranteed for many decades. Therefore, (and for other reasons), according to the report of the Ministry of Economic Development, in Russia it could not be used the prevalent way, used on the West, of forming gas prices based on oil ones, which, in turn, was formed ostensibly by the market, i.e. by balance of supply and demand.

A fundamental methodological concept, contained in the Energy Strategy of Russia, was the central role of the natural gas price in the formation of prices for all types of boiler-furnace fuel. After overcoming the debt crisis, the gas price would appraise the prices for steam coal, fuel oil and other primary energy sources, as well as the price of electricity and heat.

It follows that the concept of gas pricing in Russia determined not only development of producers and consumers, but also the entire energy sector and with it, the Russian economy. Therefore, it is understandable that great attention paid to the Russian Energy Strategy of the gas industry and to the formation of gas prices.

Another important external factor in the development of the gas industry strategy was an organizational structure of the industry, formed by the state and its regulatory scheme. The methods and severity of the state regulation of the gas industry and also means, rate and efficiency of the industry development depended on if it maintained the existing organization with the leading role of a monolithic Gazprom or if it prevailed repeatedly proposed (and rejected) the idea of planting of the intra-industry competition. This especially affected the efficiency and sustainability of Gazprom.

Affecting not only a million of Gazprom's shareholders, but the entire Russian economy, the government decisions on the pricing policy, on the organizational structure of the industry and others can not be taken behind the scenes, without a full discussion¹³⁵. Therefore, the strategy of the gas industry had to analyze the widest possible range of government decisions and show their consequences for industry and the entire Russian economy. “It must be done not only through verbal arguments and conclusions, but also in terms that reflect the interests of the key

¹³⁴ Federal'nii Zakon (Federal Law), “*O Estestvennykh Monopoliakh*” (On Natural Monopolies), 17.08.1995 No.147-FZ (ed. 25.06.2012).

¹³⁵ “O Kontseptsii Razvitiia Rynka Gaza v Rossiiskoi Federatsii” (“On concept of market development in the Russian Federation”), *Doklad MERT v Pravitel'stvo* (Report of the Ministry of Economic Development of the Russian Federation to the Government), MERT, 2002, p.15.

participants of the gas market: like domestic and exported sales volume, received revenues, size of dividends (to shareholders) and tax revenues of the state (on different levels), investments and orders for the related industries, etc. Only on the basis of this analysis it will be developed a stable and, more importantly, realized strategy of the industry development in general and Gazprom in particular¹³⁶”. One of the most important factors, to consider forming a development strategy of the gas industry, was variability of the political and social development of Russia. Russia only formed the basic concepts of social and economic development. Not only parts but also some of the key elements of this development were unclear. In this case, there was just one way in the formation of development strategy; it was the scenario approach, the essence of which applied to the analysis of cooperation between the participants of the gas market in Russia was the following¹³⁷:

The first stage was a formation of scenarios for the gas market. It was necessary to develop an ultimate set of scenarios of the possible future structure. The main requirement for this set was quite contradictory: it should contain a few scenarios (otherwise the amount of researches would be “impossible”), but these scenarios should represent the full range of possible developments. Each scenario should have a complete set of consistent rules of cooperation between participants of the gas market, of gas market structure and pricing rules.

The second stage was modeling. It must be made a simulation of future “life” for members of the gas market for given, by each scenario, rules. As a result, for each scenario it would be formed: dynamics of financial flows between the parties, assessment of the financial condition of the gas industry, tax and rental incomes of the state, structure and dynamics of investment resources, level of dividends paid to shareholders of Gazprom, etc. It was noteworthy that even within the same scenario it could not be found single-valued deterministic dynamics of “life” for each participant in the market (for example, price of gas, dynamics of gas production, amount of state tax revenue, etc.). This was due to the presence in each scenario the ambiguity of technical and economic characteristics of gas production and transportation, the inaccurate knowledge of the extracted gas reserves in fields that have not yet developed, and several other factors. Thus, even within the same scenario, the projected dynamics of financial flows represented the diversity of relevant variables.

Thereby, the requirements for forecasting the prospects for the gas industry were much more complex than they were in the planned economy. It was enough to have good computer models of gas production and transportation with the calculation of required investments. In

¹³⁶ Viakhirev R., *Neftegazovii Kompleks Rossii* (The Russian Oil and Gas Complex), Moscow: Ekskluziv Press, 1998, p.148.

¹³⁷ Belyi A., “Trends of Russia's gas sector regulation”, *Oil, Gas, Energy Law Intelligence*, 2011. № 11 <http://www.crninet.com/2011/a4a.pdf>.

addition, it was necessary to simulate the behavior of individual participants in the different sectors of the gas market (regulated and unregulated), to create and explore models of capital markets, dividend policy models, models of tax and rent policy, and many others, reflecting the new aspects of the gas industry functioning.

The third stage was an analysis of scenarios. This was the most responsible and least formalized stage of development of strategies. It was necessary to assess the position of the main participants of the gas market in each scenario and try to rank the analyzed scenarios. And it was essential not only select particularly attractive scenarios (i.e., very successful strategy rules in the gas market), but also identify the most dangerous ones that lead either to the instability of the gas industry and the loss of supply security, or to the bankruptcy of gas consumers, or, finally, to the blocking of cash flow payments to the state budget.

A natural result of the third stage was a conclusion that, in the test set, there were no attractive scenarios and it should return to the first stage.

In the last analysis, the scenario approach in formation of the gas industry development strategy made possible to structure problems and to propose a number of consistent “images” of the possible Gazprom's and other members of the Russian gas market future.

It follows that the key concept for this methodology was a sustainable and stable existence of the Russian gas industry. In the changing economic conditions, the most general ideas about stability and sustainability of the economic structures were related, as a rule, to the financial stability of companies and, in particular, of Gazprom.

For the financial stability of the joint stock company, it was recommended the following criteria:

- Payment of deserved dividends to shareholders, if not every year (for example, in Russian conditions because of the strong underestimation of the shares it may be appropriate to go to the capitalization of profits), but at least a payment of sufficiently high average dividends over a long period. This requires a flexible dividend policy of paying higher dividends in financially beneficial years.
- Company's debt, defined as a ratio of debt to instruments to its funds, should not exceed the maximum admissible level related to the firm's capital structure and its ability to service its debts. Meanwhile, the size of annual credits, required for the realization of planned investment programs, must not exceed the permissible value, due to the impossibility of instantaneous accumulation of resources. This criterion is particularly valuable for capital-intensive industries, such as natural gas industry, where the characteristic values of annual investments fluctuate from hundreds of millions to billions of U.S. dollars.

The implementation of these criteria indicated a balanced, sustainable long-term policy of the company, of which the ideal was:

- Dividend satisfaction of its shareholders and high market value of shares;
- Successful financial support of the planned investment programs.

The essence of a long-term strategy's formation of the company was a development of an effective plan for various possible scenarios, their analysis and selection according to these criteria. The same analysis determined the state attitude to these actions, according to the factors of competitiveness of gas consumers and volumes of tax and other revenues from the industry to the federal and local budgets, i.e., in terms of the economy as a whole.

Indeed, the strategy development of the gas industry could be sustainable, just if the divergence of interests of Gazprom, gas consumers and the government (in its federal and local authorities) would be minimal.

The examined approaches allow to analyze the stability and efficiency of the gas industry functioning. As active economic structures, these firms state, within its capabilities range, the controlling actions to achieve this stability and efficiency. It can be distinguished three main groups of control actions:

- Production program;
- Structural organization;
- Financial flows' management.

The production program primarily meant a formation of demand, effective volume of gas production and transportation. These criteria defined the foundations of different strategies. For example, the development of new extractive regions (like the Yamal and Shtokman fields) occurred at different rates and with different volumes of the maximum level of gas production. Further, the gas production in the Nadym-Purtazovsky region of the Western Siberia, which is now a basis of the Russian gas production could be carried out in the next century, based on two different concepts:

- Moderate growth in production for 10-15 years with a guarantee of stable gas production in the next 15-20 years;
- A highly significant increase in production in a decade or two, followed by its intense reduction.

The production program traditionally was a part of the development strategy. But if, in the planned economy, this element dominated, then in the economy of the 1990s, the structural policy and the strategy of financial flows' management became no less important.

The diversification of the Gazprom's structure, i.e. the establishment of subsidiaries could significantly increase its stability. The subsidiaries should be organized to exit from the sphere of state price regulation (e.g., new producers developing the resources of the Valanginian gas). This increased the rate of profit in an unregulated field. The formation of subsidiaries was advisable also to separate the risky business areas to increase the stability of the holding company. The creation of Rosshelf¹³⁸ was an excellent example.

In the new economic conditions, the most crucial elements of the Gazprom's strategy were a structure of investment resources and rules of distribution of free residual profit between payment of dividends, reinvestment and creation of reserves. It is clear that, in the planned economy, there was no one of these elements and, consequently, in Russia there was no practical experience of their creation. This will require a particular attention to the formation of structure of investment and dividend policy.

It is necessary to stress the fundamental difference between a number of scenarios for the market development in the gas industry and the development of the Gazprom's policy strategy.

The possible scenarios for the market development were formed, virtually, outside of the gas industry. They were probably worked out with the participation of Gazprom, but the dominant position was occupied by the government authorities, the gas consumers and the gas industry competitors. In this regard, it can be supposed that such scenarios were given to Gazprom by the external players.

Nevertheless, the formation of Gazprom's development strategy was an in-house problem. The task of Gazprom's management was to choose from several possible ways of development the dominant adaptive strategy to ensure long-term stability and effectiveness of the holding at all (or most) of probable scenarios of market relations.

For solving this problem, it is necessary to predict the response of the Gazprom's enterprises to the given market development scenarios and to the options for possible solutions that were generated by the holding, and by introducing a generalized quantitative indicator of quality, to identify a program preferred for Gazprom.

Although there was no formal procedure of “construction” of the original set of different strategies for the gas industry development, there was an opportunity to optimize the production

¹³⁸ **Rosshelf consortium** is a Gazprom subsidiary that comprised 19 Russian companies developing new perspective oilfields. It was founded in 1992.

program and to calculate a wide range of future behavior, according to the given scenario for the gas market and for deterministic object characteristics.

Among these parameters, as a rule, there were following expected dynamics:

- Demand for gas in different regions and at different categories of consumers;
- Production of gas and condensate in the gas producing enterprises;
- Gas flows through the gas transmission network;
- Sales volume and revenues in each of the zonal gas markets;
- Funds flows and state of the current account for each natural gas entity;
- Volume of investment resources, their structure (the reinvestment of profits, share emission, borrowed current assets) and ways of their uses;
- Total amount of current debt of Gazprom;
- Total amount of profits intended for the payment of dividends and the level of earnings yield;
- Rental and tax payments to the federal and regional budgets¹³⁹.

If it could be considered all the known conditions which entered in the development (like characterization the process of gas reserves preparing, its production and transportation, construction of new facilities, the value of the extracting reserves of gas fields, and many other parameters), there would be no other serious problems in the prediction of financial flows between the participants of the gas market (means under a fixed scenario of the market development and a fixed strategy of Gazprom).

However, the problem existed, and its essence was in uncertainty. The ambiguity, in the main, persisted in the evaluation of gas demand, success of exploration, operating budget for implementation of investment projects in gas production and transportation, in gas price levels at domestic and European gas markets, etc. Therefore, the investment in new capacity in the gas production and transport was always related to the risk of not achieving the expected result. That is why the notion of risk was a key element at the market economy.

The methods for development strategies of individual companies or industries were radically different from traditional means and technology of their development (i.e., techno-economic reports and industry development schemes, development projects of the UGSS, etc.). The purpose of planning was a detailed design and a rationale for specific decisions and peculiar objects while the development strategy should formulate the relevant industry as a whole or as its leading companies to the external conditions and the possible “game rules” in response to them,

¹³⁹ Ahrend R., Tompson W., *Russia's gas sector: the endless wait for reform?* OECD, Economics Department Working Papers, Vol. 402, 2004, p.25.

rather than specific actions (build or not one or another object), but its structure (institutional adjustment) and the policy: pricing, investment, exports, science and technology, etc.

As already noted a sufficient methodological basis for the creation of such strategy development was not yet worked out. This process was a number of analysts' and managers' researches of the industry or company. Nevertheless, there was a methodological groundwork in implementation of its part to formalize this work.

The gas industry strategy can not be elaborated spontaneously, without regard for general economic and energy policy. The latter was defined by the Decree of the President of the Russian Federation “On the main directions of energy policy and the restructuring of fuel and energy complex of the Russian Federation for the period up to 2010” (on May 7, 1995 N472) and specified in “The main provisions of the Energy Strategy of Russia until 2010” (N1006), approved by the government in October 1995.

In these documents, the main purpose of the energy policy of Russia was “...The detection of ways and creation of conditions for the most efficient use of energy resources and potential production of the energy industry to raise the welfare of citizens and socio-economic revival of the country”¹⁴⁰. The gas industry, as the leading part of Russian fuel and energy complex, was mostly responsible for achieving this goal.

In contrast to the previous focus on large-scale energy production, the top priorities of the Energy Strategy were energy efficiency and energy conservation. Therefore, the development strategy of the gas industry should highlight as much as possible the careful use of natural gas to get the maximum economic and social effects of each of its units, used domestically or exported.

However, for energy conservation, the main provisions of the Energy Strategy of Russia provided for overcoming decline in production of energy resources and their subsequent increase in volumes that ensure economic growth of the country and the needs of export. Meanwhile, according to this document “...A top priority, in the fuel production, will be considered the natural gas...”, and the new structural policy in the energy sector over the next 10-15 years means in the first place “...An increase in the share of natural gas in the total production of energy resources and expansion of its use, especially in ecologically unfavorable industrial centers and for the gasification of the village”¹⁴¹. Accordingly, the strategy provided for the extraction of natural and associated gas in Russia that should not be less than 660 Bcm in 2000 and 740 Bcm in 2010, and, under favorable conditions, it can reach respectively 750 and 860 Bcm.

¹⁴⁰ Presidential Decree, “*On the main directions of energy policy and the restructuring of the fuel and energy complex of the Russian Federation for the period up to 2010*”, N472, 07.05.1995 <http://base.garant.ru/100707/>.

¹⁴¹ Government Resolution, “*The main provisions of the Energy Strategy of Russia until 2010*”, N1006, 13.10.1995.

The Russian Energy Strategy identified targets and possible ranges of the gas industry of the country, but, not the development strategy itself. It must be analyzed the internal and external conditions for industry development and according with the targets of the Energy Strategy it was essential to assess the possible options for the gas companies to develop the most effective policy, including:

- Policy to stimulate or deter domestic gas demand;
- Export policy in the near and far abroad;
- Production strategy of the gas industry;
- Policy to improve economic structure of the industry.

The main external factors that determined the development strategy of the gas industry were:

- Pace of economic development;
- Internal state pricing policy and dynamics of gas prices in foreign markets;
- Intensity of energy efficiency and overall growth of energy consumption;
- Competitiveness of other energy sources (primarily coal and nuclear energy) in different zones of the Russian energy market;
- Rigidity of state regulation¹⁴².

The structure of the gas industry regulation was far from being harmonious. The basic mechanisms of control were created by the former Ministry of Gas Industry, which, in fact, was Gazprom. The subsequent considerable changes in the gas industry were not always followed by corresponding changes in goals, instruments, and legal framework of regulation.

Changes in the legal framework of the industry were rather spontaneous and reflected the stages of interaction between the state and Gazprom. Some legal changes were initiated by Gazprom. These changes were hailed by the Russian Federation Government and approved with minimum corrections. Others were initiated by different liberal groups in the Russian Federal Government and obstructed by Gazprom in every possible way. Eventually, most of these initiatives were not adopted. Nevertheless, the most significant regulatory documents of the gas industry reflected the acceptable compromise of the conflicting parties at the moment of their adoption. By way of example, there were underway the disputes on possible approaches for the structure of the gas industry legislation. For example, development and adoption of an industry-wide law “On Oil and Gas” was being discussed for several years. This law could cover all

¹⁴² De Vany A., Walls D., *The Emerging New Order in Natural Gas: Markets versus Regulation*, Westport: Greenwood Publishing Group Inc., 1995, p. 83-91.

essential aspects in regulation of production, transportation, storage, and export of hydrocarbons and operation of the market of hydrocarbons. Apart from that, back in 1999, the State Duma (Parliament) of the Russian Federation adopted at its first reading the draft law “On Pipeline Transport” that was intended for legislative resolution of issues related to construction and operation of trunk pipelines. Despite of the high importance, the issue of revising certain provisions of the law “On Gas Supply in Russian Federation” was raised more and more often as its existing version was outdated and cannot adequately regulate contemporary processes in the industry.

In conditions of rapid changes in the Russian economy, the entire framework of the industry was clearly inadequate and out-of-date. Only a small number of regulatory documents related to activity of the industry were adopted later. Certain regulatory documents, essential for proper development of the gas market in the Russian Federation, such as the “Rules of Access to Trunk Pipelines of Gazprom” approved by Resolution No. 858 of July 14, 1998 of the Russian Federation Government and the “Rules of Gas Supply” approved by Resolution No. 162 of February 8, 1998 of the Russian Federation Government, were outdated beyond hope. One of the positive news was the adoption of the “Procedure for Calculating Tariffs for Gas Transportation in Trunk Gas Pipelines” approved by Resolution No. 338-e/1 of August 23, 2005 of the Federal Tariff Service of the Russian Federation. However, all this was extremely far from being sufficient, especially in view of the fact that discussions on reforming the legal framework of the gas industry were underway for a long time¹⁴³.

The relationship between Gazprom and the government was quite complex and had changed over time. “In the 1990s, Gazprom functioned as “a state within a state” and operated mainly in the interests of its management. The government was not able to control the gas giant either formally (most of the 38% of state shares were managed by Gazprom itself), or informally (Gazprom was an extraordinarily successfully lobbyist)”¹⁴⁴. The government was in general tolerant to Gazprom because the company supplied gas at extraordinarily low prices to Russian consumers, and often without any payment at all. The Russian economy benefited from stable and inexpensive supplies of gas, and in return, Gazprom was able to apply financial advantages like its privileged access to hard currencies from its exports. These funds to some extent allowed it to finance its own investments. Return to the organizational relationship between Gazprom and

¹⁴³ Belyi A., “Trends of Russia's gas sector regulation”, *Oil, Gas, Energy Law Intelligence*, 2011. No.11 <http://www.crninet.com/2011/a4a.pdf>

¹⁴⁴ Victor N., *Gazprom: gas giant under strain*, Stanford: Program on Energy and Sustainable Development, 2008, pp. 15-33.

the state into informal networks allowed nonpayments to be effectively managed and guaranteed the survival of enterprises throughout Russia¹⁴⁵.

The state regulation of prices and tariffs guaranteed the profitability of Gazprom. The cost plus principle put in the basis of the antitrust legislation, provided Gazprom with the state guarantees of profitability as long as prices and tariffs were regulated by the state. In search for a balance of interests between the gas monopoly and consumers, the government had no right to endorse prices and tariffs that were lower than the economically justified level.

Until recently, the revenues from gas sales on external markets were included into consolidated reports of Gazprom and taken into consideration in most governmental decisions, including governmental approvals of investment programs of the gas monopoly. The considerable growth of gas export prices helped the government postpone reforms in the gas industry, including liberalization of domestic gas prices, by more than five years. According to Nadejda Victor, during that period, the growth of domestic gas prices was limited by political decisions of government based on the negotiated compromise of the main concerned parties (different groups in the government, industrial lobbies, and representatives of the gas industry) rather than the balance of demand and supply.

Being a subject of the state regulation, formally Gazprom could not exceed the established rate of repayments from its activities. In this aspect, the growth of prices on the domestic market did not have any significant impact on the gas monopoly's economy. However, the profits of certain subsidiaries of the holding and, consequently, their budgetary processes (investments, wages, emoluments, bonuses, and other financial flows) strongly depended on the relation between internal and external prices.

The state pursued its “gas policy”, continuing to take part in shaping the terms of gas sales, and actively helping Gazprom in solution of the strategic problems. In particular, the government played a crucial role in the organization of gas import from Central Asia. This mechanism was considered as one of the key sources of covering the forecasted shortage of gas. The gas import volumes depended on the possibilities of gas suppliers (reserves, production volumes, and technical state of gas pipelines) whereas prices were determined exclusively at the political level between governments of countries.

The government had no intention of radically change the structure of the industry. This means “economically justified prices and tariffs” was based on the partial information disclosed by Gazprom. Thus, the key driving force for development of the domestic gas market was public disclosure and open expert examination of the information in the industry.

¹⁴⁵ Ibid.

As a rule, the government's role was developing policies to attain goals, but it had also to deal with contrary short-term interests and short-term threats to political stability¹⁴⁶. The Kremlin was a political interface between Gazprom and society, and it became particularly sensitive to the opinion of the electorate around presidential elections. At that time, the nationalism in Russia was extremely popular (especially resource nationalism, which sought to protect hydrocarbons from foreign hands¹⁴⁷), and political views shaped attitudes toward foreign investments. Thus, “public opinion tended to exert political pressure on the government, which in turn reached Gazprom”¹⁴⁸.

“The political confusion between short- and long-term political interests can lead the government to embrace conflicting goals, like seeking greater revenue from the energy sector, while at the same time asking Gazprom to carry out social and political goals (for example, buying popular TV and radio stations or newspapers) that hamper its operations and increase its costs. Gazprom is an instrument of the state, which helps the government achieve a number of policy objectives, even if these objectives conflict. This institutional arrangement is mainly used to ensure the survival of unprofitable enterprises, and, therefore, the protection of employment. In this sense, there is an essential institutional struggle between the government and Gazprom”¹⁴⁹. The latter has technical and business expertise, but the government sets game rules and determines whether, when and how to introduce competition and invite foreign investments.

During the 1990s Gazprom was the world's leading producer of gas and the biggest Russian company by market capitalization. It had grand ambitions to become a global, vertically integrated company occupying a leading position on the world market. The company wanted to compete with the majors on their own territory by developing upstream and downstream activities overseas.

The principal financial goal of Gazprom was to increase its stock price, and so far it had done so intensely successfully. Moreover, there was a potential for improvement. When comparing Gazprom to IOC on the basis of market capitalization per barrel of proven reserves, Gazprom looked like an incredible deal. However, there were a lot of reasons to believe that the situation was not as plentiful as it looked. To some degree, Gazprom behaved more like an instrument of the state than a profit seeking firm.

¹⁴⁶ Belyi A., “Trends of Russia's gas sector regulation”, *Oil, Gas, Energy Law Intelligence*, 2011. № 11 <http://www.crninet.com/2011/a4a.pdf>

¹⁴⁷ Viakhirev R., *Neftegazovii Kompleks Rossii* (The Russian Oil and Gas Complex), Moscow: Ekskluziv Press, 1998, p.137.

¹⁴⁸ Victor N., *Gazprom: gas giant under strain*, Stanford: Program on Energy and Sustainable Development, 2008, pp. 15-33.

¹⁴⁹ Ibid.

According to A. Belyi, the problems faced by Gazprom were many and significant. On the one hand, questions were still open about the capacity of Gazprom to face up to the considerable investment needed to renew the principal gas deposits developed during the Soviet days. Gazprom was already heavily indebted while the profitability of its domestic market sales had still to be improved. On the other hand, the progressive deregulation of the European gas market, Gazprom's principal export market, and most likely brought significant changes to long-term gas contracts.

Until the early 2000s, the company was still managed as “a Soviet enterprise”¹⁵⁰. An archaic system of distribution and consumption of gas, along with continuing underinvestment in infrastructure, gave little grounds for optimism. Indeed, there was a threat of energy catastrophe in this energy “superstate”: Gazprom's production was stagnant; the biggest fields were in decline; investments were insufficient and costs were rising. The growth in the company's market value, which was driven primarily by rising gas prices and the low level of Gazprom's primary market value, masked more fundamental long-term problems.

The Gazprom's main activity was selling natural gas in Europe at competitive market prices, and subsidizing low energy prices domestically (price ratio of roughly five to one). The low gas prices in Russia were a serious problem as they made gas sales inside the country unprofitable. But their increase could put the economic growth of Russia at risk. The only competitive advantage of Russia's inefficient economy was cheap gas and electricity.

“Given that Gazprom is a company with enormous fixed costs for exploration, production facilities, and pipelines, and relatively far lower variable costs, it would be surprising if it did not pursue a strategy of price discrimination. And indeed, there is unambiguous evidence that such commercial thinking has driven Gazprom's policy regarding external and domestic markets. The firm wishes to charge lower prices to domestic consumers than to foreign ones, on the grounds that domestic consumers imply cannot pay the prices that foreigners do. There is no indication, however, that the prices Gazprom charges domestic consumers are lower than marginal costs, since it is seeking to expand sales at these prices. Thus, Gazprom seems to be engaged in “marginal dumping”, in which exports are priced higher than sales on the home market. Just as ordinary dumping does not always reflect predatory pricing directed at foreign competitors, so Gazprom's stock dumping does not reflect unjustified subsidies for its Russian customers”¹⁵¹.

The meaning of Gazprom's program was clearly formulated by Petr Rodionov, Minister of Fuel and Energy in the second half of 1996 and 1997. Prior to assuming this position he was

¹⁵⁰ Belyi A., “Trends of Russia's gas sector regulation”, *Oil, Gas, Energy Law Intelligence*, 2011. № 11 <http://www.crninet.com/2011/a4a.pdf>

¹⁵¹ Woodruff D.M., *It's value that's virtual. Bartles, rubles and the place of Gazprom in the Russian economy*, Massachusetts: Institute of Technology, 1999, p.9.

director of a Gazprom subdivision, and since leaving it, he became one of the company's vice-presidents. As David M. Woodruff emphasizes, shortly after assuming his post at the Ministry, Rodionov told an interviewer that in the context of high nonpayment for fuel “it is unambiguously necessary to reduce the general level of prices on all fuel and energy resources... And now I would especially like to stress that when discussing fuel one cannot mention of abstract “world prices”, to which we are encouraged to orient ourselves”. Lower prices, he argued, would allow Russian industry to grow and make more profits, enabling them paying for energy, and ending fiscal dependence on gas and oil exports. Similarly, in late 1998, as a Gazprom official pleading the company's case before the government, Rodionov argued for freezing domestic gas prices until 1999, which given renewed inflation amounted to a call for effectively lower prices. In a journalist's retelling, Rodionov argued “Gazprom higher prices only cause more nonpayment”.

These political reviews show a fundamental fact: Gazprom was not able to set prices for its domestic consumers just as it wished. Its prices were set by regulators, most recently by the Federal Energy Commission. Gazprom complained more constantly that they set the prices too high than, in fact, the prices were too low. As Rodionov hinted part of pressure on Gazprom came from foreign pressure. In 1997, for instance the International Monetary Fund included among its conditions for extension of aid that gas prices within Russia should be differentiated based on the distance of the transported gas, to take better account of costs. Gazprom, though, loudly and publicly resisted this demand for fear that the policy would raise the price for Russian consumers distant from the gas fields to unsustainable levels. As company president Rem Viakhirev put it, the higher gas prices for industry would mean “whatever is still showing signs of life will shut down once and for all”. It is more than a little ironic that, in this conflict, Western economists conceived cost as something intrinsic to physical production processes (more transport, more cost), an engineering mindset reminiscent of the Soviet style, whereas former command-economy managers were defending a commercial notion of minimizing costs through maximizing sales¹⁵².

Since by early 1996, the domestic customer's debts to Gazprom were already greater than their receipts from exports to Western Europe, the reason for the firm's concern was obvious. Explaining the origins of Mezhrefiongaz, Gazprom's new marketing arm set up in 1997, its head noted that a completely abnormal situation arose, in which an entire sector of the economy became a practically unpaid donor for the economy of the entire country. It was also welcomed a presidential order expanding the firm's right to cut off nonpaying customers. Central to

¹⁵² Ibid, p.10.

Mezhregiongaz's strategy was negotiated agreements with provincial governors about levels of supplies and payment, including the share of payment in money or in kind.

As it was stated by Viakhirev, it is a purely rhetorical question to ask where Gazprom ends as a company and where it begins as a tool of the state. For example, the Russian government had taken a stand against the European Energy Charter and its Transit Protocol because it would reduce Gazprom's monopoly powers. The export monopoly benefited the state by guaranteeing the Kremlin's control over what became Russia's most powerful foreign-policy tool. The business decisions of Gazprom often had a political context. For example, the decision to build one or two gas pipelines to China rather than a liquefied natural gas plant was the Kremlin's political choice. The blusher in negotiations with the former Soviet republics had some political context, as well.

In 2000, Gazprom started to be aligned to act more completely as an agent of the Kremlin to pursue Russia's political interests and V. Putin's foreign policy. The Gazprom's policy and the state's interests began to march together. The Russian president was in control of the energy giant, and his main priority was to reestablish Russia's status as a great power. In his dissertation and subsequent articles V. Putin emphasized the importance of natural resources and the need for strategic planning to develop them. He argued also that the sustainable development of the Russian economy must be based on her raw material wealth in the short term and that in the longer term, this natural resources orientation should be maintained for the first half of the twenty-first century at least¹⁵³.

According to V. Putin, the best use of the natural resources is a creation of so-called “national champions”; corporations sought profit but for whom the national interest is the bottom line.

“Analysis of the economic processes, taking place in the world, - V. Putin wrote in his dissertation of 1999 - requires a comprehensive government support and the creation, on the extractive enterprises' basis, of financial and industrial corporations with inter-sector profile that could compete with the Western transnational companies. The development of the extractive complex should be regulated by the state purely with markets methods...”¹⁵⁴

He argued that these corporations must determine the rate of transformation and recovery of the Russian economy as a stable source of budgetary and foreign exchange earnings and a substantial center of stability¹⁵⁵.

¹⁵³ Balzer H., “The Putin thesis and Russian energy policy”, *Post-Soviet Affairs*, Vol.21, N3, 2005, pp.210-225.

¹⁵⁴ Putin V., “Mineral'no-sir'evye resursy v strategii pazvitiia Rossiiskoi ekonomiki” (Raw mineral resources in the strategy of Russian economy development), *Zapiski Gornogo Instituta*, Vol. 144(1), 1999, pp.1.

¹⁵⁵ *Ibid*, p.6.

The price of oil and gas rarely figured explicitly into the political strategy, but surely it was an extremely significant driving force. When prices were low in the 1990s, there was less reason to control Gazprom while at the same time there was an urgent need for outside capital. Thus, the government was interested in PSA contracts. It was the combination of Putin's rise in the Kremlin (with his model of state-controlled “champions” of industrial development) and high energy prices (which created the revenues for Russia) that made the strategy of asserting control over Gazprom feasible and attractive. On the other hand, if oil and gas prices were to go down in the future, the Kremlin's internal and foreign policy would likely change again.

As it was analyzed previously, Gazprom faced significant obstacles to become an efficient company. The company had the potential to improve operations substantially. However, the future of Gazprom is uncertain as it depends not only on the company's effort, but also on political and economic uncertainties, such as world oil and gas prices, the economic and political situation inside Russia, and the government's foreign policy priorities. If the main forces for Gazprom's decision making continue to be predominantly political rather than business oriented, it will be hard for Gazprom to reach its ambitious goals. However, concluding the review of the Gazprom's position on the domestic market, it is necessary to examine its cooperation with the independent gas producers and the legal framework defining their relations.

CHAPTER 6. Gazprom and independent gas producers.

Legislative regulations of their cooperation

Combined functions of Gazprom are a key problem of the Russian gas market. The main issue of development of a competitive market of natural gas is that the functions of gas production, transportation and sales are all combined in Gazprom. The company owns the national gas transportation system. Its structure allows controlling gas flows of independent producers and forcing them to manage their business transactions only after coordination with the interests of Gazprom.

Formally, the state regulation instruments established a clear solution to this problem. The Federal Tariff Service set tariffs for transportation of natural gas from independent producers through the gas transportation system of Gazprom. The Federal Antimonopoly Service prevented abuse of the dominant position of infrastructure monopolies, according with the Federal Law “On Natural Monopolies” of August 17, 1995. “The natural monopolies are obliged to provide access to the commodity markets, and (or) produce (sell) goods and services...”¹⁵⁶

However, in actual practice, the development of state regulation instruments lagged behind the dynamic growth of economic and administrative relations among players in the sphere of natural gas production, transportation and sales. In particular, the effective regulatory framework was incapable of fully ensuring the right of independent producers to have fair access to facilities of the national gas transportation system in everyday practice. The procedure of setting tariffs for natural gas transportation from independent producers based on the cost-plus principle fails to give due attention to the wholesale prices of natural gas produced by Gazprom, which created the regional markets.

From the consumers' point of view, the gas supplies from independent producers were more reliable and transparent. Regional gas marketing subsidiaries of Gazprom often failed to fulfill their contractual obligations to consumers, e.g. Gazprom failed to fulfill its gas transportation obligation in 20% of cases¹⁵⁷.

The dominant position of Gazprom on the market made possible for the sales companies of this holding to impose their tight contract terms on consumers. The latter preferred to deal with independent suppliers of gas, but the regional sales companies of Gazprom reluctantly gave up their markets and resorted to a wide range of competitive weapons. Gazprom sold gas in regions at lower state-regulated prices because the state subsidized the company with the profit

¹⁵⁶ Federal'nyi Zakon (FZ) (Federal Law) “*O Estestvennykh Monopoliakh*” (On Natural Monopolies), 17.08.95 N147-FL (ed. 19.07.2011).

¹⁵⁷ Popov A., “*Analiz rynka gaza v Rossii*” (Analysis of the Russian Gas Market), 2001, www.erta-consult.ru.

derived from natural gas export. This scheme of price dumping allowed the regional sales companies of Gazprom to control the domestic gas market by selling subsidized gas at lower prices than those independent producers could afford and thus it won the competition.

In recent years, a number of new producers emerged, including Itera, and four main oil companies LUKoil, Yukos, Surgutneftgaz, and Rosneft. These companies had significant, yet unexploited gas reserves. Gazprom held only 70% of proved and probable Russian reserves. Most of their production consisted of associated gas. These new producers had not lessened Gazprom's dominance at the production level. In fact, because of Gazprom's monopoly on gas transportation, these new players were forced to sell their gas to the gas company at prices fixed by Gazprom. Most of these prices were not particularly attractive and did not guarantee even a minimum of profitability. Following a request from IMF, in July 1997 the Russian government introduced a reform centered on the function of Gazprom's transportation network as a Common Carrier, in order to introduce a degree of competition by establishing legal bases for nondiscriminatory access to Gazprom's network¹⁵⁸. Nevertheless, as there was no assistance in the form of regulations, the implementation of this provision remained largely dependent on the goodwill of the holding.

At the gas distribution level, the pipeline nets (regional and low-pressure urban ones) were outside of the Gazprom's jurisdiction, and as such, they remained under control of regional and municipal authorities. The Gorgaz (Municipal gas) companies were distribution companies responsible for the dispensing network within the cities. The Oblgaz (Regional gas) companies coordinated the distribution of gas at district level. At the higher regional level, there were Mezhraigaz (Inter-regional gas) companies that were responsible for distributing gas to areas made up of several districts and were required to sell the gas from Gazprom. In recent years, Gazprom extended its participation in these networks by exchanging their debts for sales and by making direct purchases in the context of bankruptcy producers. 10% of the distribution network was, therefore, held by Gazprom, and it was expected that this process will continue.

It is widely known that, in spite of access regulation, there were serious problems with gas transportation from independent producers for a number of reasons described below.

The first reason is that Gazprom ruled the free capacities. All rights of access to the gas transportation system depend, first of all, on the availability of free capacities, which was determined and ruled by Gazprom. Information on the actual load of the gas transportation system was kept by Gazprom as a top secret. Nevertheless, all participants in the market knew, to a certain extent, the actual situation and competed for access with other participants (including

¹⁵⁸ Locatelli C., "Le modèle organisationnel de Gazprom", *The role of Russian and CIS countries gas in deregulated energy markets, conférence MIEC/CGEMP*, Paris, 6-7 Dec., 1999, p.14.

Gazprom) in the bottleneck of the gas transportation system. However, there was still no transparent mechanism for fairly determining the winner of this competition and no clear and transparent mechanism of investments for de-bottlenecking the gas transportation system.

The second motive is that there was no real arbitration mechanism. Despite the right of independent producers to require arbitration of issues related to access to the gas transportation system (for example, the Federal Antimonopoly Service of the Russian Federation), so far the solution of these problems never went beyond publications in the press and unfulfilled formal recommendations. The business of independent producers hinged on the decisions of Gazprom and independent producers were not going to endanger their existence for the abstract triumph of justice.

The third one is that Gazprom decided on all issues related to connection of producers and consumers to the gas transportation system. There were some formal procedures for connection to the gas transportation system, but the actual practice of their application (such as, for example, in the case of the Beregovoe field) revealed that they were inadequate and insufficient for ensuring the rights of market participants.

The non-transparency of determining gas transportation routes forced independent producers to pay for gas transportation along routes whose length was far from being optimal. The choice of such routes was often explained by excessive loads of certain segments of the gas transportation network. The actual amount of gas transportation services was almost impossible to estimate correctly, and, as a result, Gazprom was regularly blamed for doubling and even tripling the prices for transportation of gas from independent producers.

In addition, there were no procedures for independent access to gas storage capacities. The operation of the 24 underground gas storages of Gazprom was not subject to the state regulation and was a part of the natural gas transportation activities of the gas monopoly. Currently, there are no mechanisms for getting guaranteed access to gas storage capacities.

The next problem is that there was no possibility of concluding long-term contracts or take-or-pay contracts. Although the application procedure allowed granting access for a period of longer than five years, in actual practice Gazprom never granted such permissions. Thus, even if a supplier got a short-term access to the gas transportation system, there was no guarantee of any actual supply, because a real chance that the customer might be switched over to another supplier (usually affiliated to Gazprom), always existed.

The following issue is the rigidity of the gas supply system. The gas supplies abroad actively use various technological and financial instruments for maintaining the daily balance of supply and demand. These instruments include high-pressure and low-pressure gas storages and peak fields that may be used by system operators for physical balancing of the gas stream; take-

or-pay contracts with customers; special systemic tariffs for overtake or undertake of gas from the system, etc. In Russia, such instruments were usually not used or used in a highly specific way. The Russian gas supply system was not sufficiently flexible for efficient development and did not provide economic incentives for development of a fair gas market.

The next one is the absence of fair competition. As long as Gazprom combined the functions of natural gas production and transportation for independent producers, there was always a temptation to use the exclusive position for correcting business results. In cases of failure to fulfill the production plans, the gas monopoly always had an opportunity to sell other producers' gas transgressing the terms of its transportation without any significant sanctions from the owners of gas.

Gazprom was interested in purchasing natural gas from independent producers at the well at minimal prices. Thus, the gas monopoly had the possibility to cover the gas balance deficit without any additional investments. Gazprom had a wide spectrum of methods and implements for forcing independent producers to this form of interaction¹⁵⁹.

The solution of the problems proposed by the advising on Fuel and Energy Complex sector, Independent ERTA Group¹⁶⁰ was an organizational division of the gas transportation system of Russia. The general concept of partition of potentially competitive and natural monopolistic activities in the gas industry was put forward by governmental departments many times. Many different versions were proposed for dividing Gazprom ranging from organizational division of the Gas Transportation System within the holding to separation and sale of producing companies of Gazprom.

The official counterarguments of Gazprom managers always boiled down to the same threat that the company will divest itself from the responsibility of gas supply reliability in case of any extraneous transformations of the holding. In fact, the government still has no sound plan for minimizing the risk of losing control of the gas industry in case of reforms in the industry.

Independent producers sell their gas in several ways described below:

1. *Two-sided short-term contracts*. Independent producers find customers and have to obtain approval of the deal from Gazprom, which they not always do. Gas prices in such deals sometimes covered in the press seldom exceed regulated prices. This causes the signing of contract just for one year only. Gas sold under short-term contracts is somewhat more expensive. Nonetheless, there is a tendency towards signing long-term contracts. For example, the five-year contract between Novatek and Samaraemergo implies supply of 1.1 billion cubic meters of gas a

¹⁵⁹ Situation on the Gas Market: Key Problems of the Market, 14.09.2007, www.erta-consult.ru.

¹⁶⁰ ERTA – Energy Resources and Technologies, Analysis and Consultations Group.

year (provided that Novatek gets access to the gas transportation system from Gazprom every year).

2. *Supplies at prices pegged to regulated prices.* Regulated prices now are fairly high for independent supplies. This is especially important for regions remote from production areas. Itera sells a part of gas supplied to the Sverdlovsk Region at prices that do not exceed the regulated price, and Novatek supplies gas to Tyumen, Kurgan, and the Arkhangelsk Region at prices pegged to the level of regulated prices.

3. *Sales at the well.* Gazprom buys gas from independent producers immediately at the well although this is not highly profitable as the offered prices are usually considerably lower than regulated prices. According to Gazprom, only 400 million cubic meters of gas were sold according to this scheme (by Novatek) in Q1-Q2 2003. Other sources report greater volumes (7.5 Bcm of gas a year). The best known deal of this type is the contract signed by LUKoil for buying 8.75 billion cubic meters of gas in 2005-2006.

4. *Sales to wholesale resellers.* There are a number of wholesale resellers working on the Russian market, the best known of which is Transneft, whose activities were extensively covered in relation to the crisis of gas supplies to Belarus in 2004. The main task of such companies is getting access to the gas transportation system and finding end users.

5. *Local supplies of gas to isolated territories.* In regions unrelated to the gas supply system of Gazprom, such as Norilsk, Yakutia, and Sakhalin, gas is supplied by producers, independent from Gazprom, directly to consumers. However, the prices in such deals are regulated by the state.

The terms of gas supply contracts offered by independent producers of gas were much more profitable than the current contracts of the sales companies of Gazprom (Regiongaz companies). A large share of gas sold by independent producers was supplied at prices not exceeding the regulated prices of Gazprom. Apart from that, contracts of independent producers allowed considerable flexibility in supplies, payment, supply guarantees, and possibilities of concluding long-term contracts (for up to 10 years).

The first place among independent producers was taken by Novatek Gas Company. Novatek, originally JSC FIK Novafininvest, was established as an open joint stock company in August 1994 to provide a central legal entity for the management of construction activities, exploration and production in the Russian oil and gas industry.

The first operating business of the group, SNP Nova, was acquired in January 1995. Nova was one of the largest state owned enterprises specializing in oil and gas pipeline construction in Russia, originally founded in 1979. Currently, Nova continues to construct pipelines,

transportation infrastructure and production facilities in various locations throughout the country, including the Far North region.

Following the acquisition of the controlling interest in Nova, the company intensified its expansion in the oil and gas industry. It secured interests in various production companies which held exploration and production licenses in Yamalo-Nenets District of the Western Siberia (YANAO) - a region which provides over 90% of total Russian gas production and approximately 20% of the world's natural gas production.

Amongst the most important initial acquisitions were Purneftegasgeologiya, Tarkosaleneftegas, Khancheyneftegas and Yurkharovneftegas. Gaining a control stake in these entities has been of a particular importance as they held exploration rights for oil and gas fields in the early stages of development. The successful development of these fields has enabled Novatek to become the leading independent Russian gas producer in terms of production volumes and hydrocarbon reserves¹⁶¹.

The strategy of Novatek as one of the largest independent producers of gas was built until recently on balancing the interests of different divisions of Gazprom. The company used to gain access to the gas transportation system by exploiting the idea of connecting new consumers – new companies that cannot get gas from Gazprom because formally the latter has no required gas resources in production. Novatek used to enter regional markets through contracts with the sales subsidiaries of Gazprom (Regiongaz companies), to which the first got accustomed to selling about a half of its gas sold in the respective region. The company used to earn a considerable part of its profits outside the sphere of Gazprom's interests – on the market of liquid hydrocarbons.

However, the role of Novatek in the gas industry kept growing, and it became impossible for the company not to have its own standpoint. A direct conflict with Gazprom would have destroyed its entire business. Clear understanding of this thesis by both parties led to a deal in which Gazprom got a blocking stake in Novatek for coordination of its marketing policy in natural gas supplies.

The second place among independent producers is occupied by Itera. It is a private group of companies based in Moscow. Itera focuses on natural gas exploration and processing. In addition, the company deals with other fields of the energy industry, such as oil extraction, pipeline transportation and coal mining, civil and industrial engineering, and finance and insurance. The company operates mainly in Russia, the CIS countries and Turkmenistan.

Itera Group Ltd. is registered in Cyprus. It owns Itera Holdings Limited, also registered in Cyprus, which owns 99.99% of Itera Oil and Gas Company, the main company of the group. Altogether, Itera has over 150 subsidiaries all over the world. Its main shareholder and Chairman

¹⁶¹ Novatek, *History in brief*, <http://novatek.ru/en/about/general/history/>.

of Board of Directors is Igor Makarov, and its General Director and Chairman of the Management Board is Vladimir Makeev. The company was originally established in 1992 in the United States under the name Itera International Energy Corporation as a basic commodities trading company. In 1994, after a sale of sugar to the country of Turkmenistan, Itera obtained rights to sell Turkmeni natural gas as payment for its sugar transaction. The company began sales to the Ukraine of the Turkmeni gas in 1995 and, based on that success, continued to expand its natural gas trading activities throughout the former Soviet Union, becoming the second largest seller of natural gas in the FSU in the late 1990s.

In the late 1990s Itera started gas business in the Sverdlovsk Region, followed by the Moscow and Perm regions.

In 1998, the company launched production of natural gas in Yamalo-Nenets Autonomous Region in the Western Siberia. It was the first private company to put gas fields into operation in the Far North of Russia: the Gubkinskoye gas field (reserves of 399 Bcm - 14.1 trillion cubic feet) in 1999, the Vostochno-Tarkosalinskoye field (reserves of 407 Bcm - 14.4 trillion cubic feet) in 2001, and the Beregovoye gas field (reserves of 325 Bcm - 11.5 trillion cubic feet) in 2003¹⁶².

The main gas consumer of Itera is the Sverdlovsk Region. The company provides this region with gas via Uralsevergaz pipeline. Itera had an agreement with the Administration of the Sverdlovsk Region on supplies of gas through 2008.

The gas resources of the company are provided by Gazprom (60%) and Novatek (40%). Gas is supplied to consumers at graduated prices: at prices equal to the regulated prices for the population and the housing maintenance and utilities sector, and at prices exceeding the regulated prices by 20% for other consumers.

On the third place, there is LUKoil, Russian oil and gas company. It was formed in 1991 when three state-run, western Siberian companies, Langepasneftegaz, Urayneftegaz, and Kogalymneftegaz, merged. The initials of the three companies are preserved in the name **LUKoil**. The central figure in the company's founding was the Soviet Deputy Minister of Oil Production - Vagit Alekperov. He came to believe the only way Russians could compete against western companies was to copy their business model. That meant vertically integrating the three branches of the industry - exploration, refining, and distribution - that were strictly separate under the old Soviet system¹⁶³.

¹⁶² Itera, *Itera and group*, <http://www.itera.ru/isp/eng//history/>.

¹⁶³ LUKOIL, *General Information*, http://www.lukoil.com/static_6_5id_29_.html.

In 2005, LUKoil declared that it wanted to become the second largest gas company in Russia. The company places its main stake on fields in the Yamalo-Nenets Autonomous District and the shelf of the Caspian Sea.

In October 2003, Gazprom and LUKoil signed an agreement according to which the latter will supply gas from the Nakhodka gas field at a certain price formula. According to the statements of company managers, the price shall not fall lower than \$22 per 1000 cubic meters. However, after connection of the company to the gas transportation system, Gazprom agreed to buy LUKoil's gas at no more than \$11 per 1000 cubic meters. The terms of the agreement did not stipulate Gazprom's refusal to accept gas. As a result, the Nakhodka gas field was remained idle in 2004.

Another step to cooperation was successive attempts to conclude strategic agreements with Gazprom. In March 2005, Gazprom and LUKoil signed an agreement of strategic cooperation till 2014, which implied joint implementation of oil projects in the Nenets Autonomous, Yamalo-Nenets Autonomous Districts, and the Russian sector of the Caspian Sea. The role of Gazprom was related to utilization of associated gas.

LUKoil and Gazprom signed another agreement on the organization of a joint venture in 2006. Gazprom had 51% in the joint venture, and LUKoil - 49%. The draft agreement specified a number of concrete fields in the Yamalo-Nenets Autonomous District and the Republic of Komi for joint development and production.

However, this strategy did not yield any breakthrough of the company to the gas industry. The company acknowledges, in particular that it is ready to follow the steps of Itera and bear the responsibility of supplying gas to a certain region. In the sphere of industrial consumption, LUKoil decided to follow the path of retail sales mainly to small and medium-size enterprises that do not have enough of Gazprom's gas. The company is interested in consumer enterprises in the sphere of electric power generation, petrochemical production, gas chemistry, and oil refining.

Currently, LUKoil is already supplying its gas to power plants though it is associated gas produced together with oil. After treatment at a gas processing plant, gas is supplied to power plants in West Siberia, the Perm Region, Volgograd Region, and Republic of Komi. LUKoil is going to purchase energy-related assets and construct its own power generation facilities.

The next one is Rosneft. The company is a leader of Russia's petroleum industry and ranks among the world's top publicly traded oil and gas companies. Rosneft is primarily engaged in exploration and production of hydrocarbons, production of petroleum products and petrochemicals, and marketing of outputs. It has been included in the Russian Government's List of Strategic Enterprises and Organizations. The state holds 75.16% in the Company (through

OJSC Rosneftgaz) while approximately 15% of shares are in free-float. Rosneft is also one of the leading independent gas producers in Russia, with an annual output of natural and associated gas of about 12 Bcm. The company's vast and unique reserve portfolio ensures steady long-term growth in gas output. Rosneft is currently implementing comprehensive measures aimed at achieving a target gas utilization rate of 95%, one of the company's high-priority objectives.

Rosneft was established in 1993 as a single enterprise on the basis of assets previously held by Rosneftgaz, the successor to the Soviet Union's Ministry of Oil and Gas. During early 1990s, almost all Russian local oil companies and refineries were extracted from Rosneft to form ten integrated companies (later their number was halved as a result of acquisitions). On 29 September 1995, the Resolution of Russian Government N971 transformed Rosneft into an open joint stock company. In October 1998, the Russian Government appointed Sergey Bogdanchikov¹⁶⁴ as President. The company had only two obsolete refineries and several low-productive and poorly managed oil-producing assets. Several plans for the company's privatization were composed in late 90s but due to struggle of equal influential pretenders they were never fulfilled¹⁶⁵.

The relations between Gazprom and Rosneft cannot be called cloudless. So far, despite the control of the state over both of these holdings, Gazprom, whose Board of Directors was headed by the First Deputy Prime Minister Dmitrii Medvedev, and Rosneft, whose Board of Directors was headed by Igor Sechin, Deputy Chief of Staff of the Presidential Executive Office, were in fierce competition with each other. In 2004, President V. Putin declared their merging, but Rosneft managed to defend its independence. After that, these two state-controlled companies became rivals. Gazprom was going to buy Iuganskneftgaz, but it eventually went to Rosneft. The companies often clashed for licenses. Rosneft used to have constant problems with access to the Unified Gas Supply System.

In November 2006, Gazprom and Rosneft signed an agreement of strategic cooperation. Owing to this partnership, Gazprom solved the problem of its own declining production by purchasing increasing volumes of gas produced in the gas fields of Rosneft. Apart from that, the companies implemented joint projects related to geological exploration and production of hydrocarbons.

The companies agreed that Gazprom bought gas in the Rosneft's fields in produced volumes, but not less than the production capacity of 2006. Rosneft is the fourth largest

¹⁶⁴ **Sergey Bogdanchikov** (born August 10, 1957, in Orenburg Oblast, Soviet Union) is a Russian manager. He received a degree from Buguruslansky Gas Technicum in 1976. In 1981, Bogdanchikov earned a PhD (Kandidat Nauk) from Ufa Gas Institute. Since October 16, 1998 he has been the President of Rosneft. Since November 1, 2004, after Gazprom bought Oligarch's Abramovich oil company Sibneft which was renamed to Gazprom Neft, he has been the Director General of the latter.

¹⁶⁵ Rosneft, *Rosneft at a glance*, <http://www.rosneft.com/about/>.

independent gas producer. In 2005, 3.6 Bcm of gas from fields in West Siberia was sold to Gazprom, 1.1 Bcm of gas to independent traders, and 420 Mcm of gas to end users. In 2005 Mezhhregiongaz bought 2-3 Bcm of gas from Rosneft and Rosneft independently transported approximately 3 Bcm of gas. Presumably, Gazprom undertook to buy at least 5-6 Bcm of gas in 2007 at the entrance of the gas transportation system.

As to gas produced in the field that is not connected to the gas transportation system yet, there is an agreement that the volumes, terms, and periods of gas sales will be regulated by additional agreements.

Experts' attitude to this agreement is rather skeptical. Stanislav Belkovskii, Russian political analyst and communication specialist analyzed the situation from the political point of view and called this agreement a "mere declaration". According to him, Gazprom and Rosneft are the financial supports of different political parties. "The mutual hatred of Dmitrii Medvedev and Igor Sechin is reciprocal and particularly much alive. The agreement only demonstrates that the two parties publicly shook hands at Vladimir Putin's request in order to lessen the talks and publications insisting that the two companies are at war of extermination. Nevertheless, the war is on"¹⁶⁶.

Among other independent gas producers Sibur, Northgas and Surgutneftegas should be emphasized.

Sibur or JSC Siberian-Urals Oil and Gas Company was established by the Government's Decree on March 7, 1995. Initially the company included the union Sibneftegazopererabotka (Gas Processing Company of the Western Siberia), Research Institute Gazpererabotka (Krasnodar) and Perm's Gas Processing Plant.

In 1998, the company was privatized, and Gazprom became the largest shareholder, but real control over the production and economic activity came to Iakov Goldovskii's Gas and Petrochemical Company. Iakov Goldovskii, Russian manager and business owner, co-owner of the Austrian Petrochemical Holding took up the General Manager's position at Sibur in 1999. During 1998-2001, the company has included in its membership a large part of the petrochemical assets in Russia and became the largest petrochemical holding company of the country.

In late 2001, the company's management, headed by Iakov Goldovskii attempted to diminish the Gazprom's share of the company's capital through an additional issue of ordinary shares, previously tried to bring petrochemical assets of Sibur under the legal control of the company. In response, in March 2002, Gazprom has initiated bankruptcy proceedings of the company.

¹⁶⁶Belkovskii S., "Ubiistvenno malen'koie zlo" (The lesser evil), 05.12.2006, <http://www.apn.ru/publications/article/11080.htm>.

The process of negotiating with lenders on the terms of debt restructuring lasted more than six months and ended on 10 September 2002 with signing of the settlement agreement. According to some facts, the deciding factor was the force interaction and the subsequent arrest of the then co-owner of Sibur Iakov Goldovskii (the arrest was made in the office of the chairman of the Gazprom's Board, Aleksey Miller). Following the transfer of Sibur's shares to Gazprom Goldovskii was released; some time he lived in Austria, but then returned to the Russian petrochemical business (Dzerzhinsk enterprise Korund).

Northgas is a natural gas-producing company in Russia. It is a developer of the North-Urengoy (Severo-Urengoyiskoie) gas field in the Yamalo-Nenets region. According to the official information, it controls total reserves of 368 Bcm of natural gas. All produced gas is acquired by Gazprom.

Northgas was founded in 1993 to develop the North-Urengoi field. The company was controlled by Gazprom through its subsidiary Urengoygazprom, which owned a 51% stake in Northgas. 44% of the company was owned by Bechtel Energy, while Tansley, an offshore company owned by the Russian businessman Farkhad Akhmedov had a stake of 5%. A license for the North-Urengoy field was transferred from Urengoygazprom to Northgas in 1994. In 1996, Bechtel sold its stake to Akhmedov-owned Farcot Group, which later also took over a stake owned by Transley. In 1999–2001, Farkhad Akhmedov gained full control over Northgas through the three emissions of additional shares and signing-off the existing share capital. Its ownership was transferred to the holding company REDI.

Northgas started natural gas production in 2001. However, due to a dispute with Gazprom, the access of produced gas to the gas transportation system of Russia was limited and the Northgas license of the North-Urengoi field was annulled. In 2005, the dispute was resolved by Gazprom acquiring a 51% stake in Northgas free of charge. Gazprom owns its stake through Urengoygazprom¹⁶⁷.

Surgutneftegas is one of the Russian major oil and gas companies. It was created in 1993 by merging several previously state-owned companies with large oil and gas reserves in Western Siberia. The company's headquarters are located in Surgut, Tyumen Region.

The company is believed to have close ties to the Kremlin under Vladimir Putin. Surgutneftegas includes a large oil refinery in Kirishi, Leningrad Region, operated by the Kirishinefteorgsintez subsidiary. The company is also engaged in fuel retail activities in northwest Russia. It cooperates with the Petersburg Fuel Company in this field. Surgutneftegas is also a shareholder of Oneximbank. From the very beginning till now Surgutneftegas has been led

¹⁶⁷ Northgas, *About the company*, <http://www.northgas.ru/company/>.

by President and Director General Vladimir Bogdanov, who had run the Surgut oil fields since 1983.

In 1995, the company won a tender for prodigious oil fields in the Khanty–Mansi Autonomous District. The company also gained permission to build an export terminal in the Batareynaya Bay of the Gulf of Finland and a pipeline between it and the Kirishi refinery. Surgutneftegas was widely believed to be behind Baikalfinansgrup which acquired Yukos' main oil production facility Yuganskneftegaz at a controversial auction in 2004.

In addition to independent gas producers, there are other players that have their own influence on the Russian gas industry:

1. *Relationship advisors*. The complicated procedure of obtaining permission of access to the gas transportation system gave rise to companies that simplify and palliate this process (often called relationship advisors). For remuneration, these companies can find out the reason behind previous access denials, speed up the decision making process, and even obtain the required decision with some violations of the procedure (such as, for example, violation of the term of application).

2. *Traders*. In case of serious problems with getting access (such as, for example, a conflict with Gazprom), relation-shippers may buy gas at the inlet to the gas transportation system and then sell it at the outlet from the gas transportation system. Often, these companies have close contacts and relations with regional sales subsidiaries of Gazprom (Regiongas companies) and offer their assistance in gas sales in regions of interest.

The business of relation-shipper is built mainly on trust relations (kinship relations, concealed affiliation, etc.). This business is alive for a long time now and has formed stable resale chains and diversified trading portfolios of key players. The consumers' willing to receive additional volumes of gas, firstly, turns to well-known relation-shippers on the market and only after that the negotiations start with independent producers of gas.

3. *Gas distribution organization*. They perform the function of gas delivery from the trunk gas pipeline to end users (often called the last mile function). The procedure of getting access to gas distribution networks is based on the same principles as the procedure of getting access to the trunk pipeline transport. Thus, gas distribution organizations use the same schemes, manipulations, and tricks of Gazprom for deriving all potential benefits and profits from their monopoly in the region (tricks and subterfuges like “absence of technical possibility”, “noncompliance with the term of application”, etc.).

The situation is complicated and entangled by the broad range of owners of regional gas distribution organizations. Typical owners are Gazprom, local administration, former managers of gas distribution organizations, and local business elite. Despite the efforts of Gazprom, a

considerable part of all gas distribution organizations in Russia are out of control of the gas monopoly. Gazprom takes part in 196 gas distribution organizations in Russia out of the total 300 existing in the country. These gas distribution organizations operate more than 80% of all gas distribution networks with an overall gas transportation capacity of over 150 Bcm per year.

Gazprom is going to buy gas distribution stations owned by extraneous organizations, informed Valery Matyushechkin, Head of the Division of Gas Supply and Utilization of Gazprom¹⁶⁸. According to him, there are approximately 300 gas distribution stations in Russia, and Gazprom will buy about 25-30 gas distribution stations at the nearest future.

Gas distribution organizations have the right to sell gas to end users and often take advantage of it. First, they have complete information on regional consumers, including their actual needs, requirements, consumption regimes, installed equipment, etc. Second, gas distribution organizations have sizeable volumes of their own unaccounted gas, which consist of standard losses in gas distribution networks and mostly of the difference in norms and supplies of gas to the population. Third, their infrastructure may be used for compensation of peak (daily) variations of gas consumption.

Gas distribution organizations belong to the system of domestic maintenance and utilities and works directly with the electorate. Their employees live in the region covered by their services. Therefore, despite the fact that they form an integral part of the gas industry, they take the side of the region in conflicts between the regional administration and Gazprom.

However, the formal dependence of gas distribution organizations on Gazprom is quite strong and, practically, they carry out the technical measures for limiting gas supplies to consumers under instructions of regional sales companies of Gazprom.

4. *Mezhregiongaz* was established for overcoming the nonpayment crisis, and functions of this company today are severely curtailed. Nevertheless, *Mezhregiongaz* is a mediator between Gazprom and end users. The company collects gas requirement applications, draws up the expense side of the gas balance of the country, controls maintenance of this balance and ensures collection of gas payments.

The General Director of *Mezhregiongaz* is Head of Marketing and Processing Department of Gas and Liquid Hydrocarbons in Gazprom. The company has a sales subsidiary (*Regiongas*) in every region responsible for selling gas of Gazprom. An associated business of these sales subsidiaries is selling gas of independent producers. These regional sales subsidiaries constitute the basis of *Mezhregiongaz* for implementing the strategy of Gazprom in regions (standard supply contracts, standard limitations of supplies to consumers, etc.) and, in particular, building a trading site for gas sales.

¹⁶⁸ Gazprom, *Rukovodstvo* (Management), <http://www.gazprom.ru/reports>.

As appears from the above, the poor efficiency of Gazprom management is so far compensated by its high political status and strong administrative resources. Gazprom is not ready for open competition and is not likely to face it in the nearest future because all independent companies are being squeezed out of the market or incorporated into the structure of Gazprom.

The proliferation of problems in the gas industry requires sound decisions and efficient solutions. The limited ones may be bought from outside on an outsourcing basis. Global solutions may only be worked out after radical changes in the structure of management of the gas monopoly.

The structure of ownership in the gas industry is undergoing drastic changes. High prices of exported gas allow Gazprom to accumulate funds and assemble the industrial vertical. Its ownership often goes far outside the gas industry framework.

Independent producers of gas are contriving different schemes for using the industrial contradictions and discrepancies for direct supplies of their gas to consumers. The higher cost of independent gas is compensated by the flexibility of suppliers and transparency of relations.

The sector of gas distribution in Russia is underestimated both in the financial and managerial aspects. Development of the gas market in Russia will be stimulated by a shortage of gas for consumer rather than by excessive production of gas. Gas distribution organizations act as concentrators of consumer interests and organizational bases for independent sales companies.

The sales companies of Gazprom enjoy an unreasonably high administrative status in regions and are characterized by low efficiency of their business. If the gas market is finally formed, the sales companies will have to revise their business approaches or sacrifice a considerable part of their customer base.

Currently, the Federal Tariff Service of the Russian Federation regulates the following gas transportation tariffs:

- Tariffs for services of gas transportation through trunk gas pipelines for independent organizations;
- Tariffs for services of gas transportation through gas distribution networks;
- Tariffs for gas supply and distribution services provided to end users by gas suppliers (if gas is supplied at regulated wholesale prices).

The principal regulation in the sphere of gas transportation and sales is Resolution No. 1021 of December 29, 2000 of the Russian Federation Government “On State Regulation of Gas Prices and Tariffs for Services of Gas Transportation on the Territory of the Russian Federation”,

which approved the “Main Provisions for Formation and State Regulation of Gas Prices and Tariffs for Services of Gas Transportation on the Territory of the Russian Federation”.

Currently, these tariffs are determined using the following procedures developed and approved by the Federal Tariff Service and the Federal Energy Commission of the Russian Federation:

1. “Guidelines for Regulating Tariffs for Services of Gas Transportation Through Gas Distribution Networks” approved by Resolution of the Russian Federation’s Federal Energy Commission No.88-e/1 of October 28, 2003 (in the version of Resolution of the Federal Tariff Service of the Russian Federation No142-e/1 of October 26, 2004).

The state regulation of gas transportation through gas distribution networks is based on the same legal framework as gas transportation through trunk gas pipelines. One of the salient features is a legislative rule prescribed by the Federal Law “On Gas Supply” and approved by the Russian Federation Government's Resolution No.335 of May 3, 2001 “On Establishment of Special Surcharges to the Tariffs for gas Transportation by Gas Distribution Organizations for Financing Gasification Programs”, which regulates the procedure of determining special surcharges to tariffs for gas transportation by gas distribution organizations for financing gasification programs. Apart from that, in contrast to gas transportation through trunk gas pipelines regulated by the Federal Tariff Service of the Russian Federation, ample materials have been worked out for gas transportation through gas distribution networks and published as Guidelines.

2. “Procedure for Calculation of Tariffs for Services of Gas Transportation through Trunk Gas Pipelines” approved by the Russian Federal Tariff Service's Resolution No.338-e/1 of August 23, 2005.

Apart from that, regulation of gas transportation through pipelines uses the method of price regulation, the process for identifying consumers with the right of mandatory attendance, and method for determining the minimum level of their attendance in case the requirements of such consumers for the product produced or sold by the natural monopoly subject cannot be fully satisfied.

Thus, the following regulatory documents are added to the list of regulations for gas transportation and sales:

- “Regulation on Access of Independent Organizations to the Gas Transportation System of Gazprom” approved by Resolution No.858 of July 14, 1997 of the Russian Federation Government; and

- “Regulation on Access to Organizations to Local Gas Distribution Networks” approved by Resolution No.1370 of November 24, 1998 of the Russian Federation Government.

The main points of the access regulations are as following:

- Access is granted for ensuring supplies to consumers in the Russian Federation (the issues of gas supplies outside the customs territories of the Russian Federation are not considered);
- Access may be granted to any organization (producer, consumer, or supplier of gas);
- Gas transportation contracts are concluded if free gas transportation capacities and technical possibilities of gas supply to the gas transportation system or gas withdrawal from it are available and gas satisfies certain standards;
- Free gas transportation capacity is defined as the technical capacity of the gas transportation system to receive and transport the required volume of gas, in addition to the volumes of gas transported for organizations of Gazprom and independent organizations under current gas transportation contracts;
- Disputes and discrepancies are settled by the Commission of the Russian Federation Government for the use of trunk oil and gas pipelines and pipelines of oil products¹⁶⁹.

It should be mentioned that the availability of free capacities in the gas transportation system is determined by Gazprom. The liability of Gazprom, as owner of the Unified Gas Supply System, for a failure to grant access or failure to grant timely access to the gas transportation system when free capacities are available, is not defined. All this makes users of the gas transportation system dependent on the owner of this system, which was confirmed at several meetings of the Commission of the Russian Federation Government for the use of trunk oil and gas pipelines and pipelines of oil products dedicated to the cases when access to the trunk pipelines of Gazprom was not granted.

Considering the aspects of granting access to the gas transportation system, it is necessary to point out that requirements for connecting facilities of independent gas producers (fields, gas processing facilities, etc.) to the pipeline transport of Gazprom are set by the latter. Gazprom coordinates the technical conditions for connecting facilities of independent gas producers. However, coordination of technical conditions for connection by Gazprom is necessary but not sufficient for getting access to the pipeline transport (as, for example, in the case of the Beregovoe field developed by Itera).

¹⁶⁹ Belyi A., “Trends of Russia's gas sector regulation”, *Oil, Gas, Energy Law Intelligence*, 2011. №11 <http://www.crninet.com/2011/a4a.pdf>

All this leads to the conclusion that many crucial issues of using the gas transportation system are not regulated. To develop mechanisms ensuring truly nondiscriminatory access to the gas transportation system and establishing rules that regulate access to the gas transportation system, it is necessary to introduce essential changes into the existing “Regulation on Access of Independent Organizations to the Gas Transportation System of OJSC Gazprom” and the law “On Gas Supply”.

Access to the local gas distribution networks is regulated by Resolution No.1370 of November 24, 1998 of the Russian Federation Government “Regulation for Access of Organizations to Local Gas Distribution Networks”. The terms and procedure of access to the local gas distribution networks prescribed by this document are similar to the terms and procedure of access to the gas transportation system of Gazprom and have the same shortcomings.

Practical application of this resolution of the Russian Federation Government is explained in the “Regulation for Consideration of Issues Related to Access of Organizations to Local Gas Distribution Networks” approved by Resolution No.6/1 of February 19, 1999 of the Federal Energy Commission of the Russian Federation.

The following prices and rates are currently regulated in the sphere of purchase and sale:

- Wholesale prices of gas (natural gas, associated petroleum gas, and stripped dry gas), except the prices regulated by gas producers that are not affiliated companies of the open joint-stock company Gazprom and the joint-stock companies Yakutgazprom, Norilskgazprom, Kamchatgazprom, and Rosneft-Sakhalinmorneftegaz;
- Rates for supply and distribution services provided by gas suppliers to end users (with regulated wholesale prices of gas); and
- Retail prices of gas sold to the population and the domestic, household sector.

The main regulation here is Resolution No.1021 whose provisions are reflected in the following regulatory documents:

- “Procedure for Determining the Rates for Supply and Distribution Services Provided by Gas Suppliers to End Users” approved by Resolution No.8/9 of February 6, 2002 of the Federal Energy Commission of the Russian Federation; and
- “Guidelines for Regulation of Retail Prices of Gas Sold to the Population” approved by the Russian Federal Tariff Service’s Resolution No.194-e/12 of November 23, 2004.

The rate for supply and distribution services, provided by gas suppliers to end users, is added to the regulated wholesale price of gas. Regulated wholesale prices and rates for supply and distribution services do not apply to gas produced by organizations that are not affiliated companies of the open Gazprom and the joint-stock companies Yakutgazprom, Norilskgazprom, Kamchatgazprom, and Rosneft-Sakhalinmorneftegaz. That means that according to Resolution No.1021 of the Russian Federation Government, regulation of wholesale prices and rates for supply and distribution services does not apply to independent gas producers. This is important because the establishment of the rate for supply and distribution services by the Federal Energy Commission of the Russian Federation resulted in an actual increase of wholesale prices regulated by the state and expanded the geographic scope of economically efficient regions for independent gas producers.

The price of gas for end users is based on the regulated wholesale price of gas, tariffs for gas transportation in gas distribution networks, and rates for supply and distribution services. If end user networks are directly connected to the trunk gas pipeline system, in this case the price of gas for end users is based on the regulated wholesale price of gas and the rate of supply and distribution services. If several organizations take part in gas supplies to end users, the regulated rate for supply and distribution services paid by end users is distributed among these organizations as agreed between them. Apart from that, if a holding structure takes part in gas supplies, the regulated rate for supply and distribution services is set by the companies engaged in immediate gas sales and the parent company.

Retail prices of gas are regulated as prescribed by Resolution No.239 of March 7, 1995 of the Russian Federation Government “On Measures for State Regulation of Prices (Tariffs)” adopted in fulfillment of Decree No.221 of February 28, 1995 of the President of the Russian Federation “On Measures for State Regulation of Prices (Tariffs)”.

Wholesale prices and rates for supply and distribution services are regulated by the government and federal executive authorities. Prices of natural gas sold to the population and domestic, household cooperatives are regulated by executive authorities of constituent entities of the Russian Federation.

Regulation of retail prices of natural gas sold to the population and rates for supply and distribution services, provided by gas suppliers to end users, is exercised in accordance with the guidelines approved by the Russian Federal Tariff Service in coordination with the Ministry of Trade and Economic Development.

In the legal framework regulating relations in the gas industry, the main legislative enactment is Federal Law No.69-FL of March 31, 1999 “On Gas Supply in the Russian

Federation”. This law is the only and primary legislative enactment regulating relations in the gas industry and requires detailed analysis.

Despite the continuous arguments about the necessity of development and adoption of a unified industry law “On Oil and Gas” that would take into account all salient features of the oil and gas industry, Russian legislators followed the path of including separate reforms in the oil and gas industry into general legislative enactments and regulations. The main issues in the oil and gas industry that require state regulation are as follows:

- Issues of subsoil use (in particular, definition of fields of federal importance, aspects of license agreements, etc.);
- Issues of taxation and customs regulation (in particular, rental payments);
- Issues of property and ownership;
- Issues of access to the infrastructure;
- Issues of export directions, etc.

A closer look reveals that most of these issues are already reflected in one way or another, in the currently effective legislation, or are in the stage of development and adoption (such as, for example, the draft law “On Pipeline Transport”).

The history of development and adoption of the law “On Gas Supply” shows that it is a clearly political law oriented, first of all, to protection of the principles of and approaches functioning and regulation of the gas industry used by the management of Gazprom at the moment of its adoption. For example, the law states that separation of the Unified Gas Supply System is impossible, and its owner (Gazprom) may only be liquidated by a specific federal law. In addition to the fact that the legislative prohibition of separation of the Unified Gas Supply System makes difficult to separate the spheres of natural monopoly from potentially competitive spheres, the provision that Gazprom may only be liquidated by a special federal law contradicts the Civil Code of the Russian Federation that provides a complete list of cases when a legal entity may be liquidated and cannot be expanded, including liquidation of legal entities by adopting a special federal law.

The essence of the law “On Gas Supply” is that

- Gazprom is indivisible;
- The state must own at least 35% of shares of Gazprom;
- Nonresidents may own no more than 20% of shares of Gazprom; and
- State regulation may take the form of control of transportation tariffs or wholesale prices and transportation tariffs for independent gas producers.

A number of provisions of this law check the development of the gas market in the country. Interestingly, in 2001, a special commission created at the presidential Executive Office at the request of Vladimir Putin that took inventory of the entire legislation of the Russian Federation, came to a conclusion that the law “On Gas Supply” is meaningless, and proposed to abolish it.

Most provisions of the law “On Gas Supply” do not contain mechanisms of their practical implementation. Many concepts used in it are not explained, and they have not any criteria for their clear definition. Many provisions of this law repeat provisions of other laws or refer to provisions that do not ensure the necessary level of legal regulation.

For example, the law says that state regulation of tariffs for gas transportation services, classified by the Federal Law “On Natural Monopolies” into the sphere of activities of natural monopolies, should be exercised by the federal authority for regulation of natural monopolies, which, in fact, repeats the corresponding provision of the Federal Law “On Natural Monopolies”.

Law of the Russian Federation No.948-1 of March 22, 1991 “On Competition and Limitation of Monopolistic Activities on Commodity Markets” and Federal Law No.147-FL of August 17, 1995 “On Natural Monopolies” classify pipeline transportation of gas into the sphere of activities of natural monopolies.

The law “On Gas Supply” applies the antitrust legislation to the problem of access to gas transportation facilities and obliges all organizations conducting business on the territory of the Russian Federation to ensure nondiscriminatory access to free capacities of their gas transportation and gas distribution networks in accordance with the procedure prescribed by the Russian Federation Government. The term “free capacities” has no legal definition.

The document applying the provisions of the law “On Gas Supply” to regulation of access to gas transportation facilities is Resolution No.858 of July 14, 1998 of the Russian Federation Government “On Ensuring Access of Independent Organizations to the Gas Transportation System of the Open Joint-Stock Company Gazprom”, which approved the “Regulation on Access of Independent Organizations to the Gas Transportation System of OJSC Gazprom”.

As to construction of private gas pipelines, Mikhail Fradkov, Prime Minister of the Russian Federation, said on June 21, 2004 at the briefing in Tallinn “the issue of private pipeline construction is not on today's agenda”. Earlier, he spoke against the idea of privatization of

pipelines: “This is our infrastructure and our competitive edge, and we have to attend to it.” Mr. Fradkov stressed that access to pipelines, as well as to any resources, should be free¹⁷⁰.

Acknowledgement of separation of competitive and natural monopoly sectors as the accepted strategy of economic development would simplify and facilitate state regulation in the gas industry. In his speech on February 14, 2003 at the meeting dedicated to the celebration of the 10th anniversary of Gazprom, Vladimir Putin, said, “the state, as the largest shareholder of Gazprom, will insist on cutting costs and raising the performance efficiency of the company but will not support any plans for its separation ...” This statement froze the concept of the gas market development in the Russian Federation, which implied separation of gas production and gas transportation activities. Nevertheless, the issue of reforming Gazprom by separation of its different activities is still on the agenda, said A. Sharonov, Deputy Minister of Trade and Economic Development of the Russian Federation, because “natural monopolies should be reformed by separating their competitive and natural monopoly activities”.¹⁷¹

¹⁷⁰ Victor N., *Gazprom: gas giant under strain*, Stanford: Program on Energy and Sustainable Development, 2008, pp. 15-33.

¹⁷¹ Ibid.

CHAPTER 7. The Russian export policy and the European strategy of Gazprom

After the study of the Gazprom's position and activity on the domestic natural gas market, this chapter will deal with the Russian export policy and the strategy of Gazprom on the European market. To clarify these issues, it is necessary to explain the importance of the European gas market for the Russian economy and Gazprom's policy and vice-versa the importance of the Russian gas supply for Europe; it is crucial to analyze the production and consumption of natural gas in Europe to demonstrate its dependence on imports. Moreover, it is necessary to examine the criteria that had an impact on the export policy of Gazprom, including its strict cooperation with some European countries.

At the end of 1990s, the estimated natural gas reserves of Russia accounted for 42.44 Tcm (Trillion cubic meters) or about 29% of the world proven gas reserves; it provided 23% of the world production¹⁷². It is clear that large and growing volume of natural gas export was a key strategic priority for the Russian gas industry, in addition to create and meet domestic demand. The gas export is realized through the foreign-economic activity of Gazprom in accordance with the Russian regulations.

Due to the Russian Energy Strategy, the increase of energy exports was the important means in the reconstruction and recovery of the Russian economy. In the global energy markets, the Russian presence would be increasingly connected to natural gas, in terms of the dramatic slump and the further expected reduction in the total exports of oil and oil products, the practical cessation of coal export and uncertain prospects for export of electric energy.

For this reason, the policy of natural gas export was seen as the most important strategic task of the Russian economy and the subject of the Gazprom's commercial interests. The point is not only getting more and more currency earnings, although, initially, it was vital to stabilize the ruble, and then to service and pay off the external debts, i.e. to national security of the country. It was equally necessary that investment in increasing gas exports would provide a real source of orders for the conversion engineering industry, metallurgy, building materials industry, construction companies and other industries. It would also provide a wide range of related businesses with real work places (and wages). Most of them were not able to compete in foreign markets, but they were able to go to them indirectly through the Russian gas export.

¹⁷² BP, *Statistical Review of World Energy*, June 2010, <http://www.bp.com/statisticalreview>.

The strategic importance of gas exports to the Russian economy was not in contradiction with the Gazprom's desire for maximizing its revenues from export, on conditions that the most part was returned to Russia and consigned for the investment needs of Gazprom.

It was quite natural that, after its formation, Gazprom had extremely active policy in the world (mainly European) energy markets, surely affiliating to the largest energy companies, along with the old multi-national oil corporations.

In its foreign economic activity in the 1990s, Gazprom, firstly, varied forms of gas export: it moved from the Soviet traditional gas sales by pipeline system to its high-volume supply to the end users, conducting joint gas-electric and gas-chemical projects, creating trading houses, etc. Secondly, Gazprom continued to seek contracts and new forms of participation (including financial) to the reconstruction of old gas pipelines and construction of new ones and other facilities outside of Russia. Thirdly, the company aimed to become one of the shareholders and investors of non-energy structures, both within Russia and abroad, strengthening the country's integration into the world economy. According to the some statesmen's opinions, all these activities of Gazprom should be controlled by the state¹⁷³.

At the world energy markets, Gazprom met not only the increasingly tough competition but sought and found strategic partners. Long-term relationships with them were built on a contract basis as well as through the mutual incorporation, transfer of ownership rights, etc. The natural allies of Gazprom were primarily gas and gas transportation companies from the CIS: appropriated agreements with Belarus, Turkmenistan, etc. But also this kind of strategic transactions was with companies of other countries, such as “British Gas” in respect of construction of a gas pipeline between Britain and Belgium.

The European market was the traditional and most crucial for Russia. As follows, in terms of gas supply and revenues, it was the emerging market of the CIS. There was a reason for the creation of the third export market: the Far East (China, Korea, maybe Japan)¹⁷⁴ at the beginning of the 21th century. The participation of Gazprom in the formation of the fourth - the South Asian market, covering Afghanistan, Pakistan and India - was more problematic, but strategically very important.

According to the R. Viakhirev's opinion, with the implementation of this “gas expansion” policy in the first decade of the 21th century (the resources and capabilities of production and construction of gas transport facilities for this were quite enough), Russia could become the core unique transcontinental gas supply system stretching from the Atlantic to the Pacific and from the Arctic to the Indian Ocean and covering the most part of the Eurasian continent.

¹⁷³ Viakhirev R., Makarov A., eds., *Strategiia Razvitiia Gazovoi Promyshlennosti Rossii* (Strategy of the Russian Gas Industry Development), Moscow: Energoatomizdat, 1997, pp. 140-151.

¹⁷⁴ Ibid, p. 141.

As stated in the chapter 2, the natural gas market of Western Europe was originated in the late 1960-s through the gas supply from the Dutch Groningen field. For a decade, the Netherlands were the only supplier of natural gas and only in the late 1970s, the market had other exporters: Algeria, Norway and Russia. At the same time in Western Europe, it was increased demand for natural gas, but in the 1980s, it was unstable: growth alternated with recessions associated with abnormally warm winters.

As it can be seen from the Table 7.1, between 1992 and 2000, the largest consumers of natural gas were France, Germany, Great Britain, Italy, and the Netherlands, they accounted for about 90% of natural gas demand in Western Europe.

Table 7.1 Production, and consumption of natural gas in 1992-2000¹⁷⁵, Bcm

Region	Production			Consumption		
	1992	1996	2000	1992	1996	2000
Western Europe						
France	3.23	3.40	3.53	31.4	36.1	39.3
Germany	14.9	17.4	16.9	63.0	83.6	79.5
Italy	16.4	18.2	15.2	45.7	51.5	64.9
Netherlands	69.4	76.7	58.1	37.6	42.4	39.0
UK	51.5	84.2	108.4	56.4	82.1	96.9
Norway	25.8	37.4	49.7	2.6	3.2	4.0
Denmark	4.1	6.4	8.2	2.5	4.2	4.9
Russia	582.8	543.5	528.5	404.8	368.6	354.0
Africa						
Algeria	55.3	62.3	84.4	20.7	21.6	19.8

About 70% of the Western European countries' gas needs were covered with the gas production in Western Europe. The major producing countries were the Netherlands (31.47% of the total production in 1996), the UK (34.55%), Norway (15.35%), Italy (7.47%) and Germany (7.14%)¹⁷⁶.

In the period between 1990 and 2000, in the Western European countries, the average annual growth rate of natural gas production amounted to about 3%, as a whole for this period, the production increased by 30%.

¹⁷⁵ BP, *Statistical Review of World Energy*, June 2010, <http://www.bp.com/statisticalreview>.

¹⁷⁶ Ibid.

During the same period, in Western Europe, the proved reserves of natural gas increased by 12.4% (6.29 Tcm), representing 4.2% of the world reserves¹⁷⁷. Norway, the Netherlands, Great Britain, Italy, Germany, and Denmark had the largest stocks: they accounted for about 96% of the proved natural gas reserves in Western Europe.

Over the period of 1990-2000, the production of natural gas increased on the continental shelf of the Western Europe. As a result, the share of offshore gas in the region was 57%, significantly higher than the world average (19.1%)¹⁷⁸. The high share of offshore production led to the growth in gas prices.

According to J. Stern's forecasts, due to the depletion of natural gas fields overland, its production on the continental shelf could grow, and conditions for development and exploitation of the fields, due to the advancement in the deeper waters of the North Sea could become more complicated. Thus, despite the gained experience and progress made by the Western European countries in offshore fields development and sub sea pipelines construction, costs of production and transportation of natural gas in the North Sea would increase, affecting the further production growth.

This strengthened the dependence of Western Europe on natural gas imports from other regions. Thus, from 1995 to 2000, gas imports increased by 26% to 203.30 Bcm.

The competition between Russia and Algeria increased on traditionally large market for Algerian gas in Italy and France, the competition with Norwegian gas was growing in Germany and Central Europe.

According to the forecasts made in the late 1990-s¹⁷⁹, the major intra-European gas supplier was Norway. It was supposed to double (and the maximum option - even triple) the supply of gas to Europe in 2010. However, further increase in exports as stocks was almost extremely difficult. The same problem could be applied also to Algeria.

However, it should be taken into account the probability of occurrence in the European market of the South Asian natural gas, primarily from Iran and the Persian Gulf fields, as from Turkmenistan.

Thus, if before 2000-2005, it can be counted on a stable gas supply from the North Sea, since 2005-2007, the shortage of supply became more noticeable. At the end of 1998, ensuring construction and subsequent operation of the underwater gas pipeline between terminals in the UK and Belgium, the project "Interconnector" supported the stability and growth of gas supply to Europe. There was a possibility to transport natural gas also in the opposite direction.

¹⁷⁷ Ibid.

¹⁷⁸ Stern J., *Security of European Natural Gas Supplies: the Impact of Import Dependence and Liberalization*, London: Royal Institute of International Affairs, 2002, p. 7.

¹⁷⁹ Mabro R., Wybrow-Bond I., *Gas to Europe: the strategies of the four major suppliers*, Oxford: Oxford University Press, 1999, pp. 255-267.

In the increasing integration of the Russian and European gas systems, Central Europe was more important. This was determined not only by preserving the dominant role of Russian gas to the gas market in the region, but also by its “transit” role, the value of which increased with the passage, especially through Poland, the Yamal–Europe gas pipeline.

The results of negotiations for the supply of the Yamal gas have shown buyers' interest in the additional supplies of Russian gas. However, the main demand for it was only after 2000-2005.

In the period between 1990 and 2000, the average total consumption of natural gas was about 400 Bcm (including the Central Europe - 65 Bcm). The assessment of the region's needs for 2010 varies, but close to 600 Bcm, in particular, the IEA's assessment was 628 Bcm¹⁸⁰.

In satisfaction of the European needs by 1999, the gas main suppliers took part as following: Russia - 106 Bcm, Norway - 27 Bcm, Algeria - 35 Bcm, a total was about 170 Bcm, or 43% of consumption¹⁸¹. The further increases in gas consumption could be covered only by its imports, which was a necessary increase of 200-230 Bcm.

The Norwegian export capacity significantly expanded, and, according to the company Statoil's information, an increase would be between 30 and 60 Bcm. Increasing exports of Algeria could reach 40 Bcm¹⁸².

Then, according to the Viakhirev's calculations, the general incremental capabilities of Russian competitors could grow from 110 to 140 Bcm. In this case, Russia might raise its export on 90 Bcm, so its total volume could reach 200 Bcm to 2010¹⁸³.

At the same time, it was possible that with its active policy Gazprom could prevent access of the Middle Eastern gas to Europe, thus increasing the growth of its gas exports to 120 Bcm. As a result, the upper limit of the participation range of Russian gas to the European market would be up to 230 Bcm by 2010.

According to the analysis carried out by the International Energy Agency, the gas balance of Europe aimed at the average levels of Russian gas exports (Table 7.2).

Table 7.2 Gas balance in Europe¹⁸⁴.

Factors	2000	2010
Demand, Bcm	465	628

¹⁸⁰ BP, *Statistical Review of World Energy*, June 2010, <http://www.bp.com/statisticalreview>

¹⁸¹ Ibid.

¹⁸² Stern J., *Security of European Natural Gas Supplies: the Impact of Import Dependence and Liberalization*, London: Royal Institute of International Affairs, 2002, p. 10.

¹⁸³ Ibid.

¹⁸⁴ IEA, Gas balance in Europe, 2011, <http://www.iea.org/stats/index.asp>.

Production for local consumption, Bcm	173	172
Import, Bcm	292	456
Existing contracts and their prolongation	260	260
Including		
Norway	57	57
Denmark	4	4
Netherlands	40	40
UK	0.6	0.6
Russia	95	95
Algeria	61	61
New contracts	30.8	195.7
Including		
Need in new contracts		
Norway (maximal version)	5	30
UK (Interconnector)	10	20
Algeria	5	15
Russia	8	90
Iran	0	19

Gas exports became the largest source of exchange earnings from foreign trade in Russia, in consideration of the expected stabilization or even the decrease of oil export, in the coming term.

Therefore, a correct export policy was among the most crucial aspects of the industry strategy.

The possible options for the export policy in 1990s period were mostly created by differences in the effectiveness of export volumes of gas to the European market and to a much lesser extent - its supplies to the CIS. Another important factor in the export policy was the effective volume of Russian output in the Far Eastern market for natural gas.

When assessing the effectiveness of different scenarios, two factors: the external (global) gas prices and the rate of economic growth in Russia were virtually uncontrollable, from the standpoint of the industry. Moreover, economic growth was, to some extent, dependent on world prices as Russia is a major exporter of resources and the amount of revenue received significantly affects its economy. That is why further considered external conditions of the gas

industry development should include not all possible but only realistic combination of these factors as shown in the Table 7.3.

Table 7.3 Combination of the external conditions of the gas industry development¹⁸⁵.

Pace of economic growth	External gas prices		
	High	Medium	Low
High	I	II	-
Low	-	III	IV

Analysis showed that the strategy of the gas industry is influenced by search of compromise between the main actors with the distinct interests. This strategy is related to the choice of the following actions:

- 1) Establishment of low (close to the price of self-financing) or high (corresponding to the global) domestic prices, or some of their intermediate values;
- 2) Moderate or aggressive export policy;
- 3) Maintaining the perspective dominant role of Gazprom in the Russian gas industry (with its state regulation as natural monopoly) or gradual transformation of the gas market into a competitive one with the expansion of the independent producers' role.

Such issues of the gas industry development are strategic as the detection of a rational structure of investment sources (company's income or loan capital of foreign and domestic investors), the choice of how to maintain an adequate market value of the shares of gas companies, means of rent withdrawal for natural resources and quality of fuel, and others. But these questions are related to the second level of the strategic industry issues and the answers would be different subject to the variants of three key strategic actions.

The first two strategic actions could be analyzed clearly and quantitatively with the already available resources. For each one, the reaction of the industry can be calculated as in the form of its production characteristics (dynamics of domestic demand and exports of gas, necessary volume of gas production and transportation with the appropriate power input) as with the key economic indicators: sales volumes, costs (including investments) and profits, dividends, tax payments, etc.

¹⁸⁵ Viakhirev R., Makarov A., eds., *Strategiia Razvitiia Gazovoi Promyshlennosti Rossii* (Strategy of the Russian Gas Industry Development), Moscow: Energoatomizdat, 1997, pp. 315-330.

These production and financial assessments of the gas industry reaction can reveal the preference of certain actions. This reaction depends on the strategic actions for each of the mentioned above (Table 7.3) combinations of external conditions.

The pricing policy applies to the major strategic decisions in the economy. The complexity of the situation in the Russian gas industry is that the most part of it is owned by the single company, which is a natural monopoly, and according to the law its activity is governed by the state.

There are possible (and in particular - inevitable) disagreements and conflicts in conducting the pricing policy between the company and the government. Therefore, to determine the preference of an option of pricing, in terms of the state and Gazprom, it is advisable the same scenario of the industry development, evaluating them separately, from the position of each subject of the market.

According to R. Viakhirev, the possibility to vary the pricing policy in the gas industry is not so great with the state regulation of prices. They are consisted in a range, where the lower limit is determined by the price of the self-financing sector, and the top one is formed due to the European gas market prices without transportation costs.

These options are required to assess each combination of external conditions for the development of the gas industry indicated in the Table 7.3. Meanwhile, it is acceptable to consider not all the possible combinations of options and scenarios, but only the most representative. In the Table 7.4, the representative combinations are selected in such way that each variant of internal pricing policy is analyzed at high and low rates of economic development of Russia. But the policy of compliance with world prices is seen only at high and average level, and medium and low world prices for gas correspond to the domestic price of self-financing.

Table 7.4. Structure of the representative scenarios of the gas industry development for assessment of the pricing policy options¹⁸⁶.

Options for the pricing policy	External conditions of the industry development (according to the Table 7.3)			
	I	II	III	IV
Compliance with international prices	1	-	2	-
Self-financing prices	-	3	-	4

¹⁸⁶ Ibid.

Thus, the quantitative characteristics of external conditions and options of the pricing policy are given for the generated representative scenarios in the Tables 7.5 (Parts 1, 2). Also, there is the corresponding growth in demand for natural gas and its export to neighboring and other countries, the optimized program of gas production, and related basic financial and economic characteristics of the development of the gas industry in Russia.

Table 7.5 (Part 1) Production and economic characteristics of the gas industry development for different scenarios¹⁸⁷.

Characteristics of the industry	Representative scenarios					
	1			2		
	2000	2005	2010	2000	2005	2010
Price on the European gas market, dollar/1,000 cm	95	125	140	95	110	120
Russian GDP, % to 1990	63	84	103	70	75	83
Domestic gas prices, dollar/1,000 cm	71	90	103	70	75	83
Domestic demand, Bcm	453	497	540	410	435	465
Export to the CIS, Bcm	83	85	92	80	85	90
Export, Bcm	143	190	240	137	160	185
Gas production, Bcm	685	785	880	635	695	755
Annual sales volume, billion dollars	46.8	68.0	88.4	42.3	50.9	61.5
Cumulative salary schedule, billion dollars	2.63	8.9	21.2	2.51	7.8	17.3
Annual capital investment, billion dollars	3.53	3.8	4.4	2.45	3.2	3.5
Revenues, billion dollars:						
Cumulative	83.8	197	354	77.8	161	260
Annual	20.5	26.2	34.6	18.3	17.5	21.7
Dividends (cumulative), billion dollars	12.3	36	69	12.2	34	61
Dividend rate, %	10	12	13	9	10	11
Share capital, billion dollars	39.6	48	56	41.7	47	48
Surplus earnings (+), debts (-), billion dollars	-1.05	0.99	0.57	2.89	4.42	0.29

Table 7.5 (Part 2) Production and economic characteristics of the gas industry development for different scenarios

¹⁸⁷ Ibid.

Characteristics of the industry	Representative scenarios					
	3			4		
	2000	2005	2010	2000	2005	2010
Price on the European gas market, dollar/1,000 cm	95	110	120	95	97	105
Russian GDP, % to 1990	63	84	112	55	70	85
Domestic gas prices, dollar/1,000 cm	58	68	75	56	62	68
Domestic demand, Bcm	480	550	600	433	475	510
Export to the CIS, Bcm	83	85	90	78	83	85
Export, Bcm	137	160	185	130	140	160
Gas production, Bcm	705	810	890	640	705	765
Annual sales volume, billion dollars	41.7	55.8	68.5	37.3	43.9	51.5
Cumulative salary schedule, billion dollars	2.53	8.0	18.2	2.45	7.5	16.5
Annual capital investment, billion dollars	3.82	5.1	5.0	2.69	3.6	3.6
Revenues, billion dollars:						
Cumulative	73.8	156	259	65.9	129	207
Annual	16.5	18.2	21.6	13.9	13.7	16.9
Dividends (cumulative), billion dollars	11.9	32	60	11.8	32	52
Dividend rate, %	9	10	11	8	9	8
Share capital, billion dollars	40.7	49	55	42.8	48	48
Surplus earnings (+), debts (-), billion dollars	-0.86	0.39	-1.47	3.75	5.33	0.04

As shown in the Tables 7.5, in the analyzed scenarios, the production levels of gas (and other parameters of the industry) is strongly depended on the pace of economic growth and very little related to the level of domestic prices.

Indeed, during the price transition from the self-financing system to the corresponding to the international prices, the growth of domestic prices reduces domestic demand by 8-10% at high and 5-7% at reduced economic growth. But domestic prices can not completely break away from the international ones. In the examined scenarios, this link is taken into account. Domestic gas prices tend to increase with the rising of the international ones. But the higher world prices are, the greater is the opportunity for effective gas exports.

Thus, a decrease in domestic demand for gas within the prices rise, to a certain extent, is compensated with the improved conditions of gas exports.

In contrast to the levels of gas production, the sales volume depends significantly not only on the pace of economic development, but also on the pricing policy: the transition from self-financing price (options 3 and 4) to the prices corresponding to the international ones (versions 1 and 2) and increases the annual production from 12 to 30% at high and from 12 to 20% at low rates of economic growth.

The Tables 7.6 (Parts 1, 2) show the external conditions, production and economic characteristics of the additional scenarios for the gas industry development, they allow identifying the preference of different variants of gas exports with the data in Tables 7.5. Since the differences of export policies significantly appeared after 2000, the Tables 7.6 give the specifications of options also for 2005 and 2010.

Table 7.6 (Part 1) Production and economic characteristics of the gas industry development for different scenarios¹⁸⁸

Characteristics of the industry	Additional (to the Tab. 7.5) representative scenarios					
	5		6		7	
	2005	2010	2005	2010	2005	2010
Price on the European gas market, dollar/1,000 cm	110	120	110	120	125	140
Russian GDP, % to 1990	84	112	70	85	84	112
Domestic gas prices, dollar/1,000 cm	75	83	75	83	75	83
Export, Bcm						
European	190	240	290	240	160	185
Far Eastern	35	50	35	50	7	20
Export to the CIS, Bcm	85	90	85	90	85	90
Gas production, Bcm	810	925	725	810	810	890
Annual sales volume, billion dollars	60.1	76.7	53.5	67.2	62.0	76.9
Salary schedule, billion dollars	8.4	19.4	8.0	18.3	8.7	20.1
Annual capital investment, billion dollars	4.3	5.2	3.6	4.0	5.1	5.0
Revenues, billion dollars:						
Cumulative	181	301	169	276	180	302
Annual	20.6	26.7	19.3	22.5	21.5	26.9
Dividends (cumulative), billion dollars	36	68	33	60	35	65

¹⁸⁸ Ibid.

Dividend rate, %	11	12	11	12	11	12
Share capital, billion dollars	51	58	45	51	50	55
Surplus earnings (+), debts (-), billion dollars	2.00	0.16	1.20	0.20	1.31	-0.91

Table 7.6 (Part 2) Production and economic characteristics of the gas industry development for different scenarios

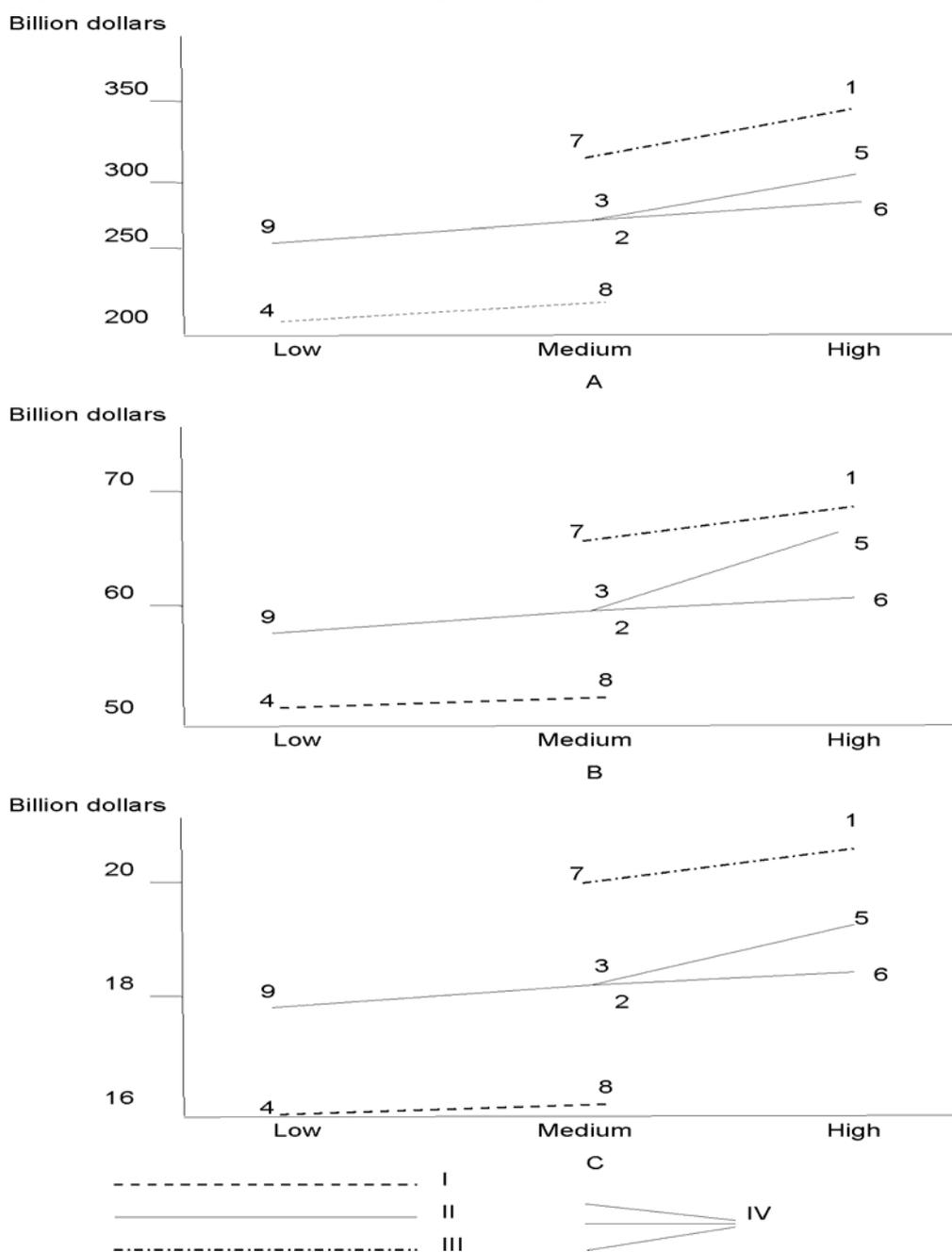
Characteristics of the industry	Additional (to the Tab. 7.5) representative scenarios			
	8		9	
	2005	2010	2005	2010
Price on the European gas market, dollar/1,000 cm	95	95	100	120
Russian GDP, % to 1990	70	85	70	85
Domestic gas prices, dollar/1,000 cm	62	68	75	83
Export, Bcm				
European	160	185	140	160
Far Eastern	7	20	-	12
Export to the CIS, Bcm	83	85	83	85
Gas production, Bcm	720	780	670	725
Annual sales volume, billion dollars	44.3	50.9	49.2	59.5
Salary schedule, billion dollars	7.5	16.5	7.9	17.9
Annual capital investment, billion dollars	3.3	3.9	2.9	3.5
Revenues, billion dollars:				
Cumulative	133	212	161	256
Annual	14.0	17.3	17.4	20.1
Dividends (cumulative), billion dollars	31	52	33	57
Dividend rate, %	8	9	10	11
Share capital, billion dollars	51	45	45	46
Surplus earnings (+), debts (-), billion dollars	6.58	-4.72	3.47	0.09

According to its main production characteristics, especially in terms of gas production, the additional scenarios are more intense (scenario 5), and highly restrained (scenario 9)

dynamics of the industry development in comparison with the scenarios of the Tables 7.5. The average growth of the industry is more fully represented in additional scenarios.

A large number of examined scenarios makes difficult their comparison in pairs or facts and allows resorting to a complete analysis. For this purpose, the main financial and economic characteristics of the analyzed scenarios of the industry development are presented in the Figure 7.1, subject to the volume of exports. These characteristics include the amount of revenues (the main criterion for the state) and the volume of accumulated dividends and wages by which shareholders and staff of gas companies judges the effectiveness of the scenarios.

Figure 7.1 Efficiency of the export policy options



A – earnings; B – dividends; C – salaries

Variants: I – low price; II – medium price; III – high price; IV – world prices

Figure 7.1¹⁸⁹ clearly demonstrates the effect on the revenue amount of the main external conditions, like world gas prices and pace of economic development.

The low and average world prices for gas and the associated modest growth mainly correspond to the low and medium volume of gas exports. Under these conditions, the gas industry would produce, for the whole period \$210-255 billion of revenues. The earnings are entirely determined by the level of the international gas price, but they are also slightly dependent on the volume of exports since in these cases, its increase is almost entirely offset by a decrease in domestic demand for gas.

Thus, at low and even average world prices of gas and associated moderately developed economy, the state is not interested in the rapid growth of exports. As can be seen from Figure 7.1 B and C, under these conditions, Gazprom also is not very interested in its growth, because there it is not achieved a sharp increase in dividends to shareholders and staff costs.

The situation is quite different under the high world prices for gas, contributing to accelerated economic growth in Russia. In these circumstances, the fiscal revenues from the industry are about \$350 billion with an average export and about \$375 billion with a high export. Even the decline in world prices to the average level reserves this proceeds quite impressive: respectively \$260 billion and \$300 billion. As it can be seen from Figure 7.1 B and C, in these circumstances, an increase in exports is extremely attractive to shareholders (dividends) and personnel (salaries) of Gazprom.

The analysis primarily demonstrates the coincidence of interests of the state and Gazprom in assessing the options of export policy. But at the same time, it reveals the complexity of rational choice in export volumes.

Indeed, in the hope of favorable conditions (high world prices of gas and rapid economic growth), it would seem necessary to choose a policy of large exports. Obviously, it would require a major investment that will need to do in advance. But if the adverse environmental conditions actually develop (low gas prices and moderate economic growth), the state and Gazprom would suffer substantial losses, and the company might be on the verge of bankruptcy.

On the contrary, choosing out of prudence the low gas exports, it cannot manage to build the necessary capacity in case of appearance of favorable conditions and lose profits, measured in many tens of billion dollars.

According to the Viakhirev's opinion, the choice of export policy should be guided by the volume exports, by 7-10% higher than its average value, but carefully monitoring and predicting

¹⁸⁹ Ibid.

the environmental conditions in order to modify the volumes. To facilitate it, he advised to sell 5-7% of the exported gas, not by the long-term contracts but on the spot markets.

The capacity of the European energy market for Russian natural gas was determined by:

- Competition of natural gas with other fuels in the European energy market, especially oil and oil products;
- Competition between the various gas suppliers (competition gas-to-gas) in the European gas market.

It should be clarified that the figures appearing in the statistics of price levels are an average notion. In fact, they are made up of prices, the value of which is established in the negotiations for each contract, depending on the entire set of pricing factors. Primarily it is considered the cost of alternative energy sources, such as gas oil, diesel oil, fuel oil, etc., used in this region by different users: in households, industry and power generation.

During the 1980-1994 periods, the trend of decline in natural gas prices was typical for all the regional markets in the world (Table 7.7). It resulted from a decrease in oil prices.

Table 7.7 Gas price evolution, dollars/Mcm¹⁹⁰

Years	USA	Western Europe	Japan
1980	4.42	3.0-3.7	5.01
1981	4.84	3.3-4.7	5.83
1982	4.94	4.1-5.2	5.74
1983	4.51	3.5-4.4	5.16
1984	4.08	3.5-4.2	4.90
1985	3.19	3.4-4.4	4.99
1986	2.53	3.2-3.6	3.98
1987	2.17	2.5-2.8	3.29
1988	2.00	1.9-2.5	3.22
1989	2.04	1.7-2.5	3.26
1990	2.03	1.8-2.5	3.60
1991	2.02	2.9-3.2	2.98
1992	1.97	2.4-2.8	3.60
1993	1.98	2.5-2.76	3.51
1994	2.08	2.25-2.6	3.12

¹⁹⁰ *World Energy Outlook*, IEA, 1996, p.137.

The ambiguous estimates of the promising oil prices complicate prediction of gas prices. The International Energy Agency (IEA) is the most substantial source of the regularly performed forecasts in world fuel prices reduced once again the expected future price levels (Table 7.8).

Table 7.8 Price assessment on the primary energy, dollars, 1998¹⁹¹

Energy resource	1990	1995	2000	2005	2010
Crude oil, barrel	24.18	16.31	17.0	25.0/17.0	25.0/17.0
Natural gas:					
Produced in the USA, 1,000 cubic foot	1.87	1.61	2.0	2.5/2.3	2.7/2.3
Imported to Europe, 1,000 cm	108.63	91.35	95.1	138,4/95,1	137,4/95,1
Imported in Japan, ton of liquefied gas	216.79	186.08	193.8	281.9/193.8	281.9/193.8
Coal					
Produced in the USA, net ton	23.68	20.10	24.8/21.7	25.0/21.7	25.0/21.7
Imported in Europe, ton	55.91	51.22	54.6/51.9	57.9/51.9	57.9/51.9
Imported in Japan, ton	55.61	49.48	51.2/49.8	53.0/49.8	53.0/49.8

The preservation of extremely low price on oil and gas is unlikely, given the opening of a period of wide-scale renovation of fixed assets of the oil industry and the need for substantial financial resources for massive new investment, which should affect the level of oil prices. In the relatively distant future, it will be possible the weakening of a supporting role of the oil prices to form a gas price due to increasing its relative ecological value. This trend will increase over time.

Another factor is an increasing introduction of natural gas in power and its competition with nuclear and coal alternatives. Thus, the journal "Oil and Gas" forecasts oil price as \$24 per barrel for 2010, with a corresponding price of gas in Europe about \$125 per 1000 cm.

Thus, the most probable value of the natural gas price in Europe would be in the range of \$125-140 per 1.000 cm. The Table 7.9 gives examples of the price formation for a number of gas supply options to Western Europe.

Table 7.9 Gas prices in the Western European countries, dollars/1,000 cm¹⁹²

¹⁹¹ *World Energy Outlook*, IEA, 1998, p.128.

Supply country	Cost (at the border)	Transport cost	Transit cost	Production costs	Type of production and transportation
Norway – (Ekofisk) - Emden	47	12	0.00	35	Sea (70m depth) (Off-shore)
Algeria – Magreb – Spain	48.5	26	5	17.5	Land
Norway (east Sleipner) – Emden	54.5	16	0.00	38.5	Sea
Norway (Troll) – Zeebrugge	80	27.6	0.00	42	Sea
Norway (West Sleipner) – Zeebrugge	104.6	27.6	0.00	77	Sea
Norway (Haltenbanken) – Emden	102.2	52.5	0.00	49.7	Sea
Nigeria – Italy	104.0	79.5	0.00	24.5	LNG
Norway (Haltenbaken) – Zeebrugge	113.7	64.0	0.00	39.7	Sea/land
Qatar – Italy	116.2	98.7	0.00	17.5	Sea
Russia – Yamal – Germany	118.0	69.4	22.4	26.2	Land, underwater pipeline
Nigeria – Italy	119.0	94.5	0.00	24.5	LNG
Iran – Turkey	131.0	98.5	15.0	17.5	Land, LNG
Iran- Turkey - Italy	143.0	71.3	54.2	17.5	Land
Norway (Barents Sea) – Zeebrugge	147.0	80.5	0.00	66.5	LNG
Qatar – Turkey – Italy	164.5	65.0	82.0	17.5	Land, underwater pipeline

The previously described options accounts for the chosen Russian policy on gas exports that included a number of fundamental principles:

- Sale of gas on the basis of long-term export contracts by the “take-or-pay” principle;

¹⁹² IEA, *Oil, gas and coal*. Paris, 1995, p.64.

- One channel of gas export to European countries (Gazprom and its 100 percent subsidiary, Gazprom Export LLC);
- Access to end-users with a simultaneous increase in the share of delivery to internal markets of European countries;
- Setting gas prices (with a lag of six to nine months) dependent on the market value of petroleum products, using the appropriate formula;
- Attainment of monopoly of gas purchase from Central Asian countries;
- Investment in the development of new deposits dependent on obligations under long-term export contracts. (Chairman of the Board of Gazprom, A. Miller, put this principle as follows: “Gas will not be extracted until it is sold”);
- Diversification of transportation routes to reduce transit dependence on neighboring countries. Gas pipeline projects include Nord Stream, South Stream, and Altai (West Siberia–China).

Gazprom Export, a relatively small business unit is responsible for gas deliveries to European countries. Sales to the former CIS countries remained under Gazprom with more politically driven centralized organization. Although these principles had been breached in several respects, they remained indicative for Russian government and Gazprom's aims.

The analysis of internal and external potential markets of Russian gas and resource capabilities showed that Gazprom was able to provide any options for natural gas export to Europe¹⁹³. However, the increasing supply of Russian gas was not an end in itself, and each new project should be taken to implement only if it is efficient for the country's economy.

In this regard, the determining factor was the ratio of the expected gas price values in the European market with the cost of its production in Russia.

The calculations show that at the level of gas prices in Central Europe \$125-140 per 1,000 cm, its limit price in the fields in Western Siberia should not exceed \$20-23/1000 cm that for individual deposits, it is already extremely strict¹⁹⁴. Therefore, Gazprom intensified the technological progress at all levels of the gas stream in order to reduce costs. Attention was also focused on the rational planning of the gas resource development with sequential fixation for Russian gas the main segments of foreign markets.

The long term sustainable use of Nadym Purtazovskii region's resources offered the prospect of further strengthening the position of Russian gas to the European market, the possibility of preparing large-scale gas use also from the Yamal Peninsula. In consideration of the price trends in the international market, it might be specified the sequence of Nadym Yamal

¹⁹³ Viakhirev R., Makarov A., eds., *Strategiia Razvitiia Gazovoi Promyshlennosti Rossii* (Strategy of the Russian Gas Industry Development), Moscow: Energoatomizdat, 1997, pp. 315-330.

¹⁹⁴ Ibid.

system's individual units: for market equilibrium it required that the input of high cost sources would correspond to increasing purchasing capacity.

Gazprom, as noted above, sought for new forms that could allow increasing the income from the Russian gas export. These include the integration of the company into the European gas market, with direct access to the gas distribution in Europe, which means an opportunity of getting profits directly from the consumer.

This strategy provided for the delivery of Russian gas through specially formed businesses and joint stock enterprises with national basic companies. In the German market with the BASF (Wintershall) group, it was created a public limited company and trading house WINGAS and WIEH built its own transportation system MIDAL-STEGAL-RHG Rehden. Thus, in 1994 in Germany, it was achieved 29.8 Bcm of Russian natural gas sales¹⁹⁵.

Similar business corporations were also established in Austria, Finland, France, Greece, Hungary, Italy, Poland, Romania, Slovenia, and Turkey (see Table 7.10).

Table 7.10 Joint marketing companies of Gazprom

Country – partner	Company – partner	Name
Austria	OMV	GVX (Gas and Varenhandelshaus mbH)
Finland	Neste	Gasum
France	France	Fragaz
Germany	Winteshall	WINGAS/WIEH
Greece	DEPA	Prometheus Gas
Hungary	MOL/Mineralimpex DKG East	Panrusgas
Italy	SNAM Edison	Promgas VOLTA
Poland	POGC POGC	Gaztrading Europol
Romania	Romgaz/WIEH	Europol Gaz
Slovenia	Petrol	Tagdem
Turkey	GAMA	Gama Gasprom

¹⁹⁵ IEA, *Oil, gas and coal*. Paris, 1995, p.64.

The company planned the development and formation of new Russian gas markets to Greece, Yugoslavia, Macedonia, Romania, Bulgaria, Turkey, Slovakia and other countries of Central and Eastern Europe. Russian gas supplies to these areas required the construction of new gas pipelines, as well as a significant increase in transit gas transmission facilities in these areas, both in Russia and third countries. The capacity of the export systems is presented in Table 7.11.

Table 7.11 Export pipelines of Russia, 1994.

CIS entry points to the Russian export corridors	Name of pipeline	Further route	Capacity of the border zone, Bcm
Imatra	Siianiiie Severa (North Shining)	Finland	3.4
Brest	Kobrin-Brest	Poland	6.2
Uzhgorod	Yamburg-Western border of Urengoy – Uzhgorod	Austria, Italy, France, Germany, Czech Republic, Slovakia, Slovenia, Croatia	75.6
Berengovo	Soiuz (Union)	Serbia, Hungary	6.3
Isakcha		Bulgary, Greece, Turkey, Macedonia, Romania	4.3
			105.8

Given the predicted development of the European gas market and large potential export opportunities of Russia, as well as requirements to increase the reliability and flexibility of supply, it was completed the development of the project and started the construction of the gas transportation system of the Yamal-Europe gas pipeline. This pipeline starts from the Bovanenkovovo gas condensate field in the Yamal Peninsula. The pipeline runs from the field to the south across the tundra of the Yamal Peninsula, crosses the waters of the Baidaratskaya Bay 70km-long and goes to the mainland more to the west of the foothills of the Polar Urals. The trail was laid in the European part of Russia on the territory of the Republic of Komi, Arkhangel'sk, Vologda, Yaroslavl', Tver' regions and in the city of Torzhok, and then it is connected to the gas pipeline system of Russia. Three-joint gas pipelines system crosses 400 km of the permafrost zone, 600 km of water-logged grounds and more than 1,600 km of forest zone.

The Yamal-Europe gas pipeline has the length more than 4.107 km (to the German border) and the capacity of about 33 Bcm by 2006¹⁹⁶. The selected configuration of the pipeline represented its connection to a number of major West European pipe system that enhance the ability to maneuver the gas flow and increase system reliability.

The MIDAL-STEAGAL-RHG Rehden project (Germany) was seen as the initial stage of the Yamal-Europe transportation system development. The second stage of this project was the opening of the corridor for export of Russian gas through Belarus and Poland.

The creation of the Yamal-Europe gas pipeline system provided step by step, to ensure the delivery of additional volumes of Russian gas in time, minimizing the risk of this large-scale project's financing.

The construction of the Yamal-Europe gas transmission system on the territory of Central European countries was carried out at individual share of the national gas companies or through the creation of joint stock companies and trading houses, similar to German.

On December 1994, nine oil and gas companies, including Gazprom, teamed up for the practical realization the project to connect sub sea gas transmission system of the UK with continental European system, known as the Interconnector¹⁹⁷, up to the end of 1998.

The project provided for the construction and commercial operation of the underwater gas pipeline from the terminal in Bacton (the UK) to the terminal in Zeebrugge (Belgium). The main capacity was 20 Bcm per year, by 2000. The peak of gas production was reached in 2000, after which the productivity of British deposits began to fall sharply. Already in 2004, the country had to start importing gas. Interconnector was transferred to the reverse flow.

The realization of this project linked into a single system the gas transmission and distribution pipelines of mainland of Europe and the UK, providing high reliability and flexibility of gas supply for industrial and domestic European consumers. Participation of Gazprom in the Interconnector project was aimed to facilitate the integration of Russia into the European Community.

The second area of Gazprom's export strategy was participation in joint gas and energy projects abroad involving the construction, operation and ownership of power plants operating on gas. In this case, Gazprom as co-owner of power plants received two channels of profit: through the sale of gas to power plants and the implementation of electricity generated by these plants (as a percentage of invested capital in the joint construction).

¹⁹⁶ Stroytransgaz, *Stroim budushchee: Gazoprovod Yamal-Evropa* (Energizing the Future: Yamal-Europe), <http://www.stroytransgaz.ru/projects/belarus/yamal>.

¹⁹⁷The owners of Interconnector: Caisse de dépôt et placement du Québec (33.5% of shares), Eni (16.41% - 5% directly and 11.41 through Distrigas), E.ON Ruhrgas (15.09%), ConocoPhillips (10%), Gazprom (10%), Fluxys (10%), GDF Suez (5% - through Electrabel).

On September 1995, it was created Volta S.p.A. with the participation of Gazprom (49%) and the company Edison S.p.A. (51%) in the framework of a joint project to improve transportation and sales of Russian natural gas to consumers in Italy. Among consumers of additional gas delivered by Volta on the Italian market, there were power plants of the companies Enel and Edison, in the first place.

The phased implementation of the project included the expansion and development of the gas pipeline system in Italy and the construction of new highways in its territory, as well as a new transit gas pipeline to Italy from Slovakia via Hungary and Slovenia.

Joint gas and energy enterprises were established in Turkey (for example, Turusgaz with participation of BOTAS); there conducted studies on the organization of similar firms in Latvia (Liepaja and Daugavpils), Poland (together with Enron) and Hungary.

It was worked out the project of “Northern route”, submitted in 1995 by the Russian side at the presentation in Paris. Its implementation (together with Germany) affected not only the gas and electricity supply to various customers, but also allowed for more efficient use of natural gas as a raw material for chemical facilities. The project included the construction of new facilities for the production of a wide range of products in Russia with a reliable and long-term provision of raw materials and energy.

During the 1990s, Gazprom approved itself open to the mutually beneficial cooperation with all European countries, and actively participated in the development of the European gas market, strengthened mutual understanding and trust between the leading gas companies in Europe in order to ensure energy security of both Russia and Europe¹⁹⁸.

¹⁹⁸ Viakhirev R., Makarov A., eds., *Strategiia Razvitiia Gazovoi Promyshlennosti Rossii* (Strategy of the Russian Gas Industry Development), Moscow: Energoatomizdat, 1997, pp. 315-330.

CHAPTER 8. Russia-EU Energy Dialogue

After the description of the Russian and Gazprom's export policy modeling, chapter 8 deals with the study of the monopolistic position of Gazprom on export and especially with its subsidiary Gazprom Export's (or simply Gazexport) activities. In the network of the Russia-EU Energy Dialogue, it is necessary to determine the legal framework of their cooperation, as Energy Charter Treaty. And it is also required the analysis of the transit relations with Ukraine and Belarus to demonstrate the motives of the diversification of pipeline routes.

The issue of Gazprom's monopoly on gas exports to the Western European countries remains evident. Considering the Russian export policy, the attention should be paid to: the transition to a profitable pricing on the domestic market and the prospective rents. An important issue is the fact that in the period of 1990s and early 2000s, domestic prices were significantly lower than the average export prices, even taking into account the transport costs, and they remained so, at least in the short run, despite the government's commitment to further increase tariffs. While there was such difference between domestic and export prices, Russia's authorities controlled exports.

In a different way, producers could ignore the supply of the domestic market and export the major part. As a result, investment could gain misinterpretation and focus on financing projects aimed at export, neglecting the development of the infrastructure that was necessary for the domestic customers' supply. Therefore, it was extremely important to ensure that producers were substantially indifferent as to if they supply the export or domestic markets. The crucial point was that they should provide themselves in any circumstances with revenue.

During the stated period, the export monopoly of Gazprom was the system by which Russia tried to assure proper gas supply on the domestic market with the large difference between export and domestic prices. The government fixed the differential with the 30 percent tax on exports, but its main part went to Gazprom. The company supplied gas to domestic consumers (especially households) at low regulated prices, for example, reverse dumping. For a long time it was a principal explanation of its monopoly on exports. But increasing internal prices, there was less of a burden for Gazprom and, therefore, less of explanation to appropriate the differential in prices. A significant part was shared between the Gazprom's workers and its shareholders (including the state), and some parts were probably disappeared because of the inefficient functioning of Gazprom. It was unlikely an optimal way. Working in this sphere companies should be permitted to make acceptable profits, but there was no motive why they should suffer from the large wedge between the cost of production and net income from exports.

Any revision of exports to the Western European countries should be handled carefully. Gazprom and its subsidiary company, Gazexport are known all over the world, and they proved to be the reliable suppliers: there was no significant reduction of gas supplies to Western Europe since the Soviet Union started to export gas in 1968. In a sphere where supply's security is a key point, it is a very significant fact that many producers independent from Gazprom indicate that they would prefer Gazexport's channels to export gas. Furthermore, existing contracts of Gazprom should be respected. However, for weakening the monopoly of Gazprom on export, the government began with new export routes (for example, from Eastern Siberia to Asia) and allowing other manufacturers to participate in the signing of new contracts, even if it was done by means of Gazexport.

Such measures deeply affected the development of industry. However, there was still a significant gap between domestic and export prices; there were many ways to balance the two markets. One option suggested transferring the control on the Gazexport company's activity from Gazprom to the authorities, and making the only channel for exporting Russian gas to European markets. It would turn into a small company, apart from Gazprom, which would be occupied just with one task: purchase of gas in Russia and its export. Such a system would ensure equal right to all the Russian gas companies to export their products, which would stimulate the development of the gas sector. The alternative was the area where the state provided all producers with direct access to export markets, only if the prices for all exporters would be determined by negotiations between European consumers and a single gas producers' association. Both of these options could be better than the status quo, even if they do not exclude the problems. In any case, it would be significant for the government to consider with care the allocation of the difference between export and domestic prices. In the latter case, it is most likely involving a change of the existing 30 percent tax on exports in order to make it more susceptible to fluctuations in prices of export.

In 2002, OECD made the point that, unlike oil, Russia set the price of gas. Gazprom did not just change the world price for gas if it increased exports to specific markets; the price of gas in these regions was much lower. Thus, while Russia cannot dictate the price of gas in export markets, it certainly can influence them by increasing or decreasing their exports. In the long term, use of power in the gas market can be reduced. This depends not only on the development of the gas industry in Russia, but also to the presence in the export markets of alternative suppliers that could replace Russian gas at competitive prices and the prices of alternative fuels. In this context, the events related to the liquefied natural gas may be of particular importance as the liberalization of the European gas market. However, while Russia used its power in Europe

and other countries, the Russian authorities closely monitored how in the best way manage the export of natural gas.

After the Soviet Union's dissolution, the institutionalization of the East-West energy diplomacy and trade changed. Part of the value chain was currently under the jurisdiction of newly emerged independent states. Consequently, ownership of value chain parts passed into new organizations (mostly state-owned enterprises), and a unified system of regulation reaching the borders of Western Europe disappeared. In addition, the energy relations between Russia and European countries became more commercial. However, the dealings between the former Soviet republics and Moscow preserved some of their political charge. This politicization of the energy relations made transit supplies of Russia and other European countries unstable.

Both Russia and Europe attempted to obtain, or regain, lost control over the value chain. In 1991, it was made a proposal from Europe, to create a European Energy Community. This led to the Energy Charter Treaty, which aimed to coordinate the energy flows from East to West. Under the influence from the U.S., in particular, the geographical scope was later extended. Five countries have refused to ratify the Charter, including Russia, Norway and Belarus. In particular, the Charter's Transit Protocol was a stumbling block, as allowing free access to third parties, as set in the Protocol, would bring about gas producing countries to lose control over the flows of gas¹⁹⁹.

Moreover, in the 1990s, after the Central European and Baltic countries joining to the EU, the value chain elements became part of the European market. Outside the jurisdiction of the EU, the internal market paradigm was used to develop new agreements and institutions. These initiatives can be seen as an attempt to weaken the regulatory control of the export pipelines. At the beginning, there were attempts forcing Russia to ratify the Energy Charter, and later, the PSAs via the energy dialogue. Nevertheless, Russia chose its own approach, to control the export routes, gas flows and access to the market, and as such remained outside of the EU policies' scope.

In addition to the expansion of Western influence, the process of unification and liberalization of the European national markets also began in the 1980s; it was based on the examples of the UK and the U.S.²⁰⁰ as described previously. The process of liberalization had a number of complications for the way how the gas market in Europe was organized, as following:

- Consolidation of the European gas market to the “national champions” was often supported by the different national governments;

¹⁹⁹ Stern J., *The future of Russian gas and Gazprom*, New York: Oxford University Press, 2005, p. 109.

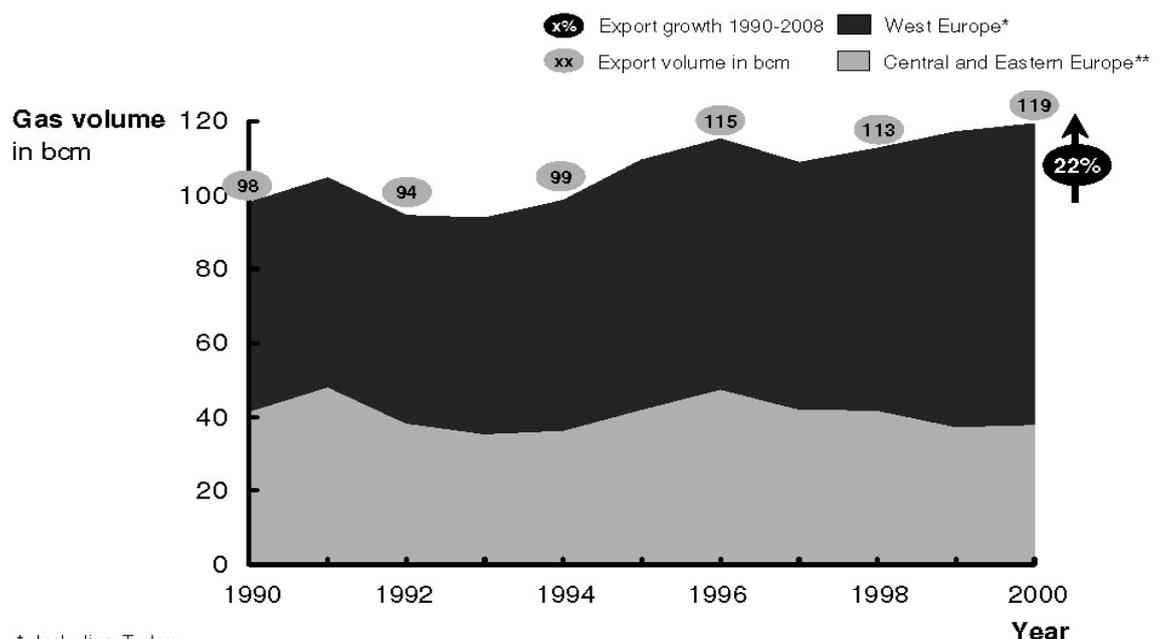
²⁰⁰ Matlary J., *Energy policy in the European Union*, London: Palgrave Macmillan, 1997, p. 25.

- Improved opportunities for new participants to get access to the European market;
- Spot market development, allowing the competition “gas-to-gas”, while the trading share on the spot market were relatively small (with the exception of the UK);
- Greater flexibility in long-term contracts, including price indexation terms;
- Approval of secondary market, after the abolition of clauses about destination.

The difficulties with non-payments, the relatively low gas prices and the reduced demand for gas in Russia and the former Soviet republics during the 1990s constrained Gazprom to focus on export markets of Western Europe to create hard currency revenue. However, the limited opportunities for growth caused by the market of buyer, combined with low gas and oil prices, and lack of financial resources hampered Gazprom in conducting an active expansion strategy.

Initially, exports to Western Europe were stable, after which they grew up, with additional sales under long-term contracts in countries such as Germany and Turkey. Russia's exports to the countries of Central and Eastern Europe increased slightly during the second half of the 1990s (for example, in Poland); while the decline in the first half of this decade implied that they were below the 1990 level (see Figure 8.1). The market share of Gazprom in Europe remained more or less stable at around 25-30 percent.

Figure 8.1 Gazprom's gas exports to Europe, 1991-2000 (Bcm)²⁰¹.



* Including Turkey.

** Including Baltic and Balkan countries.

²⁰¹ *Gazprom v tsifrakh 1996 – 2000* (Gazprom and statistics 1996-2000), Moscow: Gazprom, 2001, p. 56.

Against the background of limited opportunities for growth, Gazprom began the process of vertical integration in order to increase its profits. This process also gave the company more guarantees about its security of demand and gave it access to the market information. The vertical integration began in 1990 with the cooperation Wintershall, through Wintershall Erdgas Handelshaus (WIEH), and then Wingas. The partnership primarily focused on the sale of gas in the Eastern part of Germany, in expanding to sell it to other regions, the construction of a pipeline network in Germany and storage in Reden. As it was shown in the previous chapter, Gazprom also created trading houses and sales organizations in other European countries, in cooperation with European partners in order to get direct access to the market. The company acquired the ownership rights during the process of liberalization and privatization, mainly in gas companies in Central and Eastern Europe. In addition to trading companies, Gazprom also participated in pipeline projects, like the Yamal-Europe, the Blue Stream and consortium of the North Transgas²⁰².

In particular, in its relations with several countries of Central and Eastern Europe, Gazprom faced with transit and payment difficulties, when market prices were introduced, and the economy was restructured. The transit problems in Central and Eastern Europe were most evident in Bulgaria. In the Baltic countries (in particular, Lithuania and Latvia), the debt increased as a result of non-payment. However, these debts were only part of those of Ukraine, Belarus and Moldova (\$80 million in 1995) and were mainly repaid in the second half of the 1990s²⁰³. In Central Europe, Gazprom continued to engage in some friendly barter agreements and other arrangements in order to maintain its position, for example, in Slovakia.

The financial restrictions of Gazprom, the low oil and gas prices, the limited opportunities for growth and other difficulties and constraints meant that two major new projects were eventually given priority abroad, with the Western parties financing. The Yamal-Europe pipeline project was aimed to provide the Northwestern European market with gas while the Blue Stream project's goal was to increase Russia's share on the Turkish market. No other large-scale expansion was achieved, and any additional volumes were implemented using the existing transportation system.

The pipeline proposals for the Nordic Gas Grid and North Transgas, which would bypass the former Soviet countries, by way of the Baltic and Nordic countries, it was difficult at that time. The pipeline would be part of the Shtokman field's development in the Barents Sea, which

²⁰² Quast O., Locatelli C., "Russian natural gas policy and its possible effects on European gas markets", *Energy Policy*, Vol. 25, No. 2, 1997, pp.125-133.

²⁰³ Stern J., "Soviet and Russian gas: the origins and evolution of Gazprom's export strategy", in Mabro R. and Wybrew-Bond I., *Gas to Europe: the Strategies of Four Major Suppliers*, Oxford: Oxford University Press/Oxford Institute of Energy Studies, 1999, p. 158.

was also postponed. In addition, Russian projects of LNG and the pipelines proposed to Eastern Asia (China, Korea, and Japan) were also set aside for political and economic reasons. The possibilities for the export of LNG were beyond the technological and financial capacity of Gazprom and were not competitive with other LNG projects, like those of Indonesia, Qatar, and Trinidad and Tobago. As a result, the development of LNG on Sakhalin was left to Western and Japanese companies, for example, Royal Dutch Shell. Despite the proposals of pipeline from Siberia to Eastern Asia became more specific in the late 1990s, their implementation was delayed due to lack of interest from potential buyers, the high capital costs and the geopolitical issues related to transit through Mongolia. As a result, the European market remained the main export market for Gazprom.

As described above, two major gas infrastructure projects were implemented in the 1990s. The Yamal-Europe project focused on weakening the monopoly of Ruhrgas on the German market by contracting additional volumes through Wingas, and thus providing the Northwestern European market with additional volumes. With the Blue Stream, the goal was to supply the growing Turkish market with additional gas, using a direct gas pipeline from Russia to Turkey. The Blue Stream avoided transit countries and reached the Turkish market at an early stage, resulting in competing projects from Turkmenistan, Iran and other countries, which were delayed or postponed.

During the brief period in 1990, when Gazprom did not control the export contracts, the company, in partnership with Wintershall, tried to implement new sales in Germany in order to increase their profits through the export volume and higher profit margins. This agreement allowed Wintershall and Gazprom, to break up the German market.

The original plan for the Yamal-Europe project was to build six parallel 56-inch pipelines from the Bovanenkovo (onshore) and Kharasevey (offshore) fields on the Yamal peninsula. From Belarus, the potential to the Eastern and Northern Germany would then be expanded (66 Bcm/year) through Poland to Germany in order to connect with the network of Wingas. In 1993, Russia, Belarus and Poland signed an intergovernmental agreement on the construction of the Yamal-Europe. The pipeline was also intended as a “priority project” of the EU, as part of the Trans-European Network Program (TENP)²⁰⁴.

The construction of this pipeline was not primarily designed to avoid Ukraine. To break up the German market, a direct route to the Eastern and Northern parts of Germany, passing through Belarus was desirable because Wintershall had developed its network through Wingas in the Northern Germany. The traditional route from Russia by way of Ukraine, Slovakia and the Czech Republic, and going into Germany was under the Ruhrgas' monopoly on gas transport

²⁰⁴ Stern J., *The future of Russian gas and Gazprom*, New York: Oxford University Press, 2005, pp. 113-125.

from the German border, which meant no third-party access (as regulated by the gas liberalization directives). In addition, the alternative served to stimulate the development of routes to Belarus and Poland.

Nevertheless, the ambitions of the Yamal-Europe pipeline project were reduced in the mid-1990s. The investment climate was not optimal, and the project was part of the policy to weaken the monopoly of Ruhrgas in Germany, which could cause a significant risk. In addition, the project did not have effective, and central planning, in particular, the lack of international institutions (such as the CMEA), although the Energy Charter sought to attract attention to the project. In this climate, a strategic long-term investment that would lead to a substantial growth in production was not possible. In addition, the demand for gas in the former Soviet Union fell, releasing existing production volumes for export.

The demand for gas in the potential German and Polish markets also proved to be too overestimated. Although in Germany, the demand for Russian gas increased slightly, the growth was largely met by Ruhrgas. In addition, the joint venture between Gazprom and Wintershall had difficulties to gain the market access, it made impossible to implement the planned 24 Bcm/year for Germany. In Poland, the demand for gas was less than expected; because of the coal domination at the energy system. Despite the willingness of the Polish authorities (with the support of the West), to create possibilities for gas power plants, based on environmental concerns, commitments were not enough, for reasons of costs. In addition, the export development of Gazprom was postponed by the lack of financial resources because of the financial crisis in Russia in 1998. Eventually, a number of policy issues in Poland and Belarus were also one of the reasons why the ambitions were fallen. The Consortium for the Polish section pipeline (EuroPol GAZ) dominated by the Russian companies caused the increasing of the Polish opposition. Furthermore, the continuing problems with transit through Belarus detracted from the appeal of the project.

Finally, only one pipeline was built, and less number of the expected compressor stations was constructed, providing a capacity of 33 Bcm/year. The part through Belarus was built by Gazprom, which still controls it while the Polish section was run by a Polish-Russian joint venture, EuroPol Gaz. The limited domestic and external demand meant that the Yamal peninsula did not need to develop. The Polish Petroleum and Gas Mining (PGNiG) with Gazprom contracted 7 Bcm/year; Wingas took out a contract to 10 Bcm/year and the Dutch Gasunie - 4 Bcm/year. For the first time, gas was shipped via the Yamal-Europe pipeline in September 1999, and the additional compressor stations were subsequently put into use.

The focus on the transit relations between Russia, Ukraine and Belarus as far as the transit and gas storage in Ukraine (and Belarus) is vital for the issue of gas supply to Europe. In

the late 1990s, the Ukrainian transit took more than 90 percent of Russian gas exports to Europe. In 1999, additional gas supplies were started via Belarus, resulting in the slight share drop (to about 80 percent). In addition, most of Russia's exports to the former Soviet Union were intended to Ukraine and Belarus.

The dissolution of the Soviet Union caused the disintegration of the value chain and latter, in turn, affected commercial and political conflicts between Russia and Ukraine over the transit and sale of gas. The Ukrainian gas network was already well developed in the Soviet period, because:

- Ukraine historically produced its own gas, though the gas production fell sharply during the 1980s and 1990s (40 Bcm in 1985, 26.2 Bcm in 1990 and 16.7 Bcm in 2000²⁰⁵).
- The gas consumption in Ukraine was substantial, despite a decline in the 1990s due to the economic downturn and the rise in prices for imported gas (127.8 Bcm in 1990 to 73.1 Bcm in 2000²⁰⁶). The differences between the volume of consumption and domestic production had to be imported from Russia and Turkmenistan, which called for pipelines.
- The geographical location of Ukraine made suitable for Russian transit routes to Europe. In addition, its position on the border of the Soviet Union meant that Ukraine was also an appropriate place for storage.

Ukrgazprom²⁰⁷ and the state enterprise Naftogaz of Ukraine²⁰⁸ became responsible for the gas market in Ukraine. Almost 95 percent of the gas production was controlled by Naftogaz and its affiliated companies. Ukrtransgaz had a monopoly on gas transmission and storage in and through Ukraine. In addition, Naftogaz was responsible for most of imports of gas from Russia and Central Asia. Moreover, the state-owned enterprise, intermediaries such as Itera also played an important role in the gas supply to Ukraine.

Although Ukraine depended on imports of Russian gas, the economic instability in the country meant that it was inefficient to higher prices demanded. Russia was not able to take any strong measures to force Ukraine to pay higher prices because the transit of Russian gas to Europe depended on Ukraine. Despite various agreements and resolutions with independent gas traders, the cooperation between Russia and Ukraine was not particularly strong in the 1990s.

²⁰⁵ BP, *Statistical Review of World Energy*, June 2010, <http://www.bp.com/statisticalreview>.

²⁰⁶ Ibid.

²⁰⁷ Corporation **Ukrigasprom** is Ukrainian company specializing in the projection, construction and operation of transmission and distribution pipelines, supply and transportation of natural gas, as well as heat and electricity.

²⁰⁸ **Naftogaz** (full name: National Joint-Stock Company Naftogaz of Ukraine) is the national oil and gas company of Ukraine founded in 1991. It is the state-owned company under the Ministry of Fuel and Energy of Ukraine. The company is concerned with extraction, transportation, and refinement of natural gas and crude oil.

This relationship was characterized by a series of seven “issues” that were the cause or effect of the problems in relationships:

- 1) In the process of transition to a market-based system in the 1990s, the former Soviet countries continued to benefit from the low price of natural gas from Russia. The gas prices were regulated and “related” to a certain price zones in Russia. Most of the former Soviet countries were not able to absorb the exponential growth of prices in the economy. Moreover, Gazprom used the barter agreements and low regulated prices to regain control over the gas network.
- 2) Ukraine had difficulties to pay its gas bills. Besides Russia's transit payments in kind (about 25 Bcm/year), Gazprom also supplied gas to Ukraine on a commercial basis. Until 1992, that delivery was substantial (65-85 Bcm/year), although since 1993 it fell to 15-25 Bcm/year²⁰⁹. Intermediary Itera, little by little took the role of Gazprom in the 1990s.
- 3) During the cold winters, the volume of consumed gas often surpassed the volumes prescribed in the contracts. Ukraine illegally tapped some of the gas intended for transit to Europe from the network. These tapplings are estimated to have been higher than 10 Bcm/year in some years²¹⁰.
- 4) Non-payment and consumption above contractual restriction meant that Ukraine's debt to Russia increased. The total debt was established in the agreements and repayment schedules were organized using loans. In 1995, the agreement set the debt of \$1.4 billion²¹¹. Non-payment continued in subsequent years, which led Russia's claim to be settled upward.
- 5) Sometimes Ukraine “re-exported” gas (through intermediaries) to Poland and other countries, in spite that it was prohibited according to the destination regulation. According to Russian sources, the volume of gas concerned was negligible. It is unclear how often gas was re-exported
- 6) In extraordinary situations, when the talks on debt and illegal tapping reached a deadlock, Russia blocked gas supplies to Ukraine. Other former Soviet countries (such as Georgia and Belarus), who could not meet their payment obligations, met or were threatened with boycott measures. The increasing debt of Itera caused Turkmenistan stopped the supply of gas from 1997 to 1999.

²⁰⁹ *Gazprom v tsifrakh 1996 – 2000* (Gazprom and statistics 1996-2000), Moscow, :Gazprom, 2001, p. 45.

²¹⁰ Viakhirev R., Makarov A., eds., *Strategiia Razvitiia Gazovoi Promyshlennosti Rossii* (Strategy of the Russian Gas Industry Development), Moscow: Energoatomizdat, 1997, p. 137.

²¹¹ Ivanova E., “Gazovaia Promyshlennost’” (Gas Industry), *Kommersant Vlast'*, No 47, 27.11.2001.

- 7) The mediators caused the system's instability and prevented transparent commercial relations between Ukraine and Russia. In 1994, Itera was responsible for the most of gas exports to Ukraine and other former Soviet countries. The intermediaries' role was frequently revised, and was based on a complex barter arrangement. The management of Gazprom allowed these operations because they had personal interests. Its new management (from 2001 onwards) shifted the exports of new companies working for their own (personal) benefit (Eural Transgaz since 2003, and since 2005 to RosUkrEnergo). Itera undermined the control of Gazprom over exports, and the Ukrainian industrial market became more profitable.

A number of commercial and intergovernmental agreements were signed, for example, in 1994, 1998 and 2001, to solve these problems. In 1998, the decrease in foreign revenues from gas, caused by the low international gas and oil prices and non-payment in Russia, combined with the financial crisis in Russia, increased the pressure on Gazprom and Russia to make its gas exports to the former Soviet countries more favorable. The concept of active policy of Russia was also stimulated by the ongoing internal problems (especially political) in Ukraine, the gradual political reorientation of the country to the West, Putin's presidency, and the change in Gazprom's management.

The bilateral relations between Russia and Belarus were less significant than those between Russia and Ukraine. In addition, production in Belarus was minimal (about 0.2 Bcm/year²¹²). Beltransgaz²¹³ was responsible for import contracts and the transport network of Belarus. In the 1990s, the sales of Gazprom in Belarus decreased from 17.6 Bcm in 1992 to 10.8 Bcm in 2000²¹⁴ and were replaced mainly by Itera. Part of the transit through Ukraine passed through Belarus, with the Northern Lights pipeline with a capacity of 25 Bcm/year. Russia also supplied gas to Poland via Belarus (7 Bcm/year²¹⁵). Since 1999, the transit through Belarus became more important, with the construction of the Yamal-Europe. The strong economic and political ties between Russia and Belarus meant easier participation of Gazprom in new pipeline projects. In fact, Belarus had the same problems with the import of Russian gas as Ukraine did.

²¹² BP, *Statistical Review of World Energy*, June 2010, <http://www.bp.com/statisticalreview>.

²¹³ **Beltransgaz** is a natural gas infrastructure and transportation company of Belarus. It operates the main natural gas transit pipelines through Belarus - Northern Lights and Yamal-Europe. Beltransgaz was founded in 1992 on the bases of Zapadtransgaz, a company responsible for the gas transit through Belarus. The company is owned by the Russian gas company Gazprom.

²¹⁴ *Gazprom v tsifrakh 1996 – 2000* (Gazprom and statistics 1996-2000), Moscow, :Gazprom, 2001, p. 46.

²¹⁵ Ibid.

Gazprom used a two-pronged strategy to lessen the increased risks of transit. First, it tried to extend its control over the existing pipeline network to Europe. Then, the company reduced the project risks by varying the transport routes to Europe.

Throughout the 1990s, several pipeline consortiums were proposed to mitigate the operational risks and risks of interruption, dividing them among several private and public entities. Firstly, Gazprom tried to persuade the government of Ukraine to transfer control over the pipeline system to a joint venture, or directly through holding ownership. However, the Ukrainian government and parliament rejected this proposal, for reasons of supply's security (for example, in order to reduce external influences). In 1996, Royal Dutch Shell proposed an international association, in which Russia would be also involved, but this proposal was rejected in 1997 as Shell's bid was too low. Three years later, Ukraine made a serious proposal to sell 50 percent of the shares less one to international operators. Gazprom demanded a part of shares in exchange for repayment of debt. Russian proposal provoked a nationalist reaction in Ukraine, which led to the consortium being rejected. There was proposed another international consortium involving the Ukrainian and Russian sides, the German government and Ruhrgas. But the Orange Revolution in 2004/05 and the election of pro-Western President Viktor Yushchenko caused the consortium disappearance from the agenda.

Different proposals were made by Belarus to regain control over the network either through sharing, or through a joint venture. Gazprom had a success with the construction of the Yamal-Europe, with acquiring full ownership of the section of Belarus. Contracts for the sale of gas and its transit from 1993 to 1995 also included rental agreements between Gazprom and Beltransgaz. Gazprom increased supplies to Belarus in exchange for renting the current Belarus gas network. In the 1990s, the ownership share of the gas network of Belarus was impossible, even as a joint venture.

It was not easy for Gazprom to regain control over the Ukrainian pipeline and storage system. To strengthen its position in order to determine the rates and charges in dealings with the transit countries, it attempted to create a diversified network of gas transportation. In fact, the new pipeline projects were implemented exclusively to avoid Ukraine. In the mid-1990s, the first pipeline project that would not pass through Ukraine was initiated: the Yamal-Europe pipeline through Belarus and Poland. As alternative to the Yamal-Europe there was a direct link between Russia and Germany via the Baltic Sea, and then to the UK - the North European Gas Pipeline - which, however, served as a basis for the North Stream project. In the Southeastern European gas market, the Blue Stream pipeline project, as it was called, provided a direct link between Russia and Turkey, excluding Ukraine or any other country. However, Ukraine continued to play an important role in the storage of Russian gas and transit it to Europe.

According to the growing gas imports of the European countries and their further increase due to the experts' assessment, in these circumstances, the European Union considered Russia as a key strategic partner to ensure its energy security. In late September 2000, the European Commission President, Romano Prodi took the initiative to further develop and expand cooperation between the EU and Russia in the energy sector. It was a significant increase (1.5 times as much) in supplies from Russia to the EU oil and oil products, natural gas and electricity and supplies from the EU to Russia the equipment, infrastructure facilities and technology. The initiative was supported by Russia - EU summit (Paris, October 2000) with the decision on setting a joint working group, which would carry out a task to identify ways and means of cooperation between the EU and Russia in the energy sector. Since then, it was prepared three joint reports, where the interaction of gas sector was reflected. The EU expressed a desire to have access to the Russian mineral resources on civilized conditions, get shares in the natural monopolies (such as UES, Gazprom) and force Russia to ratify the Energy Charter Treaty. Russia, in turn, expected that Russia - EU energy dialogue would promote non-discriminatory access of Russian companies to the financial resources of Europe. Russia's gas industry required a significant investment for the development of new and modernization of existing fields, the construction of gas pipelines and implementation of new technologies.

However, the transition from dialogue to real cooperation was constrained by several factors of economic and political reasons. In particular, the main obstacle to cooperation in the gas sphere was a new gas import policy of the EU. It provided a number of measures to liberalize the domestic gas market in the European Union:

Firstly, countries (including transit ones), and companies will be permitted to resell (re-export) gas at any price and in any volume. This means that getting Russian gas at a discounted price (the price of gas is often related to political preferences of Russia), and reselling it, they will objectively help to lower prices. According to the Russian Ministry of Energy and Gazprom, Russia can lose from such practices reach \$700 million a year.

Secondly, the dependence of the EU Member States and countries associated with the European Union on gas imports from one region may not exceed 30 percent. Otherwise, the EU may restrict such imports by a directive. Valid until recently, restrictions are not so stringent. Thus, the maximum share of a provider country cannot exceed 60%.

Thirdly, the maximum term of gas supply contracts should not exceed six years (about 75% of current supply contracts are long-term). The meaning of the new EU restriction is a creation of a "spot" gas market (spot trading is trade of goods with immediate delivery) that will seriously complicate the bargaining at conclusion of contracts.

Of course, the gas-exporting countries were not interested in Europe's plans to liberalize the gas market, short-term contracts, the transition to the “spot” pricing, as well as all these measures would lead to lower gas prices.

The contradictions between the suppliers and European gas consumers matured more than one year. Traditionally, gas prices were formed depending on oil prices: as higher the price of oil, so, consequently, more expensive gas. However, this did not always reflect the real costs of producers and transporters of “blue fuel”, without mentioning the specificity of this product as liquefied gas. Also, given the tendency for growth in natural gas consumption in Europe, there was every reason to believe that the conflicts between gas consumers willing to pay less for gas, and suppliers hoping for an increase in prices would only deepen. At the center of these contradictions was Gazprom, as the largest supplier of gas to Europe.

In 1999, on the International Gas Congress in Paris, the Russian side made statement about a new pricing mechanism for gas and supported the idea of gas-OPEC, launched by Qatar in the mid-1980s. Not surprisingly, the Russian initiative was met in the West very cool. According to the representatives of the German company Ruhrgas, the idea of Gazprom to review the mechanism of gas export price formation was unlikely to succeed. As for the idea of gas-OPEC, it was perceived very negatively: the Western press attacked the plans to create a gas cartel, seeing it as a threat to their interests and stressing in this regard the moral aspect of the problem.

As known, in addition to the monopoly concept, in the economic theory exists also other term as monopsony. Monopsony is a situation in the market, arising when an entity (organization, country or group of countries) totally controls the demand for a product or service, as its only possible buyer. Monopsony power, respectively, is the buyer's ability to effectively influence on the price of goods. For example, for bulk purchases a larger company with its market monopsonic power is capable to assure lower prices than the price that a small customer would have to pay. In principle, if the monopoly power pushes the price closer to the maximum value of the goods, the monopsony power pushes it to the marginal production costs.²¹⁶ In fact, the European Union in this case acts as a cartel of buyers having monopsony power in the European gas market. This is, in particular, clearly demonstrates the EU's gas market liberalization.

According to the Western media reports, Russia could strengthen its position in the European market; first of all, by low (dumping) prices for gas, for example, at the end of the 1990s the average contract price of Russian gas was at \$63/1.000 cm, while the price for the

²¹⁶ *Economic Encyclopedia*, Moscow: Economy, 1999, p. 233.

Dutch, British, Danish and Norwegian gas was at least \$70²¹⁷. This price difference existed in the market for many years. Taking into account the reluctance of the EU to reconsider the mechanism of pricing and analyzing its new gas policy, it is reasonable to suggest that Russia could continue to maintain the role of a stable supplier of cheap gas. Moreover, the EU countries had shown little willingness to invest in Russian gas production. According to Deputy Chairman of the Board of Ruhrgas B. Bergman, with the current overstocking German and Western European gas markets, especially with Russian gas, increased investment in the export production of Russian gas was unreasonable.

The EU-Russia energy dialogue was constrained by other factors, which include: unfavorable investment climate in the Russian Federation (the lack of clear game rules), stagnation and bureaucracy in the gas industry, as well as the position of some deputies of the Russian Parliament, convinced that the West was trying to appropriate the national wealth. According to this, there were restrictions to the access to natural resources. As a result, both sides were looking for alternative solutions: the EU for new gas suppliers, Russia for new markets outside Europe.

Development of the energy partnership between the EU and Russia in the energy dialogue format was the most important part of cooperation between Russia and Europe. Dialogue aimed at creating appropriate guarantees and mechanisms to ensure the economic and energy security of the EU and Russia.

For Russia, the energy dialogue with the EU was a way of attracting investments to increase gas export, renewal and modernization of the energy infrastructure, creating favorable conditions for the economic transition to an innovative model of development. The dialogue could help to reduce market distortions and remove barriers to competition in the energy sector, create a positive environment for the restructuring of natural energy monopolies.

For the EU, the energy dialogue was an access to Russian energy resources, primarily to oil and gas. Dialogue created the conditions for the diversification of energy imports and increasing the EU energy security.

To suspend the growing dependence of the EU on external energy supply was not possible. It was expected the growth of energy supplies, especially natural gas from Russia. The EU took considerable interest to import gas from Central Asian countries of the CIS and the Caspian region. The entry of new countries into the European Union did not change the situation. The enlarged EU, to a greater extent, remained dependent on energy imports.

For the energy security, the European activity was aimed at liberalization of gas and electricity markets. As a result, the economic and political risks of energy supply lowered. The

²¹⁷ Ivanova E., "Gazovaia Promyshlennost'" (Gas Industry), *Kommersant Vlast'*, No 47, 27.11.2001.

economic ones did through increased competition in the energy markets and reduction of the energy prices, political - by diversifying imports.

The efficient and reliable energy supply involved a combination of monopolistic and competitive forms of organization of the energy market. Competition and non-discriminatory trade regime allowed Russian energy suppliers to sell directly to consumers, which dramatically increased the efficiency of Russian exports.

Long-term gas supply contracts continued to be important in the development of the European gas market due to the risk-sharing mechanisms between producers and buyers. They retained the importance of financing for investment projects.

Investment from the EU to the Russian energy sector could be a significant factor in the development and updating the energy sector. It was possible to increase the export potential of the country's energy; more fully meet the needs of the EU in Russian energy.

The formation of reliable energy supply system was largely dependent on the decision of transit issues. It was necessary to take into account the interests of the EU, Russia, the Central Asian countries of the CIS and the Caspian region.

The EU-Russia Energy Dialogue reflected a deep mutual interest of both parties in a strategic partnership in the energy field. The parties worked together to create a favorable environment, to harmonize economic relations. Russian and foreign businesses needed stable, clear rules of the game, non-discriminatory laws in order to ensure sustainable economic growth. For reliable supply, it was necessary to reduce the threat of risks, primarily political and economic. The essential task was to create conditions for the symmetrical parties' entry into the integration processes in the energy sector that equally provide mutual benefits to the EU and Russia.

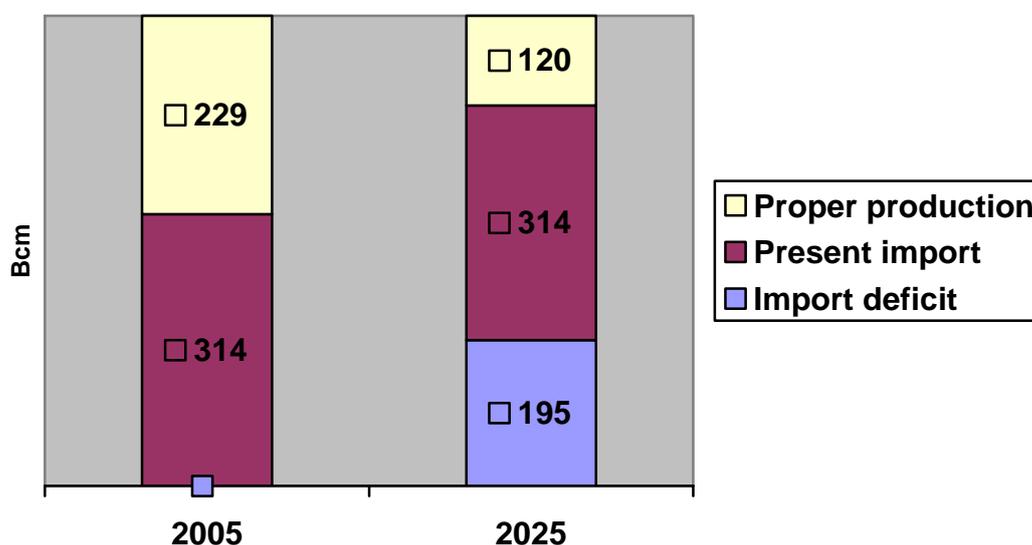
The Energy Dialogue provided an opportunity within the EU, and Russia to form a single energy market, which, in the future, may become a part of a single global energy space.

CHAPTER 9. Nord Stream – an example of Russia-EU Energy Dialogue

As the previous chapters showed Europe depends on gas import, so it is essential to reveal the Russian position relative to other suppliers and to prove that Russia established a reputation of a reliable supplier. To raise efficiency and eliminate transit problems with other countries, it was proposed the Nord Stream pipeline project. So it is necessary to examine how it was appeared the idea of its creation and analyze why it is preferable as compared to other sources. This Chapter deals with the period of development of the project, excluded the up-to-date state.

Against the backdrop of the reduction in volume of production and the EU's own reserves, it is expected that demand for natural gas in the European Union continues to grow. As a result, the import accounts a larger share of total consumption of the EU. It is foreseen that the demand for natural gas imports will increase from 314 Bcm (which accounted for 58% of demand in 2005) to 509 Bcm per year (predicted 81% of demand in 2025)²¹⁸. The new routes are needed to prevent the import of the critical shortage of natural gas imports.

Figure 9.1 Forecast of supply and demand in the EU. (This scheme is based on the assumption that the existing supply contracts will be renewed)²¹⁹.



Due to the reduction of the EU's own production and reserves, with increasing demand for natural gas, the demand for import is foreseen to increase. Therefore, to prevent a critical shortage of natural gas import there is a necessity of new sources.

²¹⁸ European Commission, *European Energy and Transport. Trends to 2030*. EC, 2007, p. 96.

²¹⁹ Ibid.

As it was mentioned in the previous chapters, Europe receives natural gas from three main sources: Russia, Norway and Algeria. The quantity of reserves, as well as geographical proximity to the EU and security of supply, in the long term, will be important factors in the choice of future import sources. Russia meets all these requirements²²⁰.

Three factors determine the availability of opportunities for Russia to make a significant contribution to the stability of future supplies to the EU:

- (a) Russia has the largest proven reserves of natural gas in the world,
- (b) It is geographically close to the EU, and
- (c) Can provide a stable supply of natural gas to customers in the EU for more than 35 years.

Currently, the volume of natural gas imports from the producing countries will be displaced into the regions with long-term resources. Thus, the quantity of reserves will be an important factor in the choice of future import sources. The world's proven gas reserves are located in three main regions:

- Europe and Eurasia: approximately 33.5% (Russia: 25.2%, Norway 1.7%)
- Middle East: 41.3% (Iran: 15.7%, Qatar: 14.4%)
- Africa: 8.2% (Nigeria 3.0%, Algeria 2.5%)¹

The remaining 17% of the total world reserves are distributed in small amounts in various regions²²¹.

In each of the three regions, the EU has the main supply agreements with those countries that have either the highest or second-largest reserves of natural gas, such as Algeria, Qatar, Norway and Russia. The EU does not have any supply agreement with Iran.

Currently, Algeria has 4,520 Bcm of natural gas²²², and it is located close to the Mediterranean countries of Europe. There are plans to increase the current exports from 65 Bcm per year to 115 Bcm per year in 2015.²²³

Qatar has 25,600 Bcm of natural gas reserves and it takes the third place between the largest natural gas reserves in the world after Russia and Iran²²⁴. It exports mainly in the form of LNG, because of the remoteness of markets. Current efforts of Qatar to increase exports of LNG are aimed mainly to Japanese and South Korean markets. Exports to the EU began in small volumes in 2000; several projects are worked out to increase the export of liquefied natural gas to the North American and European markets.

²²⁰ Statistical publications of Eurostat: *Gas and Electricity Market Statistics*, 2007, p.56.

²²¹ BP, *Statistical Review of World Energy*, June 2010, <http://www.bp.com/statisticalreview>.

²²² Ibid.

²²³ AHK, *Erneuerbare Energien*, <http://algerien.ahk.de/index.php?id=landesinfos>, as on August 4, 2008.

²²⁴ BP, *Statistical Review of World Energy*, June 2010, <http://www.bp.com/statisticalreview>.

Having 2.960 Bcm of stocks²²⁵, Norway will continue to play a crucial role in the future supply of natural gas to the EU in the short and medium term. However, gas export from Norway is expected to reach the peak of 150 Bcm per year in 2020. To 2025, it is foreseen only 120 Bcm per year. It corresponds to 19% of demand for natural gas supplies to the EU in 2025.

With its natural gas reserves in the quantity of 44,650 Bcm, Russia owns 25.2% of the world's proven reserves²²⁶. Their geographic concentration also favors the development of industry: 90% of the current Russian production is concentrated in Western Siberia. In the future, the production will increase, in particular, due to the Shtokman offshore field in the Barents Sea and some offshore fields in the Kara Sea.

The Shtokman field has 3.700 Bcm²²⁷ of proven natural gas reserves concentrated in one place, and it has the great advantage of the location close to the EU.

The potential growth of gas export from Norway, Algeria and Qatar, is insufficient to cover the medium- and long-term growth of demand for import into the EU. The possible shortage enhances the importance of creating additional transportation capacity of large volume from Russia to the EU.

Different countries of the EU use various sources of natural gas imports, and the key factor is geographical proximity. Countries such as Germany, France, Belgium and the UK receive natural gas, mainly from Russia and Norway, and most of the Italian and Spanish natural gas imports come from Algeria. The geographical proximity is an important factor in the choice of future importers. In addition to its resources, Russia has the advantage of proximity to the European market. The Shtokman field will contribute to securing a stable supply of natural gas to the EU in the future.

The cooperation in the gas field, based on mutual interest, exists between the EU and Russia for more than thirty five years. The EU companies buy about 80% of Russia's natural gas exports²²⁸. Russian stocks also have great importance for the future energy security of the EU. The oil and gas industry is one of the key sectors of the Russian economy, which accounts for two-thirds of export earnings in 2007. The revenues from gas exports are crucial for the Russian state budget. The European Commission stresses the obvious interdependence between the EU and Russia in terms of energy partnerships and benefits for Russia, gaining access to the natural gas market of the EU²²⁹.

²²⁵ Ibid.

²²⁶ Ibid.

²²⁷ Gazprom, *Shtokmanovskii proekt* (Shtokman project), <http://gazprom.ru/about/production/projects/deposits/shp/>.

²²⁸ BP, *Statistical Review of World Energy*, June 2010, <http://www.bp.com/statisticalreview>.

²²⁹ Communication from the Commission to the European Council. *International relations in the field of energy: principles and activities*. Oct. 2006, <http://eur-lex.europa.eu/LexUriServ>.

Exporting companies tend to extend the additional volumes of natural gas. Russian energy company Gazprom has already signed an agreement for sale to various consumers 21 Bcm of additional natural gas for delivery by the Nord Stream pipeline. These contracts show that the Gazprom's intentions to export using the new route correspond to the long-term trends of growth in demand for natural gas as predicted by European energy companies. Therefore, the Nord Stream pipeline system is a priority project as for the producer, the company Gazprom, as for European consumers.

Though there is a proved cooperation between exporting companies in Russia and buyers in the EU, the fast delivery of Russian natural gas to the European market is also important in view of the increasing competition among the natural gas consumers.

With the development of trade relations between Russia and Asia in the field of energy, the EU risks to take a second place as a buyer of Russian gas. Thus, the strategic involvement of Russia into the European market gains in this regard the importance of ensuring the supply of natural gas to the EU in the long term. The large investments of Gazprom in the Nord Stream pipeline project underline the interest of the world's leading producer of natural gas in the long-term relationship with the EU. This is a significant advantage of the EU in the context of increasing competition for natural gas as an energy resource.

The establishment of direct links between the Russian gas reserves and the EU market becomes urgent. Therefore, the European Commission supports projects aimed at the timely expansion of gas infrastructure in the EU from third countries through the Trans-European Energy Network routes (TEN-E). The Nord Stream pipeline will be able to cover requirements of the EU's additional transport capacity and; therefore, it has a great importance for the EU's security of gas supply.

The company Nord Stream AG (Nord Stream) is an international joint venture established for the planning, construction and subsequent operation of the gas pipeline through the Baltic Sea.

In 2000, the European Commission recognized the North European gas pipeline through the Baltic Sea as part of the Trans-European Energy Networks (TEN-E). On September 2006, the European Commission included this project in a number of energy projects of the highest priority as being of interest to the European Union, and Europe in general. In 2006, the project's status of the TEN-E has been re-confirmed.

On September 2005, Gazprom, BASF AG (currently BASF SE, further BASF) and E.ON AG (hereinafter E.ON) reached an agreement on the responsibility for the projection, construction and operation of a new trunk pipeline system. In order to implement the joint intentions of these companies, in November 2005, the company "North European Gas Pipeline"

was founded, and in October 2006 the company was renamed Nord Stream AG (hereinafter, Nord Stream).

Gazprom holds a 51% stake in the joint project. German companies, BASF (indirectly, through its 100 per cent subsidiary of Wintershall Holding AG, further Wintershall) and E.ON (indirectly, through its subsidiary E.ON Ruhrgas AG, hereinafter E.ON Ruhrgas) own a 20% stake each. The infrastructure company Gasunie Infrastruktur AG, which is 100 percent affiliate of Dutch N. V. Nederlandse Gasunie (further, Gasunie) owns 9 percent of shares²³⁰. The multinational membership of shareholders and their interest in the project extended beyond the companies, countries of origin and the Nord Stream pipeline's route emphasize the European character of the project. The headquarters is located in Zug, Switzerland.

The structure of the Nord Stream project provides an effective and successful implementation of the project. This warranty is reliability and experience of its shareholders: Gazprom, Wintershall, E.ON Ruhrgas and Gasunie. These companies have many years of experience in the exploration, production, transportation and marketing of natural gas, which will be used in the Nord Stream project's realization.

The details of shareholders and necessary for the project specializations are given below.

Gazprom is the world's largest natural gas producer (as it was described previously). Its shares are included in the quotation list of the Moscow Stock Exchange; 50.002% of the company is owned by the Russian state. The German energy company, E.ON Ruhrgas owns 6.4% of Gazprom's shares.

Gazprom is also active in the planning and construction of pipelines to transport natural gas. In addition to experience in building and operating onshore pipeline, Gazprom has experience in construction and operation of offshore pipelines, which is particularly important for the Nord Stream project.

In 2005, it took place the official opening of the Blue Stream pipeline, which was built as a joint project of Gazprom and the Italian multinational oil and gas company ENI S.p.A, 30% of its shares are state-owned. The pipeline starts in Izobilnoe village (Russia) and ends in Ankara (Turkey); the section 386 km long passes on the bottom of the Black Sea. Although offshore section of the Blue Stream pipeline is shorter than the Nord Stream, it does not mean that the technical requirements for the project were not as high. The maximum depth of the Blue Stream is 2.150 meters, which is many times greater than the maximum depth of laying the Nord Stream pipeline, the deepest point of which corresponds to about 210 m²³¹.

²³⁰ Gazprom, *Severnyi Potok* (Nord Stream), <http://gazprom.ru/about/production/projects/pipelines/nord-stream/>.

²³¹ Ibid.

In addition, the high concentration of hydrogen sulfide in the Black Sea largely complicated the construction process and the choice of materials for the Blue Stream pipeline. During the implementation of this and other projects, Gazprom has acquired a special experience in the construction of offshore pipelines, which will be in demand during the construction of the Nord Stream pipeline, given the specific circumstances and characteristics of the Baltic Sea environment.

E.ON Ruhrgas is a 100-percent subsidiary of E.ON AG, responsible for the gas business of E.ON in Germany and Europe. For about 80 years, with headquarters in Essen, the company was an active participant in the heating gas market and for about 45 years the market for natural gas. E.ON Ruhrgas is the Germany's largest supplier of natural gas and one of the leading gas companies in Europe²³². With its experience in the construction and operation of long-haul pipeline networks, E.ON Ruhrgas has a comprehensive knowledge and skills necessary for the Nord Stream project.

This necessary experience, E.ON Ruhrgas gained by participating in the construction of important European offshore pipelines in the North Sea, including the pipeline Interconnector UK (IUK) (the United Kingdom) between the UK and Belgium, the pipeline Balgzand-Bacton Line (BBL) between the Northern part of the Netherlands and the UK and offshore pipeline Seal of the Elgin/Franklin in the central of the North Sea to Bacton.

The company Wintershall Holding AG (Wintershall) is a 100-percent subsidiary of BASF SE. Over 75 years, the company Wintershall was active in various regions of the world (at present in Europe, North Africa, South America, Russia and the Caspian region), engaged in exploration and production of oil and natural gas. More than 60% of natural gas and oil production of the company Wintershall is on its own deposits²³³. While working on the project of natural gas production in the Dutch North Sea, the company Wintershall gained considerable experience in the design of offshore pipelines.

Trade in natural gas, which the company Wintershall leads by means of Wingas GmbH & Co. KG (hereinafter, Wingas) with its Russian partner Gazprom, is a second area of the company's activity, along with the exploration and production.

Wingas was active in gas supply since 1993 and supplied natural gas to utilities, regional gas suppliers, industrial companies and power plants in Germany and other parts of Europe through its own newly built pipeline network Wingas Transport GmbH & Co. KG, more than 2.000 km long. It is used by Wingas, and third parties.

²³² E.ON, *Entwicklung des Unternehmens*, <http://www.eon-ruhrgas.com/cps/rde/xchg/SID-F29D6EF9-CB651965/er-corporate/hs.xsl/599.htm>.

²³³ Wintershall, *Shaping the future*, <http://www.wintershall.com/en/company.html>.

The Dutch NV Nederlandse Gasunie is a state owned company (100 percent). The company is headquartered in Groningen. Gasunie has more than 40 years of experience in the construction and operation of pipelines to transport natural gas. The company specializes in infrastructure projects in the supply of natural gas; its focus areas are management, operation and development of the national transport networks, construction and maintenance of the transport network, participation in international projects.

The company Gasunie controlled the construction of the BBL pipeline, which was completed in December 2006. It indirectly holds a 60 percent stake in this project. In that capacity, Gasunie is primarily responsible for the operation and maintenance of the BBL pipeline, 230 km of which run along the bottom of the North Sea, connecting Balgzand and Bacton²³⁴.

The idea of a pipeline supplying Western Europe with gas from Northern Europe arose a long time ago. In fact, such plans appeared long before the fall of the Berlin Wall in 1989. The purpose of the following is to show how to develop these plans, and how they led to the Nord Stream project.

In the early 1980s, when the oil and gas prices still were at a high level, and in the Swedish society the debate on adequate replacement nuclear power went forward, a number of alternative solutions for transport of gas through Sweden were analyzed. The most ambitious project was the Transscandinavian project for transportation of gas from the Barents Sea through Sweden and possibly Denmark to Germany, where the company Statoil stated as the founder. In addition, the plans were developed for the transportation of gas from the Haltenbanken area of the Norwegian Sea through Sweden to Central Europe.

New systems appeared such as offshore project Skanled, connecting Norway, Sweden and Denmark, with a branch in Poland. Onshore solutions, such as the Scandinavian gas ring, were also considered but were put off by the market and environmental reasons, as well as in connection with issues of authority and taxation.

In the late 1980s, the Swedish gas company Swedegas in cooperation with the Finnish company Neste developed a business plan for the transportation of Russian gas to Sweden and Western Finland. In 1989 and 1990, the sea routes to the north and south of the Aland Sea were analyzed, and sea investigations were conducted. The main reasons for the rejection of this project were the collapse of the Soviet Union and the economic crisis in Sweden and Finland. In 1986, the oil and gas prices fell after a sharp rise in the late 1970s, when OPEC reduced oil production, and the consequent shortage of supply led to higher prices for oil and gas. At the same time in Sweden, there was an active lobbying idea to refuse the use of natural gas. These

²³⁴ Gasunie, *Crossing borders in energy. About Gasunie*, http://www.gasunie.ru/contents/about_gasunie.

projects have been revived only in the late 1990s, after the visit of the then Russian President Boris Yeltsin in Sweden, and only then feasibility studies were prepared.

The Yamal pipeline runs from the Western Siberian gas fields through Belarus and Poland to the German border in the state of Brandenburg. Near Frankfurt on Oder, the pipeline is connected to the German pipeline network. With a total length of 1600 km from the Russian city of Torzhok and diameter of 56 inches (1.420 mm) it gives annually to Western Europe 33 Bcm of natural gas. The project Yamal-1 was launched due to the expected strong growth in demand for natural gas in Poland and Western Europe. In addition, it was designed technically diversification of the existing then transport routes for Russian gas. Created after the collapse of the Soviet Union, Yamal became the first major pipeline scheme, realized by the then founded company Gazprom. Its construction began in the mid-1990s in order to supply gas to Poland. During the construction, the main obstacles were difficult negotiations with landowners and farmers in Poland and Belarus, which led to significant delays. Pipeline operated by the Russian-Polish joint venture, Gazprom, the Polish state-owned oil company Polskie Górnictwo Naftowe i Gazownictwo SA (PGNiG) and Gas-Trading SA; share of Gazprom and PGNiG in a joint venture accounted for 48%, and Gas-Trading SA for 4%.

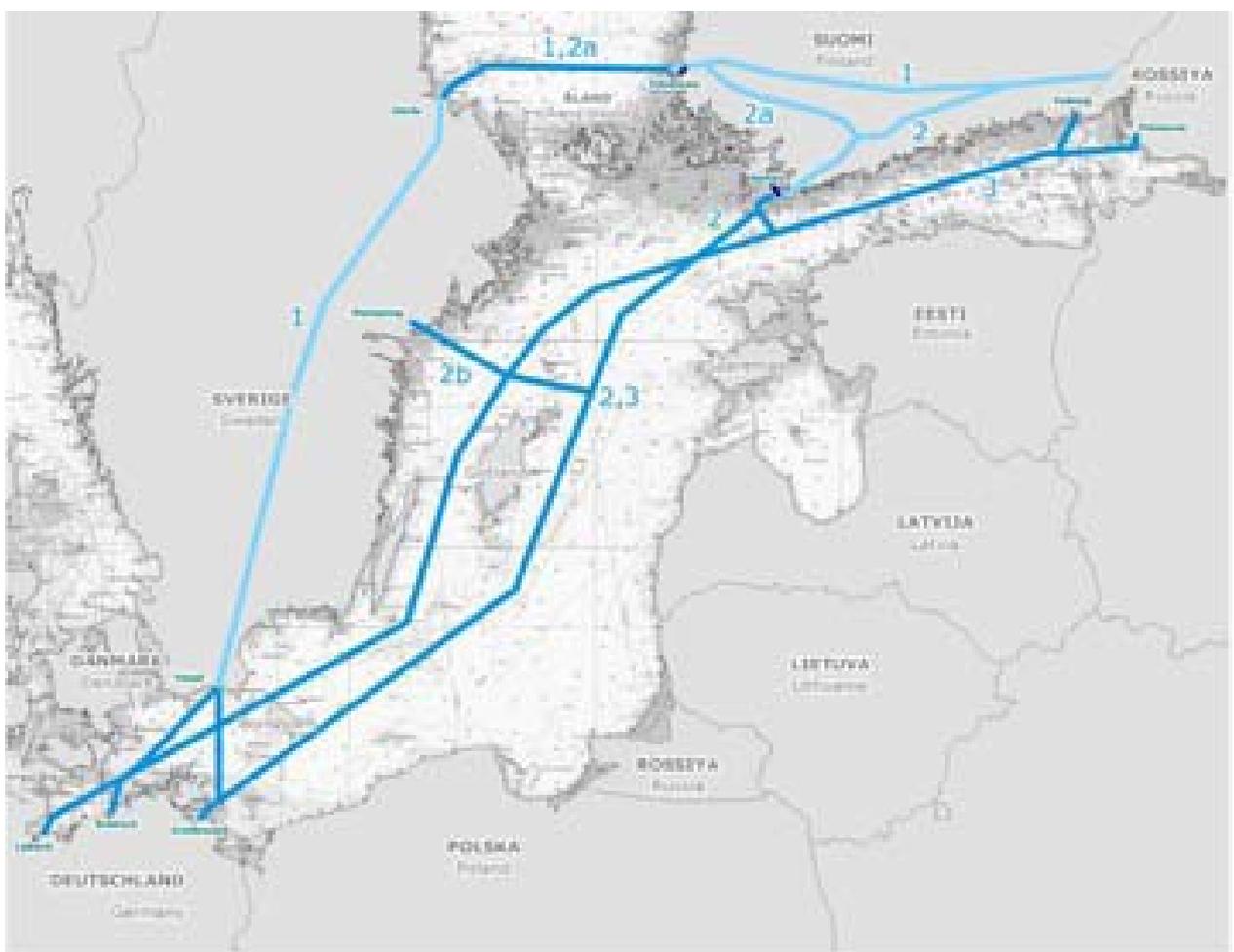
The goal of North Transgas Oy (NTG), founded in 1997, was to conduct a thorough analysis of the gas supply in the Nordic countries, and the possibility to use the Nordic countries as a transit region for export to Western and Central Europe. Brussels considered it necessary in the interests of Europe that joined the EU in 1995, Finland and Sweden integrated into the gas transportation system of the EU. At the time, the NTG project was seen as benchmarking as it provided a very ambitious and detailed feasibility study with a larger budget (over \$20 million) than in similar European projects. NTG's shareholders were Gazprom, Fortum Oil Company and Gas Oy, formed by the merger of Neste and IVO in 1998. Neste is a Finnish company, actively participated in the natural gas projects in the Nordic countries in the late 1990s. The company Neste also took part in research on the North European gas grid (NGG), as well as projects launched by the Council of Ministers of the Northern European countries, intergovernmental forum for cooperation between Denmark, Sweden, Finland, Norway and Iceland in order to integrate the gas systems of these countries. The company IVO (full name Imatran Voima Oy) was then the largest utility in Finland. NTG's headquarters was located in Helsinki, where it was carried out the most part of the practical work on the feasibility study.

The NTG study was conducted in 1998. To define one or several pipeline routes it was surveyed about 3.900 km of the Baltic seabed, Gulfs of Bothnia and Finland. For laboratory tests, there were taken more than a hundred of geological samples of the seabed. Three alternative routes were considered with sixteen places landfall. It was investigated the pipeline

routes to the East and to the West of the island of Gotland and Bornholm. Here are three basic scenarios, including the options of places landfall²³⁵:

- Scenario 1: via Finland and Sweden, including offshore areas to the north of the Aland Islands
- Scenario 2: via Finland. Branch to Sweden or to the north of the Aland Islands (alternative 2a), or to the north of Gotland (alternative 2b)
- Scenario 3: sea route to Finland and Sweden through pipe bends in Hanko and Nyukeping respectively.

Figure 9.2 Route Options considered in the feasible justification of NTG in 1998.²³⁶



All route options included landfall near Greifswald as a baseline, but it was also analyzed and evaluated alternative routes to Lübeck and Rostock. In addition, there was a version with an alternative point of landfall on the island of Usedom (East of Greifswald Bodden), but it was

²³⁵ *Nord Stream Espoo Report*, National EIA Summary, 2009, pp. 21-65.

²³⁶ *Ibid*, p. 30.

given up before researches started, due to technical difficulties and the fact that this region was actively used for tourism.

Since the Baltic countries and Poland were not included in the scope of the NTG project, all options provided connection Russia with Finland, Sweden and Germany. The projected volumes of gas were in the range of 35.5 Bcm per year to 21.6 Bcm per year²³⁷.

Thus, joined the EU in 1995, the two Nordic countries had an opportunity to integrate fully into the gas system of the EU. In the cases of disruption of supplies from Russia, the study examined the possibility of reverse flow of gas from Germany to Scandinavia using the supplies from the Mediterranean, the Middle East and the North Sea the diversified structures of Germany.

After the evaluation of the routes and development, the feasibility study of all routes in 1999, NTG concluded that the option 2b route through the Baltic Sea was the best²³⁸. This route consists of the land area in Finland and the branch across the Baltic Sea to Germany. Finnish onshore part was replaced in the next phase of the project to the full solution of the offshore through the Gulf of Finland.

The results of the study were not implemented in practice as Fortum Oil and Gas Oy changed priorities, focusing on the energy sector and the creation of new nuclear power plants in Finland, as well as the purchase of Swedish utilities. Thus, the pipeline connecting Northern Europe to Western and Central Europe was excluded from the corporate strategy of Fortum. As a result, Gazprom and the Russian government shifted their attention to the southern direction. To strengthen the strategic partnership between two countries, in 1999, Russia and Turkey signed an intergovernmental agreement on the construction of an underwater pipeline, Blue Stream, from the Russian coast of the Black Sea to the Turkish city of Samsun. Gazprom and Eni S.p.A. were the shareholders of the joint venture, which, as scheduled, had to transport 16 Bcm of natural gas a year to Turkey and then in Southern and South-Eastern Europe.

The analysis of the main factors determining the solutions for marine pipelines highlighted the findings of the NTG's feasibility study. This is described in the following.

On the supply side, the Russian Baltic coast with its geographical proximity to various Russian gas fields, of course, was the preferred starting point of the pipeline. In the short and medium terms, the main sources of gas for the Nord Stream project were gas fields on the Yamal Peninsula and the South Russian gas field. Since the beginning of large-scale production, the Shtokman offshore gas field in the Barents Sea could be an alternative to them. From the investors' point of view, the crucial parameter was the size of the project's target market. Thus, in

²³⁷ Ibid, p. 35.

²³⁸ Ibid, p. 30.

terms of demand, Western Europe was becoming more and more attractive market as its own gas reserves were depleted, and it was necessary to take into account restrictions on greenhouse gas emissions. To ensure easy connection to a well-developed pipeline network, Germany was seen as a convenient place for the supply of gas from outside the EU. Moreover, the laying of pipeline overland through the Baltic States and Poland, from the economic point of view was not the best option. The market potential of Western Europe was considered more promising. This argument, and also the low population density and long distances between the potential points of sale in the urban area extended to an alternative onshore route through Sweden or Finland.

Analyzing, the argument, based on the market size, has been enhanced by the political aspects.

According to the analysis of different route options in the feasibility study, NTG was assessed as only possible Russia-EU route linking vast reserves of Russian natural gas to more than 300 million EU citizens (as of 1998), as a significant point of potential customers. In comparison with the land route through Poland and the Baltic states, the legal situation in the EU was more predictable and stable. Although the investment projects were based on economic decisions, the political support might be an important factor. While the candidates for accession to the European Union from Central and Eastern Europe were eager to reduce their dependence on Russian gas and diversify sources of energy supply, the Western European countries experienced a growth in demand and were interested in securing energy supplies.

In the late 1990s, Russia was still one of the recipient countries of the International Monetary Fund and therefore, could not independently finance a project of this scale. Thus, the initial discussion of alternative routes, including land-based sites in Finland or Sweden, was partly depended on the funding requirements. Alternative routes through the former Soviet sphere of influence were not suitable because of a lack of funding and other reasons. The subsequent economic recovery of Russia with an increase in economic growth gaining bankable ratings and an increase in world energy prices eventually allowed Russia to route directly to Western and Central Europe.

To give a complete economic argument, it seems necessary to make a comparative analysis of the costs for land and maritime solutions. The company Nord Stream AG prepared a feasibility study comparing the onshore pipeline projects of the Yantar²³⁹ and the Yamal-Europe gas pipeline to the offshore Nord Stream. For an objective comparison of costs, it should be considered the main pipeline system connecting the field to the distribution points of existing pipeline networks. Thus, the study was based on the model relating the Russian deposits of

²³⁹ The pipeline project to transport natural gas under the name Yantar intended to connect Russian oil fields to the gas pipeline Yamal-Europe, passing through Latvia, Lithuania and Poland.

Yamburg (West Siberian gas fields) and Murmansk (Shtokman) with distribution points in the German gas pipeline system Achim in Lower Saxony and Olbernhau in Saxony. In addition, the analysis should be carried out with the calculation of adequate transport facilities. Consequently, the planned capacity of the Nord Stream pipeline in the volume of 55 Bcm via two separate pipe runs was compared to the two pipelines of Yantar, each of which was supposed to have a capacity of 27.5 Bcm, respectively, to 55 Bcm. The Nord Stream pipeline was also compared to the Yantar and the Yamal-Europe pipelines. Again, the estimated power for each pipeline was 27.5 Bcm. The total capacity was 55 Bcm²⁴⁰.

Finally, a comparative cost analysis should take into account the equivalent design pressure, which provides natural gas transportation by sea or land lines, respectively. The above assumptions were reflected in the three scenarios selected for the analysis:

- The first scenario considered the Nord Stream pipeline with two separate lines, plus a connection to Russian sources of supply with German distribution points;
- The second scenario was based on the model of the two pipelines of Yantar, including the aforementioned connectors;
- The third scenario was a combination of one Yantar's pipeline and one Yamal-Europe's pipeline, including the aforementioned connectors.

The main findings were that the Nord Stream pipeline was shorter than the Yantar and Yamal-Europe were and that the power requirement for the compressor was much less for a sea route. A smaller number of compressor stations required less fuel gas, and as a result, operating costs were reduced. This means that based on the current value of the total costs, the advantage was on the side of the Nord Stream pipeline.

The cost calculations had various assumptions. Given the differences in these trunks from supply sources to distribution points, the estimated budget, the pipe diameter, technical parameters, such as the design pressure and the thickness of the walls, the other calculation models showed a significant cost advantage in the Nord Stream pipeline, compared to the pipeline Yantar, on the assumption that the lifetime will be 25 years. According to the project life-cycle of the Nord Stream gas pipeline, its decommissioning was expected in about 50 years. Thus, the advantage of the Nord Stream pipeline costs was even greater.

In terms of impact on the environment, the Kyoto Protocol was signed in 1997; it had a major influence on the energy sector. Thus, the transition from the use of coal in Germany, the UK and other European countries to natural gas helped the reduction of carbon dioxide emissions, which corresponded to agreements between the parties, particularly the EU. Moreover, with the pipeline sea route through the Baltic Sea, carbon dioxide emissions would be

²⁴⁰ *Nord Stream Espoo Report*, National EIA Summary, 2009, pp. 21-65.

significantly less than the land route through Eastern and Central Europe. This is due to increased efficiency, achieved through higher design pressure.

Regarding stability, the surface analysis of potential impact on the environment has shown that any ground solution will lead to a significant impact on the environment. First, this statement was based on the need of digging required to land routes in the corridor of 40 meters, as well as different rates of pipe-laying. Thereby, if it is assumed that one day is needed to lay the 2.5 - 3km of offshore pipelines, laying onshore pipelines moves much more slowly. As a result, the impact on the environment is more intense. Secondly, the geographical conditions of different route options certainly indicate in favor of marine solutions. Onshore routes through the countries of Northern Europe, as well as through the Baltic-Polish corridor must pass through the difficult parts of crossing rivers and lakes and other environmentally sensitive areas. Thus, initially provided land areas in Finland, about 328 km long and 391 km long would have to cross the river Kymi²⁴¹.

Next to Edveynen, one of the foreseen points of landfall was to be into the intersection of environmentally sensitive areas. One of the possible landfalls' points to the north of Hanko would lead to difficult passage of Pohyanpityayanlahti Bay. In Sweden, about 654 km land route would pass through the two large lakes and ecologically sensitive area, the valley Fyuledalen. Moreover, the conditions of the seabed near the Finnish city of Hanko are severe, leading to a significant increase in work.

Onshore routes through the Baltic States and Poland also had to cross a variety of environmentally sensitive areas. In the north-eastern part of Poland, there are many national parks, each of which is inhabited by a large variety of birds and animals. In this connection, it should be mentioned Vigierski Biebrzanki, and Narevyanski national parks. In addition, the area near the border with Kaliningrad and Lithuania has many large and small lakes and swamps, such two of the largest lakes as it Sniardwy and Mamry, which are connected by small rivers, canals and lakes. Tourism and recreation are significant sources of income in the areas around lakes and national parks. Finally, the area to the south of the Kaliningrad border is differed by a combination of agricultural crops and pristine forests, wetlands, lakes and rivers.

A comprehensive comparative analysis of the impact on the environment required a full assessment of the possible onshore routes, which were outside the competence of the Nord Stream, and it was not conducted by participating Member States.

From 2001 to 2005, there was a transfer of cases from the Finnish Fortum to the Russian Gazprom. The latter expanded cooperation with the German gas company Ruhrgas (later merged by E.ON AG, and in 2004, renamed E.ON Ruhrgas AG) and the German gas producer

²⁴¹ Ibid.

Wintershall, a subsidiary of BASF. After the company Fortum Oil and Gas Oy changed its business strategy, in 2005, Gazprom bought at Fortum a 50 percent stake in the NTG²⁴².

The project changed its name to the North European Gas Pipeline. Denmark and the Netherlands were considered as additional target markets. Due to the decline in gas production in the UK, more attention was paid to the British gas market, and it was made an assessment of the route from Russia to the UK via Denmark. The UK gas companies considered various alternative sources of supply, in addition to Russian, including the Norwegian alternative and LNG. Due to its geographical proximity of the starting pipeline point to the Russian gas fields, the North European Gas Pipeline would improve the degree of diversification of gas supplies to the EU. From a technological point of view, it was improved the technologies for large-diameter pipelines, high pressure and large extension mainly for transportation purposes from Norway to the mainland of Europe and the UK, and also for the transportation from the Middle East. The construction of the Blue Stream pipeline at a depth of 2.150 m also paved the way for a new generation of technologically advanced offshore projects.

For the Baltic Sea route, the throughput was estimated of 19.2 Bcm of gas, the diameter of the pipeline - from 42 to 48 inches, the design pressure - respectively 220 and 160 bars²⁴³. Eventually, it was decided to build the Langeled pipeline from the Norwegian offshore Ormen Lange field to the UK and other sea routes laying on the coast of Norway to the UK. Moreover, plans were discussed to develop the Shtokman gas field as a source of LNG to non-European markets. To diversify the supply of the British sources, it was decided to build a new pipeline Balgzand Bacton Line (BBL) from the Netherlands to the UK almost using the same route as the route analyzed in the framework of the North European Gas Pipeline. Thus, the direct gas pipeline from Russia to the UK was not necessary as BBL pipeline could be used to service this market through Germany and the Netherlands. Moreover, the possible use of intermediate storage facilities in Germany was seen as an added advantage.

Summing up, it can be said that the sponsors of the Norway-UK pipeline, Statoil and Hydro, as well as core strength, promoting the BBL pipeline, as Dutch energy company Gasunie and Belgian Fluxys gas corporation indirectly influenced the current status of the Nord Stream gas pipeline.

The rejection of the Nord Stream project's realization threatened the stability of supply of natural gas to the EU because of the lack of transport capacity of 55 Bcm per year. The proposed gas pipeline system could satisfy more than one-quarter of the additional demand for gas

²⁴² Gazprom, *Severnyi Potok* (Nord Stream), <http://gazprom.ru/about/production/projects/pipelines/nord-stream/>.

²⁴³ Ibid.

imports, estimated to volume to 195 Bcm per year by 2025. The renunciation of the project could threaten the energy security of the EU²⁴⁴.

The major part of the remaining import needs would be covered with gas import projects mentioned above. These projects should be seen as complementary to each other. Interruptions in the supply, as a result non-fulfillment of the Nord Stream project, will be covered with projects that have not even been considered.

In the absence of the Nord Stream project, it should be considered the following:

- Any other field;
- Other routes for the transportation of natural gas in the European Union;
- Other energy sources.

In addition to the analysis of these three aspects, it must be emphasized that further to the Nord Stream, other projects that are currently under consideration are needed to meet the growing demand for imported natural gas, and; therefore, cannot be considered as an alternative to the project Nord Stream.

The defined in the Espoo Report analysis of the criteria described below shows that there is no comparable alternative to Russia.

- Russia has the world's largest reserves of natural gas and will be able to ensure the supply of natural gas to the EU in the long term;
- Russia is characterized by geographical proximity to the EU;
- Russia has the potential for long-term supply;
- In the medium term it can be expected an increase in Russian gas supplies.

Other potential sources of additional gas:

- From the Caspian region and the Middle East: systems of pipelines and LNG facilities;
- From Algeria and Libya: the pipeline through the Mediterranean Sea;
- From Norway: pipeline through the North Sea;
- More distant sources: LNG.

As prescribed, none of these alternatives has the advantage that the Nord Stream project has, connecting the EU with the Russian gas fields. Moreover, they will only be available in the long term a few years later than the Nord Stream project. LNG transportation is accompanied by higher emissions of CO₂.

Below there is a comparison of Nord Stream with other modes of transportation on the effectiveness of emissions, which is principal taking into account the environmental aspect.

²⁴⁴ *Nord Stream Espoo Report*, National EIA Summary, 2009, pp. 21-65.

Other environmental aspects are the safety and social perception of these types of transportation. The Nord Stream project offers distinct advantages in terms of energy efficiency compared to the onshore routes and transportation of liquefied natural gas, which is an important factor in relation to the EU's objectives of the CO₂ reduction.

- **Onshore pipelines.** Under the same pressure levels, and throughput, the energy required for operation of the pipeline, in the first place, depends on the medium pressure of the gas transportation. At high pressure during transport there is no pressure drop due to the properties of compressed gas, which reduces the number of compressor stations required to transport gas at a distance. At the maximum input pressure of 220 bars for Nord Stream it is not provided the intermediate compression necessary for the gas transportation over a distance of over 1.200 km. As for onshore pipelines, they mostly operate at a pressure below 100 bar level, and so they need more compressor stations, and need to expend more fuel to provide equivalent features²⁴⁵. Therefore, compared with onshore alternatives, the Nord Stream project reduces emissions of CO₂.

- **LNG transportation.** The transportation of liquefied natural gas is much less energy efficient and associated with high carbon emissions compared to offshore pipelines. LNG process transport is complex and requires high-pressure gas liquefaction in exports, specialized shipping transport, finally, subsequent re-gasification. Each element of this process is related to a significant loss of energy and carbon emissions. The analysis shows that the pipeline from the Murmansk region, where the Shtokman gas goes to the land, will lead to fewer energy losses and reduced emissions of carbon dioxide compared to the transport of liquefied natural gas to the northern coast of Germany. The same advantages, compared to transportation of LNG, are also true with regard to offshore pipelines leading to the north of Germany from Vyborg on the Baltic coast of Russia. To fulfill the volume, planned for the Nord Stream gas pipeline, it will take about 600-700 LNG tanker shipping through the Baltic Sea in a year, accompanied by high levels of noise and other difficulties that seriously affect the environment of the Baltic Sea, without mentioning the additional carbon emissions²⁴⁶. In addition, in the statement of the European Commission in 2007 related to the priority projects of TEN-E, at least in the planning stage, it was noted that “the construction of various LNG terminals were accompanied by significant delays²⁴⁷”. This statement clarifies the difficulties of creating additional LNG terminals that have not even been planned.

²⁴⁵ Ibid.

²⁴⁶ Ibid.

²⁴⁷ The European Commission, *Statement by the Commission of the European Council and the European Parliament: Priority Interconnection Plan*, 2007, p. 11.

- **Renewable energy.** By 2025, in the European Union, it is expected that the share of renewable energy in the European scale will be 11% of the overall structure of the primary sources²⁴⁸. From an environmental point of view, the use of renewable energy sources is the preferred option. However, projects to develop renewable energy sources can not meet the basic objectives of development, and their share in the energy mix is still too small. To replace the power of 55 Bcm of gas, supplied through the Nord Stream pipeline, it would be necessary to build 240,000 windmills or use about 90.000 – 100.000 km² of the cornfield for bio-ethanol production²⁴⁹. Therefore, renewable energy systems will not be considered as an alternative to the project.

- **Fossil fuels.** Natural gas provides 30 – 50 percent less pollution and greenhouse gas emissions compared to other fossil fuels such as coal and oil as it contains a higher ratio of hydrogen and carbon and cleaner combustion process. Thus, gas has less impact on the environment than other fossil fuels. To satisfy energy needs in the case of renunciation of the Nord Stream project through other fossil fuels would require building 55 additional coal-fired plants or building 150 oil tankers passing the Baltic Sea every year. A further increase in demand for natural gas is particularly evident according to the decision of the European Council in March 2007 to reduce greenhouse gas emissions by 20% to 2020²⁵⁰. Projects with fossil fuels have a more negative impact on the environment compared to the Nord Stream project. Therefore, they will not be considered as an alternative project.

- **Nuclear energy.** Use of nuclear energy as an alternative to natural gas can be considered as an option if in the long run, the demand exceeds the supply of natural gas through the existing infrastructure. Meeting energy needs in the case of rejection of the Nord Stream project in exchange for nuclear energy would require building 23 new nuclear power stations²⁵¹. Since the process of nuclear plant building is long, the decision to resolve shortfall of imports in 2025 with the help of nuclear energy is highly unrealistic.

Moreover, nuclear energy has a number of shortcomings in terms of impact on the environment. On the one hand, nuclear power has a positive effect on CO₂ emissions. On the other hand, there is still uncertainty as to the long-term effects²⁵². Nuclear energy has a more negative impact on the environment compared to the Nord Stream project. Moreover, it should be noted that, under the public pressure, the future use of nuclear energy is largely questioned in

²⁴⁸ The Commission of the European Union, *European energy and transport. Trends to 2030*. Updated in 2007, p. 96.

²⁴⁹ Ibid.

²⁵⁰ ETAP, *Nanotechnology brings new Solutions for Carbon Capture* http://ec.europa.eu/environment/etap/agenda_en.htm#4 (October 19, 2007).

²⁵¹ The Commission of the European Union, *European energy and transport. Trends to 2030*. Updated in 2007, p. 99.

²⁵² For example, uranium production, safety and nuclear waste issues.

many countries of the European Union. For example, Germany has pledged not to build any new nuclear power stations and gradually replace the existing nuclear power plants with other energy sources. Therefore, nuclear energy systems will not be considered as an alternative to the project.

Thus, according to the Espoo Report, the Nord Stream project provides less carbon emissions than LNG transportation and onshore lines. LNG transportation is the most environmentally damaging way to transport natural gas. Offshore gas pipeline transportation is one of the most effective ways of transportation of energy resources. In this context, the environmental impact on flora and fauna should oppose the environmental impact of the results of the natural gas use instead of other fossil fuels. Given that the construction of the offshore pipeline through the Baltic Sea is the most environmentally beneficial way to increase the supply of natural gas to the EU, as well as taking into account the fact that the rejection of the import increase is not considered as an option, it can be concluded that, apart from renewable energy sources, any other alternative projects to supply the EU with the necessary sources of energy will cause more damage to the environment.

Summarizing the described above, it can be concluded that the rejection of the Nord Stream pipeline project with a capacity of 55 Bcm a year that meets more than 25% of the additional needs of the EU gas imports, cannot be adopted without the risk of a serious threat to the stability of the EU energy supply. The Nord Stream pipeline system is an integral part of the priority projects of TEN-E, which are aimed at ensuring the gas supply to the EU. The main will link the EU with the largest of the world's known reserves of natural gas. Offshore pipeline of the Nord Stream is the most environmentally friendly way to transport natural gas to the EU. Compared with other projects in the EU gas transportation, the Nord Stream is at a very advanced stage of technical design and planning. It can be completed and put into operation at the right time, to help meet the growing demand for gas in the EU. Thus, the Nord Stream pipeline is essential to satisfy the demand for gas in the EU because, in a few years, the demand is predicted to increase.

CONCLUSION

Russia, as the largest producer and exporter of natural gas in the world, is particularly interested in the balanced development of the domestic and foreign market, which is essential to attract the necessary investment for the gas projects, sustainable operation and development of the gas industry and ensure the stable development of the economy, as well as a high degree of energy security.

Russia's energy security risks should be considered in the first place, in the development of export strategy of Russia. Export of natural gas aims at ensuring stable functioning and development of the gas industry. Export revenues are a significant source of the budget of the country and address the critical problems of the gas industry. These challenges include funding for key gas projects, the development of mineral resources, the creation of gas production, gas transportation and gas processing facilities, the solution of social gasification programs of Russian regions, the development of related sectors of the economy as a whole, and etc.

The main export destination is a natural gas market of European countries, which has traditionally played a crucial role in the export policies of Russia due to the dominant position of the Russian gas in historically established political-economic relations.

This research reports on a study of Gazprom's position on the domestic and European natural gas markets relative to the Russia's gas export policy and the behavior of the export market, with an emphasis on European areas of cooperation, in a geopolitical context. For the gas sector of Russia, gas infrastructures such as LNG trains and pipelines act as options in obtaining, maintaining or expanding access to new markets or strengthening its positions in existing ones. The planned and proposed export investment strategy of the government-controlled company Gazprom was assessed by economic-strategic theoretical approaches. The political and strategic implications of Gazprom's strategies and solutions are required to have a long-lasting impact on the energy balance in Europe in general and its gas balance in particular. Additionally, the Russian gas export position in Europe has both geo-economic and geopolitical consequences.

The research purpose of this study has been determined as: "To identify, estimate and extrapolate the Gazprom's strategy considering the Russia's domestic natural gas market, Russia's gas exports and export market behavior, with a focus on the Western European market during the 1990s and early 2000s." From this research objective, six research questions have been derived. Conclusion aims to give answers to them.

Chapter 1 helped understand the first research question: “What are the different institutional and theoretical aspects and appropriate valuation tools in relation to the natural gas market development?”

The main models of the natural gas market development are the evolutionary 4-stages model and the dynamic market theory's one. The evolutionary model includes four stages of the market development: initiation - growth – development – competition. It is elaborated by the Norwegian scientists as J. Estrada, A Moe, K.D. Martinsen, the Americans P.W. MacAvoy, A. Juris and Russians A. Konopljanik, V. Kriukov. According to this model, the progressive development of the gas industry organization proceeds from the less advanced forms, as a monopoly, to the more advanced ones, as competitive forms, by increasing the multiplicity of suppliers, customers and delivery routes.

As the evolutionary model, the dynamic market theory based on the De Jong studies consists of four phases: embryonic phase – expansion – maturity – decline. The essence of the dynamic market theory is based on the relationship between the product life cycle and the paradigm of structure-behavior-result: Firms behave as a function of the market structure, and to a certain extent, markets are influenced by an individual firm behavior. In other words, the paradigm emphasizes that the conditions of supply and demand in a particular industry define its market structure. Just as in many industries, gas companies must develop strategies in anticipation of market developments that are dynamic. Because of the complexity of the interregional gas market, primarily, it can be focused on Cournot-type quantity competition, where suppliers are assumed to compete in quantity or gas volume rather than in gas prices. De Jong recognizes the possibility that companies with market power can affect on market conditions as do the various market development phases. Depending on the phase of the market the export companies operate in, they are likely to interact in different ways by competing or colluding. However, in the long run it can be argued that a national gas company seeks to maximize the aggregated export value of gas available for its export markets, in particular when domestic prices are not competitive with export ones.

Chapters 2 and 3 helped understand the second research question: “What is the historical and institutional background with respect to European and Russian natural gas market development?”

During the 1990s, many European countries, the main consumers of natural gas reformed their gas industry. The general trend was the liberalization of the gas market, aimed at the creation of competition for the various types of activities. In many countries, the monopolistic vertically integrated companies under the government's pressure were divided legally into

separate entities. There was a separation of potentially competitive activities from the others within the scope of natural monopolies.

As a part of a widespread, “four-stage model” of evolution and development of gas markets, which became the ideological foundations of liberalization, the presence of a ramified configuration of gas transportation network, advanced information and control systems at all stages of the gas chain is the objective conditions for the transition to a competitive organization of the gas market. The transition from markets of national monopolies to internal common market radically changed the situation for participants in the gas business, threatening the market share of traditional suppliers. The pace of the market opening was reduced by its restrictions such as obligations under existing contracts, including demand side. In addition, the positions of traditional main gas suppliers were supported by solid marketing means, and a limited amount of “new” gas. Under the optimistic scenario, the dynamic nature of the EU gas market, a new energy policy and environmental protection, the connection of gas networks and completion of the internal competitive gas market, all these parameters could lead to a growth in gas demand, which would be compensated the “old” suppliers to reduce their market share.

During the 1990s, the Russian gas market did not have a developed market infrastructure and competitive environment. Its characteristic feature is an extremely high degree of government regulation. The peculiarity of the Russian gas industry functioning was also the fact that many of the state control functions were run by the largest company-monopolist: Gazprom, which, according to the independent producers' view, was abnormal because it reinforced the dominance of this company and led to numerous distortions and reductions of the economic efficiency of the gas industry as a whole. In the period of the 1990s, there were no long-term relations on gas supply in the domestic market and because of the marketing policy of Gazprom that preferred contracts with validity of one year. The short-term contracts were used to manage the permanently changing situation on the domestic market with its non-payments. Meanwhile, the long-term gas supply contracts could be a potential tool to create guarantees for investment projects on construction of gas consuming industries. In fact, they were necessary as for gas producers, to invest in the development of new gas fields, as for everyone who was interested in forming long-term guaranteed market for the goods. Gazprom considered necessary to conclude the long-term contracts with the importing countries because the domestic market could not guarantee the same investments that foreign did. Thus, by using the short-term contracts, the company was able to change its policy on the domestic market.

Chapters 4, 5 and 6 helped understand the third research question: “What is the role of Gazprom on the domestic natural gas market?”

The major part of the Russian gas industry was concentrated in Gazprom, which owned nearly all natural gas pipelines and 94% of production. During the economic crisis, the maintenance of the gas industry within one vertically integrated structure provided stability and security of gas supply. For the same reason, Gazprom fell under the definition of a “natural monopoly”, and; therefore, the price of gas should be directly regulated by the state. This regulation was contained in the Federal Law “On natural monopolies”.

Russia was characterized by a particularly large share of gas in total energy balance, which had no analogue in the world. An important external factor in the development of the gas industry was its organizational structure, formed by the state and its regulatory system. The methods and severity of the state regulation of the gas industry, as well as means, rate and efficiency of the industry development depended on if the existing organization with the leading role of a monopolistic Gazprom was maintained or if repeatedly proposed the idea of planting of the intra-industry competition prevailed. This especially affected the efficiency and sustainability of Gazprom.

The relationship between Gazprom and the government was quite complicated and had changed over time. During the 1990s, Gazprom functioned as “a state within a state” and operated mainly in the interest of its management. The government was in general, tolerant to Gazprom because the company supplied gas at extraordinary low prices to Russian consumers, and often without any payment at all.

According to R. Viakhirev, the Russian government had taken a position against the European Energy Charter and its Transit Protocol because it would reduce Gazprom's monopoly power. The export monopoly benefited the state by ensuring the Kremlin's control over what became the most powerful tool of Russian foreign-policy.

The development of state regulation instruments lagged behind the dynamic growth of economic and administrative relations between the players in the field of natural gas production, transportation and sales. In particular, the effective regulatory framework was unable to ensure the right of independent gas producers to have fair access to facilities of the national gas transportation system.

Independent producers owned approximately 30% of licenses for the development of gas reserves and had the right to sell it at free market prices, but their share in the total production and supply of gas to the market was a little over 12 %. At a time when the most part of gas was sold to consumers in the regulated sector of the natural gas market, the possibility of using this right for independent producers was limited. The availability of free capacities in the gas transportation system was determined by Gazprom. The liability of the company, as owner of the Unified Gas Supply System, for a failure to grant access or failure to grant temporary access to

the gas transportation system when free capacities were available, was not defined. All this made users of this system dependent on its owner.

Chapter 7 helped understand the fourth research question: “What is the European export policy of Russia and Gazprom?”

The increase of energy exports was the fundamental means in the reconstruction and recovery of the Russian economy, due to the Energy Strategy of Russia. In the global energy markets, the Russian presence would be increasingly connected to natural gas, in terms of the dramatic decline and the further expected reduction in the total exports of oil products, the practical cessation of coal export and uncertain prospects for export of electric energy. For this reason, the policy of natural gas export was seen as the most significant strategic task of the Russian economy and the subject of the Gazprom's commercial interests.

The analysis of the domestic and foreign potential markets for Russian gas and resource capabilities showed that Gazprom was able to provide any options for natural gas export to Europe.

The described in Chapter 7 scenarios included a number of fundamental principles for the Russian policy on gas exports, among which there were long-term “take-or-pay” contracts, one-channel of gas export to European countries, setting gas prices dependent of the market value of petroleum products, monopoly on gas purchase from Central Asian countries, investments in the development of new deposits and diversification of transportation routes and others.

As it was examined, Gazprom also sought for new forms of cooperation with the European countries conducting joint gas-electric and gas-chemical projects, creating trading houses. The company continued to look for new contracts and new forms of participation to the reconstruction of old pipelines and construction of new ones and other facilities outside of Russia. The company aimed to become one of the shareholders and investors of non-energy structures.

Gazprom used the strategy of integration into the European gas market, with direct access to the gas distribution in Europe. This strategy provided for the delivery of Russian gas via specially formed businesses and joint stock enterprises with national basic companies, for example, the creation a public limited company and trading house WINGAS and WIEH. Similar business corporations were established in Austria, Finland, France, Greece, Hungary, Italy, and other countries. Another issue of the export strategy of Gazprom was participation in joint gas and energy projects involving the construction, operation and ownership of power plants operating on gas, for example, the creation of Volta S.p.A. for supplying power plants of the Italian companies Enel and Edison.

Chapter 8 helped understand the fifth research question: “What is the role of Gazprom in the Russia-EU energy dialogue?”

The Russian gas export orientation towards Europe was the result of more than half a century of gas developments. The first Soviet gas exports materialized just after the Second World War to Poland followed in 1968 by Austria as the first market-oriented destination in Europe. The Soviet westward gas export campaign saw a substantial increase throughout the 1970s and 1980s, despite the U.S. protests against increased European gas imports from Russia during the period of the Cold War. Large-scale Soviet exports materialized throughout the 1970s and 1980s via so-called “gas-for-pipe” agreements. The West European gas contracts and the related financial and technological know-how that allowed the Soviet Union to free up deliveries to the Central and Eastern European countries within the Council for Mutual Economic Assistance for exports to the West, resulting in additional hard currency earnings. During the second half of the 1980s, the off-take of gas fell below expectations because of the economic recession and the rise of a buyer's market in Western Europe.

During the Soviet period, the government continued to control all natural gas production in the different Soviet republics. This made relatively easy the coordination of production in different gas fields in the Soviet republics and the construction of gas pipelines within the Soviet system. But with the construction of the Brotherhood pipelines through Ukraine from the late 1960s onwards, Russia's future export dependence on Ukraine was sealed.

The disintegration of the Soviet Union and its related institutions has changed the institutional structure of political and economic relations on the Eurasian continent, as well as the institutionalization of the value chain of gas. As a result of the economic reform process, Russia's gas sector was partially privatized, though not entirely broken-up. The government-controlled company Gazprom, which had become responsible for Russia's gas production, distribution and sales from 1989 onwards suffered from the Russian economic difficulties in the form of reduced gas sales and non-payments.

Furthermore, Gazprom's loss of control over Ukrainian transit routes to Europe, which at that moment were responsible for almost all gas transit to Europe, had resulted in significant transit problems and risks. The decline in the economy as a result of the collapse of the Soviet system, a slow and complex transition to a market-economy and the rise in gas prices led to payment defaults and debt issues in Ukraine and other CIS countries. During the 1990s, intermediaries gradually became responsible for the part of gas exports, using complex barter agreements. Gazprom's management allowed these transactions because they had personal interests, which postponed the transition to a normal, commercial relationship between Ukraine and Russia. Gazprom tried to heighten its control and ownership over existing and new transit

routes through Ukraine, without any success due to political obstacles. In Belarus, Gazprom has been more successful in gaining some control, mainly due to indebtedness of Belarus and its relative political isolation that exposed its strategic-economic interests to the increasing market leverage of Russia.

Development of the energy partnership between the EU and Russia in the energy dialogue format was the most crucial part of cooperation. The dialogue aimed at creating appropriate guarantees and mechanisms to ensure the economic and energy security of Europe and Russia. For Russia, the energy dialogue with Europe was a way to attract investments for increasing gas export, renewal and modernization of the energy infrastructure, creating favorable conditions for the economic transition to an innovative model of development. It helped to reduce market distortions and remove barriers to competition in the energy, create positive conditions for the restructuring of natural energy monopolies. For the EU, the energy dialogue was an access to Russian energy resources, especially oil and gas. It created the conditions for the diversification of energy imports and increasing the EU energy security.

Both Russia and Europe attempted to obtain or regain the lost control over the value chain. In 1991, Europe made a proposal, to create a European Energy Community. This led to the Energy Charter Treaty, which aimed to coordinate energy flows from East to West. Under the influence from the U.S., in particular, the geographical scope was later extended. Five countries have refused to ratify the Charter, including Russia, Norway and Belarus. In particular, the Charter's Transit Protocol was a stumbling block because providing free access to third parties, as set in the Protocol, would bring about gas producing countries to lose control over the flows of gas. At the beginning, there were attempts forcing Russia to ratify the Energy Charter, and later, the PSAs via the energy dialogue. Nevertheless, Russia chose its own approach, to control the export routes, gas flows and access to the market, and as such remained outside of the EU policies' scope.

Chapter 9 helped us understand the sixth research question: “How can it be evaluated and extrapolated the Gazprom's export policy with respect to Russia-EU energy dialogue, based on the case of the Nord Stream pipeline project?”

The cooperation in the gas field, based on mutual interest, exists between the EU and Russia more than thirty five years. The European companies buy about 80% of Russia's natural gas exports. Russian stocks also have significant importance for the future energy security of the EU. The oil and gas industry is one of the key sectors of Russian economy, which accounts for two-thirds of export earnings. The revenues from gas exports are crucial for the Russian state budget. The European Commission stresses the obvious interdependence between the EU and

Russia in terms of energy partnership and benefits for Russia, gaining access to the natural gas market of the EU.

Besides Gazprom's market growth opportunities in volume terms, the company focused on new investments in alternative transport routes (i.e. capacity) to Europe in order to mitigate transit risks, especially via Ukraine and Belarus. The diversification of pipeline routes for additional supplies and the possibility to reroute existing flows, despite the high costs, create additional strategic value, including improving Russia's security of demand. In the midstream, from a practical point of view, the Nord Stream pipeline seemed to have relatively more strategic value, because of its proprietary status and, therefore, its strategic value is not undermined by third-party regulation. In addition, Gazprom had secured a part of the Nord Stream's capacity through long-term contracts.

Therefore to pursue the research objective, it can be concluded that energy provides Russia with a crucial role in international affairs, where especially gas may be regarded as a potential tool to resurrect some of its geo-strategic position. As it was analyzed, during the 1990s and early 2000s, Gazprom played a crucial role for development of Russian economy in general and gas industry in particular. The company occupied the leading position in gas supply to Europe favoring the relationship between Russia and the EU. The study showed Gazprom's position on the domestic and European markets, and it opens different interesting issues for further investigations.

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