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Gazprom's transformation into a globally integrated enterprise: a diversified strategy towards Europe and Asia

La transformación de Gazprom en una compañía global verticalmente integrada. Análisis de su estrategia de diversificación hacia Europa y Asia

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ABSTRACT:

Gazprom is the largest gas company in the world and leading supplier of natural gas to the European Union. The article analyzes the various channels through which this state-owned company is becoming a vertically integrated global company: a) upstream: undertaking new production projects, b) middle-stream: diversifying pipeline and LNG routes towards Europe and Asia, and c) downstream: entering into the European gas market building a wide network of subsidiaries, joint ventures, and alliances with European firms. Analysis shows that following this strategy Gazprom has become a leading company in Europe, which offers the company a new ruling role in a liberalized but oligopolistic market. However, the expansion to East Asia is still full of uncertainties.

Key words: Energy, Gas markets, Gazprom, EU, East Asia.

JEL: F10, Q41, Q47, Q48, O52, O53.

RESUMEN:

Gazprom es la compañía de gas más grande del mundo y principal suministradora de gas natural a la Unión Europea. El artículo analiza los distintos canales a través de los cuales esta empresa estatal se ha convertido en una compañía global verticalmente integrada: a) upstream: desarrollando nuevos proyectos de producción, b) middle-stream: diversificando sus rutas de transporte hacia Europa y Asia, y c) downstream: penetrando en el mercado europeo mediante la creación de una amplia red de filiales, joint ventures, y

alianzas con empresas europeas. El análisis muestra que esta estrategia ha convertido a Gazprom en una empresa líder en Europa, que le otorga un nuevo papel “regulador” en un mercado liberalizado pero de naturaleza oligopólica. Sin embargo, su expansión hacia Asia oriental está todavía llena de demasiadas incertidumbres.

Palabras clave: Energía, Mercado de gas, Gazprom, Unión Europea, Asia oriental.

GAZPROM'S TRANSFORMATION INTO A GLOBALLY INTEGRATED ENTERPRISE: A DIVERSIFIED STRATEGY TOWARDS EUROPE AND ASIA

Rafael Fernández

1. Introduction

The strong growth of the Russian economy during the 2000-08 period was closely related to the dramatic rise in international energy prices. At the same time, this economic emergence and rising oil prices facilitated the development of a policy very much orientated toward increasing State intervention in strategic sectors of the economy, especially the energy sector. This increasing State control over operation of the energy sector has helped to modify institutional mechanisms for accessing and redistributing energy income, as well as to refocus the strategies of Russian oil and gas companies, in terms of both investment policies and export projection.

In the gas sector, top management at Gazprom was changed in 2001, the Russian state having recovered 51% ownership of the company. Since then, the gas monopoly has had to reconcile business performance criteria with the economic and geopolitical guidelines of the Russian government. Under this new institutional framework, the tandem organism formed by Gazprom and the Russian government extended its influence to oil and electricity, as well as to other economic sectors; above all, it has assumed a leading role in all major gas investment projects, defining a very ambitious foreign strategy which aims to transform the state-owned Russian company into a globally integrated energy enterprise (Liuhto, 2010).

The article analyzes this strategy which looks simultaneously towards Western and Eastern markets. The strategy has three different levels of action: a) upstream: undertaking new production projects, b) middle-stream: diversifying pipeline and LNG routes towards Europe and Asia, and c) downstream: entering into the European gas market building a wide network of subsidiaries, joint ventures, and alliances with European firms. Analysis shows that following this strategy Gazprom has become a leading company in Europe, which offers the company a new ruling role in a liberalized but oligopolistic market. However, the expansion to East Asia is still full of uncertainties.

The structure of this article is as follows. First, it describes the current situation of the Russian gas industry. Second, it analyzes the characteristics and objectives of Russian export strategy. Third, analysis is made of specific goals and achievements in Europe. Fourth, it analyzes the objectives and projections proposed to gain a foothold in Asian markets, questioning the viability of these plans. The final section summarizes our conclusions.

2. Current situation of the Russian gas industry

The basic features that define the current situation of the Russian gas industry can be summarized as follows:

a) Over the past decade, gas production followed an upward dynamic that was cut short by the crisis of 2009. In 2008, output recorded 664 billion cubic meters (bcm), of which 550 bcm were extracted by the state-owned Gazprom, 57 bcm by oil companies, 49 bcm by Novatek and other independent gas companies, and 8 bcm by the Production Sharing Agreement (PSA) known as Sakhalin-1, led by the American company ExxonMobil¹.

b) These data indicate Gazprom's dominant role in the gas sector, although other companies are expected to obtain a growing share of output. The state company, apart from providing 82% of production, holds 60% of national gas reserves, owns all transmission and distribution networks, and enjoys export monopoly².

c) The origin of almost all domestic production is the region of Nadym-Pur-Taz, located in Western Siberia, whose large fields were opened in the Soviet era; most of these have already exceeded peak production. Gazprom exercises complete control over production and reserves in this region, and it is thus the company most affected by the fields' gradual decline. Other regions in Western Siberia and around the Caspian and Sakhalin islands provide the rest of Russian production. Regions in Eastern Siberia, the Far East, and along the Arctic coast have abundant reserves but remain untapped.

d) Domestic gas consumption also rose from 2001, peaking in 2008 at 457 bcm, of which 64% went to heat and power industries and 36% to different final consumption. This very high level of consumption is due to low-efficiency use of energy, low domestic gas prices, and the high degree of gasification of the Former Soviet Union economies. As a result of these factors, gas represents 53 to 54% of the primary energy demand structure.

e) Domestic gas consumption absorbs 70% of production, but this does not prevent Russia from being the world's leading exporter. Excluding sales to the Commonwealth of Independent States (CIS), Russia controls one fifth of global trade in natural gas. Exports are directed almost entirely to Europe, which in

¹ Data are drawn from Energy Intelligence [11, 16] whose information comes from Gazprom and the Ministry of Energy. These data show some differences from those offered by BP [7], mainly due to the distortions introduced by the computation of Russian imports from Central Asia.

² The Russian state owns 51% of Gazprom. The company also extends its influence to oil and electricity, as well as to other economic sectors such as metallurgy, chemistry, finance, and the media. Since top management was changed in 2001, company management is more professionalized, trying to reconcile business criteria performance with the economic and geopolitical guidelines of the Russian government. Under this new institutional framework, Gazprom has assumed a leading role in all major gas investment projects. See Locatelli [31, 32].

2008 received more than 180 bcm, 150 bcm of which went to the European Union (EU) and the rest to non-EU countries, mainly to Turkey³. That same year, 7 bcm were sold to Asia for first time, and that figure rose to 15-16 bcm in 2009.

f) Supplies to CIS countries are around 80-90 bcm, though part of this trade is fueled by imports from Central Asia, which in 2008 were more than 60 bcm. Russian imports come mainly from Turkmenistan and are supplemented by small amounts from Uzbekistan and Kazakhstan. During the past decade, trade relations with Turkmenistan have consisted of a series of agreements and disagreements motivated by price differences between intra-CIS markets and international markets. High growth of both Russian and European demand forced Gazprom in 2007 to accept a sharp increase in the purchasing price, in exchange for stabilizing Turkmen supplies at around 60-70 bcm⁴.

g) The gap between international, domestic, and CIS prices underscores the strategic role of foreign demand, which represents less than a third of Gazprom's sales but generates 60% of the company's earnings⁵. Conversely, 57% of Gazprom's sales go to the Russian market, yielding only 25% of earnings, and only since 2005 has the domestic market begun to offer small profit margins. Under these conditions, the raising of the price paid by CIS countries (where Gazprom sells 14% of output) toward international price levels means an additional source of earnings for the company [18].

h) However, the equalization of both prices will be difficult to enforce while 75% of gas sold to Europe moves through Ukrainian territory⁶. Currently, only Goluvoi Potok (Blue Stream), which crosses the Black Sea from north to south towards Turkey, and the Yamal-Europe (Northern Light), which allows entry into the EU via Belarus, manage to partially overcome this transit dependence on Ukraine. In the next decade, other ongoing projects will serve to very significantly reduce gas flow through the center of the European continent. The development of these new routes piques the interest of European importers, who have repeatedly suffered the consequences of the conflict between Russia

³ The export data come from Gazprom [18]: 180 bcm to Europe and 80-90 bcm to the CIS countries, assisted by 63 bcm of imports from Central Asia. BP Statistics (2009) do not include intra-CIS trade and report 154 bcm of exports in 2008, of which 125 bcm went to the EU. According to BP statistics, the main consumers of Russian gas are Germany (36 bcm), Italy (24 bcm), and Turkey (23 bcm). Taking data from Gazprom, the other two major importers of Russian gas are Ukraine (56 bcm) and Belarus (21 bcm).

⁴ See Stern [46] and Pirani [42] for further information about gas relations between Russia and Central Asia.

⁵ During the last decade, international price has been about five times the domestic, and CIS price has been no more than twice the domestic price. Price reform aims to equalize prices in 2014-15 implementing a netback formula. However, as far as there is a high gross export tax, domestic prices will remain far below real netback.

⁶ The factors involved in the Russian-Ukrainian conflict are analyzed in Stern [48, 50].

and Ukraine⁷. For the EU, security of Russian supply is essential, covering a quarter of EU gas consumption. Russian sales represent 36% of EU gas imports, and this rises to 45% when only extra-EU trade is considered. This dependence is considerably stronger for Central European countries⁸.

i) In recent years, some European politicians and specialists have questioned the safety of Russian supplies, not only due to the Russian-Ukrainian conflict, but also for two related reasons: they believe European dependence on Russian gas to be excessive, and they consider that it will be increasingly difficult for Russian industry to increase gas exports. Thus do some authors argue that export stagnation, coupled with rapidly rising European demand, are putting at risk Russian compliance in supply contracts signed with European countries [34].

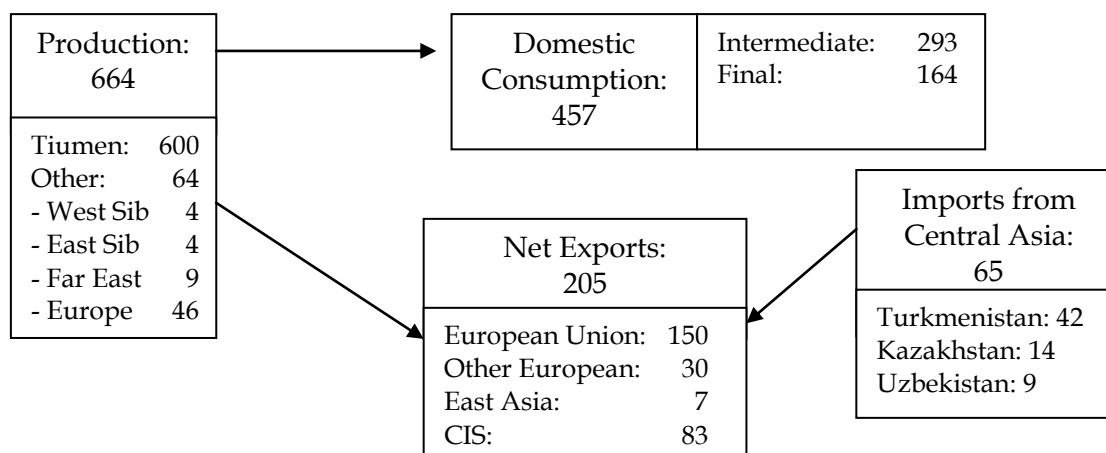
j) Paradoxically, this situation reversed completely in 2009. The fall in European demand caused a 24% decline in purchases from Russia, which responded with a flexible interpretation of take-or-pay contracts. This decline in external demand, coupled with the fall in domestic demand by 12% in 2008-09, has rolled back production figures to 2001 levels (582 bcm). Gazprom has made an even more intense adjustment, with a cut of 16%, reducing output to 462 bcm compared with 550 bcm in 2008. The decline among independent companies has been less pronounced: 5.8% for Novatek and 2.2% for oil companies. Only Sakhalin, whose production is geared to the Asian market, has weathered the impasse well, with increased gas drilling from 8 to 18 bcm in 2009, thanks to the launching of Sakhalin-2 [16].

k) Demand collapse in Russia and Europe has led to a further disruption of imports from Turkmenistan, endangering the normalization of relations achieved in 2007. The cut in gas supplies came in April, with safety reasons cited following a fire in one of the pipelines. As a result, acquisitions in the region in 2009 decreased from 63 to just 30 bcm. In December 2009, Russia and Turkmenistan have reached a new agreement for trading 30 bcm annually over the next three years [13].

⁷ The consequences for the European economies of the Russian-Ukrainian conflict are studied in Kovacevic [29]. Biglin [3] analyses the geopolitics of gas supply routes to Europe from Russia, Caspian and the Middle East.

⁸ The share of Russian gas imports is particularly high in countries of Eastern and Central Europe: Finland (100%), Lithuania (100%), Slovakia (100%), Bulgaria (100%), Serbia (100%), Greece (87%), Croatia (82%), Romania (78%), Czech Republic (77%), Hungary (77%), Poland (74%), and Austria (72%). Own data, made from BP [7].

Figure 1. Russian gas production, consumption, and export in 2008 (bcm)



Source: Own design.

3. Russia's gas export strategy

3.1. Growth and diversification to Europe and Asia

Russian exports, which account for more than a fifth of world trade in natural gas, are directed almost entirely to Europe. Excluding CIS countries, the continent in 2008 received over 150 bcm, of which 125 bcm went to the European Union (EU). These sales represent less than one third of Gazprom's supply, which is intended mainly for domestic consumption, but generate 60% of the revenues of the state company. This imbalance is explained by the differential between domestic and foreign prices⁹, with gas sold by Gazprom in Russia hardly contributing 25% of the company's turnover (Poussenkova, 2009). These data combine with other factors of a geo-strategic nature to show the importance of both Gazprom and the Russian government to overall gas relations with the European Union (Closson, 2009).

At the same time, the medium-term aim of Russian policy is to combine its leading position in Europe with a growing presence in East Asia. From the Asian point of view, Russian reserves could guarantee a substantial portion of their necessary external gas supply. Gas imports to Japan and South Korea continue to grow, and China is forecast to rapidly increase its gas consumption, which remains minimal in relative terms (APEREC, 2010). From the Russian perspective, gas trade with East Asia offers several advantages.

⁹ During the last decade, the international price has been about five times the domestic, while the CIS price has been no more than twice the domestic price (Energy Intelligence, 2008).

First, the potential size of gas demand from these countries opens an excellent opportunity for Russia to profitably develop gas drilling of abundant untapped reserves in Eastern Siberia and the Far East. Second, the development of trade relations with the Asia-Pacific region would allow part of eastern gas production to flow to domestic consumption. Third, it would help to reduce the absolute dominance of European trade, affording greater guarantees amid the uncertainty surrounding EU liberalization and the quest by some EU countries for new supply options. Fourth, it would strengthen Russia's position in the changing international gas market, where geographical barriers are beginning to dissolve as new scenarios, players, and exchange mechanisms emerge (Perovic, 2009).

Moreover, increase in and diversification of gas exports would give Russia a better strategic position in international economic and political relations. Gas sales could strengthen other types of trade and investment deals with countries that are gaining increasing significance in the world economy: China, Japan and Korea, and perhaps others in South Asia, such as India or Pakistan. This would have not only economic but geopolitical importance, because Asian alliances would strengthen Russian's position in international arena (Poussenkova, 2009).

The following section analyzes the main features of Russia's strategy for diversifying gas exports. Then, we analyze the specific goals both to Europe and Asia.

3.2. Objectives and projections

From 2000 to 2008, natural gas exports outside the CIS remained stable at around 180 bcm¹⁰. Sales in 2009 fell to 137 bcm, but the government expects exports to soon recover to normal levels and to maintain a moderate rate of increase over the coming decades. If these estimations are met, net gas exports sold abroad will increase by 40% in twenty years, from the 270 bcm exported in 2008 (including sales to the CIS) to 370 bcm in 2030. This projection means that exports should reach 290 bcm by 2015, and 340 bcm in 2020 (Interfax, 2009a)¹¹.

¹⁰ Gazprom's export data in 2008 were: 180 bcm to Europe and 80-90 bcm to the CIS countries, assisted by 63 bcm of imports from Central Asia. BP Statistics (2009) did not include intra-CIS trade and reported 185 bcm of exports in 2008. Discounting variations in stocks at storage facilities and liquefaction plants, BP reported exports of 154 bcm, of which 125 bcm went to the EU. BP Statistics (2010) include exports to CIS and report 176 bcm, of which 111 to UE.

¹¹ Recently, Gromov (2009, 2010) has lowered this amount to 300 bcm, as previous projections had not taken into account the dramatic fall in demand recorded in 2009. For the same reason, EIA (2010) has recently projected an average annual percent change of 1.6% from 2007 to 2035 of 1.6%, being Russian net natural gas trade of 315-325 bcm in 2030.

The fulfillment of this goal of moderate growth in exports is itself subject to the achievement of the following four objectives.

3.2.1. Increasing productive capacity

Russian natural gas production in 2008 reached a record high of 664 bcm, making Russia the largest natural gas producer worldwide, with a market share above 20%. However, the decline of major fields in Western Siberia, where more than 90% of Russian gas is currently extracted, demands the opening of new fields to compensate for depletion of these old Soviet fields¹². Thus, since mid-decade, the authorities in collaboration with the state-owned Gazprom have defined a roadmap for the rapid expansion of national productive capacity.

The expansion of productive capacity is to be implemented by creating a new and more diversified gas map. The main operating regions in this map would be (see Table 1):

- The Nadym basin in Western Siberia, which (resulting from a reduction to about half its current output) would provide little more than one third of domestic production. However, despite this decline, the region will remain the main centre for global gas production in 2030.
- The Arctic coast, where fields (Yamal, Kara Sea, and Ob-Taz bay) are still untapped, would provide 40% of output by 2030. This production would be complemented by the offshore Shtokman field (located in the Barents Sea, 370 miles from Russian borders with Finland and Norway), whose contribution is expected to reach 7.5 -8%.
- Eastern Siberia, the Far East, and Sakhalin would provide 15% of production, divided between four major areas: Krasnoyarsk, Irkutsk, Sakha-Yakutia, and Sakhalin¹³.
- Gas output would be complemented by a smaller proportion (2%) coming from the Caspian region

Thus, the Russian strategy is based on the simultaneous development of northern and eastern areas, most of which still remain untapped, to offset the decline of traditional basins. Overall, new production regions which now provide 20 bcm would produce 350 bcm (of a total 820 bcm) in 2020, and 580 bcm (of

¹² During the peak years of demand growth in Europe, some European politicians and specialists have questioned Russia's reliability as gas supplier, not only due to the Russian-Ukrainian conflict, but also due to difficulties in increasing gas production, in view of the lack of investment and the depletion of major fields in Western Siberia (Milov, 2006). On the other hand, other authors have raised doubts about this common concern (Stern, 2009).

¹³ Proven reserves of the Kovytka field in Irkutsk (1.9 tcm) and Chayandinskoye in Sakha (1.2 tcm) are the largest. Krasnoyarsk reserves seem lower (0.5 tcm), although the region is little explored. Sakhalin-1 has recoverable reserves of 0.5 tcm and Sakhalin-2 has 0.7 tcm (Stern, 2008).

915 bcm) in 2030. In the case of the Eastern areas, which in 2008 pumped just 11 bcm, production would rise to 50 bcm in 2015, to 105 bcm by 2020, and to 140 bcm by 2030.

According to these forecasts, the exportable surplus would increase moderately over the coming decades. The increase would be minimal in the early years and grow at a faster rate between 2015 and 2030, so that the average annual rate over the whole period (2008-30) would range between 1.38% and 1.69%, resulting in an export increase of about 85 bcm, from 205 bcm in 2008 to 290 bcm in 2030.

Additionally, the ministerial strategy takes for granted that this increase will be supplemented by imports from Central Asia. In fact, foreign sales growth until 2015 is almost entirely entrusted to the annual purchase of 70 bcm from Central Asia. From this date, the differential between production and domestic consumption would sustain the increase in exports, and flows from Central Asia would act as a reinforcement to meet external demand growth, if required.

Table 1. Official forecast of production by region (bcm)

	2008	2013-15	2020-22	2030
Total gas output	664	685 - 745	803 - 837	885 - 940
Western Siberia	604	586-599	589-592	612-642
Tyumen	600	580 - 592	584 - 586	608 - 637
Nadym-Purtazovsky	592	531 - 559	462 - 468	317 - 323
Obsko-Taz Bay	-	0 - 7	20 - 21	67 - 68
Bolshekhetskaya	8	9 - 10	24 - 25	30 - 32
Yamal	-	12 - 44	72 - 76	185 - 220
Tomsk	4	6 - 7	5 - 6	4 - 5
Europe	46	54 - 91	116 - 119	131 - 137
Caspian sea	-	8 - 20	20 - 22	21 - 22
Shtokman	-	0 - 23	50 - 51	69 - 71
Eastern Siberia	4	9 - 13	26 - 55	45 - 65
Far East	9	34 - 40	65 - 67	85 - 87
Sakhalin	7	31 - 36	36 - 37	50 - 51

Source: Interfax [23].

3.2.2. Domestic growth and CIS gas market

1) *Moderation of growth in domestic demand*: Russian domestic consumption of natural gas is very high¹⁴ and has continued to increase in recent years (2000-08) driven by intense economic growth, reaching in 2008 a record high of 457 bcm, which represents 70% of all national gas production.

This high level of domestic consumption limits the export capacity, and its moderation is therefore a main goal of the government's energy policy. This moderation can be achieved by a slowdown in economic growth and/or by other saving factors such as: a) progressive increase in domestic prices¹⁵, b) productive structural change, b) gas replacement by other energy sources, and, above all, c) improving energy efficiency through the replacement of heat and electricity generating plants, the modernization of industrial equipment and distribution networks, and adaptation of infrastructure in the residential sector (IEA, 2006).

2) *Supply agreements with Central Asia*: Russian imports from Central Asia in 2008 exceeded 60 bcm, which represents more than one fifth of Russian net exports. The government strategy gives assurance that, in future, these imports will continue to play a key role in increasing export supply. In fact, following the national energy strategy for 2030, the goal of export growth until 2015 relies almost entirely on the acquisition of 70 bcm annually from Central Asia. After 2015, the gap between output and domestic consumption is expected to be large enough to maintain the increase in exports, so that imports from Central Asia would be adjusted to meet the total requirements of external demand.

These imports from Central Asia come primarily from Turkmenistan, supplemented by small amounts of Uzbekistan and Kazakhstan¹⁶. During the last decade, trade relations with Turkmenistan have been conditioned by a series of agreements and disagreements motivated by the difference between international and intra-CIS prices.

The first conflict between both countries dates back to 1997, when Turkmenistan decided to stop its exports to Ukraine, suspecting that Itera, Russia's intermediate, was earning an extra profit by taking advantage of price differences between markets and by delaying payments to Turkmenistan on the grounds that Ukraine was not paying for its imports. It was then that Turkmenistan entered into negotiations to build a pipeline across the Caspian Sea, in order to export gas to Europe via Azerbaijan and Turkey, following a

¹⁴ Natural gas represents 53% of Russian primary energy demand, and Russia is the second gas consumer worldwide, with 14%.

¹⁵ Price reform aims to equalize prices in 2014-15 by implementing a netback formula. However, as long as the gross export tax remains high, domestic prices will remain far below real netback (Fjaertoft, 2009).

¹⁶ Gazprom's imports from Central Asia in 2008 were: Turkmenistan (42 bcm), Uzbekistan (14 bcm), and Kazakhstan (9 bcm). Source: www.gazprom.com.

route parallel to the Baku-Tbilisi-Ceyhan. However, disagreements with the Azeri government foiled the attempt. A few years later (2003), Russia and Turkmenistan reached a new agreement whereby Russia would buy 10 bcm to 80 bcm through five years, effectively closing the door to any supply alternative.

Despite this agreement, gas trade was cut off once again in 2005 due to the increasing gap between the CIS and international prices. However, two years later, supplies returned to normal after Gazprom agreed to raise the purchase price to \$100 per 1,000 cm, that price being adjustable to the evolution of the international price, meanwhile committing itself to construction of a new pipeline to Russia parallel to the eastern shore of the Caspian Sea. In return, Turkmenistan would increase its exports to Russia, reaching 70-80 bcm in 2009.

This trade agreement with Turkmenistan, along with supplies from Kazakhstan and Uzbekistan, allowed Russia to import 65 bcm of gas from Central Asia in 2008, rising to 100 bcm in the near future, if such an amount is required to feed growing demand in Russia, Europe, and Asia.

Simultaneously, the Russian agreement of 2007 with Turkmenistan had the virtue of letting Nabucco offside, just after the December 2006 launch of the BTE had fuelled European hopes for entering the Turkmen market without Russian intermediation. As a matter of fact, the Turkmen government never committed, despite feints, to supporting construction of a Trans-Caspian pipeline or to signing supply contracts with EU countries. Finally, the agreement signed with Russia in 2007 made these two proposals (both considered necessary to the original Nabucco project) appear highly unlikely.

In 2009, Russia again interrupted gas imports from Turkmenistan, but the battle over European competition was already won. Officially, the outage was blamed on a security problem arising from a fire in one of the main pipelines in March 2009, but in practice the interruption was due to the slump recorded by European and Russian demand throughout the previous year¹⁷. In December, a new agreement was finally reached: Turkmenistan would sell gas to Russia at 30 bcm per year until 2020, pending confirmation of a recovery in consumption (Energy Intelligence, 2009b). Very significantly, during those months of impasse, the temporary withdrawal of Russia did not give rise to new initiatives on the European side for securing a share of Turkmen supplies¹⁸.

3) *Redefinition of trade relations with importing countries of the CIS.* To achieve a steady increase in exportable supply, three objectives must be observed:

¹⁷ Russian imports from Central Asia dropped from 63 bcm in 2008 to 33 bcm in 2009, coming from Uzbekistan (12), Turkmenistan (11), and Kazakhstan (10), BP, 2010.

¹⁸ The most active agents have been Chinese and Korean companies, in addition to the U.S.'s Chevron and Exxon, but the Turkmen government has been reluctant to grant more facilities (Energy Intelligence, 2009c).

expansion of productive capacity, improvement in energy efficiency in the domestic market, and continued imports from Central Asia. However, achievement of these objectives may not be sufficient to increase exports to the EU, as sales to East Asia might absorb much of this increased export surplus¹⁹.

In such a case, export growth to the EU would also demand the phasing out of sales to importing CIS countries. Increasing trade disputes (most recently with Belarus), the imminent opening of new transport routes, and progressive reduction in the price gap²⁰ emerge as the three determining factors for achieving reduction in gas demand from these countries, and such a reduction could prove decisive for freeing up Russian gas, for sale in EU markets. It should be noted that in 2008, before the sharp 2009 drop in demand²¹, Ukraine and Belarus received 56 bcm and 21 bcm of Russian gas, respectively, accounting for 30% of Russian exports (www.gazprom.com).

4. Specific goals to Europe: transport routes, exchange mechanisms, and strategic alliances

Along with the broader objectives that are part of Russian export strategy, other goals more specifically related to Russia-EU energy relations must be emphasized.

4.1. The expansion of transport infrastructure

Gas trade security depends not only on increasing the export supply, but also on expanding the transport infrastructure to avoid bottlenecks in the old Soviet-era pipelines and to reduce transit dependence to Ukraine. The latter piques the interest of European countries and companies, but it would also be important for Russia, since new pipelines bypassing Ukraine would offer greater scope for changes in pricing policy.

Currently, only the Goluvoy Potok (Blue Stream), which crosses the Black Sea from north to south towards Turkey, and the Yamal-Europe (Northern Light), which allows entry to the EU via Belarus, manage to partially overcome transit dependence on Ukraine. In the next decade, other ongoing projects will serve to open new routes in order to facilitate increasing exports, access to new

¹⁹ For a long time, the Russian government has sought to diversify exports to East Asia, but only recently have they begun to take real steps in this direction. The first sales from Sakhalin in Asian markets were conducted in 2008, and in 2009 they amounted to 15-16 bcm. The government forecast is for sales to reach 50-70 bcm in 2030 (Bradshaw and Stern, 2009).

²⁰ The price of Russian gas for Ukraine in 2010 is set at \$305 per thousand cm, which is already very close to the \$325 paid by EU countries. The Ukrainian government foresees purchases of only 33 bcm of Russian import (Interfax, 2009b).

²¹ Russian exports to Ukraine and Belarus in 2009 dropped to 24 and 16 bcm, respectively (BP, 2010).

customers, and, above all, reduction in the amount of Russian gas flowing to Europe through Belarus and Ukraine²².

Especially important is the Russian bid to construct Southstream that would offer Europe a "free" solution to its problem of dependence, meanwhile contributing toward at least three goals of Russian export strategy: diversifying the entry routes to Europe, weakening the Ukrainian position, and allowing alliances with large European companies.

Southstream is slated to cross the Black Sea through Bulgaria, entering the EU market without the involvement of Ukraine. The pipeline would lead from Bulgaria to Hungary and Austria via Serbia, with the potential to also supply Greece and Italy. It is a risky project, being more expensive and technically more complex than Nabucco, but if joined with the Brotherhood, the Northern Light, the Nordstream, and the Bluestream, it would give Russia a complete and wide network of pipelines to Europe, avoiding bottlenecks in the Brotherhood, the great central artery inherited from the Soviet era.

At the same time, this variety of routes will lead within a short time to a drastic reduction in transit dependence on Ukraine. In 1999, the extension of the Northern Light allowed gas to be brought to Central Europe through Belarus and Poland, and in 2002, the Bluestream, which crosses the Black Sea from north to south, shortened the path to Turkey that had previously moved through Ukraine and Moldova. However, in 2010, over 80% of Russian gas coming into the EU still has to go through Ukraine. But by the middle of the next decade that percentage may fall to below 30% due to Nordstream, which is scheduled to open in 2012 with a capacity to pump 55 bcm, and to Southstream, to be operational in 2015 with capacity of 63 bcm, or double the maximum capacity of Nabucco.

Therefore, Southstream would guarantee increasing flows of Russian (or Turkmen) gas to Europe, while simultaneously offering the EU a free solution to its transit dependence with regard to Ukraine. In addition, Southstream permits Gazprom to toughen its bargaining position in the conflict with Ukraine over gas prices and freight tariffs. This tightening between both countries amplifies risk and insecurity among European economies, but in the medium term it may also be beneficial for the EU, as it will likely reduce Russian exports and free up gas supply for the European market. Ukraine currently absorbs 56 bcm of Russian gas sold abroad. Rising prices and the construction of pipelines bypassing Ukrainian territory could lead to a significant reduction in this amount, which would represent an important source of additional supply to Central European markets. Moreover, Southstream not only widens the scope of transport

²² See Barysh (2009) and Nies (2008) for more detailed information about pipeline projects to Europe.

alternatives to Europe, but it helps to expand the Gazprom network of strategic alliances with some of the largest energy companies in the EU.

4.2. Strengthening and expanding Gazprom's position in the European energy market

Gazprom accounts for 82% of national production and 60% of reserves; it owns the entire transmission and distribution network and enjoys a legal export monopoly. During the past decade, Gazprom's new top managers have followed an ambitious strategy that has transformed the state company into one of the largest international energy companies. A main goal of this strategy has been to expand the Gazprom network of strategic alliances with some of the largest energy companies in the EU both upstream-middlestream and downstream.

4.2.1. Upstream and Middlestream alliances

The Italian company ENI is involved in completion of the Southstream, while the German company E.ON is involved in the construction of Nordstream. The recent entry of France's GDF Suez into Nordstream and EDF into Southstream, made possible due to Gazprom's agreement to lower its share in the project below 51%, allow France to form part of this triangle of strategic alliances (Interfax, 2009c).

The direct participation of these companies in Southstream (and Nordstream) is very advantageous for Russia, essentially for three reasons: a) it ensures the economic viability of the pipeline, providing the necessary funding for development of the projects and guaranteeing stability of supply to major markets in Germany, Italy and France; b) it helps to further deepen the interdependence with these major European companies, bolstering Gazprom's goal of becoming part of the gas distribution and marketing business within these economies; and c) it also deepens political interdependence with these three large EU states, weakening the position of those EU members which are committed to a policy of greater distance from Russia, and to amending the current framework of EU-Russia energy relations.

The influence of these interdependences on the development of European energy policy should not be underestimated, as it goes far beyond the co-financing of major Russo-European gas pipelines. Such alliances between Gazprom and large energy companies from Germany, Italy, and France will also extend to other phases of the gas business. Thus, Germany's Wintershall holds a quarter of the capital in Severneftegazprom, which is licensed to operate the Yuzhno-Russkoye field in Nadym-Pur-Taz, while Gazprom has received half the company shares of the German gas trader Wingaz (founded

by Wintershall, a subsidiary of BASF). Gazprom also has half ownership in the gas marketing, WIEH, one-third ownership in Etzel, the storage infrastructure owned by BP, and a small stake in Verbundnetz Gas, for sales in Eastern Germany. The upstream partnership also includes France's Total, to participate in Shtokman with Norway's Statoil, and in the Yamal peninsula, where Total leads a Production Sharing Agreement (PSA) in Karyagha. Recently, the entry of a Gazprom subsidiary (Zarubezneft) in this PSA was further agreed upon. A 20% share was acquired at a very favorable price, as "payment" for the facilities granted to EDF and GDF for entering Southstream and Nordstream. Finally, Italy's ENI has enjoyed a unique relationship with Russian authorities for many years, conferring a privileged position not only in Russia but also in Kazakhstan and Turkmenistan²³.

4.2.2. Downstream and gas markets

The other goal is to entry into the downstream gas business within the EU market, taking advantage of the extensive network of business alliances between Gazprom and numerous EU companies (Locatelli, 2007, 2008). Marketing of final product within the EU economies offers not only the chance to achieve higher profit margins, but also increases Gazprom's market power and strengthens its position as a major exporter of gas to the EU²⁴.

The participation of European companies in large investment projects headed by Gazprom (both midstream and upstream) accompanies other initiatives aimed at expanding Gazprom's gas business in the EU and strengthening its capacity to intervene in short- and long-term gas markets. The first of these initiatives is to expand Gazprom's joint ventures and subsidiaries, which act as intermediaries in the distribution of Russian gas within domestic EU markets, bypassing the role traditionally played by the "national energy champions" of these countries. The second aims to control the Central European Gas Hub (CEGH).

The entry of Gazprom capital into the OMV-controlled Central Hub at Baumgarten may have particularly widespread consequences, as it represents an important step toward European long-term contracts. Originally, the CEGH

²³ In turn this triangle of alliances has not been without problems. France's Total is also involved in both the Shah Deniz gas field and the construction of BTE, and also wants to enter the Nabucco consortium. Other stumbling block may be ENI's unease at the fact that EDF's Italian affiliate Edison is backing the Interconnector Turkey-Greece-Italy (ITGI) pipeline aiming to flow Caspian gas via southeastern Europe to Italy. Edison is also the marketer of Qatari LNG brought into Italy through the new Adriatic LNG terminal (Interfax, 2009c).

²⁴ Gazprom's strategy is complemented by gas equities in other countries in Africa and Latin America, especially Algeria and Venezuela, which may provide an important supply for meeting European demand, also serving as a platform for entering Western European markets (where Russia currently has no presence).

(established in 2005) was owned by Austria's OMV, a senior partner in Nabucco, highlighting a clear synergistic relationship between the two projects. But in 2008, the Russian company reached an agreement with OMV to share ownership of the CEGH. Apparently, Gazprom has a minor share (30%) in the hub, but another 20% is owned by Centrex, a gas trading company controlled by Russia (and whose director is a former chairman of Agip, the Italian company now controlled by ENI). The agreement also includes cooperation between Russia and Austria for the construction of storage devices -- highly expensive, but necessary for expansion of the hub.

Initially, expectations for this hub were very positive. In a scenario in which demand was rising, gas prices hiking, and uncertainties over Russian gas exports (and Russia's ability to fulfill long-term contracts) were increasing, OMV aspired to convert CEGH into the largest European hub by feeding gas from multiple sources: Norwegian gas, Russian gas, intra-EU production, and Central Asian gas pumped to Europe through Nabucco.

However, the continuing uncertainty over Nabucco's supply sources, together with the decrease in gas demand, falling oil prices, the uncertain future of gas shale, and lowered doubts about Russian supplies have led to a very different scenario²⁵. From a strictly business perspective, this new scenario justifies OMV's invitation to Gazprom to enter the hub, as Russian participation has become the surest path to viability for the project. From the Russian side, entry into CEGH is very beneficial as it secures control of the Hub for Gazprom, both in terms of prices and supply sources. At the same time, the Russian company's presence limits the role of OMV as a leader in the Central European market. In a similar vein, the purchase of 8% of Hungary's Mol by Russia's Sugurteftgaz seems to have been a tactic to prevent Mol's purchase by OMV.

At the same time, these decisions have implications for Nabucco. First, the presence of Russian capital in Hungary's Mol weakens support for the pipeline project from one of its main partners. Second, Russian control over the Baumgarten Hub gives Nabucco an outlet, but minimizes its strategic sense. For the EU, Nabucco wasn't only meant to strengthen European energy security threatened by dependency on Ukraine and Russia; it was also expected to be useful in eroding Russian domination over Central European markets -- helping to develop a cross-border market as an alternative to bilateral trade between Russia and individual EU countries. This goal has been largely undermined by

²⁵ During the next decade, the recovery of European gas demand from Russia is the most likely scenario. However, many reports have recently called into question previous gas demand growth projections, not due to the economic and financial crises but as a consequence of the future effects of gas shale on the global gas market. See Kefferpütz, Mäkinen, and Øverland (2010).

the entry of Gazprom into the CEGH; while the hub will make gas supply more flexible, it will hardly serve to change market operating rules.

As a matter of fact, the Gazprom-OMV agreement is another good example of the paradoxical effects of the European strategy, which gives companies the responsibility of creating a large unified market, although the companies themselves are more interested in perpetuating the pattern of bilateral trade and establishing strategic alliances with Gazprom. The second paradox is that EU market liberalization has helped to bolster, rather than diminish, Gazprom's power, at least in some key areas.

In this regard, it should be noted that Gazprom's control of CEGH --a spot market platform for East-Central Europe-- has been accompanied by two phenomena: the ongoing expansion of various subsidiaries of the Russian monopoly, to facilitate direct Russian gas sales within EU markets, bypassing large national companies; and the renewal of long-term contracts with most Russian customers in Central and Eastern Europe. These agreements are the basis of Gazprom's strategy of consolidation and expansion into Europe. At the same time, often in the case of agreements with companies from the countries participating in Nabucco, they have contributed to creating uncertainty and distrust among the rival project partners.

In Bulgaria, negotiations are open for renewing contracts set to expire in 2010; this agreement should not prove complicated, as it is linked to other positive considerations, such as a service charge for transporting Southstream gas through Bulgarian territory, Russian participation in the building of a nuclear plant, and new guarantees to avoid a recurrence of the gas shortages suffered in January 2009. In Serbia, which imports 2.15 bcm, the most recent agreement guarantees the delivery of 2 bcm from 2010, with the chance of increasing that amount, and without penalties for purchases below those prevailing. In Slovakia, a supply agreement covering all imports has been extended until 2027. In Poland, a renewed agreement with Gazprom until 2037 will undertake to increase exports from 8 bcm to 11 bcm, beginning in 2011. Finally, Gazprom and the German company RWE have agreed to delivery of 9 bcm through September 2038, to be sold into the Czech market, which currently receives 8.6 bcm from abroad.

5. Specific goals and main difficulties for diversification to East-Asia

5.1. Gas fields and pipelines

Gas fields in Krasnoyarsk and Irkutsk (in Eastern Siberia) and Sakha-Yakutia and Sakhalin (in the Far East) would provide the source of most exports to Asia. In fact, production in these areas would be more export-oriented than other regions, although a substantial portion of this gas would also be directed to

domestic consumption. Following government forecasts, export share will tend to stabilize at around 50% from 2020, against an estimated national average of around 33%.

This export orientation would be greater in Sakha and Sakhalin, while fields in Sobinskoye, Yurubcheno (Krasnoyarsk), and Kovytko (Irkutsk) could hold the dual option of supplying domestic and foreign markets (China). Doubts about the feasibility of this dual role is reflected in the range given to the evolution of the Krasnoyarsk and Irkutsk gas fields, which is considerably broader than is offered for other regions.

At the same time, the development of these regions and their production destination depend on the rate at which new pipelines to different markets are built. According to official estimates, the pipe grid will be extended by 11% in the first years and by 20-23% as of 2030. At the same time, the export of liquefied gas, which is now almost nonexistent, could see a boost, rising to represent 5% of exports in 2015, 11% in 2022, and 15% in 2030.

The specific projects of this major expansion in export infrastructure are extremely ambitious. For export to Asia, there are two major pipelines: the Chajadanskoje-Khabarovsk (Ch-Kh) or West-East (WE), and the Altai. The WE will pump gas from Sakha towards the Pacific coast, where it will join the pipeline running from Sakhalin in the direction of China and Korea, via Vladivostok. The Altai, with 30 bcm capacity, is scheduled to leave the city of NovoKuznets to enter China via its northeastern border. This option introduces a significant change in the design of the energy map, because it opens the door for exporting gas to China from Nadym and Yamal. In addition, it enables the export of gas from Yurubcheno, Sobinskoye, and Kovytko, while at the same time allowing coverage of domestic market needs. This way, the gas from these fields will flow to West, discarding the “natural” route towards East²⁶.

Besides these two continental pipelines, there are plans to expand the Sakhalin infrastructure, which is currently more advanced. Despite resistance from Gazprom, Sakhalin-1 has since 2008 operated a pipeline capable of transporting 8 bcm to China, and in 2009 Sakhalin-2 opened an LNG plant south of the island with a capacity of 10.5 bcm per year. In the Eastern Gas Programme, it was expected that exports from this plant would reach 14 bcm by 2010, doubling this amount by 2030 (Energy Intelligence, 2010).

²⁶ Sino-Russian agreements of 1997 for the operation of Kovytko and for the sale of gas to both China and Korea alleged that the pipeline would approach the Pacific coast. This approach remained unchanged until 2007. Another alternative route is to cross Mongolia from north to south, which would reduce gas travel by thousands of miles from Irkutsk to the Pacific; but China has made clear its rejection of this option (Stern, 2008).

Map 1. Eastern gas fields and pipeline projects



Source: Gazprom [18].

Overall, this is a very ambitious investment program whose development is inseparable from the destination served by upstream investment, as production activities in areas of such difficult access only make sense if the gas can be moved in large quantity towards export markets. Thus, the government's goal of simultaneously increasing exports to Europe and Asia will require combining both the development of drilling activities (in northern and eastern fields) and the enlargement of transport infrastructure in both directions.

This strategy is very ambitious but its viability is in doubt due to several factors that can be summarized as follows.

5.2. Difficulties in establishing financial and commercial agreements with the two major Asia-Pacific consumers

On paper, conditions in the eastern gas fields are favorable, but their effective development will depend on the signing of firm agreements among key actors. For various reasons, such agreements remain elusive, inevitably slowing the progression of investments. In turn, these delays act as a deterrent against the establishment of closer ties between the countries involved.

Historically, Japan has always been the leading candidate for open trade relations in the Asia-Pacific. At present, however, possibilities for reaching such agreements with this country seem remote. Japan is a major consumer of natural gas (94 bcm per year) and is moreover expected to increase the share

of gas in its total primary energy demand. However, demand growth is almost nil and the government foresees its decline from 2020. In addition, Japan has a structure of stable and diversified providers based on an extensive network of plants for processing liquefied gas imported via long-distance shipping, rather the country lacks an internal network of pipelines ready to receive and distribute any gas imported by this means (Miyamoto, 2008).

This situation is compounded by the conflict between Gazprom and companies that form part of the Sakhalin-1 PSA, among which is the Japanese Sodeco (30%); also, Gazprom has attempted to prevent construction of a pipeline to the island of Hokkaido. Earlier, a more virulent conflict took place with regard to Sakhalin-2, where Russia forced the reduction of shares held by Mitsui (12.5%) and Mitsubishi (10%) in order to grant Gazprom 51% ownership of the consortium that enjoys the exploitation rights in this field²⁷.

However, the proximity between Sakhalin and Japan, and the interest of the three Japanese companies to drill gas around this island, reveal that sales to Japan remain a plausible option. This could come to pass following the launch in 2009 of the first Russian LNG plant, located south of Sakhalin. Initially the gas pipeline proposed by PSA Sakhalin-1 was preferred because it was the least expensive mean of transport, but the LNG plant could ultimately serve to enter the Japanese market, as well as other Southeast Asian countries.

As regards China, the situation differs radically from that of Japan. Gas consumption still occupies an almost marginal role (2-3%) in Chinese energy demand, but official estimates suggest that it will increase rapidly in the coming decades. Thus, the 80 bcm currently consumed would rise to 200 bcm in 2020, making China a large consumer capable of formalizing important agreements with Russia, as Chinese self-reliance is limited and most domestic consumption will have to be met by imports (Palazuelos y García, 2008).

However, many Sino-Russian negotiations, including various pre-arrangements, have failed to lead to actual exchanges. The sale of 30 bcm from Irkutsk to China and Korea was first discussed in 1997, and this same intention was renewed two years later. In 2006, Presidents Putin and Hu signed an agreement to build two pipelines to allow the annual sale of 80 bcm within ten years, and that same year Gazprom and CNPC agreed upon the basis for financial cooperation to launch these projects. In 2008, Gazprom announced commencement of the Altai gas pipeline. Finally, in December 2009, representatives of both governments met again to explore the possibility of signing a new supply agreement that would ensure the delivery of 70 bcm beginning in 2015 (Interfax, 2010).

²⁷ Sakhalin-1 is managed by: America's ExxonMobil-Neftegaz (30%), Japan's Sodeco (30%), India's ONGC (20%), and Rosneft (20%). Apart from Gazprom (50%), Sakhalin-2 is owned by Shell (27.5%), Mitsui (12.5%), and Mitsubishi (10%).

Surprisingly, after so many feints, the first concrete initiative was taken by the U.S. company ExxonMobil, which sold 7-8 bcm from Sakhalin-1 to China in 2009; meanwhile, relations with Gazprom are still blocked by disagreement over sales prices. This price issue is compounded by two other uncertainties related to China's energy policy. The first concerns the timing and intensity of the gasification program announced by authorities; the second question is whether China will opt for importing gas by sea or by land. Currently, one LNG plant is operating, two others are under construction, and several more could be installed if this dilemma is solved in favour of liquefied gas. The inland option would require the construction of pipelines capable of transporting gas over long distances (Fridly, 2008).

In this respect, the pipeline that permits gas imports from Turkmenistan via Kazakhstan through Xinjiang has been operating since December 2009. This means that the land option has not been ruled out, although at the same time the Turkmen pipeline may hinder the Russian strategy, as several Chinese companies are directly involved in developing the new South Iolatan field in Turkmenistan (Energy Intelligence, 2010). If the Turkmen bet succeeds, the chance for Chinese imports from Russia may be reduced.

The third major candidate to receive Russian gas is South Korea. The Korean government was willing to conclude (in September 2008) an agreement that includes the purchase of 10 bcm per annum for thirty years from 2015, adding to an existing commitment that Sakhalin-2 provide 1.5 bcm from 2008 to 2028. Thus, relations with Korea do not seem subject to the political and economic obstacles that hinder agreements with China and Japan; but at the same time Korea is a smaller market already supplied by multiple providers. For that reason, the Korean market alone does not justify major investments. In addition, Korean infrastructures are based on the import of liquefied gas, which limits Russian gas exports to the Sakhalin fields²⁸, and the modest potential of Russian market share in Korea makes possible the abandonment of plans for an undersea pipeline to pump gas from Sakha-Yakutia avoiding North Korea (Paik, 2008).

In short, the LNG plant operating Southern Sakhalin allows the export of a certain volume of gas to Asia-Pacific, but in the long term, the increase in sales to Asia will require the establishment of bilateral agreements that promote trade through pipelines and encourage drilling activities in the Eastern mainland fields. Thus, given its large market size and its government's greater willingness to negotiate, China emerges as the main potential partner.

²⁸ There is also the possibility of exporting from a LNG plant near Vladivostok, but this project has not progressed beyond a vague hypothesis.

5.3. Delays caused by the economic crisis and falling demand

While the lack of specific agreements with Russian neighbors continues to delay major development of the onshore fields in Eastern Siberia and the Far East, the current international economic crisis adds new problems and uncertainties. Falling energy prices and reduced foreign gas demand will likely result in further delay of planned investment programs.

First, the crisis has significantly restricted the availability of financial resources for such investments. A simultaneous drop in sales and prices has impacted negatively on Gazprom revenues: the company collected less than \$42 billion from exports to Europe in 2009, versus \$64 billion in 2008 [5]. Under these conditions, Gazprom expenditures in 2009 were cut by 17% compared to 2008, and major projects such as Yamal suffered dramatic reductions [46]. Recently, the company has announced a 2010 expenditure program that exceeds the 2009 budget by only 5%, significantly below pre-crisis expenditures (Energy Intelligence, 2010).

Moreover, although sales have begun to recover, export contracts to be renewed in 2010-12 will contain a significant price reduction. Gas prices will be closer to the \$280 per thousand bcm paid in 2009 than to the average \$410 paid in 2008. President Medvedev has projected a 2010 gas price of around \$325. This discount will be only partially offset by higher domestic prices, thus reducing Gazprom's financial capacity to lead several simultaneous large projects over the next decade.

Similarly, the State's fiscal deficit (almost 6% of GDP in 2009) will put government in a much weaker position to support major projects announced in the energy strategy for 2030. Therefore, recent financial difficulties of both Gazprom and State increase the importance of establishing partnerships with foreign companies and governments. However, the crisis has also dealt blows to the big European companies, which are also finding difficulty in providing necessary funding for the development of collaborative projects with Gazprom already underway.

Second, the worsening economic situation in Russia and Europe raises new doubts about demand trends, leading governments and businessmen to be more cautious around the development of large investment projects, even when funding exists to carry them out. Moreover, other uncertainties are recently raising from the European desired transition to renewable energy sources, the boom of shale gas, or the increase in LNG production both in Gulf and worldwide (in fact, current surplus has already forced Gazprom to re-negotiate price formulas of long terms gas contracts). However, doubts are not so much centered on external demand, because the most likely scenario is that EU consumption will recover as soon as economic growth resumes; rather, the uncertainty may be Russian domestic demand, which accounts for 70% of

production. Outside the scope of influence of pricing policy and energy-saving measures, consumption growth depends largely on the pace at which Russia's economy recovers, and this is not easy to predict in view of the economy's high sensitivity to changes in international oil prices.

As a matter of fact, the expectation that Russian consumption may not grow at the previously estimated rate may lead to a rethinking of the need to address the urgent expansion of productive capacity, and therefore the need to carry out several large projects simultaneously. Thus the current situation requires (for financial reasons) and suggests (for reasons of demand) the implementation of a more prudent and gradualist investment strategy.

5.4. Conditions in Eastern Siberia and the Far East gas fields

The difficulty of reaching agreements with importing countries and the consequences of the economic crisis have a direct and fundamental impact on the productive development of new gas regions that face specific challenges such as extreme climate and environmental conditions and, above all, a substantial lack of basic infrastructure and severe difficulties to coordinate regional and federal interests.

i) Irkutsk: Since Gazprom took control of Kovytko in 2007²⁹, this field has been oriented toward the domestic market, but without renouncing the sale of part of its production to China through the Altai. However, in the present circumstances, this proposal faces a twofold problem. On the one hand, Irkutsk gas would have to travel thousands of miles to reach the large Chinese consumer centres -- a far more expensive option than other supply alternatives. On the other hand, if domestic demand does not grow as was estimated prior to the economic crisis, the contribution of Kovytko to the Russian market becomes less acute. For this reason, the project seems less urgent now as the Irkutsk regional government recently announced the opening of Kovytko would have to wait to 2017 (Interfax, 2010).

ii) Krasnoyarsk: This region is in a similar situation, as gas could be either linked to the national network in Tomsk, or exported to China through the Altai. Thus, in one way or another, it comes into competition with Kovytko, so that its development will be uncertain even in a scenario of higher domestic or Chinese demand. If such a positive scenario is not confirmed, the delay could affect both regions. In the case of a choice between the two, Krasnoyarsk is helped by its relative proximity to Tomsk, while Kovytko's appeal lies in its greater size.

²⁹ Russia Petroleum, whose major partner was TNK-BP, had the rights to work in Kovytko. In 2007, TNK-BP sold this share to Gazprom after the state company agreed to pay nearly double what TNK-BP had spent in developing the field (Stern and Bradshaw, 2008).

iii) Sakha-Yakutia: This is the region that has planned to be more export-oriented, but its tapping depends on the extent of WE pipeline, whose construction has not yet begun despite scheduling by the Eastern Gas Programme in 2007. However, even in 2007, priority was given to the Altai project. In addition, the opening in 2008 of a pipeline from Sakhalin-1 to China set new hurdle for the Chayandanskoye plans. This is why Gazprom wants to reach an agreement with Rosneft (the State oil company), participating in the Sakhalin-1 PSA, so that gas from that field can be diverted for consumption in the Far East. If these pressures succeed, there will be increasing incentives to extend the WE and meet Chinese demand with gas from Sakhalin-2 and Sakha-Yakutia.

Thus, drilling gas in large, untapped eastern reserves has not been ruled out for the medium term, but the obstacles preventing the onset of such major projects must first be cleared. Therefore, new launches are not likely to occur before 2020, so until this date exports to Asia will depend crucially on the development of Sakhalin-2, while the continuity of Sakhalin-1 is subject to the resolution of tensions between Gazprom and its partners in the PSA. Later, the inland areas could be developed, if trade with Korea is fruitful and negotiations to supply China come to a positive end. If Chinese demand growth is accompanied by a rise in Russian domestic consumption, the Irkutsk and Krasnoyarsk fields would acquire priority, and should even be used temporarily as part of Nadym production. Otherwise, it a more profitable option might be to build the West-East gas pipeline for export from Sakha-Yakutia.

6. Conclusion

The Russian government wants to export natural gas to East Asian markets without abandoning further increases in sales to Europe. This leads to plans for immediate and simultaneous development of gas drilling across all major fields that remain untapped. In this way, the gas industry could sharply increase its productive capacity and address rapid domestic demand growth while enjoying a moderate increase in export supply. The simultaneous opening of both Western and Eastern fields would also ensure that this export growth could be shared between both European and Asian markets.

Export growth should come together with other achievements such as new pipelines and agreements with Turkmenistan. Central Asian agreements ensure that the majority of Turkmen exports will go to Russia, either for re-export (to Europe, China, or other CIS countries) or to serve Russian domestic needs. New pipelines will prevent bottlenecks in the wide central Brotherhood artery inherited from Soviet times, also reducing Russian dependence on Ukrainian transit.

Southstream and Nordstream simultaneously contribute to strengthening political and business links with Germany, Italy and France. Through these alliances, Russia ensures the economic viability of the projects, and energy cooperation policy is meanwhile strengthened among Russia and major Western European states. At the same time, these links weaken political support for other alternative projects such as Nabucco.

The signing of long-term gas supply contracts with Central European governments and companies, the expansion in these countries of Russian-owned subsidiaries, and Russia's entry into some of the largest energy companies all guarantee the dominant position of Gazprom in the Central European market. At the same time, this policy serves to capture potential customers from Nabucco and to create uncertainty and distrust among the project partners.

The entry of Gazprom into Baumgarten's Central Hub raises particularly significant consequences, as it represents a decisive step toward Russian control of the European alternative to long-term contracts. At the same time, this decision further erodes political support for Nabucco, which has lost much of its credibility as a strategic tool in order to facilitate the integration of the European gas market. Among other virtues, this economic integration could contribute to the abandonment of bilateral energy relations with Russia, which from the EU perspective places Europe in a position of clear weakness vis-à-vis Russia.

At the same time, Gazprom looks towards East Asia. However, the government's strategy is hardly plausible, taking into account the extraordinary level of investment required to achieve its goals. Three interrelated facts contradict government investment projects: a) the scarcity of actual signed agreements with large potential clients (China, Japan, and South Korea); b) the delays and new uncertainties arising from the international economic crisis; c) and the technical difficulties of quickly putting into operation major fields of Eastern Siberia, the Far East (except Sakhalin), and the Arctic coastline (Shtokman, Ob-Taz bay, and others).

Therefore, more realistic criteria lead to the suggestion that investment for expanding transport infrastructure and opening new fields should follow a gradualist dynamic. In this case, the increase in gas production through two next decades will most likely be lower than forecast by the government. Lower output growth should not prevent slight export growth as long as domestic demand does not grow at an excessive rate.

As Russia is able to raise its export supply at a moderate rate, the destination of this surplus depends on the geographic targeting of investments. It is foreseeable that in coming years, investments will be concentrated in Yamal, so that sales to Asia will depend on further development of Sakhalin-1 and -2. In the medium term, there are two further alternatives: a) developing of some

Eastern areas, in Krasnoyarsk, Irkutsk, and Sakha-Yakutia; and b) expanding the productive capacity of Western Siberia and Northern Europe.

The first of these mid-term options would give more prominence to Asian markets, but its implementation would depend upon fostering new synergies between Russia and Asian countries, in hopes of signing financial and long-term trade agreements. In this case, Asian sales could rise significantly, with an uncertain effect on European exports, which might be expanded, maintained, or even reduced, depending on supply factors but above all on Russian demand.

If domestic consumption grows at close to 1.5% through 2030, the increase of exports to Asia would result in decreasing sales to Europe. However, Gazprom could ease this result by limiting sales to CIS countries, or by selling gas from other countries. But if Russian domestic consumption tends to slow down, export growth to East Asia could be compatible with a slight increase in sales to Europe.

Finally, the second option (focusing the investment policy on Western Siberia and Northern Europe, even during 2020-30) would allow an increase in European exports. Gas for sale in Asian markets would be limited to production at Sakhalin, with certain supplements from Western Siberia. Looking to energy and geopolitical implications for the future, this latter scenario would not be markedly different from the current situation.

As a conclusion, the analysis reveals that whatever decision is taken Russia needs to develop a demand security policy that ensures the profitability of investments and the sustainability of its energy sector. The decision taken will also have profound consequences on the country's regional development, economic growth, and international alliances. At the same time these policies will have great influence on the new world energy order that is emerging over the coming decades.

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