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May 2004

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## Russia

*Russia is important to world energy markets because it holds the world's largest natural gas reserves, the second largest coal reserves, and the eighth largest oil reserves. Russia is also the world's largest exporter of natural gas, the second largest oil exporter, and the third largest energy consumer.*

*Note: Information contained in this report is the best available as of May 2004 and is subject to change.*



### GENERAL BACKGROUND

In 2003, Russia's real gross domestic product (GDP) grew by 7.3%, surpassing average growth rates in all other G8 countries, and marking the country's fifth consecutive year of economic expansion. Russia's economic growth over the last five years has been fueled primarily by energy exports, particularly given the boom in Russian oil production and relatively high world oil prices

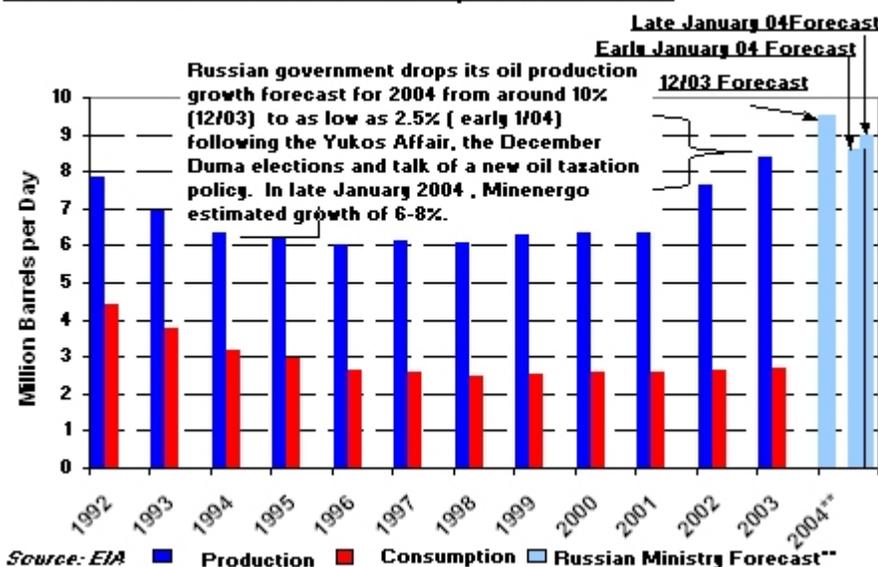
during this period. But this type of growth has made the Russian economy dangerously dependent on oil and natural gas exports, and especially vulnerable to fluctuations in world oil prices. Although estimates vary widely, the [World Bank](#) has suggested that the oil and gas sector may have accounted for up to 25% of GDP in 2003—while employing less than 1% of the population.

The Russian government has made decoupling economic growth from commodity exports a priority, and is attempting to restructure and liberalize its energy sector. These reforms have come at the behest of both Russian oil and natural gas producers, who are seeking to grow in a more liberalized marketplace; as well as Russia's external trading partners, who are pressuring the country to synchronize their policies with those in Western Europe and North America, particularly vis-a-vis Russia's aspiration towards the World Trade Organization (WTO). Key to these efforts will be breaking up the monopolies that control the natural gas and electricity industries.

But in the meantime, Kremlin policy makers have exhibited an inclination to advance the state's influence in the energy sector, not to reduce it. Over the past six months, the Russian Energy Ministry (now known as the Ministry of Industry and Energy) has been streamlined and empowered; taxes on oil exports have been raised significantly (effective August 1, 2004); state-owned export facilities have grown at breakneck pace while private projects have progressed more slowly or faltered (see Oil Exports); and leading industry figures have come under criminal

investigation at the behest of Russia's Procuracy General (see Oil Industry Structure). While acknowledging Russia's changing regulatory environment, as well as the oil and gas sectors' important role in economic development, President Vladimir Putin said on December 23, 2003, "The fuel and energy sector, overall, is the goose that lays the golden egg. Killing the goose would be insane, stupid and unacceptable." Having secured overwhelming victories in both Parliamentary elections (December 2003) and Presidential elections (March 2004), President Putin is expected to re-organize his country's domestic energy industry in his second term, while simultaneously working towards his pledge to double the country's GDP within 10 years.

### Russian Oil Production and Consumption, 1992-2004\*\*



### **OIL**

Russia has proven oil reserves of 60 billion barrels, most of which are located in Western Siberia, between the Ural Mountains and the Central Siberian Plateau. In the 1980s, this prolific region, also known as the "Russian Core," made the Soviet Union a major world oil producer, allowing for peak production of 12.5 million bbl/d in 1988 (most of which came from Russia). Following the demise of the Soviet Union in 1991, oil production fell precipitously,

reaching a nadir of roughly 6 million bbl/d, or around one-half of the Soviet-era peak (see graph). Several factors are thought to have caused the decline, including the depletion of the country's largest fields due to state-mandated production surges and the collapse of the Soviet central planning system.

A turnaround in Russian oil output began in 1999 which many analysts have attributed to the privatization of the industry following the collapse of the Soviet Union, rising world oil prices ([oil prices tripled between January 1999 and September 2000](#)), and a number of after-effects of the 1998 financial crisis and subsequent devaluation of the ruble in August. Today, Russian oil fields are maintained using modern technologies from around the world, and many of the country's old command economy institutions have been streamlined.

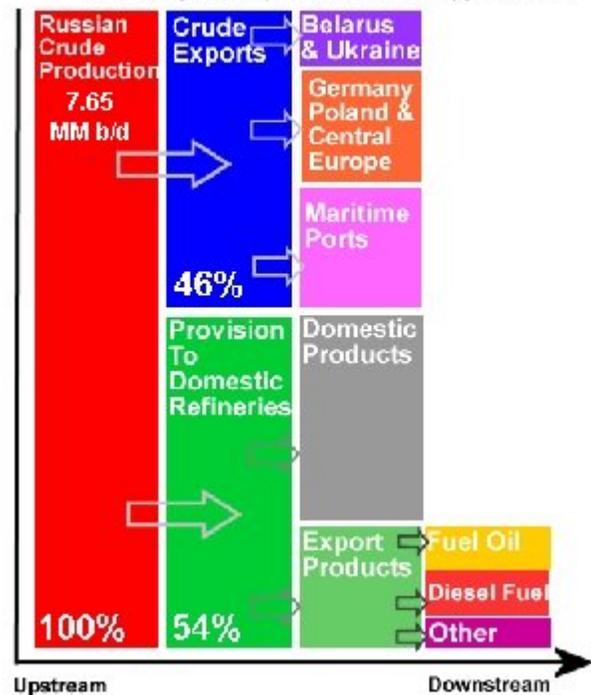
The rebound in Russian oil production has continued since 1999, resulting in 2003 total liquids production of 8.4 million bbl/d (8.2 million bbl/d of which was crude oil)--a 10% increase over last year and almost 40% higher than the 1998 level. Accordingly, in 2003, Russia was the world's second largest producer of crude oil, behind only Saudi Arabia. Both the Russian government and outside observers agree that production should continue to grow, at least in the short term. However, it is unclear whether production can continue to grow with the same remarkable quickness shown over the past few years. In what could prove to be a harbinger of what's to come, the Russian government's own forecasts for oil production in 2004 began to fluctuate significantly towards the end of 2003, following the investigation and incarceration of leading industry figures, parliamentary elections and policy statements from President Putin and members of his cabinet (see graph above).

### Russia's Oil Balance

The chart at right shows a rough sketch of Russia's 2002 oil balance. Blocks are sized to show proportionally where the oil goes as it moves from the well (upstream) to the end-user (downstream). As the chart shows, exports of crude oil play a very important role, with roughly one half of crude production being sent directly abroad for export, while the remaining half is refined locally.

**Rough Sketch of Russia's Oil Balance 2002**

\*Note: Graphical representations are approximate



The balance also indicates that in 2002 roughly two-thirds of Russia's crude oil exports were sent to Belarus, Ukraine, Germany, Poland, and other destinations in Central and Eastern Europe (including Hungary, Slovakia, the Czech Republic). These destinations are all points along Russia's major export pipeline, Druzhba, and its multiple branches. The remaining one-third of crude oil exports were sent to maritime ports and in turn sold on world markets. Also, because of higher world oil prices recently, some of Russia's oil is also exported via railroad and river barge (more below). Most of Russia's product exports consist of fuel oil and diesel fuel which are used for heating in European countries (see chart).

### Oil Exports

Expanding Russia's capacity to export oil in order to keep pace with the country's growing production is important to both Kremlin policy-makers and Russia's oil companies. However, the two sides are sometimes at odds over how best to boost the country's export capacity. Crude oil exports via pipeline fall under the exclusive jurisdiction of Russia's state-owned pipeline monopoly, Transneft. But bottlenecks in the Transneft system make the company's export capacity incapable of meeting oil producer's export ambitions. Recently, Russian oil producers have taken advantage of



higher world oil prices and re-directed their surplus oil via railroad and river barge to external markets. Some of the crude oil export capacity deficit is also overcome through the exportation of petroleum products. However, all of these counter-measures come at much greater cost than shipment via pipeline, and this option could become less viable should

world oil prices fall.

The Russian government and Transneft have acknowledged the capacity problem and have taken careful steps towards developing new export infrastructure. At issue, however, is not only the direction and scope of enhancements to the country's export infrastructure, but also the potential role that private firms and investors may play in these projects, presumably at the expense of state-owned Transneft.

### **Baltic Pipeline System (BPS)**

The BPS came online in December 2001, and carries crude oil from Russia's West Siberian and Timan-Pechora oil provinces westward to the newly completed port of Primorsk in the Russian Gulf of Finland (see map). For most of 2003, throughput capacity at Primorsk was 240,000 bbl/d. In February 2004, expansion to 840,000 bbl/d was completed ahead of schedule. Transneft plans to further boost capacity to 1.2 million barrels per day, perhaps by 2005.

The BPS gives Russia a direct outlet to northern European markets, allowing the country to reduce its dependence on transit routes through Estonia, Latvia, and Lithuania. Unfortunately for these states, the growth of the BPS has come at considerable cost (particularly at Ventspils in Lithuania), as Russian crude which traditionally moved through the Baltic States has been re-routed through Russia's BPS. Russian authorities have stated publicly that when allocating the country's exports, precedence will be given to sea ports in which Russia has a stake over foreign ones; in other words, BPS over other Baltic ports (for more information on energy in the Baltic Sea Region, see: [Baltic Sea Region Country Analysis Brief](#))

### **Murmansk**

The idea for a new pipeline and deepwater tanker terminal, designed to carry crude oil from Russia's West Siberian Basin and Timan-Pechora basin westward to Murmansk on the Barents Sea (see map), was first suggested during a summit in May 2002 between Presidents George W. Bush and Vladimir Putin. As conceived by a consortium of Russia's leading oil companies, the Murmansk project would allow for between 1.6 and 2.4 million bbl/d of Russian oil exports to reach the United States via tankers within only nine days travel time, much faster than shipping from the Middle East or Africa. A feasibility study considering the availability of crude oil supplies and the interest of U.S. refiners is expected in the Fall of 2004. A liquefied natural gas (LNG) facility at the port has also been suggested, possibly allowing for deliveries to American markets.

But despite vociferous support for the Murmansk proposal from Russian oil companies, American oil companies, and the U.S. government, Transneft (and thereby the Russian government) has approached the project with trepidation. It is unclear whether the Russian government will allow private Russian oil companies to proceed with their plans to construct the port and its associated facilities, or if the project will be handed, either partially or entirely, to Transneft. Some Transneft officials and others have stated that Russia's expanding BPS system as well as a few other key export projects (listed below) will be sufficient to keep pace with growing production. At stake is not only the Murmansk project, but also the Russian government's ability to control the growing oil industry via Transneft.

### **Adria Reversal Project**

Reversal of the Adria pipeline, which extends between Croatia's port of Omisalj on the Adriatic Sea and Hungary (see map), has been under consideration since the 1990s. The pipeline, which was completed in 1974, was originally designed to load Middle Eastern oil at Omisalj, then pipe it northward to Yugoslavia and on to Hungary. However, given both the Adria pipeline's existing interconnection with the Russian system, and Russia's booming production, the pipeline's operators

and transit states have since considered reversing the pipeline's flow, thus giving Russia a new export outlet on the Adriatic Sea.

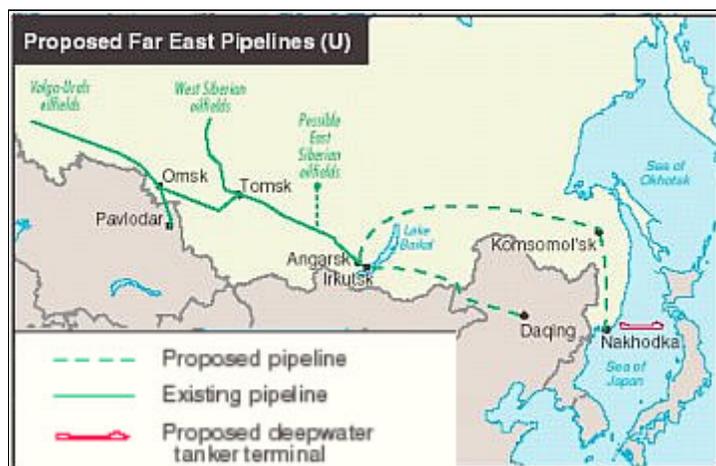
Connecting the pipeline to Russia's Southern Druzhba system would entail the cooperation of six countries (Russia, Belarus, Ukraine, Slovakia, Hungary, and Croatia). In December 2002, these countries signed a preliminary agreement on the project. Since then, however, progress has been slow moving, as the transit states wrangle over the project's details (including tariffs and environmental issues). Of the six partners, to-date, only three countries, Slovakia, Hungary, and Ukraine are fully ready to implement the reversal.



The most recent to ratify the necessary legislation, Ukraine, approved in February 2004 after denying another highly touted pipeline reversal project, Odessa-Brody. Given the relative simplicity of reversing the flow should the countries come to an agreement, some analysts expect that the Adria pipeline could begin transiting roughly 100,000 bbl/d of Russian crude in the first year of reversal, with an ultimate capacity of approximately 300,000 barrels per day.

### Eastern Oil Pipeline Options

Given the public statements of Russian governmental officials and oil company representatives, it is clear that, in the near future, the country plans to construct a pipeline connecting the Russian city of Angarsk to Asian markets. However, it is as of yet unclear whether the oil will be routed to Japan (the "Angarsk-Nakhodka" option), or to China (the "Angarsk-Daqing" option), or both; and if both, in what order. After weighing the pros and cons of each option (summarized below) as well as sizeable incentive packages offered by both sides, key government officials and Transneft representatives have indicated substantial high-level support for the Angarsk-Nakhodka option. However, a final decision from the Putin government is still pending.



### Angarsk-Nakhodka

The Angarsk-Nakhodka option would extend roughly 2,500 miles, from Angarsk, around Russia's Lake Baikal, to the port of Nakhodka where a new export facility would have to be constructed (see map). This option is estimated to cost between \$5 and \$6 billion, with a capacity of 1 million bbl/d. Although this option is significantly more expensive, as it covers a greater distance and involves more investment, the Angarsk-Nakhodka route would open up a new Pacific port from which Russian oil exports could be shipped by tanker to other

Asian markets, and possibly even North America.

### Angarsk-Daqing

The Angarsk-Daqing option would extend for about 1,500 miles to the inland Chinese city of Daqing (see map) and is estimated to cost approximately \$2.5 billion. The project has been backed by Russian oil company Yukos, and was planned to carry 400,000 bbl/d beginning in 2005, with the possibility for 600,000 bbl/d by 2010. In March 2003, Yukos and the China National Petroleum Company (CNPC) signed a non-binding agreement stipulating exports to China of 400,000-600,000 bbl/d via pipeline for 25-years beginning in 2006. However, since signing the deal, the Russian government has asked for more time to decide between pipeline options.

### Russia's Evolving Oil Industry Structure

In 2003, two major mergers were announced: Tyumen Oil Company (TNK) with British Petroleum (BP), and Yukos with Sibneft. Prior to these mergers, the Russian oil industry was dominated by five companies: Yukos; LUKoil; Surgutneftegaz Tyumen Oil Company; and Sibneft. Combined, these companies accounted for roughly 70% of the country's oil production. The other 30% belonged to the country's roughly 150 small-to-medium sized oil producers. While one of the two officially announced mergers was completed (TNK-BP), the other (Yukos-Sibneft) fell apart towards the end of the year leaving wide-spread speculation as to how the Russian oil industry will evolve next.

### TNK-BP

In February 2003, British Petroleum BP announced its intention to purchase a 50% stake in Russia's Tyumen Oil Company (TNK), as well as other assets held by TNK's shareholders, thus creating a new company, TNK-BP. The deal was approved by regulatory authorities in Russia and Europe in the summer of 2003, marking the largest single foreign investment in Russia since the collapse of the Soviet Union. TNK-BP holds oil reserves of 4.1 billion barrels (Securities and Exchange Commission estimate, others vary) and produced 1.2 million bbl/d in 2003, making it Russia's third largest oil producer (see chart). The deal also includes retail outlets in Russia and Ukraine. In 2004, the company plans to develop a new marine terminal in the Gulf of Finland.

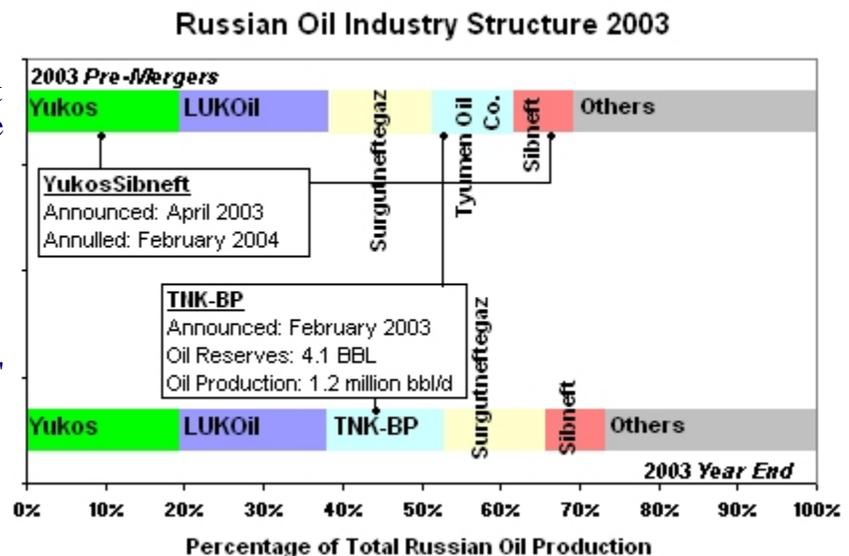
### YukosSibneft

In April 2003, Yukos and Sibneft announced merger plans to create what would have been Russia's largest oil company, YukosSibneft. The \$12-\$15 billion transaction was approved by Russia's Anti-Monopoly Ministry on August 15, 2003, creating a Russian "super-major," with proven oil reserves of 18.4 billion barrels, and a production capacity estimated at 2.2 million bbl/d. But investigations into Yukos by Russia's Procuracy

General resulted in the arrests of key figures in Yukos ownership, including Platon Lebedev (July 2003) and company head Mikhail Khodorkovsky (October 2003), and the seizure of roughly one-half of the company's shares. In November 2003, representatives from Sibneft suspended the merger and the protocol for de-merging was signed in February 2004.

### Downstream/Refining

Russia has 42 oil refineries--many of which are inefficient, aging, and in need of modernization--

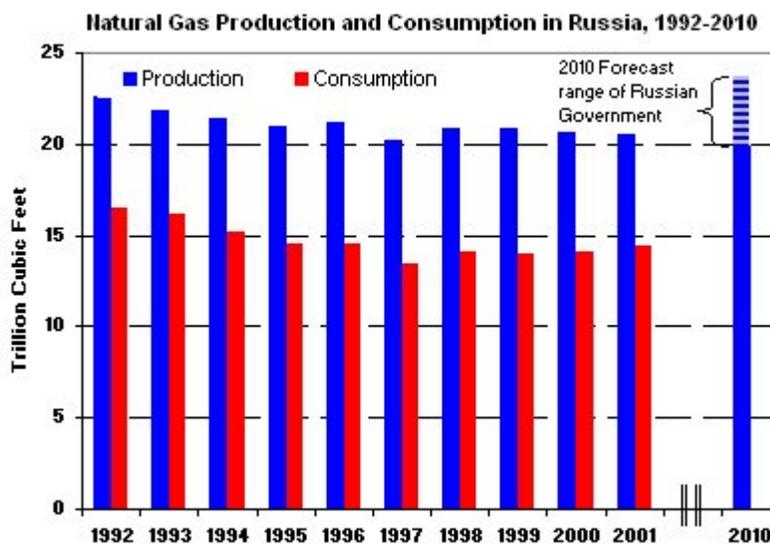


with a total processing capacity of 5.4 million bbl/d. With Russian domestic demand of 2.68 million bbl/d in 2003 (preliminary estimate), refining capacity far outstrips demand for refined products. In addition, because a barrel of crude oil on the Russian market typically sells for far below the world crude oil price, many Russian oil companies prefer to export their crude oil rather than to refine it in Russia. When Russian oil producers do not export their crude oil--often because of the constraints of Russia's pipeline system or the government's limits on each company's exports--many choose to supply their own refineries rather than sell the oil on the open market.

## NATURAL GAS

Russia holds the world's largest natural gas reserves, with 1,680 trillion cubic feet (Tcf)--more than twice the reserves in the next largest country, Iran. Accordingly, in 2002 Russia was the world's largest natural gas producer (21 Tcf), as well as the world's largest exporter (6.5 Tcf). But unlike the Russian oil industry, Russia's natural gas industry has not been booming. Both production and consumption have remained relatively flat since independence (see graph). Moreover, Russia's energy strategy, released in May 2003, calls for only modest

production growth by 2010, even under its most optimistic scenario (see graph). Growth of Russia's natural gas sector has been stunted primarily due to ageing fields, state regulation, Gazprom's monopolistic control over the industry, and insufficient export pipelines.



| Russia's Natural Gas Exports to Europe 2002:<br>Top 10 Importers |              |                           |
|--|--------------|---------------------------|
|  | Tcf per year | % of Domestic Consumption |
| Germany  | 1.14         | 36%                       |
| Italy  | 0.68         | 27%                       |
| Turkey   | 0.42         | 67%                       |
| France   | 0.40         | 25%                       |
| Hungary  | 0.32         | 69%                       |
| Slovakia   | 0.27         | 100%                      |
| Czech Republic   | 0.26         | 78%                       |
| Poland   | 0.25         | 52%                       |
| Austria  | 0.18         | 65%                       |
| Finland  | 0.16         | 100%                      |

NOTE: Does not include Ukraine or Belarus  
Source: *Nitrogen and Methanol*, Jan 1, 2004 and EIA

## Gas Industry Structure

Gazprom, Russia's state-run natural gas monopoly, holds nearly one-third of the world's natural gas reserves, produces nearly 90% of Russia's natural gas, and operates the country's natural gas pipeline grid. Gazprom is also Russia's largest earner of hard currency, and the company's tax payments account for around 25% of federal tax revenues.

But despite its terrific size and significance, Gazprom is seriously encumbered by domestic regulation. By law, Gazprom must supply the natural gas used to heat and power Russia's vast domestic market at government-regulated prices (approximately \$25 per thousand cubic meters), regardless of profitability. Accordingly, roughly two-thirds of the company's revenue comes from its export sales to Europe, where Russian gas is sold for around \$100-\$125 per thousand cubic meters. Because exported Russian natural gas

accounts for approximately 25% of Europe's demand for natural gas, Gazprom is also one of Moscow's main foreign policy tools (see table at left).

But as Gazprom's trade relationship with European consumers grows, contentions issues have arisen. European trade representatives have denounced Gazprom's monopolistic market position and two-tiered pricing system and have linked the pricing issue to Russia's ascension to the World Trade Organization (WTO). The Russian government has recognized this problem and has been gradually increasing the price for natural gas domestically. Russia hopes to complete negotiations on WTO ascension by 2005.

### Export Markets

Historically, the majority of Russia's natural gas exports were sent to customers in Eastern Europe. But since the collapse of the Soviet Union, Russia increasingly is looking to diversify its export options. Russia continues to export significant amounts of natural gas to customers in the Commonwealth of Independent States (CIS), but Gazprom (through its subsidiary Gazexport) is shifting its export strategy to send more natural gas to the countries of the EU as well as Turkey, Japan, and other Asian countries.

However, if Gazprom is to fulfill this long-term aim of increasing its European sales, it will have to boost its production, as well as secure more reliable export routes to the region. Several proposed new export pipelines would serve European markets if constructed.



### New Export Pipelines: Blue Stream

The Blue Stream natural gas pipeline connects the Russian system to Turkey through a 750-mile pipeline, 246 miles of which extends underneath the Black Sea (see map). Natural gas began flowing through the pipeline in December 2002, under an initial schedule of 71 Bcf per year, which was to increase by 71 Bcf annually and plateau at roughly 222 Bcf per year in 2009. However, in March 2003, Turkey halted deliveries through Blue Stream, invoking a clause in the contract allowing either party to stop deliveries for six months. After filing suit in Stockholm's International Arbitration court, the two sides came to an agreement in November 2003 and the supply of natural gas to Turkey resumed in December 2003.

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### North Trans-Gas Pipeline

The idea of a North Trans-Gas pipeline, extending 746 miles from Russia's Baltic Sea port city of Vyborg (near St. Petersburg), underneath the Baltic Sea to Germany, and then across the Netherlands and under the North Sea to the United Kingdom, was countenanced in June 2003 by Russia and the United Kingdom. In January 2004, the Russian government issued an official decree in support of the pipeline's construction and several European oil and gas concerns have reportedly shown interest in the project. However, to-date there is no definite consortium developing the pipeline. The North Trans-Gas project is expected to cost \$5.7 billion and transport approximately 1.05 Tcf per year. A possible spur connection to Sweden has also been considered. Despite great enthusiasm for the project from both sides, some analysts have pointed out that unresolved conflicts between the EU's liberalized gas market and Russia's state regulated system could prove to be a hindrance. Proponents of the project expect initial operation to begin at a rate of 0.7 Tcf in 2007, and later increase to 1.05 Tcf.

### Sakhalin

Sakhalin Island, a former penal colony located off Russia's eastern shore (see map), is home to five oil and gas projects, each operated by a unique international consortium. The five projects are currently in different stages of development, and two of the projects, Sakhalin I and Sakhalin II, aim to bring oil and natural gas production online in the near term. Both projects have targeted Asian markets.

#### Sakhalin I

The Sakhalin I project is being led by Exxon Neftegaz, in conjunction with consortium members SODECO, ONGC Videsh, Sakhalinmorneftegaz, and RN Astra. The consortium members started drilling in May 2003 and expect preliminary oil production of 250,000 bbl/d in 2005. The project's oil output will be piped westward to the Russian port of De-Kastri and pumped into the Russian system. Sakhalin I's natural gas is expected to be sent southward to Japan via a proposed pipeline. The partners are planning for natural gas exports to Japan to begin in 2008.

#### Sakhalin II

The Sakhalin II project is being developed by Shell, Mitsubishi, and Mitsui and entails the development of Russia's first LNG facility, to be built on the southern tip of the island, near the town of Prigorodnoye (see map). Construction of the project's two-train, 9.6-million-tons-per year facility began in Spring 2003, and Shell expects that initial production could begin in 2005 with exports scheduled to commence in 2007. According to press reports, the Sakhalin II partners have already secured sales contracts with four Japanese utilities worth 3.4 million tons per year, or approximately 35% of the plant's output capacity, for roughly 20 years. The most recent of these contracts was announced in March 2004, and entails the sale of 300,000 tons of LNG per year to Japan's Toho Gas between 2010 and 2033.

#### China and South Korea

Rusiya Petroleum (a TNK-BP-led consortium), South Korea's state-owned Korea Gas Corporation (Kogas), and the Chinese National Petroleum Company (CNPC) have announced plans to construct a pipeline connecting Russia's Kovykta field to China's northeastern provinces and across the

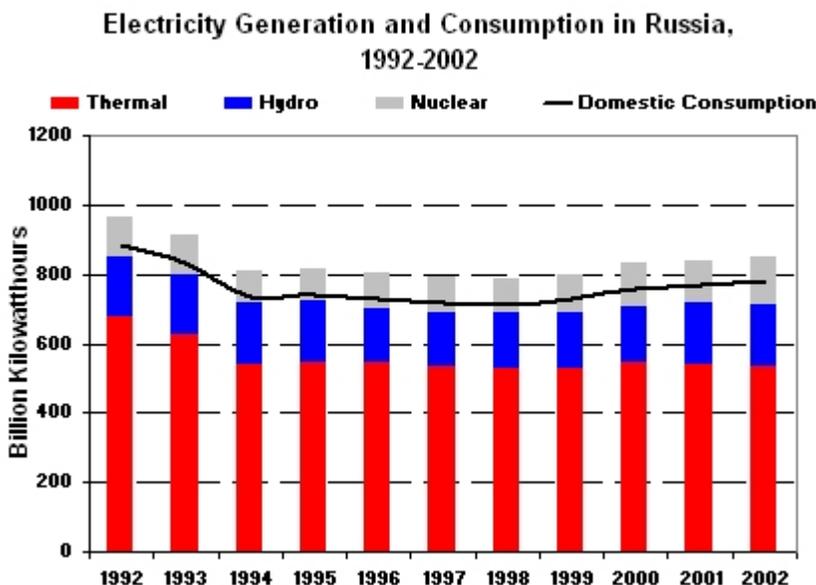


Yellow Sea to South Korea. The plan calls for a 1.2 Bcf per year pipeline which would deliver roughly two-thirds of its gas annually to China, while delivering the rest to South Korea and smaller quantities to the domestic market en route. The partners expect that the pipeline could come online in 2008.

## COAL

With 173 billion short tons in estimated recoverable coal reserves, Russia holds the world's second largest coal reserves, behind only the [United States](#) which holds roughly 274 billion short tons. However, years of poor management during the Soviet era, and a sharp decline in demand for coal during the early 1990s, significantly undermined the Russian coal sector. In 2002, Russia's total coal production was 259.3 million short tons, less than one-third of U.S. production.

Between 1996 and 2001, Russia worked with the World Bank to restructure the country's coal industry. As a result of the program, the state monopoly, formally known as RosUgol, has been dissolved, and roughly 77% of domestic coal production comes from independent producers. Russian coal production began a three-year upswing in 1999, and preliminary statistics indicate that this trend has continued throughout 2002 and into 2003. According to the government's energy strategy, Russia should produce between 441 and 496 million short tons in 2020.



## ELECTRICITY

Russia's power sector includes over 440 thermal and hydropower plants (approximately 77 of which are coal-fired) plus 30 nuclear reactors. The system has a total electric generation capacity of 205.6 million kilowatts, and in 2002 generated approximately 850.6 billion kilowatt hours (bkwh) of electric power (see graph). Since the collapse of the Soviet Union, electricity generation has shown both a dramatic decline, (down 18% between 1992 and 1999), and a gradual recovery (up 8% between

1999 and 2002)--see graph. As with similar patterns in oil, natural gas and coal, electricity generation was stunted by the economic slowdown which followed the collapse of the Soviet Union. Economic recovery has resulted in an increase in total electricity consumption from 715 Bkwh in 1998, to roughly 780 Bkwh in 2002, resulting in corresponding increases in electric generation (see graph).

Thermal power (oil, gas, coal) accounts for roughly 63% of Russia's electricity generation, followed by hydropower (21%) and nuclear (16%)--see graph. The Russian government has stated that it intends to expand the role of nuclear and hydropower in the future in order to allow for greater export of fossil fuels. Russia has an installed nuclear capacity of 21.2 million kilowatts, distributed across 30 operational nuclear reactors at 10 locations, all west of the Ural Mountains. However, Russia's nuclear power facilities are aging, and the nuclear power industry has been hard hit by Russia's transition to a market economy. Russia already has shut down several reactors that were over 30 years old, and many more are over 20 years old. By 2010, Russia plans to construct five new units at existing facilities throughout the country. By 2020, the Russian Ministry of Atomic

Energy predicts that nuclear generation could reach 300 bkwh per year, more than double the 2002 level.

The Russian government has also made hydroelectric generation a priority, particularly in the country's Far East, where electricity supply can be problematic. In June 2003, a representative from the country's power monopoly, Unified Energy System of Russia (UES), told reporters that the company plans to invest \$14 billion in the development of Russia's hydroelectric sector, particularly in Siberia and the Far East. On July 9, 2003, Russia's newest hydroelectric power station, the Bureya dam, located on the Amur river in the Far Eastern Amur Region was officially inaugurated. The dam is expected to reach full capacity in 2007.

### **Electric Industry Structure**

Russia's electricity sector is currently in a transitional period. Since independence, Russia's electricity sector has been dominated by Unified Energy Systems (UES), which is 52%-owned by the Russian government. UES, headed by former privatization minister Anatoly Chubais, controls approximately 70% of the country's distribution system and oversees Russia's 72 regional electricity companies, called energos. In March 2003, Russian President Vladimir Putin signed six bills into law which aim to substantially reform the industry. According to the reform package, tariff rates on the domestic market could be liberalized by July 1, 2005, and UES should be liquidated beginning in 2006. UES's generation and distribution facilities are expected to be privatized, while the country's transmission grid will remain under state control.

According to some analysts, reform of Russia's electricity sector was long overdue. Much of the sector is obsolete by Western standards, and Russia lacks the money to pay for necessary maintenance. In April 2003, UES CEO Anatoly Chubais estimated that \$55 billion in investment will be needed over the next 10 years for maintenance and modernization efforts. The March 2003 reform package is expected to boost investment, but only after the reforms are implemented.

### **Electricity Exports**

Russia exports significant quantities of electricity to the countries of the former Soviet Union, as well as to China, Poland, Turkey and Finland. There are currently two efforts underway to integrate the Russian and Western European electricity grids. UES is participating in the Baltrel program, designed to create an energy ring of power companies in the Baltic states. Also, the Union for the Coordination of Transmission of Electricity (UCTE), of which 20 European countries are members, has entered into discussions with Russian colleagues over the technological and operational aspects of amalgamating their systems. In October 2003, officials representing Russia and the European Union agreed to develop plans for the full integration of their respective power grids by 2007.

### **ENVIRONMENT**

After years of neglect under the Soviet Union, the **environment** has become a pertinent issue in today's Russia. Soviet policies that encouraged rapid industrialization and development left a legacy of **air pollution** and **nuclear waste** with which Russia now is struggling to contend. In addition, despite the objections of nascent environmental groups, the post-Soviet Russian government has passed legislation to facilitate the permanent storage of other countries' nuclear waste on Russian territory. Although environmental awareness in Russia is rising, the cost of remediating the country's environmental hot spots is high, and the Ministry of Natural Resources has a limited budget. As a result, cleanup has been slow, and environmental protection has not been a top priority for the Russian government.

The economic contraction in the aftermath of the Soviet Union's collapse caused a drop in industrial production, resulting in less **energy consumption** and a drop in Russia's **carbon emissions**. However,

energy and carbon intensities in Russia remain high, and although per capita carbon emissions have fallen over the past 12 years, Russia will need to pursue more sustainable environmental policies in order to maintain this trend, especially with the rebound in industrial production since the August 1998 financial crisis. Russia has abundant fossil fuel resources, but the country will need to pursue more renewable energy options and cleaner environmental technologies in order to preserve its natural wonders and protect its environment for future generations.

## COUNTRY OVERVIEW

**President:** Vladimir Vladimirovich Putin (acting president since December 31, 1999, president since May 7, 2000)

**Prime Minister:** Mikhail Fradkov (since March, 2004)

**Independence:** August 24, 1991 (from Soviet Union). National holiday: Russia Day, June 12, 1990

**Population (7/03E):** 145 million

**Location:** Eurasia

**Size:** 6,592,850 square miles, slightly more than 1.8 times the size of the United States

**Major Cities:** Moscow, St. Petersburg, Yekaterinburg, Irkutsk, Murmansk, Yakutsk, Vladivostok

**Languages:** Russian, others

**Religions:** Russian Orthodox, Muslim, other

## ECONOMIC OVERVIEW

**Minister of Economic Development and Trade:** German Oskarovich Gref

**Minister of Finance:** Aleksey Leonidovich Kudrin

**Currency:** Ruble

**Market Exchange Rate (5/6/04):** \$1 = 28.9 rubles

**Nominal Gross Domestic Product (GDP) (2003E):** \$433.9 billion **(2004E):** \$539.4 billion

**Real GDP Growth Rate (2003E):** 7.3%; **(2004E):** 5.7%

**Inflation Rate (Change in Consumer Prices, 2003E):** 13.7% **(2004E):** 10.9%

**Unemployment Rate (2003E):** 8.9% **(2004E):** 8.5%

**Current Account Surplus (2003E):** \$35.9 billion **(2004E):** \$34.2 billion

**Major Trading Partners (2003):** Germany, Ukraine, U.S., Belarus, Italy, Netherlands, Kazakhstan

**Merchandise Exports (2003E):** \$135.4 billion; **(2004E):** \$133.8 billion

**Merchandise Imports (2003E):** \$75.4 billion; **(2004E):** \$84.7 billion

**Merchandise Trade Balance (2003E):** \$60.0 billion; **(2004E):** \$49.1 billion

**Major Exports:** Petroleum and petroleum products, natural gas, wood and wood products, metals, chemicals, and a wide variety of civilian and military manufactures

**Major Imports:** Machinery and equipment, consumer goods, medicines, meat, grain, sugar, semifinished metal products

## ENERGY OVERVIEW

**Minister of Industry and Energy:** Viktor Borisovich Khristenko

**Proven Oil Reserves (1/1/04E):** 60 billion barrels

**Oil Production (2003E):** 8.44 million bb/d (of which 8.18 million bbl/d was crude)

**Oil Consumption (2003E):** 2.68 million bbl/d

**Net Oil Exports (2003E):** 5.76 million bbl/d

**Major Oil Customers:** Europe, Commonwealth of Independent States

**Crude Refining Capacity (1/1/04E):** 5.4 million bbl/d

**Proven Natural Gas Reserves (1/1/04E):** 1,680 trillion cubic feet (Tcf)

**Natural Gas Production (2002E):** 21 Tcf

**Natural Gas Consumption (2002E):** 14.5 Tcf

**Net Natural Gas Exports (2002E):** 6.5 Tcf

**Coal Reserves (1/1/01E):** 173 billion short tons

**Coal Production (2002E):** 259.3 million short tons (Mmst)  
**Coal Consumption (2002E):** 229.3 Mmst  
**Electric Installed Capacity (2002E):** 205.6 gigawatts (68% thermal, 22% hydro, 10% nuclear)  
**Electricity Generation (2002E):** 850.6 billion kilowatt-hours (Bkwh)  
**Electricity Consumption (2002E):** 780.0 Bkwh  
**Net Electricity Exports (2002E):** 70.6 Bkwh

## ENVIRONMENTAL OVERVIEW

**Minister of Natural Resources:** Yuriy Trutnev

**Total Energy Consumption (2001E):** 28.2 quadrillion Btu\* (7% of world total energy consumption)

**Energy-Related Carbon Dioxide Emissions (2001E):** 1,614.3 million metric tons (7% of world carbon dioxide emissions)

**Per Capita Energy Consumption (2001E):** 195.3 million Btu (vs. U.S. value of 341.8 million Btu)

**Per Capita Carbon Dioxide Emissions (2001E):** 11.2 metric tons (vs. U.S. value of 20.2 metric tons of carbon dioxide)

**Energy Intensity (2001E):** 30,239 Btu/\$1995 (PPP), vs U.S. value of 10,810 Btu/\$1995 (PPP)\*\*

**Carbon Intensity (2001E):** 0.58 metric tons of carbon/thousand \$1995 (PPP) vs U.S. value of 0.64 metric tons/thousand \$1995(PPP)\*\*

**Fuel Share of Energy Consumption (2001E):** Natural Gas (52%), Coal (18%), Oil (19%)

**Fuel Share of Carbon Dioxide Emissions (2001E):** Natural Gas (48%), Coal (30%), Oil (23%)

**Status in Climate Change Negotiations:** Annex I country under the United Nations Framework Convention on Climate Change (ratified December 28th, 1994). Under the negotiated Kyoto Protocol (signed on March 11th, 1999, but not yet ratified), Russia has agreed to stabilize greenhouse gases at 1990 levels by the 2008-2012 commitment period.

**Major Environmental Issues:** air pollution from heavy industry, emissions of coal-fired electric plants, and transportation in major cities; industrial, municipal, and agricultural pollution of inland waterways and sea coasts; deforestation; soil erosion; soil contamination from improper application of agricultural chemicals; scattered areas of sometimes intense radioactive contamination; ground water contamination from toxic waste.

**Major International Environmental Agreements:** A party to Conventions on Air Pollution, Air Pollution-Nitrogen Oxides, Air Pollution-Sulphur 85, Antarctic-Environmental Protocol, Antarctic-Marine Living Resources, Antarctic Seals, Antarctic Treaty, Biodiversity, Climate Change, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Marine Dumping, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Wetlands and Whaling. **Has signed, but not ratified:** Air Pollution-Sulphur 94, Climate Change-Kyoto Protocol.

\* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar and wind electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.

\*\*GDP figures from OECD estimates based on purchasing power parity (PPP) exchange rates.

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*Sources for this report include: Agence France Presse, Asia Pulse, Associated Press, BBC Monitoring International Reports, Central Asia & Caucasus Business Report, Caspian News*

*Agency, Caspian Business Report, CIA World Factbook, Current Digest of the Post-Soviet Press, The Economist, Energy Day, The Financial Times, FSU Energy, FSU Oil and Gas Monitor, Gas Connections, Global Insight, Hart's European Fuel News, Interfax News Agency, The International Herald Tribune, International Petroleum Finance, ITAR-TASS News Agency, Mining & Metals Report, The Moscow Times, Oil and Gas Journal, Petroleum Economist, Petroleum Report, Platt's International Coal Report, Platt's Oilgram News, Polish News Bulletin, PR Newswire, Project Finance, Radio Free Europe/Radio Liberty, Reuters, RosBusinessConsulting Database, Russian Economic News, Stratfor, The Russian Oil & Gas Report, Turkish Daily News, Ukraine Business Report, U.S. Department of Energy, U.S. Energy Information Administration, U.S. Department of State, Warsaw Business Journal, World Gas Intelligence, and World Markets Research Center.*

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