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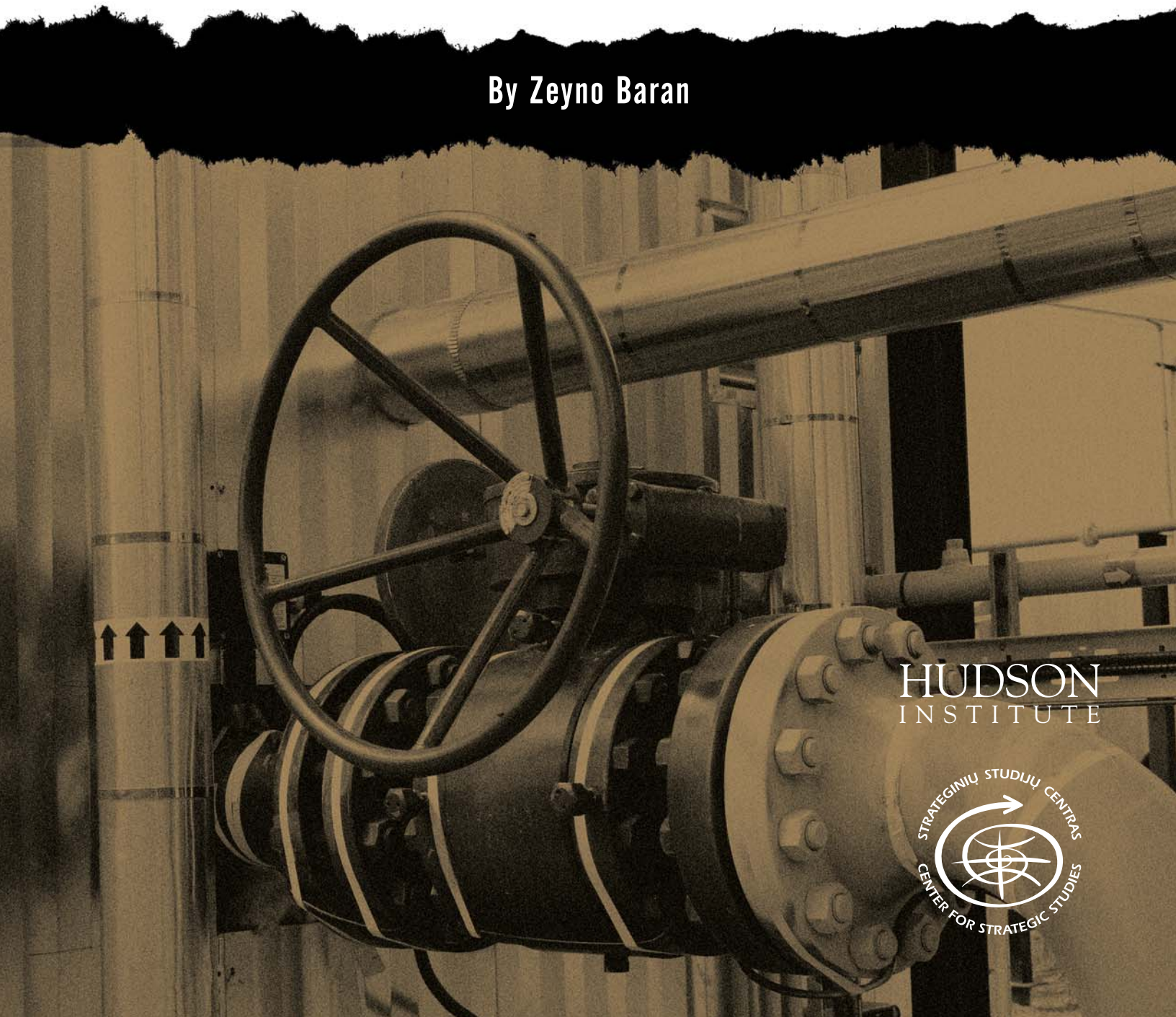
LITHUANIAN ENERGY SECURITY: CHALLENGES AND CHOICES

By Zeyno Baran



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Lithuanian Energy Security: Challenges and Choices

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Author's Note

On January 1, 2006, the day Russia took over the G8 presidency, Russian state-owned gas monopoly Gazprom cut off gas supplies to Ukraine. This was a bold move given that G8's key issue this year is energy security. While a "wake-up call" for many in Western Europe, the Ukrainian incident was only another step in President Vladimir Putin's strategy to strengthen Russia's already strong position in the Eurasian and European energy markets.

These policies are fraught with consequences for Central Eurasia and for Western Europe. If Russian monopoly power increases any further, then these countries will have difficulty resisting Russian political and economic pressure. Similarly, if Russian market power within the European gas sector increases, then many in "old Europe" will be even less willing than they are now to lean on Russia when Moscow's policies toward the Eurasian countries undermine the independence of these states.

Recognizing this risk, US Vice President Dick Cheney underlined on May 4 at the 2006 Vilnius Conference that "No legitimate interest is served when oil and gas become tools of intimidation or blackmail, either by supply manipulation or attempts to monopolize transportation." That said, and while countries ranging from Central Asia to the Baltic Sea want to diversify their sources away from Russia, to date, there is still no coherent energy security policy in Europe or the US.

While the European Commission's most recent Green Paper has outlined some priorities, they were too broad; moreover, they were insufficient in addressing the concerns and needs of Lithuania. This White Paper intends to highlight Lithuanian interests and urge Lithuanian and Western policy makers into action.

Table of Contents

Introduction 1

Russia's Use of Energy as a Political Weapon 4

US Policy 7

Is the EU Waking Up? 10

Recent Developments

The Northern European Gas Pipeline (Nord Stream) 12

Mažeikių Nafta 14

The Ignalina Nuclear Power Plant 17

Prospects and Potential Solutions

Electricity Connections with Europe 19

Renewable Resources 21

Building a New Nuclear Plant 22

Alternative Natural Gas Suppliers 24

Alternative Oil Suppliers 30

Conclusions and Recommendations 33

European Union Level Recommendations 34

Regional Level Recommendations 38

State Level Recommendations 39

Endnotes 41

Lithuanian Energy Security: Challenges and Choices

Introduction

Energy security is, at its essence, an issue of national security. Due to the power that energy-producing states have relative to transit and consumer countries, energy security must be understood in terms of geopolitics. The gas cutoff to Ukraine on January 1, 2006 is often called a "wake-up moment" for Europe; in other words, the point at which Europeans became aware of their over-dependence on Russian gas. While Russia has historically been a reliable energy supplier to Western Europe, it has often used strong-arm tactics in Eastern Europe and in other parts of the former Soviet bloc. Lithuania, in particular, has had direct experience with Russia's use of energy as a political weapon. Even before the Ukraine incident, the Lithuanian government attempted to develop a common European understanding of the Russian threat—an understanding which, as of December 2006, does not yet exist. In fact, on this question Europe is even more divided now than it was on January 1st.

Of all EU and NATO members, the Republic of Lithuania—a country of 3.5 million located on the eastern shore of the Baltic Sea—finds itself in a particularly difficult situation with regards to energy security. It has no domestic natural gas reserves, and its extremely limited oil reserves are estimated at only 1.63 million tons. Bordering Latvia in the north, Belarus in the south and east, and Poland and the Kaliningrad region of Russia in the south and southwest, Lithuania relies on Russia for 90% of its oil and 100% of its natural gas supply. Owing to its history of Soviet occupation, Lithuania's energy infrastructure is oriented eastward. Its main oil and gas pipelines must travel from Russia through neighboring Belarus before they enter Lithuania. In the case of oil, two parallel pipelines run from the Bryansk region of Russia through Minsk into Lithuania. At the country's pumping station in Biržai (near the Latvian border) one line turns northward into Latvia while the second continues westward to the Baltic Sea. In the case of natural gas, Lithuania is supplied by a single pipeline that connects Russia and Lithuania via Minsk. Lithuania does have the ability to import small amounts of gas from gas storage facilities in Latvia in case of emergency, as it did in January 2004 when Russia shut down gas shipments to Belarus. However, excluding these poorly utilized pipelines to neighboring Latvia, Lithuania has no pipeline connections with the European Union.

Source: www.countryreports.org

Lithuania is home to the only oil refinery in the Baltic states. Located near the city of Mažeikių (less than 100 kilometers from the Baltic Sea), the Mažeikių refinery is Lithuania's largest commercial entity. It is also the biggest taxpayer in the country. The facility has the capacity to process 10 million tons of crude per year, but has never reached this level due to inconsistent supplies. Mažeikių received 9.3 million tons of crude in 2005, up from 6.6 million in 2002.[1] Poland's state energy company, PKN Orlen, recently committed to purchasing an 84% stake in Mažeikių Nafta (the company whose assets include the refinery), signing a $2.7 billion agreement in May 2006.

Lithuania also serves as an important transit point to the energy markets of the West and the Kaliningrad region of Russia. There is a state-of-the-art onshore terminal and offshore sea platform at the coastal village of Būtingė, which has a capacity of 12 million tons of crude per year. Twenty-five kilometers south of Būtingė is Klaipėda, the country's only deep-water seaport. In 2005, the tanker terminal at Klaipėda handled some 5.8 million tons of oil bound for Western Europe and the United States.

Oil supply and refining in Lithuania

Source: http://www.lei.lt/_img/_up/File/atvir/leidiniai/energ.pdf

Thanks to its nuclear power plant (located near the town of Ignalina), Lithuania is currently a net exporter of electricity; its principal customers are Latvia and the Kaliningrad exclave region of Russia. However, the aging facility is scheduled to be decommissioned in 2009, and no work is yet underway to construct a replacement. Once Ignalina ceases operation, Lithuania will have to use thermal power plants (TPPs)—which burn fossil fuels—to generate its electricity. This poses a large dilemma for Lithuania, since the country is completely disconnected from both the larger European

electricity network (UCTE) and the Nordic electricity network (Nordel).[2] Clearly, the closure will lead to a dramatic increase in demand for oil and gas—and, if no steps are taken to diversify import supplies, to further reliance on Russia.

After more than 50 years of occupation, Lithuania restored its independence on March 11, 1990. Since then, it has taken steps to distance itself both politically and economically from Russia. It has embraced market reforms and, in 2004, became a member of both NATO and the EU. Yet, Lithuania remains overwhelmingly dependent on Russia for both oil and natural gas. As the European Commission stated in its Green Paper "A European Strategy for Sustainable, Competitive and Secure Energy," Lithuania is indeed an "energy island."[3] Given Russia's increasingly aggressive energy policy, this dependence represents a huge security risk.

Thus, with the urgent goal in mind of developing a concrete set of policies to counter this risk, the Lithuanian government has begun to review its National Energy Strategy, which was last updated in 2002. First among the revisions are the construction of a new reactor at Ignalina and the planned projects to link Lithuania to the European energy grid via power bridges with Sweden and Poland. But Lithuania cannot accomplish this alone. It is essential that the EU speak with one voice on energy security and not allow Russia to once again divide the continent into an "old Europe" and a "new Europe"—a division that projects such as the planned gas pipeline linking Russia and the EU via the Baltic Sea (Nord Stream) would effectively create.

This paper will first discuss Russia's use of energy as a political tool, providing the context for Lithuania's energy "insecurity." It will then briefly discuss US and EU efforts to develop policies toward improving the situation. This study will next outline recent developments regarding Nord Stream, the Mažeikių refinery, and the Ignalina reactor. It will then discuss Lithuania's options for achieving energy security: connecting with Europe, constructing a new nuclear plant, and accessing new sources of oil and natural gas, including LNG. Finally, this paper will present a series of policy recommendations to the Lithuanian government.

Russia's Use of Energy as a Political Weapon

With proven reserves of approximately 68 billion barrels of oil and 52.5 trillion cubic meters of natural gas, Russia is one of the most energy-rich countries in the world. Ever since he came to office in 2000, President Vladimir Putin has sought to utilize these resources as a tool in the execution of Russian foreign policy. Indeed, Putin has long been an advocate of using energy as a policy instrument, as evidenced by his 1997 doctoral thesis entitled "Strategic Planning of the Reproduction of the Resource Base."

Since taking office, Putin has tightened the Kremlin's control over all areas of the Russian energy sector. Currently, Russia's vast oil and gas transportation infrastructure (almost 200,000 kilometers of pipeline, with hundreds of compressor and transit stations) is owned by two companies: Transneft, which manages oil transit (100% state-owned), and Gazprom, which manages natural gas transit (majority state-owned). In addition to overseeing the pipelines, Gazprom is also the world's largest energy company, holding nearly one-third of the world's natural gas reserves; it accounts for 90% of total Russian production. Gazprom is the crown jewel of Putin's emerging energy empire; accordingly, the Russian president has taken great care to see that it remains firmly under his control.[4] Putin has stocked the company leadership with government insiders, such as Dmitri Medvedev—the presidential chief of staff who also serves as the chairman of the Gazprom board of directors—and cronies from his hometown of St. Petersburg, such as Alexei Miller. Miller worked in the city mayor's office with Putin in St. Petersburg and then as deputy minister of energy before being appointed CEO of Gazprom in 2001.

A march of government-backed mergers and acquisitions has seen the steady consolidation of up-, mid-, and down-stream activities. In September 2005, Gazprom acquired Sibneft, Russia's fifth-largest oil production and refining company. This acquisition followed the gas giant's unsuccessful merger bid with Rosneft, the country's second-largest oil company. Yet, despite this setback, consolidation continues: Rosneft is now poised to acquire most of the assets of the country's third-largest oil company, Yukos, which was dismantled by the government in 2003. Most recently, Lukoil and Gazprom's oil arm, Gazpromneft, announced the formation of a joint venture to be signed by end 2006. It is widely assumed that the Kremlin pushed Lukoil into the agreement with Gazprom whereby Gazpromneft will have the controlling stake in the venture and the ability to take advantage of Lukoil's overseas operations.

The end result of this maneuvering is that Vladimir Putin can now be regarded as the *de facto* CEO of the Russian oil and gas industry.[5] He has thus been able to exercise complete power in determining the conditions of Russia's economic relationships with energy producers and consumers. In Central Asia, producer countries such as Turkmenistan, Kazakhstan, and Uzbekistan have little choice but to utilize Russian pipelines. Since these countries have no alternatives, Moscow is able to purchase their supplies for prices well below world levels. Each time that American and EU leaders have approached Central Asian governments about the prospect of constructing new export pipelines that do not involve Russia, the Kremlin has utilized tactics of "persuasion" to bring a halt to such projects.

Pressure from Moscow is equally strong in the Caucasus, where Gazprom has succeeded in taking over much of Armenia's natural gas infrastructure. In November 2006, it also acquired a controlling share of the Iran-Armenia pipeline project that is under construction. This project was initially envisioned by Armenian leaders as a way to lessen reliance on Russia. Yet, even if Moscow does not secure full operational control of the pipeline, it has already exerted significant influence during the planning stages. Gazprom successfully demanded that the pipe's diameter be limited to 700 millimeters. The line was originally envisioned to be 1,420 millimeters in diameter, thus allowing Iranian gas to be transported through Armenia to Georgia and potentially onward to Ukraine and Europe.[6] However, with the limitation, Armenia will not be able to import sufficient quantities of gas for re-export.

Gazprom is also currently engaged in a price dispute with the government of Georgia. With the Kremlin eager to weaken pro-Western President Mikheil Saakashvili and to take over control of Georgia's gas infrastructure—which due to its strategic location is the key to the transport of Caspian gas to Turkey and Europe—Gazprom has seriously increased pressure on Georgia. Last winter, three consecutive explosions occurred which interrupted the gas and electricity for Georgia. During a period when the country recorded the lowest temperatures in a decade, Georgians had no heat for two weeks. Gas imports from Russia returned to normal levels only after Armenia had exhausted almost all of its reserves—in fact, when imports finally resumed, Armenia had only enough for one day's consumption remaining. In September, following a political incident in which Georgia expelled a number of Russian spies, Gazprom has announced that the price of natural gas for the Caucasian state in 2007 will be more than double than that of 2006 ($230 per thousand cubic meters (tcm) rather than $110). Gazprom claimed that it is only charging a market price; however, political realities and past practices belie this claim. First of all, there is no internationally accepted "market price" for gas. Moreover, in the past, Gazprom has often used price hikes as a lever to pressure countries into selling energy assets. Armenia, for example, pays only $110 per tcm; however, that preferential rate was gained only at the cost of allowing Gazprom to acquire a significant portion of the country's energy infrastructure.[7]

Azerbaijan is also coming under pressure. Soon after gas production began in the Shah Deniz field on November 10, 2006, Russian officials privately told their Azerbaijani counterparts that if they sell Turkey the natural gas at $120 (per agreement between Azerbaijan and Turkey), Russia would increase the price at which it sells gas to Azerbaijan to $230. Azerbaijan would not be able to justify internally purchasing gas for $230, while selling its own gas for almost half of that amount. In addition, Gazprom informed Azerbaijan that in 2007 it would only sell 1.5 bcm of gas, which is 3 bcm less than the amount sold this year.[8] Faced with a possible shortage of 3 bcm of gas, Azerbaijan would clearly come under great pressure to use the gas produced at Shah Deniz for domestic needs, rather than exporting it to Georgia and Turkey.

While the January gas cutoff to Ukraine is the most infamous example of Russian strong-arm tactics, several other countries have been presented with similar ultimatums. In

addition to Armenia, Azerbaijan and Georgia, Belarus now finds itself a target of Gazprom. Unless Minsk agrees to sell Gazprom a 50% stake in Beltranshaz (the state-owned operator of Belarus' gas infrastructure), Moscow will raise gas prices for its longtime ally from $47 per tcm to as much as $200.[9] Even Bulgaria and Greece—both NATO members—have been subjected to this "trademark" move: either give up control of infrastructure, or face higher gas prices. Gazprom's demands in the latter two countries have focused specifically on gaining control of planned pipeline routes that would enable the transport of Caspian and Iranian gas via Turkey directly to European markets. Both of these routes were designed as means of reducing Europe's dependence on Russia for natural gas supplies. Russia is further targeting Bulgarian and Greek infrastructure by linking gas-sector concessions with supply commitments of Russian crude to the Burgas-Alexandroupolis oil pipeline. Thus, just as it did with Iran and Armenia, Moscow is pressing hard against any attempts to undermine its supply dominance.

In Western and Central Europe, Putin has pursued his acquisition of key gas distribution assets with more subtlety, focusing on "dividing and conquering" the continent. The former KGB officer has made tempting offers to various companies in an effort to play them against each other as they scramble for access to Russian resources. Most recently, Moscow has used involvement in both Nord Stream gas pipeline and the massive Yuzhno-Russkoye (South Russian) gas field as a carrot to entice European energy companies to sign over parts of their distribution networks. Through this tactic, Gazprom has increased its holdings in two of Germany's largest energy distributors, E.ON Ruhrgas and BASF. These companies own infrastructure in a number of other European countries, including Belgium and Hungary. Nor is Gazprom finished with Nord Stream. It recently signed a memorandum of understanding with the Netherlands' Gasunie for a 9 percent stake in the pipeline project. Of course, these shares are offered in exchange for control over still more European gas distribution assets. Russia's European maneuvering has created a market that is increasingly monopolistic, giving Moscow the ability to limit—or even deny—other potential suppliers access to European markets.[10]

Perhaps recognizing the potential economic and political dangers in allowing one company such broad control, in October 2006, German Chancellor Angela Merkel rebuffed an offer by Putin to make Germany the "energy hub" of Europe. In a welcome sign of EU unity, Merkel stated that Germany would instead pursue closer energy cooperation with France. At the same time, the chancellor's chief aide, Thomas de Maizière, warned about the tendency of energy-rich countries to use control over supply as "currency of power" and a "political weapon."[11] Merkel's decision may mark the beginning of recognition by Germany—and possibly by other countries in "old Europe"—that Europe's interests are best served by cooperation, not competition.

US Policy

The recently-completed Baku-Tbilisi-Ceyhan (BTC) pipeline is an excellent example of the success that cooperation can bring. Connecting the Caspian and Mediterranean seas, BTC provides a route by which Caspian oil can reach European markets without Russian involvement. At first, a number of European countries believed BTC was commercially infeasible; since it would also incur the wrath of Moscow, they firmly opposed the pipeline and urged the US also to end its support. Yet, with strong cooperation among Azerbaijan, Georgia and Turkey, and with the continued backing of the US and a consortium of Western energy companies, BTC was completed; it began operating in the summer of 2006. While BTC was expensive to construct ($3.6 billion, or 2.75 billion), few European governments would now maintain that the benefits of this first major non-Russian export route from the Caspian outweigh the costs of its construction.

The BTC project was a key component of America's Caspian Sea regional energy policy. This policy is based on the promotion of multiple pipelines to allow the region's newly independent countries to export energy supplies to Western markets without having to rely solely on Russia's transportation infrastructure. The most significant projects backed by the United States were two pipelines for oil and gas along the "East-West Energy Corridor." In addition to BTC oil pipeline, which transport Azerbaijani (and, in the future, Kazakhstani) oil via Georgia to Turkey's Mediterranean port of Ceyhan, there is also the South Caspian Gas Pipeline (SCP). Starting in 2007, the SCP will transport Azerbaijani gas via Georgia into Turkey and onward to Western Europe.

US support for these two projects did not reflect any anti-Russian agenda on its part. American policy is instead intended to break the Russian monopoly on economic and political relations with Azerbaijan and Georgia, so that these newly emerging states could freely develop their economic and foreign policies without fear of reprisal. This policy has already seen positive results; in Azerbaijan, the end of the Russian monopoly over oil and gas transportation has given a tremendous boost to Western companies.

Despite the strong support of the US government, the east-west pipelines would never have materialized were it not for their commercial attractiveness. American involvement was certainly important to the oil companies and other investors, as it substantially reduced the political risk of these projects. Yet even despite the strong political commitment of the government, US support was not sufficient by itself to make the projects a reality. The international consortium responsible for the development of Azerbaijani oil and gas did not make the final decision on either pipeline until each state signed internationally binding agreements offering investors the right incentives and the necessary legal protection.

The US was correct to focus on the Caspian Sea region as an important non-OPEC source of oil. It also properly identified that the transportation of Central Asian gas directly to EU markets, rather than by Gazprom's pipeline network is the best strategy for the region's energy future. Caspian and Central Asian gas will not reach US markets, but the reduction of Russia's energy monopoly in the region will nevertheless benefit the United

States by curbing Moscow's influence over the EU and its policies, especially regarding countries Russia still considers to be in its backyard.

While the SCP will begin transporting Azerbaijani gas in the coming months, efforts to connect the eastern part of the Caspian to this line have thus far been unsuccessful. In short, Russia clearly won the first round of the Caspian gas competition. In the late 1990s, while the US backed a trans-Caspian gas pipeline to transport Turkmen gas via an undersea pipeline to Azerbaijan (and from there, via Georgia to Turkey and onward to European markets), Russia was able to finalize a gas pipeline agreement with Turkey to export its gas there via the so-called Blue Stream pipeline underneath the Black Sea. With Turkey as the main interim market for Russian and Turkmen gas, and with its domestic market reaching short-term saturation following the Russian Blue Stream gas pipeline, the Turkmen project was no longer commercially viable.

In part because of the authoritarian rule of Turkmen President Saparmurat Niyazov, until recently the US had abandoned its Central Asian gas strategy. The US decision was not to engage in energy dialogue with Niyazov until and unless he made improvements to the democracy and human rights situation in the country. Given that he is not likely to do so, it was deemed best to wait him out, and to begin energy talks with his successor—no matter how far in the future. However, this policy simply did not work. While the US waited, the Chinese and the Russians moved in to fill the vacuum.

More recently, the trans-Caspian gas pipeline idea was revived by the US government, this time with a focus also on Kazakhstan. Given Kazakhstan's pragmatic energy development policy and demonstrated interest in the east-west corridor, this option seems to be a good way forward. Yet, this pipeline may not materialize unless the US is seriously committed to changing the energy dynamics in Eurasia, which ultimately means confrontation with Russia's regional energy strategy. Since Russia is firmly committed to its monopoly on the transport of Central Asian gas, any change will require confrontation.

Until recently, the US was reluctant to oppose Russia directly, but the tide may be turning. After Gazprom's repeated attempts to take over Georgia's north-south gas pipelines, the Millennium Challenge Account (MCA) provided Georgia with funds to rehabilitate the principle line in 2005—thus preventing the need to sell this asset to Gazprom.[12] In April 2006 during meetings in Greece and Turkey, Secretary of State Condoleezza Rice reportedly urged her counterparts not to accede to Gazprom's demands of ownership stakes in the Nabucco and the TGI pipelines; she also opposed the Russian effort to utilize these pipelines for its own exports.[13] Instead, she highlighted the importance of sending Azerbaijani gas via these pipelines to Europe, thus providing true energy diversification. (These pipelines are discussed in greater length below).

The most forceful US statement to date against the Russian monopoly was made by Vice President Dick Cheney during his May 2006 speech in Vilnius:

> "Actions by the Russian government have been counterproductive, and could begin to affect relations with other countries. No legitimate interest is served when oil and gas become tools of intimidation or blackmail, either by supply manipulation or attempts to monopolize transportation. And no one can justify actions that undermine the territorial integrity of a neighbor, or interfere with democratic movements."[14]

After Vilnius, Cheney traveled to Kazakhstan to encourage President Nursultan Nazarbayev to commit to east-west oil and gas pipelines. Putin reacted immediately, inviting the Kazakh president to the Moscow G8 summit in mid-July. At the summit, Putin made very clear his opposition to Kazakh oil and (more importantly) gas independently reaching western markets. Nazarbayev then visited the White House on September 29, where an energy partnership was a key element of the discussions. Not surprisingly, Putin visited Nazarbayev immediately afterwards in order to reiterate his opposition to any non-Russian export route for Kazakhstani gas. For now, Nazarbayev is playing it safe and keeping quiet on the prospect of a trans-Caspian gas pipeline.

Further to the west, the US has also been concerned that projects like Nord Stream would weaken European solidarity without contributing to energy security. Deputy Assistant Secretary of State Matthew Bryza recently stated in an interview with the *Financial Times* that the project "simply raises the question what diversification means when it comes to gas supply…I wonder…how much diversification anybody can develop by having more pipelines into the same supplier."[15]

Despite the evident high-level US commitment to energy security, without transatlantic cooperation it will be difficult to devise and implement an effective Eurasian and European energy security plan—especially in light of the determination exhibited by Russia. Thus far, the EU's inability to come up with a "unified" position has inhibited transatlantic cooperation, weakening the position of the West.

Is the EU Waking Up?

Thanks in part to effective US diplomacy, Europe's political concern about its energy security has grown over the last year. At an October 2005 summit held under the British presidency of the EU, heads of state agreed to formulate a long-term Common Energy Policy.[16] Russia's actions in December and the subsequent gas cut off to Ukraine in January 2006 propelled this issue to the forefront of EU agenda.[17] Since then, Brussels has devoted a significant amount of attention to developing secure sources of energy supply, issuing numerous publications and press releases. The first formal step taken towards the enactment of a Common Energy Policy was the release of a European Commission Green Paper in March 2006. Together with statements made by EU officials, this document presents a European energy strategy with a strong emphasis on diversifying supply and coordinating strategy among member states.

Indeed, this Green Paper identified the establishment of a coherent external energy policy as a "priority" for Europe. It calls for member states to "speak with a common voice" on energy issues, recommending that a pan-European Energy Community Treaty be drafted. The document also advocates the completion of an interconnected EU grid for both electricity and natural gas, emphasizing that Lithuania and the other Baltic states are completely isolated from the rest of Europe's energy infrastructure. It further advises that the EU invest in the infrastructure necessary to diversify the sources from which it acquires its energy resources. This, the Green Paper maintains, is vital to ensure competitiveness and security of supply. At the same time, it argues that Europe must work to establish fair and secure partnerships with its existing energy partners. The report singles out Russia not only because it is Europe's largest energy supplier (over 40 percent of its gas imports and 30 percent of its oil imports) but also because it has continually resisted European calls for a fairer, more open energy market. Russia's ratification of the Energy Charter Treaty and its Transit Protocol addendum, the paper concluded, would go a long way towards the creation of a more equal energy partnership between Russia and the EU.[18]

The Green Paper's findings have been met with a favorable response in Brussels. In June 2006, the European Council officially adopted a set of recommendations on external energy relations that largely echoes the conclusions of the Commission's Green Paper. First on that list is coherence, which the Council calls "central to achieving [its] objectives." The Council also advocates strengthening internal energy interconnections, enhancing coordination between member states when dealing with energy suppliers, and establishing relationships with new energy suppliers such as those in the Caspian region. While noting the unavoidable role that will be played by fossil fuels, the Council advises diversification away from them towards cleaner sources such as nuclear power. It stresses creating a more "level playing field" in regards to the EU-Russia energy relationship, singling out the need for fairer market conditions and a mutually agreed-upon transit protocol.

The EU Energy Commissioner, Andris Piebalgs, has been one of the most vocal champions of this strategy of diversification and solidarity. During a recent speech in

Bratislava, he argued for the importance of coordinating external energy policy and "speaking with one voice." He also revealed that the EU's ambitious new Energy Strategy—to be announced in January 2007—will incorporate many of the recommendations found in the original Green Paper. Piebalgs specifically singled out his intention to focus on a priority interconnection and infrastructure plan, which will include electricity links, gas storage facilities, new pipelines, and liquefied natural gas (LNG) terminals. This plan will presumably be a refinement of the existing priority energy projects list of the Trans-European Network (TEN). Given that so few of these infrastructure projects have been completed—or even begun—Piebalgs stated that the Energy Policy will re-evaluate the adequacy of the EU's funding level for them. Currently, only €20 million ($25.6 million) per year is devoted to such endeavors.[19]

This emphasis from Brussels on solidarity and unity should come as welcome news to Lithuania, which, as described above, is uniquely vulnerable to energy disruptions. Coherent support from the European Union would go a long way towards ensuring that Lithuania does not fall prey to deliberate manipulations of its energy supply by Russia. Unfortunately, a number of recent events have led Vilnius to question whether the "one voice" policy is more than mere rhetoric.

Recent Developments

THE NORTHERN EUROPEAN GAS PIPELINE (NORD STREAM)

In November 2005, Russia began construction on a 1,200 kilometer natural gas pipeline that, when complete, will run along the floor of the Baltic Sea to the city of Greifswald in northern Germany. This massive project, now known as Nord Stream, will eventually transport 55 bcm of gas per year from Russia directly to Western Europe. It will bypass Lithuania along with the other Baltic states and Poland, thus denying them the economic windfall they would have enjoyed had the pipeline's route passed through their territory. Naturally, this project has generated sharp criticism from Lithuanian politicians, who not only objected to with the pipeline on financial grounds, but also because in their view Nord Stream will make Lithuania more politically beholden to Russia and further its isolation from the rest of Europe.

When Moscow halted gas supplies to Ukraine in January, the resulting disruption had corresponding effects for the rest of Europe. Austria, Slovakia, and France all saw their gas supply curtailed by approximately 30 percent, while Germany, Hungary, and Poland experienced lesser reductions in supply.[20] Lithuania, on the other hand, plays no role in the transit of natural gas to other European nations; a hypothetical cutoff of supplies to Lithuania would therefore not attract as much attention in Western Europe. Although the Russian exclave of Kaliningrad currently receives its gas supplies through pipelines that cross Lithuanian soil, Russia is planning to build a spur connecting Nord Stream to Kaliningrad. Once this spur is completed, Russia could manipulate the gas flow into

Source: Nord Stream AG

Lithuania without affecting supplies either to the nearly 1 million Russians living in Kaliningrad or to the EU—thus eliminating any potential leverage for Vilnius. Lithuania has been left open to extortion by Russia and Gazprom. Since there is no global market for natural gas, buyers and sellers must negotiate the price bilaterally. Lithuania's near total lack of alternative suppliers means it must accept whatever price Moscow demands—or risk a total shutdown.

As early as 2004 Lithuania proposed an overland pipeline, named the Amber Project, which would have connected the three Baltic states and Poland. Originally developed

together with Poland and Denmark, the concept was proposed to the EU in 2004. The Amber Project would have cost an estimated 30% less to build than Nord Stream, and would have drastically limited the environmental impact of potential accidents.[21] Beyond the danger of possible spills, there is another risk factor associated with the construction of Nord Stream: an accident involving the significant quantities of munitions and chemical weapons on the floor of the Baltic. The ecological consequences of such an incident would be severe.[22] Nevertheless, Germany remained committed to the Nord Stream project.

The apparent lack of interest on the part of Germany and other key EU states in sponsoring the Amber Project has troubled Lithuanian leaders. To them, it indicates that the rest of the European Union has little regard for the concerns of its newest members. The Nord Stream arrangement has been wryly likened by Polish officials—most notably Defense Minister Radoslaw Sikorski—to the Molotov-Ribbentrop Pact signed between Germany and the Soviet Union prior to World War II.[23] That secret agreement effectively paved the way for the USSR's 1940 annexation of the three Baltic states, as well as the partition and occupation of Poland. Lithuania's former Prime Minister, Algirdas Brazauskas, also expressed his indignation at the perceived slight, saying that "during the preparation of the project nobody asked our opinion even once. Everything was done behind our backs."[24] That the EU would support the Nord Stream project over the Amber Project has puzzled many observers. After all, the European Union has repeatedly stated that the integration of all member states into a common gas market is one of its priorities. By connecting the Baltic states to the existing gas infrastructure of the "old" EU, the Amber Project would have accomplished this goal. In choosing Nord Stream, Europe is apparently reneging on its commitment to "speak with one voice." Indeed, Nord Stream actually exacerbates the fragmentation of the European energy market, thereby increasing Moscow's ability to manipulate gas supplies for political purposes. Lithuanian president Valdas Adamkus has expressed his surprise, saying, "I believe I can understand the Russian position, but I can't understand Germany's position."[25]

The Baltic states and Poland are not the only countries upset over the planned route of Nord Stream. A number of Swedish and Finnish politicians and government officials—including Sweden's former Prime Minister Goran Persson—have also raised concerns over the potential environmental side effects of the pipeline. Equally irksome for Sweden and Finland is the fact that neither Germany nor Russia consulted them in planning Nord Stream. That route, although avoiding the territorial waters of Sweden and Finland, will pass through their exclusive economic zones (EEZ).[26] Under international law, Sweden and Finland are held responsible for any environmental damage that occurs in these zones. As Krister Wahlback (a former policy advisor to Swedish Foreign Minister Carl Bildt) stated, Nord Stream will provide no direct benefits to his country despite the great risk posed to Sweden by the pipeline. Wahlback joined other Baltic and Polish critics by arguing that an overland route—such as the Amber project—would be both cheaper and safer than Nord Stream. Wahlback remarked that "the apparent impetus behind the undersea route is to subvert the principles of solidarity in the EU."[27] The company overseeing Nord Stream's construction is currently conducting an environmental impact

assessment of the project. The study will not be completed until at some point in 2007, after which construction begins on the underwater portion of the pipeline.

Nord Stream is also creating controversy in a different way. In December 2005, less than a month after he left office, German Chancellor Gerhard Schröder accepted a position as chairman of Nord Stream. While not illegal—there are no laws governing such behavior—the fact that the chancellor is now profiting from a project that he was so instrumental in arranging raises the question of his motivations. Even while in office, Schröder's fierce advocacy for Nord Stream troubled some observers; after all, the chancellor has long been a close personal friend of Putin's, once traveling to Moscow for the Russian president's birthday. This relationship had led Schröder to overlook Russia's actions in Chechnya and resist calls to criticize the Kremlin for its abuses of political freedom. (It also earned Schröder an honorary doctorate degree from St. Petersburg University—Putin's alma mater.) The announcement of Schröder's new position as an employee of Gazprom drew a firestorm of criticism from German politicians, as well as leaders from Poland and the Baltic states. As noted above, the choice of an undersea rather than overland route benefits Gazprom more than any other actor.[28] It allows the energy giant to avoid ceding control of the pipeline to states whose territory it would pass through. As such, Gazprom will not be forced to pay transit fees. But perhaps most importantly, an undersea route grants Moscow and Gazprom a greater degree of control over European energy markets.

MAŽEIKIŲ NAFTA

Even as the first kilometers of Nord Stream were being laid, another chain of events was set in motion that has dramatically worsened Lithuania's energy security situation. In May 2006, the Polish energy company PKN Orlen agreed to purchase the Lithuanian government's 30.66% stake of Mažeikių Nafta (MN). MN is the largest company in Lithuania and one of the biggest oil refineries in Central and Eastern Europe. PKN Orlen won its stake in an open auction. KazMunaiGaz, Lukoil and TNK/BP, which had been in negotiations with the Lithuania government to acquire the refinery, were unwilling to match PKN's price.

MAŽEIKIŲ NAFTA

Assets:	
Mažeikių Nafta Refinery; Būtingė Terminal; 500 km pipeline System—includes 2 pumping stations (Biržai and Joniškis)	
Data:	
Employees:	3500
Annual Refining Capacity:	10 million tons of crude oil
Share in State Budget Revenues:	7.3% in 2005 and 6.8% in Q1 of 2006
Share in State GDP:	approximately 10%
Revenues:	$4.14 billion (€3.22 billion) in 2005

Losing the bid to PKN Orlen only intensified Moscow's anger; just one week earlier, the Polish conglomerate signed a deal to acquire the 53.7% interest in MN that had been held by Yukos, the now-defunct Russian energy giant. Beginning with the arrest of its CEO Mikhail Khodorkovsky in 2003, Yukos was dismantled by the Kremlin in a battle that was as politically charged as it was one-sided. Moscow proceeded to freeze the majority of Yukos' assets, before appointing a temporary manager to oversee their sale. However, because Mažeikių Nafta was operated by a Dutch-based subsidiary of Yukos, the auction moved forward without Moscow's approval. Rosneft subsequently lobbied a bankruptcy court in New York in an attempt to block Yukos's attempt to sell Mažeikių Nafta until the company had settled with the Russian government over "unpaid back taxes." This appeal was denied and the sale was authorized. In total, PKN Orlen paid $2.34 billion (€1.82 billion) for an aggregate 84.4 % stake of MN. Yet, PKN Orlen's gain again came at the expense of Rosneft and Moscow. First, Lithuania and Poland spurned Moscow's effort to acquire MN and the profitable Mažeikių refinery. At the same time, Yukos continued to antagonize the Kremlin by selling a sizeable asset against Moscow's wishes. Faced with this, Moscow decided to respond.

On May 29 (just after Lukoil lost its bid for MN), the vice president of Transneft, Sergei Grigoryev, issued an ominous statement about PKN Orlen:

> We really don't know who they are…I suppose they should talk to Russian producers about supplies and then only come to us…We know their rivals: Lukoil, TNK-BP and KazMunaiGas. We have met them many times. But we have never met PKN or Russian producers who are willing to supply them with crude.[29]

At a mid-June meeting with a group of Lithuanian journalists, the Kremlin's chief of staff Modest Kolerov made clear that Moscow's dissatisfaction with the new owner of Mažeikių Nafta. Shortly thereafter, on June 28, the vice-president of Lukoil, Leonid Fedun, stated that "deliveries to Mažeikių are not interesting for us…The price is very low and the deliveries in that direction are less attractive than to refineries in Germany, Romania, or Bulgaria."[30]

On July 29, citing environmental and safety concerns, Transneft completely halted crude oil shipments to Mažeikių. According to company officials, the northern branch of the Druzhba-1 (which ironically means "friendship") pipeline had "sprung a leak" somewhere in the Russian region of Bryansk. In light of the Kremlin's obvious dissatisfaction at losing its bid to acquire the refinery, suspicions immediately arose that the interruption was intentional. Lithuanian Prime Minister Gediminas Kirkilas publicly voiced his skepticism, saying that "perhaps the crude suppliers are dissatisfied with what has happened at [Mažeikių] …although they are giving other reasons for the halt in supply—technical ones."[31] Soon after the leak was announced, Transneft officials declared that the supply disruption would only affect oil shipments into Lithuania. Belarus, a neighboring state whose leadership is more closely aligned with Moscow, would continue receiving its full share.

Further fueling suspicions is the fact that, as noted above, Russia is a repeat offender; it has utilized energy shutoffs as a political tool many times in the past. The Ukraine gas incident in January is only a recent example. In 1990, the Soviet Union cut supplies to all the Baltic states in a (futile) attempt to stifle their independence movements. Moscow utilized this tactic again in 1992 when Latvia, Lithuania, and Estonia demanded that Russia remove its remaining military forces from their countries. Indeed, it was fear of such Russian actions that led to the construction of the Būtingė oil terminal in the late 1990s. The port was intended to serve as a hedge against future supply disruptions. That decision was soon justified when in 1999, Lukoil sharply curtailed pipeline shipments to Lithuania following the government's decision to award a 33% share of Mažeikių Nafta to American energy giant Williams instead of the Russian company. Over the course of the next two years, Lukoil reduced oil supplies to Lithuania on nine separate occasions, ultimately cutting off the country completely. The financial effect of this embargo was devastating—since the beginning of 1999, the once-profitable Mažeikių refinery posted losses for eleven consecutive quarters.[32] Williams and Vilnius were left with little choice but to resell Mažeikių Nafta. In late 2001, Williams and the Lithuanian government reached an agreement by which control of the company would be sold to Yukos, then a privately owned Russian energy company. Following this, crude shipments resumed and the refinery became profitable again (in fact, by late 2004, following a much-needed modernization that enabled the refinery to produce the high-octane gasoline that EU regulations require, Mažeikių was the largest commercial entity in Lithuania and the government's biggest taxpayer). Distrust of Moscow increased after a suspicious recent fire at the refinery on October 12.

Transneft officials maintain, however, that the leak is simply a leak. The transportation giant's president, Semyon Vainshtok, professed that Transneft is "an apolitical company."[33] According to Vainshtok, his company is awaiting the results of an independent study before deciding whether to simply repair the pipeline or to build an entirely new one. He has dismissed Lithuanian offers to assist in repairing the pipeline until the results of this study are available in March 2007. At the same time, he has also hinted that Transneft may not reopen the line regardless of the results of the analysis, saying that the company can reroute its oil towards alternate terminals. Indeed, despite the total closure of its pipeline into Lithuania, overall Russian oil exports are not at all decreasing, as shipments via the Primorsk export terminal have correspondingly increased.[34]

Despite the bleak situation—including the possibility of foul play—MN officials have remained confident about the refinery's future. One spokesperson for the refinery vowed that it "could function at full capacity without receiving crude from Druzhba" by receiving shipments from tankers via the import-export Būtingė facility.[35] So far, this boast has proven to be accurate. A single tanker bearing Venezuelan crude arrived at Būtingė in September; the rest have been from Primorsk carrying Russian oil. Thus, for the first nine months of the year, the company's oil product sales actually increased by three percent—from 6.25 million tons to 6.44 million tons. Unfortunately, the supply disruption has had a dramatic economic impact on the refinery. Crude oil received via tanker is over $8 per ton more expensive than oil received via pipeline; it is also more

cumbersome to process.[36] At the same time, every metric ton of oil that must be imported through Būtingė further constrains the seaport's substantial export capacity. In fact, Būtingė exported 6.1 million metric tons of crude oil in 2005—more than half of that year's total. Due to these factors, Mažeikių Nafta's profit for the first nine months of the year is less than half of what it was for the same period in 2005 (€108 million/$151 million, down from almost €225 million/$288 million).[37]

Aware that this disruption could prove to be quite permanent, PKN Orlen officials have begun investigating the feasibility of expanding the pipeline infrastructure that connects the refinery with Lithuania's export-import facilities on the Baltic coast. Currently, a single line runs from Mažeikių to Būtingė. Therefore, either finished product or unrefined oil must be transported via rail between refinery and port. This is costlier and more inefficient than relying solely on pipeline transport. Therefore, PKN Orlen is examining the possibility of constructing a second, parallel line from Mažeikių to Būtingė, as well as a 25 kilometer spur connecting Būtingė with the port at Klaipėda. This would allow Lithuania to readily import crude from both facilities.

While Russian pressure is unlikely to ease, PKN Orlen is in a significantly better position than was Williams, as it purchases 15% of all Russian oil and exports to Europe (via the Czech Republic and Poland); Williams had no access to crude. Unfortunately, Lituania soon faces an even greater energy crisis.

THE IGNALINA NUCLEAR POWER PLANT

Unfortunately, Lithuania faces an even larger energy crisis further down the road. The Ignalina nuclear power plant is scheduled to be decommissioned in 2009. This facility produced over 10.34 terawatt-hours (TWh) of electricity in 2005, more than 70% of Lithuania's total production that year. In 2005, Lithuania exported approximately 2.96 TWh.[38]

Ignalina originally consisted of two RBMK-1500 reactors, similar to the RBMK-1000 models employed by the infamous Chornobyl nuclear facility. Although the Ignalina reactors are of a safer, more advanced design, they still contain a number of design flaws (most notably a positive void coefficient) that make the possibility of an accidental meltdown more likely than other reactors. Therefore, the EU requested that Ignalina be deactivated upon Lithuania's accession. The first reactor at Ignalina's reactors was shut down on December 31, 2004. The second was allowed to remain active until the end of 2009 in order to allow Lithuania time to secure alternative means of energy production, presumably through the construction of a newer, safer plant. To assist Lithuania in the decommissioning effort, the European Bank for Reconstruction and Development (EBRD) established an account, known as the Ignalina International Decommissioning Support Fund (IIDSF) to manage allocated funds. The IIDSF currently has some €900 million ($1.15 billion).[39] IIDSF funds have been used for constructing a spent fuel storage facility, a new boiler station for the plant, a pipeline from Visaginas to the plant,

creation of an environmental impact assessment of the decommissioning, and upgrades to the Elektrėnai thermal power plant.[40]

The Ignalina closing decision was in principle a negative investment, as after closure Lithuania will be almost completely dependant on Russia. Nobody knows yet what would happen in the period after closure of the second unit in 2009 until the new reactor is built (around 2015 at earliest). The other generating capacities in Lithuania are old; the main generator after closure will be Elektrėnai, which is around 40 years old. Now it serves as a reserve and goes working if Ignalina is closed for repair works. If no suitable alternative to Ignalina is secured, Lithuania will be forced to rely on imported oil and natural gas for its electricity.

Prospects and Potential Solutions

ELECTRICITY CONNECTIONS WITH EUROPE

UCTE

There are three electricity networks in Europe: Nordel (Iceland, Denmark, Sweden, Norway, and Finland), IPS/UPS (the entire former Soviet bloc, including Lithuania), and UCTE (all other European continental countries). Lithuania wants—and needs—to join both Nordel and UCTE.

In 2005, the EU-Russia Energy Dialogue released a joint study investigating the feasibility of a future synchronous interconnection between UCTE and UPS. The study makes clear that significant time and investment will be needed to prepare a system as large as IPS/UPS for its synchronous work with the UCTE.

Linking the Baltic countries' electricity systems to the UCTE—preferably as soon as possible—is an important issue from the point of view of both national sovereignty and European integration. The European Commission calls the establishment of an energy link between the Baltic States and the rest of Europe "fundamental…to guarantee [their] security of supply."[41] Without connections to the rest of the EU, Lithuania and its Baltic neighbors will remain energy islands.

Therefore, it is unacceptable for the three Baltic EU members to be left on the Russian rather than the European side of this division. Estonia, Latvia and Lithuania have sought to have the issue of joining their electric systems to UCTE considered separately from the issue of joining the Russian system to UCTE. They have argued their connection to UCTE should be treated as an internal EU matter. The Baltic states have appealed to the European Commission for its mediation and assistance. They also plan to call on UCTE itself to establish a working body to determine which technical measures are necessary for the full integration of the three countries into the network. In case of synchronous operation with UCTE, the possibilities for electricity interchange through direct current converters with the Russian energy system would be secured.

The precedent for integrating the current IPS/UPS countries into UCTE without jeopardizing broader electricity-network integration has already been set. At the first meeting of EU-Ukraine Subcommittee 4, entitled "Energy, Transport, Environment & Nuclear Safety" (held in Kyiv in May 2006), UCTE officials announced that the joint application request of Ukraine and Moldova for integration into UCTE had been accepted, and a special technical committee was being formed.

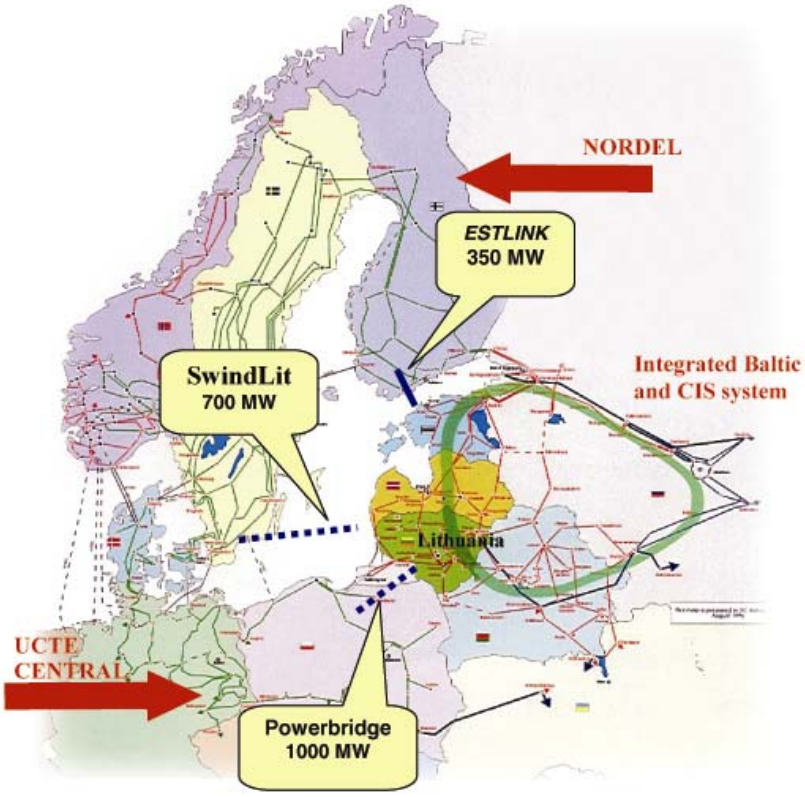
SWEDEN

Lithuania has been negotiating with Sweden on constructing an undersea cable linking the two countries' electrical grids. Sweden has a long history of political and economic

ties with Lithuania. Sweden is also the second largest source of foreign direct investment in its Baltic neighbor. Most importantly, Svenska Kraftnaft (SK), the state utility in charge of Sweden's electrical grid, has several interests in Lithuania: importing/exporting electricity, linking to the Russian market, and building a wind energy park in Lithuania's Baltic territorial waters. In August, the state-owned Lithuanian energy company Lietuvos Energija agreed to launch a feasibility study on the cable with SK. Although this study is not due to be completed until early 2007, preliminary estimates put the cost of the project at around €400 million ($513 million). The proposed cable, which would extend 350 kilometers along the Baltic seabed, would have a capacity of 1,000 megawatts (MW).[42] At the earliest, this link could be operational in 2010.

Representatives from both countries have expressed optimism in this as-yet-unproven project. After all, a similar cable has already been laid across the Baltic between Finland and Estonia. Construction on that 100 kilometer-long cable was begun in April 2005, and is expected to be complete by the end of this year. The project—called Estlink—will have a capacity of 350 MW; it will link the Nordic and Baltic energy grids. Estlink was financed by a coalition of five Finnish and Baltic energy companies, including Lietuvos Energija, which holds a 25% equity stake in the project. When completed, Estlink will be capable of transmitting up to 3.06 TWh of electricity per year across the Baltic Sea.[43] However, this figure only represents approximately 16 percent of total Baltic demand; Estlink will therefore not have a significant impact on the region's energy security.

Baltic electricity system and possible connections



Source: Presentation of Undersecretary of the Ministry of Economy of the Republic of Lithuania A.Ignotas, "Guidelines for Updated National Energy Strategy."
http://www.urm.lt/index.php?-985502806

POLAND

In addition to pursuing trans-Baltic cable projects, Lithuania is also working to construct an electricity link with Poland. Such a bridge would be a tremendous step forward for Lithuania, since it would also link the country to UCTE. Although the possibility of an energy bridge between the two countries has emerged several times over the past decade, Russia's recent policies have provided new impetus for cooperation. In fact, during President Lech Kaczynski's visit to Lithuania in September, Kaczynski and his Lithuanian colleague Valdas Adamkus jointly stressed the necessity of "exerting every effort towards strengthening the two countries' energy security," signing a protocol of intent on building the energy bridge.[44] For his part, Kaczynski emphasized that Lithuania and Poland are "linked by deep historical ties."[45] Indeed, the two countries existed as a single political entity (the Polish-Lithuanian Commonwealth) for over two centuries. Although this union disappeared in 1795 (partitioned by its neighbors Austria, Prussia, and Russia), it appears that a new strategic alliance—one centered on energy security—may be forming between Poland and Lithuania.

Past ties and current objectives likely played a role in Lithuania's decision to award the Mažeikių refinery stake to PKN Orlen. It has been speculated that an informal arrangement regarding the power link was agreed upon during negotiations between the two countries. Under such a pact, PKN Orlen would gain control of the Lithuanian refinery; in return Poland would firmly commit to the construction of the power link. In the past, Poland's left-leaning government had vacillated on the establishment of an electrical connection, fearful that cheap Lithuanian energy would hurt Poland's robust coal mining industry.[46] A full 94% of Poland's electricity production in 2003 came from coal-fired plants, whose workers form a key constituency of the governing party.[47] Yet even before the recent change in government, concerns over the noxious greenhouse gases that such plants emit were slowly beginning to erode Polish enthusiasm for its staple energy source.

Even absent such considerations, both countries would prefer to rely on each other for energy rather than Russia. President Lech Kaczynski reflected this sentiment in a March 2006 speech before the Lithuanian parliament, warning that "Poland and Lithuania face a certain danger: that they can be subjected to an attempt at gaining political domination over them by means of energy supplies."[48] A feasibility study carried out by the EBRD estimated that this project would cost €430 million ($552 million). It also noted that the energy bridge would be "profitable" only if the public sector provided approximately 40 percent. Although the EU has offered to contribute €160 million ($205 million), Poland remains hesitant. Officials from the Polish electrical utility PSE have put forward a price tag of €600 million ($770 million) for the project, noting that significant upgrades are required for Poland's aging electrical infrastructure if the energy bridge is to be implemented.[49] Warsaw is expected to reach a decision regarding the proposed link by December 8, the day the prime ministers of Poland and the Baltic states will meet in Vilnius.

RENEWABLE RESOURCES

Wind, solar, hydroelectric and geothermal power accounted for less than one percent of Lithuania's total energy supply in 2003. Renewable energy sources have little technical feasibility—let alone economic viability—in Lithuania. Since it is a relatively flat, low-lying country (only a few western areas rise above 200 meters), there is little potential for hydroelectric power. This energy source currently represents 0.3 percent of Lithuania's total primary energy supply. In terms of electricity production, hydroelectric power's share of the total is five percent, producing a mere 800 gigawatt hours for all of 2005. Nor is Lithuania a good candidate for wind power. According to EBRD, the average wind speed in most areas of the country is around 15 kilometers per hour (kph). This is insufficient, as most wind turbines in operation today require speeds of 10-15 kph as a bare minimum for power generation. Although the coastal regions of Lithuania experience somewhat higher wind speeds, averaging approximately 18-20 kph, this is still not fast enough to make wind power a viable option; current wind turbine technology requires speeds around 23-25 kph to even be profitable. Lithuania is an even less suitable candidate for solar and geothermal energy. The country's high latitude and climate conditions are particularly unfavorable for solar power generation. At the same time, Lithuania is part of a region that is geologically extremely stable, effectively eliminating the potential for employment of geothermal power.[50] Thus, Lithuania must turn to fossil fuels and nuclear power for its energy needs.

BUILDING A NEW NUCLEAR PLANT

With the deadline for the closure of Ignalina fast approaching, Lithuania has made the construction of a new nuclear reactor the centerpiece of its national energy strategy. It has stepped up its diplomatic efforts to garner the necessary political and financial support, and in February signed an agreement with its fellow Baltic states towards the construction of a new reactor near the current site. The three countries commissioned a series of studies to assess the feasibility of such a project. This survey, completed in late October, concluded that decommissioning the existing reactor and building a new one in its place was both economically and technically feasible. Furthermore, it found Ignalina to be an environmentally suitable location for the new reactor. The study estimated the cost of this project to be between €2.5 and €4 billion ($3.2 and $5.1 billion). Although the Baltic governments have agreed to finance equally any new nuclear reactor project in equal shares, due to its high start-up costs this project will only be commercially feasible with the financial backing of other countries. Fortunately, a number of energy companies have already expressed interest in Ignalina, including France's Areva, Spain's Iberdola, and the Czech Republic's CEZ.[51] Yet without a power bridge linking Lithuania to the rest of the EU, this electricity will be unavailable to these and any other financial sponsors. Therefore, connecting to both UCTE and Nordel will greatly improve the new reactor project's chance of success.

At the same time, it is likely that Poland and Sweden have been waiting for the results of the feasibility study before firmly committing to the construction of a power link. Electricity produced by Lithuanian nuclear power is less expensive than that produced by

plants that burn oil and natural gas. At the same time, a new Lithuanian nuclear plant would offer countries such as Poland a way to lessen dependence on Russia. If a new reactor is not built, an energy bridge to Lithuania loses many of these advantages. Instead of importing Lithuanian energy, countries would be exporting their own. Potential financial sponsors have made this concern clear. Citing the cost of the proposed electricity bridge, one official from the Polish electricity utility PSE suggested that his company's investment in that project would depend heavily on the construction of a new Ignalina nuclear plant.[52] Yet, as mentioned earlier, this concern may be offset by a desire to protect the domestic coal mining industry in Poland.

Polish parliament speaker Marek Jurek visited Ignalina in June 2006 and stated that "discussions on [Ignalina] are under way. The Polish power grids are interested and willing to start cooperation…"[53] At approximately the same time, Jerzy Nowakowski, a Democratic Left Alliance (SLD) member of the parliament's Foreign Affairs Committee, described the mutual benefits both of a power bridge and a new nuclear reactor: "After the closure of the Ignalina nuclear power plant, Lithuania will have to import electricity; it would be better if it were imported from Poland rather than from the East. When a new nuclear power facility starts operating, Poland will be able to use the power bridge to import cheaper electricity."[54] Then, in July, Prime Minister Jarosław Kaczynski publicly urged his country to develop nuclear power so it is "not left behind" as the rest of Europe abandons high-pollutant forms of energy like coal. One week later, his Lithuanian counterpart visited Warsaw and officially invited Poland to take part in his country's pending nuclear endeavor. [55]

Given that the projected costs of the Ignalina project could reach €4 billion ($5.1 billion), Lithuania is also eyeing cooperation with its Nordic energy partner Sweden. Swedish energy company E.ON Nordic is mulling the prospect of cooperating in the Lithuanian nuclear project. In fact, following a meeting with Prime Minister Kirkilas in September 2006, E.ON Nordic CEO Lars Frithiof stated that his country has a "long experience in nuclear energy" and that it is "ready to share this experience with our partners in Lithuania and ready to contribute to building a nuclear power plant in Lithuania."[56] Sweden, a net importer of electricity with rising demand for energy, is particularly keen to ensure that Lithuania continues to produce relatively cheap nuclear power. Sweden is a firm practitioner of nuclear energy; the Nordic country has 10 active reactors supplying a full 50 percent of its power needs. Yet because of a 1980 referendum calling for the county to eventually phase out nuclear power, Sweden's leaders have begun to shy away from nuclear energy in favor of renewable sources such as wind. In June 2005, Sweden shut down a 600 MW nuclear reactor in Barseback, while pledging to invest over $1 billion (€778 million) towards the building of the largest wind farm in Europe.[57] The construction of a nuclear plant in Lithuania—along with the necessary Baltic Sea electrical cable—would be an ideal way for the Swedes to essentially "have their cake and eat it too." They can enjoy the independence from Russian fossil fuels that nuclear power offers, while honoring their pledge to discontinue their own atomic energy program.

A new reactor at Ignalina is extremely unlikely to be constructed before 2015. Since the current reactor at Ignalina must be decommissioned by the end of 2009, Lithuania currently faces a window of at least five years during which it will be without nuclear power. By that point the Estlink cable will be operational, and it is possible that electricity connections with Sweden and Poland will come online sometime after 2010. Recognizing that Estlink alone will not be able to replace the power supplied by Ignalina, and that the completion of the latter two projects is by no means certain, Lithuania has begun a project aimed at refurbishing its massive thermal power plant (TPP) at Elektrėnai.

Built during the 1960s, this plant was designed to produce 1800 MW of electricity, averaging approximately 10 TWh per year. Yet since 1992, it has existed only as a reserve facility, operating at just 5 percent of capacity. Before this facility can be used again, extensive upgrades are needed to meet EU environmental standards and to ensure security of supply. The Elektrėnai TPP currently burns natural gas, heavy fuel oil, and Orimulsion—a bitumen-based product developed in Venezuela. Of these, natural gas is by far the cleanest option. Yet, for the foreseeable future, Lithuania lacks the ability to obtain significant quantities of this hydrocarbon from any country other than Russia. Clearly, this does little to address the underlying problem of energy security. However, both Orimulsion and heavy fuel oil can be imported by tanker through either Būtingė or Klaipėda (and the latter product can be manufactured by the Mažeikių refinery).[58]

Following the upgrades, the Elektrėnai plant will more than meet EU emission standards for all three fuels. It will also be able to supply enough electricity to meet Lithuania's demand. This project is estimated to cost €252 million ($323 million) and is scheduled for completion in 2008. Because this project was motivated by the closure of Ignalina the IIDSF is able to provide a €90 million ($115 million) grant. The owner of the plant, Lietuvos Elektrinė, is providing a further €80 million ($102 million), while the Lithuanian government is supplying €30 million ($38 million). Various loans will be used to finance the remainder of the cost.[59]

ALTERNATIVE NATURAL GAS SUPPLIERS

For Lithuania, nuclear energy currently produces some 70-80 percent of its electricity, representing over 40 percent of the country's total energy supply. Natural gas is Lithuania's next largest source of energy, providing approximately 25 percent of the country's supply. In 2005, Lithuania's natural gas consumption was 3.05 bcm and is projected to rise—especially following the decommissioning of Ignalina.[60] Natural gas has the highest energy to carbon ratio of any fossil fuel, making it cleaner to burn than coal or oil. It also possesses higher energy efficiency than most alternatives, including coal and Orimulsion. Unfortunately, natural gas supplies to Lithuania are more acutely vulnerable to manipulation than those of other fossil fuel products.

The only possible alternative to Russian supply is a limited stock of natural gas contained in a Latvian underground storage facility. Even in this facility, a majority of the gas is

owned by Gazprom. Also potentially troublesome is the fact that Gazprom was 37.1% of the shares in Lietuvos Dujos, Lithuania's primary gas company.

Although particularly acute, Lithuania's reliance on Gazprom is hardly unique among EU members; approximately 40 percent of the EU's natural gas imports come from Russia. Recognizing that the demand for natural gas is expected to increase in coming years, the EU is focusing a great deal of attention on diversification away from Russian sources. Yet not only is Lithuania's reliance more severe than most European countries, it is also isolated from the gas infrastructure of the rest of the continent. As mentioned above, this utter lack of alternative suppliers leaves Lithuania vulnerable to unfair business practices by Gazprom. A necessary step in addressing Lithuania's energy security is linking it with the broader energy markets of Europe.

As already mentioned, Lithuania wants to construct an electricity bridge to Sweden and/or Poland. In addition, Vilnius is attempting to construct gas pipelines to Europe, focusing most intently on its southern neighbor Poland. Warsaw appears receptive to the idea of establishing such an energy link. At the September meeting mentioned earlier, President Lech Kaczynski reaffirmed Poland's commitment to work together with Lithuania on constructing oil and gas connections. Specifically, he stated that such pipelines linking the two states are "needed for ensuring energy security."[61] President Adamkus heartily agreed, arguing that a pipeline would "strengthen energy security in Central and Northern Europe."[62]

The Caspian Sea

Lithuania, Poland, and others in the EU are increasingly recognizing that Caspian Sea littoral nations—notably Azerbaijan, Kazakhstan and Turkmenistan—can provide the natural gas they need to improve their energy security. While there is an existing infrastructure that transports Caspian gas to Europe, it travels through Gazprom-controlled networks.

In fact, Russia has for many years purchased Central Asian (Kazakh, Turkmen and to a lesser degree Uzbek) gas at low prices and sold it to high-paying European consumers as "Russian gas." As mentioned earlier, Gazprom's basic strategy has been to maintain its monopoly in the region, with which it can purchase Central Asian gas at below world-market prices, channel it to lower-paying Russian customers, and sell its own domestic reserves to Western Europe at higher prices. It can further protect its lucrative European markets by freezing out independent Central Asian suppliers. By maintaining and strengthening its monopoly power, Gazprom has thus increased its leverage (and that of the Russian government) over European gas consumers. To continue this lucrative and politically effective strategy, Gazprom desperately needs continued supplies of Central Asian gas (primarily from Turkmenistan) in order to meet its supply commitments. It also needs to make sure no Azerbaijani gas could reach European markets outside of its control.


Eurasian Oil and Gas Export Routes
Oil pipeline
Proposed oil pipeline
Gas pipeline
Proposed gas pipeline
Tanker terminal
0 500 Kilometers
0 500 Miles
Barents Sea
Varandey
Nadym
Murmansk
Yamal-Europe
Timan-Pechora basin
West Siberian basin
Pechora
Krasnoleninskaya
Proposed Murmansk pipeline routes
Ukhta
Baltic Pipeline System (BPS)
Northern Lights
Finland
Norway
Primorsk
St. Petersburg
Russia
Sweden
North Sea
Kirishi
Estonia
Yaroslavl'
Ventspils
Latvia
Brotherhood
U.K.
Denmark
North Transgas
Butinge
Lith.
Rostock
Kaliningrad
MOSCOW
Samara
Gdansk
Germany
Yamal–Europe
Belarus
Leipzig
Northern Druzhba
Poland
PRAGUE
Yamal II
Central Asia
Kazakhstan
France
Czech Rep.
Southern Druzhba
Ukraine
Slovakia
Soyuz
Switz.
Austria
Transgas
Atyrau
Hungary
Brody-Odessa
Proposed reversed Adria pipeline
Caspian Pipeline Consortium Project (CPC)
Omisalj
Romania
Odesa
Tikhoretsk
Italy
Novorossiysk
CPC terminal
Tuapse
Caspian Sea
Serbia and Mont.
Black Sea
Blue Stream
Supsa
Baku-Supsa
TBILISI
Bulgaria
Baku-Tbilisi-Erzurum
Turkm.
Bosporus
Caucasus
BAKU
Istanbul
Samsun
Greece
ANKARA
Erzurum
Baku-Tbilisi-Ceyhan (BTC)
Turkey
Tunisia
Ceyhan
Iran
Mediterranean Sea
Syria
Cyprus
Iraq
Israel
Jordan
Libya
Egypt
Saudi Arabia
Persian Gulf
Boundary representation is not necessarily authoritative.
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Turkmenistan has long been the key to Gazprom's European markets strategy. Gazprom has been able to buy Turkmen supplies to satisfy demand from the low-price Russian domestic market, and then sell Russian domestic production to European consumers at a price three to four times higher. In this way, Gazprom has been able to make billions of dollars in profit, and has avoided having to undertake the expensive corporate restructuring and technology improvements that are needed to increase its domestic production. To meet its supply commitments to Europe, Gazprom needs Turkmenistan to continue to sell its gas at these below-world-market prices—which can only be done if Turkmenistan has no other outlet but the Russian pipeline network.

This unhealthy dynamic has existed for over a decade. In the early 1990s, Turkmenistan tried to use the Soviet-era transit pipeline from Central Asia to Russia in order to directly export gas to hard-currency markets in Europe. But Gazprom had no desire for Turkmen competition. Following disputes over transit and price, Turkmenistan cut off gas supplies to Russia in 1997. Gazprom then declared that it would never allow Central Asian producers to use its pipeline system for exports to Europe.

With awareness increasing in European policy circles and with the South Caucasus Pipeline (SCP) soon coming online, the pipeline will begin operations incrementally—the first gas extraction was in November; it is expected to reach capacity of 20 bcm in 2012.[63] Recent figures indicate that Azerbaijani fields can in fact produce approximately 40 bcm of gas and send it to Europe—supplies that can help to meet Europe's gas needs. Recognizing this possibility, Russia is now putting enormous pressure on Azerbaijan (and the Shah Deniz operators Statoil and BP) to send the gas via Blue Stream to Turkey and not the SCP.

From Turkey, there are two proposed routes for Caspian natural gas to reach European markets. First, is the Turkey-Greece-Italy (TGI) pipeline. The Turkey-Greece section will be finished in 2007 and gas can begin flowing before the end of the year. This means Azerbaijani gas could be sold to EU markets starting in 2007. Thus, not surprisingly, Greece has come under increasing pressure from Gazprom—as well as directly from the Kremlin—both to yield control of its internal gas distribution and transportation networks and to agree to give Gazprom a major share in the planned new gas pipeline. This is all part of the Gazprom plan to prevent any non-Russian pipeline from reaching European gas markets.

Second is the Nabucco project, which begins in Turkey and crosses Bulgaria, Romania, Hungary, and Austria. Since the Iran-Turkey gas pipeline and the SCP converge in Turkey, Nabucco would be able to provide Europe with natural gas from both Middle Eastern (mainly Iranian and Iraqi) and Caspian fields. In June 2006, the principal energy companies of the five transit countries created the Nabucco Gas Pipeline International Company, placing it in charge of overseeing development of the project. If all proceeds well, construction on the $5.8 billion (€4.5 billion) pipeline could begin in 2007 and be completed by 2011. It would have an initial capacity of up to 13 bcm, achieving its final potential capacity of 30 bcm in 2020. It would also be the first conduit for the

transportation of Middle Eastern and Central Asia gas directly to Europe, a tremendous step for the EU in its effort to reducing dependence on Russia.[64]

Of course, this as-yet-unrealized "victory for the EU" would mean little to Lithuania, which currently has no connection to the European gas market. Fortunately, not only has Poland expressed interest in a gas connection with Lithuania, but it has also favorably discussed a direct link to Nabucco. During a July 2005 visit to Turkey, Marek Jurek announced that Poland "is interested in the [Nabucco] project."

Caspian gas requires more attention, as its potential for supplying Europe could be developed more rapidly. Gazprom has recently attempted to increase its ability to transport more gas via Nabucco and the TGI pipeline by connecting them through Blue Stream. If Gazprom succeeds in getting involved in the gas pipelines connecting Turkey with the EU markets, there may be delays in further development of Shah Deniz—as companies will not invest billions of dollars unless they can be sure of market space.

In addition to Nabucco and TGI, a third project has recently been proposed to transport Azerbaijani gas to European markets without using the Russian system. The so-called Georgia-Ukraine-European Union (GUEU) pipeline project envisions the construction of a 700-kilometers gas pipeline connecting Georgia and Ukraine via a sub-sea pipeline traversing the Black Sea. GUEU would help speed up investments in Caspian natural gas fields by offering increased access to export markets. Lithuania's prospective gas pipeline connection with Poland would enable it to benefit from GUEU as well. Though the first phase of the pipeline will only have a capacity of only 8 bcm, it could provide some diversification in the medium term.

Norway

Although Russia has supplanted Norway as Europe's top gas supplier, the Scandinavian country's gas fields still contain an estimated 3.8 trillion cubic meters of recoverable reserves. It is currently constructing a series of pipelines that will allow it to increase its already substantial exports to the EU. In addition to a second pipeline to the United Kingdom, Norway is planning to build a pipeline east to Sweden. In October 2006, a coalition of 18 Swedish and Norwegian companies—led by Gassco, the Norwegian state energy company—committed to moving forward with the project. The pipeline, which will have an annual volume of approximately 3 bcm, is expected to cost almost €900 million ($1.15 billion). The Polish Mining and Gas Company (PGNIG) is interested in having an extension from this line constructed to Poland.

Liquefied Natural Gas (LNG)—Latvia and Poland

In addition to pipeline routes for natural gas, Latvia, and Poland are entertaining the prospect of constructing a LNG receiving terminal. This would allow these countries easy access to a much broader market since LNG is not limited to transmission by pipeline; like crude oil, it can be shipped via tanker. As of August 2005, there were 28 liquefaction

facilities in the world, many of which already service European markets. At the same time, a number of countries, including Qatar, Algeria, and Norway, are planning to build new LNG facilities, or expand existing ones. Although Latvia is also considering the possibility of hosting a LNG facility, Poland has made the most progress in this regard. In fact, there are currently two Polish ports in contention for the LNG terminal: Gdańsk and Świnoujście. A feasibility study that begun in February 2006 is currently underway examining these two potential sites and will be completed in December of this year. It is estimated that this facility will cost approximately €400 million ($513 million) and have an annual capacity of 3-5 bcm.[65] The construction of any LNG tankers for the facility would substantially raise the price, as each vessel can cost in excess of €200 million ($256 million).[66] If all proceeds as planned, the facility will be operational by the end of 2010—the same time Nord Stream is scheduled to come online.

Underground Gas Storage

A final possibility for securing Lithuanian access to natural gas is underground gas storage (UGS) facilities. Not only can these be crucial to Lithuania as an insurance policy in case of mechanical pipeline failure or exceptional seasonal demand, but they can also decrease the country's vulnerability to Russian strong-arm tactics. A number of studies have been conducted by Lithuanian energy companies assessing the feasibility of constructing a UGS site in the country, but much more potential has been shown in neighboring Latvia.

Already home to the largest UGS facility in Eastern Europe, Latvia has the ability to store tremendous quantities of natural gas. The existing facility, located at Inčukalns near the capital of Riga, is the only UGS facility in the Baltic region. It currently has a capacity of 2.3bcm. A study presented at the 2006 World Gas Conference in Amsterdam concluded that this capacity could be feasibly expanded to 3.2 bcm by 2015. That same paper also noted that the geological conditions throughout Latvia are ideally suited for gas storage. If more facilities are constructed, the country's total storage capacity could expand to 50 bcm.[67] Specifically, the paper identified the Dobele region—with a potential storage capacity of over 10 bcm—as a prime candidate for a UGS site.[68] This possibility has understandably piqued the interest of Lithuanian leaders. In January 2004, Inčukalns provided Lithuania with emergency natural gas supplies after a price dispute led Russia to shut down gas shipments through Belarus.[69] (As noted earlier, Lithuania relies on a single pipeline for natural gas.) In September of 2005, then-Prime Minister Algirdas Brazauskas stated that his government would be interested in sponsoring a UGS facility on Latvian territory, noting that IIDSF funds could be used to finance construction.[70] However, given the number—and cost—of critical energy projects in which Lithuania is currently planning to invest, it is uncertain how much funding the government will be able devote to a UGS facility in Latvia.

Moreover, the gas storage facility of Inčukalns will be operated by Gazprom until 2017. Most of the gas stored there is the property of Gazprom, which Latvia has no right to export. Another problem is that Latvia is similarly dependent on Gazprom for its entire

supply of natural gas. Finally, Lithuania will be obligated to pay to maintain its supplies at the facility, further increasing the ultimate cost of the gas.

ALTERNATIVE OIL SUPPLIERS

Lithuania consumes almost 2.5 million tons of oil per year.[71] (90,000 bbl/d) Yet, until its recent conflict with Russia, a significantly greater quantity of oil was processed at its Mažeikių refinery and loaded onto tankers at Būtingė for export to Europe and the United States.

Approximately 90% of the country's oil supply comes from Russia. Again, Lithuania is not alone among EU states in this situation. Over the past few years, Russia has supplanted Norway to become the EU's single largest source of oil. It currently is responsible for approximately 30% of EU imports. In the EU's eastern member states, this number is substantially higher—reaching 100% in the Baltic states.[72] There are several possibilities for oil supply diversification, but none will be achieved quickly or without significant international support.

The same hurdle that frustrates Lithuanian efforts at diversifying gas supplies—the country's energy isolation from Europe—also hampers its efforts at oil diversification. However, Lithuania's vulnerability in this sector is not as acute as in natural gas. The recent halt of Russian oil pipeline shipments has shown that Lithuania is capable of obtaining crude oil from its export terminals at Būtingė and Klaipėda. Of course, this is a much costlier process; obtaining oil via pipeline is preferable to either tanker or rail transport. Therefore, an important step for Lithuania will be pursuing energy connections with its only geographic link to the heart of the EU: Poland. As noted throughout this paper, the already-robust relationship between Poland and Lithuania has developed significantly in recent years, particularly in the realm of energy security. Since Lithuania granted Poland's PKN Orlen the right to buy the Mažeikių refinery in May, cooperation has begun on a variety of interrelated projects: an electricity link, the new Ignalina reactor, and new oil and gas connections. Yet Poland is also heavily dependent on Russian oil, though not quite to the same degree as Lithuania. It imports 99 percent of its oil consumption, with half of its imports coming from Russia.

Just as it does for natural gas, the EU envisions Central Asia and the Caspian Sea as the means by which it can wean itself from Russian energy. This potential has been understood for years, but has been consistently frustrated by insufficient production levels and Russian political pressure. In fact, a pipeline designed to carry Kazakh oil from the Black Sea into Europe was actually reversed in July 2004 to carry Russian oil southward for export via tanker. This pipeline, which was completed in 2002, links two Ukrainian cities: the Black Sea port of Odesa and the western city of Brody, near the Polish border. Originally, the Ukrainian government intended for the pipeline to extend to the Polish city of Plock, where it would continue via existing pipeline to Poland's export facility of Gdańsk. However, political pressure from Moscow soon compelled the Caspian Sea's main oil-producing state, Kazakhstan (and companies operating there), to

send its exports via Russian transportation routes. Once it became apparent that Caspian oil was unavailable, interest in the extension to Poland diminished, and the pipeline remained unused. Hoping to recoup its losses, the Ukrainian government eventually agreed to reverse the flow of the Odesa-Brody line.[73]

The volume of Russian oil transported via the pipeline has been far below expectations. Ukraine expected a yearly throughput of about 9 million tons, but the actual amount has been below 4 million since its reversal in September 2004. At the same time, a surge of American and European investment in Caspian oil fields is substantially boosting their output. Following political changes in Ukraine, there is now a renewed interest in switching the flow of Odesa-Brody back to its originally intended direction.[74]

First and foremost among those calling for a re-reversal of the pipeline is Ukrainian President Viktor Yushchenko. His country relies on Russia for almost 80 percent of its oil and 75 percent of its natural gas. In March 2005, Yushchenko hosted a meeting of Ukrainian, Polish, and European Commission experts to discuss Odesa-Brody. Since then, the initiative has been moving forward with gradually growing momentum. In September of this year, Ukrainian Prime Minister Viktor Yanukovych traveled to Krynica, Poland for an Economic Forum. While there, he publicly declared the reversal and extension of the pipeline to be the most important economic project linking the interests of the two countries.[75] Prime Minister Jarosław Kaczynski agreed with his Ukrainian counterpart, stating that the EU has offered to provide €400 million ($513 million) towards the pipeline extension project.[76]

Regarding potential Azerbaijani shipments to the Ukraine, Inglab Akhmedov, director of Baku's Public Finance Monitoring Center, commented that "Azerbaijan doesn't have enough free oil and gas for it to make any promises or deliveries." The majority of Azeri oil is currently committed to the recently completed BTC pipeline. Akhmedov went on to suggest that Kazakhstan should agree to ship oil west across the Caspian to Azerbaijan, saying that if his country "starts servicing oil from Central Asia then we can start talking about serious shipments to Odesa-Brody."[77] To date, Kazakh President Nursultan Nazarbayev has expressed his intentions to increase oil shipments across the Caspian Sea, but no firm agreement has been made.[78] Kazakhstan has "expressed interest" in a number of pipeline deals, leading some experts to conclude that it may be overextending itself, despite the country's pledge to more than double its current oil production by 2015. Even if the oil is available, uncertainty still exists as to whether Azerbaijan and Kazakhstan will support this Western-financed project or—as they did in 2002—yield to the wishes of Moscow, which supports neither the reversal nor the extension.

Even as uncertainty clouds the fate of the Odesa-Brody pipeline, a project is being considered that would greatly facilitate the delivery of Central Asian crude to Ukraine and the rest of Europe. Currently, oil is ferried across the Black Sea by tanker. Dozens of tankers traverse this inland body of water each day. However, banking on the successful reversal and extension of the Odesa-Brody line, Poland has proposed that a pipeline be constructed linking Georgia with Ukraine. This oil conduit would travel underneath the Black Sea to Odesa, where it would connect with a reversed Odesa-Brody pipeline. This

ambitious project is only in the earliest stages of planning, but experts now estimate it could cost upwards of $5 billion (€3.89 billion). The potential benefits (economic and political) of this project could be enough to overcome the daunting price tag. A number of energy companies from the US, Poland, Ukraine, Azerbaijan, and Kazakhstan have expressed interest. If this massive project is completed, oil from the Caspian Sea would be able to flow via pipeline all the way to Gdańsk without ever crossing Russian soil. For Lithuania, this carries enormous potential. Even if an oil conduit with Poland is not established, tankers departing from the Polish port of Gdańsk can easily transport Azeri and Kazakh oil to Lithuania's oil terminal at Būtingė; the two are separated by less than 250 kilometers.

However, even if these projects come to pass, it will be several years before they are completed. A more near-term solution for Lithuania is necessary. Obviously, Lithuania can import crude from any nation via tankers. Beyond this, another potential solution could be KazMunaiGaz, Kazakhstan's state-controlled oil and gas company. Although it recently dispelled rumors that it was willing to supply Lithuania's beleaguered Mažeikių refinery with rail shipments of crude oil, the energy giant has long desired access to the lucrative European market. It was a front-runner in the bidding for Mažeikių Nafta in May and recently failed in its bid to acquire interest in another Baltic energy company, Ventspils Nafta, the Latvian energy company that owns the country's oil exportation facilities. Although the possibility exists for KazMunaiGaz to transport oil to Lithuania by rail, it would be significantly more expensive than tanker or pipeline supplies.

Conclusions and Recommendations

As this paper has comprehensively demonstrated, Lithuania faces considerable challenges to its energy security. These challenges are manifested in three principal ways. First, Lithuania is far too dependent on Russia for energy supplies. Second, when the Ignalina nuclear plant closes, Lithuania's dependence on external sources of energy (that is, Russian supplies) will increase. Third, when Nord Stream is constructed, Lithuania will become an even more isolated "energy island" in Europe.

Unless comprehensive action is undertaken quickly, Lithuania will be forced to abandon any hope of energy independence. Given Russia's clear strategy to pressure countries along the European and Eurasian axis to give up control of their energy infrastructure—and, by extension, their political and economic sovereignty—Lithuania must also contend with a grave threat to its national security as well. Lithuania's status as a formerly occupied country that obtained NATO membership over strong Russian objections makes it even more vulnerable than many other EU members.

The Nord Stream project is particularly problematic, since it was agreed upon without any input whatsoever from the Baltic countries, Poland, or Sweden—all of which will suffer the negative environmental effects of the pipeline's construction. In Germany, Nord Stream is seen as a way to increase energy security, since it is an additional route for importing natural gas. However, since the supply source is the same, Nord Stream does not represent true diversification. In fact, Nord Stream will actually increase overall European dependency on Russian gas supplies while heightening internal tensions within the EU. After the completion of Nord Stream, many Eastern European states will no longer enjoy the modest benefits of serving as transit countries. Instead, they will be simple consumer countries, with no leverage whatsoever. Thus, Nord Stream is not merely a simple commercial project; instead, it is an endeavor fraught with tremendous geopolitical implications—and consequences.

Given the strategic nature of energy security, Lithuania needs to ensure that both Brussels and Berlin (especially in light of Germany's upcoming G8 and EU presidency) understand what is at stake: a strong and united Europe. Since the gas cutoff to Ukraine in 2006, several EU documents and statements have pointed to the need for a united, single European voice. There is already a visible change in the EU's support for Central European countries' energy policies and consolidation—but more is needed, as individual countries have different priorities and different sensitivities.

Due to painful lessons learned—both under Soviet occupation and even afterwards as an EU and NATO ally, Lithuania has recognized the use of energy as a political weapon sooner than other EU countries. In July, President Adamkus said that Russia is using energy policy as a form of "blackmail" against those who will not do Moscow's bidding. He further underlined, "those who control your energy supply control you politically. This is unacceptable."[79]

Together with the other Baltic countries and Poland, Lithuania can and should play a leading role in developing policies that will guarantee Europe's energy security and promote political unity. Lithuania can guarantee its energy security only in concert with other Central and Eastern European states; it must therefore craft a regional cooperation and coordination plan as well. Finally, Lithuania must ensure that all domestic political and social actors share a common vision for energy security.

Lithuania needs to move quickly. The European Commission has already held a series of meetings in order to come up with a strategy for implementing a common energy policy. It will unveil this European Energy Policy on January 10, 2007. Three months later, at a March 2007 meeting of European heads of state, the EU will decide the fate of the Energy Policy.

The presidents of Poland and the three Baltic states issued a joint communiqué on November 6 following their meeting in Vilnius. The presidents agreed "with respect to strengthening infrastructural ties of the Baltic Region and Poland, and their interconnectivity with the rest of the EU:

- "to underline that the energy sector is an important area of cooperation of the Baltic States and Poland. The Presidents stress the importance of implementing joint energy projects to advance the integration of the regional Baltic energy market into the common EU market;
- to acknowledge the importance of the new nuclear power plant project in Lithuania for the region, to attach particular significance to close cooperation between the Baltic States and note the expression of interest of the Republic of Poland and of other EU Member States to participate in this cooperation;
- to emphasize the common objective to develop the EU external energy policy, to speak in one voice to major energy suppliers and to complete the creation of the EU internal energy market taking into account the vital energy security of all EU Member States;
- to call on the Russian Federation to ratify the Energy Charter Treaty as soon as possible and sign the Transit Protocol"

In light of this crucial declaration, and in consideration of the issues previously highlighted, this paper will suggest three sets of recommendations for Lithuania: at the European Union level, at the regional level, and at the national level.

EUROPEAN UNION LEVEL RECOMMENDATIONS

1. Interconnection with the rest of Europe should be priority

By the time Ignalina is shut down, links need to be complete between the Baltic electric power grid and Nordel. An electricity bridge with Poland should also be constructed as soon as possible.

These are not extremely expensive projects. The Lithuania-Poland power bridge would cost around €430 million/$564 million, while the link between Lithuania and Sweden via the Baltic Sea would cost around €400 million/$525 million.[80]

2. A new nuclear reactor at Ignalina needs to be constructed.

At the EU summit in Lahti, Secretary-General Javier Solana argued that all potential energy suppliers for Europe are unstable—with the exception of Norway. Therefore, all EU member states ought to consider nuclear energy. While nuclear power often encounters fierce domestic opposition in many European countries, this is not the case in Lithuania.

If Lithuania, Latvia, Estonia, and perhaps Poland do not build a new nuclear reactor, Lithuania will be forced to drastically increase its natural gas consumption. This would mean heightened dependence on Russia.

It is therefore critical to build a new nuclear plant in Ignalina. Construction of this new nuclear plant could start as early as 2008, with completion by 2015. While all three Baltic states have agreed to build a new plant, their markets are too small to justify the cost; therefore, Poland's involvement is important.

3. **Lithuania must work closely with the German EU presidency to expand EU competence over energy matters—particularly regarding the geopolitics of energy and increasing the importance of Caspian Sea resources.**

As this paper has demonstrated, Europe's gas dependence on Russia has led to geopolitical vulnerability. While many European leaders have preferred not to discuss the geopolitics of energy, instead delegating this portfolio to their economy ministries, their Russian counterparts have not minimized the importance of this issue. Given the direct involvement of the Kremlin in devising political energy strategy, Europeans too ought to discuss energy security in the context of foreign policy and national security.

Furthermore, Europe needs to diversify not only its gas transportation routes, but also its supply sources. Building another pipeline that connects the same supplier and consumer is not a true solution. For now, Europe has significant potential leverage against Gazprom, by virtue of the company's dependence on revenues from sales to Europe. This leverage is only useful if all of Europe stands together. Europeans should recognize that Russian state-owned companies—especially the gas monopoly Gazprom—are not market actors. Backed solidly by the Kremlin, Gazprom is free to use its economic might for geopolitical purposes. Independent international energy companies do not and cannot behave this way, since they are actually governed by market forces. Hence, the growth of Gazprom's monopoly power needs to be constrained. This is a message that the EU—especially Germany—needs to hear. Lithuania is ideally positioned to send this message.

Recently, at the Lahti Summit, European Commission President Jose Manuel Barroso underlined once again that Russia and the EU are interdependent. Europe must now take advantage of this interdependence to urge Russia to ratify the Energy Charter Treaty and

sign the Transit Protocol. These will ensure "transparency, rule of law, reciprocity and non-discrimination along with market opening and market access."[81] At the same time, recognizing the negative consequences of this unbalanced "interdependence," Europe must look beyond its immediate horizon and seek other energy suppliers in North Africa, the North Sea, and the Caspian Sea.

In fact, Lithuania, together with the other Baltic countries and Poland, ought to look further ahead and call for a transatlantic energy cooperation dialogue. Over a decade ago, the US recognized the vulnerability of over-reliance on a state-owned monopoly company like Gazprom. It therefore devised a Caspian region pipeline policy to support non-Russian oil and gas pipelines. This strategy was not pursued because the US was (or is) anti-Russian or anti-Gazprom, but because it is anti-monopoly.

Through the EU, Lithuania can also work closely with the US on European energy supply diversification. The United States has for some time been actively promoting key alternatives, such as bringing Caspian gas to Western markets via transit routes south of the Black and Caspian Seas. At the same time, NATO ally Turkey is emerging as a major transit hub, with pipelines feeding into it from Azerbaijan (via Georgia), Iran, Russia, and eventually Iraq. Turkey's gas inter-connection with Greece will also be operational soon.

Access to Azeri gas supplies is particularly important; if the upstream investment in the Shah Deniz field can be accelerated, significant quantities of gas could flow from Azerbaijan to Europe. In nine years, Azerbaijan could produce from 30 bcm to 70 bcm of natural gas, of which up to 50 bcm could be supplied to European markets; by 2020, it could export one-third of what Russia sends to Europe.[82]

In a similar way, Kazakhstan and Turkmenistan can also become key energy partners of the EU. Direct ties between the EU and Central Asian states will strengthen the independence of the latter, and improve the energy security of the former.

As a country in need of new gas supply sources, Lithuania should play a role in strengthening support for Nabucco and GUEU. Particularly since it is in the initial stage of development, GUEU needs stronger support in Central Europe. After all, it is these countries—Poland, Lithuania, Slovakia (and later also Ukraine)—that will be the primary beneficiaries of Caspian gas coming to this region through the GUEU pipeline. Within the framework of the EU, Lithuania can work to support GUEU, the European Neighborhood Policy regarding South Caucasus and the Black Sea, and other important regional initiatives directly relevant to obtaining access to Caspian hydrocarbons.

4. There needs to be a coherent external European energy policy.

In November 25, the EU states were to meet with Russian leaders to negotiate (among other things) a new EU-Russia Partnership and Cooperation Agreement. The current Agreement was enacted in December 1997 and is set to expire in October 2007. It is widely hoped by states such as Poland and Lithuania that a new agreement will ensure that Russia finally ratifies the Energy Charter Treaty and the attached Transit Protocol. Essentially this Transit Protocol would enable Caspian and Central Asian resources to

reach Europe without Russian price or supply manipulation. Poland had so little faith in the ability of the EU to stand together and achieve this goal through discussion that it vetoed the start of negotiations at this summit. (Warsaw also strongly insists that Russia lift a year-long ban on imported Polish food products, ostensibly imposed out of health concerns).[83] Despite intense pressure from Finland and Germany, Warsaw has refused to back down, stating that it will not yield until Russia signals its commitment to endorse the Transit Protocol and repeal its import ban. In this, Lithuanian President Adamkus has declared his support and solidarity with Poland. This incident was indicative of the divisions that exist within the EU in regards to its external energy policy. Russia presents a unified position. It is vital that the European Union do the same.

Establishing a common strategy is especially vital in light of the fact that a *de facto* gas cartel—led by Russia and now including Iran and Algeria—may be emerging. If these three form an alliance—either formal or informal—it will be even more difficult for the EU to deal with the pressure. The dangers of this possibility have already been noted; in November, a NATO study warned of attempts by Russia to set up a "gas OPEC". [84] Such a cartel, warns the study, could expand beyond the three to encompass Qatar, Libya, and the Central Asian states, thus permitting Russia to significantly strengthen its already considerable leverage over Europe.

5. Lithuania should work to obtain financial support for strategic project diversification

The costs of the various energy infrastructure projects identified in this paper total several billion dollars. Lithuania alone will not be able to finance them—even with the help of Poland, Latvia, and Estonia. Attracting investment from other European nations is crucial to ensuring their success. The Ignalina nuclear plant, in particular, will be reliant on external financing. A number of energy companies have already expressed interest in the project. As the results of the recently-completed feasibility study are made public, Lithuania must work quickly to shore up financial and political support for this vital project.

Beyond the private sector, EU funding for all Lithuanian energy projects (electricity bridges, nuclear power plant, and LNG terminal) is vital. As noted earlier, IIDSF currently contains approximately €900 million ($1.15 billion) that can be used for projects related to the decommissioning of Ignalina. Lithuania should work to see that this fund is increased. It should also lobby for the creation of a similar fund to be dedicated to other critical infrastructure projects. Obtaining EU financial contributions will be far easier once such a fund has been established.

6. Lithuania needs to urge the EU to devise an effective crisis management mechanism.

Thus far the Mažeikių refinery has been able to continue its operations albeit with a reduced profit margin. The Lithuanian government is anxious to avoid meeting the same fate as Latvia, whose pipeline has sat idle since 2003, when Russia blatantly halted oil shipments into the country in an attempt to force the Latvian government to sell Ventspils

Nafta to Transneft. While at first employing its familiar tactics of subtle pressure and supply cutbacks, Moscow eventually dispensed with this subtlety and made clear its intentions. Transneft vice president Sergei Grigoriev brazenly stated: "Oil can only flow from Russia. You can of course sell [Latvia's oil export terminal] to Westerners, but what are they going to do with it? Turn it into a beach?" Despite this brazen treatment, Latvia's plight was largely ignored by the EU—even after it became an EU member. To help member states respond to such pressure, an EU-wide crisis management system must be created. Lithuania needs to take the lead in working to create such a system in Brussels.

REGIONAL LEVEL RECOMMENDATIONS

1. It is critically important for the Baltic and Nordic states to coordinate their policies within established frameworks

In addition to unity of purpose at the EU level, Lithuania must take steps to increase regional solidarity. So far the only Europeans resisting the Russians are the Poles and the Lithuanians; all of Central Europe must stand together. It also needs to increase cooperation and coordination with the Nordic states. These countries must reach a consensus that a government-owned monopoly taking over energy infrastructure does not constitute "privatization"—nor does it increase efficiency. Indeed, Russia has an energy intensity level that is five times worse than the EU15 average. Russian oil and natural gas production growth has also plummeted since Moscow's dramatic consolidation and *de facto* nationalization of its energy companies. All Moscow's strategy has done is increased its ability to extort European energy consumers.

2. Lithuania and Poland must organize their strategic partners into a formal strategic energy union to have more impact at the NATO level.

When oil supply to MN was cut off, the Lithuanian, Latvian, and Polish defense ministers sent letters to NATO asking it to consider this as a critical energy infrastructure issue. NATO needs to devise a common approach to protecting critical infrastructure for its allies.

3. Lithuania needs to develop other options to reduce its vulnerability

A principal alternative to Russia natural gas is LNG; however, due to the costs involved, Lithuania cannot construct a regasification facility alone. Together with Poland, all three Baltic states need to agree to jointly finance an LNG terminal. Currently, Poland is the most appealing site for such a facility. This LNG terminal could then receive supplies from any number of countries, including Norway, Qatar, and Egypt. Although the price of LNG is expected to fall as a global infrastructure is established, it is likely to remain a more expensive alternative to conventional gas. This is a necessary trade-off to achieve energy security.

A natural gas storage facility is also critically important to Lithuania's energy security. While gas storage is not a permanent solution, it can provide a three-month supply, which is important in the case of a future interruption. A natural gas storage facility currently

exists in Latvia, but constructing a new Baltic natural gas storage facility should be a priority. This is not only because of Gazprom's involvement at Inčukalns, but also because of the surge in gas demand that is expected in the coming years,

With regards to oil, even if Russia resumes pipeline shipments in spring 2007, Lithuania must continue to search for other supply options in order to hedge against future coercion by Moscow. One promising possibility, assuming improved regional cooperation, is the import of oil from Kazakhstan via railway.

STATE LEVEL RECOMMENDATIONS

Lithuania also has to take several steps at the national level. In order to have long-term sustainability, these policies must enjoy support across the political spectrum. That way, a change of government will not bring a counterproductive change in energy strategy. Key elements of Lithuania's national energy security need to include:

1. Reducing reliance on natural gas

Natural gas is currently Lithuania's second largest energy source. Following the closure of Ignalina in 2009, its significance is poised to increase dramatically. Unfortunately, no alternative to Russia is likely to available by that time. To avoid a dramatic increase in its already severe vulnerability to Gazprom, Lithuania must work to reduce its reliance on natural gas.

Clearly, as recommended earlier, the best way to accomplish this it to build a new reactor at Ignalina. Another, more near-term solution is relying on the Elektrėnai Thermal Power Plant. When this facility's upgrades are complete in 2008, it will be capable of cleanly and efficiently producing upwards of 10 TWh of electricity by burning heavy fuel oil, Orimulsion, as well as natural gas. Both Orimulsion and heavy fuel oil can be imported through Būtingė and Klaipėda—and the latter product can be refined at Mažeikių. The EBRD's assessment of the Elektrėnai refurbishment estimates that consumption of Orimulsion will increase to 465 kilotons per year before 2010 but will increase to 2800 ktons after that year. Improving the nation's ability to import and transport this fuel will be important to Lithuania's energy security.

2. Energy efficiency

Due to its Soviet legacy, Lithuania is one of the least energy-efficient states in the European Union. Its energy intensity (a measure of efficiency) is over 50 percent higher than that of the EU15. The Lithuanian government has already launched several initiatives to improve energy intensity but there is still what can—and should—be done. Improving energy intensity is an excellent way to enhance any state's economic performance. For Lithuania, the incentive to improving energy efficiency is more than financial; it will also serve to reduce its dependence on Russia.

3. Investing in costly infrastructure projects

After the closure of Ignalina in 2009, Lithuania will be reliant on imported fossil fuels for most of its electricity generation. Obtaining these supplies from Russia is a political liability at best and an invitation to energy blackmail at worst. Building the infrastructure necessary to avoid this dependence will not be cheap. Even with EU subsidies, they will require substantial funding from the Lithuanian government.

While investing in an LNG terminal or a nuclear plant would be an expensive undertaking, it would also dramatically increase energy security. In this respect, it is similar to the Būtingė oil terminal and the BTC pipeline. Both projects required a substantial investment of time and resources to hedge against an eventuality that was not at all certain. Yet both these projects have since paid huge dividends—especially Būtingė. Without this port's ability to import crude oil, the cessation of pipeline shipments in Lithuania would have dealt a far larger financial blow to Mažeikių Nafta, potentially influencing PKN Orlen's commitment to the purchase. For a country as vulnerable as Lithuania, investments such as this are necessary; hence, a great deal of political will is required.

4. Increasing oil storage

Storage at Mažeikių, Būtingė, and Klaipėda is not sufficient and must be increased. Lithuania's domestic storage capacity totals some 500,000 cubic meters of crude oil and petroleum products. Lithuania needs to work with the International Energy Agency (IEA) to establish greater oil storage capacity. While Lithuania cannot become a member of IEA, given that it is not part of the OECD, it can still work with the IEA—just as Poland did. In line with IEA regulations, Lithuania would need storage space for three months' consumption. While that would require a significant financial commitment, it would represent a crucial and essential guarantor of the country's energy security.

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