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# **NAVAL POSTGRADUATE SCHOOL**

**MONTEREY, CALIFORNIA**

## **THESIS**

**AN ENERGY BRIDGE TOO FAR? UNCONVENTIONAL  
NATURAL GAS INNOVATIONS AND EURASIA'S  
ENERGY BRIDGE**

by

Wayne J. Dahl, Jr.

March 2013

Thesis Advisor:  
Co-Advisor:

Victoria Clement  
Mikhail Tsypkin

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**AN ENERGY BRIDGE TOO FAR? UNCONVENTIONAL NATURAL GAS  
INNOVATIONS AND EURASIA'S ENERGY BRIDGE**

Wayne J. Dahl, Jr.  
Captain, United States Army  
B.S., Southwestern College, 2004

Submitted in partial fulfillment of the  
requirements for the degree of

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**NAVAL POSTGRADUATE SCHOOL  
March 2013**

Author: Wayne J. Dahl, Jr.

Approved by: Victoria Clement  
Thesis Co-Advisor

Mikhail Tsypkin  
Thesis Co-Advisor

Harold Trinkunas  
Chair, Department of National Security Affairs

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## **ABSTRACT**

Energy security has become a key watchword in defining the contemporary security landscape. Although the 1973 Oil Crisis is likely the most significant energy dispute in modern history, energy conflicts continue to impact nations and citizens around the world. Several energy disputes with Russia in the first decade of the twenty-first century serve as poignant examples of contemporary energy insecurity. The 2006 Russia-Ukraine gas disagreement halted the delivery of 100 million cubic meters of gas to Europe; in 2007, the Russian-Belarus energy clash direly affected Germany's economy. Subsequently, Ukraine siphoned gas from its pipeline to Europe in an attempt to hold European households hostage during a row with Russia over gas prices in 2009. However, unconventional natural gas innovations, such as shale gas and Liquefied Natural Gas (LNG), are dynamically altering the energy security relationships between Russia, the former Soviet republics, and Europe. This thesis will utilize a comparative study of the contemporary natural gas pipeline market and current unconventional gas market to analyze the ramifications both markets have on European and Eurasian energy security, future prospects for expansions, and possible sources of contention within both frameworks, which will lead to an examination of future energy security policy implications.



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## **LIST OF ACRONYMS AND ABBREVIATIONS**

BCM	Billion Cubic Meters
BTC	Baku-Tbilisi-Ceyhan Pipeline
BTE	Baku-Tbilisi-Erzurum Pipeline
CEE	Central and Eastern Europe
CEO	Chief Executive Officer
CIS	Commonwealth of Independent States
CSTO	Collective Security Treaty Organization
EC	European Commission
EIA	Energy Information Administration
EPA	Environmental Protection Agency
EU	European Union
EUR	Euro
FSU	Former Soviet Union
IEA	International Energy Agency
IFRI	Institut Francais des Relations Internationales
KPMG	Klynveld Peat Marwick Goerdeler
KM	Kilometer
LNG	Liquefied Natural Gas
M3	Cubic Meters
MMBTU	Million British Thermal Units
NATO	North Atlantic Treaty Organization
OPEC	Organization of the Petroleum Exporting Countries
OSCE	Organization for Security and Cooperation in Europe
SCO	Shanghai Cooperation Organization
TANAP	Trans-Anatolian Pipeline
TCF	Trillion Cubic Feet
TSO	Transport System Operator
UK	United Kingdom
U.S.	United States



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## I. INTRODUCTION

Energy security has become a key watchword in defining the contemporary security landscape. Although the 1973 Oil Crisis is likely the most significant energy dispute in modern history, energy conflicts continue to impact nations and citizens around the world. For example, Nigerian rebels set fire to their country's oil pipeline in 2005 and attacked the Lagos oil import terminal in 2009; Somali pirates hijacked a Saudi oil tanker in February 2011; North Sudan halted oil shipments from South Sudan in a 2011 dispute over customs fees; and South Sudan recently responded in April 2012 by seizing an oil field in North Sudan. The January 2013 terrorist raid and international hostage crisis at Algeria's Amanas natural gas facility provides a poignant illustration of the fragility of energy security. Moreover, Iran's threats to mine the Strait of Hormuz are troubling indicators of potential shocks to the international oil market. The Eurasian gas market is also rife with political instability. Several energy disputes with Russia in the first decade of the 21st Century serve as poignant examples of European/Eurasian energy insecurity. The 2006 Russia-Ukraine gas disagreement halted the delivery of 100 million cubic meters of gas to Europe; in 2007, the Russian-Belarus energy clash direly affected Germany's economy. Subsequently, Ukraine siphoned gas from its pipeline to Europe in an attempt to hold European households hostage during a row with Russia over gas prices in 2009. In Central Asia, a 2009 pipeline explosion sparked a 2010 Russo-Turkmen gas war, which Ashgabat survived with loans from China.<sup>1</sup> Thus, fear of energy blackmail and terrorist attacks on infrastructure permeate current defense analysis. However, unconventional natural gas innovations, such as shale gas and Liquefied Natural Gas, are dynamically altering the energy security relationships between Russia, the former Soviet republics, and Europe. Most significantly, Liquefied Natural Gas has enabled Europe to

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<sup>1</sup> "Algeria's hostage crisis: A murky mess," *Economist*, January 18, 2013, accessed January 18, 2013, <http://www.economist.com/blogs/pomegranate/2013/01/algerias-hostage-crisis>; Bendik Solum Whist, *Nord Stream: Not Just a Pipeline*, FNI Report 15 (Fridtjof Nansens Institut, 2008), 14, accessed January 25, 2012, <http://www.fni.no/doc&pdf.FNI-R1508.pdf>; Marcin Kaczmarek, "Domestic Sources of Russia's China Policy," *Problems of Post-Soviet Communism* 59, no. 2 (April 2012), 7; Gal Luft and Anne Korin, ed., *Energy Security Challenges for the 21<sup>st</sup> Century: A Reference Handbook* (Washington, D.C.: Library of Congress Cataloging-in-Publication Data, 2009), ix.

blunt Moscow's energy blackmail attacks by diminishing Russia's market share of European energy imports—bolstering European energy security.

## **A. IMPORTANCE**

A myriad of national defense white papers and security strategies highlight energy security as a priority area to include Austria, Bulgaria, France, Germany, Italy, Latvia, Norway, Poland, Russia, the United Kingdom (UK), and the United States (U.S.) among many others. While most security strategies emphasize regional stability in energy suppliers' neighborhoods and physical infrastructure security, Poland's white paper cites Russia's energy policy as a direct risk to Polish national security: "The Russian Federation, taking advantage of the rising energy prices, has been attempting intensively to reinforce its position on a supraregional level."<sup>2</sup> Additionally, multilateral organizations and defense alliances have made commitments to protect energy infrastructure or promote energy security including the North Atlantic Treaty Organization (NATO), European Union (EU), Shanghai Cooperation Organization (SCO), Organization for Security and Cooperation in Europe (OSCE), and Collective Security Treaty Organization (CSTO).<sup>3</sup> Although the placement of energy security under the purview of military alliances may be unsettling, most countries employ market principles and infrastructure diversification to counter energy risks.

Russia and several European nations have responded to mounting energy instabilities by developing gas pipelines from Russia directly to Central Europe. Although multiple energy disputes with transit states would seem like a boon for the Nord Stream and South Stream projects, current political sentiment in Belarus, the Baltic States, Poland, Scandinavia, Ukraine, and European policy centers appear

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<sup>2</sup> *National Security Strategy of the Republic of Poland* (Warsaw: 2007), 6, accessed August 10, 2012, <http://merln.ndu.edu/whitepapers/Poland-2007-eng.pdf>.

<sup>3</sup> Félix Arteaga, "Energy Security in Central Asia: Infrastructure and Risk," Madrid: Real Instituto Elcano, 2010, accessed July 31, 2012, [http://www.realinstitutoelcano.org/wps/portal/rielcano\\_eng/Content?WCM\\_GLOBAL\\_CONTEXT=/elcano/Elcano\\_in/Zonas\\_in/ARI1-2010](http://www.realinstitutoelcano.org/wps/portal/rielcano_eng/Content?WCM_GLOBAL_CONTEXT=/elcano/Elcano_in/Zonas_in/ARI1-2010); Günther Oettinger, "Energy Security for Europe: The EU Agenda until 2050," February 10, 2011, EUROPA - Press Releases, accessed August 2, 2012, <http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/11/98&format=HTML&aged=0&language=EN&guiLanguage=en>.

overwhelmingly opposed to routes that bypass Eastern Europe. Thus, German and Italian investment in the Nord Stream and South Stream pipelines, respectively, may have been purchased at great economic and political cost. First, several analysts argue these energy projects will consolidate Russia's control over Europe's supply.<sup>4</sup> Second, unilateral energy pacts hobble the EU's ability to coherently negotiate with Russia.<sup>5</sup> Furthermore, Europe's future energy security will likely rely on exports from the Caspian Basin—namely, Azerbaijan, Kazakhstan, and Turkmenistan. Therefore, strengthening the energy bridge from Central Asia and the South Caucasus region to Europe is a strategic imperative for the EU. Yet, this energy network may be imperiled by unreliable access to energy sources and aggressive Russian energy diplomacy. During President Vladimir Putin's July 9, 2012, address to Russia's ambassadors, he touted economic power as the source of Russia's strength and affirmed that economic integration in the Commonwealth of Independent States (CIS) is Russia's core strategic objective.<sup>6</sup> Thus, it appears that Russia seeks to control the energy bridge from Central Asia to Europe to shore-up its influence in CIS nations, former Soviet republics, and Europe itself. However, dynamic natural gas technologies have altered the energy environment—relegating geographic dependence on neighboring states for energy transit or sales.

Unconventional gas innovation—shale gas and Liquefied Natural Gas (LNG)—has been transforming the energy landscape for the last decade. Less than ten years ago, shale gas comprised two percent of U.S. domestic output, but currently makes up a third of U.S. gas production. Additionally, the U.S. National Petroleum Council asserts that the United States alone holds shale gas deposits to provide approximately a century of energy

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<sup>4</sup> Alexander Ghaleb, "Natural Gas as an Instrument of Russian State Power," *Letort Paper*, Strategic Studies Institute-U.S. Army War College, October 2011, 127; Robert L. Larsson, *Nord Stream, Sweden and Baltic Sea Security* (Stockholm: Swedish Defense Research Agency, 2007), 7, accessed July 30, 2012, <http://www2.foi.se/rapp/foir2251.pdf>; Ariel Cohen, "Russia: The flawed Energy Superpower," in *Energy Security Challenges for the 21st Century: A Reference Handbook*, ed., Gal Luft and Anne Korin (Washington, D.C.: Library of Congress Cataloging-in-Publication Data, 2009), 94; Jeffrey Mankoff, "Eurasian Energy Security," *Council Special Report* (Council on Foreign Relations), no. 43 (February 2009); accessed July 31, 2012, <http://www.cfr.org/europerussia/eurasian-energy-security/p18418>, 14 & 27.

<sup>5</sup> Institut Français des Relations Internationales, *Oil and Gas Delivery to Europe: An Overview of Existing and Planned Infrastructures* (Paris: IFRI, 2011), 71; Ariel Cohen, "Russia: The flawed Energy Superpower," 94.

<sup>6</sup> Vladimir Putin, "Russia in a Changing World: Stable Priorities and New Opportunities," July 9, 2012, Kremlin-Press Release, accessed July 25, 2012, <http://eng.kremlin.ru/news/4145>.

at current U.S. consumption rates.<sup>7</sup> In the past decade, the United States has stopped importing natural gas, and LNG shipments previously bound for the U.S. market have been redirected to Europe. Furthermore, the United States is likely to become a gas exporter in the next decade. Europe has been diversifying energy sources by building LNG terminals to receive increased shipments from Africa and the Middle East. The EU-27 estimates that its LNG consumption will increase from 8.9 percent of its energy mix to 31.8 by 2030. Because Russia does not ship LNG to Europe, LNG may significantly reduce EU reliance on Russian gas. There is also evidence of substantial shale gas availability in France, Germany, the Netherlands, and Poland, which will shift the sources of gas-flows within Europe. If environmental concerns caused by shale gas production can be addressed, this new gas source could increase EU domestic energy production—further decreasing the share of Russian gas in Europe’s energy mix.<sup>8</sup> Therefore, the developments of shale gas and LNG could create a new energy paradigm where geography does not dictate energy relationships or geopolitical energy influence. These innovations have the potential to weaken Russia’s monopoly on natural gas in the region by offering Middle Eastern or African LNG alternatives to Russian gas, and European shale gas deposits provide the opportunity for the European Union to produce a portion of its own energy further reducing dependence on Gazprom and the Kremlin.

## **B. LITERATURE REVIEW**

Although shale gas and LNG technologies are transforming the natural gas industry, Eurasian energy security policies may not significantly adjust unless these technological advances address fundamental energy security threats. Thus, to effectively examine the results of unconventional gas production, the sources of energy insecurity must be explored. A predominant theme emerged as many analysts attribute insecurity in European and Eurasian energy sectors to Russia’s aggressive pipeline diplomacy. There

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<sup>7</sup> Frank A. Verrastro, “The Role of Unconventional Oil and Gas: A New Paradigm for Energy,” in *2012 Global Forecast: Risk, Opportunity, and the Next Administration*, ed. Craig Cohen and Josiane Gabel (Washington, DC: Center for Strategic and International Studies, 2012), 66–67.

<sup>8</sup> Institut Français des Relations Internationales, *Oil and Gas Delivery to Europe*, 57–58; Baker Institute for Public Policy, “Shale Gas and U.S. National Security,” Baker Institute Policy Report, No. 49 (October 2011), 1 & 7.

is striking evidence that Russia flexes its energy muscles to coerce other nations. Alexander Ghaleb of the Strategic Studies Institute at the U.S. Army War College affirms that Moscow has used gas disruptions and price disputes or threatened to impose these sanctions over forty times since the collapse of the Soviet Union.<sup>9</sup> In the reference handbook, *Energy Security Challenges for the 21st Century*, Ariel Cohen, Senior Research Fellow for Russian and Eurasian Studies and International Energy Policy at the Kathryn and Shelby Cullom Davis Institute for International Studies, agrees that Russia has already demonstrated its ability to drastically increase energy prices as a tool to implement its foreign policy. He further argues that the Kremlin believes customer governments will not challenge Russia's aggressive energy diplomacy.<sup>10</sup> According to Jeffrey Mankoff, Associate Director of International Security Studies at Yale University, the 2009 Ukraine gas dispute showed that Russia has shown its ability to forgo short-term economic gain to secure long-term diplomatic dominance.<sup>11</sup> Ghaleb further purports that Russia will use natural gas disruptions or price disputes to influence NATO decision making in the future and affect the geostrategic policy of the United States and its NATO allies.<sup>12</sup>

Apart from energy disputes, several observers fear Russia will use its energy infrastructure as a means to rationalize military intervention in other states. Robert Larsson, a security policy analyst at the Swedish Defense Research Agency, affirms in his assessment on the Nord Stream pipeline that the Baltic and Scandinavian states fear Russian military presence in their territorial waters under the guise of military protection of Russia's strategic energy investment—namely the Nord Stream pipeline.<sup>13</sup> According to some analysts, the 2008 Russo-Georgian War is a powerful example of the confluence between energy interests and military power. While most analysts argue that Moscow's energy dominance played a key role in EU inaction during the 2008 Georgia invasion,

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<sup>9</sup> Ghaleb, "Natural Gas as an Instrument of Russian State Power," 127.

<sup>10</sup> Ariel Cohen, "Russia: The flawed Energy Superpower," 92–93.

<sup>11</sup> Mankoff, "Eurasian Energy Security," 14.

<sup>12</sup> Ghaleb, "Natural Gas as an Instrument of Russian State Power," 127.

<sup>13</sup> Robert L. Larsson, Nord Stream, Sweden and Baltic Sea Security, 7.



Cohen points out that “controlling strategic energy corridors from the Caspian Sea to the Black Sea and beyond” was a key impetus for the 2008 Russo-Georgian War. This conflict not only allowed Russia to maintain physical control of key transit pipelines from Central Asia, but ensured that the west viewed the Caspian region as too unstable a market to continue energy infrastructure investment to bypass Russia.<sup>14</sup> Mankoff agrees Russia’s military action “has only reinforced Russian dominance in the energy sphere, raising the stakes for countries in the region that would seek to escape its grip.”<sup>15</sup>

The aforementioned scholars and analysts believe the expansion of the Nord Stream and South Stream energy pipelines, which bypass the Baltic states, Poland, and Ukraine, will give Russia even greater power in Eastern Europe, which receives 80 percent of its energy from Gazprom, while the Baltic States, Finland, and Slovakia are 100 percent dependent on Russian energy. Nord Stream and South Stream create gas route to the heart of Europe that allow Russia to turn off energy to Belarus, Poland, and Ukraine without affecting its most important customers in Europe—namely Germany and Italy. Furthermore, these pipelines will link nations to Gazprom sources that have yet to depend on Russian energy, like the United Kingdom and the Netherlands. As EU dependence on imported gas is projected to grow to over 80 percent and production in the North Sea is anticipated to decrease by 40 percent before 2020, the EU and NATO may also become victims of energy blackmail.<sup>16</sup>

In addition to geostrategic consequences of Russia’s aggressive energy diplomacy, many analysts are concerned with the market ramifications of the Kremlin’s control of Russian energy companies. Kevin C. Smith, a senior associate at the Center for Strategic and International Studies, argues that Gazprom’s status as a domestic monopoly may limit foreign companies’ ability to negotiate prices or quantities with the government-backed giant. Russia’s use of intermediary companies and pipeline consortium registrations in Switzerland also prevents European governments from

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<sup>14</sup> Cohen, “Russia: The flawed Energy Superpower,” 92.

<sup>15</sup> Mankoff, “Eurasian Energy Security,” 7.

<sup>16</sup> Robert L. Larsson, *Nord Stream, Sweden and Baltic Sea Security*, 7; Cohen, “Russia: The flawed Energy Superpower,” 94; Ghaleb, “Natural Gas as an Instrument of Russian State Power,” 127; Mankoff, “Eurasian Energy Security,” 14 & 27.

gaining insight into the consortium's activities. Therefore, Russia may control downstream actions of European companies and influence other states via its major stake in pipeline consortium.<sup>17</sup> When assessing the South Stream versus Nabucco pipeline investment opportunities, Rafael Fernández from the Department of Applied Economics of the Complutense University of Madrid observed, Russia consistently maintains fifty-one percent stake or more in international consortiums to control these projects.<sup>18</sup> Moscow has also used consortiums and long term energy agreements to retain control of export markets from Central Asia and the Caspian Basin, while blocking infrastructure investment that would weaken Russia's monopoly of the Eurasian energy bridge. In addition to establishing multinational consortiums, Moscow consistently seeks to increase its investment in European energy infrastructure, like pipelines, refineries, electric grids, and port terminals to gain influence in downstream market activities, and possibly serve as tools of Russia's foreign policy.<sup>19</sup>

Although Russia has been an unscrupulous energy provider, European and Eurasian energy insecurity is not rooted in aggressive pipeline diplomacy, but the concentration of energy suppliers in the region.<sup>20</sup> Daniel Yergin, founder of Cambridge Energy Research Associates and CNBC's Global Energy Expert, views energy in a global context and differentiates energy security from the perspective of supplier and consumer. Russia, as an energy exporter, desires "security of demand" for its exports and control of strategic resources, including majority stakes in downstream infrastructure. This analysis follows Smith's assessment of Russia's aggressive energy investment choices, but casts these decisions in the light of rational action for the energy supplier. Yet, most of the developed world is a consumer of energy and seeks adequate supplies at

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<sup>17</sup> Keith C. Smith, "Lack of Transparency in Russian Energy Trade," Center for Strategic and International Studies, 4 & 15, accessed July 31, 2012, [http://csis.org/files/publication/100702\\_Smith\\_LackOfTransparency\\_Web.pdf](http://csis.org/files/publication/100702_Smith_LackOfTransparency_Web.pdf).

<sup>18</sup> Rafael Fernández, "The EU and Natural Gas from Central Asia: Is Nabucco the Best Option?" (Madrid: Real Instituto Elcano, 2010), 7, accessed July 31, 2012, [http://www.realinstitutoelcano.org/wps/portal/rielcano\\_eng/content?WCM\\_GLOBAL\\_CONTEXT=/elcano/elcano\\_in/zonas\\_in/asia-pacific/ari102-2009](http://www.realinstitutoelcano.org/wps/portal/rielcano_eng/content?WCM_GLOBAL_CONTEXT=/elcano/elcano_in/zonas_in/asia-pacific/ari102-2009).

<sup>19</sup> Ibid., Mankoff, "Eurasian Energy Security," 16.

<sup>20</sup> Theodore Moran, "The Globalization of America's Defense Industries: Managing the Threat of Foreign Dependence," *International Security* 15, no. 1 (1990), 80.

reasonable prices, which runs counter to Russia's aims. Thus, the European energy debate focuses on how to foster stability whilst dependent on imported natural gas.<sup>21</sup> Furthermore, Yergin affirms that high energy prices and energy insecurity are the result of global supply and demand, but often exacerbated by exporter's domestic policies or monopolistic control of the energy industry. Simply put, the key to energy security is diversification.<sup>22</sup> While attesting that Russia will use natural gas to influence NATO decision making, Ghaleb confirms that market forces empower Moscow: "Russia's monopoly of the gas supply to Eastern Europe allows it to impose unilateral sanctions at will, without the fear that the target will attempt to get gas from other European states...because the other European states also get much of their gas from Russia."<sup>23</sup> Thus, Russia's aggressive energy diplomacy is fueled by lack of diversified energy resources or transit routes in Europe and Eurasia. In his examination of the feasibility of the Nabucco project, Rafael Fernández provided troubling statistics concerning Europe's energy dependence. As of 2009, dependence on Russian energy in Finland, Latvia, Lithuania, and Slovakia was absolute as these nations received 100 percent of their natural gas from Russia. Austria, Czech Republic, Greece, and Hungary purchased 75 percent of their energy from Gazprom, while Poland, Romania, and Slovenia were dependent on Russia for over 50 percent of their energy-mix. Furthermore, the EU-27 imported 43 percent of its natural gas from Russia.<sup>24</sup>

Some analysts believe that the global demand for gas will continue to increase, which will place Europe in a more dire position due to greater competitions for natural gas. Ghaleb purports, "unless new alternative energy sources emerge, natural gas will surpass oil by the year 2050, and will grow to become the fuel of the future."<sup>25</sup> Dr. Michael Klare, U.S. defense policy and oil analyst, forecasts in *Energy Security Challenges for the 21st Century* the gap between energy demand for oil and gas greatly

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<sup>21</sup> Daniel Yergin, "Ensuring Energy Security," *Foreign Affairs* 85, no. 2 (Mar 2006): 71–72.

<sup>22</sup> Ibid., 70, 73–74.

<sup>23</sup> Ghaleb, "Natural Gas as an Instrument of Russian State Power," 6.

<sup>24</sup> Rafael Fernandez, "The EU and Natural Gas from Central Asia: Is Nabucco the Best Option?," 1.

<sup>25</sup> Ghaleb, "Natural Gas as an Instrument of Russian State Power," 6.

outstripping supply, and will surely increase the risk of great power conflicts over energy resources. He further argues that Russia is not the nation most likely to use military force to protect its energy assets: “It is the United States that, until now, has devoted most effort to the protection of foreign oil-producing regimes and that has most vigorously employed military force to ensure safe access to overseas sources of energy.”<sup>26</sup> Moreover, he affirms that China has used the Shanghai Cooperation Organization (SCO) and joint military training to provide military assistance to its energy partners in Central Asia; thus, military confrontation between the United States and China over energy resources is an emerging reality.<sup>27</sup> Yet, energy shortages may not necessarily result in open military conflict. Despite tensions during the 1973 oil crisis, military force was not used to normalize the oil market.

Furthermore, Daniel Yergin examined historical responses to peak oil periods in “Ensuring Energy Security” and determined: “despite the current pessimism, higher oil prices will do what higher prices usually do: fuel growth in new supplies by significantly increasing investment and by turning marginal opportunities into commercial prospects.”<sup>28</sup> In other words, energy shortages in the future will likely produce investment in alternative energy fields or projects that may not have been economical when energy prices were lower. Yergin also maintains that increased capacity in the oil market will come from “nontraditional supplies” such as oil sands or ultra-deep water deposits, which are both a reality through continual advances in technology. In addition to unconventional extraction, conventional supplies have increased in the past, such as the Caspian oil pipeline or U.S. offshore oil extraction.<sup>29</sup> After analyzing the global oil market, Yergin provides three principles for energy security. First, diversification of supply is the key to energy security. If one provider disrupts supply, then other suppliers can provide an alternative, which supports consumers’ and producers’ desires for a stable

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<sup>26</sup> Michael T. Klare, “There Will Be Blood: Political Violence, Regional Warfare, and the Risk of Great-Power Conflict over Contested Energy Sources,” in *Energy Security Challenges for the 21st Century: A Reference Handbook*, ed., Gal Luft and Anne Korin (Washington, D.C.: Library of Congress Cataloging-in-Publication Data, 2009), 59.

<sup>27</sup> Ibid.

<sup>28</sup> Yergin, “Ensuring Energy Security,” 6.

<sup>29</sup> Ibid.

market. Second, consumers should seek a “buffer” in the supply system to serve against shocks, which can include storage facilities, strategic reserves, or spare production capacity. Lastly, states must recognize the “reality of integration.” According to Yergin, “There is only one oil market, a complex and worldwide system that moves and consumes about 86 million barrels of oil every day...Secession is not an option.”<sup>30</sup>

Although Yergin examines the global oil market, his principles are also applicable to the gas market. Currently, European and Eurasian energy providers hold a monopoly on sources or export routes; however, Yergin’s assessment of nontraditional supply exploration in oil markets holds true for natural gas as well. Shale gas production in the United States and the growth of LNG exporters in Africa and the Middle East have already positively affected Europe’s energy market and decreased reliance on Russian gas. With substantial shale gas deposits in several European states, including Poland, Europe could further decrease dependence on imported gas, and developing LNG terminals and resilient infrastructure buffers would further improve Europe’s energy security. Yet, increasing Europe’s energy independence could have ramifications in Central Asia as well. If Europe begins investing in alternatives to pipeline gas, the Nabucco project is in peril of being abandoned, which could solidify Russia’s economic dominance in the Caspian Basin and Central Asian Republics. Incidentally, unconventional gas exploration and shipment has the potential to globalize the natural gas market—aligning Yergin’s security principles with natural gas production. Still, several significant hurdles to nontraditional natural gas exploration remain (discussed below), which could certainly inhibit the development of a global gas market and empower Russia to maintain its dominant control of the Eurasian energy bridge.

### **C. PROBLEMS AND HYPOTHESES**

If the international oil market restricts the ability of individual actors from significantly leveraging energy assets to coerce other states, then a growing international gas market would be welcome news in Europe, but may have diverging effects in Central Asia or the Caspian Region. To fully examine the effects of unconventional shale gas

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<sup>30</sup> Ibid., 7.

exploration, the status of the international gas market must first be assessed. Is there an emerging international marketplace and how will an international gas market to truly change the levers of energy power in Europe and Eurasia? Yet, before answering these questions, the critical hurdles to shale gas and LNG development must be addressed. Currently, the most significant short-term inhibitor to development is the environmental repercussions of shale gas extraction by pumping water, sand and chemicals into rock formations at high pressure. This technique is known as hydraulic fracturing or “fracking” and poses possible environmental risks, including poisoning groundwater and increased greenhouse gas emissions over traditional gas extraction. As a result, France has banned shale gas drilling and Chevron ceased extraction in Bulgaria and Romania due to environmental protests. Thus, one focus in this thesis will be the most recent environmental assessment of shale gas and its impact on the extraction of international shale gas resources. Based on the EU’s clean energy goals and value of renewable energy, it seems unlikely that most European countries will harvest shale gas deposits. Still, Eastern European states, like Poland, may override the EU’s environmental norms in support of increased energy security.

In addition to environmental concerns, economic shortfalls may inhibit shale gas and LNG investment. In order to increase production of shale gas and LNG shipping, European companies or governments will be required to spend a large amount building LNG infrastructure or shale gas extraction technologies. While consortiums with western companies are sure to limit the monetary burden of new infrastructure, investments in unconventional natural gas will likely divert funds from renewable energies or competing gas infrastructure projects—namely the Nabucco pipeline from Central Asia. Therefore, this study will also examine economic determinants to infrastructure development.

Yet, the greatest obstacle to unconventional gas exploration is not economical or environmental, but political. Government decision-making will likely play the greatest role in determining the emergence of an international gas market. This realization leads to the final issue this thesis will investigate, what are the domestic and foreign policy implications for European/Eurasian energy investment? Will the European Union abandon the Nabucco project? Will this abandoned project enable Russia to build the

South Stream pipeline? Will Russia gain a stronger influence in the Central Asia and the South Caucasuses and merely redirect energy sources to China? Although, some observers, including the International Energy Agency, believe global natural gas supply may exceed demand as early as 2015, it is likely that Europe will still require natural gas from Russia to meet its future energy needs. Therefore, examining the policy implications concerning energy diplomacy amongst Europe, Russia, and the Caspian Basin is a central focus of this thesis.

#### **D. METHODS AND SOURCES**

This thesis will utilize a comparative study to analyze the policy implication of unconventional gas exploration. The first area of examination will be the rigid pipeline-based conventional natural gas market that currently exists in Europe and Eurasia. Advantages and disadvantages within this framework, and prospects for future development or conflicts will be explored. Furthermore, historic energy disputes and relationships will be introduced to emphasize the positive and negative aspects of the pipeline system. The physical infrastructure and government, international, and private actors will be described as well. After reviewing the traditional pipeline energy market, this thesis will explore the unconventional natural gas industry—shale gas exploration and Liquefied Natural Gas. First, an examination of shale gas' impact in the U.S. energy market will be reviewed, which will be followed by exploring the effect of these energy resources in Europe. After investigating the current unconventional gas market, prospects for future exploration and controversies will be explored. Thus, this thesis will compare the contemporary natural gas pipeline market and current unconventional gas market, the ramifications both markets have on European and Eurasian energy security, future prospects for expansions, and possible sources of contention within both frameworks, which will lead to an examination of future policy implications.

#### **E. THESIS OVERVIEW**

In order to illustrate how unconventional natural gas innovations have altered the energy security relationships between Russia, the former Soviet republics, and Europe, the thesis will open with an examination of the contemporary Eurasian energy bridge.

The first chapter will provide an overview of Russian pipelines that supply Eurasian energy to Europe. In a survey of traditional natural gas pipeline transit routes, this thesis will highlight the monopolistic power employed by the Kremlin in Eastern Europe, Central Asia, and the Caspian Region. After exploring advantages and disadvantages of the current pipeline system, this chapter will examine the Nord Stream pipeline as a lens for viewing geopolitical tensions of pipeline politics between Europe and Russia and among EU member states. In order to further explore European-Eurasian energy relations, the first chapter will review EU-Russian competition in the Southern Gas Corridor through examining the projected gas market through 2035. The chapter will also examine how EU-Russian competition in the southern gas corridor illustrates the EU's inability to compete with Russia in pipeline politics, developing the South Stream pipeline will not significantly alter contemporary pipeline politics governing the Eurasian Energy Bridge. The first chapter's conclusion will highlight possible avenues for European energy diversity.

The second chapter will explore shale gas and LNG innovations and their repercussions on U.S. and European markets over the last decade in to illustrate the growing international natural gas marketplace and the likelihood these market forces will make a significant difference in European and Eurasian energy security. After reviewing the effects of unconventional natural gas exploration and shipment, this thesis will examine the problems facing expanding unconventional gas exploration—environmental concerns and monetary constraints. In general, this thesis will focus on the prospects of developing shale gas resources in Europe/Eurasia as these energy resources will directly influence energy security in the region. The second chapter's conclusion will illustrate how shale gas and LNG advances are reshaping the European-Eurasian gas markets and highlight critical policy choices facing the EU, Russia, and Caspian hydrocarbon states.

After assessing unconventional natural gas innovation and its direct effect on the Eurasian energy bridge, the third chapter will examine the domestic and foreign policy implications of this paradigm shift in Eurasian energy security. The third chapter will initially assess the impacts of LNG and shale gas on Russia's domestic energy industry and how an emerging international gas market will alter Russia's relations with Europe,



the Caspian Basin, and China. Then the future of the Caspian region, traditionally viewed as a key to energy security, will be explored. Finally, the chapter will examine how natural gas innovations provide a significant incentive for EU internal market integration, which will lead to an investigation of future energy relations between the EU, Russia, and the Caspian hydrocarbon states in transition to the conclusion of the thesis.

## II. THE CONTEMPORARY EURASIAN ENERGY BRIDGE

Europe predominantly relies on Russian pipelines to meet its natural gas needs, but this delivery method is rife with energy instability. The vulnerability of pipeline delivery was exposed by the 2007 gas disputes between Russia and Belarus and the 2006 and 2009 gas disruptions caused by pricing conflicts between Russia and Ukraine.<sup>31</sup> Consequently, these energy clashes bolstered European Union (EU) and Russian initiatives to foster energy security. European and Russian visions of energy security converged with the construction of the Nord Stream pipeline that bypassed troubling transit states, like Ukraine and Belarus, while reducing transit fees.<sup>32</sup> Even though transit instability was reduced, Nord Stream expanded Russia's stake in European gas imports.

Russia's dominant role in the EU's import energy mix has led Brussels to consider alternative supplies. Because the EU relies on pipelines to supply natural gas, the closest alternative market lies in the Caspian region. This actuality has galvanized EU support for developing a gas bulwark against Russia via the Nabucco pipeline. Russia, however, has proposed the South Stream as a competitor.<sup>33</sup> Despite proclamations from Berlin and Moscow that both pipelines are mutually reinforcing, this chapter will show that Nabucco and South Stream are competitive and the construction of either project will negate the need for a second pipeline.<sup>34</sup> More importantly, the Nabucco/South Stream rivalry highlights the EU's competitive disadvantage vis-a-vis Russia concerning contemporary pipeline politics.

This chapter will examine the contemporary Eurasian energy bridge by opening with an overview of Russian pipelines that supply Eurasian energy to Europe. After exploring advantages and disadvantages of the current pipeline system, this chapter will examine the Nord Stream pipeline as a lens for viewing geopolitical tensions of pipeline

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<sup>31</sup> Whist, *Nord Stream: Not just a Pipeline*, 14.

<sup>32</sup> Institut Français des Relations Internationales, *Oil and Gas Delivery to Europe*, 8.

<sup>33</sup> *Ibid.*, 56.

<sup>34</sup> "Merkel: Nabucco not Competing with Nord Stream," Baltic News Service, July 16, 2009, accessed October 3, 2012, <http://www.lexis-nexis.com/>.

politics between Europe and Russian and among EU member states. In order to further exploration of European-Eurasian energy relations, this chapter will review EU-Russian competition in the Southern Gas Corridor through examination of the projected gas market through 2035 to contend that EU energy demand does not require the Nabucco and South Stream pipelines. This chapter will go on to compare the Nabucco and South Stream projects, their proposed routes, consortium members, goals and motivations for development, and challenges to development. Because South Stream is the project most likely to be completed, the influence of this pipeline on exporters, transit states, and customers will be explored as well. The chapter's conclusion will examine how EU-Russian competition in the southern gas corridor illustrates the EU's inability to compete with Russia in pipeline politics, developing the South Stream pipeline will not significantly alter contemporary pipeline politics governing the Eurasian Energy Bridge, and possible avenues for European energy diversity.

#### A. THE CONTEMPORARY EURASIAN PIPELINE BRIDGE

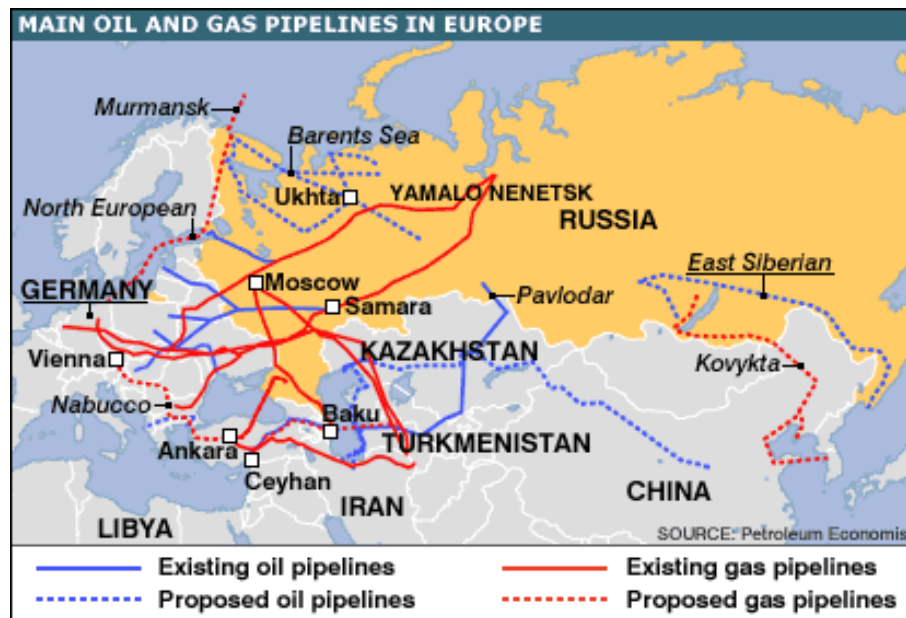


Figure 1. Eurasian pipeline network<sup>35</sup>

<sup>35</sup> "Russia: Key Facts/Pipelines," BBC News, accessed September 27, 2012, <http://news.bbc.co.uk/2/shared/spl/hi/guides/456900/456974/html/n4page1.stm>.

Seven pipeline systems currently connect Russia with Central and Western Europe. Three of these pipelines traverse Ukraine (Brotherhood, Polar Lights, and Trans-Balkans) and provide 175 bcm/year capacity to Europe. These systems are all remnants of the Soviet Pipeline grid built before 1991. Yamal-Europe is the second largest transit pipeline through Belarus and Poland and provides 33 bcm/year of natural gas. Russia has also constructed three direct pipeline projects—Finland connector, Nord Stream to Germany, and Blue Stream to Turkey—that provide 20 bcm, 56 bcm, and 16 bcm of gas per year, respectively.

<b>Pipeline</b>	<b>Route</b>	<b>Operational Date</b>	<b>2012 Capacity</b>
Brotherhood/Union	Russia/Ukraine/Central Europe	Soviet Pipeline	130
Polar Lights	Russia/Belarus/Ukraine/Europe	Soviet Pipeline	25
Trans-Balkans	Russia/Ukraine/Balkans	Soviet Pipeline	20
Finland Connector	Russia/Finland	Extended 1999	20
Yamal-Europe	Russia/Belarus/Poland/Europe	1999	33
Blue Stream	Russia/Black Sea/Turkey	2002	16
Nord Stream	Russia/Baltic Sea/Germany	2011	56

Table 1. Russia's pipeline export infrastructure to Europe (in bcm)<sup>36</sup>

## 1. Advantages

Pipelines are often the favored transport method for natural gas because other options, like LNG, require technical and expensive infrastructure investment. Lower costs can be passed on to consumers via lower prices. Furthermore, overland pipelines have a life-span of thirty-five to sixty years and lower maintenance requirements than

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<sup>36</sup> Institut Français des Relations Internationales, Oil and Gas Delivery to Europe, 70.

competing delivery methods.<sup>37</sup> Thus, natural gas remains the most economical delivery method up to 3,000 km before transport costs rise enough for LNG to compete.<sup>38</sup> Europe pipeline interconnectors have also served an important role in creating regional competitiveness by enabling reversible gas flows to offset gas disruptions and combining energy resources from several importers to converge into one gas hub, creating a multi-regional market. For example, the Bacton-Zeebrugge interconnector, an underwater pipeline from the UK to Europe, has facilitated Russian, British and Norwegian gas competition. Some believe interconnectors will be the vehicle to develop a unified EU energy policy.<sup>39</sup> Despite development in European interconnectors and economical gas transport, pipelines deliver significant disadvantages.

## **2. Disadvantages**

Even though pipeline interconnectors deliver supplies from multiple suppliers, pipeline gas is still predominantly a regional market. Until alternative energy sources provide a more dominant portion of Europe's energy mix, pipeline gas remains a regional market.<sup>40</sup> Moreover, pipeline markets are subject to regional pricing, such as Russian's long-term purchase contracts. Regional gas prices are not related to supply or demand, but are often linked to world oil prices. For example, the value of gas to Europe is determined by the price of oil substitutes—called replacement value.<sup>41</sup> Thus, European gas prices cannot effectively react to supply and demand. Additionally, competition between oil and gas resources cannot be harnessed because gas prices are linked to the oil market.<sup>42</sup> In addition to price constraints, contemporary pipelines may hobble political action as well.

Russia's history of using energy as a means of blackmailing Europe persists. Some analysts affirm that Europe's inaction during the 2008 Russo-Georgian war was

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<sup>37</sup> Ibid., 47.

<sup>38</sup> Ibid.

<sup>39</sup> Ibid., 53–54.

<sup>40</sup> Ibid., 47.

<sup>41</sup> Ibid., 50.

<sup>42</sup> Ibid., 96.

due its reliance on Russian gas and fear of gas shutoffs as a reaction to political opposition.<sup>43</sup> A more recent example of EU-Russian political opposition is the current European Commission (EC) anti-trust case against Gazprom. On September 4, 2012, the EC opened an antitrust probe against Gazprom for three charges: “preventing gas trading across national borders; hindering diversification of supply; and unfairly linking gas and oil prices.”<sup>44</sup> This action may seem like a positive step for unified EU energy relations with Moscow. Yet, President Vladimir Putin responded by signing a decree on September 11th that prohibited “strategic firms” from providing information to foreign investigators without Moscow’s permission. Consequently, Gazprom has stopped providing contract details to the EC. Moves by the EC to liberalize and unbundle European pipeline infrastructure from energy companies have met similar loggerheads. Lithuania is one of the EU states that is most inclined towards unbundling, but has the highest gas prices in Europe. Its current government is facing defeat in the upcoming October elections and cites high gas prices as one of many examples of Russian meddling in Lithuanian politics. On September 12, 2012, Russia informed Moldova—the poorest EU country—that its gas rates would dramatically increase if the country did not renounce the EU’s unbundling policies.<sup>45</sup> Incidentally, French and German politicians and energy firms have historically opposed EU unbundling efforts.<sup>46</sup> Russia can make such demands and may hold sway over larger EU nations because of its monopolistic positing as a gas provider—especially in Eastern Europe.

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<sup>43</sup> Richard J. Anderson, “Europe’s Dependence on Russian Natural Gas: Perspectives and Recommendations for a Long-Term Strategy,” George C. Marshall European Center for Security Studies, Occasional Paper series, No. 19 (September 2008), 41–2; Kenneth B. Medlock, Amy M. Jaffe, and Peter R. Hartley, *Shale Gas and U.S. National Security* (Houston: Rice University Baker Institute, July 2011), accessed October 2, 2012, <http://www.bakerinstitute.org/publications/EF-pub-DOEShaleGas-07192011.pdf>, 54.

<sup>44</sup> “Burst Valves: The European Union Squeezes Gazprom. Russia Retaliates,” *Economist*, September 15, 2012, Section: Europe, 52.

<sup>45</sup> Ibid.

<sup>46</sup> “EU Tries—Again—to Split Utilities,” *Bloomberg Businessweek*, September 19, 2007, accessed October 2, 2012, <http://www.businessweek.com/stories/2007-09-19/eu-tries-again-to-split-utilitiesbusinessweek-business-news-stock-market-and-financial-advice>; Judy Dempsey, “Germans Attack EU Energy Proposal,” *International Herald Tribune*, 10 October 2007, F1.

Most European nations and international policy centers, including the International Energy Agency (IEA), believe an undiversified energy supply is the foundation of EU energy insecurity. While the EU produces one-third of its gas domestically, the preponderance of gas supplies originate from three primary sources: Russia provides over 40 percent of EU gas imports, while 23 percent originates in Norway and 17 percent in Algeria.<sup>47</sup> EU member states are aware of this reality. In 2011, The European Commission affirmed, “the security of the EU’s primary energy supplies may be threatened if a high proportion of imports are concentrated among relatively few partners. Close to four-fifths of the EU-27’s imports of natural gas in 2009 came from Russia, Norway, or Algeria.”<sup>48</sup> These apprehensions are rooted in several Russian energy disputes in the first decade of the 21st Century. The 2006 Russia-Ukraine gas disagreement halted the delivery of 100 million cubic meters of gas to Europe. In 2007, the Russian-Belarus energy clash direly affected Europe’s economy. Ukraine subsequently siphoned gas from its pipeline to Europe in an attempt to hold European households hostage during a row with Russia over gas prices in 2009.<sup>49</sup> EU energy security is likely to worsen as the EC forecasts its gas imports will increase to over 84 percent by 2030.<sup>50</sup> Consequently, the EC has provided monetary and diplomatic support to ten gas and electricity projects that were dubbed in “European interest.”<sup>51</sup> One such project is the Nord Stream pipeline.

## **B. NORD STREAM: RUSSIA’S TROJAN HORSE?**

Although multiple energy disputes would seem like a boon for the Nord Stream project, current political sentiment in the Baltic States, Belarus, Poland, Scandinavia,

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<sup>47</sup> Institut Français des Relations Internationales, *Oil and Gas Delivery to Europe*, 44; Kari Liuhto ed., *The EU-Russia gas connection: Pipes, politics and problems* (Turku School of Economics: Pan-European Institute, August 2009), 8, accessed October 2, 2009, [http://www.tse.fi/FI/yksikot/erillislaitokset/pei/Documents/Julkaisut/Liuhto\\_percent200809\\_percent20web.pdf](http://www.tse.fi/FI/yksikot/erillislaitokset/pei/Documents/Julkaisut/Liuhto_percent200809_percent20web.pdf), 96.

<sup>48</sup> European Commission – Eurostat, “Energy production and imports,” September 2011, accessed September 1, 2012, [http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/Energy\\_production\\_and\\_imports](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Energy_production_and_imports).

<sup>49</sup> Liuhto, *The EU-Russia gas connection*, 96.

<sup>50</sup> Liuhto, *The EU-Russia gas connection*, 96.

<sup>51</sup> Institut Français des Relations Internationales, *Oil and Gas Delivery to Europe*, 54.

Ukraine, and some European policy centers appear overwhelmingly opposed to Gazprom fuel in the heart of Europe.<sup>52</sup> Therefore, Nord Stream can serve as an effective case study concerning the advantages and disadvantages of the contemporary Eurasian energy bridge. To better appreciate the risks and rewards of this pipeline, a survey of the arguments for and against the project will be presented.

## **1. Pipeline Proponents**

On November 8, 2011, several European leaders attended the Nord Stream pipeline's opening ceremony. Chancellor Merkel, President Medvedev, French Prime Minister Fillon, Dutch Prime Minister Mark Rutte, and the EU's energy commission, Günther Oettinger, all participated. As these leaders opened the pipeline, Russian natural gas flowed directly from Vyborg, Russia, to Lubmin, Germany, via a 1,224 kilometer conduit along the Baltic seabed bypassing the Baltic States, Belarus, Poland, and Ukraine. The Nord Stream currently supplies over 55 bcm/year to the heart of Europe.<sup>53</sup>

The Nord Stream pipeline was named a "project of European Interest" by the EU Commission, European Parliament, and Council of the European Union in 2006. Nord Stream's multinational consortium—comprised of Russia's Gazprom, Germany's BASF/Wintershall and E.ON Ruhrgas, Dutch firm Nederlandse Gasunie, and France's GDF SUEZ—touted the project's critical role in long-term European energy stability. Additionally, the pipeline was constructed at no cost to taxpayers.<sup>54</sup> Non-Former Soviet Union (FSU) states may argue that Nord Stream is a sensible energy option because transit state insecurity is relegated and economic interdependence with Russia reduces future threats, but open support from politicians and the aforementioned EU agencies has not erased the shadow over the Nord Stream project that has been present since Vladimir

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<sup>52</sup> Ibid., 71; Arne Schröder, "European Energy Security: A New Pattern of External Stability and Internal Risks," accessed October 2, 2012, <http://www.aicgs.org/publication/european-energy-security-a-new-pattern-of-external-stability-and-internal-risks/>.

<sup>53</sup> Nord Stream AG, "Nord Stream Pipeline Inaugurated: Major Milestone for European Energy Security," accessed September 25, 2012, <http://www.nord-stream.com/press-info/press-releases/nord-stream-pipeline-inaugurated-major-milestone-for-european-energy-security-388>; Nord Stream AG, "The Pipeline," accessed September 25, 2012, <http://www.nord-stream.com/pipeline>.

<sup>54</sup> Nord Stream AG, "Nord Stream Pipeline Inaugurated."



Putin and Gerhard Schröder announced the contract in 2005.<sup>55</sup> Nord Stream's role in bolstering EU energy security has been eclipsed by concerns about the consequences of increased reliance on Russian energy.

## **2. Arguments against Nord Stream**

Myriad concerns permeate the Nord Stream debate. Some objections are environmental, some are military in nature, such as Sweden's reservations that Nord Stream may further contaminate the already polluted Baltic and the pipeline may stymie European investment in renewable energy. Additionally, the Scandinavian states fear a Russian military presence in their territorial waters under the guise of military protection of Russia's strategic energy investment.<sup>56</sup> Yet, several European Union members are apprehensive about Russia's increased potential to leverage energy exports and the undermining of EU solidarity.

Even though some perceive Russia as unscrupulous in the ways it provides energy, Europe's energy insecurity does not derive from the nationality of its providers, but from the concentration of its energy suppliers. As of 2009, dependence on Russian energy in Finland, Latvia, Lithuania, and Slovakia was absolute as these nations received 100 percent of their natural gas from Russia. Austria, the Czech Republic, Hungary, and Greece purchased 75 percent of their energy from Russia, while Poland, Romania, and Slovenia were dependent on Russia for over 50 percent of their energy.<sup>57</sup> Thus, Nord Stream amplifies Russia's near-monopolistic power by giving Moscow the ability to restrict gas flows to the Baltic states, Belarus, Poland, and Ukraine without interrupting energy supplies to Germany and Western Europe—Russia's largest customers. Furthermore, the Kremlin has a history of linking gas prices to political subservience. This linkage is observable in the recent interaction between Russia, Moldova and Lithuania cited above. Some analysts forecast increased Russia's energy influence in Western Europe via planned pipeline connectors reaching Denmark, the Netherlands, and

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<sup>55</sup> Nord Stream AG, "Nord Stream Pipeline Inaugurated;" Nord Stream AG, "The Pipeline."

<sup>56</sup> Larsson, *Nord Stream, Sweden and Baltic Sea Security*, 7.

<sup>57</sup> Fernández, "The EU and Natural Gas from Central Asia: Is Nabucco the Best Option?" 1.

the United Kingdom—states that currently do not receive Russian gas.<sup>58</sup> As EU dependence on imported gas grows to over 80 percent and production in the North Sea decreases by 40 percent before 2020, the EU may find itself the victim of Russian energy blackmail.<sup>59</sup>

Poland and other EU member states fear the influence that Russia could gain through a Russo-German energy entente. Russia's Gazprom owns 51 percent of the Nord Stream pipeline; thus, Moscow potentially controls the flow of gas into Germany. Additionally, Gazprom's status as a domestic monopoly may limit German companies' ability to negotiate prices or quantities. Nord Stream's registration in Switzerland also prevents Germany from gaining insight into the consortium's activities. Russia has the ability to control downstream actions of German companies or German infrastructure itself via its major stake in the consortium.<sup>60</sup> Therefore, Moscow's battle against EU unbundling is an effort to retain Gazprom's controlling stake in European downstream projects. Some European policy analysts question Nord Stream's economic viability and conclude that it is primarily a political project between Russia and Germany at the expense of the Federal Republic of Germany's smaller neighbors to the east.<sup>61</sup>

Nord Stream is a poignant reminder that bilateralism is still prevalent in the European Union, especially concerning energy and Russia. Thus, the real peril of Nord Stream may not be increased Russian influence, but demoralized EU political solidarity and reinvigorated Russian motivation to follow a divide-and-coerce foreign policy. A unified EU could have pressured Russia to develop additional overland pipelines through

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<sup>58</sup> Larsson, *Nord Stream, Sweden and Baltic Sea Security*, 7; International Energy Agency, "World Energy Outlook 2009," accessed January 25, 2012, [http://wordenergyoutlook.org/docs/weo2009/WEO2009\\_es\\_english.pdf](http://wordenergyoutlook.org/docs/weo2009/WEO2009_es_english.pdf), 7.

<sup>59</sup> Laura Solanko and Pekka Sutela, "Too Much or Too Little Russian Gas to Europe?," *Eurasian Geography and Economics* 50, no. 1 (2009), accessed January 25, 2012, <http://bellwether.metapress.com/content/2u32132761116518/fulltext.pdf>, 59; Baker Institute for Public Policy, "Shale Gas and U.S. National Security," 11.

<sup>60</sup> *BBC News*, "Nord Stream Gas Pipeline Underwater Construction Starts," (BBC News, April 9, 2010), accessed September 15, 2012, <http://news.bbc.co.uk/2/hi/business/8607214.stm>; Keith C. Smith "Lack of Transparency in Russian Energy Trade," 4 & 15.

<sup>61</sup> Larsson, *Nord Stream, Sweden and Baltic Sea Security*, 7–8; Institut Français des Relations Internationales, *Oil and Gas Delivery to Europe*, 77; Alexander Ghaleb, "Natural Gas as an Instrument of Russian State Power," 67.

the Baltic countries or Poland thereby increasing capacity from Russia, while negotiating a competitive price. Moreover, overland pipelines would have cost less than the Nord Stream project and could have increased revenues via transit fees to bolster the economies of Latvia, Lithuania, and Poland. Yet, the pursuit of European “energy nationalism” squandered this opportunity to develop a non-divisive pipeline project and foster EU unity.<sup>62</sup> Although Nord Stream has been operational since November 2011 and the Nord Stream Consortium opened the second pipeline in late 2012, this project only supports one pillar of EU energy security—reducing transit state instability.

### **C. EU-RUSSIAN ENERGY COMPETITION IN THE SOUTHERN GAS CORRIDOR**

Gazprom is still the largest importer of gas to Europe; approximately 40 percent of EU gas imports come from Russia.<sup>63</sup> Therefore, Europe is still at risk of Russian energy blackmail and additional infrastructure projects are necessary to diversify gas supplies away from Russia. The Nabucco pipeline is one of the key projects that the EU supports financially and diplomatically to weaken Russia’s monopolistic power.<sup>64</sup> Yet, Russia has countered the Nabucco pipeline with its South Stream project through the Black Sea. Despite proclamations from the Berlin and Moscow that both pipelines are mutually reinforcing, this section will show that Nabucco and South Stream are competitive and the construction of either project will negate the need for a second pipeline.<sup>65</sup> Moreover, the Nabucco/South Stream rivalry highlights the EU’s inability to compete with Russia in contemporary pipeline politics.

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<sup>62</sup> Larsson, *Nord Stream, Sweden and Baltic Sea Security*, 7; Anderson, “Europe’s Dependence on Russian Natural Gas,” 42; Larsson, *Nord Stream, Sweden and Baltic Sea Security*, 7–8; Institut Français des Relations Internationales, *Oil and Gas Delivery to Europe*, 77.

<sup>63</sup> Arne Schröer, “European Energy Security.”

<sup>64</sup> Ariel Cohen, “Russia: The flawed Energy Superpower,” 165.

<sup>65</sup> “Merkel: Nabucco not Competing with Nord Stream,” Baltic News Service.



Figure 2. Gas networks of Central Asia<sup>66</sup>

## 1. Competing Pipelines?

Germany and Russia, the heavyweight political leaders in the Nabucco and South Stream pipelines projects, respectively, both contend that these pipelines can serve mutually reinforcing purposes. German Chancellor Angela Merkel confirmed in a 2009 press conference that Nabucco is not intended to threaten Russia's Nord Stream and South Stream projects, "We need not treat it as some kind of antagonism to other pipelines."<sup>67</sup> While then-President of Russia Dmitri Medvedev supported Merkel's statement, affirming, "We do not have the least envy with respect to Nabucco; let it develop on its own. If gas starts moving via Nabucco, someone consequently needs it."<sup>68</sup> At the political level, both states support the projects and affirm their cooperative efforts. This amicable viewpoint is echoed at the industry level.

The mutual benefits of Russia's South Stream and the EU-backed Nabucco pipelines was extolled at the 24th World Gas Conference held in 2009 at Buenos Aires.

<sup>66</sup> "Struggle for Central Asian Energy Riches," *BBC News*, June 2, 2010, accessed September 12, 2012, <http://www.bbc.co.uk/news/10213792>.

<sup>67</sup> "Merkel: Nabucco not Competing with Nord Stream," Baltic News Service.

<sup>68</sup> Ibid.

At this industry conference, the Hungarian office of Klynveld Peat Marwick Goerdeler (KPMG)—a global accounting and advisory service company—presented an analysis of the Nabucco and South Stream projects. In this report, the authors explained that without support from South Stream, Nabucco will only be able to meet European demand through 2016. The report further explained that South Stream could only provide adequate supply through 2020. Consequently, Nabucco and South Stream—in tandem—could provide 93 billion cubic meters (bcm) per year, over one-third of the total demand in Central and Eastern Europe (CEE), and supply CEE through 2026. Yet, the report highlights a possible motivation for proposing both projects, “This way the natural gas demand of the CEE could be satisfied until 2026 without raising the need for further infrastructural development.”<sup>69</sup> It is possible that KPMG and Russia may support the Nabucco project to keep Europe from investing in technologies, like liquefied natural gas (LNG) terminals, that could truly diversify sources from Russia or CIS nations. The report asserts, “As Nabucco and South Stream projects are designed to bridge a distance of less than 4,000 km passing mainly overland...LNG technology would be of limited interest.”<sup>70</sup> Still, the Kremlin claims it is not worried about Europe’s move to diversify. According to Gazprom’s Deputy CEO Alexander Medvedev, “Even if we count in the gas volumes supplied to Europe through Nord Stream, South Stream, Nabucco, and LNG supplies, Europe will still have a supply deficit of 15–20 billion cubic meters/year.”<sup>71</sup> Yet, Gazprom’s and KPMG’s claims are based on inaccurate demand forecasts.

The Gazprom and KPMG assessment are based on the assumption that European demand for Central Asian gas will require 31 bcm/year by 2020 and demand will continue to grow at a steady rate.<sup>72</sup> The initial demand assessment appears to be validated by the International Energy Agency (IEA), which forecasted in the *World Energy Outlook 2011*, gas flows through the southern corridor will reach 34 bcm/year by

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<sup>69</sup> Rolan Lajtai, Annamária Czinkos, and Tamás Dinh, “Nabucco vs. South Stream: The Effects and Feasibility in the Central and Eastern European Region,” *24th World Gas Conference*, Buenos Aires, Argentina (KPMG in Central and Eastern Europe, October 5–9, 2009), 11, 15, and 31.

<sup>70</sup> Ibid., 11.

<sup>71</sup> Nadio Rodova and Dina Khrennikova, “Turkey Approves South Stream Construction,” *Platts Oilgram News*, December 29, 2011, Section: Europe, Middle East and Africa, vol 89, no. 256.

<sup>72</sup> Lajtai et al., “Nabucco vs. South Stream,” 11.

2020; however, the IEA foresees southern gas flows declining to 31bcm/year in 2035 due to Europe's clean energy policies and investment in energy efficient technologies.<sup>73</sup> Despite supporting both pipelines as the best option for Europe's long-term energy future, KPMG's report admits the 93 bcm capacity of both pipelines exceeds demand in the CEE region, which will likely lead to "unused pipeline capability" or "competition between Nabucco and every other Eastern pipeline."<sup>74</sup> Not only do Nabucco and South Stream compete to meet European demand, but both projects contend for transit states and supply sources as well.

Enroute to their destinations in Central Europe, the South Stream and Nabucco project overlap in several transit states, which are also gas customers. Three of five Nabucco transit states—Bulgaria, Hungary, and Austria—also comprise part of the proposed South Stream route. Thus, both pipelines will not only be competing for energy customers, but also for funding to develop the transit infrastructure in these three countries.<sup>75</sup> Yet, the most significant competition between Nabucco and South Stream is for supplier countries. The South Stream consortium effectively targeted Nabucco's potential supply base by locking in long-term supply contracts before the Nabucco consortium was able to negotiate energy deals.<sup>76</sup> Furthermore, some of the supply contacts secured by Russia and the European Union may not be feasibly fulfilled by supplier nations. For example, Turkmenistan already supplies pipelines to Russia, Iran, and China, but is also contemplating projects to increase gas flows to Russia and Iran, while supporting the trans-Caspian portion of the Nabucco pipeline. Ariel Cohen argues that Turkmenistan does not have the gas reserves to supply these competing projects, which brings Nabucco and the South Stream into direct competition for Turkmen gas.<sup>77</sup> While rivalry between the two pipelines may seem like positive news for customers,

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<sup>73</sup> International Energy Agency, *World Energy Outlook 2011* (Paris: 2011), 343.

<sup>74</sup> Lajtai et al., "Nabucco vs. South Stream," 30.

<sup>75</sup> Ibid., 26; Fernández, "The EU and Natural Gas from Central Asia: Is Nabucco the Best Option?" 6.

<sup>76</sup> Lajtai et al., "Nabucco vs. South Stream," 29.

<sup>77</sup> Ariel Cohen, "Energy Security in the Caspian Basin," in *Energy Security Challenges for the 21st Century: A Reference Handbook*, ed., Gal Luft and Anne Korin (Washington, D.C.: Library of Congress Cataloging-in-Publication Data, 2009), 115.

whom may benefit from lower prices, the likely outcome is that duplication of supply sources, transit states, and customers creates the foundation for economically unviable pipeline projects.<sup>78</sup> Therefore, the pipeline that is sourced and funded first will likely render the competing pipeline obsolete. Consequently, examining the feasibility of each pipeline is essential to understanding which project will likely span the Southern Gas Corridor and the geostrategic implications of this pipeline's development.

## **2. Nabucco: "The New Gas Bridge from Asia to Europe"**

The Nabucco consortium—comprised of OMV (Austria), MOL (Hungary), Bulgargaz (Bulgaria), Transgaz (Romania), BOTAS (Turkey), and RWE (Germany)—hail this pipeline "the new gas bridge from Asia to Europe."<sup>79</sup> Although the Nabucco is currently planned to span 3,300 kilometers from Erzurum, Turkey—fed by the Baku-Tbilisi-Erzurum (BTE) gas pipeline—to Austria by transiting Bulgaria, Romania, and Hungary, this project will not reach Asian gas supplies.<sup>80</sup> Yet, the United States has used diplomacy in an attempt to recruit Kazakhstan into the project, and the EU has sent delegations to secure Turkmen gas supplies to feed a trans-Caspian section of the Nabucco pipeline to the BTE terminal in Baku, Azerbaijan.<sup>81</sup> Not only would Central Asian contributions to the Nabucco support a true Asian-European gas bridge, but these sources are essential to the viability of the pipeline, which will be examined in more detail below. Nevertheless, the Nabucco consortium has deftly provided maneuvering room concerning the pipeline route by proposing a streamlined option dubbed "Nabucco West," which begins at the Turkish-Bulgarian border and transports a diminished amount

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<sup>78</sup> Fernández, "The EU and Natural Gas from Central Asia: Is Nabucco the Best Option?" 6; Mankoff, "Eurasian Energy Security," 19.

<sup>79</sup> Nabucco Gas Consortium, "Overview," accessed September 12, 2012, <http://www.nabucco-pipeline.com/portal/page/portal/en/pipeline/overview>; Fernández, "The EU and Natural Gas from Central Asia: Is Nabucco the Best Option?" 1.

<sup>80</sup> Nabucco Gas Consortium, "Route," accessed September 12, 2012 <http://www.nabucco-pipeline.com/portal/page/portal/en/pipeline/route>; Lajtai et al., "Nabucco vs. South Stream," 8.

<sup>81</sup> Mankoff, "Eurasian Energy Security," 23–24.

of gas—10 to 23 bcm/year opposed to 31 bcm/year originally promised—to European customers.<sup>82</sup>

*a. Rationale*

As four of the consortium companies are headquartered in EU member states and Turkey is an aspiring EU member, the EU supports this pipeline and has selected it as a priority project by providing EU 200 million towards the first construction stage.<sup>83</sup> The key EU motivation for supporting this project is to reduce Russia's dominance over Europe's natural gas market. Russia is Europe's largest gas importer (39.1 percent), followed by Norway (23.5 percent), North Africa (11.6 percent), and LNG imports (9.9 percent). Moreover, much of Central and Eastern Europe is wholly dependent on Russia for natural gas.<sup>84</sup> During Moscow's January 2009 gas dispute with Kiev over gas pricing and Ukrainian Naftogaz's debt to Gazprom, daily gas flow to Europe reduced from 225 cubic meters to 40 cubic meters amid a severe cold spell.<sup>85</sup> This event was a poignant reminder of Europe's dependence and vulnerability. At the time of this dispute, ninety percent of Russian gas exports to Europe flowed through Ukraine. This incident spurred European investment in the Nord Stream and Nabucco pipelines to eliminate transit choke points, but the EU has rallied behind the Nabucco project to invest in an alternative to Russian gas.<sup>86</sup> Therefore, Brussels views both Russia and Ukraine as sources of instability and future gas disruptions. Incidentally, one of the most determined supporters for development of the Southern Gas Corridor has not been a European country, but the United States.

While the United States primarily invested in crude oil infrastructure in the Southern Gas Corridor, U.S. diplomacy was central to the completion of the BTE or

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<sup>82</sup> Nabucco Gas Consortium, "Overview;" Nabucco Gas Consortium, "Route;" Lajtai et al., "Nabucco vs. South Stream," 8.

<sup>83</sup> Lajtai et al., "Nabucco vs. South Stream," 8–9.

<sup>84</sup> Ibid., 4.

<sup>85</sup> "European Gas Supply Disrupted," BBC News, Jan 6, 2009, accessed September 13, 2012, <http://news.bbc.co.uk/2/hi/europe/7812860.stm>.

<sup>86</sup> Ibid., 30–31,



South Caucasus gas pipeline, which is an essential energy source for Nabucco.<sup>87</sup> Washington diplomatically supports Nabucco as a method for the EU to decrease dependence on Russian energy supplies. U.S. strategy is focused on diminishing Russia's coercive influence on its CEE NATO allies. Gazprom's monopolistic position, especially in Eastern Europe, is even viewed by some as a threat to NATO's decision making process.<sup>88</sup> Russia has the potential to exert political influence in NATO member states with threats of gas shutoffs, which could influence how NATO members vote on military and humanitarian interventions or even internal policies. Thus, developing an alternative gas bridge to Central and Eastern Europe provides these nations an option for avoiding Russian gas cutoffs. Additionally, the United States not only seeks to diminish Russian coercion in Europe, but desires to limit Moscow's influence in its near abroad. By promoting western investment in the Caspian Basin, Central Asian and South Caucasus states are given an alternative hydrocarbon customer to Russia. Furthermore, Gazprom's ability to demand below market prices will be eroded, which has already started due to China's entrance into Central Asia.<sup>89</sup> Yet, hydrocarbon development in the Caspian Basin is not a simple process of applying free market principles. Several significant geopolitical factors preclude Nabucco's development.

### ***b. Challenges***

Geography is one of the first challenges to Nabucco's construction. Although access to Caspian and Central Asian energy reserves was the original justification for the Nabucco pipeline, these supply sources have not materialized.<sup>90</sup> In order to transit natural gas beneath the Caspian Sea, the littoral states—including Russia—must reach an agreement on the division of the waters and seabed, which has been a legal issue since the collapse of the Soviet Union. Conversely, piping Central Asian natural gas to China and Russia is less risky and less expensive than the undersea

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<sup>87</sup> Fernández, "The EU and Natural Gas from Central Asia: Is Nabucco the Best Option?" 2.

<sup>88</sup> Ghaleb, "Natural Gas as an Instrument of Russian State Power," 127.

<sup>89</sup> Dmitri Trenin, *Post-Imperium: A Eurasian Story* (Washington, D.C.: Carnegie Endowment for International Peace, 2011), 171; Mankoff, "Eurasian Energy Security," 18.

<sup>90</sup> Fernández, "The EU and Natural Gas from Central Asia: Is Nabucco the Best Option?" 4.

or LNG tanker methods required to reach European markets directly.<sup>91</sup> Turkey presents another geopolitical factor in the Nabucco equation. If this pipeline is realized, Turkey will become a natural bottleneck in the Southern Gas Corridor, akin to Belarus and Ukraine—albeit not as powerful. Thus, the EU’s desire to reduce transit instability will not be fully achieved through the construction of the Nabucco pipeline.

In addition to geopolitical issues, Nabucco requires adequate funding to reach fruition. According to Jeffrey Mankoff’s July 2012 assessment, the Nabucco is still severely underfunded.<sup>92</sup> Moreover, western firms are at a disadvantage when competing with Russian and Chinese firms, especially in Central Asia, due to lack of guaranteed state financing.<sup>93</sup> Brussels is further hindered in Central Asian dealings because Ashgabat tends to favor bilateral negotiations over engaging multilateral frameworks.<sup>94</sup> Due to lack of investment in the Nabucco project, the pipeline consortium and western politicians may not be able to secure energy deposits in Turkmenistan if they cannot convince Ashgabat that Turkmen gas will reach European markets. Moreover, the 2008 Russo-Georgian War, which caused British Petroleum to shutdown pipeline operations for forty-eight hours, led to perceptions of regional instability, and reduced western financial support for developing the Southern Gas Corridor.<sup>95</sup> Thus, the Nabucco consortium is not likely to muster sufficient funds unless the European Union provides substantial financial support.<sup>96</sup>

Despite its economic shortfalls, the Nabucco consortium’s most significant challenge is securing energy supplies. As of yet, there is no determined gas source to supply Nabucco. Kazakhstan, Turkmenistan, Azerbaijan, Egypt, and Iraq have

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<sup>91</sup> Cohen, “Energy Security in the Caspian Basin,” 112 & 121.

<sup>92</sup> Mankoff, “Eurasian Energy Security,” 36.

<sup>93</sup> Ibid.

<sup>94</sup> Kirsten Westphal, “Competition for Energy Resources. Market and Power in Central Asia,” *Osteuropa* 57, no. 8–9 (2007): 463.

<sup>95</sup> Mankoff, “Eurasian Energy Security,” 24; The International Institute for Strategic Studies, “Europe’s Energy Dependence: Risks Heightened after War,” *Strategic Comments* 14, no. 7 (September, 2008), accessed September 12, 2012, <http://www.iiss.org/publications/strategic-comments/past-issues/volume-14-2008/volume-14-issue-7/europes-energy-dependence/>.

<sup>96</sup> Lajtai et al., “Nabucco vs. South Stream,” 10.

all been named as potential sources for the Nabucco pipeline, but only Baku has formally committed significant gas resources to this project.<sup>97</sup> While there is concern that Turkmenistan may not be able to produce enough gas to support Russia, China, and trans-Caspian gas projects to the west, an oil advisory company— Gaffney Cline & Associates—confirmed in a 2008 study that Turkmenistan does possess sufficient natural gas deposits to support increased exports to Russia, Europe's Nabucco, and the Turkmenistan-China gas pipeline.<sup>98</sup> However, the vital concern should not be the amount of Turkmen gas, but Ashgabat's political will to support Nabucco.

In May 2007, Turkmenistan signed an agreement with Kazakhstan and Russia to provide an additional 30 bcm/year to Russia via a new pre-Caspian pipeline. This project will allow Russia to meet future EU energy demand. Moreover, the 30 bcm/year supplied by the pre-Caspian pipeline matches the entire projected capacity of the Nabucco pipeline, which has created viability and investment issues for Nabucco. While the Nabucco consortium has yet to secure Turkmen gas supplies, the pre-Caspian pipeline feasibility study is complete and the pipeline contract is undergoing draft negotiations. Thus, the pre-Caspian project appears to be a higher priority than Nabucco in Ashgabat.<sup>99</sup> Because Central Asian gas exporters have not supported Nabucco, European leaders and consortium members have suggested Iranian resources to make Nabucco economically viable.<sup>100</sup> Yet, the EU's support of UN sanctions against Iran renders Tehran's inclusion unlikely in the short-term. Furthermore, Iran's increasing domestic demand places its potential export quantities on a diminishing curve.<sup>101</sup> Incidentally, Gazprom has even tried to enter the Nabucco consortium, which would be a boon to the project, but defeat Nabucco's purpose of diversifying away from Russian

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<sup>97</sup> Fernández, "The EU and Natural Gas from Central Asia: Is Nabucco the Best Option?" 3.

<sup>98</sup> Cohen, "Energy Security in the Caspian Basin," 115; Philip Shishkin, "Central Asia's Crisis of Governance," *Asia Society*, January 2012, 19, accessed September 5, 2012, [http://asiasociety.org/files/pdf/120215\\_central\\_asia\\_crisis\\_governance.pdf](http://asiasociety.org/files/pdf/120215_central_asia_crisis_governance.pdf).

<sup>99</sup> Mankoff, "Eurasian Energy Security," 19–21, 24; Lajtai et al., "Nabucco vs. South Stream," 31; Gazprom, "Pre-Caspian gas pipeline," accessed September 12, 2012, <http://gazprom.com/about/production/projects/pipelines/pg/>.

<sup>100</sup> Mankoff, "Eurasian Energy Security," 21.

<sup>101</sup> Institut Français des Relations Internationales, *Oil and Gas Delivery to Europe*, 56.

gas.<sup>102</sup> In 2010, Turkish Prime Minister Recep Tayyip Erdoğan summarized Nabucco's dilemma best: "The Nabucco pipeline needs 30 billion m<sup>3</sup> (cubic meters) of natural gas every year. Could Nabucco find such a supply at the moment? No, it could not. There is no gas. There is no pipeline. So what are we talking about?"<sup>103</sup> Consequently, Nabucco's construction has been pushed to 2013, and gas is not set to flow (initially 6 bcm) until 2017.<sup>104</sup> Conversely, the South Stream Consortium has scheduled pipeline construction for early 2013 and projects 16 bcm/year of gas by 2015 and full 63 bcm/year capacity by 2018.<sup>105</sup> South Stream's progress does not bode well for Nabucco's future.

### **3. South Stream: "Energizing Europe"**

South Stream is currently planned to span 3,700 km from the Russian Federation—with a 900 km portion under the Black Sea—through Central Europe into Germany. A separate 100 km offshoot is planned through Greece—under the Adriatic Sea—to Italy. South Stream would traverse seven transit countries (Bulgaria, Serbia, Hungary, Austria, Slovenia, Greece, and Italy) that have all already pledged official participation in the project.<sup>106</sup> Additionally, Turkey agreed in December 2011 to allow Russia to build the Black Sea portion of this pipeline in its territorial waters. Despite a preponderance of EU member states, Brussels is not expected to provide any financing to this project due to Russia's dominant stake in the consortium.<sup>107</sup>

South Stream's financing follows separate frameworks for transit infrastructure and offshore pipelines. For overland routes, Gazprom and transit states will provide joint financing (50–50) for the pipelines that traverse their territories, and Russia and Italy will equally share the costs of the Adriatic pipeline. Concerning the offshore section through

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<sup>102</sup> Ibid.

<sup>103</sup> "Questions about Viability of Nabucco Pipeline," *Euronews*, January 30, 2010, accessed September 12, 2012, <http://www.euronews.com/2010/01/30/questions-about-viability-of-nabucco-pipeline>.

<sup>104</sup> Sebastien Peyrouse, *Turkmenistan: Strategies of Power, Dilemmas of Development* (Armonk: M.E. Sharpe, 2010), 187; Nabucco Gas Consortium, "Timeline," accessed September 12, 2012, [http://www.nabucco-pipeline.com/portal/page/portal/en/pipeline/timeline\\_steps](http://www.nabucco-pipeline.com/portal/page/portal/en/pipeline/timeline_steps).

<sup>105</sup> Nabucco Gas Consortium, "Timeline."

<sup>106</sup> Lajtai et al., "Nabucco vs. South Stream," 9 & 11.

<sup>107</sup> Ibid., 9; Rodova "Turkey Approves South Stream Construction."

the Black Sea, a consortium of all private investors has been established. The South Stream consortium is comprised of Russia's Gazprom (50 percent), Italy's Eni S.p.A (20 percent), France's EDF (15 percent), and Germany's BASF Wintershall (15 percent). Therefore, the offshore section will be created at no cost to European taxpayers.<sup>108</sup> South Stream's participating states are set to make their final investment decisions in late 2012, and construction is forecasted to begin in early 2013. Moreover, 16 bcm of natural gas is scheduled to flow in late 2015. By early 2017, South Stream is forecasted to provide 31.5 bcm, while Nabucco is projected to produce only 6 bcm starting in 2017.<sup>109</sup>

*a. Rationale*

In spite of South Stream's benign motto, "Energizing Europe," several analysts believe Russia's primary motivation is to further its perceived opaque designs in international relations. Alexander Ghaleb argues that Russia seeks to use natural gas "as a weapon with which to reestablish dominance throughout the territory of the former Soviet Union and to reassert its primacy over both the energy-producing states of Central Asia and energy consuming states in Europe."<sup>110</sup> He further states that South Stream reinforces the Kremlin's ultimate foreign policy tactic in Europe—divide and rule—by enabling Moscow to turn off the gas to the Baltic States, Belarus, Poland, and Ukraine, without affecting its largest customers in Europe.<sup>111</sup> Paul Domjan and Matt Stone, Eurasian energy analysts and consultants, agree that South Stream is primarily fueled by the Kremlin's interest to reassert geopolitical power over Central Asia and its European energy customers.<sup>112</sup> Ariel Cohen argues that this desire for dominance was manifested in the 2008 Russo-Georgian war, and Russia's declarations of independence for South

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<sup>108</sup> Lajtai et al., "Nabucco vs. South Stream," 9–10; South Stream Transport AG, "Fact Sheet," accessed September 12, 2012, [http://www.south-stream-transport.com/media/documents/pdf/en/2012/06/ssttag\\_south-stream-offshore-pipeline-fact-sheet\\_5\\_en\\_20120620.pdf](http://www.south-stream-transport.com/media/documents/pdf/en/2012/06/ssttag_south-stream-offshore-pipeline-fact-sheet_5_en_20120620.pdf).

<sup>109</sup> Rodova, "Turkey Approves South Stream Construction," South Stream Transport AG, "Fact Sheet."

<sup>110</sup> Ghaleb, "Natural Gas as an Instrument of Russian State Power," 54.

<sup>111</sup> Ibid., 117.

<sup>112</sup> Paul Domjan and Matt Stone, "A Comparative Study of Resource Nationalism in Russia and Kazakhstan 2004–2008," *Europe-Asia Studies* 62, no. 1 (January 6, 2010): 39.

Ossetia and Abkhazia were crafted to give Russia control over the overland export routes from Central Asia to Europe.<sup>113</sup> At first glance, Russia's Energy Ministry supports these hypotheses. In the "Energy Strategy of Russia for the period up to 2030," the Russian Energy Ministry affirms, Russia "provides 25 percent of the world trade in natural gas, dominating both on the European gas market and on the gas market of the Commonwealth of Independent States."<sup>114</sup> If the Kremlin's goal is to maintain energy dominance, then Russia would be required to block the development of alternative pipeline projects in the Southern Gas Corridor.

There is evidence of Russia's desire for dominant influence over the Eurasian energy bridge. The Russian Energy Ministry states, "Russian pipeline infrastructure will become an integral part of the power bridge between Europe and Asia, and Russia will become the key center of its management."<sup>115</sup> Russia has prevented Kazakhstani companies from signing contracts with western firms and blocked Caspian seabed delineation to prevent gas exploration and transport from Central Asia, through the South Caucasus BTE pipeline, to Europe.<sup>116</sup> Consequently, Cohen affirms Russia is developing the South Stream to block the development of the Nabucco pipeline.<sup>117</sup> Rafael Fernández agrees that Moscow's 2007 formal announcement for the South Stream project was a direct reaction to the U.S.-backed BTE pipeline ground breaking in 2006, which brought Nabucco one-step closer to realization.<sup>118</sup> While Russia's statements and actions denote aggressive energy policies focused on maintaining geopolitical influence, market forces also drive Gazprom's managers and executives.

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<sup>113</sup> Cohen, "Russia: The Flawed Energy Superpower," 92 & 94.

<sup>114</sup> Ministry of Energy of the Russian Federation, "Energy Strategy of Russia for the period up to 2030," November 13, 2009, accessed September 12, 2012, [http://energystrategy.ru/projects/docs/ES-2030\\_\(Eng\).pdf](http://energystrategy.ru/projects/docs/ES-2030_(Eng).pdf), 21.

<sup>115</sup> Ibid.

<sup>116</sup> James Nixey, "The Long Goodbye: Waning Russian Influence in the South Caucasus and Central Asia," Chatham House Briefing Paper, accessed September 12, 2012, [http://www.chathamhouse.org/sites/default/files/public/Research/Russia/percent20and percent20Eurasia/0612bp\\_nixey.pdf](http://www.chathamhouse.org/sites/default/files/public/Research/Russia/percent20and percent20Eurasia/0612bp_nixey.pdf), 12.

<sup>117</sup> Cohen, "Russia: The Flawed Energy Superpower," 91.

<sup>118</sup> Fernández, "The EU and Natural Gas from Central Asia: Is Nabucco the Best Option?" 2.

The greatest advantage of the South Stream project is that Russia's reliance on Ukraine as a transit state is significantly reduced. Before the development of the Nord Stream pipeline, ninety percent of all Russian gas exports to Europe transited through Ukraine.<sup>119</sup> Russia's energy ministry affirms that the main risks in the energy field are Russia's dependence on transit countries for export and insufficient diversification to consumer markets. Thus, South Stream is one of the most important Russian energy projects not only because it bypasses Ukraine, but also because it diversifies Russian energy exports to reliable customers—namely Germany and Italy, which are the first and second largest EU gas importers.<sup>120</sup> While Alexander Ghaleb claims profitability was not a key factor in developing South Stream, Jeffrey Mankoff offers a more nuanced analysis, “Even if the initial cost of building undersea pipelines is higher than building overland, with Nord and South Stream, Gazprom would be freed from having to pay transit fees, which are the largest single operating expense.”<sup>121</sup> Another advantage of the Black Sea pipeline is that Turkey's influence as an energy transit state will be diminished. Greece, Bulgaria, and Hungary all welcome the South Stream as an option to decrease reliance on Turkey as a transit state, which Nabucco would amplify.<sup>122</sup> Thus, South Stream is not solely a tool of Russian dominance, but a confluence of economic and geopolitical interests in Russia and Europe.

### ***b. Challenges***

South Stream faces two significant hurdles compared to the Nabucco project. First, South Stream includes two undersea portions and is more technologically risky than Nabucco; however, Gazprom has recently completed seabed pipelines for the Nord Stream and is likely to use the expertise gained from this construction project for the South Stream as well. Incidentally, Nabucco will not be viable unless an undersea or

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<sup>119</sup> Ghaleb, “Natural Gas as an Instrument of Russian State Power,” 84; Lajtai et al., “Nabucco vs. South Stream,” 9.

<sup>120</sup> Ministry of Energy of the Russian Federation, “Energy Strategy of Russia” 56 & 61; Mankoff, “Eurasian Energy Security,” 15; Fernández, “The EU and Natural Gas from Central Asia: Is Nabucco the Best Option?” 2.

<sup>121</sup> Ghaleb, “Natural Gas as an Instrument of Russian State Power,” 67; Mankoff, “Eurasian Energy Security,” 15.

<sup>122</sup> Mankoff, “Eurasian Energy Security,” 22.

LNG portion of the energy bridge is built to Central Asia.<sup>123</sup> Second, building the South Stream pipeline will cost twice as much as Nabucco, which may render South Stream's construction financially prohibitive. If completed, Nabucco will cost \$3.5 million per kilometer and South Stream (with 30 bcm capacity) will cost \$6.7 million to \$8.4 million per kilometer.<sup>124</sup> Yet, the Kremlin is financing the majority of South Stream's costs, which could bode well or ill for this project.<sup>125</sup>

Due to reduced Russian energy profits stemming from the 2009 global financial downturn, Gazprom may not be able to shoulder the South Stream burden. Gazprom is the most indebted company in Russia and currently has several major projects under construction, including the second Nord Stream pipeline and the Yamal II through Belarus, in addition to gas field exploration and expansion of export routes from Central Asia. Due to shared transit states with the Nabucco pipeline, Central and Eastern European nations may not be able to handle an additional financial burden if Gazprom defaults on its obligations.<sup>126</sup> Yet, increasing financial support from transit states and consortium partners would decrease Gazprom's controlling stake in the project. This outcome is not palatable to the Kremlin's strategy of controlling downstream resources; thus, Moscow will likely muster the political will to fulfill Gazprom's obligations if South Stream breaks ground. Incidentally, the greatest stumbling block to South Stream's realization is Russia itself.

Prior to the 2009 gas war with Kiev, Gazprom sought to take control of the export routes through Ukraine. After this crisis, Russia's negotiations with Ukraine intensified. As South Stream approaches construction, Moscow's leverage vis-à-vis Kiev grows. If Kiev agrees to allow Gazprom to control the gas routes to Europe and guarantees not to disrupt gas flows, Ukraine's liability as a transit risk significantly decreases. Furthermore, Russia is likely to dissolve the costly undersea pipeline project because its greatest energy security concern will be met, rendering South Stream

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<sup>123</sup> Fernández, "The EU and Natural Gas from Central Asia: Is Nabucco the Best Option?" 2.

<sup>124</sup> Lajtai et al., "Nabucco vs. South Stream," 26.

<sup>125</sup> Mankoff, "Eurasian Energy Security," 19.

<sup>126</sup> Lajtai et al., "Nabucco vs. South Stream," 10 & 31.



irrelevant.<sup>127</sup> If Gazprom secures control of Ukraine pipelines and South Stream is halted, Russia may continue to build a pipeline from Eastern Europe—below the Adriatic—to Italy. If South Stream is cancelled, overdue upgrades to the Soviet-era infrastructure that traverses Ukraine will be required. Despite negotiations between Ukraine and Russia, Kiev has responded to Moscow's interludes by proposing a joint EU-Gazprom venture to control and modernize its pipeline routes. This concession will not likely meet Moscow's demands; therefore, South Stream appears a likely reality as construction of the Black Sea pipeline is scheduled for early 2013.

#### **4. Implications of South Stream's Probable Development**

One immediate impact of developing South Stream is Russia's diminished need for transit states. Once fully operational, South Stream and Nord Stream will supply 118 bcm/year of Russian gas to Europe. In 2010—before the Nord Stream was operational—Ukraine only transited 99 bcm/year of Russian gas to Europe. In addition to losing billions of dollars in transit fees every year, South Stream could render Ukrainian transit infrastructure obsolete.<sup>128</sup> Additionally, the IEA interprets Russia's recent energy projects as “a major shift in the pattern of gas flows” that will impact not only Ukraine, but Belarus, the Czech Republic, Poland, and Slovakia as Russia bypasses former Soviet states.<sup>129</sup> The Nord Stream and South Stream developments have led to concerns that Russia is building a system to increase its leverage in Eastern Europe without affecting its largest customers in Central and Western Europe.

In addition to reasserting its predominate position in post-Soviet spaces, it is feared that Moscow will use its energy monopoly to influence EU foreign policy and even NATO decision making.<sup>130</sup> Some argue that market forces have weakened Russia's ability to use energy as a political weapon. For example, as result of the 2008 global economic downturn, European demand for natural gas decreased in 2009. This trend

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<sup>127</sup> Ibid., 9 & 31; Rodova, “Turkey Approves South Stream Construction.”

<sup>128</sup> Rodova, “Turkey Approves South Stream Construction.”

<sup>129</sup> International Energy Agency, *World Energy Outlook 2011*, 337.

<sup>130</sup> Cohen, “Russia: The Flawed Energy Superpower,” 105; Ghaleb, “Natural Gas as an Instrument of Russian State Power,” 127.

created excess supply and a consumer's gas market. Consequently, European customers reacted by postponing gas purchases to take advantage of falling gas prices—against Gazprom's wishes for negotiating long-term contracts.<sup>131</sup> It may appear that energy exporters are currently at the behest of the consumer and Russia's traditional use of energy as a weapon has decreased in proportion to the price and demand for natural gas. Yet, Europe's recent ability to negotiate prices is not the result of changes to the pipeline market, but rather is likely the influence of LNG imports and global shale gas production, which will be examined in the next chapter.<sup>132</sup>

The EU is further concerned that Russia may not even be able to meet future European energy needs due to profit skimming from Russian energy companies and lack of reinvestment in new energy fields or infrastructure upgrades. According to Javier Solana, while the EU's High Representative for Foreign Affairs and Security Policy, "Due to Russia's outdated oil and gas pipelines, the equivalent of a quarter of Russia's total gas exports to Europe was being lost in transport."<sup>133</sup> Moreover, increased domestic gas use in Russia reduces potential exports to Europe. Russia historically consumes two-thirds of the gas it produces.<sup>134</sup> Moscow's commitment to provide fifteen percent of its gas exports to China by 2020 further compounds these fears.<sup>135</sup> Still, Moscow's resolve to be the "key center" of energy flow to Europe is resilient as evidenced in President Putin's decree to block the EC's anti-trust investigation of Gazprom. Consequently, there is concern that Russia will control Central Asian markets to meet increasing European energy demand.<sup>136</sup>

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<sup>131</sup> Philip Shishkin, "Central Asia's Crisis of Governance," 18–19.

<sup>132</sup> "Burst Valves: The European Union squeezes Gazprom. Russia Retaliates," *Economist*, September 15, 2012, section: Europe, 52.

<sup>133</sup> Cohen, "Russia: The flawed Energy Superpower," 102.

<sup>134</sup> Lioutu, 61.

<sup>135</sup> Ibid.

<sup>136</sup> Cohen, "Energy Security in the Caspian Basin," 119; Michael Denison, "Game Over? Shifting Geopolitics in Central Asia," The George Washington University, Central Asia Policy Brief No 5 (October 2012), accessed November 5, 2012, [http://www.centralasiaprogram.org/images/Policy\\_Brief\\_5\\_October\\_2012.pdf](http://www.centralasiaprogram.org/images/Policy_Brief_5_October_2012.pdf), 5.

While many fear Russia's influence and hegemony in Central Asia, Central Asian regimes do not view Moscow as a potential threat.<sup>137</sup> Even though Russia may try to block diversification of Central Asian energy to Europe—because Gazprom relies heavily on these gas flows to meet European requirements—instead of developing new gas sources to meet rising demand, the Central Asian states do not believe Moscow is strong enough to bring former Soviet republics under its exclusive control.<sup>138</sup> China's entrance into the Central Asian energy market—through financing and constructing the Kazakhstan-China oil pipeline in 2004 and Turkmenistan-China gas pipeline in 2009—has broken Russia's monopolistic hold over Central Asia's energy exports and decreased Moscow's geopolitical influence.<sup>139</sup> While some have compared Russian, Chinese, and western energy competition as a “new great game,” the Central Asian republics are not at the whim of outside powers, but have learned to game the system—balancing the powers against each other—for maximum benefit.<sup>140</sup> The emerging reality in Central Asia is a declining Russia in relation to China's rising influence—with Europe watching from the fringes—unless the EU changes its investment tactics. Western influence in Central Asia can expand even if the Nabucco never becomes a reality. The European Union and United States still have the opportunity to assist Kazakhstan, Turkmenistan, and Uzbekistan in upstream investment and technological development for extraction and exploration. Because investment in upstream technologies will not directly affected western energy markets, a mental shift from extractive geopolitics and the great game mentality that has overshadowed Central Asian relations is necessary.

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<sup>137</sup> Marlene Laruelle, “Russia ‘is a Delicate Matter?’ The View from Central Asia of Putin's Commitment to the Region,” German Marshall Fund of the United States, accessed September 12, 2012, [http://www.gmfus.org/wp-content/files\\_mf/1337967202Laruelle\\_RussiaDelicateMatter\\_May12.pdf](http://www.gmfus.org/wp-content/files_mf/1337967202Laruelle_RussiaDelicateMatter_May12.pdf).<sup>Laurel</sup>, 2.

<sup>138</sup> Ibid., Cohen, “Energy Security in the Caspian Basin,” 119.

<sup>139</sup> Marcin Kaczmarek, “Domestic Sources of Russia's China Policy,” *Problems of Post-Communism* 59, no. 2 (April 2012): 6; Jean A. Garrison and Ahad Abdurahmonov, “Explaining the Central Asian Energy Game: Complex Interdependence and How Small States Influence Their Big Neighbors,” *Asian Perspective* 35 (2011): 383–384, 398; International Energy Agency, *World Energy Outlook 2011*, 337.

<sup>140</sup> Marlene Laruelle, “Russia ‘is a Delicate Matter?’” 2; Garrison, “Explaining the Central Asian Energy Game,” 398–99.

Russia's power and influence in Central Asia has already started to wane.<sup>141</sup> In 2008, Russia moved towards world energy prices for gas imports from Central Asia, which signaled a weakening of Russia's hold of inequality over this region. China also overtook Russia as the largest Central Asian trading partner in 2010. Furthermore, Kazakhstan and Turkmenistan both view China as a more reliable partner due to vacillations in Russia's energy policy.<sup>142</sup> China even perceives Russia as a riskier and less reliable energy resource than the autocratic regimes in Central Asia.<sup>143</sup> Russia is no longer seen as a provider of modernity or security because China is assuming this role, and western technology and education is preferred to Russian expertise in some Central Asian sectors.<sup>144</sup> Thus, the Kremlin is facing a dramatic reassessment of Russia's role as the gate keeper between Asia and the west.

#### **D. CONCLUSION**

The contemporary Eurasian energy bridge may provide economical energy flows to Europe and are less costly than other natural gas infrastructure investments; however, this chapter has highlighted several drawbacks to Europe's reliance on natural gas pipelines. Most significantly, Russia's dominating stake as an energy supplier allows Moscow the potential leverage to influence individual countries and even thwart European policies, like the EC's initiative to unbundle energy delivery. Consequently, the EU has sought methods to decrease reliance on Russian energy and build a defense against future gas disruptions. This desire has spurred competition in the Southern Gas corridor from Central Asia to Eastern Europe via the Nabucco and South Stream pipelines.

This chapter has also shown that Nabucco and South Stream compete for customers, transit states, investors, and natural gas sources. Furthermore, Nabucco faces considerable hurdles; most importantly, lack of gas sources to render the pipeline feasible

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<sup>141</sup> Philip Shishkin, "Central Asia's Crisis of Governance," 30.

<sup>142</sup> Nixey, "The Long Goodbye," 12.

<sup>143</sup> Cohen, "Energy Security in the Caspian Basin," 121.

<sup>144</sup> Nixey, "The Long Goodbye," 15.

for economic investment. Consequently, construction of only the Nabucco West portion (Turkey to Central Europe) has been postponed until an undisclosed date in 2013. Conversely, South Stream is scheduled to begin construction of the most difficult and expensive section—the Black Sea pipeline—in early 2013. South Stream is likely to provide 30 bcm/year by 2017—before Nabucco begins producing 6 bcm/year—rendering the EU’s project irrelevant. Yet, South Stream’s probable construction does not solidify Moscow’s primacy over the Eurasian energy bridge.

Although Russia seeks to be the “key center” of the Southern Gas Corridor, Gazprom’s project will do little to alter Eurasian energy dynamics. Moscow’s monopoly in Central Asia has been lost to growing Chinese investment and influence, and South Stream does not condemn Europe to Russian energy domination. Although Russia’s voluminous natural gas resources, geostrategic position between Central Asia and Europe, and ownership of critical pipeline infrastructure makes the EU’s goal to diversify pipeline gas sources away from Gazprom nearly impossible, Moscow’s power over Europe has been reduced due to decreased natural gas demand. Still, Europe’s bargaining power vis-à-vis Moscow will only last while prices are low or natural gas supply is high. The EU is still susceptible to Russian energy leverage because Europe cannot effectively create new pipeline routes to diversify gas providers. Thus, the EU must shift its strategy from seeking pipelines that bypass Russia or Iran to ensure its energy security.

Brussels has viable opportunities to diversify energy sources—outside new pipeline construction. The EU could shift funding away from Nabucco to increasing renewable energy research. Renewable energy is not only central to EU’s values and future clean energy goals, but also essential to long-term, domestic energy projection. Yet, unconventional gas exploration and transportation (shale gas and LNG) provides more-immediate opportunities to diversify energy resources to meet short-term energy security and clean energy goals. Several EU member states, including France, Germany, Hungary and Poland possess significant shale gas deposits. Furthermore, the EU’s vast shoreline provides ample space to build LNG terminals to link Europe to additional gas exporters in the Middle East, Africa, and possibly the United States (if the United States expands shale gas development). Therefore, the impact of unconventional natural gas

innovation on the geopolitical dynamics governing Eurasia's energy bridge will be explored in the subsequent chapter.

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### **III. UNCONVENTIONAL GAS INNOVATIONS: PANACEA, PROPAGANDA, OR PRACTICAL SOLUTION?**

Fanfare and fear surround the possibility of Europe's large-scale investment in unconventional natural gas extraction and LNG import capacity. Proponents of shale gas tout its potential to diminish the west's dependence on unscrupulous energy providers and LNG supporters predict an emerging global gas market that will reduce geography's relevance in energy relations. These positive perspectives have been bolstered by the recent use of technology to overcome global natural gas scarcity and resource competition. Less than a decade ago, global gas reserves were estimated to last only seventy more years, but recent advances in hydraulic fracturing, enabling natural gas to be extracted from shale rock, have expanded the "life span" of global gas to over 300 years.<sup>145</sup> Despite the revolutionary potential of shale gas and LNG to unshackle the EU from energy dependency on Russia, some Europeans fear the "golden age of gas" as much as others anticipate it. The most significant uncertainties concerning unconventional natural gas are environmental contamination (especially drinking water), lack of monetary investment due to economic impracticality, and lack of political will reflecting low public acceptance of these innovations. Only a handful of EU member states are positioned to overcome these obstacles and extract shale gas in the future; therefore, this "revolutionary" energy source will merely serve as a bulwark against future gas disruptions. Conversely, LNG is the unconventional energy technology that can transform European energy security dynamics. In order to illustrate the degree that shale gas and LNG innovations will impact European-Eurasian energy relations, this chapter will analyze the contemporary unconventional natural gas market, constraints on European unconventional gas investment, and prospects for European shale gas and LNG expansion. The chapter's conclusion will examine how shale gas and LNG advances are

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<sup>145</sup> Paolo Natali, "The U.S. Natural Gas Revolution: Will Europe Be Ready in Time?" German Marshall Fund of the United States, accessed August 1, 2012, [http://www.gmfus.org/wp-content/files\\_mf/1338320486Natali\\_USNaturalGas\\_May12\\_web.pdf](http://www.gmfus.org/wp-content/files_mf/1338320486Natali_USNaturalGas_May12_web.pdf), 6.



reshaping the European-Eurasian gas market and highlight critical policy choices facing the EU, Russia, and Caspian hydrocarbon states.

## **A. SHALE GAS: FRACTURING THE CONVENTIONAL GAS MARKET**

### **1. Overview and Global Impact**

U.S. shale gas extraction has created an almost fanatical response from proponents and opponents alike; however, the dynamic impact of this new innovation merits a cogent analysis of the U.S. “shale gas revolution” and its implications on gas markets around the world. Although knowledge of shale gas is not new, the technology required to extract this energy source in economically viable quantities has only been available since 2000. Since then, U.S. shale gas extraction continued to rise, and in 2010 production reached over 10 billion cubic feet/day.<sup>146</sup> Additionally, the IEA projected U.S. shale gas extraction would double from 2010 through 2030—exceeding 50 percent of U.S. domestic gas production and comprising 25 percent of the U.S. energy mix.<sup>147</sup> Yet, this bountiful energy source is technically arduous to extract. To release shale gas, trapped in subterranean rock, the source rock must be fractured by pumping fluid and abrasive materials, often sand, to crack the rock. The high pressure fluid must also hold these fissures open while the wellbore delves into the shale rock to extract the gas. This extraction method, known as hydraulic fracturing or “fracking,” must discharge the pumping fluid at 8,000 psi and can crack shale rock up to 3,000 feet in all directions from the wellbore.<sup>148</sup> The hydraulic fracturing process has been refined in U.S. shale fields or “plays,” which enabled shale gas to become a viable and valuable energy source in the United States and North America.

Domestic shale gas development has benefitted the U.S. energy market despite the 2008 global economic downturn. Even though forty percent of U.S. conventional natural gas rigs have shut down since 2008, U.S. natural gas production continued to

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<sup>146</sup> Medlock, *Shale Gas and U.S. National Security*, 9.

<sup>147</sup> Ibid.; Howard Rogers, “Shale Gas-The Unfolding Story,” *Oxford Review of Economic Policy* 27, no 1 (2011), 136.

<sup>148</sup> Rogers, “Shale Gas-The Unfolding Story,” 121, 130.

increase through 2010. Thus, shale gas extraction offset decreased conventional gas production.<sup>149</sup> Increased natural gas production lowered domestic gas prices and consumers' electric bills. According to the U.S. Energy Information Administration (EIA) the 2011 average well-head price of shale gas was \$3.95 per thousand cubic feet, and prices in February 2012 dropped to \$2.45 per thousand cubic feet.<sup>150</sup> Domestic shale gas production detached the United States from the global natural gas pricing system pegged to oil prices, which resulted in lower U.S. rates than Europe's long-term contracts and interconnector spot prices.<sup>151</sup> Additionally, growth in the shale gas market has stimulated other U.S. sectors like the petrochemical industry.<sup>152</sup> The U.S. is preparing to develop its LNG export facilities as well. In 2012, eight LNG projects were proposed to export 15.5 billion cubic feet per day. The U.S. Department of Energy has already approved one of these export projects.<sup>153</sup>

U.S. shale gas production has not only benefited the U.S. market, but has also significantly impacted regional markets across the globe—especially in Europe. As the United States decreased LNG imports through 2010, gas shipments were redirected from Middle Eastern exporters to European and Asian markets and affected prices in both regions. Diverting LNG not only provided an alternative to Russian energy in Europe, but created economic benefits as well.<sup>154</sup> Instead of purchasing natural gas from Russia—linked to oil-prices—European customers have been able to purchase a portion of their energy mix at lower, competitive spot prices. If shale gas production proves economically viable in Europe, then competitive natural gas pricing may not be an aberration in energy relations, but the normal pricing mechanism.<sup>155</sup> Despite positive market results, shale gas's most significant global impact is its ramification for energy security policies.

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<sup>149</sup> Ibid., 123.

<sup>150</sup> Ibid., 3.

<sup>151</sup> Rogers, "Shale Gas-The Unfolding Story," 135.

<sup>152</sup> Verrastro, "The Role of Unconventional Oil and Gas: A New Paradigm for Energy," 67.

<sup>153</sup> Paul Stevens, "The 'Shale Gas Revolution': Developments and Changes," Chatham House, accessed October 25, 2012, <http://www.chathamhouse.org/publications/papers/view/185311>, 7.

<sup>154</sup> Ibid.; Medlock, *Shale Gas and U.S. National Security*, 9.

<sup>155</sup> Medlock, *Shale Gas and U.S. National Security*, 32; Stevens, "The 'Shale Gas Revolution,'" 3.

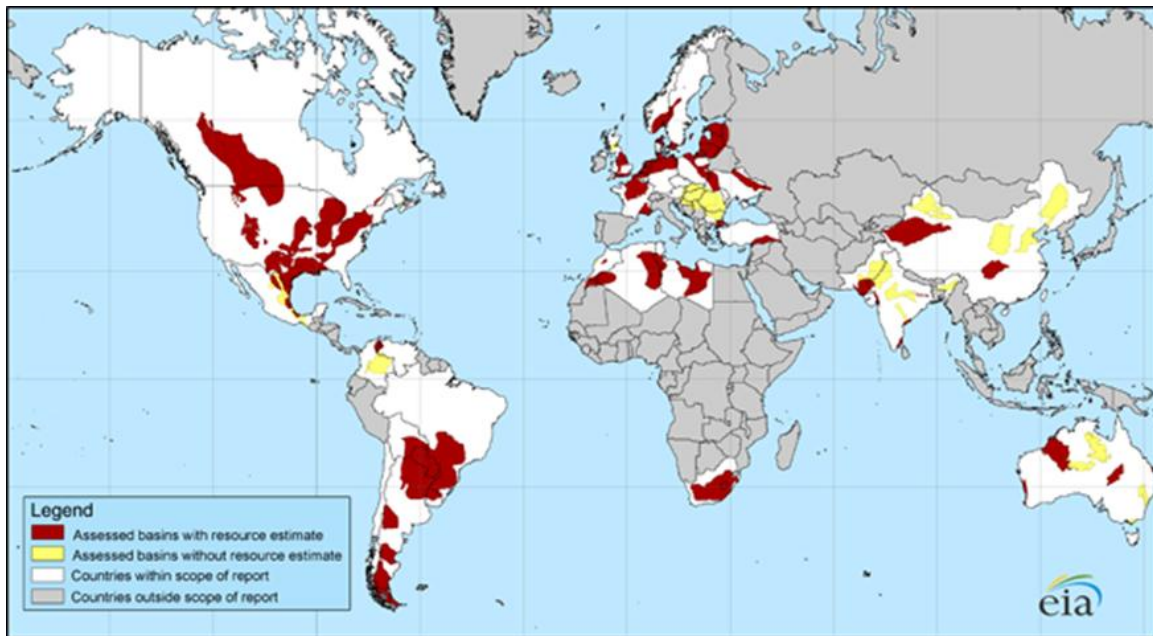


Figure 3. World shale gas resources: 2011 EIA initial assessment<sup>156</sup>

Increased shale gas production has the potential to become a cornerstone of global energy security. New shale gas reserves are redefining the haves and have-nots concerning hydrocarbon assets. According to a 2011 EIA survey of global shale gas resources, “adding the identified shale gas resources to other gas resources increases total world technically recoverable gas resources by over 40 percent.”<sup>157</sup> In addition to almost doubling the technically recoverable global gas sources, several European nations—that have little to no conventional gas assets—are positioned to benefit from the shale gas innovation. During a 2011 study, the EIA identified a grouping of seven countries where shale gas investment would be most attractive. Of the seven nations in this grouping, four are in Europe: France, Poland, Turkey, and Ukraine. These states are positively situated for shale gas investment because they are heavily reliant on natural gas imports, have some gas production infrastructure, and possess substantial shale gas resources to improve self-sufficiency in relation to their gas consumption.<sup>158</sup> Yet, shale gas

<sup>156</sup> U.S. Energy Information Administration, “World Shale Gas Resources.”

<sup>157</sup> U.S. Energy Information Administration, “World Shale Gas Resources: An Initial Assessment of 14 Regions outside the United States,” accessed October 9, 2012, <http://www.eia.gov/analysis/studies/worldshalegas/>.

<sup>158</sup> Ibid.

investment could benefit more than this handful of European states; European shale gas deposits have the potential to redefine Eurasian energy dynamics. Russia often subsidizes prices in exchange for political influence or control of pipeline infrastructure. Because Ukraine and Turkey are key transit states for Russian and Caspian energy, their increased energy independence could foster discriminatory pricing in Europe and transparent energy relations. Shale gas development could pull FSU members of the EU further away from Russian influence. According to Kenneth Medlock, Energy and Resource Economics Fellow at the Baker Institute, if European nations develop their shale gas resources, Russia's share of the FSU gas market could decrease from twenty-six percent to below thirteen percent.<sup>159</sup> Moreover, Poland and other FSU states' isolation in the wake of the Russo-German Nord Stream pipeline could be lessened through domestic energy production. The potential to alter energy dynamics is echoed in markets around the globe.

Increasing world shale gas production may also increase global energy security by preventing the development of a global natural gas exporters' union. Prior to recent shale gas analyses, Russia and Iran were expected to possess over fifty percent of future global gas reserves.<sup>160</sup> Medlock predicts that shale gas production—outside of the United States—could reduce Russia's, Iran's, and Venezuela's hold on the gas market from thirty-three percent to below twenty-six percent through 2040.<sup>161</sup> If these three exporters control only a quarter of global gas trade, they will not possess significant market share to form a cartel without economic backlash from customers selecting other energy providers.<sup>162</sup> Consequently, the potential for increased energy security vis-à-vis unscrupulous gas exporters, like Russia, and the tangible impact of U.S. shale gas production on global natural gas prices has invigorated interest in European shale gas exploration.

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<sup>159</sup> Medlock, *Shale Gas and U.S. National Security*, 24.

<sup>160</sup> *Ibid.*, 28.

<sup>161</sup> *Ibid.*, 13.

<sup>162</sup> Moran, "The Globalization of America's Defense Industries: Managing the Threat of Foreign Dependence," 80.

## 2. Hurdles to Shale Gas Extraction

While there are significant advantages to developing European shale resources, several noteworthy obstacles may preclude extracting this energy asset—namely environmental, economic, and regulatory/public acceptance challenges. These impediments will be examined in turn. The most publicized concern for shale gas exploration is the environmental impact of fracking on the ecosystems and communities surrounding drill sites. After fracking is complete, the “flow back” water—containing dissolved rock particles and chemicals—must be disposed of at a separate location or treated before returned to surface waters. Although the U.S. Environmental Protection Agency (EPA) affirmed fracking did not affect drinking water, residents and local bodies remained concerned with the ecological effects of shale gas. Several Colorado residents affirmed that fracking had tainted their ground-water wells. Additionally, Pennsylvania state regulators have penalized a single company for contaminating the drinking wells of fourteen nearby homes with spills of chemical additives, and spills that contaminated a local wetland.<sup>163</sup> Congress responded to public concerns by urging the EPA to complete another study. The EPA’s updated examination will be completed in 2014. Consequently, the EPA has created guidance for fracking, but this method is still exempt from the Safe Water Drinking Act.<sup>164</sup> In addition to contaminated ground water, gas contamination is a concern as well. Texas regulators have tested the air surrounding shale gas rigs and processing plants for carcinogenic gases. As a result of these contamination fears, New Jersey and Vermont have implemented bans on shale gas drilling and New York State has established a moratorium on issuing new drilling permits and placed the Delaware River—supplying 17 million people with drinking water—off-limits to drilling until the updated EPA study is released.<sup>165</sup>

Another water related worry is the amount of water consumed during hydraulic fracturing. For example the Barnett shale wells, in Texas, required an average of

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<sup>163</sup> Ibid., 133; Geoffrey Kemp, Corey Johnson, and Tim Boersma, “The Shale Gas Boom: Why Poland Is Not Ready,” German Marshall Fund of the United States, accessed August 1, 2012. [http://www.gmfus.org/wp-content/files\\_mf/1338835070KempEtAl\\_PolishShaleGas\\_Jun12.pdf](http://www.gmfus.org/wp-content/files_mf/1338835070KempEtAl_PolishShaleGas_Jun12.pdf), 3.

<sup>164</sup> Rogers, “Shale Gas-The Unfolding Story,” 132–33.

<sup>165</sup> Kemp, “Why Poland Is Not Ready,” 1; Rogers, “Shale Gas-The Unfolding Story,” 133.

250,000 gallons of water to drill a well and 3.8 million gallons to horizontally fracture shale rock.<sup>166</sup> Despite this excessive appearance, shale gas extraction requires less water than many other energy sources. In order to extract shale gas, an average of 1.47 gallons of water is used per one million British Thermal Units (MMBTU) of energy. This requirement is far less than the extraction that coal (17 gal/MMBTU), oil (18.5 gal/MMBTU), or biofuel (2,500 gal/MMBTU) requires.<sup>167</sup> Still, water consumption is a likely concern in arid climates or remote regions where water must be trucked to drill sites. A final environmental concern is the possible relationship between fracking and seismic activity. In Ohio, the Department of Natural Resources affirmed that twelve “seismic events” in the state were linked to human activity—namely the reinjection of flow back water into the shale wells, but not from the fracturing process itself. There have also been suspected links between shale gas extraction and earthquakes in Arkansas and Oklahoma. Great Britain has implemented a system to overcome this obstacle—shale gas exploration must halt in the event of a seismic event of 0.5 on the Richter scale and will remain at a halt until tests are conducted and the government deems it is safe to proceed.<sup>168</sup> Even if the environmental concerns can be overcome, shale gas must still be an economically viable resource for European energy companies.

Europe will not embark upon significant shale gas exploration, unless this process is economically viable with existing technology. One economic hurdle concerning shale gas is “decline rates” on shale wells that diminish faster than conventional wells. For example, the Barnett well in the United States declined in production by thirty-nine percent from the first through the second year and by fifty percent from the second to third year.<sup>169</sup> To continue producing economically viable shale gas, drilling companies consistently “tune in” their equipment and techniques to extract more gas—at a lower cost—in a given area. This adjustment process allows companies to improve production

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<sup>166</sup> Rogers, “Shale Gas-The Unfolding Story,” 131.

<sup>167</sup> Ibid.

<sup>168</sup> Kemp, “Why Poland Is Not Ready,” 3.

<sup>169</sup> Rogers, “Shale Gas-The Unfolding Story,” 122.

rates, reduce costs, and improve profitably despite declining well outputs.<sup>170</sup> The greatest economic risk facing prospective shale gas investment is the substantial time and monetary resources companies often expend in sub-economic areas before identifying the most favorable wells. To offset this possibility, extensive European surveying is taking place—especially in Poland.<sup>171</sup> Although European companies can benefit from U.S. experience and investment, no two shale gas fields are the same. Consequently, drilling techniques must be fine-tuned to each shale play.<sup>172</sup> European shale fields may not be able to replicate the profits and decreased energy prices that North American shale plays have produced. Europe's shale resources are often smaller and deeper than U.S. plays, which will likely require a more complex drilling technique and increased drilling costs.<sup>173</sup> Another key factor that separates U.S. and European markets is the regulator and public acceptance environment.

U.S. shale gas exploration has been successful due to a combination of new technology and advantageous state regulatory laws. Howard Rogers, Director of the Natural Gas Research Program at the Oxford Institute for Energy Studies, asserts the greatest challenges to European shale gas development are the European regulatory regime and public acceptance.<sup>174</sup> For example, the EU's energy policies and its goal to significantly diminish the amount of fossil fuels used by 2020 support investment in renewable energies over natural gas. Similarly, France favors nuclear energy over investment in natural gas. Thus, European policy may reduce demand for natural gas, which could hamper shale investment.<sup>175</sup> Yet, the most striking regulatory divergence between U.S. and European energy markets is unbundled transport capacity of pipeline infrastructure. If the U.S. market did not unbundle transport capacity rights from pipelines owners, many small firms would not have been able to bid for pipeline capacity and would not have begun extracting shale gas because their product would never has

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<sup>170</sup> Ibid., 128.

<sup>171</sup> Ibid.

<sup>172</sup> Stevens, "The 'Shale Gas Revolution,'" 10.

<sup>173</sup> Rogers, "Shale Gas-The Unfolding Story," 138.

<sup>174</sup> Ibid., 137.

<sup>175</sup> Medlock, *Shale Gas and U.S. National Security*, 15.

reached the market. Thus, European companies' monopolistic control of energy infrastructure precludes the involvement of smaller firms that could specialize in the extraction of shale resources.<sup>176</sup> Europe's regulatory regime may not only inhibit industry support, but public acceptance as well.

The most significant U.S. regulatory boost to shale gas is that American land owners have rights to minerals beneath their property and can also negotiate with private companies for access to these resources—in compliance with established laws.<sup>177</sup> Even though American citizens directly benefit from shale gas extraction through payment for access to land or indirectly through significantly lower gas prices, American “nimbyism” or “not in my backyard” mentality is still present due to environmental concerns examined above.<sup>178</sup> In Europe, policies are not only more environmentally conscious, but hydrocarbon access is also largely controlled by the state. Thus, there is little incentive for local residents to support shale exploration if they do not directly benefit from this extraction.<sup>179</sup> Moreover, citizens, environmental groups and Non-governmental Organizations (NGOs) have placed significant pressure on European governments to ban shale gas extraction. Consequently, Bulgaria and France have placed moratoria on fracking; however, Britain continues to carefully explore this energy source.<sup>180</sup> Even though it appears that shale gas exploration may never reach fruition in Europe, European shale gas production still shows noteworthy potential.

### **3. Prospects for European Extraction**

European governments and private companies have shown interest in extracting shale gas resources. EU companies, Statoil and Total, have both entered joint ventures with U.S. firms to import fracking technology to Europe.<sup>181</sup> UK-Danish company Royal Dutch Shell, France's Total SA, and U.S. energy firm Conoco-Philips have all acquired

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<sup>176</sup> Ibid., 14.

<sup>177</sup> Kemp, “Why Poland Is Not Ready,” 1.

<sup>178</sup> Rogers, “Shale Gas-The Unfolding Story,” 134.

<sup>179</sup> Medlock, *Shale Gas and U.S. National Security*, 14.

<sup>180</sup> Stevens, “The ‘Shale Gas Revolution,’” 8.

<sup>181</sup> Institut Francais des Relations Internationales, *Oil and Gas Delivery to Europe*, 56.



rights to explore shale gas in Poland. Additionally, TNK-BP, a joint-company of BP and Russian investors, has pledge \$1.8 million to invest in Ukraine's shale projects. Italy's Eni SpA and U.S. Chevron Corp have already invested in western Ukrainian shale gas. The Chevron corps has also acquired more than 6,250 square kilometers of potential shale gas fields in Central Europe since 2009.<sup>182</sup> Polish leaders have touted shale gas's potential for increased profits, lower energy costs, and energy independence from Russia.<sup>183</sup> Additionally, there is active research into shale potential in Austria, Croatia Denmark, France, Germany, the Netherlands, Romania, Sweden, Ukraine, and the United Kingdom.<sup>184</sup> The EIA's 2011 assessment of world shale gas deposits affirmed that Europe contains 639 trillion cubic feet (tcf) of technically recoverable shale gas, which is a significant resource when compared to its conventional natural gas reserves of 186 tcf—including Norway. Furthermore, forty percent of these shale gas reserves are located in Europe's Former Soviet or Warsaw Pact states.<sup>185</sup> Thus, shale gas is a possible avenue to bolster European energy security by decreasing import dependency.<sup>186</sup> Even though EU member states are particularly interested in reducing dependence on Russian energy, shale gas proponents must overcome environmental, public acceptance, and economic hurdles.

Because European policy makers can use the U.S. shale gas experience as a case study, regulators and politicians are unlikely to support fracking without comprehensive proof that environmental impacts can be minimized. Once the U.S. EPA's analysis of fracking's effects on drinking water is complete in 2014, European investment is likely to move forward based on the results.<sup>187</sup> Several recent U.S. studies have shown that environmental contamination related to shale extraction has been caused by poor

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<sup>182</sup> "Shale-Gas Boom Hits Eastern Europe," *Wall Street Journal*, The Journal Report: Energy, September 17, 2012, R9.

<sup>183</sup> Kemp, "Why Poland Is Not Ready," 3.

<sup>184</sup> Medlock, *Shale Gas and U.S. National Security*, 25.

<sup>185</sup> U.S. Energy Information Administration, "World Shale Gas Resources."

<sup>186</sup> Rogers, "Shale Gas-The Unfolding Story," 136; Institut Francais des Relations Internationales, *Oil and Gas Delivery to Europe*, 57.

<sup>187</sup> Rogers, "Shale Gas-The Unfolding Story," 135.

adherence to existing regulations—not the employment of fracturing technology.<sup>188</sup> Additionally, the UK’s Royal Society and Royal Academy of Engineering published research findings in 2012 that affirmed, “The health, safety, and environmental risks associated with hydraulic fracturing...as a means to extract shale gas can be managed effectively in the UK as long as operational best practices are implemented and enforced through regulation.”<sup>189</sup> Thus, increased regulations or government surveillance is the likely outcome of pending environmental studies. For example, the “Fracking Act” is currently being drafted in the U.S. Congress to ensure that companies openly disclose all chemicals used during shale gas drilling. These measures should bolster public acceptance, but will also result in cost increases.<sup>190</sup> Because EU member states are less likely to provide exemptions from environmental legislation, European shale gas investors and industry leaders will likely be at the forefront of stimulating public acceptance.

In the United States, the shale gas industry has responded to environmental concerns and declining public support by committing to responsible stewardship of environmental resources. Although the “Fracking Act” is pending Congressional approval, companies have already begun campaigns of transparency and community engagement. According to Frank Verrastro, Director of the Energy and National Security Program at the Center for Strategic and International Studies, “Smarter, safer, cleaner is now an operational necessity.”<sup>191</sup> Yet, Paul Stevens, Senior Research Fellow for Energy at Chatham House, believes European shale proponents are unlikely to overcome the public’s environmental fears: “If the public has become convinced that shale gas operations are bad, then no amount of scientific study or knowledge will counter this.”<sup>192</sup> Despite substantial concerns that European policy makers will not sacrifice political capital to support the shale gas industry, several key political factors exist that may

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<sup>188</sup> Stevens, “The ‘Shale Gas Revolution,’” 6.

<sup>189</sup> *Ibid.*, 8.

<sup>190</sup> Rogers, “Shale Gas-The Unfolding Story,” 135; Stevens, “The ‘Shale Gas Revolution,’” 5.

<sup>191</sup> Verrastro, “The Role of Unconventional Oil and Gas,” 68.

<sup>192</sup> Stevens, “The ‘Shale Gas Revolution,’” 8.

encourage European leaders to persuade public opinion.<sup>193</sup> First, the EU does not have a unified shale gas policy; therefore, popular support for fracking will likely vary depending on the size of a nation's shale gas deposits and their reliance on Russian gas.<sup>194</sup> Poland is a prime candidate for shale gas extraction due to its reliance on Russian energy, stated concern for Russia's abuse of its market position, and large shale gas reserve. Second, European nations that possess substantial shale gas deposits (France, Germany, Norway, the Netherlands, Poland, and the UK) all have a history of domestic oil and gas production; therefore, these states likely have the regulatory apparatus to oversee shale gas exploration.<sup>195</sup> These nations also currently produce natural gas domestically, which should provide shale proponents and policy makers a starting point to positively influence local populations through focusing on increased energy independence and security.<sup>196</sup> Finally, the high cost of Europe's low-carbon energy sources, such as renewables or nuclear energy—which has low popular support after the Fukushima Daiichi reactor disaster—offers fertile ground for politicians to support natural gas as a short-term domestic alternative to decrease electricity prices.<sup>197</sup> Although, several European nations could garner public support for domestic shale gas production, European shale gas extraction will not achieve marketable quantities unless fracking proves economically viable.

Despite Europe's sufficient regulatory institutions to mitigate environmental impact and likely public support from several EU member states, Europe's natural gas market may not support immediate shale gas extraction. Due to low European gas prices and a five year production timeline required to develop viable extraction techniques, several analysts affirm that Europe will not extract shale gas in substantial quantities (30

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<sup>193</sup> Ibid., 8.

<sup>194</sup> Rogers, "Shale Gas-The Unfolding Story," 138.

<sup>195</sup> Ibid.

<sup>196</sup> U.S. Energy Information Administration, "World Shale Gas Resources."

<sup>197</sup> Stevens, "The 'Shale Gas Revolution,'" 3.

bcm/year) for several years—possibly after 2020.<sup>198</sup> Ian MacDonald, Chevron’s Vice President in charge of exploration and production strategy for Europe, Eurasia, and the Middle East, estimates it will take another three to five years just to determine if Eastern European shale gas deposits are viable.<sup>199</sup> Furthermore, Russia’s long-term contracts (often extending past 25 years) with most of Eastern Europe render it uneconomical for some states to seek alternative energy sources.<sup>200</sup> In Poland, one of the most likely shale gas producers, demand and infrastructure may prove the greatest economic hurdle. Because Poland relies heavily on coal consumption to heat homes, only fifty percent of Polish households are connected to natural gas infrastructure. Consequently, there is not enough current demand to make shale gas investment economically viable. Furthermore, Poland’s shale gas reserves are located in the north, east, and southeast portions of the country, while its pipeline infrastructure is in the southwest.<sup>201</sup> Therefore, substantial infrastructure investment is required to not only deliver shale gas to domestic consumers, but export markets as well. Without viable export routes, private investment in Poland’s shale fields is unlikely to materialize in the short term. Still, several analysts affirm that shale gas will play a limited role in Europe’s energy security dynamics after 2020.<sup>202</sup> Shale gas will likely provide ten percent of Europe’s domestic energy mix, which enables this energy source to serve as “swing product,” but will not create Europe self-sufficiency.<sup>203</sup> Consequently, European nations could increase or decrease shale gas production based on market signals—when pricing is profitable or to offset gas disruptions. Because large-scale shale production is several years away, many EU

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<sup>198</sup> Institut Francais des Relations Internationales, *Oil and Gas Delivery to Europe*, 57; Kemp, “Why Poland Is Not Ready,” 4; Rogers, “Shale Gas-The Unfolding Story,” 140; Stevens, “The ‘Shale Gas Revolution,’” 8; Jonas Teusch, “Shale Gas and the EU Internal Gas Market: Beyond the Hype and Hysteria,” The Center For European Policy Studies, accessed October 25, 2012, <http://www.ceps.eu/book/shale-gas-and-eu-internal-gas-market-beyond-hype-and-hysteria>, 3.

<sup>199</sup> “Shale-Gas Boom Hits Eastern Europe,” *Wall Street Journal*. The Journal Report: Energy. September 17, 2012.

<sup>200</sup> Ibid.

<sup>201</sup> Kemp, “Why Poland Is Not Ready,” 4.

<sup>202</sup> Rogers, “Shale Gas-The Unfolding Story,” 139; Teusch, “Shale Gas and the EU Internal Gas Market,” 3; Stevens, “The ‘Shale Gas Revolution,’” 8.

<sup>203</sup> Rogers, “Shale Gas-The Unfolding Story,” 138–39.

member states are still concerned about reliance on natural gas exporters. This import dependence may be reduced by increasing European Liquefied Natural Gas investment.

## **B. LIQUEFIED NATURAL GAS: SECURITY IN LIQUIDITY**

### **1. Overview and Global Impact**

The EU's reliance on natural gas imports is anticipated to reach 84 percent by 2030 as oil and coal continue to be replaced by natural gas. Moreover, natural gas is viewed as an efficient energy source to buffer against the unreliability of renewable energy and is more palatable than nuclear power.<sup>204</sup> This increased use of natural gas does not allay European fears of energy insecurity; however, LNG offers an alternative for European energy consumers. LNG is not a new form of energy, like shale gas, but a new method for delivering natural gas. In order to transport LNG, natural gas must be cooled in special facilities to minus 256 degrees Fahrenheit—allowing the gas to condense and liquefy. Once natural gas is transformed into a liquid, it can be transported in specialized tankers to regasification terminals anywhere in the world. LNG can also be “regasified” onboard these vessels and fed directly into natural gas pipelines.<sup>205</sup> Although LNG was initially utilized to transport natural gas long distances, when pipelines proved uneconomical, it has become feasible and economically viable across short distances. For example, projects in Cyprus and Lebanon are under construction to import LNG from Egypt and Algeria.<sup>206</sup> Yet, LNG's significance is not the mechanical achievement of this new transport technology, but its revolutionary impact on gas markets around the globe.

Liquefied natural gas has begun transforming the natural gas trade from a regional market into a global market because LNG exporters can ship natural gas to any country that has regasification capabilities. Unlike pipeline gas, geographic proximity does not dictate energy relations; LNG can be imported without relying on one's neighbor for

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<sup>204</sup> Institut Francais des Relations Internationales, *Oil and Gas Delivery to Europe*, 52.

<sup>205</sup> Cindy Hurst, “Liquefied Natural Gas: The Next Prize?” In *Energy Security Challenges for the 21st Century: A Reference Handbook*, ed., Gal Luft and Anne Korin (Washington, D.C.: Library of Congress Cataloging-in-Publication Data, 2009), 270.

<sup>206</sup> Patrick Cayrade, “Investments in Gas Pipelines and LNG Infrastructure: What impact on the security of supply?” The Center for European Policy Studies, accessed October 25, 2012, <http://www.ceps.eu/book/investments-gas-pipelines-and-lng-infrastructure-what-impact-security-supply>, 4.

transit or export. LNG accounted for twenty-eight percent of the global gas trade in 2009 and the Institut Francais des Relations Internationales (IFRI), an independent French policy center, estimates LNG production will double by 2020.<sup>207</sup> Shale gas has increased the importance of LNG because a majority of these new gas producers, including the United States, cannot export to Europe via pipelines. LNG technologies enable Europe to take advantage of a global shale gas boom, even if the EU does not seek full shale exploration itself.<sup>208</sup> LNG shipments also provide opportunities for natural gas price negotiation in contrast to the rigid pipeline system of linking gas to oil prices.<sup>209</sup> As a result of the U.S. shale gas boom, Middle Eastern and African LNG exports previously identified for the United States were shifted to Europe, which resulted in an alternative to Russia's natural gas and pressured Russia to renegotiate its long-term contracts to accept lower prices and even index a portion of its gas sales on spot prices instead of oil prices.<sup>210</sup> Moreover, Gazprom has struggled to compete in Europe with LNG deliveries that are sold on spot markets because Russia's energy monolith is increasingly viewed as an unreliable and costlier energy provider.<sup>211</sup> As spot pricing increases in the gas market and gas delinks from oil prices, gas and oil sources can actually compete in the energy market, which is beneficial for European energy consumers.<sup>212</sup> Moreover, as LNG imports increase, competition among exporters will likely render oil indexing difficult as customers will have the opportunity to choose amongst energy providers.<sup>213</sup> LNG provides physical and market liquidity that can also mitigate price spikes due to regional gas disruptions.<sup>214</sup> For example, Greece, a nation dependent on Russia for seventy-six percent of its gas imports, was able to completely offset gas disruptions during Russia's 2009 price dispute with Ukraine by increasing imports via a single LNG regasification

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<sup>207</sup> Institut Francais des Relations Internationales, *Oil and Gas Delivery to Europe*, 55.

<sup>208</sup> Teusch, "Shale Gas and the EU Internal Gas Market," 5.

<sup>209</sup> Natali, "The U.S. Natural Gas Revolution," 7.

<sup>210</sup> Medlock, *Shale Gas and U.S. National Security*, 11 & 32.

<sup>211</sup> "Burst Valves: The European Union squeezes Gazprom. Russia retaliates," *Economist*.

<sup>212</sup> Liuhto, *The EU-Russia gas connection: Pipes, Politics and Problems*, 50.

<sup>213</sup> Medlock, *Shale Gas and U.S. National Security*, 31.

<sup>214</sup> *Ibid.*, 29.

terminal.<sup>215</sup> Greece also used these LNG imports to supply Bulgaria during the 2009 dispute.<sup>216</sup> In addition to reshaping the natural gas market, LNG has altered energy security dynamics as well.

Liquefied Natural Gas has enabled Europe to blunt Moscow's energy blackmail attacks by diminishing Russia's market share of European energy imports. In May 2012, Europe's LNG imports primarily originated in Qatar (41 percent), Algeria (22 percent), and Nigeria (18 percent).<sup>217</sup> IFRI estimates that the EU-27's LNG consumption will increase from sixteen percent to thirty-two percent in 2030.<sup>218</sup> Consequently, continued LNG investment could reduce Russia's stake in non-FSU Europe from twenty-seven percent in 2009 to thirteen percent by 2040.<sup>219</sup> In addition to diversifying energy importers, LNG eliminates transit state instability and minimizes regional instability that may shutdown pipeline operations like the 2008 Russo-Georgian War. Furthermore, LNG offers a surge capacity to offset natural disasters or terrorist attacks against conventional pipelines instead of leaving citizens subject to the forces of nature, will of terrorists, or whims of fickle energy providers.<sup>220</sup> Despite the apparent benefits of European LNG investment, these positive impacts may dissipate if LNG development stymies due to political, economic, or security constraints on future LNG investment.

## **2. Obstacles to Investment**

Energy investment is inexorably linked to domestic and foreign politics; LNG is no different. European nations may be wary of increasing investment in LNG regasification terminals because increased reliance on LNG exporters may limit the EU's ability to denounce human rights violations and undemocratic practices in these nations. Most LNG exporters are not democracies and do not share Europe's free market values.

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<sup>215</sup> Natali, "The U.S. Natural Gas Revolution," 13.

<sup>216</sup> Institut Francais des Relations Internationales, *Oil and Gas Delivery to Europe*, 57.

<sup>217</sup> Natali, "The U.S. Natural Gas Revolution," 8.

<sup>218</sup> Institut Francais des Relations Internationales, *Oil and Gas Delivery to Europe*, 47.

<sup>219</sup> Medlock, *Shale Gas and U.S. National Security*, 13; Hurst, "Liquefied Natural Gas: The Next Prize?" 272.

<sup>220</sup> Hurst, "Liquefied Natural Gas: The Next Prize?" 275.

Thus, LNG exporters may deny Europe gas imports if EU member states' principles or actions incense an authoritarian export nation.<sup>221</sup> While the 1973 oil embargo may seem a tempting example of this fear, a gas-OPEC has yet to form that could employ such an embargo. Furthermore, Europe's inaction during the 2008 Russo-Georgian war illustrates that political constraint through pipeline energy relations is no less threatening than potential constraints from LNG imports.<sup>222</sup> At the domestic level, European citizens may not support increased LNG facility construction near their homes. Even U.S. citizens, a public that often supports energy independence, displayed nimbyism during site surveys for future LNG terminals.<sup>223</sup> This concern was overcome in the United States through the use of offshore regasification terminals. Public acceptance fears appear to be the least significant drawback to LNG investment; yet, some EU politicians question the utility of increasing LNG import terminals.<sup>224</sup>

European capitals, including Berlin, doubt moving forward on LNG investment because LNG regasification hubs currently exceed liquefaction capabilities in export nations. Moreover, increased natural gas consumption in Asia, especially China, point to issues in security of supply.<sup>225</sup> According to Kari Liuheto, Director of the Pan-European Institute, increasing Europe's LNG regasification facilities assumes increased LNG exports from Iran, Iraq, and Qatar—all states that favor the Groningen price system (linked to oil prices) via pipeline deliveries over the price instability of LNG spot markets.<sup>226</sup> Furthermore, Iran and Iraq could provide natural gas to China without developing LNG capabilities by linking into the pipeline from Turkmenistan to China. In addition to security of supply, physical security is another concern. Although LNG is not

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<sup>221</sup> Ibid.

<sup>222</sup> Anderson, "Europe's Dependence on Russian Natural Gas," 41–2; Medlock, *Shale Gas and U.S. National Security*, 54.

<sup>223</sup> Hurst, "Liquefied Natural Gas: The Next Prize?" 278.

<sup>224</sup> Francisco de la Flor, "LNG: A major contribution to a sustainable, competitive and secure European gas market," *Presentation to the European Energy Forum*, Brussels: May 30, 2012, accessed October 25, 2012, [http://www.europeanenergyforum.eu/sites/default/files/events/files/public/gle\\_presentation\\_at\\_eef\\_dinner\\_debate\\_30\\_may\\_2012.pdf](http://www.europeanenergyforum.eu/sites/default/files/events/files/public/gle_presentation_at_eef_dinner_debate_30_may_2012.pdf), 8.

<sup>225</sup> Teusch, "Shale Gas and the EU Internal Gas Market," 5.

<sup>226</sup> Liuheto, *The EU-Russia gas connection: Pipes, Politics and Problems*, 48.



flammable or volatile, it vaporizes quickly into methane, which is highly explosive. Thus, terrorists may target regasification sites to create methane vapor clouds that ignite easily. Furthermore, LNG tankers may become terrorist targets because these vessels are easily distinguishable from other merchant ships, an attack on an LNG vessel would seriously impact import economies and citizens, and gas prices would increase to the benefit of gas export nations—some of which have sponsored terrorist organizations in the past.<sup>227</sup> Although the threat of terrorism is the most high profile risk, it can be significantly mitigated through maritime security and port security measures that are already in place in most the world's ports and heavily traveled maritime trade corridors. Additionally, many U.S. terminals have been built offshore to reduce the population impact of a terrorist attack or industrial accident.<sup>228</sup> Although combating energy security risks are important to the European citizens, increased LNG production will not come to fruition unless this delivery method is economically viable.

The most significant hindrance to increased LNG development is securing adequate funding. LNG terminals and transport systems are capital intensive in comparison to pipeline networks.<sup>229</sup> For example, a proposed LNG supply chain from Egypt to Cartagena, Spain (2,735 km) will require \$1.6 million in investment for two tankers, a liquefaction terminal, and regasification terminal. This estimate does not include upstream infrastructure investment to transport natural gas to the liquefaction terminal. This project is expected to provide 4.8 bcm/year of natural gas at a cost of \$2.56/MMBTU. A similar pipeline project, the MEDGAZ from Algeria to Spain, began providing 8 bcm/year in March 2011 via an undersea conduit at a total cost of \$1.2 million, including upstream investment, or \$1.46/MMBTU.<sup>230</sup> In addition to production costs, the manpower required to crew an LNG vessel may not be able to keep up with transport demand. Each LNG ship requires seventy specially-trained crewmembers at full

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<sup>227</sup> Hurst, "Liquefied Natural Gas: The Next Prize?" 276–77.

<sup>228</sup> Ibid., 277–78.

<sup>229</sup> Cayrade, "Investments in Gas Pipelines and LNG Infrastructure," 11.

<sup>230</sup> Ibid., 8.

strength.<sup>231</sup> Another hindrance to investment is the likely decoupling of gas from oil prices as global LNG deliveries increase. LNG spot markets do not support price stability or security of demand that energy exporters desire. Unstable gas prices may not support financing large projects to tap new natural gas fields.<sup>232</sup> Still, LNG technologies and transport costs are projected to decrease through 2020 to include a twenty percent reduction in the cost of liquefaction plant construction and a technological improvement to increase the size and double the transport capabilities of tankers while reducing their production costs by ten percent. Additionally, construction times are likely to decrease from five years to four years for a mature LNG supply chain.<sup>233</sup> These projected decreases in LNG production costs and anticipated increases in global LNG demand bode well for LNG investment.

### **3. Prospects for European LNG Expansion**

European LNG imports are a significant portion of the world LNG market and poised to grow. Natural gas consumption in Europe will almost certainly increase as most Eastern European EU member states, struggling to meet the 2020 renewable energy goals (twenty percent of domestic energy provided by renewables) will likely focus on importing inexpensive energy. To mesh their low-cost energy desires with the EU's environmental values, most Eastern European states will substitute coal consumption with natural gas.<sup>234</sup> In 2010, LNG comprised one-sixth of Europe's gas imports and Europe's imports totaled one-third of the global LNG market. Europe's twenty-one existing LNG terminals provide 191 bcm/year capacity. Additionally, thirty-four facilities are planned or under construction. If these import sites are completed, Europe could increase LNG capacity to 417 bcm/year by 2020. Consequently, 75 percent of Europe's natural gas imports could be supported via LNG.<sup>235</sup> Conservative analysts predict

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<sup>231</sup> Hurst, "Liquefied Natural Gas: The Next Prize?" 278.

<sup>232</sup> Cayrade, "Investments in Gas Pipelines and LNG Infrastructure," 11.

<sup>233</sup> *Ibid.*, 8.

<sup>234</sup> Natali, "The U.S. Natural Gas Revolution," 7.

<sup>235</sup> Natali, "The U.S. Natural Gas Revolution," 11; Teusch, "Shale Gas and the EU Internal Gas Market," 6.

Europe will double its capacity—due to economic and policy constraints—to 380 bcm/year, which still provides a significant majority of Europe’s future gas imports.<sup>236</sup> LNG’s growth potential may enable Europe to move beyond the status quo in energy relations and security policies.

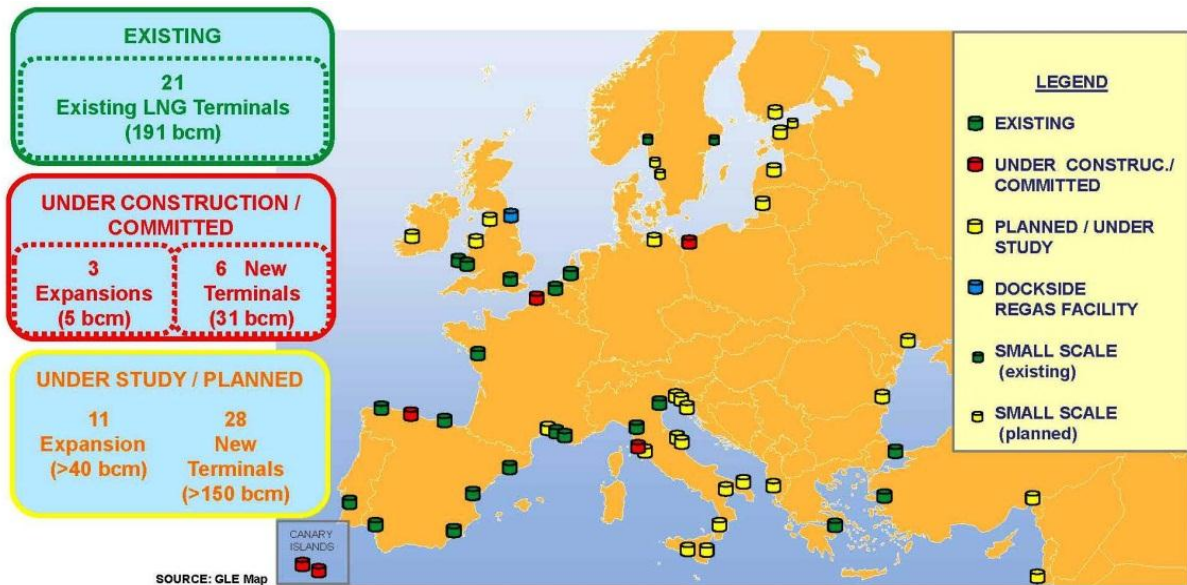


Figure 4. Current and planned European LNG infrastructure<sup>237</sup>

LNG is currently viewed as a means to ease European import dependency on Russia in exchange for higher energy costs. For example, Poland and the Baltic States, with EUR80 million support from the EU’s European Energy Program for Recovery, have begun constructing the Świnoujście LNG terminal in Poland even though this enterprise may not be economically profitable. This project will likely reach completion because LNG is a significant boon to Eastern European energy security vis-à-vis Russia.<sup>238</sup> Yet, pipeline gas is less expensive; even though it comes with the possibility

<sup>236</sup> Natali, “The U.S. Natural Gas Revolution,” 8 & 11; Medlock, *Shale Gas and U.S. National Security*, 21.

<sup>237</sup> de la Flor, “LNG: A major contribution to a sustainable, competitive and secure European gas market,” 8.

<sup>238</sup> Katarzyna Piasecka, “Construction on Świnoujście LNG terminal to start in March,” *Warsaw Business Journal*, January 25, 2011, accessed October 25, 2012, <http://www.wbj.pl/article-52927-construction-on-swinoujscie-lng-terminal-to-start-in-march.html>.

of Russian energy blackmail or gas shutoffs.<sup>239</sup> Thus, some analysts foresee LNG merely serving as a backup energy source or insurance policy, but not a dynamic future resource.<sup>240</sup> Even as a buffer energy source, LNG has the potential to innovate the Eurasian gas market.

The most significant impact of LNG imports to Europe is that old patterns of energy dependence are weakened, if not shattered. As European states develop LNG terminals, they are no longer forced to rely on unreliable pipeline energy exporters or unstable transit states.<sup>241</sup> In 2005, the European Council issued a communique in 2005 that supported increasing LNG shipments to diversify energy supplies, support growing EU gas demand, but most importantly, to use LNG to facilitate gas-gas competition via pipelines from Russia and regional natural gas interconnectors.<sup>242</sup> Therefore, LNG development in Europe will likely not only mitigate dependence on Russia, but facilitate natural gas price competition as well.<sup>243</sup> Additionally, Russian gas companies may not be able to support increased European gas consumption due to ineffective management and lack of investment in new gas fields. Consequently, natural gas imports will be required from more remote locations—enabling LNG to be truly competitive with future long-distance pipeline construction.<sup>244</sup> Nevertheless, European regasification capabilities are not evenly distributed within the continent, and a significant east/west divide is evident. LNG imports sites are predominately in Western Europe. Spain is the largest LNG consumer in Europe and Italy has had fourteen LNG terminals under construction since 2009. Conversely, Germany has no LNG terminals and only one planned for construction. Of the twenty existing terminals and six more under construction, Poland's facility is the only terminal located in an EU member state that is almost completely

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<sup>239</sup> Cayrade, "Investments in Gas Pipelines and LNG Infrastructure," 12; Hurst, "Liquefied Natural Gas: The Next Prize?" 279.

<sup>240</sup> Cayrade, "Investments in Gas Pipelines and LNG Infrastructure," 12; Institut Francais des Relations Internationales, *Oil and Gas Delivery to Europe*, 57.

<sup>241</sup> Hurst, "Liquefied Natural Gas: The Next Prize?" 278.

<sup>242</sup> Liuhto, *The EU-Russia gas connection: Pipes, Politics and Problems*, 52.

<sup>243</sup> Ibid., 96.

<sup>244</sup> Ibid., 61; Cayrade, "Investments in Gas Pipelines and LNG Infrastructure," 6–7.

reliant on Russian energy.<sup>245</sup> This disparity highlights the vulnerability of Eastern Europe to Russia in contrast to Western Europe's apparent energy security. Yet, the current lack of LNG terminals in Eastern Europe does not consign these states to Russian domination. LNG imports to Western Europe can still bolster Eastern European energy security—if the EU develops policies and energy infrastructure to support an internal European market.

### C. CONCLUSION

The fanfare surrounding global shale gas resources may not result in a shale gas boom in Europe; however, this energy source will still play a role in Europe's future energy mix. Despite the substantial shale resources in Europe and its potential to significantly reduce Europe's energy dependence, the environmental, technological and economic, and regulatory/public acceptance challenges facing the shale industry will likely prevent wide spread extraction in Europe. Yet, the lack of EU policy concerning hydraulic fracturing technologies allows EU member states maneuver room to explore their own domestic energy policies and environmental regulations. United Kingdom policy supporting shale extraction and its efforts to minimize environmental impacts bode well for future British shale development. Additionally, the Polish government's strong support for energy independence and private investment in the Polish shale industry by several American and European firms illustrate the likelihood of significant shale extraction in Poland. Moreover, heavy investment into Ukraine's shale gas capabilities is ongoing. Despite British, Polish, and Ukrainian extraction potential, shale gas will likely serve as a swing energy source for most of Europe—providing buffers against import disruptions. Shale gas production in a few European nations is still several years away, which leaves the specter of import dependence looming in most European capitals. Even if the EU does not seek full-scale shale gas exploration, LNG technologies enable Europe to take advantage of the U.S. shale gas boom via increased gas imports from the Middle East and Africa that were previously designated for the United States.

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<sup>245</sup> Institut Francais des Relations Internationales, *Oil and Gas Delivery to Europe*, 57; Hurst, "Liquefied Natural Gas: The Next Prize?" 272; Natali, "The U.S. Natural Gas Revolution," 11.

LNG is the likely unconventional energy technology that will revolutionize European-Eurasian energy security dynamics. Liquefied Natural Gas has already served as insurance against gas disruptions, including during the 2009 Russo-Ukrainian energy disputes. Europe's twenty-one LNG terminals will be augmented shortly by the expansion of three existing facilities and construction of six new terminals within the next four years. Furthermore, eleven terminals are scheduled for expansion and twenty-eight new LNG import sites are planned for future development. If these terminals are completed, European LNG import capacity will reach 417 bcm—seventy-five percent of the EU's natural gas imports. Although the most significant hindrance to increased LNG development is securing adequate funding, the EU's EUR80 million investment for Poland's Świnoujście LNG facility is a strong display of European political will despite concerns about the project's economic profitability. Furthermore, LNG technologies, construction timelines, and transport costs are expected to continue decreasing, while transport capacity and productivity are predicted to increase through 2020. LNG's ramifications extend beyond technological achievements and have the potential to significantly alter Europe's energy market.

Increased LNG imports should create competition among exporters, which habitually lowers prices to slightly above production costs. Thus, additional natural gas supplies will likely compel pipeline exporters to sell a portion of their natural gas at spot prices instead of the Groningen oil index. Furthermore, increased EU natural gas will likely require gas from more remote locations, which will enable LNG to become even more competitive with future long-distance pipelines. Consequently, energy providers that feed long-distance pipelines may have to accept spot pricing as the new normal to compete with LNG in the globalizing gas marketplace. Still, the most significant impact of LNG imports to Europe is that old patterns of energy dependence are weakened. As European states build LNG terminals, Russia's dominance over energy exports will continue to diminish. Liquefied Natural Gas has enabled Europe to blunt Moscow's energy blackmail attacks by diminishing Russia's market share of European energy imports and its ability to disrupt domestic markets as seen in Greece's ability to provide

natural gas to itself and in Bulgaria during the 2009 Russo-Ukrainian energy disputes. Yet, the location of Europe's LNG terminals raises some concerns.

Although several LNG terminals are planned in the Baltic Sea and Black Sea littorals of Eastern European nations, Poland is the only state dependent on Russian gas that will have a terminal in the near term. The disparity in the LNG import capacity may appear to condemn Eastern Europe to Russia's fickle energy policies, but LNG terminals in Western Europe can still bolster Eastern European energy security if the EU develops policies and energy infrastructure to support an internal European market. The importance of EU energy policy in reaction to European unconventional gas investments, including LNG terminals, will be examined in the next chapter. However, EU member states are not the only nations at a crossroad. Moscow's objection to transparency and adhering to EU regulations remains stalwart, but unconventional natural gas has provided Europe with an energy alternative. This shift in Eurasian energy dynamics warrants exploring Russia's political will and ability to adapt and the policy implications for energy exporting nations in the Caspian region as well.

## **IV. POLICY IMPLICATIONS OF THE ALTERED ENERGY BRIDGE**

Liquefied Natural Gas has already altered Eurasian energy dynamics. Russia no longer holds a monopolistic position in EU gas imports and its power to form a gas cartel has been severely limited; EU member states continue to diversify gas imports with 21 operational LNG terminals and 34 terminals planned or under construction; and diminished European demand for Caspian gas has facilitated a shift of Central Asian energy to China. Yet, the emergence of unconventional gas technologies does not render energy diplomacy obsolete. According to Daniel Yergin, government policy, not extractive capability, is the most critical factor for ensuring energy security.<sup>246</sup> Therefore, this chapter will examine the internal and external policy implications of the changes to Eurasia's Energy Bridge. This chapter will initially assess the impacts of LNG and shale gas on Russia's domestic energy industry and how an emerging international gas market will alter Russia's relations with Europe, the Caspian Basin, and China. I will then explore the future of the Caspian region, which is traditionally viewed as key to energy security. European LNG imports not only impact the Caspian nations' relations with the West, but will likely influence internal politics as well. Finally, this chapter will examine how natural gas innovations provide a significant incentive for EU internal market integration, which will lead to an investigation of future energy relations between the EU, Russia, and the Caspian hydrocarbon states.

### **A. RUSSIA: WILL MOSCOW GRIN AND BEAR IT?**

#### **1. Internal Policies**

President Putin's July 2012 speech to Russia's ambassadors touted economic power as the source of Russia's strength in foreign relations; it is the same in domestic politics.<sup>247</sup> Russia's political elite understand that hydrocarbon funds are key to economic stability and political popularity. Oil and gas exports currently support one-

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<sup>246</sup> "The Journal Report: Energy," *Wall Street Journal*, September 17, 2012, R3.

<sup>247</sup> Putin, "Russia in a Changing World: Stable Priorities and New Opportunities."



third of Russia's annual budget.<sup>248</sup> Therefore, economic prosperity and political stability depend on exporting hydrocarbons to Europe at high prices. This economic dynamic may provide a partial explanation for the Kremlin's strategy to consolidate hydrocarbon exporters into monopolistic corporations, like Gazprom, which controls ninety percent of Russia's gas exports. Yet, the EU's move to diversify imports through LNG erodes Russia's ability to demand high prices and long-term contracts. The possible extraction of shale gas by a handful of member states, especially Poland, exacerbates this problem. Consequently, future European gas prices may drop to half of the current oil-linked prices. Thus, a central girder of Russia's domestic stability is weakening and a substantial income stream for Russia's ruling elite is in jeopardy.<sup>249</sup>

Russia's industry leaders, politicians, and criminal entrepreneurs have utilized the energy sector to launder illicit profits while enriching high-level elites. The corrupt management of Gazprom has rendered it economically stagnant. Gazprom pays twice the global average construction cost to build its pipeline projects, and fifty percent of the funds Gazprom invests in development simply disappear.<sup>250</sup> In 2008, Gazprom's corruption and waste totaled \$40 billion, while its annual profits were only \$44.7 billion. Moreover, Gazprom's persistent utilization of intermediary companies is likely driven by rent-seeking activities. Russia's political elites and criminal entrepreneurs have developed a network of dummy corporations to build trans-national alliance with the aim of laundering illicit profits, while enriching high-level elites. By 2008, Gazprom had established fifty intermediary companies with the consent of political elites. Intermediaries serve little practical purpose in the energy trade; they do not own or operate pipeline infrastructure or expedite products and payments. These practices have

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<sup>248</sup> Andrei Shleifer and Daniel Treisman, "Why Moscow Says No: A Question of Russian Interests, Not Psychology," *Foreign Affairs*, 90, no. 1 (2011), 3; George H. Quester, "Energy Dependence and Political Power: Some Paradoxes," *Demokratizatsiya: The Journal of Post-Soviet Democratization* 15, no. 4 (October 2007), 450.

<sup>249</sup> Shleifer, "Why Moscow Says No," 5; Anders Aslund, "Big Setbacks Give Gazprom Impetus for Change," *Moscow Times*, September 27, 2012, accessed November 21, 2012, <http://www.themoscowtimes.com/opinion/article/big-setbacks-give-gazprom-impetus-for-change/468840.html>.

<sup>250</sup> Anders Aslund, "Why Gazprom Resembles a Crime Syndicate," *Moscow Times*, February 28, 2012, accessed November 21, 2012, <http://www.themoscowtimes.com/opinion/article/why-gazprom-resembles-a-crime-syndicate/453762.html>.

led some economic analysts to liken Gazprom to a crime syndicate funneling profits to its bosses.<sup>251</sup> Simply put, Russia's energy sector is poorly managed, corrupt, and weakening.

Gazprom's decision to cancel development of the Shtokman field in the Barents Sea is one indication of Russia's weak energy sector.<sup>252</sup> While the uncertainty in the European market plays some part in this decision, the lack of energy profitability in the domestic market, due to price subsidies, may be the greatest obstacle to new investment.<sup>253</sup> In addition to the need for new field development, much of Russia's gas infrastructure is a remnant of the Soviet pipeline system—in need of replacement.<sup>254</sup> In the light of Russia's waning energy sector, the opportunity for bold changes in the domestic market is ripe. Rent seeking will no longer support increased Russian living standards or competitiveness in the globalizing gas market. Gazprom's inefficiency and corruption are unlikely to be remedied, but the company could be separated into several medium-sized, private companies. Small corporations have been successful in Russia's oil industry and these firms may be able to exploit the large gas fields that Gazprom has been unable to develop.<sup>255</sup> Instead of subsidizing energy prices to bolster living standards, the Kremlin could deregulate energy and gas sectors to enable Russian business to use energy more efficiently and compete domestically and internationally. Additionally, commitment to the Kremlin's timeline for removing energy subsidy better position gas firms to make profits in the domestic market, which would increase the

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<sup>251</sup> Shleifer, "Why Moscow Says No," 5; Anders Aslund, "Why Gazprom Resembles a Crime Syndicate," "Transparency in Russia and Eurasia and Energy Interdependence," Chatham House, November 5, 2008, accessed June 10, 2012, <http://www.chathamhouse.org/publications/papers/view/108856>, 8–9, 11; Roman Kupchinsky, "Russian Energy Sector Opaqueness: Testimony before the Senate Foreign Relations Committee," June 12, 2008, U.S. Senate Committee on Foreign Relations, accessed November 8, 2012, <http://www.foreign.senate.gov/imo/media/doc/KupchinskyTestimony080612p.pdf>, 2–3; Smith, "Lack of Transparency in the Russian Energy Trade," 5–6.

<sup>252</sup> Aslund, "Big Setbacks Give Gazprom Impetus for Change."

<sup>253</sup> Robert F. Price, "Energy Reform in Russia and the Implications for European Energy Security," *Demokratizatsiya: The Journal of Post-Soviet Democratization* 15, no. 4 (October 2007), 406.

<sup>254</sup> Aslund, "Big Setbacks Give Gazprom Impetus for Change."

<sup>255</sup> Stephen J. Blank, ed. "Can Russia Reform? Economic, Political, and Military Perspectives." Strategic Studies Institute-U.S. Army War College. Accessed August 1, 2012. <http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?pubID=1111>, 38; Aslund, "Big Setbacks Give Gazprom Impetus for Change."

likelihood of infrastructure overhaul or investment—if private enterprises exist in the energy sector.<sup>256</sup> Although these changes to the domestic market may appear lofty, Russian leaders seem to grasp their dire reliance on the hydrocarbon industry. Yet, they will have to contend with the Kremlin to reform the energy sector.

Russian political elites have voiced support for improving the domestic energy market. Both President Medvedev and Putin affirmed that economic modernization is the key to reducing Russia's reliance on hydrocarbon exports.<sup>257</sup> To codify this political objective, the Ministry of Energy of the Russian Federation stated in the *Energy Strategy of Russia for the period up to 2030*, "The main objective of the Strategy is to set up innovative and efficient energy sector in Russia meeting the energy needs of a growing economy, as well as the foreign economic interests of the country."<sup>258</sup> In order to achieve this goal, the Ministry of Energy proposed: developing a competitive market environment, establishing a "stable institutional environment within the energy sector," improving energy efficiency in the Russian economy, and shifting economic reliance from hydrocarbons exports to high-technology production.<sup>259</sup> Although political elites understand the issues facing the energy sector and required solutions, Russian power brokers may prevent these necessary reforms.

Despite identifying the critical need to transform the Russian economy, Moscow's political will appears to be weak. The stagnation of Russia's energy sector would seem to be a significant catalyst for transition to free market principles—listed as a necessary solution by the Energy Ministry, but Russian leaders, going back to the Tsars, have historically preferred delegating authority over realms of the empire in exchange for money, reward, or political support.<sup>260</sup> Putin has had over a decade to recover from Yeltsin's kleptocratic systems, but he has merely installed a new version of rent seeking

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<sup>256</sup> Price, "Energy Reform in Russia," 406.

<sup>257</sup> Shleifer, "Why Moscow Says No," 3.

<sup>258</sup> Ministry of Energy of the Russian Federation, "Energy Strategy of Russia," 15.

<sup>259</sup> *Ibid.*, 12, 15–16.

<sup>260</sup> Blank, "Can Russia Reform?" 40

through Kremlin control of “strategic” industries.<sup>261</sup> Rosneft’s October 17, 2012 buy-out offer for TNK-BP is the most recent example of Kremlin consolidation. This deal was so significant that it required the formal approval of Vladimir Putin. If BP accepts Rosneft’s offer, the state-backed firm will become the world’s largest oil producer. Furthermore, BP will lose its position as the only foreign firm with veto rights in a Russian consortium. Rosneft’s purchase of TNK-BP may also prevent BP from entering a consortium to explore the Arctic—further limiting Russia’s development of new energy fields.<sup>262</sup> In addition to Moscow’s control of the energy sector, actors outside the Kremlin may also stymie necessary domestic reforms. Oligarchs in the manufacturing industry will likely oppose the removal of energy subsidies, which will raise operating costs and decrease their profits.<sup>263</sup> Yet, Putin’s imprisonment of Mikhail Khordokovsky—former owner of Yukos Oil—in May 2005 has appeared to curb oligarchic protestation. Some observers believe the economy’s reliance on hydrocarbon exports may divert Russia from investing in human capital and new technologies—including those in the energy field, which will force Russia to cope with the industry and technology it currently employs.<sup>264</sup> Yet, innovations in the gas industry—outside Russia—may be the greatest catalyst for transforming the domestic market.

There are signs that Russia industry leaders can reform. According to Robert Peston, BBC News Business Editor, the BP-TNK purchase should be viewed as an indication of “Rosneft’s gradual privatization and its ambition to be seen as one of the world’s most powerful oil companies.” The TNK-BP purchase may give BP twenty percent share in Rosneft. Consequently, the Russian oil firm will likely have access to BP’s trade techniques, technology, management experience, and budgeting methods. Moreover, the addition of BP in the Rosneft firm will enable Russia’s oil giant to attract

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<sup>261</sup> Blank, “Can Russia Reform?” 50.

<sup>262</sup> Robert Peston, “Will BP be bruised by Russian bear?” BBC News, October 22, 2012, accessed November 21, 2012, <http://www.bbc.co.uk/news/business-20026068>; “BP and Rosneft: Unhappy Families,” *Economist*, October 20, 2012, accessed November 21, 2012, <http://www.economist.com/news/business/21564914-russia%E2%80%99s-state-controlled-oil-giant-bids-become-new-supermajor-where-does-leave-bp>.

<sup>263</sup> Price, “Energy Reform in Russia,” 406.

<sup>264</sup> Quester, “Energy Dependence and Political Power,” 448; Price, “Energy Reform in Russia,” 406.

international investors. Exposure to BP's business practices and a new opportunity to attract international investors will likely be an impetus for Rosneft's managers to remove the company from the Kremlin's grasp.<sup>265</sup> Additionally, there are signals that Gazprom is preparing for a similar move away from Moscow's control. Despite decades of supporting Russian economic development, the depletion of Gazprom field—with little prospect of new development—coupled with lack of profits in the domestic sector and high operating costs are a strong incentive for Gazprom to remove itself as a “national donor” in order to ensure the company's survival and profitability.<sup>266</sup> Signs of Gazprom's struggle against the Kremlin have manifested themselves in Russian energy disputes. Russia's 2006–2007 energy clashes with Ukraine and Belarus were likely maneuvers to gain equity stakes in both nations transit infrastructure—not political disputes. In 2007, the Belarusian government was a political ally of the Kremlin; however, Moscow set a firm deadline for Belarus to surrender control of transit company, Beltransgaz, or begin paying market prices for energy. These early conflicts demonstrate that Russia sought control of downstream gas routes and intermediary companies instead of managing domestic politics in former Soviet and Warsaw Pact states. Gazprom's economic goals have led Russia into precarious relations with its European customers and may be a critical factor in many future policy decisions. Thus, Moscow may make imprudent foreign policy choices—such as supporting unstable dictators in Turkmenistan and Uzbekistan or aggravating tension with China over competition for energy resources in Central Asia—in Gazprom's search for capital gain.<sup>267</sup> Despite Putin's use of legal and extralegal means to influence the hydrocarbon industry and the pervasive corruption in the energy sector, powerful lobbies within the energy sector already exist and have persistently pushed for internal reforms to decrease energy subsidies and move towards liberalizing the energy industry to increase profits, international investment, and

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<sup>265</sup> Peston, “Will BP be bruised by Russian bear?”

<sup>266</sup> Price, “Energy Reform in Russia,” 406.

<sup>267</sup> “Does Gazprom's Tail Wag Russia's dog?” May, 22, 2008, Jane's Intelligence Review, accessed November 9, 2012, [http://search.janes.com/Search/documentView.do?docId=/content1/janesdata/mags/jiwr/history/frp2006/frp70012.htm@current&pageSelected=allJanes&keyword=Gazprom%2C Beltransgaz&backPath=http://search.janes.com/Search&Prod\\_Name=JIWK&](http://search.janes.com/Search/documentView.do?docId=/content1/janesdata/mags/jiwr/history/frp2006/frp70012.htm@current&pageSelected=allJanes&keyword=Gazprom%2C Beltransgaz&backPath=http://search.janes.com/Search&Prod_Name=JIWK&).

competitiveness in the world energy market. Moreover, the primary goal of Russian energy companies is to make a profit for licit or illicit reasons.<sup>268</sup>

## **2. External Relations**

Gazprom will likely liberalize due to its desire to make profits in the European market, if the EU continues to hold foreign companies to their internal standards. The gas giant will find it difficult to counter the European Commission's power to enforce EU regulations. Moreover, the European Commission's raids on Gazprom's offices last year dispelled the belief that ties with the Kremlin would give the company legal immunity.<sup>269</sup> Additionally, Gazprom has begun conforming to EU market regulations and integrating into the single energy market. In May 2012, Gazprom's deputy Chairman Alexander Medvedev stated that Lithuania authorities had pressured Gazprom into unbundling its pipeline import and transport companies in compliance with EU requirements.<sup>270</sup> On September 25, 2012, in contrast to Putin's decree, Alexander Medvedev admitted the company is planning on unbundling its European subsidiary companies to comply with EU antitrust laws and Third Energy Package.<sup>271</sup> Although Gazprom has voiced its willingness to comply with EC requirements, the company's share price has dropped, and Gazprom will likely receive fines and incur legal fees that could catalyze spending adjustments and improve management techniques to recover lost revenue.<sup>272</sup>

Gazprom's future share of the European gas market will likely be substantially reduced due to LNG and shale gas developments. The EU's planned LNG facilities can sustain two-thirds of the EU's projected gas requirements in 2020.<sup>273</sup> LNG and minor shale development in Europe will likely erode Russia's monopolistic footing or preclude

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<sup>268</sup> Quester, "Energy Dependence and Political Power," 450.

<sup>269</sup> Ibid.

<sup>270</sup> "PM: unbundling of Lithuanian Gas' operations - outcome of talks with shareholders," Baltic News Service, May 29, 2012, accessed November 5, 2012, <http://www.lexis-nexis.com/>.

<sup>271</sup> Rosemary Griffin, "Gazprom looks to Restructure European Gas Assets," Platts Oilgram News, September 26, 2012, accessed November 6, 2012, <http://www.lexis-nexis.com/>.

<sup>272</sup> "Gazprom shares down as EU opens antitrust probe," Huffington Post –Business, September 5, 2012, accessed November 23, 2012, <http://www.huffingtonpost.com/huff-wires/20120905/eu-russia-gazprom/>.

<sup>273</sup> Teusch, "Shale Gas and the EU Internal Gas Market: Beyond the Hype and Hysteria," 6.

the formation of a functional gas cartel. According to U.S. anti-trust policies, if four countries or companies control over fifty percent of a certain market, then collusion is able to occur without economic backlash. Simply put, the “4/50 rule of thumb” affirms cartels cannot exert control if non-cartel providers supply over fifty percent of the market.<sup>274</sup> Prior to expansion in European LNG imports, Russia’s market position appeared uncontested. In 2009, the EU-27 imported forty-three percent of its natural gas from Russia.<sup>275</sup> Furthermore, close to four-fifths of the EU-27’s imports of natural gas in 2009 came from Russia, Norway, or Algeria.<sup>276</sup> Yet, Europe’s LNG imports primarily originated in Qatar (forty-one percent), Algeria (twenty-two percent), and Nigeria (eighteen percent) by May 2012.<sup>277</sup> This expansion in LNG trade has diversified Europe’s exports from Russian dominance. Consequently, continued LNG investment could reduce Russia’s stake in non-FSU Europe to thirteen percent by 2040.<sup>278</sup> Thus, Gazprom’s position in the European market will likely continue to weaken and Brussels may begin to exert leverage vis-à-vis Moscow. Decreased European demand for Russian gas and increased global gas reserves continue to drive down European natural gas spot prices, and Gazprom’s oil indexed prices cannot compete with these lower LNG spot prices.<sup>279</sup>

The Kremlin and Russia’s Energy Ministry understand Russia’s position vis-à-vis Europe. Gazprom needs to sell its gas on the European market. Russia’s pipeline system, and lack of pipelines to Asia, requires most Russian gas to be sold in the European market. Moreover, Russia’s domestic economy and political stability are founding on hydrocarbon exports.<sup>280</sup> In 2000, before Putin became Russia’s President he declared,

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<sup>274</sup> Moran, “The Globalization of America’s Defense Industries: Managing the Threat of Foreign Dependence,” 80–81.

<sup>275</sup> Fernández, “The EU and Natural Gas from Central Asia: Is Nabucco the Best Option?” 1.

<sup>276</sup> European Commission – Eurostat, “Energy production and imports.”

<sup>277</sup> Natali, “The U.S. Natural Gas Revolution,” 8.

<sup>278</sup> Hurst, “Liquefied Natural Gas: The Next Prize?” 272.

<sup>279</sup> “Burst Valves: The European Union squeezes Gazprom. Russia retaliates,” *Economist*.

<sup>280</sup> Quester, “Energy Dependence and Political Power,” 447.

“There can be no superpower where weakness and poverty reigns.”<sup>281</sup> This affirmation was reiterated in Putin’s recent statement that Russian economic strength is its greatest tool in foreign policy.<sup>282</sup> Russia’s current energy strategy implies that Europe and the CIS will remain the primary consumer market through 2030. Consequently, “maintenance of Russia’s stable relations with its traditional consumer of energy resources and development of equally stable relations on new energy markets will be one of the key principles.”<sup>283</sup> Therefore, Russian gas cutoffs may not be a sign of political control of powerful energy blackmail. The gas-wars in Eastern Europe have not increased Moscow’s power, but publicized Gazprom as an unreliable energy provider.<sup>284</sup> By ceasing gas deliveries to Ukraine in 2009, Russia angered its largest consumer market and catalyzed Europe’s drive for energy diversity. According to Andrei Shleifer, Professor of Economics at Harvard University, “That the Kremlin had to shoot itself in the foot to get Kiev’s attention reveals the limits of its blackmail power.”<sup>285</sup> Despite past episodes of energy blackmail, bountiful hydrocarbon assets have not guaranteed Russian political control in former Soviet and Warsaw pact states. For example, the Czech Republic, Estonia, and Poland—three of the states most dependent on Russian energy—have all recently joined NATO, offered to host NATO missile defense, and openly criticized Russian policy.<sup>286</sup> Gazprom is facing a European gas market—the only market that Russian gas companies can make substantial profits—that is diversifying away from Russian gas and instituting reforms that will weaken the Kremlin’s ability to demand preferential treatment. Moscow’s response to the European Commission’s 2012 antitrust case against Gazprom provides an opportune lens to view Russia’s ability to adjust to evolving EU-Russian energy dynamics.

On September 11, 2012, President Putin responded to the European Commission’s antitrust investigation of by signing an official decree that forbade

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<sup>281</sup> Shleifer, “Why Moscow Says No,” 3.

<sup>282</sup> Putin, “Russia in a Changing World.”

<sup>283</sup> Ministry of Energy of the Russian Federation, “Energy Strategy of Russia,” 22–23.

<sup>284</sup> “Burst Valves: The European Union squeezes Gazprom. Russia retaliates,” *Economist*.

<sup>285</sup> Shleifer, “Why Moscow Says No,” 7.

<sup>286</sup> Shleifer, “Why Moscow Says No,” 6.



“strategic” firms from negotiating or cooperating with “foreign investigations” with Moscow’s permission.<sup>287</sup> He also commented, “The EU subsidized the economies of Eastern European countries...Now it seems someone in the EU has decided to shift part of the burden, some of the subsidies, onto us.”<sup>288</sup> Thus, Putin’s reactions to the antitrust probe display a lack of understanding of market forces and a desire to control Gazprom’s integration into a free market system. In addition to the Kremlin decree, some analysts believe Moscow has used pricing to punish nations that are moving forward with EU market reforms, such as Lithuania and Moldova.<sup>289</sup> Consequently, Anders Aslund—former economic adviser to Kyrgyzstan, Russia, and Ukraine—believes Gazprom will be “headed for the dustbin of history” because the company has become irrevocably state controlled and will not conform to the rules of the European market; however, there are indicators that Gazprom will survive its row with the European Commission.<sup>290</sup> The company may have shelved its development of the Shtokman field, but it has recently enlarged its trading division in the United Kingdom, completed the second undersea Nord Stream pipeline, forecasted South Stream pipeline construction for early 2013, and begun studying recoverable shale gas deposits in Russia.<sup>291</sup> Gazprom’s managers and investors, driven by the desire for profits, will likely strive to keep the company engaged in the European market—its only profitable sector. Therefore, it may be a bit early to consign Gazprom to strategic irrelevance. Nevertheless, Russia’s diminished leverage in the European market have also affected its position in the CIS.

Russia has traditionally sought control of the energy bridge from Central Asia to Europe to shore-up its influence in CIS nations, former Soviet republics, and Europe, but decreased European gas demand has propagated a rapid decline in Russia’s gas imports from Central Asia.<sup>292</sup> Central Asian exports to Russia are predominantly used to meet Russia’s domestic energy needs, and Central Asian states have offset declining energy

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<sup>287</sup> “Burst Valves: The European Union squeezes Gazprom. Russia retaliates,” *Economist*.

<sup>288</sup> Aslund, “Big Setbacks Give Gazprom Impetus for Change.”

<sup>289</sup> “Burst Valves: The European Union squeezes Gazprom. Russia retaliates,” *Economist*.

<sup>290</sup> Aslund, “Big Setbacks Give Gazprom Impetus for Change.”

<sup>291</sup> “Burst Valves: The European Union squeezes Gazprom. Russia retaliates,” *Economist*.

<sup>292</sup> Vladimir Putin, “Russia in a Changing World.”

relations with Russia by shifted gas exports to China, which is more desirable to the Kremlin than Central Asian gas exporters shipping supplies directly to Europe.<sup>293</sup> Consequently, Russia's soft power draw and economic influence have waned. Still, some analysts believe Russia will maintain its role as the primary military power due to China's non-interventionists policies.<sup>294</sup> In the face of declining exports to Europe, Russia has contemplated increasing exports to eastern markets (China, Korea, Japan, and Taiwan). Russia's energy ministry asserts that its energy firms must alter their role in the international market by diversifying export destinations.<sup>295</sup> Yet, current pipeline infrastructure cannot support a large-scale shift to the east. Moreover, Russian exports to this region may only increase by thirteen percent through 2040, which would give Moscow less geopolitical impact than it probably desires.<sup>296</sup> Russian energy prospects may appear bleak, but the IEA projects that Russia will remain the world's largest gas supplier through 2035.<sup>297</sup> This gas will find a market, if it is priced competitively and conforms to regulations in consumer nations. Nevertheless, the waning power of Russia's "energy weapon" has repercussion in the Caspian Region and the EU as well.

## **B. CASPIAN REGION: FUTURE OF THE "NEW NORTH SEA"**

The Caspian region has traditionally been hailed as a linchpin of European energy diversity; however, expansion of unconventional natural gas technologies (shale and LNG) has altered the region's role in Eurasian energy relations.<sup>298</sup> After the collapse of the Soviet Union, Europe and the United States anticipated a Caspian boon to the global energy market. Some analysts referred to the region as the New North Sea and predicted that Caspian exports would provide eight percent of the world's future oil supply.

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<sup>293</sup> Denison, "Game Over?" 5; Shleifer, "Why Moscow Says No," 5.

<sup>294</sup> Henrik Bergsager, "China, Russia and Central Asia: The Energy Dilemma," FNI Report 16 (Fridtjof Nansens Institut, September 2012), accessed November 5, 2012, <http://www.fni.no/doc&pdf/FNI-R1612.pdf>, 18; Laruelle, "Russia 'is a Delicate Matter?'" 4.

<sup>295</sup> Ministry of Energy of the Russian Federation, "Energy Strategy of Russia," 23.

<sup>296</sup> Bergsager, "China, Russia and Central Asia," 6; Medlock, *Shale Gas and U.S. National Security*, 47.

<sup>297</sup> International Energy Agency, *World Energy Outlook 2011*, 155.

<sup>298</sup> Mankoff, "Eurasian Energy Security," 22.

Moreover, the region was viewed as a solution to reliance on Middle Eastern oil and its geographic position between Asia and Europe made it an essential component of the natural gas bridge to Europe.<sup>299</sup> Other analysts have tempered these excited forecasts with predictions of hydrocarbon shortages leading to intense conflict. For example, Michael Klare, U.S. defense policy and oil analyst, believes military confrontation between the United States and China over Central Asian energy sources is an emerging reality.<sup>300</sup> Yet, there is a current oversupply of natural gas in the global market due to new technology to extract unconventional gas sources and the globalization of the gas market through LNG technology. Russia's share of Europe's natural gas market has receded due to LNG shipments sold at lower spot prices, which has significantly reduced Gazprom's need for Central Asian gas. Currently, Russia uses natural gas from Turkmenistan and Kazakhstan to meet its domestic energy needs.<sup>301</sup> Therefore, shale gas and LNG have nearly eliminated the threat of intense natural gas competition in the Caspian. Although this de-escalation of resource competition may be a positive indicator of reduced energy conflicts, the Caspian will likely be irrevocably changed.

### **1. External Relations**

After the Soviet era, the diverse South Caucasus and Central Asian littorals were often viewed as one region—the Caspian. However, a unified role in energy relations will likely never materialize in the Caspian Basin. Despite monetary investment and diplomatic endeavors from the EU and United States, Central Asian gas has not been able to bridge the Caspian Sea. Nevertheless, a December 2012 Minority Staff Report for the U.S. Senate Committee on Foreign Relations proposed leveraging Russia's weakened energy relationship vis-à-vis Europe to reenergize development of the Southern gas corridor and support U.S. policy aims to further isolate Iran, foster independence of FSU

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<sup>299</sup> Cohen, "Energy Security in the Caspian Basin," 124; Robert Ebel and Rajan Menon, ed., *Energy and Conflict in Central Asia and the Caucasus* (New York: Rowman & Littlefield Publishers, 2000), 1 & 126.

<sup>300</sup> Cohen, "Energy Security in the Caspian Basin," 110; Klare, "There Will Be Blood," 59.

<sup>301</sup> Denison, "Game Over?" 1, 3–4.

sates in the Caucasus and Central Asia, and diversify NATO gas sources.<sup>302</sup> Yet, Azerbaijan is the key center of the Southern gas corridor as the gateway for Central Asian gas. In addition to the hurdles to a trans-Caspian pipeline examined in the first chapter of this thesis, persistent risk of Caspian maritime conflicts may preclude foreign investment. Although Azerbaijan and Turkmenistan recently ended their naval confrontation over ownership of the Serdar/Kyapaz gas field in the Caspian, this conflict may resume unexpectedly. Additionally, Iran and Azerbaijan could clash over the Sardar Jangal oil field in the proximity of their disputed maritime border as they have in the past.<sup>303</sup> These conflicts render Caspian seabed delineation unlikely, which is pivotal to developing a trans-Caspian energy bridge. Most hydrocarbon assets on the western coast (Azerbaijan) will likely continue to head to west via the BTE pipeline, while resources from the east littorals (Kazakhstan and Turkmenistan) will continue to be exported north to Russia and east to China.<sup>304</sup> The BTE and Baku-Tblisi-Ceyhan (BTC) pipelines have empowered Baku to drift from Moscow's sphere of privileged interest towards the west, and Azeri gas is expected to directly link into European markets before 2020.<sup>305</sup> Incidentally, Turkey may become a more significant player in the Caspian gas market. In 2011, Azerbaijan and Turkey signed a bilateral energy deal to construct the Trans-Anatolian Pipeline (TANAP). This project is the first forward movement in the Southern gas corridor since 2009. This pipeline is projected to deliver sixteen bcm/year of natural gas to supply Turkey and Central Europe.<sup>306</sup> Thus, Azerbaijan will likely continue to drift west.

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<sup>302</sup> United States Senate, "Energy and Security from the Caspian to Europe," A Minority Staff Report prepared for the use of the Committee on Foreign Relations, accessed January 11, 2013, <http://www.foreign.senate.gov/publications/download/energy-and-security-from-the-caspian-to-europe> 2 & 5.

<sup>303</sup> Ibid., 3; Caspian Research Institute, "The Caspian: Predictions for 2013," January 2, 2013, accessed January 11, 2013, <http://caspianresearch.com/2013/01/02/the-caspian-predictions-for-2013/>.

<sup>304</sup> Alexandros Petersen, "In the Hunt for Caspian Gas, the EU Can Learn from China," European Policy Center, 17 October 2012, Accessed November 6, 2012, [http://www.epc.eu/documents/uploads/pub\\_2991\\_in\\_the\\_hunt\\_for\\_caspian\\_gas.pdf](http://www.epc.eu/documents/uploads/pub_2991_in_the_hunt_for_caspian_gas.pdf), 1; Ebel, *Energy and Conflict in Central Asia and the Caucasus*, 124.

<sup>305</sup> Mankoff, "Eurasian Energy Security," 23.

<sup>306</sup> United States Senate, "Energy and Security from the Caspian to Europe," 3.

Conversely, Central Asian gas reaches less of the European and Russian markets and is increasingly exported to China.<sup>307</sup> Central Asian hydrocarbon exporters have become adept at playing Russia, China, and Europe against the other to obtain the relationship most conducive to Central Asian foreign-policy interests and sovereignty, but unconventional gas technologies have reduced the competition for Central Asian gas and proximate bargaining power of Central Asian hydrocarbon exporters. Turkey has expressed interest in purchasing gas from Turkmenistan; however, a trans-Caspian pipeline would be required to deliver this energy supply to the Turkish market. Moreover, Azerbaijan is projected to control fifty-one percent of the proposed TANAP conduit to Turkey. Therefore, Baku could prevent Turkmen gas from reaching Turkey: recent and historical gas disputes between the two states make this likely.<sup>308</sup>

Unconventional natural developments, coupled with a lack of export routes to Europe, render China the most attractive customer—possibly the sole customer—for Central Asian gas, which could severely limit these republics’ maneuver room in future energy negotiations.<sup>309</sup> China has successfully utilized a strategy of offsetting Russia’s political influence with economic integration through the SCO and energy backed loans.<sup>310</sup> EU interests in Central Asia will not likely focus on hydrocarbon extraction, and Russia’s reduced need for Central Asian energy may result in diminished influence in the region.<sup>311</sup> Moreover, Russia’s waning impact and China’s non-interventionist approach will directly impact Central Asian internal policies.

## **2. Internal Policies**

In Central Asia, hydrocarbon profits are often used to enrich and empower ruling elites, drive economic development, and maintain sovereignty; yet, unconventional gas

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<sup>307</sup> Bergsager, “China, Russia and Central Asia,” 15.

<sup>308</sup> United States Senate, “Energy and Security from the Caspian to Europe,” 3–4.

<sup>309</sup> Jean A. Garrison and Ahad Abdurahmonov, “Explaining the Central Asian Energy Game: Complex Interdependence and How Small States Influence Their Big Neighbors,” *Asian Perspective* 35 (2011), 399; Denison, “Game Over?” 5.

<sup>310</sup> Bergsager, “China, Russia and Central Asia,” 15, 18.

<sup>311</sup> Mankoff, “Eurasian Energy Security,” 36; Laruelle, “Russia ‘is a Delicate Matter?’” 3; Bergsager, “China, Russia and Central Asia,” 9.

developments have altered the motor of this dynamic—great power competition.<sup>312</sup> Michael Denison, former Special Adviser to the UK Secretary of State for Foreign and Commonwealth Affairs, predicts that the lack of resource competition for Central Asian gas will result in energy geopolitics becoming the “local politics of energy.”<sup>313</sup> If the local politics of energy leads to domestic political upheaval, Central Asian leaders will likely have to handle internal challenges on their own. Russia may refuse to intervene due to strategic consideration or lack of capabilities; moreover, Moscow’s recent inability to follow through on political and investment promises may highlight a lack of commitment to the region. China’s economic-driven, non-intervention strategy does not fill the vacuum of waning Russian support for Central Asian leaders.<sup>314</sup> Therefore, the lack of resource competition, has provided Central Asian leaders the greatest sovereignty of all—freedom to manage domestic policies and responsibility for maintaining domestic stability.

### **C. EUROPEAN UNION: MARKET LIBERALIZATION—THE CRITICAL INFRASTRUCTURE**

#### **1. Internal Policies**

EU member states have long employed energy nationalism as Gunther Oettinger—EU Energy Commissioner—cautioned, “Energy supplies are simply too important to view as a national prerogative.”<sup>315</sup> Thus, a unified energy market may be the “critical infrastructure” to fulfilling EU energy security. Although the 1973 Arab Embargo illustrated that national companies do not buffer a state from upstream manipulation, European nations have traditionally relied on national champions to foster energy security. During this oil crisis, the United Kingdom was still subjected to OPEC pressure because BP followed the guidance of OPEC instead of the UK.<sup>316</sup> Moreover,

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<sup>312</sup> Denison, “Game Over?” 1; Cohen, “Energy Security in the Caspian Basin,” 118.

<sup>313</sup> Denison, “Game Over?” 5.

<sup>314</sup> Bergsager, “China, Russia and Central Asia,” 9; Laruelle, “Russia ‘is a Delicate Matter?’” 4.

<sup>315</sup> Oettinger, “Energy Security for Europe.”

<sup>316</sup> Moran, ““The Globalization of America’s Defense Industries: Managing the Threat of Foreign Dependence,” 59.

large EU energy firms and their patron governments—such as France, Germany, and Italy—have stalled efforts to create an internal European energy market.

LNG innovations may provide the decisive incentive to unify Europe's energy market. This energy source has provided physical liquidity to global markets, enabled EU member states to respond to single supply shocks, and lowered gas prices through arbitrage with Russia.<sup>317</sup> Nevertheless, European LNG terminal often operate at fifty-percent capacity. This untapped vital infrastructure illuminates an imbalance in the internal market. Most EU LNG terminals are in Western Europe, while Eastern European member states—most susceptible to energy disruptions—have no LNG terminals to diversify supplies. Therefore, LNG imports to the west could be a critical tool to ensure energy security in Eastern Europe. Oettinger affirms, “Just take the example of the gas crisis in January 2009. If the internal market had been functioning and the necessary infrastructure had been in place to transport gas to where it was needed, nobody would have had to stay in the cold.”<sup>318</sup> Incidentally, this event has spurred EU investment in LNG terminals, like the Świnoujście terminal in Poland, and pipeline interconnectors to all member states by 2015.<sup>319</sup>

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<sup>317</sup> Medlock, *Shale Gas and U.S. National Security*, 29.

<sup>318</sup> Oettinger, “Energy Security for Europe.”

<sup>319</sup> *Ibid.*”

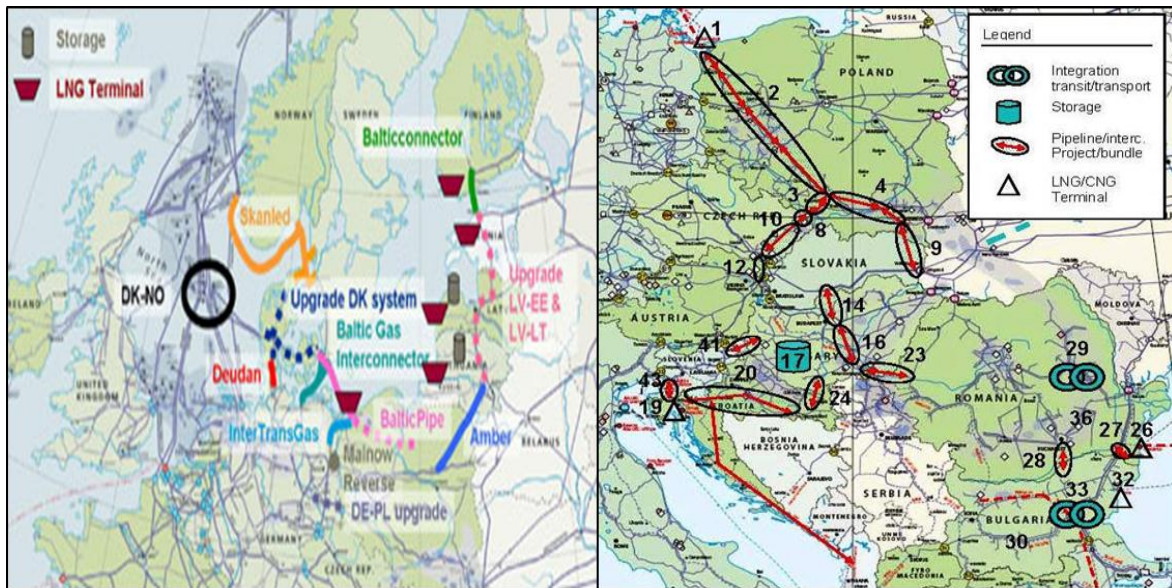


Figure 5. Baltic and Central-Eastern European Market Interconnection Plans<sup>320</sup>

The EU is well on its way to building an extensive interconnector network in the FSU and former Warsaw Pact territory. Poland is currently connected to Germany and Belarus through the Laow and Teterovka interconnectors; interconnector pipelines already link Hungary with Romania and Croatia; connection pipelines are currently under construction from Bulgaria to Romania; Hungary and Slovakia have dedicated funds to construct an interconnector by 2015; and Bulgaria will begin another pipeline connection to Greece next year. In 2008, the European Commission (EC) listed the interconnection of the Baltic Region as one of its six “priority energy infrastructure projects” with the goal of integrating the three Baltic States into the European market. This Baltic European Market Interconnector Plan requires the construction of 18 pipelines. Two of the interconnectors have already been completed. Of the sixteen current projects, only one has been delayed due to funding constraints. Moreover, the EC is examining the feasibility of building a North-South gas interconnector from the Baltic Sea to the Adriatic Sea that is estimated to reduce gas purchase prices by 15 percent compared to

<sup>320</sup> European Commission, “Energy: Baltic Energy Market Interconnection Plan,” accessed November 23, 2012, [http://ec.europa.eu/energy/infrastructure/bemip\\_en.htm](http://ec.europa.eu/energy/infrastructure/bemip_en.htm); European Commission, “Energy: North-South Interconnections in Central-Eastern Europe,” accessed January 10, 2013, [http://ec.europa.eu/energy/infrastructure/north\\_south\\_east\\_en.htm](http://ec.europa.eu/energy/infrastructure/north_south_east_en.htm).



2011.<sup>321</sup> Despite the apparent success of the EU's interconnector programs, providing political capital for new infrastructure projects should not be Brussels' primary focus. Regulatory framework is the key hurdle to a unified market.

Instead of expending political will on infrastructure projects (pipelines, LNG facilities, storage terminals, and shale extraction), EU energy security may be better realized through regulatory action that leverages dynamic unconventional gas resources. While European shale gas production has received much media attention, it will not sufficiently alter energy dynamics in the short-term and the "shale gas hype" may actually reduce member states' political support for internal market integration. Moreover, a European level approach to shale gas exploration that requires transparency and monitors environmental impacts will likely be required before large scale European shale exploration materializes.<sup>322</sup> Yet, national efforts to engage the public on shale gas's merits may not yield significant results, but prioritizing market integration over lobbying for specific energy technologies will likely bolster long-term shale gas development. Investors will be assured of a more stable and inclusive European gas market.<sup>323</sup> Simply restated, energy firms are more likely to invest when they are certain their gas will reach demanding consumers. For example, North America's unbundled market structure was a critical factor that enabled the U.S. shale gas boom because smaller firms could enter the shale gas market with confidence their gas would reach U.S. domestic customers.<sup>324</sup> Moreover, the U.S. shale gas boom has directed greater quantities of LNG to Europe, but increased LNG imports to Western Europe does not guarantee EU energy security.

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<sup>321</sup> "Think Tank Sees Hungarian Slovak Pipeline as Advantageous," BBC Monitoring Europe, July 31, 2012, accessed November 15, 2012, <http://www.lexis-nexis.com/>; "Gaz-System to Decide on Cross-Border Investments in 2013," Polish News Bulletin, September 17, 2012, accessed November 15, 2012, <http://www.lexis-nexis.com/>; "Bulgarian Economy Minister, Diplomats Discuss Energy Strategy, Efficiency," BBC Monitoring Europe, October 4, 2012, accessed November 16, 2012, <http://www.lexis-nexis.com/>; European Commission, "Baltic Energy Market Interconnection Plan;" European Commission, "Baltic Energy Market Interconnector Plan—Fourth Progress Report," June 2012, accessed November 23, 2012, [http://ec.europa.eu/energy/infrastructure/doc/20121016\\_4rd\\_bemip\\_progress\\_report\\_final.pdf](http://ec.europa.eu/energy/infrastructure/doc/20121016_4rd_bemip_progress_report_final.pdf), 14–21.

<sup>322</sup> Stevens, "The 'Shale Gas Revolution'" 8.

<sup>323</sup> Teusch, "Shale Gas and the EU Internal Gas Market," 7–8.

<sup>324</sup> Medlock, *Shale Gas and U.S. National Security*, 14.

Building interconnectors is a step to bridging the east/west gas divide, but unifying the European energy market is the most important energy security requirement and most likely method to reduce the geopolitical risk of dependence on Russian energy.<sup>325</sup> The EU's Third Energy Package, adopted on September 19, 2007, addresses the shortfalls of creating an internal gas market. The goal of this legislation was to create a competitive gas market—open to all suppliers—through the unbundling of pipeline systems, cooperation of national regulators, and investigation of monopolistic companies—regardless of national ownership.<sup>326</sup> Yet, the EU's energy directive was poorly implemented due to lack of interest and incentive because large European energy suppliers utilized long-term pipeline contracts and enjoyed near monopolies in their respective domestic markets.<sup>327</sup> Moreover, many European energy companies were national champions that held sway over their governments through political lobbying. Several EU member states with strong energy ties to Russia—Germany, France, and Italy—have blocked Brussels' moves towards market integration for over a decade.<sup>328</sup> Thus, the EU's goal to complete the internal energy market by 2015 appeared in jeopardy; yet, several events indicate a shift in member states' political will to liberalize Europe's gas market.<sup>329</sup> The 2009 Russo-Ukrainian gas dispute galvanized member state support—even from Germany—for greater market integration.<sup>330</sup> In February 2011, EU Heads of States and Governments reaffirmed their commitment to remove all barriers to

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<sup>325</sup> Natali, "The U.S. Natural Gas Revolution," 29; Anderson, "Europe's Dependence on Russian Natural Gas," 48; Mankoff, "Eurasian Energy Security," 38.

<sup>326</sup> Howard V. Rogers, "LNG Trade-flows in the Atlantic Basin: Trends and Discontinuities," Oxford Institute for Energy Studies, March 2010, accessed November 23, 2012, <http://www.oxfordenergy.org/wpcms/wp-content/uploads/2010/11/NG41-LNGTradeFlowsInTheAtlanticBasinTrendsandDiscontinuities-HowardRogers-2010.pdf>, 20; European Commission, "Single market for gas & electricity," accessed November 6, 2012, [http://ec.europa.eu/energy/gas\\_electricity/legislation/legislation\\_en.htm](http://ec.europa.eu/energy/gas_electricity/legislation/legislation_en.htm).

<sup>327</sup> Rogers, "LNG Trade-flows in the Atlantic Basin," 20; Natali, "The U.S. Natural Gas Revolution," 25.

<sup>328</sup> Natali, "The U.S. Natural Gas Revolution," 26; Mankoff, "Eurasian Energy Security," 27–28; Michael Cohen, "Russia and the European Union: An Outlook for Collaboration and Competition in European Natural Gas Markets," *Demokratizatsiya: The Journal of Post-Soviet Democratization* 15, no. 4 (October 2007), 388.

<sup>329</sup> Oettinger, "Energy Security for Europe."

<sup>330</sup> Mankoff, "Eurasian Energy Security," 27.

the internal energy market by 2014.<sup>331</sup> Most recently, the EC has begun to enforce the Third Energy Package by referring delinquent member states to the EU Court of Justice. On October 24, 2012, Slovenia and Poland were both accused of “failing to fully transpose the EU internal energy market rules.” Furthermore, the EC declared that other member states might be referred to the Court of Justice.<sup>332</sup> As a result, national governments have forced monopolistic energy companies—including those Gazprom partially owns—to divest assets and unbundle pipeline ownership in compliance with the Third Energy Package.<sup>333</sup> Still, pipeline unbundling is not the most significant obstacle to bridging the east/west gas divide.

Eastern European states could diversify energy supplies—increasing EU energy security—if the EU improved regulations to render cross-border shipping faster and easier. Lack of coordination among member states and the preponderance of Transport System Operators (TSOs) make cross-border gas flows inefficient. For example, a gas supplier must ensure that the transport capacities requests submitted to several TSOs (often one per member state) match along the entire transport route. This coordination is difficult because member states and TSOs have different compliance rules and varying systems to allocate pipeline capacity and manage gas flows.<sup>334</sup> Consequently, Eastern European states are unlikely to reap the benefits of increased LNG development in Western Europe under the current cross-border framework. Yet, the EC’s enforcement of unbundling pipeline ownership could positively impact cross-border trade. Many vertical gas monopolies, forced to divest national pipeline infrastructure ownership, have begun consolidating holdings across borders. These horizontal acquisitions may actually bolster cross-border harmonization as large companies will to seek streamline gas shipments to increase profits.<sup>335</sup> Removing barriers to cross-border gas trade, possibly through the

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<sup>331</sup> European Commission, “Internal energy Market: Commission Refers Poland and Slovenia to Court for Failing to Fully Transpose EU Rules,” Press Release—October 24, 2012, accessed November, 23, 2012, [http://europa.eu/rapid/press-release\\_IP-12-1139\\_en.htm](http://europa.eu/rapid/press-release_IP-12-1139_en.htm).”

<sup>332</sup> Ibid.

<sup>333</sup> Natali, “The U.S. Natural Gas Revolution,” 26; “PM: Unbundling of Lithuanian Gas’ Operation,” Baltic News Service.”

<sup>334</sup> Natali, “The U.S. Natural Gas Revolution,” 15, 18–19.

<sup>335</sup> Natali, “The U.S. Natural Gas Revolution,” 26.

implementation of an EU energy passport and European-level oversight, could enable a small, independence energy firm to import LNG in Western Europe in order to sell this gas in Central and Eastern Europe. Thus, internal policies will deliver the greatest boon to EU energy security, which will also influence foreign energy relations. Oettinger assert, “The completion of the internal market and a strong external voice are two sides of the same coin.”<sup>336</sup> The internal market will allow the EU to leverage LNG and minor shale developments to strengthen its position vis-à-vis unreliable and aggressive energy providers.

## **2. External Relations**

The Eurasian Energy Bridge has been rife with insecurity. Moscow has used gas disruptions and price disputes or threatened to impose these sanctions over forty times since the collapse of the Soviet Union—reflecting the Kremlin’s willingness to use its hydrocarbon assets for political blackmail. Russia’s actions illustrate that Moscow believes customer governments will not challenge Russia’s aggressive energy diplomacy.<sup>337</sup> Moscow’s resolve to be the “key center” of the energy flow to Europe is also resilient as evidenced in President Putin’s decree to block the EC’s anti-trust investigation of Gazprom. Yet, unconventional natural gas has bolstered EU geopolitical clout—concerning energy relations—because LNG addresses the fundamental principles of energy security: diversification of supply, system buffers to serve against supply shocks, and recognition of “the reality of integration.”<sup>338</sup>

EU customers have several alternatives to Russian gas through LNG shipments. In 2012, Europe’s LNG imports primarily originated in Qatar, Algeria, and Nigeria. In the future, the EU’s most likely LNG providers will be Qatar, Saudi Arabia, the United Arab Emirates, Algeria, Nigeria, and possibly Iran. In order to prevent an LNG monopoly or cartel, Richard Anderson—a Senior Fellow in the George C. Marshall Center’s

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<sup>336</sup> Oettinger, “Energy Security for Europe.”

<sup>337</sup> Ghaleb, “Natural Gas as an Instrument of Russian State Power,” 127; Cohen, “Russia: The Flawed Energy Superpower,” 92–93.

<sup>338</sup> Daniel Yergin, “Ensuring Energy Security,” 7; Quester, “Energy Dependence and Political Power: Some Paradoxes,” 450.

College of International and Security Studies—suggests balancing upstream investments so that no particular supplier acquires more than 20 percent of the EU LNG import market.<sup>339</sup> Brussels’ near-realization of an integrated market enables LNG to serve as a system buffer as well through redirecting LNG shipments to areas most affected by supply disruptions or providing natural gas from storage facilities via the interconnector network. Despite the hurdles to constructing a unified energy market, facing “the reality of integration” in the globalizing gas market may be the EU’s most precarious energy security endeavor.

As the natural gas market globalizes through unconventional innovations, Yergin’s “reality of integration” principle asserts energy security will depend greatly on foreign relations. Oettinger echoes Yergin’s principle: “To exploit the EU’s geopolitical potential, we must reinforce our cooperation with strategic partners...with the objective of promoting regulatory convergence.”<sup>340</sup> Despite Russia’s unreliable history, it will remain the largest gas exporter in the world and Gazprom will likely provide significant supplies to Europe’s natural gas market. Therefore, energy security vis-à-vis Russia should be approached with a dual approach: integrating Russia into the European market to decrease its ability to leverage energy blackmail, while diversifying energy sources to ensure that integration with Gazprom does not heighten energy dependence. Furthermore, diversification may compel Moscow to integrate in a mutually reinforcing feedback loop. The EC’s September 4, 2012 antitrust probe against Gazprom showed the Kremlin that if Russia does not conform, it will lose significant market share, especially in Eastern Europe—where the Kremlin is keen to exercise influence. Moreover, the EC will probably fine Gazprom billions of Euros and deem oil-linked prices, long-term contracts, take-or-pay clauses, and prohibitions against reselling gas anti-competitive.<sup>341</sup> Consequently, Gazprom’s business model will require significant changes. Enforcing the Third Energy Package regulations will also make it difficult for Russia to employ

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<sup>339</sup> Medlock, *Shale Gas and U.S. National Security*, 45; Anderson, “Europe’s Dependence on Russian Natural Gas,” 50.

<sup>340</sup> Yergin, “Ensuring Energy Security,” 7; Oettinger, “Energy Security for Europe.”

<sup>341</sup> Aslund, “Big Setbacks Give Gazprom Impetus for Change.”

bilateral energy relations. Furthermore, the anti-trust investigation is a message from Brussels to member states that Gazprom is no longer treated as a special case.<sup>342</sup>

The European Union should also seek to incorporate Ukraine, Belarus, and other non-EU FSU states into compliance with the EU's market rules. This integration may foster cooperation between EU, Russia, and Ukraine for infrastructure upgrades that can provide inexpensive pipeline gas through networks owned by independent energy firms—decreasing Russian control and Ukraine's reliance on state-owned companies as well. This model could be employed in Belarus as well. Integrating Russian and non-EU firms companies into Europe's gas market may provide inexpensive pipeline gas, in competition with LNG sources, and foster economic interchanges with Russia. As Russia sells its gas in the European market, it is likely to purchase high-tech and industrial goods in return. Maintaining economic interdependence may not only reduce the threat of overt military conflict, but also transmits European value and the benefit of market economies to Russian leaders and citizens as well. European values could also reemerge at the forefront of EU engagement in the Caspian.

Most European governments have viewed the Caspian region as a key to EU energy security. Yet, Russian and Chinese engagement has hindered Brussels's role in the region. Even high-level EU engagement did not secure natural gas from Turkmenistan or forward development on trans-Caspian energy ties.<sup>343</sup> However, unconventional gas developments have the potential to eliminate Europe's need for Caspian gas and diffuse zero sum energy competition in the region. Consequently, the EU could remain a marginal influence in the Caspian Region, especially Central Asia.<sup>344</sup> Some analysts believe western governments and firms should model its energy relations after China's use of energy backed loans and limited political involvement.<sup>345</sup> Yet, Russia's lack of

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<sup>342</sup> Mankoff, "Eurasian Energy Security," 25 & 31; "Burst Valves: The European Union squeezes Gazprom. Russia retaliates," *Economist*.

<sup>343</sup> Neil Melvin, "The EU Needs a New Values-Based Realism for its Central Asia Strategy," Europe-Central Asian Monitoring, Policy Brief No 28, October 2012, accessed November 6, 2012, [http://www.fride.org/download/PB\\_28\\_Eng.pdf](http://www.fride.org/download/PB_28_Eng.pdf), 2.

<sup>344</sup> Melvin, "The EU Needs a New Values-Based Realism," 1–2, 5; Denison, "Game Over?" 4; Cohen, "Energy Security in the Caspian Basin," 110.

<sup>345</sup> Bergsager, "China, Russia and Central Asia," 18; Petersen, "In the Hunt for Caspian Gas," 2.

will and ability to support Central Asian leaders and China's non-intervention stance provides Europe an opportunity to reopen dialogues with Central Asian leaders that focus on long-term strategies and development instead of short-term EU policy goals. Brussels's efforts to obtain Caspian hydrocarbons have often prevented the development of consistent policies towards growth and stability in the region, but shifting Eurasian energy dynamics may facilitate European engagement in the Caspian Region by addresses emergent requirements and challenges in the region such as rule of law, human rights, election monitoring, defense-level mentoring, and policing support. The EU's Common Security and Defense Policy's capabilities are uniquely structured to support EU missions to this region—in contrast with NATO and CSTO military-centric capabilities.<sup>346</sup> Concerning energy relations, the European Union still has the opportunity to assist Caspian hydrocarbon producers in upstream investment and technological development. Western investment goals in this region should focus on providing technical assistance and fostering competitive market dynamics in the energy sector—even if western energy security is not directly affected. Moreover, the EU could leverage its role as a disinterested party—not requiring Caspian energy—to promote transparency, common market rules, and rule of law to provide a stable investment environment. These actions may not deliver Caspian energy to European markets, but can communicate to Caspian leaders that Brussels is focused on long-term development instead of extractive geopolitics.

#### **D. CONCLUSION**

Unconventional natural gas developments may bolster EU energy security by providing energy diversity, the ability to respond to supply shocks, but most importantly a key incentive for EU member states to implement a unified energy market. Beyond the EU's benefit, LNG and shale gas pose second and third order implications for European/Eurasian energy relations. Russia has maneuvered to maintain its position as the “key center” in Eurasian energy relations, but LNG has transformed traditional

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<sup>346</sup> Jolyon Howorth, *Security and Defence Policy in the European Union* (Basingstoke: Palgrave Macmillan, 2007), 92–95; Melvin, “The EU Needs a New Values-Based Realism,” 3; Laruelle, “Russia ‘is a Delicate Matter?’” 4; Klare, “There Will Be Blood,” 28; Bergsager, “China, Russia and Central Asia,” 9.

natural gas flows. Still, hydrocarbon exports are critical to Russian economic and political stability. In light of Russia's waning energy influence and decreased natural gas profits, internal reforms to Russia's energy sector are necessary and there are signs that Russia can reform. Despite Vladimir Putin's endeavor to control the hydrocarbon industry, managers and investors within the energy sector have pushed for internal reforms to liberalize the energy industry and enable Russian companies to become more competitive in the world energy market to increase profits.

The Kremlin's ability to shield energy companies from foreign market rules has also been reduced by LNG developments in Europe and Brussels's efforts to unify the energy market. Russia's decreased foreign influence is another indicator of potential reform. LNG developments have enabled price arbitrage in Europe that has shown Gazprom as a pricey and unreliable energy provider. Moreover, Gazprom's future share of the European energy market is likely to diminish as LNG imports increase and renewable energies become a larger part of the EU's energy mix. Yet, Russia still has few alternative customers because infrastructure to Asia has not been developed to support a large-scale export shift. Consequently, Putin's decree that Gazprom will not cooperate with the EU's anti-trust case appears empty as Gazprom has already begun unbundling energy assets to comply with the EU's Third Energy Package. Although it appears that Russia is truly the dependent party, Moscow can play an important role in Eurasian energy security. Russia possesses the world's largest gas fields and will likely remain the world's biggest natural gas exporter. Gazprom can provide significant quantities of gas to Europe, if it is priced competitively and in compliance with EU market rules. Therefore, EU energy security strategy should utilize a dual-pronged approach: integrating Russia into the European market and diversifying sources away from Russia through unconventional natural gas investment. Ensuring Russian firms comply with EU regulations will likely decrease the incidents of future energy dependence, foster economic interdependence between the EU and Russia, and may decrease future energy blackmail attempts as a tool of desperation to gain political attention or market share.

LNG development and decreased European demand have limited the EU's and Russia's need for Caspian natural gas, which has diminished resource competition in the



region. Moscow's reduced need for Central Asian energy may result in less regional influence; conversely, China continues to offset Russia's political power with economic integration. China will likely remain the key energy player in the region. Moreover, increasing Chinese natural gas demand may bring Russia and China together; however, Russian exports to China and North East Asia may not yield the political clout that Moscow has traditionally yield in the FSU. Thus, the impact of North East Asian energy demand on Eurasian energy relations warrants future investigation. Russia's waning impact and China's non-interventionist approach will directly impact Central Asian domestic politics. Central Asian leaders may be unsure of political support from Russia, China, or Europe when confronting internal threats or shifting domestic dynamics in the regions. Because the EU will likely no longer need Caspian energy to bolster energy security, Brussels can engage these FSU leaders to address emergent challenges such as rule of law, human rights, monitoring, and policing. Simply restated, the EU has a unique opportunity to transmit its values through soft power engagement tools instead of seeking to build ties with Caspian leaders to secure hydrocarbon assets.

## V. CONCLUSION

Unconventional natural gas innovations, such as shale gas and Liquefied Natural Gas, have dynamically altered energy security relationships between Russia, the former Soviet republics, and Europe. Although the Kremlin has shown that it will use energy as a form of political coercion, LNG has diminishing Russia's market share of European energy imports and its ability to disrupt domestic markets—thereby blunting Moscow's energy blackmail attacks. Moreover, unconventional natural gas has fortified European energy security where traditional pipeline projects have failed to diversify natural gas resources.

Europe's reliance on natural gas pipelines raises critical energy security concerns. Most significantly, Russia's dominating stake as an energy supplier allows Moscow the potential leverage to influence individual countries. This power is evident in Russia's attempt to sway the unbundling and compliance activities of Lithuania and Moldova by raising natural gas prices. Consequently, the EU has attempted to counter its energy insecurity vis-à-vis Moscow by seeking alternative energy suppliers—a central pillar of energy security. Yet, the EU's attempt to expand energy resources through new pipeline construction to Central Asia via the Nabucco project has proved unsuccessful because Russia has stymied EU development of the Southern gas corridor. The EU's Nabucco project and Russia's South Stream compete for customers, transit states, investors, and natural gas sources. Furthermore, Nabucco faces considerable hurdles; most importantly, lack of gas sources to render the pipeline feasible for economic investment. South Stream is scheduled to begin construction of the most difficult and expensive section—the Black Sea pipeline—in early 2013. Moreover, South Stream is likely to provide 30 bcm/year by 2017—before Nabucco begins producing 6 bcm/year—rendering the EU's project irrelevant. Thus, a trans-Caspian pipeline appears unlikely, and the EU's strategy of building pipelines to bypass Russia or Iran is not likely to reduce susceptibility to energy disruptions.

Shale gas and LNG have fostered a global gas market that has begun transforming the patterns of energy dependency. States with shorelines or shale gas deposits may no

longer be reliant on their neighbors for transit of energy or a regional gas exporters for supplies. In the last ten years, the United States' shale gas development has produced a global surplus of natural gas, decreased gas prices, and diverted LNG supplies to Europe. The impact of shale and LNG has led some to wonder if Europe can emulate America's shale gas boom to become energy independent. Due to the environmental, technological and economic, and regulatory/public acceptance challenges to full-scale shale gas extraction, a European shale gas boom is unlikely. Nevertheless, some EU member states are poised to begin shale extraction, such as the United Kingdom and Poland. Consequently, shale gas will likely serve as a buffer energy source, but not a pillar of energy independence. Conversely, LNG has already altered the market dynamics that govern European natural gas sales.

Increased LNG imports have created competition between Europe's gas suppliers—resulting in lower prices. Pipeline gas competition with LNG sources has enabled price arbitrage in Europe and compelled Russia to sell a portion of its natural gas at LNG spot prices. Moreover, Gazprom is viewed as a costly and undependable energy provider. Gazprom's future share of the European energy market will likely diminish as LNG imports increase. As EU natural gas consumption increases, energy will likely be required from incrementally remote locations—necessitating long-distance pipelines. As pipeline lengths increase—raising costs—LNG will become an equally economical energy source. Consequently, energy providers that feed long-distance pipelines may have to accept spot pricing as the “new normal” to compete with LNG in the global gas marketplace. Still, the most significant impact of LNG imports to Europe is that old patterns of energy dependence are weakened. As European states build LNG terminals, Russia's dominance over energy exports will continue to diminish.

Liquefied Natural Gas has the potential to further revolutionize European-Eurasian energy security dynamics. LNG's role in European energy security can be seen in Greece's ability to provide natural gas to itself and in Bulgaria during the 2009 Russo-Ukrainian energy dispute using increased LNG imports. As the EU continues to build LNG import terminals, access to global gas sources will increase—providing a significant alternative to Russian pipeline gas. By 2016, the EU will expand three existing facilities

and complete construction of six new terminals to augment the twenty-one existing LNG import sites. Furthermore, eleven terminals are scheduled for future expansion and twenty-eight new LNG import sites are planned for future development. Consequently, European LNG import capacity could reach 417 bcm/year or seventy-five percent of the EU's natural gas imports. Yet, the location of Europe's LNG terminals is cause for concern. Poland is the only former Warsaw Pact or FSU state that is currently constructing an LNG terminal. Although Eastern Europe may appear vulnerable to Russia's fickle energy policies, LNG terminals in Western Europe can still strengthen Eastern European energy security if the EU develops policies and physical infrastructure to support the internal European market.

Unconventional natural gas developments may not only bolster EU energy security by providing energy diversity and the ability to respond to supply shocks, but also provide a key incentive for EU member states to implement a unified energy market. The probable maturity of a unified market is evident in the myriad interconnector pipelines projects currently under construction in the Baltic region and Central and Eastern Europe. Additionally, the EC's resolve to bring violators under EC rules displays political will to complete the internal energy market. The EC's September 4, 2012 antitrust probe against Gazprom and October 24, 2012 referral of Slovenia and Poland to the EU Court of Justice for noncompliance with the Third Energy Package are compelling examples of Brussels' desire to unify the EU energy market although, Moscow's objection to transparency and adhering to EU regulations appears stalwart, LNG provides Europe with gas import alternatives. Conversely, Russia still has few alternative customers because infrastructure to Asia has not been developed to support a large-scale export shift.

The Kremlin's ability to shield energy companies from foreign market rules has been reduced by LNG developments in Europe and Brussels' efforts to unify the energy market. Hydrocarbon exports are critical to Russian economic and political stability. In light of Russia's waning energy influence and decreased natural gas profits, internal reforms to Russia's energy sector are necessary and there are signs that Russia can reform. Despite Vladimir Putin's actions to control the hydrocarbon industry, managers

and investors within the energy sector have pushed for internal reforms to liberalize the energy industry and enable Russian companies to become more competitive in the global energy market to increase profits. Consequently, Putin's September 11, 2012 decree that Gazprom will not cooperate with the EC's anti-trust investigation appears empty because Gazprom has already begun unbundling energy assets to comply with the EU's Third Energy Package. Unconventional natural gas innovations pose second and third order implications for European/Eurasian energy dynamics beyond EU-Russian relations.

Shale gas and LNG have impacted Eurasian domestic and foreign policies. Russia has maneuvered to maintain its position as "key center" of the Eurasian energy bridge, but LNG has transformed traditional natural gas flows. The EU will require less gas from Russia and Central Asia, but cancelling the Nabucco project does not abandon Central Asia to Russian primacy. Moscow's decreased necessity for Central Asian energy may result in less regional influence; conversely, Beijing continues to offset the Kremlin's political power with economic integration and increased resource extraction. Russia's waning impact and China's non-interventionist approach will directly impact Central Asian domestic politics. Central Asian leaders may be unsure of political support from Russia, China, or Europe when confronting internal threats or shifting domestic dynamics in the region. Because the EU will likely no longer need Caspian energy to bolster energy security, Brussels has a unique opportunity to transmit its values through soft power engagement tools instead of seeking to build ties with Caspian leaders to secure hydrocarbon assets.

China will remain a key energy player in Eurasia. While Beijing's natural gas demand may deepen Chinese and Russian economic relations, natural gas exports to China and North East Asia may not yield Moscow the political clout that it has traditionally held in the FSU. Additionally, several factors may hamper Sino-Russian energy relations. First, decreased EU gas imports from Gazprom may render Russia dependent on China to buy its gas, which will give Beijing a strong negotiating position. Moscow may limit its sales to Beijing to reduce its risk of export dependence. Second, Russia and China may not overcome their current strained relations, especially in light of the Kremlin's concern over China's growing influence in Central Asia and Russia's Far

East. Third, China is poised to play a significant role in the global gas market. While traditionally viewed as a hydrocarbon consumer, China may possess greater shale gas resources than the United States. Moreover, Beijing has demonstrated political will to exploit these deposits. In March 2012, China's National Energy Agency forecasted its shale gas sector would produce 6.5 bcm/year by 2015 and 60 -100 bcm/year of shale gas by 2020.<sup>347</sup> Thus, the future of Sino-Russian energy relations and its impact on Eurasian energy networks merit further analysis.

Although it appears that unconventional gas innovations are propelling Russia towards dependence on its customers, Moscow can play an important role in Eurasian energy security. Russia possesses the world's largest conventional gas reserves and will likely remain the world's leading natural gas exporter. Gazprom can provide significant quantities of gas to Europe, if it is priced competitively and in compliance with EU market rules. Therefore, EU energy security strategy should avoid alienating Russia by employing a dual-pronged approach: integrating Russia into the European market and diversifying sources away from Russia through Shale gas and LNG investment. Ensuring Russian firms comply with EU regulations will likely decrease the likelihood of future energy dependence, foster economic interdependence between the EU and Russia, and may decrease future energy blackmail attempts as a tool of desperation to gain political attention or market share. The terrorist attack on the natural gas facility in Amenas, Algeria on January 16, 2013, illustrates how unforeseen shocks can disrupt global gas supplies. Thus, Russian gas can serve as a buffer during times of energy crises in Africa, the Middle East, or beyond. Despite the EU's decreased vulnerability to energy disruptions via unconventional natural gas innovations, the Eurasian energy bridge is still necessary. The EU will likely continue to require Russian gas and Russia will likely rely on Central Asian energy to support its domestic market. No single party is currently situated to dominate Eurasian energy flows or achieve energy independence. Therefore, the Kremlin's desire to play "key center" of the gas corridors to Europe appears to be a bridge too far in Eurasian energy relations.

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<sup>347</sup> Natali, "The U.S. Natural Gas Revolution," 28; Stevens, "The 'Shale Gas Revolution,'" 8; "The Journal Report: Energy," *Wall Street Journal*.

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