

Andrei Stetsenko

- "Indicator Definition: Type of State Education Funding Formula." *EdCounts.org*. <<http://www.edcounts.org/indicatorDefinition.php?id=27>>
- Kozol, Jonathan. 1991. *Savage Inequalities*. New York: Crown Publishers, Inc.
- Krueger, Alan B. "Experimental Estimates of Education Production Functions." *The Quarterly Journal of Economics* 114 (1999): 497–532.
- Ladd, Helen F. and Sheila E. Murray. "Intergenerational Conflict Reconsidered: County Demographic Structure and the Demand for Public Education." *Economics of Education Review* 20 (2001): 343–57.
- Lamdin, Douglas J. "Evidence of Student Attendance as an Independent Variable in Education Production Functions." *The Journal of Education Research* 89 (1996): 155–162.
- Mintrom, Michael. "Why Efforts to Equalize School Funding Have Failed: Towards a Positivist Theory." *Political Research Quarterly* 46 (1993): 847–862.
- Morgan, David R. and John P. Pelissero. "Interstate Variation in the Allocation of State Aid to Local Schools." *Publius* 19 (1989): 113–126.
- Murray, Sheila E., William N. Evans, and Robert M. Schwab. "Education-Finance Reform and the Distribution of Education Resources." *The American Economic Review* 88 (1998): 789–812.
- Payne, Kevin J. and Bruce J. Biddle. "Poor School Funding, Child Poverty, and Mathematics Achievement." *Educational Researcher* 28 (1999): 4–13.
- Pelissero, John P. and David R. Morgan. "Targeting Intergovernmental Aid to Local Schools: An Analysis of Federal and State Efforts." *The Western Political Quarterly* 45 (1992): 985–999.
- Poterba, James M. "Demographic Structure and the Political Economy of Public Education." *Journal of Policy Analysis and Management* 16 (1997): 48–66.
- Roscigno, Vincent J. and James W. Ainsworth-Darnell. "Race, Cultural Capital, and Educational Resources: Persistent Inequalities and Achievement Returns." *Sociology of Education* 72 (1999): 158–178.
- Sadker, David M. and Karen R. Zittleman. 2007. *Teachers, Schools, and Society: A Brief Introduction to Education*. Boston: McGraw-Hill.
- Serrano v. Priest*, 5 Cal.3d 584 (1971).
- Sirin, Selcuk R. "Socioeconomic Status and Academic Achievement: A Meta-Analytic Review of Research." *Review of Educational Research* 75 (2005): 417–453.
- Tiebout, Charles M. "A Pure Theory of Local Expenditures." *The Journal of Political Economy* 64 (1956): 416–424.
- Wenglinsky, Harold. "Finance Equalization and Within-School Equity: The Relationship Between Education Spending and the Social Distribution of Achievement." *Education Evaluation and Policy Analysis* 20 (1998): 269–283.
- West, Martin R. and Paul E. Peterson. 2007. *School Money Trials: The Legal Pursuit of Educational Adequacy*. Washington, D.C.: Brookings Institution Press.

While American dependence on energy imports has been extensively analyzed and critiqued, the United States has done relatively little to help address its European allies' reliance on imported energy. The European Union (EU) is the "world's largest importer of oil and gas," buying eighty-two percent of its oil and fifty-seven percent of its natural gas from abroad. Half of EU oil imports and a third of EU gas imports come from Russia (Cohen 2007, 2). This dependence, in conjunction with an EU energy market that remains divided along national borders and a pattern of bilateral deals between European national energy monopolies and external suppliers, endangers not only cooperation within Europe but also the reliability and independence of European diplomatic and political action with regards to U.S. interests (Noël 2008, 8). Unable to form a common position based around a unified energy market, EU member states must increasingly choose between stable energy supplies and siding with the United States on key diplomatic issues ranging from sanctions on Iran to reciprocal investment rights.

This paper aims to address this issue by analyzing the roots and effects of the disunity of European energy markets, noting the U.S. interest in an integrated, reformed European energy market, outlining policies that mitigate dependence on imported energy, providing two case studies which illustrate the drawbacks of current policy and potential of new proposals, and finally suggesting three major platforms of reform to be pursued jointly by the United States and the European Union. I argue that a European Union featuring a more competitive private energy market operating in the context of robust institutional oversight would enjoy significantly greater

Andrei Stetsenko is a senior at Princeton University, where he focuses on global energy markets at the Woodrow Wilson School of Public and International Affairs.

commercial and diplomatic leverage – particularly with regards to supplier states such as Russia.

BACKGROUND INFORMATION

EU Energy Vulnerability

Recent European energy crises, including natural gas pricing disputes between Russia and Ukraine in January 2006, March 2008, and January 2009, have highlighted the vulnerability that results from Europe's disunited market (Bely 2009, 3). Slow to respond to crises and its energy transmission infrastructure fragmented, the EU suffers from a "solidarity gap" between its new and old members (Tcherneva 2009, 1). For example, a dispute in June 2007 between Germany and Poland, ostensibly about European parliamentary representation, was also an opportunity for Poland to express frustration at "the perceived reluctance of Berlin to stand up to Moscow on a whole host of issues," including energy (Baran 2007, 134).¹ Russian energy firms, aware of this "lack of cohesion," play their hand to further increase European dependence (Baran 2007, 131). Russia's gas export monopoly Gazprom does this by pursuing lucrative bilateral relationships directly with Western European nations (Leonard and Popescu 2007, 16).

The world's largest gas producer, Gazprom is the keystone of Russia's energy industry (De Leon 2010, 1). Established in 1992 from the foundation of the Soviet Ministry of Gas (Ahrend and Tompson 2005, 802), it produces 70 percent of Russian natural gas and represents virtually all of Russia's gas exports (Roberts 2004, 17). Of the 47 trillion cubic meters of gas reserves in Russia – roughly a quarter of estimated worldwide supply (Nicoll and Delaney 2007, 1)—Gazprom owns licenses to 60 percent (International Energy Agency 2006, 15). Since 2005, 50.002 percent of Gazprom shares have been owned by the Russian state, giving the Kremlin majority control over the corporate board (Heinrich

¹ Certain Polish politicians argued representation should account for Polish population losses during World War II.

2006, 8).² The remaining 49.998 percent of shares are owned by a combination of Russian banks, energy firms, European energy distribution firms, and smaller private investors (OAO Gazprom 2008, 80). Through downstream acquisitions, Gazprom has shifted policy from volume-maximization to profit-maximization, emphasizing added-value income over simple sales of gas at the border (Mitrova 2008, 2–3). Today, over seventy percent of Gazprom's profits are derived from sales of gas terminating in EU states (Cameron 2009, 26).

Gazprom's bilateral contracts with major consumer countries such as Germany, France, Italy, and Austria were renewed in 2006 for periods of between fifteen and twenty-five years (Stern 2007, 3). Both Gazprom and the European energy companies benefit from the "stable flow" of both revenue and energy supplies they provide in the context of an otherwise volatile price environment (Wu and Cavusgil 2006, 87). Both Gazprom and these European firms find the prospect of a reformed European energy market unappealing for many of the same reasons. The Commission envisions a market that is integrated, transparent, and highly competitive. Were the continent's energy market ever to actually become liquid and amalgamated, both Gazprom's and European monopolies' profit spreads would inevitably decrease as competition eroded their ability to capture price differentials (Westphal 2006, 52; Checchi 2009, 1; Finon and Locatelli 2007, 29).³

EU Energy Markets and Infrastructure

Collectively, the twenty-seven member states of the European Union form the world's largest import market for natural gas, consuming 530 billion cubic meters (bcm) of gas in 2008 (Roberts 2004, 2). However, the European Union's large western members—

² Specifically, the Federal Agency for State Property Management owns 38.373 percent, state oil company OAO Rosneft owns 10.740 percent, and state holding company OAO Rosgazifikatsiya owns 0.889 percent, for a subtotal of 50.002 percent.

³ Western Europe's energy monopolies have countered that their large size enables them "to compete in" a highly competitive "global market place."

notably France, Germany, and Italy—import large volumes of gas constituting relatively smaller proportions of their overall gas supply, in contrast to eastern members such as Poland and Bulgaria which import lower volumes constituting dramatically higher proportions of their gas supply (Gelb 2007, 2–3). See Table 1 for a visualization of this distinction.

Table 1: Comparative Dependence on Russian Gas
(Gelb 2007)

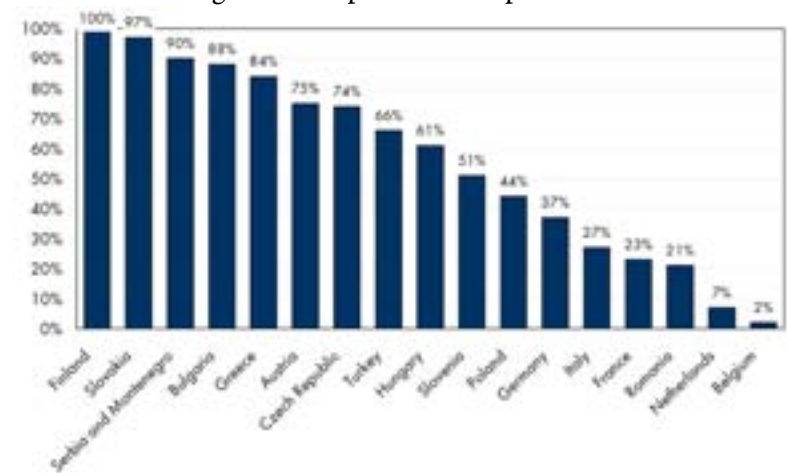
Country	Gas imported annually	% of Domestic Consumption
Germany	36.5	39
Italy	34.2	31
France	11.5	24
Poland	6	43
Slovakia	6.4	99
Bulgaria	2.8	99

The “new” member states of Eastern Europe, which remain tethered to Soviet-era gas distribution systems, are almost three times more dependent on Russian gas than Western European nations such as France, Germany, and Italy (Noël 2008, 1–2; European Commission 2008, 9). Whereas Germany and Italy represent nearly half of total imports of Russian gas, countries including Estonia, Latvia, Lithuania, Bulgaria, Slovakia, and Finland, while proportionally much smaller importers, individually draw nearly one-hundred percent of the gas they use from Russian supplies (Checchi, Behrens, and Egenhofer 2009, 19).⁴ These highly dependent eastern members are truly the EU’s weak link in terms of energy security. They “lack modern, well-financed companies that can secure more favorable terms with Russia” and typically do not possess large storage facilities (Smith 2008, 18). In comparison, both France, Germany, and Italy all enjoy significant storage capacity of “20 percent or more of annual consumption” (Westphal 2009,

⁴ Similarly, Lithuania, Hungary, Slovakia, and Poland rely on Russia for nearly all their oil imports.

24). Figure 1 provides an additional illustration of the variation in European states’ dependence on Russian gas supplies.

Figure 1 : Disparities in Dependence



Source: Mitrova, Tatiana. “Gazprom’s Perspective on International Markets.” Russian Analytical Digest No. 41. Bremen: Research Centre for East European Studies, 20 May 2008. 7.

The current European Commissioner for Energy, Guenther Oettinger, confirmed this continental bifurcation as the decisive factor behind the Commission’s failure to implement the unbundling of energy monopolies, which would require the splitting of production and distribution arms of current energy firms and an end to monopoly firms’ domination of national energy markets. Member states such as France and Germany, cognizant of the domestic significance and economic weight of their national monopolies, have, according to Mr. Oettinger and others, consistently demurred on the topic of unbundling, leaving such proposals all but dead in the water (Pop 2010). This policy inaction is invaluable for Gazprom, as the Commission’s unbundling proposal would “effectively bar” the company from exercising any control over the wholesale and retail distribution, or “downstream,” segment of the European energy market (Perovic 2008, 3).

Barring a dramatic change in its energy policy, the European

Union can expect to import eighty percent of its natural gas by 2030 (European Commission 2006, 3). By then, the EU is projected to consume between 700 (Roberts 2004, 2) and 816 bcm (Goknel 2009) annually of which only 163 bcm will be produced within the European Economic Area, principally in Norway (International Energy Agency 2002, 189). Even in the extremely unlikely case that the EU's gas demand does not grow over the next two decades, it will require significantly increased levels of imported gas to compensate for declining internal production (Godzimirski 2009, 4; Checchi, Behrens, and Egenhofer 2009, 14–15).⁵

Within Europe, the rift over how to react to this growing dependence on external energy suppliers has been labeled “the most contentious issue for EU governments since Donald Rumsfeld and the Iraq War” (Leonard and Popescu 2007, 26). Nations such as Germany and Italy have concluded bilateral natural gas deals with Gazprom, for which such large, well-paying markets are essential to maintaining profitability (Cohen 2007, 1). Meanwhile, countries such as Slovakia and Poland (which import smaller amounts of gas) are less diversified in terms of energy supply and thus have suffered the brunt of recent gas shutoffs, including a two week standoff in January 2009 between Russia and Ukraine, Gazprom's most important transit country for supplying EU customers. During that crisis, leaders of large Western European EU members, including President Sarkozy, Chancellor Merkel, and Prime Minister Berlusconi, were noticeably silent (Tcherneva 2009, 1).

The infrastructural isolation of the newer EU member states—particularly Lithuania, Latvia, and Estonia—further complicates Europe's physical and institutional energy disunity. To an even greater extent than many other former members of the Soviet bloc, the Baltic states represent an “energy island” almost completely cut-off from gas markets in the rest of Europe (European Commission 2006, 6). The Commission's proposed “solidarity rule,” intended to institutionalize the transfer of gas from less to more affected EU member states in the event of a crisis, would be of little use without

⁵ Indigenous EU gas production, chiefly occurring in UK, Dutch, and Danish waters, is projected to plummet nearly 60 percent by 2030.

the necessary infrastructural connections to countries such as these (Le Coq 2009, 37; Finon and Locatelli 2007, 26–27).⁶

While the EU has delineated in great detail a proposal for improved inter-member state energy infrastructure called the Trans-European Energy Networks (TEN-E) and has even outlined proposed mechanisms to compensate transmission operators for cross-border electricity transfers via Regulation 1228/2003/EC, a lack of necessary “financial and political instruments” has stood in the way of implementation (Westphal 2009, 16). As a result, the Baltic states and Finland, which are not currently connected to the continental gas network, are unable to implement even nominal diversification away from Russian gas (Nyquist, Egenhofer, and Legge 2001, 20).

Background on the EU Internal Politics

Brussels is acutely aware of the price the European Union pays for its disunited energy market. The European Commission, the major EU policymaking body, is conscious of the fact that a “common external dimension to its energy policy” is impossible without an integrated, collaborative market (Youngs 2007, 5). A large part of this problem pertains to a lack of institutional jurisdiction. Energy is primarily the responsibility of the Commission, with its “energy technocrats” working together with national-level energy experts (Youngs 2007, 7).⁷ Yet European member states are not empowered to apply Community (EU-wide) law (Council of the European Union 2003, 2); moreover, the European Commission has “no authority” to regulate the most visible manifestation of the current system: the long-term contracts between Gazprom and Europe's national energy monopolies (Stern 2007, 2).

⁶ One example of successful European infrastructural diversification occurred outside the scope of EU institutions. In 2006, eight Central European nations, including EU members such as Austria but also non-members including Croatia, met following that year's Russo-Ukrainian gas crisis and were able to provide the collective political backing for a Hungary-Croatia gas pipeline tying the region to a planned LNG deliquification terminal in Adria, Croatia.

⁷ The Council of the European Union, meanwhile, takes a more political role.

In the context of a liberalized Union-wide market in almost every economic sector, with the prominent exception of agriculture, energy policy remains a field viewed in Paris, Rome, and Berlin as a “national prerogative.” The old member states have been “extremely reluctant to cede any sovereignty to the EU in this sphere” (Mangott and Westphal 2008, 169). In particular, the western European energy monopolies (most notably France’s GDF Suez, Germany’s E.ON Ruhrgas, and Italy’s ENI) have largely stood in the way of establishing greater cross-border transmission interconnections. This situation exists because such interconnectors would have little value unless national utilities were able to sell energy across borders throughout the Common Market, which is a fundamental platform of proposals to “unbundle,” or split up, these very same national monopolies.

At the same time, the EU bureaucracy has produced no shortage of memoranda, directives, and regulations discussing “effective legislative and regulatory frameworks” for reforming the EU’s energy sector (European Commission 2006, 3). The Commission’s Directive 98/30/EC, unanimously approved by EU member states in June 1998, as well as 2003/55/EC five years later, were intended to move Europe towards an integrated market (Lecarpentier 2005, 1) by mandating “third party access to transmission and distribution networks” (Delegation of the European Union to Ukraine, Moldova, and Belarus 2009, 13–15). EU green papers, policy outlines, and regulatory briefs consistently emphasize the value of a more liberalized and more competitive European energy market, one diverse in terms of “source, supply, transport, and sales” (Cameron 2009, 23). They note the challenge of accomplishing diversification in the context of projected rising overall demand and declining indigenous production (Mangott and Westphal 2008, 175). Some even urge, obliquely, active diversification away from Russia: “increasing imports from an established source should be avoided” (Egenhofer et al. 2004, v).

Yet EU documents do not delineate any path towards implementation of mechanisms intended to counter third party supply monopolies. As an example, Directive 2004/67/EC only requires

that each member state establish “minimum security of supply standards” (Delegation of the European Union to Ukraine, Moldova, and Belarus 2009, 15). Critics of current EU policy argue that handling of energy issues in Brussels has been “too rhetorical and too visionary,” devoting relatively little attention to pedestrian but crucial issues such as pipelines and market regulation (Hill 2005, 6). Yet even EU diplomats acknowledge that member states are likely to maintain their own foreign policy approach, particularly with regards to energy. Ursula Plassnik, a former Austrian foreign minister, noted that she expects member state priorities to prevail for some time even as the newly established European External Action Service draws upon staff from the Council Secretariat, the Commission, and member state foreign ministries to play a more active role in Europe’s external policy (Plassnik 2009).

Granted, Europe-wide energy policy has seen some limited success. For example, in 2003, the Commission forced Gazprom to drop “destination clauses” prohibiting downstream resale from its contracts with European firms (Lecarpentier 2005, 6). However, the EU bureaucracy has at times provided a sort of scapegoat for avoiding real liberalizing work in the energy sphere; in an interview, former President of the European Commission Romano Prodi noted member states’ tendency to play the “it was Brussels” card in order to defer responsibility for energy reform (Prodi 2009). Notably, the ultimately unratified European constitution would have explicitly established energy as an area of “shared competency” between member states and Brussels (Westphal 2006, 52). The Lisbon Treaty, which replaced the constitution, meanwhile, while continuing to formally refer to energy as an area of “shared competency,” specifically reserves decisions regarding “the general structure of [. . .] energy supply” for member states (Office for Official Publications of the European Communities 2007, C 306/88).

The U.S. Interest in an Integrated European Energy Policy

Officials from Brussels to Bucharest, unable to form a common position based around a unified energy market, often must

“choose between an affordable and stable energy supply and siding with the US on some key issues” (Cohen 2007, 12). Aware of the possibility of a European “strategic drift” resulting from energy-related conflicts of interest exacerbated by the lack of a unified European energy policy or transmission network (Cohen 2007, 1) the United States can move proactively to ensure that Russian energy does not indirectly limit the economic and foreign policy independence of the United States’ European partners.

The United States can work to encourage the implementation of the policy options detailed below, particularly by influential EU members such as France, Germany, and Italy—the so-called “Strategic Partners” for whom special energy relationships with Russia have the potential to “[undermine] common EU policies” (Leonard and Popescu 2007, 2). Conspicuously silent on subjects ranging from Russian nuclear collaboration with Iran to the lack of investor rights for Western firms in Russia, these nations have the potential to stand as unencumbered partners to the United States and to each other.

U.S. Interest in a Liberalized Transatlantic Energy Structure

By simultaneously encouraging European integration on energy matters and cooperating with the European Union on the creation of a liberalized transatlantic framework for energy independence, the United States can help enact a more sustainable energy policy for both itself and its allies. Together, the European Union and the United States represent forty percent of world energy consumption (Belkin 2008, CRS-18–CRS-26); as major consumers, Europe and the United States can jointly “promote more market-based approaches to the development, extraction and trade of key energy commodities such as oil and gas” (Union of Industrial and Employers’ Confederations of Europe 2007, 4). In other words, work to liberalize a market in which suppliers currently tend to be monopolistic by creating a single, competitive buyers’ market to counter the sizeable leverage enjoyed by suppliers such as Gazprom. This transatlantic effort should focus first on integrating

markets for natural gas. For producer countries, oil is a much more difficult commodity to use for geopolitical purposes due to the fact that there exists a liquid international market for oil offering multiple, transparently priced supply, transport, and trans-shipment options (European Commission 2008, 4). This characteristic in and of itself is evidence of the benefits to be reaped from creating a comparably open market for natural gas (Noël 2008, 2).

Limiting and counteracting the effects of energy import dependency is critical to ensuring U.S. interests ranging from the security of the oil and gas supply to NATO bases in Turkey to preserving European diplomatic leverage vis-à-vis Russia (Cohen 2007, 7). Such goals can be more effectively achieved through better exchange of technology and information and through a coordinated diplomatic effort to mitigate import dependency. By pooling their diplomatic and economic influence, the United States and European Union can ensure that producer leverage is not excessive and that the integrity of downstream distribution networks remains intact.

Other Factors to Consider

While this cooperative approach is not intended to antagonize any third country, Russia will not react benignly to an overt attempt to reduce dependency on its energy. Already, it has shown a willingness to disrupt any activity that mitigates this dependence, as evidenced by Russian efforts to suppress pipeline plans it does not control and embargo refineries that resist Gazprom acquisition. For example, Russia has succeeded in stifling the EU-supported Nabucco pipeline from Turkey to Austria in favor of its own plan, South Stream, achieved through intense lobbying of transit countries such as Hungary. In Latvia and Lithuania, Russia ceased oil shipments to the Ventspils Nafta and Mazeikiu Nafta refineries, respectively, drawing a “muted” reaction from Western European EU members unwilling to protest at risk of revealing their own vulnerability (Baran 2007, 5). Through more vigilant enforcement of existing business regulations such as the aforementioned ener-

gy directives outlined by the European Commission, the United States and the European Union can help ensure that monopolistic moves do not go uninvestigated and that a collective strategy is adopted before it is too late. Without such a strategy, the European Union—by far the largest, most lucrative, and most accessible consumer of Russian energy—will continue to one-sidedly assume the vulnerabilities of an energy relationship characterized by mutual dependence (Bustin 2009).⁸

POLICY OBJECTIVES

An Integrated Energy Market

Europe can only leverage the scale of its energy market by uniting it. By implementing the regulatory changes and developing the infrastructure necessary for this to happen, the European Union will give its eastern members the flexibility they currently lack due to their high individual levels of import dependency. The contemporary European energy grid and market are a legacy of national utility operators and their 1970s-era bilateral agreements with the Soviet Ministry of Gas (European Commission 2003, 1; Noël 2008, 8–9).⁹ Some names have changed—Italy's Eni, the Netherlands' Gasunie, Gaz de France, etc. now face Gazprom (Baran 2007, 8). However, these European companies continue to purchase gas using the same patchwork of bilateral deals that allow Russia to divide the continent into a series of weak segments (Korski 2008, 2). The alternative is a single European market that would require Russia to sell gas at the EU border, rather than to national firms. In this type of new system, the opportunity cost

⁸ Sixty-five percent of all Russian export revenues over the past few years have come from sales of energy to the European market. Russia is dependent on the openness of the European market; in fact, European profit margins finance profit-destructive energy subsidies to domestic Russian consumers.

⁹ Western and Central European countries began importing Soviet gas in the 1970s. These imports received a significant boost as the Iranian Revolution largely removed Iranian gas from the continent's potential supply mix and indigenous production in the North Sea began a steady decline.

of geopolitical uses of energy would be raised; instead of shutting supply off to one country, supplier states would only be able to decrease supply to the market as a whole—significantly disincentivizing supply cuts (Noël 2008, 2).

By integrating their energy distribution and consumer networks, EU member states would confer on the energy sector the benefits accrued to virtually every other European industry through the Single Market: increased competition, lower prices for consumers, and most importantly, dramatically increased bargaining strength vis-à-vis third countries. A single European market for gas, and eventually for electricity as well, would leave Russia with one western export option: Europe (Noël 2008, 9), where a concession to any national distributor would immediately become available to consumers across Europe (Soros 2009, 2). The resentment and tension currently bred by eastern EU member states' high dependence on gas imports would be replaced with the solidarity and flexibility of an integrated grid.

By lobbying its allies, in particular Germany, France, and Italy—the governments most reluctant to liberalize gas distribution, largely due to their powerful national energy monopolies (Noël 2008, 12)—the United States could help jumpstart the creation of a new European transmission and pipeline network in simultaneity with its own planned energy sector reforms (Obama for America 2008, 8). Through the transatlantic technology and investment initiative recommended below, this effort would allow for easier substitution of energy sources, a critical step for integrating renewable technologies undergoing expansion in both Europe and the United States. The United States can benefit by working with the EU on establishing funding mechanisms for energy infrastructure modernization. This coordination could take the form of a U.S. counterpart to the EU's public infrastructure investor, the European Investment Bank (EIB) (European Commission 2008, 8–12). In fact, the Obama administration has already voiced plans for a comparable U.S. institution designed to provide low-cost financing for electricity transmission and pipeline projects (Leftly 2009).

Unbundled, Liberalized Distribution

An integrated European market for energy would still not fully solve the issue of collusion between Gazprom and the so-called “national champions,” such as Germany’s E.ON Ruhrgas and Gaz de France. Thus, a comprehensive energy solution would require that any firm engaged in the distribution of energy in Europe, be it Russian, Danish, or American, be split from energy production (Hanson 2008, 121). Such unbundling is already in place in the United States, where it has successfully increased competition in the energy sector (Pollitt 2007, 28). In Europe, this policy would forestall geopolitically motivated down-market moves. In addition, it would complement an integrated energy grid by ensuring that gas and oil flow to distributors, not to the monopolies that currently segment the market along national borders.

The relationship between these monopolies and Gazprom has directly contributed to the division between eastern and western EU members.¹⁰ For example, Polish politicians infamously referred to Nord Stream, an undersea pipeline currently under construction in a partnership between Gazprom and German firm E.ON Ruhrgas, as “a new Molotov-Ribbentrop pact” (Leonard and Popescu 2007, 10).¹¹ The pipeline, laid along the Baltic seafloor, bypasses an overland route through Poland that would have cost an estimated one-third as much (Baran 2007, 135). The costs to Europe include higher energy prices for consumers and a free rein for Gazprom to foment friction and tension among EU member states (Cohen and Szaszdi 2009, 9).

Energy sector unbundling would “Europeanize” the relationship between Gazprom and the European Union (Noël 2008, 3). Gazprom realizes that downstream activity, including wholesale and retail distribution, holds the greatest long-term profit potential, especially if Europe succeeds in crafting a single energy market

¹⁰ In an interview, Fyodor Lukyuanov, a prominent Russian journalist, referred to these national monopolies as “allies with Russia against liberalization.” Lukyuanov, Fyodor. Editor-in-Chief of Russia in Global Affairs. Videoconference Interview. 27 March 2009.

¹¹ The 1939 agreement between Nazi Germany and the Soviet Union that included a secret protocol for the two sides’ partitioning of Poland.

(Locatelli 2008, 11). Yet Russia is aware that the only way to gain real access to these downstream assets is through reciprocity, that is, by allowing upstream access to European firms in exchange. For both Russia and the European Union, decoupling between production and distribution would defuse security worries by ensuring that no enterprise, domestic or foreign, controls the full vertical chain of energy production and distribution. Unbundling would better equip the energy industry for dealing with dwindling supply and more widespread sources of investment capital (Youngs 2007, 13).

Reciprocal Investment Rights

The benefits of an unbundled European energy sector are dependent on reciprocity between the European Union and Russia. Just as Europe will remain dependent on Russian energy for the foreseeable future—these policy proposals are meant to restructure, not necessarily eliminate, this dependence—Russia will remain dependent on European demand and on Western capital to finance reinvestment in upstream infrastructure (Jackson 2006, 6). Yet Russia cannot expect to benefit from this capital as long as it engages in tactics such as those carried out at Sakhalin and Kovytko gas fields, where Royal Dutch Shell and BP, respectively, were forced to sell their stakes in developing projects to Gazprom in what could be termed benign expropriations (Dellecker 2008, 6; Leonard and Popescu 2007, 23).

Only by taking the “fear tax” out of investments in energy production can Russia ensure the same rights for its own investments downstream in Europe and the United States (Egenhofer et al 2006, 4). The United States has a vested interest in this sort of reciprocity. Whereas Lukoil, a Russian oil firm, was allowed to purchase one hundred percent of U.S. firm Getty Petroleum and its 1,500 service stations, American and European firms are restricted to an apparent ownership ceiling of twenty percent on their investments in Russia (Smith 2008, 7).¹² This lack of reciprocity is also

¹² Though forty-nine percent is the “official” ceiling for foreign ownership, the reality

of direct concern to European consumers of Russian gas; without sufficient capital investment in production infrastructure, Russia will not be able to sustain current levels of production in coming years, creating the possibility of future energy shortages (Baran 2007, 11). The missing factor is investment, not the availability of capital. Foreign investors cannot be expected to pour the enormous amounts of capital required for the continued exploitation of Russian resources without a significant solidification of investor and property rights (Monaghan and Montanaro-Jankowski 2006, 20).

The United States can pursue investment reciprocation through forums such as Russian WTO accession talks. It can also push for Russian ratification of a new treaty that would be acceptable to all parties replacing the moribund Energy Charter Treaty (Emerson 2006, 7).¹³ A new treaty which secures investor rights and reduces transit risks would be advantageous not only to Europe but also to Russia, which would benefit from a clear legal mechanism to arbitrate energy disputes with transit states such as Ukraine (Bely 2009, 6). The American role in securing passage of such a treaty could also involve exerting diplomatic pressure on certain new EU members, such as Poland and Lithuania, which have in the past obstructed further negotiations with Russia (Velyaminov 2009).

Focus on Liquefied Natural Gas

Liquefied Natural Gas (LNG) currently represents fifteen percent of EU gas imports. Easier to move and store than ordinary

appears to be twenty percent, based on coercive tactics that have emerged when investors attempted to go higher.

13 In 1991, several European countries participated in the creation of an international agreement designed to bring together the energy sectors of Western Europe and the former Eastern bloc. The Energy Charter Treaty itself was signed in 1994 and as of today has fifty-one signatories, including both EU member states as well as CIS members such as Kazakhstan and Ukraine. The Treaty primarily covers issues of investment, free trade in energy goods and services, and dispute settlement. In the mid-2000s, Russia signed the treaty, but never ratified it, citing Articles 5 and 20 as major stumbling blocks. These articles concern opening pipeline capacity to foreign suppliers for transit and sale, respectively – in Moscow's eyes, both unacceptable concessions.

gas, it would be a useful complement to an integrated continental distribution grid (Belkin 2008, CRS-18–CRS-19). In an integrated market, LNG sells much like oil, in the sense that it is highly mobile and difficult to manipulate geopolitically (Noël 2008, 6). Moreover, producers including Norway, Algeria, Nigeria, and Qatar have begun selling LNG, offering Europe an immediate means for reducing dependence on Russian pipelines (Council of the European Union 2007, 17). Russia also has a vested interest in LNG, which would allow it greater export flexibility (Kupchinsky 2007, 1). The United States can encourage the development of LNG infrastructure in Europe, particularly in the pipeline-dependent Baltic states and Poland (European Commission 2008, 9). Whereas LNG was constrained by prohibitive costs only a decade ago, a recently concluded boom in the construction of liquification and de-liquification plant infrastructure has made it “competitive with pipeline gas.” Indeed, the growth rate in LNG production has for several years exceeded the growth in overall natural gas production capacity (Dahlman Rose & Co. 2009, 6). Through a partnership for LNG investment and technology transfer, the United States and Europe could further encourage the transformation of the gas market into an oil-like market, with spot purchase and arbitrage gas availability taking the place of contract-driven pipeline-delivered gas (Day 2009).

Focus on Nuclear Energy

In reducing dependence on imported sources of energy, the European Commission has chosen to emphasize the role of renewable energy sources such as wind and solar power. However, its own analysts admit that “[e]ven when the renewable energy policy goals are reached, Europe is likely to be dependent on more imports than today” (European Commission 2008, 2). Thus, if Europe is to make progress on reducing dependency on imported gas and oil, projected to reach seventy and ninety percent respectively by 2020, other sources must be considered (European Commission 2008, 18). Currently, nuclear energy is Europe's biggest single non-

imported source of energy (European Commission 2008, 9–10), supplying fifteen percent of total EU energy consumption needs and thirty-one percent of electricity needs (FORATOM 2007, 1). Europe's nuclear industry enjoys a global leadership, with 148 reactors in fifteen of twenty-seven member states easily outproducing the United States' own nuclear sector (European Commission 2008, 1). Yet attitudes towards nuclear energy differ widely; whereas France satisfies nearly three quarters of its electricity demand through nuclear power (Belkin 2008), Germany and Sweden have only recently begun reconsidering plans to phase out nuclear power generation altogether (The Economist Intelligence Unit 2009, 1–2). The United States, meanwhile, has not built a new reactor in decades, and tentative plans for a new generation of American nuclear plants are based on a French design (Wald 2008).

Obviously, the choice of pursuing nuclear power cannot be forced onto any EU member state, or the United States for that matter (European Commission 2008, 4). However, given the fact that simply maintaining nuclear generating capacity in both the United States and the European Union will require extensive new construction (FORATOM 2007, 2), a transatlantic nuclear collaborative effort would make long-term energy independence all the more feasible. This collaborative effort could come under the auspices of the IAEA in the form of a new transatlantic agreement for nuclear cooperation, comprising the United States, the European Union, and Russia. Indeed, nuclear energy cooperation offers an opportunity to defuse some of the tension that may result from overtly acting to reduce dependency on Russian gas. Current nuclear sector collaboration with Russia, such as the Rosatom-Siemens joint nuclear power engineering enterprise in the Kaliningrad enclave of Russia or the Department of Energy-Russian Ministry of Energy common protocol (U.S. Department of Energy 2003, 2), can serve as a model for pooling American, European, and Russian efforts towards common goals such as avoiding proliferation and ensuring nuclear safety (The Economist Intelligence Unit 2009, 1–2).

The European Union's indigenous energy production is de-

pleting partly due to reluctance to maintain or expand generation sources perceived to be polluting or unsafe, such as coal and nuclear energy (European Commission 2008, 8). By 2020, nuclear power's contribution to European energy production is projected to fall unless a significant number of new plants are built to meet new demand and replace obsolete reactors (European Commission 2008, 15). The United States faces a similar problem, and has a similar aversion to increasing carbon or import dependency. A joint partnership could serve as a model for a world whose energy use is projected to rise 50 percent by 2030 (Barden 2008, 34). Nuclear power has been criticized as "not a credible option" in the short term (Noël 2008, 2); however, within the framework of a larger transatlantic effort, it could be essential to a long-term energy solution.

CASE STUDIES

South Stream

The stalled U.S.- and EU-backed Nabucco pipeline emblemizes the disadvantages of the European Union's current approach to energy policy. Intended to carry Caspian and possibly Iraqi natural gas westwards through Turkey to a hub terminal in Austria, it has been overshadowed by the Russian-backed South Stream project. South Stream, like its Baltic cousin Nord Stream, expensively cuts across the sea floor (the Black Sea between Russia to Turkey) in order to avoid the costs (in the form of annual transit fees) and the risks (in the form of the constant risk of contract renegotiation) of transit countries such as Ukraine. Owned by a consortium comprising both Gazprom and Italian utility ENI, the sixty-three bcm pipeline is set to be completed by 2015 (Mankoff 2009, 20). It is, in the words of Hungarian Prime Minister Gyurcsány, "backed by a very strong will and a strong organizational power," contrasting clearly with the institutionally fragmented EU (Baran 2007, 140).

To set South Stream in motion, Russia picked out one country, Hungary, for a lucrative bilateral deal. By guaranteeing Prime

Minister Gyurcsány that South Stream would terminate in Hungary, giving it partial ownership of the terminal storage facility, Gazprom—with support from the Kremlin—effectively co-opted one EU member at the expense of the entire Union’s energy independence (Dempsey 2009). South Stream, like Nord Stream, is an overtly political project: it simply diverts gas that currently flows through Ukraine. As part of the deal, Gazprom agreed to construct a spur off the pipeline into Serbia, gaining control of Serbian oil company NIS in exchange (Pop 2008). Romano Prodi, the former Italian Primer Minister, was offered chairmanship of the project, in a parallel to former German Chancellor Gerhard Schröder’s current chairmanship of the Nord Stream consortium, for which he is paid an annual salary of one million euros (Cohen and Szaszdi 2009, 9; Osipov 2007, 9).

South Stream, in other words, perfectly demonstrates the failings of Europe’s fragmented market. This situation allows for maneuvering by a producer country—Russia—that does not offer consumer countries the same investment rights it regularly exercises downstream. The competitor pipeline, Nabucco, is truly a “litmus test” of European institutional and political strength. For its own part, the United States did exercise extensive pressure on the Hungarian Gyurcsány government to back Nabucco (Baran 2008). However, in the end the prime minister agreed to the Russian proposal, after he realized that the EU– and U.S.– backed plan appeared to be crippled by political fragmentation (Cohen and Szaszdi 2009, 9).

Nabucco, if it were to be built, would break Russia’s monopoly on Caspian natural gas. By 2020, for example, it would allow Azerbaijan to export an amount of gas equal to one third of Russia’s current exports to the European Union (Baran 2007, 24).¹⁴ Yet even if it existed today, it would not break Russia’s control over the European market. This can only occur when the European Union

¹⁴ This would be an important achievement, even if political considerations are set aside. Currently Russia is using Central Asian and Azerbaijani gas to replace its own declining capacity. Forcing competition would be an added incentive for necessary Russian production investment.

implements a single energy market, a market immune to lucrative but ultimately one-sided deals that hamper European unity. In an integrated grid and market, Nabucco could then be tied into countries like Poland or even the Baltic states through proposed supplementary pipelines, including north-south links, finally installing a gas alternative where none exists today (Baran 2007, 24).¹⁵

The Caucasus and Caspian Sea Regions

The geopolitical importance of the Caucasus and Caspian regions, particularly in recent years, is hard to overstate. The area is an energy crossroads, home to pipelines, oil and gas fields, and clashing geopolitical ambitions. As a result of Europe’s energy dependence, its leaders are tempted to cast a blind eye when Russia bullies or hampers democratic efforts in nations such as Azerbaijan, Georgia, Kazakhstan, and Turkmenistan because of their energy producer or transit country status (Baran 2007, 133). Moreover, using its unchallenged energy muscle, Russia has successfully acquired substantial geopolitical influence in the region. This in turn has further weakened Europe’s position by denying it independent alternate energy suppliers (Baran 2007, 10).

The United States has previously succeeded in improving its Caucasus allies’ energy security. In the late 1990s, the United States assisted the Azerbaijani and Georgian governments in constructing independently owned pipelines from Baku to Turkey and on to Europe, free of Russian control (Baran 2007, 12–13). With cooperation from NATO ally Turkey, the Baku-Tbilisi-Ceyhan (BTC) oil pipeline connected Azerbaijan’s Caspian Sea shoreline to Turkey’s southern coast in 2006 (Baran 2007, 136). The United States also helped prevent Gazprom’s takeover of this and other Georgian energy infrastructure by offering Tbilisi a grant to maintain and upgrade its network (Baran 2007, 25). The BTC pipeline was briefly threatened during Russia’s 2008 invasion of Georgia, underlining the geopolitical and symbolic value of this independent

¹⁵ With pipeline connections to coastal de-liquification terminals offering access to other gas alternatives in the form of LNG.

link, which nonetheless represents at most six percent (one million barrels of oil per day) of Europe's overall crude oil demand (Cohen and Szaszdi 2009, 2).¹⁶

Clearly, Russia is in a stronger position today than it was in the late 1990s. However, by integrating its capacity for political leverage, the EU could join the United States in ensuring that energy development in alternate producer regions, especially in the contested Caucasus and Central Asia, is cooperative rather than a zero-sum game (Baran 2007, 16). This could be accomplished through information sharing, investment reciprocity, and possibly through negotiations about Iran and missile shield proposals for Eastern Europe. Above all, the United States would need to make clear that it is not "surrounding" Russia (Smith 2008, 10), but rather insisting on reciprocal investment access to producer regions—an understandable goal given apprehension about monopolistic control from Gazprom (Bely 2009, 4). By giving its unified, "unambiguous support" to a U.S.-supported program for establishing both geopolitical stability and energy market competition in this region, the EU can avoid losing Azerbaijan and other alternate producer states to agile Russian diplomacy (Loskot-Strachota 2009).

POLICY RECOMMENDATIONS TO ADVANCE U.S. INTERESTS

In light of the cases and policy options presented above, the United States has several options for mitigating European institutional discord and energy dependence on Russia. Some policies, such as nuclear and Liquefied Natural Gas cooperation or collaboration with NATO partners such as Turkey, can be accomplished directly with the collaboration of relevant U.S. departments (State, Defense, and Energy) and agencies. Others, such as European energy market integration and utility unbundling, could be better encouraged through primarily ministerial-level diplomatic pressure on member states and the European Commission in both bilateral

meetings as well as roundtable meetings ranging from the Transatlantic Economic Council (TEC) to G8 and WTO. Additionally, ambassadors in Europe could express the United States' recognition and support for European efforts to reduce dependence on imported energy through diplomatic contacts and opinion editorials in local newspapers. Through these forums, the U.S. could leverage the increasing willingness it has recently shown to pursue post-Kyoto climate change negotiation for a greater EU willingness to pursue energy strategy cooperation that would offer the European Union a plethora of additional intrinsic benefits, including greater supply security.

First, the Obama Administration should encourage European energy market integration. A major aspect of the EU's energy insecurity involves its inability to transmit energy across national borders. Both Europe and the United States are presently engaged in planning for the development of a new generation of energy infrastructure. From European objectives such as "overnight battery recharging for plug-in electric vehicles" (European Commission 2008, 1) to American plans for dynamic transcontinental transmission lines (Joyce 2009), these plans are comparable and could be better coordinated. Currently, only about ten percent of European power generation capacity can be exported across borders (Belkin 2008); similarly, the Obama Administration believes that the current American power grid is not equipped to carry new sources of energy to points of need (Obama for America 2008, 8).

Implementation of a European energy grid could begin with a "warning system" of bilateral deals between European energy firms and foreign energy suppliers (Leonard and Popescu 2007, 59). Notified in advance of such deals, the Commission would have time to review and react to tactical moves by Gazprom. In the medium term, the European Union could continue implementing basic transmission and pipeline developments, such as the France-Spain and Poland-Lithuania electricity grid interconnections it currently coordinates (European Commission 2008, 5-6). In the long term, both gas and electricity could begin to be traded across an integrated grid, lessening the need for divisive national-level deals with

¹⁶ The BTC pipeline's capacity is one million barrels of oil per day. A parallel pipeline, the Baku-Tbilisi-Erzurum (BTE) pipeline, supplies Azerbaijani natural gas to Turkey.

external suppliers (European Commission 2008, 10). The current project for integrating the European grid, Trans-European Energy Networks (the aforementioned TEN-E), does not appear to be getting the job done (European Commission 2008, 3). Thus, the best option for the United States may be to lobby major EU states, such as France and Germany, to explore successful existing models of grid cooperation. Existing initiatives, such as Baltrel, which combines energy producers and transit operators in Scandinavia, the Baltics, and Poland, could serve as an “intermediate step to” a larger European single market for both gas and electricity (Baltrel 2007, 3–5).

The U.S. role in this European project is twofold: coordinating it with its own push for a new generation of transmission infrastructure, and insisting that a real structure to counteract Russian leverage, rather than vague “crisis response mechanisms,” are put in place (Council of the European Union 2007, 18). In other words, the United States could push for a long-term solution to the issue of dependence rather than short-term responses to Russian action. If both the European Union and the United States work together, both private and public resources will be easier to find, and major efforts—such as connecting wind farms in the North Sea and solar installations in New Mexico to mainland grids—will be complementary and coordinated (European Commission 2008, 2–3). Finally, in contacts with Russia, the United States could make clear that an integrated European grid would better equip Russia to export energy alternatives beyond oil and gas, such as selling electricity directly to an integrated European grid (European Commission Green Paper 2006, 6).

Second, the Obama Administration should pursue transatlantic energy market liberalization. Liberalization of the transatlantic energy market would involve unbundling European monopolies, but would provide for the transparency and reciprocity that is necessary for constructing a single energy market and two-way flow of investment. This policy would benefit Europe by forestalling bilateral deals between Gazprom and national energy firms, and it would thus help remove the hidden cost paid by European con-

sumers for the disunity of their energy market. The United States would benefit by finally obtaining the reciprocal right to invest in EU utilities as European firms have done in the deregulated U.S. energy market for years. Even Russia would profit from accession to this policy, which would give its unbundled firms full investment rights downstream and allow Western capital and technology to flow to fill critically needed upstream needs without fear of extortion.

The European Union has the power to implement this proposal under its power to enforce competition regulation (Gray 2009, 1). It will, however, be difficult to put into motion due to the resistance of powerful members such as Germany and France, both of which have resisted unbundling (Belkin 2008, CRS-9). However, the only way for an integrated European energy market to be fully effective is through the complementary effect of this policy. With the strength of a united, liberalized market, Europe could finally effectively pursue antitrust measures against Gazprom’s violations (Smith 2008, 2)¹⁷ of Article 82 of the European Community Treaty (Delegation of the European Union to Ukraine, Moldova, and Belarus 2009, 17–18; Baran 2007, 141).¹⁸ Furthermore, armed with the strength gained from this policy, the European Union would have more leverage in pursuing the expansion of the energy acquis to nations such as Ukraine, where a lack of unbundling and transparency has contributed to and exacerbated recent gas crises.

The United States has tools and resources to help a Europe that has integrated and liberalized its energy sector. In particular, the United States can play a role in prodding investigation of non-transparent entities such as the notorious RosUkrEnergo, a Switzerland-based firm that has allegedly served as a high-level money-laundering scheme for well-connected Gazprom and Ukrainian

¹⁷ It certainly is guiltier, and more of a threat to European commercial security, than Microsoft has repeatedly been found to be.

¹⁸ Article 82 forbids the “abuses of dominant positions” such as “dissimilar conditions for equivalent transactions”—an excellent description of Gazprom’s current strategy of price discrimination between national European customers.

officials (Leonard and Popescu 2007, 10–11; Wilson 2009, 1). The United States can also assist the effort to liberalize the energy market by incentivizing transparency in transit states, by contributing to funds that help transit states improve infrastructure and discouraging geopolitical manipulation, and by cooperating with the European Union on intelligence and law enforcement (Smith 2008, 10).

Third, the Obama Administration should establish a transatlantic partnership for nuclear and LNG collaboration. A new collaborative effort on nuclear energy and liquefied natural gas between the United States, the European Union, and possibly Russia, would help fill a “glaring omission” in many EU reports about energy dependence (European Policy Centre 2007, 2). Starting with regular consultations through the existing Strategic Energy Dialogue and culminating in a European Aeronautic Defense and Space Company (EADS)–style¹⁹ multinational partnership for the transatlantic community (perhaps under the auspices of the IAEA), this proposal would utilize technology to add stability for energy consumers and producers alike.

In the field of nuclear energy, this partnership would build off existing research collaboration such as Europe’s Energy Research Alliance, offering the United States, European Union, and Russia a chance to cooperate on improving safety and efficiency in a method of power generation all three powers utilize (European Commission 2008, 8). By standardizing and streamlining regulation, this policy would make it easier for French firms to import plans for so-called “Generation III” nuclear plants, or those incorporating latest safety and efficiency features, to the United States—where nuclear currently suffers from a regulatory process which is a “a product of the 1970s anti-nuclear and post-Three Mile Island mindset” (Spencer 2009, 2; FORATOM, 8). Similarly, U.S. firms would find it easier to enter the European market, helping to expand an energy

¹⁹ EADS, or the European Aeronautic Defense and Space Company, most famous for its Airbus jets, was founded in 2000 in a merger of several European aerospace firms. It has proven highly successful in terms of encouraging EU industrial and technology integration and cooperation in a way that might serve as a useful model for encouraging transatlantic energy collaboration.

sector that produces energy “on a large scale, in a secure manner, at competitive costs and with respect for the environment” (European Commission 2008, 5).²⁰ Existing U.S. legislative efforts at moderating the relatively high startup cost of new nuclear plants, such as a provision in the 2005 energy bill to lower the cost of capital for new reactors (primarily through debt insurance), could be extended in light of recent recommendations that underline the extent to which scaled-up reintroduction of nuclear power generation could significantly reduce costs (Friedman 2007, 9).

In the field of liquefied natural gas, this proposal would help lessen European dependence on the long-term bilateral contracts that contribute to disunity among EU members. By increasingly transforming natural gas into an oil–like liquid market with widespread spot (rather than contract) availability, LNG would defuse the geopolitical aspect of gas importation (Delyagin 2006, 136–137). Already, expanded LNG capacity has helped move natural gas towards a price structure more like that of oil, a truly global commodity (Krauss 2009). The United States and European Union could join together in further promoting LNG through tax incentives and common regulatory streamlining. Extensive development of LNG would remove the need for highly expensive new pipelines, such as South Stream, by making gas available wherever a port exists to receive it (Belkin 2008, CRS-15).

CONCLUSION

The European Union is dependent on a small number of large suppliers for its energy. This dependency has severely exacerbated the fragmentation of its energy market along national lines and intensified contention between old and new members. This situation endangers both cooperation among EU member states as well as the reliability and independence of European diplomatic and po-

²⁰ Eurobarometer polls show that a plurality of opponents to nuclear energy base their opposition on dissatisfaction with current waste disposal practices. A possible solution is the approach currently taken by the United Kingdom, which restricts nuclear operators to land around decommissioned nuclear plants.

litical action with regards to United States interests. By diplomatically prodding the European Union to adopt both a more competitive private energy market and more robust regulation of its energy sector, the United States can help dampen the benefits enjoyed by suppliers such as Russia as a result of its monopoly power. By agitating for transmission infrastructure improvement, expansion of nuclear power generating capacity, and speeding up of LNG technology implementation, the United States can help lessen Europe's overall dependence while increasing the economies of scale for its own comparable energy reforms (Cohen and Szaszdi 2009, 2).

Works Cited

- Agence France-Presse, "EU-Ukraine pipeline deal 'unfeasible,' says Gazprom." France 24. 3 April 2009.
- Ahrend, Rudiger and William Tompson. "Unnatural Monopoly: The Endless Wait for Gas Sector Reform in Russia." *Europe-Asia Studies*. 57–6. September 2005. 802.
- Baltrel. "Annual Report 2007." October 2007.
- Baran, Zeyno. "EU Energy Security: Time to End Russian Leverage." *The Washington Quarterly*. Autumn 2007.
- _____. Testimony to the United States Senate Committee on Foreign Relations. 12 June 2008.
- _____. "The Common Foreign and Security Policy and the Security of Energy Supplies." *The Hudson Institute*. 12 February 2007.
- Barden, Justine. "International Energy Outlook 2008 with Projections to 2030." U.S. Energy Information Administration. 27 October 2008.
- Belkin, Paul. "The European Union's Energy Security Challenges." Congressional Research Service. 30 January 2008.
- Bely, Andrei. "After the Oil Boom." *Russia in Global Affairs*. No. 1. 8 March 2009.
- Bustin, George L. Guest Lecture. U.S.-EU Economic Relations and National Security. Princeton University, Princeton, NJ. 24 March 2009.
- Cameron, Fraser. "The Politics of EU-Russia Energy Relations." *EU-Russia Centre Review: EU-Russia Energy Relations*. Issue 9. June 2009. 26.
- Checchi, Arianna, Arno Behrens and Christian Egenhofer. "Long-Term Energy Security Risks for Europe: A Sector-Specific Approach." CEPS Working Document No. 309. Centre for European Policy Studies. January 2009. 19.
- Cohen, Ariel. "Europe's Strategic Dependence on Russian Energy." *The Heritage Foundation*. 5 November 2007.
- Cohen, Ariel and Szaszdi, Lajos F. "Russia's Drive for Global Economic Power: A Challenge for the Obama Administration." *The Heritage Foundation*. 30 January 2009.
- Council of the European Union. "Presidency Conclusions." 2 May 2007.
- Day, Sean C. Chairman of Teekay LNG Partners. Personal interview, 15 April 2009.
- Dahlman Rose & Co. LLC. "Equity Research – Golar LNG." 16 April 2009.
- Delegation of the European Union to Ukraine, Moldova, and Belarus. "The Energy Community Treaty: Integrating Energy Markets across Europe." Kiev, 2009. 17–18
- Dellecker, A. "Kremlin Inc., Gaming the Energy Landscape." IFRI Policy Paper, Paris. January 2008.
- De Leon, Philip D. "Gazprom: Energy weapon deployed by Russia." *CommodityOnline*. 29 January 2010. 1.
- Delyagin, M. "Assessing Russia's Energy Doctrine." *Russia in Global Affairs*, December 2006.
- Dempsey, Judy. "Hungary forges closer energy ties with Russia." *International Herald Tribune*. 17 March 2009.
- Egenhofer, Christian et al. "Market-based Options for Security of Energy Supply." CEPS/ECN/FEEM. INDES Working Paper No. 1. March 2004.
- Egenhofer, C., L. Grigoriev, V. Socor. "European Energy Security – What Should It Mean? What to Do?" *European Security Forum Paper No. 23*, October 2006.
- Emerson, Michael et al. "A New Agreement between the EU and Russia: Why, what, and when?" CEPS Policy Brief. No. 103. Centre for European Policy Studies. May 2006. 7.
- European Commission. "Communication from the Commission on the Directive 2004/67/EC of 26 April 2004 concerning measures to safeguard security of natural gas supply." 13 November 2008. 9.
- _____. "Differentiating Reality from Rumours: Some Considerations on the Alleged Restrictions on Natural Gas Imports from Russia." 2003. 1
- _____. "EU Energy Security and Solidarity Action Plan: Second Strategic Energy Review." 9.
- _____. "Green Paper: Towards a Secure, Sustainable, and Competitive Energy Network." 13 November 2008.
- _____. "Second Strategic Energy Review: An EU Energy Security and Solidarity Action Plan." 13 November 2008
- _____. "Securing your energy future: Commission presents energy security, solidarity and efficiency proposals." 13 November 2008.
- _____. "Update to the Commission's Nuclear Illustrative Programme." 13 November 2008.
- European Commission – Energy and Transport Directorate General. "Report on public consultation prior to the 2nd Strategic Energy Review." 11 October 2008.
- European Policy Centre. "The New EU Energy Policy: Balancing the Internal Market and External Security of Supply." 29 January 2007.
- Finon, Dominique and Catherine Locatelli. "Russian and European gas interdependence: Can market forces balance out geopolitics?" *Laboratoire d'Economie de la Production et de l'Intégration Internationale*. Grenoble, January 2007. 29.
- FORATOM. Statement on "An Energy Policy for Europe." 31 January 2007.
- Friedman, Thomas L. "The Power of Green." *The New York Times*. 15 April 2007. 9.
- Gelb, Bernard A. "Russian Natural Gas: Regional Dependence." Washington: Congressional Research Service, 5 January 2007. CRS-2–CRS-3.
- Godzimirski, Jakub M. "The Northern Dimension of the Russian Gas Strategy." *Russian Analytical Digest No. 58*. German Association for East European Studies. 21 April 2009.
- Goknel, Mete. "Anatolia: The Energy Meeting Point." *Eurasia Critic*. August 2009.
- Gonchar, Michael, Vitalii Martyniuk and Olena Prystayko. "2009 Gas Conflict and Its Consequences For European Energy Security." *EU-Russia Centre Review: EU-Russia Energy Relations*. Issue 9. June 2009. 40.
- Gray, C. Boyden. "EU has the means to check Gazprom." *The Washington Times*. 12 March 2009.
- Hanson, P. "Russia and Europe are Doomed to Cooperate." *Russia in Global Affairs*, March 2008.
- Heinrich, Andreas. "The Changing Structure of the Russian Oil and Gas Industry." *Russian Analytical Digest No. 1*. Bremen: Research Centre for East European Studies, 6 June 2006. 8.
- Hill, Fiona. "Beyond Co-Dependency: European Reliance on Russian Energy." Washington: The Brookings Institution, July 2005. 6.

- International Energy Agency. "Optimising Russian Natural Gas." Paris: IEA/OECD, 2006. 15.
- International Energy Agency. "World Energy Outlook 2002." Paris, 2002. 189.
- Jackson, Bruce P. "The 'Soft War' for Europe's East." *Hoover Institution Policy Review*. June/July 2006.
- Joyce, Christopher. "Green Energy Scores Big In Obama's Stimulus Plan." National Public Radio. 27 January 2009.
- Korski, Daniel. "Russian threats are just gas." European Council on Foreign Relations. 2 September 2008.
- Krauss, Clifford. "Natural Gas, Suddenly Abundant, Is Cheaper." *The New York Times*. 20 March 2009.
- Kupchinsky, Roman. "Gazprom Looks To a LNG Future." Radio Free Europe. 16 July 2007.
- Lecarpentier, Armelle. "The Liberalization of Gas Markets in Europe." *Panorama/IFP*. 20 December 2005. 1.
- Delegation of the European Union to Ukraine, Moldova, and Belarus. "The Energy Community Treaty: Integrating Energy Markets across Europe." Kiev, 2009. 13–15.
- Le Coq, Chloé. "Russian gas supply and common energy policy." *Baltic Rim Economics*. Expert Article No. 330. Pan-European Institute. 29 April 2009. 37.
- Leftly, Mark. "Obama's team turn to EU bank for inspiration." *The Independent*. 25 January 2009.
- Leonard, Mark and Nicu Popescu. "A Power Audit of EU-Russia Relations." European Council on Foreign Relations. November 2007.
- Locatelli, C. "EU Gas Liberalization as a Driver of Gazprom's Strategies?" IFRI, RussieNEI Visions No.26, February 2008.
- Loskot-Strachota, Agata. "Is the EU in danger of losing Azeri gas?" *European Voice*. 10 April 2009.
- _____. "Security of Russian gas supplies to the EU – the question of infrastructural connections." Centre for Eastern Studies. February 2005.
- Lukyanov, Fyodor. Editor-in-Chief of *Russia in Global Affairs*. Videoconference Interview, 27 March 2009.
- Mangott, Gerhard and Kirsten Westphal. "The Relevance of the Wider Black Sea Region to EU and Russian Energy Issues." *The Wider Black Seas Region in the 21st Century: Strategic, Economic, and Energy Perspectives*. Hamilton, Daniel and Gerhard Mangott, Eds. Center for Transatlantic Relations, The Johns Hopkins University/Austrian Institute for International Affairs. 2008. 169.
- Mankoff, Jeffrey. "Eurasian Energy Security." Council Special Report No. 43. New York: Council on Foreign Relations, February 2009. 20; Deutsche Press-Agentur. "Gazprom Agrees to Boost Pipeline Capacity." 15 May 2009.
- Mitrova, Tatiana. "Gazprom's Perspective on International Markets." Russian Analytical Digest No. 41. Bremen: Research Centre for East European Studies, 20 May 2008. 2–3.
- Monaghan, A. and L. Montanaro-Jankowski. "EU-Russia Energy Relations: The Need for Active Engagement." European Policy Center, 2006.
- Nicoll, Alexander and Jessica Delaney. "An OPEC for gas? Producers step up coordination." IISS Strategic Comments. Vol. 13. No. 03. International Institute for Strategic Studies. April 2007. 1.
- OAQ Gazprom. "Annual Report 2007." Moscow, 21 May 2008. 80.
- Noël, Pierre. "Beyond Dependence: How to Deal with Russian Gas." European Council on Foreign Relations. November 2008.
- _____. "Europe needs a single market for natural gas." *The Financial Times*. 15 May 2008.
- Nyquist, Carl-Erik, Christian Egenhofer, and Thomas Legge. "Security of Energy Supply: A Question for Policy or the Markets?" Report of a CEPS Working Party. Centre for European Policy Studies. Brussels, November 2001. 20.
- Obama for America. "New Energy for America." 2008.
- Office for Official Publications of the European Communities. "Treaty of Lisbon: Amending the Treaty on European Union and the Treaty Establishing the European Community." 17 December 2007. C 306/88.
- Osipov, Igor. "From Transit Networks to Direct Routes: Politics and Business in European Energy Dialog with Russia (The 'Nord Stream' Case)." Center for Applied Business Research in Energy and Environment. 2007.
- Pannier, Bruce. "EU-Ukraine Pipeline Agreement Piques Moscow." Radio Free Europe. 25 March 2009.
- Perovic, Jeronim. "Russian Energy Power Abroad." Russian Analytical Digest No. 33. Bremen: Research Centre for East European Studies, 22 January 2008. 3.
- Plassnik, Ursula. "Dr. Kissinger's Request and the Future of EU Foreign Policy." Liechtenstein Institute On Self-Determination. Lecture at Princeton University, 1 December 2009.
- Pollitt, Michael. "The arguments for and against ownership unbundling of energy transmission networks." University of Cambridge. August 2007.
- Pop, Valentina. "Energy security: South Stream vs. Nabucco gas pipelines." *Southeast European Times*. 14 February 2008.
- _____. "German candidate steers steady course through energy hearing." *EU Observer*. 14 January 2010.
- Prodi, Romano. Personal Interview. 19 November 2009.
- Roberts, John. "The Turkish Gate: Energy Transit and Security Issues." EU-Turkey Working Paper No. 11. Centre for European Policy Studies. October 2004. 17.
- Smith, Keith C. "Russia and European Energy Security: Divide and Dominate." Center for Strategic and International Studies. October 2008. 18.
- _____. "Russian Energy Policy and its Challenge to Western Policy Makers." Center for Strategic and International Studies. March 2008.
- Solana, Javier. Address of the EU HR-CFSP at the 44th Munich Conference on Security. 10 February 2008.
- Soros, George. "Europe's Russia Problem." Project Syndicate. 23 February 2009.
- Spencer, Jack. "A To-Do List for Secretary Chu on Nuclear Energy Policy." The Heritage Foundation. 3 March 2009.
- Stern, Jonathan. "Gas-OPEC: A distraction from important issues of Russian gas supply to Europe." *Oxford Energy Comment*. Oxford Institute for Energy Studies, February 2007. 3.
- Tcherneva, Vessela. "Bridging Europe's solidarity gap." European Council on Foreign Relations. 27 February 2009.
- The Economist Intelligence Unit. "Germany nuclear: Russia, Germany join for nuke engineering." *The Economist*. 10 March 2009.
- _____. "Sweden nuclear: new departure." *The Economist*. 17 February 2009.
- Union for the Co-ordination of Transmission Electricity. "Annual Report 2007." February 2007.
- Union of Industrial and Employers' Confederations of Europe. "Business Key Messages on Energy Policy." Press conference on 10 January 2007.
- United States Department of Energy. Energy Information Administration. "Major Recipients of Russian Natural Gas Exports, 2006–2007." 2007.
- U.S. Department of Energy. "Protocol on Cooperation in Energy Efficiency and Renewable Energy Between the United States Department of Energy and the Russian Federation Ministry of Energy Under The Russian-American Energy Working Group." 8 April 2003.
- Velyaminov, Georgy. "Legal Options for Russian-EU Cooperation." *Russia in Global Affairs*. No. 1. 8 March 2009.

- Wald, Matthew L. "A Cautious Approach to Nuclear Power." *The New York Times*. 23 September 2008.
- Westphal, Kirsten. "Energy Policy between Multilateral Governance and Geopolitics: Whither Europe?" *Internationale Politik und Gesellschaft*. No. 4. 2006. 52; Checchi, Arianna. "Gas Interconnectors in Europe: More than a Funding Issue." CEPS Commentaries. Centre for European Policy Studies. 9 April 2009.
- _____. "Europe Held Hostage?" *Russian Analytical Digest* No. 53. German Association for East European Studies. 20 January 2009. 16.
- _____. "Russian Gas, Ukrainian Pipelines, and European Supply Security: Lessons of the 2009 Controversies." Berlin: Stiftung Wissenschaft und Politik/German Institute for International and Security Affairs, September 2009. 24.
- Wilson, Andrew. "Cleaning up Ukraine's Pipes." *European Council on Foreign Relations*. 13 January 2009.
- Wu, Fang and S. Tamer Cavusgil. "Organizational learning, commitment, and joint value creation in interfirm relationships." *Journal of Business Research*. No. 59. 2006. 87.
- Youngs, R. "Europe's External Energy Policy: Between Geopolitics and the Market." *Center for European Policy Studies*. November 2007.

OF NAVIES AND POWER TRANSITIONS: THE UNITED STATES, NAVAL POWER, AND THE RISE OF CHINA

Brian C. Chao

In the Age of Discovery, European powers explored, conquered, and tied together the regional systems of the world. These states—Portugal, the Netherlands, France, and England—were the first world powers and influence events around the globe based on their power projection capabilities. In jockeying for position with other competing states, establishing colonies, and subjugating tribute states, the world powers relied on one particular form of power projection: naval power. Christopher Columbus, James Cook, Bartolomeu Dias, Francis Drake, Vasco da Gama, Henry Hudson, and Ferdinand Magellan all sailed from Europe and explored Africa, South Asia, the Americas, and Oceania. If a map does not show the obvious, these men's stories do: Europe conquered the world because it could project naval power. Indeed, Europe's use of land power on these newly-explored continents depended on the ability of its navies to bridge the oceans between the metropolises and the colonies.

Nearly seventy-five percent of Earth's surface is water. In the international system, a blue-water navy is one of the necessary conditions to be the world's dominant power (Organski 1968, 364).¹ From time to time, the dominant state perceives a potential challenger, a rising state that is developing capabilities to rival or overtake those of the dominant power. Power transition scholars seek to shed light on the dominant state-rising state dyad to understand

¹ A blue-water navy has the ability to undertake operations far from land for extended periods of time without support from or defense by forces based on land. This differentiates a blue-water navy from green- and brown-water navies: a green-water navy can project power up to a couple hundred miles from shore, but still relies heavily on land support, while a brown-water navy is a riverine navy, patrolling rivers, lakes, and coastlines.

Brian C. Chao graduated *cum laude* in 2009 from Dartmouth College, receiving a Bachelor of Arts degree in Government with High Honors as well as the Rockefeller Prize for the best thesis in international relations. Brian is currently a Chinese Government Scholar at Tsinghua University in Beijing, China.