

Regional and International Energy  
Security Dynamics:  
Consequences for NATO's Search for  
an Energy Security Role

Phillip Cornell

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# Regional and International Energy Security Dynamics: Consequences for NATO's Search for an Energy Security Role

Phillip Cornell

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# About the Author

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# List of Acronyms

ACG	Azeri-Chirag-Guneshli
bcm	Billion Cubic Metres
b/d	Barrels Per Day
BP	British Petroleum
BTC	Baku-Tbilisi-Ceyhan (pipeline)
CEIP	Critical Energy Infrastructure Protection
EADRCC	Euro-Atlantic Disaster Response Coordination Centre
EBRD	European Bank for Reconstruction and Development
GAS	Golden Age of Gas (scenario)
ICI	Istanbul Cooperation Initiative
IEA	International Energy Agency
IFC	International Finance Corporation
IOC	International Oil Company
LNG	Liquefied Natural Gas
MD	Mediterranean Dialogue
NATO	North Atlantic Treaty Organization
NGV	Natural Gas Vehicle
NOC	Nationalized Oil Company
NPS	New Policy Scenario
NTM-I	NATO Training Mission-Iraq
OECD	Organization for Economic Cooperation and Development
OPEC	Organization for Petroleum Exporting Countries
PfP	Partnership for Peace
ppm	parts per million
SACEUR	Supreme Allied Commander Europe
SCADA	Supervisory Control and Data Acquisition
tcm	Thousand Cubic Metres
TCP	Trans-Caspian Pipeline
UN	United Nations
USD	United States Dollar

# Executive Summary

It should not come as a surprise that energy has been steadily gaining importance within security circles in recent years due to the military and security dimensions of this mainly economic issue. As globalization has blurred the lines between traditional security and economic interchange (and especially energy flows), new challenges have arisen. This process has fanned the debate surrounding the role of the North Atlantic Treaty Organization (NATO) with regard to energy questions and their evolution.

NATO's political-security agenda in a rapidly changing economic environment therefore offers significant scope for influence. But over the longer term, technological and economic changes, and especially concerted government policy choices in terms of investment, could lead to different energy scenarios with very different implications for NATO. The potential role which NATO can play in this domain is multi-faceted, ranging from the direct protection of critical infrastructure for energy production and transport to training, crisis reaction, and facilitating political dialogue among consumers and suppliers. Thinking more broadly, NATO's possible roles can quickly become controversial, especially given the fact that those policies which would have the greatest impact are often decidedly outside NATO's purview.

This study attempts to offer background insights into the regional energy security issues that are of particular importance to NATO, taking into account the struggle that global oil suppliers have experienced over the past decade in meeting significant rises in global demand driven by an expanding middle class and emerging markets. To a limited extent, those difficulties have resulted from instability in the Middle East, strikes in Venezuela, internal unrest in Nigeria, and other security problems. As many European states seek to promote diversification of supply (particularly for oil and gas), the political relationships between Europe and alternative suppliers remain at the forefront, affecting the nature of NATO's interests in regions such as Russia, the Middle East, the Caucasus, and Central



Asia. However, concurrent and longer term tectonic shifts in the global economy, with huge boosts in fossil fuel imports from developing Asia off-setting flat or declining energy demand in the developed economies, will have major implications for long-standing security relationships as the producers in these regions untangle themselves from historic dependencies. Ultimately NATO will be forced to decide how it will evolve to embrace a Pacific century – and energy concerns will only accelerate this trend.

Taking into account scenarios developed by the International Energy Agency (IEA) to help us understand how energy markets may develop between now and 2035, this study concludes with three possible paths for the development of energy scenarios that the Alliance may have to face in the next twenty years. Overall, fundamentally changing patterns of production, consumption, and technology deployment are likely to alter security relationships long based on relatively static producer-consumer ties built around legacy technologies.

Those realities have resonated within NATO circles, and a debate as to NATO's role in energy security has been seriously afoot since at least 2006. While the political arguments against NATO's assumption of a substantial role (particularly with ambiguous and potentially military ramifications) were always compelling, "militarizing" a fundamentally economic issue would have negative effects on both the markets and sensitive security relationships – in short, a leading NATO role would be counterproductive to the end-goal of political and security risk reduction. Nonetheless, a coordinated international approach to energy security is certainly necessary, and NATO can indeed add significant supporting value in specific and limited capacities.

But the relationship between international security policy and energy policy is not a one-way street. Just as tools of hard power may be able to play a supporting role to improve energy security, energy policy can have a significant impact on the international security environment. Indeed this paper will argue that economic shifts are likely to have a greater impact on the security environment than vice-versa – economics is the "more independent" variable. It would therefore behoove security planners and NATO to better understand and take account of that relationship.

# Introduction

It should not come as a surprise that energy has been steadily gaining importance within security circles in recent years. A tight global oil market, substantial and sustained price increases, a new era of resource nationalism, rapidly rising demand from emerging markets, and heightened concerns about terrorism and conflict around infrastructures and supply lines lead to serious concerns about the availability of stable and sufficient supplies at reasonable prices. At the same time, such questions are by no means new and while the issue is mainly an economic one, its military and security dimensions have been historically significant. Many of the current debates about energy security infrastructure and supply line protection, as well as producer-consumer political relationships also have long histories. However, the blurred lines between traditional security and economic interchange – especially energy flows – caused by globalization present new challenges.

One of these challenges is how to differentiate responsibilities among institutions originally designed to deal with segmented threats. To that end, this study examines those regional energy security issues that are of particular importance to NATO. It attempts to explain the debate surrounding the role of NATO regarding energy questions and their evolution, and concludes with some possible paths for the development of energy scenarios that the Alliance may have to face in the next twenty years. Arguably, the reasons why security policy-makers have become so interested in energy questions have more to do with fundamental shifts in the global energy market than with those in the security landscape. Therefore, using scenarios developed by the International Energy Agency (IEA) to help us understand how energy markets may develop between now and 2035 can shed some light on how the market evolution might impact security issues during that period.<sup>1</sup>

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<sup>1</sup> There is no attempt here to assess the probabilities of these scenarios, which would have to be considered, mostly based on expert opinions, in actual decision situations.

# Euro-Atlantic Energy Security: Historical Notes

Navigating the full range of political as well as practical possibilities for NATO involvement and defining the Alliance's interest in energy developments first requires an understanding of what is meant by “energy security” in the general security environment.

Over the past two hundred years, abundant supplies of energy have driven economic growth and sustained economic activity in industrial and post-industrial societies. Global economic growth boomed in the 20<sup>th</sup> century, and as late as the 1970s, growth in economic production and energy consumption were directly proportional (i.e. energy intensity was flat).<sup>2</sup> Securing access to energy resources has consequently long been crucial to keeping factories humming and transport links running.

But such security is also key to keeping militaries moving. Indeed, it is that requirement that has always made energy resources special and a category of commodities closely linked with national security. From the mid-19<sup>th</sup> century, steam became the main source of propulsion for modern navies, and coal producing regions like Alsace, Silesia, and Southern Wales took on a military importance that complemented their economic one. The American Civil War established the utility of railroads to transport troops and equipment over long distances at speed. This exercise became central to strategy ahead of the First World War under planners like Alfred von Schlieffen. However, the major powers generally possessed sufficient domestic coal deposits to reliably supply both industry and the military.

Winston Churchill's decision in 1912 to switch the entire Royal Navy to oil was therefore critical and widely regarded as the birth of international energy security concerns. The strategic advantages of oil were multiple: ships were faster, more easily refuelled, and enjoyed increased range due to oil's high thermal content.

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<sup>2</sup> Energy intensity is defined in this context as the ratio of energy consumption to economic production.

The disadvantage was Britain's lack of domestic oil endowment, and more generally the unique global distribution of oil deposits. Baku (Azerbaijan) led the world in production in the late-19<sup>th</sup> century. This production and export of oil, as with the rest of the world have been largely financed by the Swedish Nobel brothers. Indeed, international investment and logistics management are not new to the oil industry. Other now-familiar regions were rising to prominence in Persia, Arabia, and Texas in the years before the First World War.

The British solution to its domestic oil shortage was to acquire a controlling stake in the Anglo-Persian Oil Company, later known as British Petroleum (BP). The Admiralty was subsequently reliant upon the maintenance of steady supply from Persia, rendering Anglo-Persian political relations, open transport routes, and abundant proven petrochemical reserves matters of state security.

Other navies soon followed suit and the emerging strategic importance of tanks, airplanes, and light vehicles only reinforced the centrality of oil in security planning. North Africa, the Middle East, the Caspian Basin, and the East Indies replaced Silesia and Wales; and in a stroke strategic energy competition “went global”. Indeed, much of the Second World War was dictated by the global-scale quest for energy resources. The German attachment to its Romanian client state, Operation Barbarossa's aim to reach and hold Caspian fields, and Japan's rush to capture Dutch Indonesia were all motivated by militaries' thirst for liquid hydrocarbons.

## Post-Second World War Energy Security

Following the Second World War, the political commitment to oil intensified. Mossadeq's nationalization of Iranian oil production in 1952 led directly to Anglo-American covert action to help overthrow him and reinstate the primacy of the pro-Western Shah. Nevertheless, a wave of nationalizations in the 1960s ousted the Seven Sisters (the established Western majors) from many producing countries, most of whom went on to join the Organization for Petroleum Exporting Countries (OPEC). In the 1970s, oil prices quadrupled when OPEC cut supplies repeatedly. The first oil crisis, unleashed in response to American and Dutch support of Israel in 1973, demonstrated the potency of the “oil weapon” and the politicization of energy supply. It thus encouraged the first efforts to develop an international framework for joint energy security provision.

The International Energy Agency (IEA) emerged in 1974 from negotiations initiated by the then US Secretary of State Henry Kissinger. The central mechanism of the IEA was an “oil sharing” plan designed to redistribute oil among the signatories when a country’s supplies were reduced by seven percent or more, thus countering embargoes against specific states such as those of 1973. In addition, the IEA Statistics Office enhanced market transparency by producing an annual report of energy supply and demand balances. A division for long-term cooperation conducted assessments of member states’ energy policies and the research and development division encouraged sharing of costs and expertise in new energy development projects. The second oil crisis, sparked by the Iranian Revolution in 1979, presented a new problem of supply shortages. The IEA responded with demand reduction targets (seeking to drive demand down four to five percent), but panicked scrambles for excess supplies (for example in Saudi Arabia) and excessive stock-building drove oil prices above USD 40 per barrel. Consequently, by the time of the Iran-Iraq War, the main focus of the IEA shifted to the coordination of oil stock release, and this remains its primary crisis response mechanism today.

In the 1980s, the development of global financial markets surged in tandem with a new era of globalized goods, information, and capital flows. This was also the case with oil trading after the introduction of reference pricing in 1987 when the deepening of liquid futures markets steadily disconnected short and medium term oil pricing from the fundamentals of production. Liberalized commodity markets, which continued to deepen and quicken with increasingly complex financial tools and electronic trading technologies through the 1990s, contributed to periods of relatively high price volatility.

OPEC, and particularly Saudi Arabia, no longer has the power it once did to directly control the global price of oil by fiddling with the taps. On the other hand, with a few financial companies controlling the bulk of future trading and often using similar trading algorithms, perception management has become a key element of tempering the herd-effect in the market – particularly in the short and medium term. In other words, perceptions of instabilities or threats to production can drastically affect increasingly sensitive oil prices that in turn impact other energy prices and can feed headline inflation (for example, through food). But the volatility goes both ways and price collapses in the 1980s and late 1990s stung

producers. The plummet to sub-USD 10 per barrel after the Jakarta Conference in 1998 had a particular impact on investment decisions and psychology for years. Indeed, the argument can be made that the increased volatility of the spot market, induced by deep futures markets, has had a detrimental impact on security insofar as it discourages large-scale production investment by increasing risk and also reducing the price-viability threshold of major projects.

## Post-Cold War Energy Security

At the same time, oil, while still the dominant source of energy (along with coal), has been increasingly complemented by alternative sources of energy. Natural gas, used in lamps since the 19<sup>th</sup> century, is so difficult and expensive to transport that this valuable commodity was often simply burned off during petroleum extraction.<sup>3</sup> With the steady expansion of distribution networks and shippable liquefied natural gas (LNG) since approximately the 1970s, demand for gas has increased for both consumers' (e.g. heating and cooking) and industrial use (e.g. electricity production). However, the real revolution has been the rise of unconventional shale gas, particularly in the United States. This rapid supply increase has driven down prices in North America, and has also contributed to an LNG glut since supplies of LNG (in Qatar and elsewhere) originally meant to serve the American market have subsequently come online. However, this glut is likely to be short-lived as rapidly increasing Asian demand will likely absorb both piped and shipped gas as the building of regasification plants alleviate gas security concerns in places like Europe, where some markets otherwise rely on a single supplier.

Nuclear energy production has never been subject to the same supply security concerns due to the relative abundance of uranium. Rather, the technology remains politically controversial in some countries because of safety and waste management issues. After the 2011 Japanese tsunami and partial meltdowns at the Fukushima nuclear power plant, it is policy reactions away from nuclear (epitomized in the German decision to pursue a total phase-out by 2022) that are likely to affect security by increasing demand for coal and gas alternatives as well as regional electricity imports.

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<sup>3</sup> This continues to be a problem in places like Russia and Africa and is addressed through schemes such as the World Bank Global Gas Flaring programme.

Renewable energy technologies, such as solar and wind, have always struggled to compete on the basis of price but this is changing with technological improvement, higher energy prices, and government support programs such as feed-in tariffs. Over the longer term, these solutions will prove key to energy security by eventually reducing dependence on imported fossil fuels. But they will require major investments in grid technologies, storage, and base-load generation to help mitigate security concerns deriving from the variable nature of many of these power sources.

For the purposes of this analysis and insofar as NATO is concerned, oil and gas are likely to remain the primary focus due to their dominant role in global energy because of their physical and international flows and because their relatively concentrated nature in regional terms pose distinct cross-border political and security problems.

# A New Century of Concerns: Contemporary Political Issues

Rising global demand and competition for energy on the back of economic growth are nothing new; energy security concerns have a long history. In the 21<sup>st</sup> century however, a confluence of factors combined to intensify those issues and fundamental changes in the world economic balance are significantly changing energy trading patterns. Indeed, Asia's economic rise is most likely to be the dominant story of energy markets in the coming decades.

## Effects on Demand

With regard to demand, rapid industrialization and economic growth in much of the developing world, and particularly in Asian emerging markets led by China and India, are driving a booming demand for energy, even after the global economic crisis.<sup>4</sup> One effect of that crisis was to dramatically widen the gap between demand changes in Organization for Economic Cooperation and Development (OECD) countries, where it was flat or falling, and those in emerging economies where it surged ahead. In 2000, China's primary energy demand was only half that of the United States, but in 2011 it became the largest consumer of energy in the world. Currently, Asia accounts for about 35 percent of global demand, but that percentage will probably increase to 44 percent by 2035 under the IEA's baseline "New Policies Scenario".<sup>5</sup> Indeed, 93 percent of all energy demand growth to 2035 will come from emerging economies, with 36 percent coming from China alone.<sup>6</sup> Industrial consumption continues to be pushed by growing manufacturing

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4 Chinese primary energy demand is expected to grow by 30 percent in the period 2008-2015. Indian primary energy demand is expected to grow by 25.5 percent over the same period. See *World Energy Outlook 2010*, International Energy Agency, p. 85.

5 The IEA New Policy Scenario (NPS) assumes cautious implementation of national pledges made in Copenhagen to reduce greenhouse gas emissions by 2020, even if detailed policies to achieve these cuts may not have been implemented. The NPS also assumes that the new measures introduced after 2020 are continued in such a fashion to maintain the pace of decline in carbon intensity.

6 *World Energy Outlook 2010*, p. 85.



production and an expanding middle class drives personal consumption of new televisions, air conditioners, and cars. Demand for mobility is rising everywhere, but especially in Asia. The global car fleet is projected to grow from just under 800 million vehicles today to close to 1.6 billion by 2035 – of which more than 40 percent will be in Asia. This is a large increase from the 18 percent that exists in China today.<sup>7</sup>

## Effects on Supply

Global oil suppliers have struggled to meet such demand rises over the past decade, partly because of instability in the Middle East, strikes in Venezuela, internal unrest in Nigeria, and other security problems. But supply is especially constrained by chronic underinvestment both from nationalized oil companies (NOCs) and private international oil companies (IOCs) since the 1990s when oil dipped to USD 10 per barrel. As late as 2006 some companies reportedly continued to measure future returns on potential investments at USD 20 per barrel, even as forecasts predicted long-term prices above USD 50 per barrel for the foreseeable future. Such conservatism was driven by fear of a price collapse but also by fewer opportunities. Declining output from mature fields (largely in OECD countries) and limited access to the world's remaining reserves (largely in OPEC countries) means that oil production is becoming ever more concentrated.

Investment by NOCs, as well as other nationalized energy producers, continues apace but can be constrained by lack of access to capital or technology, or by political developments. The 2011 Arab Spring elicited new risk concerns about Middle Eastern production, even if Libya was the only significant producer to be drastically affected. Also, the 2011 Iranian presidency of OPEC revealed deep fissures inside the organization, which prevented an increase in production quotas in June even in the face of disrupted Libyan production.

The result of such constricted supply expansion and runaway demand in emerging economies is a tightening oil market. The 2008 price correction and the economic crisis that followed offered a brief respite, but since September 2010 the tightening trend has continued. A tighter oil market without ample spare production capacity creates precisely the conditions in which disruptions, including those caused by security events, can have even more drastic effects on the global oil market.

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<sup>7</sup> *Ibid.*, p. 107.

# Supply Concentration and Regional Politics: Russia

The political debate about the reliability of Russian energy supply was reignited in January 2006 when Gazprom, the Russian state monopoly, signalled its intention to raise the price of previously subsidized gas exports to Ukraine from USD 50 to USD 230 per 1,000 cubic metres (tcm). Besides demanding Western European prices for its natural gas, Gazprom also asked that contracts be settled in cash. Ukraine refused to pay the higher prices, and before a compromise was reached at USD 95, Russia reduced the flow of gas through the country and accused Kiev of stealing supplies intended for Europe.<sup>8</sup> Through the year, a succession of similar disputes with Georgia, Azerbaijan, and even Belarus, a close Russian ally, stoked European fears that Russian political spats with transit countries could endanger Western supply.

Among security experts, these events raised questions about Russia's willingness to use the "energy weapon" in its political dealings, and thus also about the wisdom of the heavy dependency of many European countries (mostly in Central and Eastern Europe) on Russian energy supplies. Although Gazprom was demanding Western "market" prices from Ukraine, the move was seen by some as an effort to put pressure on President Viktor Yushenko after his success over the Kremlin's preferred candidate in the 2005 "Orange Revolution". It was following the Ukrainian crisis that Poland released its proposals for an "all-for-one" energy pact. Political rumblings from mainly Eastern quarters lamented the lack of European solidarity in the face of Russian energy power and depicted a growing security problem. The undersea Nord Stream pipeline from Russia directly into Germany (bypassing Poland) and the Italian diversification toward, rather than away from, Russian gas in 2006 served as examples of such division.

After averting a repeat in 2007, relations soured again in 2008, finally resulting

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<sup>8</sup> See "A Murky Deal Ends the Russian Gas Row", *The Economist*, 4 January 2006, available at <http://www.economist.com/node/5353164>.

in another disruption starting 7 January 2009. Slovakia, Bulgaria, and Moldova were among the most impacted by severe cut-offs in gas supply, with some civilian heating being interrupted in the dead of winter. In addition, various other countries from Hungary to the North Sea also experienced significant pressure drops and service interruptions. A deal was made and gas supplies were restored on 21 January 2009. Russian public messaging had improved significantly since 2006. While the crude portrayal of an antagonist/victim relationship that drove security concerns in 2006 was tempered, trust in both Russia and Ukraine as stable suppliers and transporters was certainly affected.

The mix of sources of imported oil and gas is indeed dominated in Europe by a substantial reliance on Russia for both commodities. The European Union imports 60 percent of its natural gas demand, almost 50 percent of which are supplied by (or via) Russia.<sup>9</sup> However, there is significant variation across European importers when it comes to reliance on Russia. Hungary, for instance, is particularly dependent with over 90 percent of its imports coming from the East (including 100 percent of oil imports),<sup>10</sup> but Northwest Europe, on the other hand, receives comparatively little Russian oil or gas. Globally, Russia's increasing importance as mature North Sea production dwindles and Middle Eastern uncertainty continues to exist, is undeniable. The country possesses 6 percent of proven oil reserves globally, and 25 percent of gas reserves.<sup>11</sup>

The creeping “shady-nationalization” of Russia's energy industry is a tricky business. Unlike outright state control in other countries, Russian companies are tangled in a web of subsidiaries and joint ventures that bring the state in through the back door and render the entire sector notoriously opaque. Government agents or individuals representing their interests may sit on the board of one or more entities within these complex webs, which often extend well beyond Russian borders. But the state also exerts pressure via personal connections, regulatory pressure, contractual ambiguity, and a host of public-private arrangements that may represent significant conflicts of interest.

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9 See *World Energy Outlook 2010*, pp. 193-194. Note that EU net imports are only 40 percent.

10 “Energy Policies of IEA Countries: Hungary 2011”, *IEA In-Depth Review Series*, 2011, p. 14.

11 *Russia Country Analysis Brief*, Energy Information Administration, November 2010, available at <http://www.eia.gov/cabs/Russia/pdf.pdf>.

The nature of state control in the Russian energy sector is worrying to the degree that energy sales and transport may be employed as political tools; but the trend is uneven and often opaque. While the extent to which the state intends to exercise its influence and the degree to which energy plays a broader role in Russian foreign and security strategic thinking may be unclear in practice, it is unambiguous in official doctrine. The 2009 Russian report on its National Security Strategy to 2020 describes energy resources as both tools and objectives of security policy: “The change from bloc confrontation to the principles of multi-vector diplomacy and the [natural] resources potential of Russia, along with the pragmatic policies of using them has expanded the possibilities of the Russian Federation to strengthen its influence on the world arena”.<sup>12</sup> But the generally rising profile of the state also raises political-economic questions about how policy will be affected by the importance of energy to the Russian economy. Corruption, already a significant problem, is exacerbated by the flow of resource assets into state pockets.

Moscow’s reliance on energy income does not appear likely to be going away soon. Its dependence on high prices susceptible to volatility was felt acutely when the price collapsed in 2008, causing Russia to suffer a massive reduction in its capital reserves and a particularly sharp recession. Over the longer term, the problem of Dutch-disease (whereby petrodollars crowd out development in other sectors) is showing signs of afflicting the Russian economy in which a large state-dominated energy sector threatens diversification. The heavy reliance of the Russian economy on oil and gas combined with the political-economic effects of creeping state control combine to make fluctuating energy prices key to Russian stability.

But the irony of the Russian gas security question in Europe, particularly given its important role in sparking the energy security debate in NATO, is that events have largely overtaken the issue. Since 2009 natural gas markets have been turned on their head with the introduction of hydraulic fracturing to cheaply access unconventional gas, particularly American shale gas. Tumbling prices in the United States and expanding supply created a knock-on effect in LNG markets where massive capacity expansions in anticipation of exports to the US market (particularly from Qatar) came online in 2009 just as unconventional gas production was

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12 See “National Security Strategy of the Russian Federation to 2020”, Russian Federation, May 2009, § 9.

exploding. Investments in European regasification infrastructure and the availability of LNG (sometimes even on a cheap spot-price basis), as well as large expansion of gas storage in Europe and the improvement of regional interconnections, have helped to mute concerns about Russian dependency.

How long this will continue is unclear as voracious Chinese demand moves into gas (a policy confirmed by the unveiling in 2011 of its Twelfth Five-Year Plan), which is likely to end the “unexpected” gas glut sooner than many realize. This expectation is partly borne out in unprecedented regional divergences in US, UK/European, and Asian gas prices. In a recent scenario, the IEA has raised the spectre of a possible “Golden Age of Gas” Scenario (GAS).<sup>13</sup> However, it may end as quickly as it begins with the gas glut offering breathing space for those countries that were caught with particularly dependent gas sectors. This time should be seized to invest in longer-term solutions.

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13 “Are We Entering a Golden Age of Gas?”, Special Report, *2011 World Energy Outlook*, June 2011, available at [http://www.iea.org/weo/docs/weo2011/WEO2011\\_GoldenAgeofGasReport.pdf](http://www.iea.org/weo/docs/weo2011/WEO2011_GoldenAgeofGasReport.pdf).

# Supply Concentration and Regional Politics: The Middle East

As a region, the Middle East dominates energy production and global distribution. Over the longer term, OPEC (whose members are predominantly but not totally based in the region) will account for an ever increasing share of global oil production. Supply concentration will render the entire market ever more dependent on regional stability. Saudi Arabia alone contains about 20 percent of global oil reserves and serves as the “central bank” of oil via OPEC.<sup>14</sup> What little spare capacity exists in global oil production is overwhelmingly in Saudi Arabia, but deepening and more liquid financial markets (and the speculation which occurs within them) have increased volatility and diminished the country’s ability to control prices over the past twenty years. The second and third largest oil reserves in the region are in Iraq and Iran, both of which present serious political and security problems as reliable suppliers. The region is also a leader in gas production. Indeed, Iran is second only in the world to Russia. However, the political jigsaw map of the region impedes sufficient overland transport infrastructure to bring much of it to the European market. Thus Qatar is the largest producer of LNG globally and undersea pipelines bring North African (primarily Algerian) gas to Europe via Spain and Italy. While none of the three major oil producers have formal relations with NATO as an organization, the Alliance does have official ties with many of the major gas players in the region including Algeria, Egypt, and Qatar.

Middle Eastern political and security concerns loom large, potentially impacting energy supplies from a region which will substantially increase its share of global exports over the next decades. The 2011 Arab Spring raised the spectre of major producers falling prey to domestic political upheaval, though for the moment Libya is the only significant producer to have faced disruption as a result.

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14 *Saudi Arabia Country Analysis Brief*, Energy Information Administration, June 2010, available at <http://www.eia.gov/countries/country-data.cfm?fips=SA>.

With over USD 1 trillion expected to be transferred for the first time from non-OPEC to OPEC countries in 2011,<sup>15</sup> countries may be tempted to buy off dissent. But the habit among some of those countries under domestic pressure of distributing largesse to placate the people can effectively lock in higher oil prices by raising the price necessary to balance national budgets and by raising the political “price floor” sought by producers. Comments from officials in major producers, like Saudi Arabia, about optimal oil prices have steadily risen over the past year from USD 70-80 to USD 100-plus per barrel.

The “risk premium”, which derives from ongoing uncertainties throughout the Middle East, had been priced in for years, but its rise should be partly to blame for price hikes through 2011. Particularly in an environment of such political jitters, individual incidents can still spook markets and send prices rocketing. Understanding those security issues is crucial if one is to identify how NATO can help to mitigate threats to energy supply and resultant market risks.

In 2005 Patrick Clawson and Simon Henderson cited five major potential sources of an oil supply disruption in the region which still loom today: terrorist attacks on energy facilities; an exodus of oil workers prompted by fears of unrest; domestic political instability (such as Arab Spring movements); the spread of Iraqi instability into other producers; and confrontation with Iran and subsequent threats to the Strait of Hormuz.<sup>16</sup>

## Saudi Arabia

The first three apply separately across a range of countries, but come together to threaten the primary energy player in the region and the centrepiece of global oil production – Saudi Arabia. Saudi Arabia alone possesses what excess production capacity exists in the global system and contains almost a quarter of global reserves. J. Robinson West, Chairman of the US Institute for Peace and founder of PFC Energy, places concerns about Saudi Arabia’s stability as a supplier into three broad categories: regime stability (including terrorist threats); foreign policy and

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15 See interview with IEA Chief Economist F. Birol, *Financial Times*, 29 March 2011.

16 P. Clawson and S. Henderson, “Reducing Vulnerability to Middle East Energy Shocks. A Key Element in Strengthening US Energy Security”, *Policy Focus* No.49, November 2005, pp. ix-x.

external alignment; and production capabilities.<sup>17</sup> An external security organization can do little to affect production capabilities, particularly when Saudi Aramco monopolizes domestic production and investment decisions are not particularly affected by security risk assessments, but rather by price management targets and backroom negotiations (often with the United States).

This is not to say that security risks are not negligible. Indeed since May 2003 a wave of Islamic militancy has targeted Westerners and energy infrastructures with the explicit aim of undermining the Saudi regime by disrupting oil revenues. After the 2004 Khobar Towers attack succeeded in killing many Western oil workers and impacting the world oil market by precipitating fears of a foreign exodus and production drop, the Saudi government passed various measures to tighten security. However, divisions exist within the ruling family about balancing security crack-downs, political reform, and appeasing popular sentiment (which can include elements of religious extremity and anti-Western opinion). The Kingdom has also been very mindful in the past to construct numerous systemic redundancies and maintain excess capacity to mitigate the effects of attacks. But especially when spare capacity is very low (as in 2008), it can be difficult to convince the market of Saudi Arabia's ability to withstand future attacks with only negligible effects on output.

In 2005 Saudi Arabia embarked on a program to increase production capacity, causing new infrastructure to come online since 2009. However, many are sceptical of the Kingdom's assurances that its reserves are as vast and easily tapped as it claims.<sup>18</sup> That being said, during the 2011 Libyan disruption, Saudi Arabia still proved a responsible producer in raising production as rising demand rendered the disruption particularly acute.

But its reaction to the Arab Spring in announcing almost USD 130 billion in increased public transfers raised its preferred oil price. The budget break-even point rose from USD 68 to USD 88 per barrel. At the same time, Saudi markets have quickly moved East, with China becoming Saudi Arabia's primary customer

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17 J. Robinson West, "Saudi Arabia, Iraq, and the Gulf", in J.H. Kalicki and D.L. Goldwyn (eds.), *Energy and Security: Toward a New Foreign Policy Strategy*, Woodrow Wilson International Center for Scholars, 2005, p. 201.

18 This includes US government officials, as revealed by the 2011 Wikileaks release as well as many independent analysts (as compiled by the Oil Drum website). See <http://www.guardian.co.uk/business/2011/feb/08/saudi-oil-reserves-overstated-wikileaks> and <http://www.theoil Drum.com/node/7465>.



by a significant margin. The orthodox political-security logic which has linked Saudi Arabia to the West (and particularly the United States) has been one in which the Saudis maintain significant spare capacity and cooperate to manage reasonable oil prices, while the United States provides security cover as well as a primary export market whose economic health serves Saudi interests. Given current economic trends, that logic could begin to fall apart. Such a decoupling would represent one of the most significant shifts in regional and global security in twenty years, leaving serious uncertainties.

## Libya

At the time of writing, Libyan production is slowly resuming after a total shut-in during the 2011 civil war. NATO air-strikes, ostensibly to prevent civilian casualties (but applied with rather less than equal operational impact on the adversaries), suddenly brought similar scrutiny on French President Nicolas Sarkozy, British Prime Minister David Cameron, and other European enthusiasts as had Iraq eight years earlier. Though there were very legitimate arguments for providing military support to prevent civilian deaths (and also to support a fledgling movement for liberation, if not democracy), the truth remains that Libya is also a major energy supplier to Europe. That is not to say that energy is a major or even significant objective, but stability on Europe's energy producing periphery certainly is.

With the fighting, 1.6 million barrels per day of oil were taken off the market in March 2011.<sup>19</sup> Because this came at a low-point in the annual demand cycle and many refineries were therefore undergoing seasonal maintenance, the impact on the physical market could be withstood. But sufficient OPEC production increases to make up for the shortfall failed to materialize through the spring. After a particularly acrimonious June 2011 OPEC Meeting failed to agree to lift official production quotas, Saudi Arabia announced it would pump more oil unilaterally. But with summer demand already rising, the IEA countries chose in June to release strategic stocks and serve as a bridge to increased production.

The entire episode demonstrated that while major security lapses in producing member states on Europe's periphery could severely impede production, existing IEA measures can function to maintain liquidity in the market. However, that may

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19 IEA, *Monthly Oil Market Report*, 13 July 2011, p. 3, available at <http://omrpublic.iea.org/omrarchive/13jul11full.pdf>.

not be enough to curb rising oil prices, which are driven not only by the physical market but also by speculation, fears, and expectations – including about the security situation that NATO is influencing. The NATO operation and the IEA action are obviously not connected. In fact the degree to which NATO airstrikes draw out the conflict in Libya will delay production stoppages. However, if stability in producing regions can be improved with the introduction of greater political legitimacy in the long run, the result can only be positive for energy security.

## Iraq

Iraq represents a serious uncertainty with the potential to serve as a game-changer in global oil production over the coming years. On the high-end of estimates, the government announced plans to raise production from 3 million barrels per day (b/d) to 12 million in the next decade. This will be an extremely ambitious target, but few doubt that outputs will nonetheless rise substantially.

On the other hand, the security situation is still unsure and could yet deteriorate. Domestic political developments and how the United States manages its withdrawal over the next years will dictate the security situation, and by consequence, impact the pace of production expansion. Presently, production levels hover at 25 percent below pre-war output and attacks on installations are not uncommon. A March 2007 US Defence Department report on Iraq's security assessed that "the timing and location of more recent attacks [on infrastructure] resulted in greater disruption of service. In addition, weak ministerial oversight, ineffectual rapid-repair teams, and criminal harvesting of infrastructure assets have proved to be major impediments..."<sup>20</sup> Indeed in January 2007 production dropped 300,000 b/d below the 2006 average.<sup>21</sup>

NATO's role in Iraq is limited to the NATO Training Mission-Iraq (NTM-I), which oversees officer training both in-country at Al Rustimiyah and also at the NATO School in Germany. Any further involvement is unlikely – having divided the Allies in 2002-03, Iraq is a highly sensitive and essentially taboo subject notwithstanding the compounding controversy of NATO and energy. However, if the encouragement of sustained security can help to realize even half of Iraqi

20 "Measuring Security and Stability in Iraq", US Department of Defence, Washington, DC, March 2007, p. 20.

21 IEA, *Monthly Oil Market Report*, 18 January 2007, p. 12, available at <http://omrpublic.iea.org/omrarchive/18jan07full.pdf>.

production targets by 2020, this will represent a huge boost to global supply and energy security.

## Iran

Iranian political tensions with the West over its nuclear program and suspected involvement in Iraq have raised the spectre of military confrontation. The country is a major player in the market as the second oil producer and first gas producer in the Middle East and North Africa region. It also holds a strategic coastline along the Strait of Hormuz, through which 20 percent of the world's oil supply passes. Stated Iranian military strategy has long envisioned affecting this traffic to target either producer or consumer adversaries. In 1982 it targeted ships exporting Iraqi oil and was met with American air attacks on its vessels. More recently, in 2006 the supreme commander of Iran's Revolutionary Guards, Major General Yahya Safavi, threatened repeatedly Iran's intention to block the straits if the country were to come under United Nations (UN) sanctions due to its nuclear programme. Similar threats were issued in 2011 by Revolutionary Guards Naval Commander Ali Fadavi, who warned that "the Islamic Republic has the ability to block the Strait of Hormuz if threatened".<sup>22</sup> Early 2012 saw these threats escalate further. In the unlikely event of a successful closure of the strait, IEA stocks would be able to cover the enormous resultant oil supply shortfall for many months until the security situation could be resolved, perhaps with NATO or Western intervention. However, both interventions would be crucial elements of the policy response.

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22 "Iran's Revolutionary Guards Ready to Close Strait of Hormuz Linking Gulf to International Markets", *Al Arabiya* news agency, 4 July 2011, available at <http://www.alarabiya.net/articles/2011/07/04/156120.html>.

# Supply Concentration and Regional Politics: The Caucasus and Central Asia

At the beginning of the last century, the area around the Caspian Sea, and particularly the coastal city of Baku in Azerbaijan, was a leader in energy production. Under Soviet rule, Caspian basin and Central Asian deposits were under-utilized in favour of Siberian reserves. Thus as the region emerged as a collection of independent states after 1991, there were high hopes that it would provide a new alternative to Middle Eastern and Russian suppliers. Transportation from this relatively inaccessible region has historically constituted the greatest hurdle to large-scale export. Indeed, the Nobel brothers financed an entire Transcaucasian Railway line in order to bring their Baku oil to market in the 19<sup>th</sup> century. Unsurprisingly then, energy concerns in the region tend to revolve around a complex interplay of “pipeline politics”.

Under the Soviet Union, the region was fully integrated into the Soviet pipeline system. As a result, post-independence exports were subject to the high transit fees charged by Transneft and Gazprom or extremely low prices for gas and oil purchased directly. Even given high fees, underinvestment in the Russian transit systems meant that pipelines were often working to capacity, restricting exports and forcing them onto higher-cost, lower-capacity transport means (such as railways). By monopolizing the export networks, the Russian state-controlled transit companies thus subjected exports to potential political interference. However, the same was true of imports, causing oil-rich Azerbaijan to rely on Transneft to export Caspian oil and on Gazprom to import necessary gas supplies. Other states in the region are reliant on the two entities to different degrees depending on their oil and gas endowments. While this was the case, Caucasian and Central Asian states were held virtually hostage to Russian energy cooperation, and by extension, to Russian political pressure.

## The Caucasus

It was in order to circumvent Russian distribution systems that Western public financing was granted through the International Finance Corporation (IFC) and the European Bank for Reconstruction and Development (EBRD) towards the building of trans-Caucasian routes. An initial oil pipeline to the Georgian port of Supsa offered an alternative from Baku but still required shipping through the clogged Bosphorus. The South Caucasus gas pipeline provided an export route for Caspian gas through Turkey. But most importantly, since the completion in 2006 of the Baku-Tbilisi-Ceyhan (BTC) oil pipeline from the Azeri-Chirag-Guneshli (ACG) field to the Southern Turkish coast, the political implications of a viable alternative oil export route have already become apparent in the region.

In the wake of the Russian-Georgian row of 2008, the newly completed BTC line allowed Azerbaijan the political freedom to support its avidly pro-Western neighbour and compensate for Georgian gas shortages. When Gazprom tried to apply pressure in turn on Baku by doubling the price of Southern gas exports, Azerbaijan refitted some power generators to run on oil (thus eliminating its need for gas imports) and halted all oil exports North through Russia. The move was a symbol of new-found Azeri energy independence from Russia, which, along with high oil prices, has helped to drive the increase in confidence towards the Azeri regime. Such confidence impacts the security of a region rife with frozen conflicts with mixed results. Revenues from Azeri energy are financing a new railroad to bring goods through Georgia to Turkey and on to Europe, but a military build-up is also threatening to renew violence in Nagorno-Karabakh.

President Aliyev's efforts to court the West seemed to be growing in 2007. While less vocal than Georgia, Azerbaijan was undoubtedly orienting itself towards the Euro-Atlantic community. Building direct energy interdependence and serving as a realistic option for European energy diversification were both integral parts of this process. In the case of both Georgia and Azerbaijan, new-found energy independence and tightening regional cooperation were providing room to manoeuvre in foreign and security policies, which was previously impossible. In the case of Georgia however, this new sense of confidence was undoubtedly a factor in Tbilisi's reckless diplomacy, which helped trigger the 2008 war with Russia. But even in its significant bombing campaign, Russia made a point of

avoiding the pipeline. Since that conflict, the politics in the Caucasus have been more fluid and Azeri energy ties with Russia have warmed significantly. But on the whole, there is no doubt that investments in regional energy production and transport infrastructure have granted a political independence to the Southern Caucasus countries, which they did not enjoy in the decade after independence.

## Central Asia

Across the Caspian, Turkmen and Kazakh oil and gas also seek transport routes to market, resulting in what seemed to be a geopolitical tussle between Russia and the West in the last decade. However, Chinese energy demand is rising quickly, and Beijing has shown its capacity to complete huge international pipeline projects in a fraction of the time which Western consortia require to dither over financing, equity, and political support. That has allowed Central Asian producers to triangulate between Moscow, Europe, and China.

For its part, Kazakhstan was keen to emphasize its cooperation with Russia despite significant investment by Western majors. During a March 2007 meeting with Vladimir Putin, President Nursultan Nazarbayev reaffirmed his country's energy commitment to Russia and intention to export most of its resources through Russian pipelines. In 2007, 50 million tons of oil and 54 billion cubic metres (bcm) of gas (including 48.1 bcm of Turkmen gas) were exported via Russia.<sup>23</sup> This is unlikely to change without new and very large transport infrastructure projects since substantial Kazakh oil deposits are located near the Northern border and are well connected to the Russian network.

However, Russian anxiety about a Kazakh reorientation is not wholly unfounded. Kazakhstan has been receptive to Chinese moves to strengthen bilateral energy relations. The completion of the Kazakhstan-China oil pipeline in 2009, which will reach full capacity in 2011, offers a new export route East. But more relevant for European supply and regional security interests, Astana has been less receptive to any trans-Caspian pipeline (TCP) plan, relying on Russian transit networks to sell to Europe.

In the world of Central Asian energy, Turkmen gas has been sought after by Europe and China and the country has used this as a principal bargaining chip in its Russian diplomacy. The political proclivities of its new leadership, following

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23 "Perspectives on Caspian Oil and Gas Development", *Working Paper Series*, International Energy Agency, December 2008, available at [http://www.iea.org/papers/2008/caspian\\_perspectives.pdf](http://www.iea.org/papers/2008/caspian_perspectives.pdf).

the death in December 2006 of autocratic ruler Saparmurat Niyazov, appear more opportunistic and pragmatic than ideological. Gurbanguly Berdymukhammedov, confirmed in February 2007 as Niyazov's successor, at first appeared committed to promoting the diversification of Turkmen export options away from Russian dependency. Indeed, Niyazov had already been actively pursuing such a course in the months before his death, promoting new export routes to China and through Afghanistan to South Asia and negotiating a 54 percent price increase in gas sold to Russia. But soon after coming to power, Berdymukhammedov signed a deal with Putin to expand export capacity through Russia and construct the first gas pipelines in the country since the 1970s.

In 2009, a pricing dispute with Moscow caused Gazprom to block the gas flow North eventually resulting in a dramatic pipeline explosion. Exports resumed only in 2010 after a nine-month hiatus. Previously, such a dispute would have been unthinkable, effectively starving the country of crucial revenue. But the completion in 2009 of new gas lines to China and Iran, as well as a swamp of Chinese loans to tide over the country during the stoppage, allowed Ashgabat to turn the screws. It lost no time in doing so.

As for NATO, its standing in Central Asia is somewhat mixed. After 11 September 2001, Central Asian countries gained significant standing on the security agenda and intensified partnership programmes have assisted with defence institution building and strengthened armed forces. However, across the board significant entrenched business interests continue to bind the region to Russia, and Central Asian governments are cautious of political interference while welcoming both the legitimacy and enhanced military capabilities that ties with NATO bring.

The lesson to take from Caspian energy politics is that they are the legacy of over a century of Russian political dominance meeting with the 21<sup>st</sup> century reality of Chinese demand and new European export routes. Caspian neighbours have been (variously) keen to escape from under Russian dominance once manifested in an energy export stranglehold that commanded political and strategic subservience. Russia is anxious to lose lucrative transit fees, sources of cheap gas, and to see competition from Europe and in Asia. From NATO's point of view, whether the energy goes East or West, new markets and export options can have major impacts on the strategic independence of Caspian countries. Accessing Asian energy and encouraging political and economic regional development are two sides of the same coin.

# Consequences for NATO's Search for an Energy Security Role

Recognizing these global developments, but particularly in the face of the Russian-Ukrainian gas dispute of 2006, NATO began the process of debating its own role with regard to energy security. Yet defining such a role is tricky for both political and practical reasons. The potential role NATO can play in that domain is multi-faceted, ranging from the direct protection of critical infrastructure for energy production and transport to training, crisis reaction, and facilitating political dialogue among consumers and suppliers. Thinking more broadly, NATO's possible roles can quickly become controversial.

In March 2006, Poland proposed an “energy Article V” that would require all signatories to pledge assistance to a country facing supply disruption.<sup>24</sup> The reference to NATO's founding charter, the unspoken target of that initiative (Russia), and the support proffered at the 2006 Riga Summit by Senator Richard Lugar implied a deterrent role for the organization when it comes to energy. Even though this moment helped to kick-start the NATO debate, support among its members was never widely shared and Poland's proposal was viewed as extreme within the spectrum of options. Even those sympathetic to a stronger line against Russia were unwilling to support such a stance.

Indeed, the political arguments against NATO's assumption of a substantial role, particularly with ambiguous and potentially military ramifications, were always compelling. “Militarizing” a fundamentally economic issue would have negative effects on the markets, discouraging investments to expand capacity at a time when they are necessary. It could sour relations with producing countries by adding an apparently confrontational dimension, further politicizing energy trading and at the same time casting a shadow over various other political issues. In short, a leading NATO role would be counterproductive to the end-goal of political and security risk reduction. In the end, while a coordinated international

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24 See J. Dempsey, “EU Urges an Energy Pact with Russians”, *New York Times*, 8 March 2006, available at <http://www.nytimes.com/2006/03/08/world/europe/08iht-energy.html>.



approach to energy security is certainly necessary, the policies which would have the greatest impact – liberalizing the European market, facilitating greater connectivity between national energy networks, encouraging reserve and supply chain capacity, supporting the development of alternative energy sources, and encouraging conservation and efficiency – are decidedly outside NATO's purview.

That being said, in January 2006 when the annual drama of Russian-Ukrainian gas negotiations turned particularly sour and caused a supply shortage to Europe, NATO began in earnest to look at how it could contribute to solving a problem with so many political and security impacts. Suggestions about NATO's role, starting with the Polish proposal, have since then spanned the spectrum of political possibility. Jamie Shea, at the time the director of NATO's in-house policy think tank, proposed in November 2006 a collection of monitoring and assessment mechanisms at NATO, including Article IV assistance to Allies, maritime surveillance, and even possible interdiction operations.<sup>25</sup> In 2007, former Supreme Allied Commander Europe (SACEUR) James Jones (who later became US President Obama's National Security Advisor) alluded to NATO's possible contribution to stability in the Niger Delta, where sporadic attacks consistently kept national output at 20 percent below full production levels. Others pointed to the fact that through NATO, Europe could bring US political pressure to bear on Russia. Turkey could be institutionally involved in European energy security and engagements with producer countries on energy concerns through the Mediterranean Dialogue (MD), the Istanbul Cooperation Initiative (ICI), and the Partnership for Peace (PfP) could occur within those existing frameworks. Assistance towards critical energy infrastructure protection (CEIP) – through communications, surveillance, and training support – yielded the most consensus. More ambitious proposals formulated shortly after the 2006 disruption envisioned direct CEIP support, but a scenario in which NATO troops are stationed on platforms or along pipelines was always unlikely.

Indeed, many of the above suggestions were pipedreams, and at best politically unpalatable. Significant concern remains that too much NATO involvement, no matter how well intentioned, could in fact undermine security of both kinds. Energy supply security could suffer by impediments to investment, and geopoliti-

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<sup>25</sup> See J. Shea, "Energy Security: NATO's Potential Role", *NATO Review*, Autumn 2006, available at <http://www.nato.int/docu/review/2006/issue3/english/special1.html>.

cal security by the militarization of energy flows and of the sensitive regions in which they tend to originate.

That is not to say that NATO cannot add significant value. CEIP, around which consensus within NATO built early, is a good example. Improving energy infrastructure security measures by providing tools that the private sector cannot, including capital-intensive surveillance (air, sea, or space-based reconnaissance) and training support to the security sectors of producing and transit countries, can mitigate risks that otherwise drive up costs and discourage investment.

Even in areas where domestic governance is weak, public security provision (domestic security services or internal military forces) still monopolizes force at the medium to high-end of the threat spectrum. The international network-centric nature of complex energy supply chains means that the quality of such publicly-supplied security varies along the chain. Therefore, there is clear potential for militaries (perhaps under the aegis of NATO) to identify the weakest links and assist in ameliorating public security provision at those points. There is also a question about whether the elements of public security provision that already exist (e.g. American maritime patrols or surveillance support) might benefit from internationalization for purposes of enhanced legitimacy and access.

## Energy Security in the Modern General Security Environment: Possibilities for NATO

Over the course of 2007-2008 the NATO International Secretariat completed an unpublished internal report entitled “NATO’s Role in Energy Security”, which was noted by the Heads of State at the 2008 Bucharest Summit. It identified the following areas where NATO can play a role:

- information and intelligence fusion and sharing;
- projecting stability;
- advancing international and regional cooperation;
- supporting consequence management; and
- supporting the protection of critical infrastructure.

However, despite the identification of these areas, discussion and concrete action remained, perhaps appropriately, rather limited. The first three areas are broad objectives that certainly impact positively on energy security, but whose pursuit (at least within NATO) is only marginally driven by energy concerns. Con-

cretely, value-added in these areas generally mean using existing fora as talking shops. As for consequence management, exercises organized by the Euro-Atlantic Disaster Response Coordination Centre (EADRCC) at NATO duly included energy aspects in 2008. Additionally, some energy infrastructure specialists were added to their emergency contact lists. Otherwise, implementation was limited.

So in the run-up to the Lisbon Summit in November 2010, and particularly in the formation of the new Strategic Concept, CEIP and information sharing in that area remained at the centre of discussions on potential NATO contribution. This includes cyber-security – an “emerging challenge” often spoken in the same breath as energy security within NATO circles. With institutional implications in terms of NATO Secretariat organization, both now fall under the same department. The challenges of cyber-security and energy infrastructure in a world of interconnected Supervisory Control and Data Acquisition (SCADA) systems are closely linked. The 2010 Stuxnet virus which affected Iranian nuclear operations is one publicly visible example. However, as the implementation of smart electricity grids increases with more variable renewable technology integration and efficiency concerns, data control systems will be increasingly important to maintain the delicate grid balance that keeps the lights on.

It is not surprising then, that when the new Strategic Concept was unveiled at Lisbon, cyber-security garnered particular attention and a loosely defined CEIP stood out as the cornerstone of NATO's future energy security endeavours. In terms of threats, it was noted that:

“All countries are increasingly reliant on the vital communication, transport and transit routes on which international trade, energy security and prosperity depend. They require greater international efforts to ensure their resilience against attack or disruption. Some NATO countries will become more dependent on foreign energy suppliers and in some cases, on foreign energy supply and distribution networks for their energy needs. As a larger share of world consumption is transported across the globe, energy supplies are increasingly exposed to disruption”.<sup>26</sup>

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26 NATO, *New Strategic Concept*, Lisbon, November 2010, Article 13.

Therefore, NATO committed itself to “develop[ing] the capacity to contribute to energy security, including protection of critical energy infrastructure and transit areas and lines, cooperation with partners, and consultations among Allies on the basis of strategic assessments and contingency planning”.<sup>27</sup> Yet, it is unlikely that a broader mandate for NATO at the nexus of energy and security will be recognized as policy-makers would have to think outside the CEIP box.

The relationship between international security policy and energy policy is not a one-way street. Just as tools of hard power may be able to play a supporting role to improve energy security, energy policy can have a significant impact on the international security environment. In some cases, for example, additional transport capacity, diversification, or energy access may not be commercially viable but may be of significant benefit to the security environment. Filling those gaps would then presumably be the responsibility of others, such as international development organizations, market regulators, national governments, or financing organizations. Decreasing regional dependence on a few export routes in order to encourage policy independence in the Southern Caucasus was at least part of the political logic in the 1990s to support the construction of the BTC pipeline and similar arguments have been raised with respect to the Nabucco gas pipeline from Baku to Europe. These are debates in which NATO could add value.

Indeed, understanding the security impacts of changes to the energy infrastructure, energy trading, and the energy economy more broadly, will better inform security planning but also policy coordination across organizations with various policy mandates.

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<sup>27</sup> *Ibid.*, Article 19.

# Possible Futures – Energy Driving Security Challenges

As mentioned in the opening of this study, the more independent variable in the security-energy nexus going forward is likely to be the energy side. Fundamentally changing patterns of production, consumption, and technology deployment are likely to alter security relationships long based on relatively static producer-consumer ties built around legacy technologies. The Russian-European and Saudi-American relationships have already been mentioned and key to both has been a long-standing producer-consumer interdependency. The question then arises as to the role of NATO in response to these challenges, and in particular the type of energy scenarios that the Alliance may have to face in the next 20 years.

## IEA New Policy Scenario: Pacific NATO

The IEA New Policy Scenario (NPS) assumes cautious implementation of climate change targets already announced up to the Copenhagen Accords.<sup>28</sup> Under the NPS, world energy demand rises by 36 percent as we approach 2035, the growth is uneven in terms of location and fuels. Demand for oil and coal drops significantly in the OECD countries but raises 18 percent overall on the back of non-OECD demand growth. On the supply side, oil production will also shift geographically and OPEC's global market share rises from 44 percent today to over half by 2035. So as supply is steadily reduced to a few OPEC producers (Saudi Arabia sees the largest marginal production increase, followed by Iraq), their market also shifts decidedly East.

At the same time, gas demand increases by 44 percent between 2008 and 2035, led by China and the Middle East, with China accounting for almost one-quarter of the increase in global demand. Demand in the Middle East, which is well-endowed with relatively low-cost resources, increases almost as much. In terms

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28 IEA, *World Energy Outlook 2010*, p. 46.

of production, the Middle East leads the expansion of gas production over the outlook period with its output almost doubling to 800 bcm by 2035. Two thirds of this increase is consumed locally.

From a strategic orientation point of view, this scenario sees a much stronger relationship develop between Middle Eastern producers and Asian emerging economies in both oil and gas. The decoupling of the Saudi-US relationship would be more likely and happen more quickly, with real impacts on oil prices. Unless industrialized countries were to significantly reduce oil dependence, such a scenario could seriously impact medium-term economic recovery in the West – and portend an extended period of austerity with impacts on defence spending at just the time of rising Asian powers. The focus of European and American strategists will certainly be on the Pacific region and on maritime traffic in the Indian Ocean and around Southeast Asia – whether or not NATO expands its own area of responsibility so far afield. China and India, on the other hand, are unlikely to leave such vital supply routes unprotected and increasing military presence in the region may well be a consequence. How NATO develops its relationships with the Pacific countries will be crucial under any scenario, but in this case existing cooperation in the context of anti-piracy actions in the Western Indian Ocean holds significant scope for expansion. Concerns over the protection of Gulf waters and especially the Strait of Hormuz (through which almost 16 million barrels of oil currently pass daily) will become more pressing to Asian strategists. Whether or not the US Fifth Fleet will remain the primary guarantor is unclear.

### IEA “Golden Age of Gas” Scenario: Pipelines and Home Waters

The IEA GAS assumes lower gas prices;<sup>29</sup> pricing mechanisms which are projected to become more reflective of market conditions; Chinese gas demand which is expected to rise along the lines of its Twelfth Five-Year Plan; 10 percent less nuclear energy additions, particularly after the Fukushima crisis; and a rise in natural gas vehicle (NGV) use (70 million NGVs in 2035 vs. 30 million in NPS). Gas demand increases from 3.3 tcm in 2010 to 5.1 tcm in 2035 – an increase of over 50 percent – with the average rate of increase in gas demand being nearly 2 percent per

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29 Natural gas prices in the GAS scenario are between USD 1.5 per million British thermal units (Mbtu) and USD 2.5/Mbtu lower than the NPS – so USD 8/Mbtu in 2035 vs. 10.4 NPS, Europe 10.9 vs. 13.3 and Japan 12.9 vs. 15.3.

year. Unsurprisingly, natural gas sees the strongest demand growth of all energy sources in absolute terms in the GAS Scenario.

Under this scenario, the share of natural gas in global energy consumption increases to account for 25 percent in 2035, compared with 22 percent in the baseline NPS. The combined effect of a strong increase in natural gas demand throughout the outlook period and a decline in global coal demand from around 2020 onwards results in global demand for gas overtaking coal before 2030 to become the second-largest fuel in the primary energy mix.

How would this production be distributed? High investment in unconventional exploration, along with minimal regulatory oversight blocking extraction under this scenario, could lead to large increases in gas production in various parts of the world including Asia, Latin America, Australia, and Africa. While Europe has some potential for unconventional production (for example in Poland), regulatory and legal hurdles (from European sub-soil ownership laws to strong political resistance to the technology in places like France) make for a relatively poor medium-term outlook on the continent.

With most Middle Eastern and Pacific LNG going to Asian markets, and more of rising global demand being met by local unconventional production, rising European gas demand could reignite questions of gas security. Particularly, rising demand to replace coal could renew the spectre of competition over Russian gas under this scenario, with the Arctic also becoming a key zone for European economic activity in a new gas bonanza. NATO has already begun to consider the growing strategic value of the Arctic and a high-level Alliance conference in Reykjavik in January 2009 examined the issues. Given crucial unresolved boundary issues and multiple overlapping claims to shipping and resource exploitation rights, the potential for stiff competition over Arctic resources and territory exists.

North African security and the protection of the Mediterranean could also be key areas with the renewed importance of piped gas from Algeria and Libya and new gas plays being developed off Cyprus and Israel. Finally, Turkey's growing importance as a regional energy hub could come into play and a more active Turkish policy in its region could prove a boon for European energy needs. While overtures in recent years in the context of its "no problems with neighbours" policy have sometimes been met with media suspicion or even whispers of "los-

ing Turkey”, it is largely Turkish policy that will help determine whether supplies are there to feed Europe’s current “grand project”, the Nabucco pipeline. Through NATO Europe should leverage its close ties with Turkey in order to encourage its energy hub ambitions and nurture close relations with the only NATO country with concurrent political and strategic interests whose growth rates and economic dynamism put it squarely into the camp of emerging economies on par with India, Brazil, and others.

## IEA “450” Green Scenario: Pacified NATO

The 450 Scenario goes beyond the NPS in terms of action to tackle climate change with the aim of achieving long-term stabilization of the atmospheric concentration of greenhouse gases at 450 parts per million (ppm) – a level that, according to the International Panel on Climate Change, gives the world a 50 percent chance of limiting global average temperature increase to 2°C. This is the IEA’s “greenest” scenario and is one of the most ambitious in terms of achieving emissions targets (scenarios from other major institutions are beginning to see 550 ppm or even 650 ppm as the most optimistic outcomes). Even the IEA appreciates that it is becoming increasingly unrealistic.

“450” is based on the high-end of pledges, announced in association with the Copenhagen Accord, on strong implementation of the commitments made by the G-20 to phase out fossil-fuel subsidies and on strong action after 2020 to rapidly reduce emissions from all sectors. Gas still plays an important role for countries making the transition to a lower-carbon power sector, but overall, fossil fuelled electricity generation will fall to only around 20 percent by 2035, from almost 70 percent today. Already in the NPS, renewable-based electricity generation will triple in absolute terms between 2008 and 2035 – the increase coming primarily from wind and hydropower. But in the 450 Scenario, this is set to grow almost four-fold or 30 percent higher than in the NPS. Renewable sources (including hydro) and nuclear power are projected to account for 45 percent of total global power generation by 2035, a sum increasing from the 32 percent that exists today. We see a marked shift occurring in OECD countries where this share will reach 56 percent by 2035. Non-OECD countries also move towards low-carbon technologies in the power sector. In absolute terms, China sees the biggest increase in



generation from both renewable sources and nuclear power between 2008 and 2035 at almost 2,000 TWh (terawatt-hour per year<sup>30</sup>) and 830 TWh respectively.

From a strategic point of view, the 450 Scenario represents significant benefits for energy security in both developed and emerging economies, as well as security benefits from limiting ballooning wealth transfers to the Middle East and reducing dependence on fossil fuel imports (with their implications for protecting foreign regimes or trade routes). Annual spending on oil imports in 2035 by the five largest importers – China, the European Union, the United States, India, and Japan – is around USD 560 billion, or one-third lower than in the NPS. This also implies a declining level of spending on oil imports as a share of GDP in all major importing countries. That is not to say that OPEC countries would suffer – cumulative oil revenues in 2010-2035 amount to USD 27 trillion, or a little over USD 1 trillion per year. While this is 16 percent lower than in the NPS, it is more than a three-fold increase compared with the last quarter century. For those parts of the economy still dependent on oil, the price would stay flat over the long term from about 2020. Even while the greenest IEA scenario continues to see huge increases in absolute fossil fuel demand, it also predicts global oil demand to peak before 2020 at 88 million b/d – helped by more than 4 million b/d reduction in OECD oil demand by that peak date and 14 million b/d reduction by 2035.

Under the 450 scenario, the strategic landscape in the 2030s could look significantly different for NATO and the world. With oil demand less than that of today and falling by 2035, we can begin to see a trajectory that finally moves the entire world away from oil dependence over the long term. Supply is still concentrated, and the Middle East in particular retains its strategic importance, but especially in the OECD reinvestment into the low-carbon high-tech sector of the domestic economy displaces huge wealth transfers abroad. Massive electrification of the economy, including in transport (where 70 percent of new cars will run on low-emission power sources by 2035), largely refocuses much of the concern on electricity security writ (with new implications for grid technology and security). In terms of environmental endowment, international transfers of energy are still important in the electricity sector, for example, in dreams to cover the Sahara with

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30 1 TWh/year = 114 MW.

photovoltaics (such as the Desertec project) or to send solar power from Greece to Germany (the Helios project).<sup>31</sup>

But overall, for the first time since the industrial revolution, developed economies can reverse the trend of increasing reliance on foreign sources of energy. Just as this trend initiated the growing importance of energy to international security concerns, so its reversal could begin to decouple that link.

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31 See T. Gropp (Director of the Desertec Foundation), "Multi-Euro Project Helios", 6 September 2011, available at <http://www.desertec.org/en/press/press-releases/110906-01-multi-billion-euro-project-helios/>.

# Conclusion

This study has attempted to offer background insights into the major issues regarding energy within NATO and on the European periphery. As European states seek to promote diversification of suppliers especially for gas, the political relationships between Europe and those alternative suppliers will remain at the forefront. A “Golden Age” of gas could reinforce that situation, despite upheavals in the market and a recent gas “glut”. NATO’s political-security agenda in a rapidly changing economic environment therefore offers significant scope for influence. But over the longer term, technological and economic changes, and especially concerted government policy choices in terms of investment, could lead to different energy scenarios with very different implications for NATO. As a general rule, reducing dependence on foreign imports, particularly on those fossil fuels such as oil whose production will quickly be concentrated in fewer countries, will greatly benefit the security environment. In the meantime, the focus will surely move rapidly East, with huge increases in fossil fuel imports from developing Asia off-setting flat or declining energy demand in the developed economies. This will have major implications for long-standing security relationships, as producers untangle themselves from historic dependencies with the same enthusiasm as consumers. Though the point may finally sound glib, NATO will have to decide how it evolves to embrace a Pacific century – as energy concerns will only accelerate this trend.

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