



Game Change? The Many Faces of Today's Energy Revolution

Part II: Geopolitical Implications

Marie Vandendriessche

Researcher
ESADEgeo Center for Global Economy and Geopolitics

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Introduction

Much ado has recently been made about what has been termed the 'shale gas revolution': the boom in US unconventional gas production driven, in large part, by technological advances. The fortuitous developments in the energy sector have been discussed at length in the media, not only because of their promising economical prospects for a nation some had labeled as in decline, but also for its potential to bring about profound changes in the geopolitical landscape.

This **series of brief papers** aims to be a guide to help contextualize some of the confident claims being made in the media on today's shale gas revolution, offering a variety of factors – economic, political, security-related and environmental – to take into account in order to paint a more multidimensional view of the prospects. Both positive and negative effects stemming from the energy revolution will thus be addressed.

Part I of the series provides critical background information, offering insights on the range of energy sources involved in the revolution, the technology behind their extraction and the economical factors which have propelled the energy boom – and which could present risks of their own. **Part II** presents the geopolitical side of the story, with a detailed look at a number of countries and regions – United States, China, Russia and Europe – in turn, teasing out potential consequences of the energy revolution. **Part III**, which rounds out the series, examines the environmental effects of the energy boom on a local and global level.

*"The relative fortunes of United States, Russia, and China - and their ability to exert influence in the world - are tied in no small measure to global gas developments and vice versa."*¹

¹ Quote from "[The Geopolitics of Natural Gas](#): Report of Scenarios Workshop of Harvard University's Belfer Center and Rice University's Baker Institute Energy Forum" (July 2012). Authors: Amy Myers Jaffe & Meghan L. O'Sullivan.

Following the claim above, the present paper – **Part II of this paper series** – introduces a number of possible geopolitical scenarios. For a number of years, geopolitical analysis has been set on the idea that the United States, the world's great power, was in decline, due in no small part to its relative economic position. However, forecasts such as those made recently by the IEA in its 2012 World Energy Outlook (WEO), have turned that relativity upside-down. The IEA predicts that the US will overtake Saudi-Arabia to become the world's largest oil exporter by 2020; by 2015, it will be producing more natural gas than gas empire Russia, and by 2020, it should be a net gas exporter. In what follows, a number of countries and continents – United States, China, Russia and Europe – are studied in turn in order to examine the possible and plausible geopolitical shifts they could experience as a result of the current energy revolution.

The American dream of energy independence

The USA is central in the story of the current energy revolution: it is in this country that a cluster of geological, technological, economical and regulatory factors has come together most beneficially, leading to a vast increase in unconventional hydrocarbon production. Despite also entailing a number of potential economical risks², this revolution has reignited the American dream of '**energy independence**', a concept desired by United States presidents since the 1973 oil crisis. The term was flung around once again in this year's presidential election cycle, this time with the year 2020 attached. Interestingly, after years of unattainable visions, the IEA has confirmed that the domestic side of the equation is indeed pointed in the direction of energetic self-sufficiency: American oil imports are predicted to fall from 10 million to 4 million barrels per day (mb/d) (and have already dropped by 1 mb/d since 2008).

However, neither achieving 'energy independence' nor its supposed political and security consequences are guaranteed. There are a number of reasons why **attaining energy independence is far from sure**. For one, increased domestic production only accounts for a portion of the decline in oil imports: due to the economic crisis and to increasing fuel efficiency, American demand has fallen. Moreover, natural gas, at the heart of today's energy boom, is not fully fungible. It is, for example, **no substitute for the petroleum required by the crucial transport sector**. Furthermore, there may be a glut of confidence in one of the main components to America's global energy success, namely **becoming a net exporter of gas**: the ability to export natural gas will require a stark increase in liquefaction capacity, as well as the construction of export terminals and governmental consent – none are certain as of yet.

² See Part I of the series for more detail on the economic drivers, opportunities and risks of the American energy revolution.

Despite the impediments described above, it is likely that the dream of energy independence will live on and prosper – after all, the hypothetical geopolitical rewards do shine bright. Simplistically stated, reduced reliance on oil imports could mean **lower need to secure overseas production sites and to pander to oil-producing regimes**, which are not always in line with American ideals. Concretely and in the present world scenario, some have suggested US ‘energy independence’ would allow newly re-elected President Obama to complete his ‘**Asia pivot**’: after extricating the country and its troops from messy wars in the



Middle-East by 2014, the US could devote its foreign policy resources to the burgeoning Asian continent. Military resources could also be freed up, for example, from the **Strait of Hormuz**, the critical maritime alley which sees the passage of 20% of all world crude oil trade, 20% of world LNG trade (mainly from Qatar), and 35% of all seaborne traded oil. In addition, the competitiveness benefits brought by the energy production revolution would considerably broaden the US’ scope of action and incentives toolbox on many fronts.

But, even if energy independence is reached or approximated, it is unsure whether the mythical and much-touted benefits of energy independence will all materialize. A number of factors could tie the US down. Firstly, it is important to remark that **oil prices are global** - as opposed to gas prices, which vary immensely by region as there is currently no global gas market. As seen in recent years, tumultuous events such as the Libyan uprising have disturbed the oil markets profoundly, leading to increased prices despite the supposedly mitigating effects of the US energy revolution. Secondly, the United States has **allies** in the Middle-East which it will not abruptly abandon; **humanitarian concerns** may also retain US involvement in the region. But perhaps most importantly, the US is an **inextricable part of a global economy**: if its export or import markets were to suffer due to disruptions in oil flow from the Middle-East, America too would feel the pain.

To sum up, neither the possibility of reaching the American dream of full energy independence nor the resulting liberty for American foreign policy actions are fully assured. On the one hand, economic factors and technological developments may mar the achievement of self-sufficiency; on the other, global interdependence and global markets may severely restrict American foreign policy maneuvering room.

China's scramble for resources and what it might require

China and Asia are in a very different situation. Energy demand in the Asian continent is hitting new highs every day. Chinese energy demand, for example, is set to grow by 60% between 2010 and 2035. At present, Asia, with its lacking pipeline infrastructure, is **highly reliant on LNG (Liquefied Natural Gas) and coal**. Coal is still in heavy use in China in particular, with the World Resources Institute [reporting](#) that China consumed 46% of world coal consumption in 2010 and that, together with India, the country accounts for 76% of the proposed new coal power capacities in the world. Asia is thus in search of energy sources, both conventional and new, especially with traditional LNG supply (from Indonesia and Malaysia, among others) in decline.

As described in the Part I of this series, China's reserves of unconventional gas are still under assessment. Despite measurement being at an early stage, the [IEA](#) suggests that the size of unconventional gas resources in China is “**undoubtedly large**”. At this time, however, the only type of unconventional gas being explored on a significant scale is **coalbed methane** (production stood at 10 billion cubic meters (bcm) in 2010). Indeed, at the beginning of 2012, China had only 20 shale wells in total.

Nevertheless, the country is **ambitious in its exploration goals**, targeting a shale gas output of between 60 and 100 bcm by 2020 (a scenario the IEA sees as likely, if certain [policy features](#) are in place), as well as a tripling of coalbed methane output by 2015. However, **shale gas development experience and technical know-how is lacking as of yet** – one could speculate that this may explain in part why foreign companies are being permitted to enter into partnerships with state-owned enterprises (SOEs) for new shale exploration projects (while SOEs typically hold monopoly roles in Chinese domestic petroleum exploration).

Another **highly attractive source of energy is the South China Sea**. Though there is no agreement on the precise reserves of oil and gas beneath the ocean floor, these rich grounds are becoming more and more disputed between the surrounding countries. Moreover, claims of sovereignty over the seabed are far from being settled, rendering the situation even more incendiary. While energetic concerns may not be the only elements at play here (nationalisms, historic frictions and economic issues such as shipping routes and fishing grounds are certainly relevant as well), this priceless tinderbox is likely to become more contentious and dangerous as energy stakes increase.

Regardless of the success of the domestic development of the 'new' hydrocarbons, it appears that in the short term, China – and Asia – will become **increasingly reliant on the**

Middle-East for their energy supply. So, while the Gulf States will be losing an export market in the US, Asia will probably step in quickly to fill its shoes. In fact, the IEA predicts that 90% of Middle-Eastern oil exports will be destined for the Asian market by 2035. Currently, 85% of all oil going through the Strait of Hormuz is already headed eastward (mainly to Japan, India, South-Korea and China); this number only stands to increase.

The question that follows is: **who will guarantee the security of these energy sources and their transport routes?** Some would suggest that with the US benefiting from its newfound domestic energy resources and disengaging from Middle-Eastern battlefields, the age of free-riding on American security provision in the Middle-East is over. In this case, they suggest, China will have to step up, matching both its economic strength and more assertive foreign policy positioning. Alternatively, some posit that the US could use its security provision in the Middle-East as a carrot in Sino-American negotiations on a broad range of issues. It appears, economically at least, that China may already be taking a pro-active role to guarantee its future petroleum provision. According to [The Financial Times](#), for example, state-owned Chinese energy companies are currently rehabilitating the giant oilfields in the south of Iraq, a country set to overtake Russia to become the second-largest global oil exporter by 2030 – with 25% of its oil output destined for China by 2035 (IEA estimates).

In sum, Asia's energy demands paint an interesting picture, one which **may require increased interaction with neighbors and global partners.** Efforts to develop renewable and unconventional sources at home – whether from shales, coal seams or the seabed – will undoubtedly be expedited, but in the meantime, import from the Middle-East is almost certain to become much more central. In addition, negotiations with Russia on new pipelines may become more attractive. Finally, increasing dependence on the Middle-East may require taking up a stronger international security role, after years of riding American coattails.

Russia's weaknesses: fiscal dependence, stagnant leadership

Russia is a country highly dependent on oil and gas revenue: these revenues accounted for a third of total federal government revenue in 2008 (IMF) and almost half (46%) of it by 2010. This **fiscal position is a clear vulnerability** in a world discovering and exploiting new energy sources: for example, sizeable shale gas reserves are being found in a number of European countries. At the same time, the IEA sees American production of natural gas as set to overtake Russian production in just three years, with the spread widening through to 2020.

Russia's problem is not one of reserves: its conventional gas resources are still larger than the shale gas reserves discovered in its neighbors in West and East Europe, and as is

demonstrated in the next section, the European import market is unlikely to evaporate. However, the **price fetched by Russian gas depends heavily on European demand**, and it would appear that these prices are gradually decreasing. A recent [report](#) by Harvard University's Belfer Center remarks that Russia **has already had to accept lower prices for its natural gas**. In what the authors call a “**major paradigm shift**” in pricing terms, and because of global energy trends, Russia is now allowing part of its European sales to depart from the practice of indexing gas to oil prices. Instead, these gas prices have been indexed to spot natural gas markets, or regional market hubs.

Moreover, Russia's non-European export market is limited because of infrastructure: there are many lost gas export opportunities to Russia's south, due to **lack of pipeline connections to Asia**. The combination of fiscal vulnerability, dependence on European demand and gas prices, and lack of export infrastructure to one of the world's most promising markets could make **Russia somewhat of a lame duck in the changing world energy market, unable to control its own destiny**. In addition, these international developments could have domestic political repercussions. If indeed a point is reached where Russia's static elites start to feel the pressure of dropping oil and gas revenue, this could arguably reduce the political isolation they currently enjoy – which in turn could **hypothetically increase calls for domestic reform**.

Europe: Many impediments for new reserves on the old continent

Nevertheless, it is clear that **Europe**, the world's second largest regional gas market, **will not be able to cut the energetic umbilical cord with Russia** any time soon. Many factors are at a play here, including the recent pledges by many European countries to **reduce their reliance on nuclear power** (a movement accelerated considerably by the Fukushima disaster). As nuclear power is phased out and European production of conventional gas declines, Europe will certainly look to other resources to make up for the shortfall.

Considerable non-conventional reserves have been located in countries such as Poland, France, Sweden, the UK and Germany. However, their **exploration will likely face a number of inherently European roadblocks**³. For one, Europe's reserves are thought to be more difficult to extract due to **geological factors** such as depth and pressure⁴. Moreover, the **dense population** of the continent is a strong inhibiting factor. **Public opposition** is quite fierce in certain countries (such as the UK and France), and can be explained in part by population density and the NIMBY (not-in-my-back-yard) phenomenon. The opposition is further driven by environmental concerns such as earthquake risks and

³ See also Paul Stevens' 2012 Chatham House [Report](#) for an excellent extensive examination of the feasibility of reproducing the US shale gas revolution in Europe.

⁴ A number of exploration operations in Poland, for example, have already turned out to be unsuccessful.

groundwater contamination⁵. Many European governments have taken these public and environmental worries seriously; a number of governments have instated moratoria⁶ on drilling pending investigations.

In addition, **crisis-mired Europe** is not exactly abuzz with investment at the moment, and prospective investors could be put off by such factors as the **expense of European extraction**. These high costs are attributable to **lack of economies of scale**, as well as the geological factors mentioned above. However, risk and costs also run high in Europe due to **environmental regulation** and ownership of mineral rights. Environmental regulation, determined both at national and at EU level (especially environmental protection rules such as water protection and chemical disclosure), is tighter in general on the Old Continent. Struggles over regulation, dubbed as schizophrenic⁷, are ongoing between different European institutions and between European Parliament Committees – an element inconducive to investment security.

Another crucial determinant of drilling prospects is **mineral rights**, which constitute a major difference between the US and Europe. Whereas private land-owners or leasers in the US hold the rights over the minerals and oils underground, mineral rights in Europe are held by the state rather than by private land-owners. That is, while American land-owners are paid off for the negative externalities they face when energy companies drill on their land, in Europe it is governments rather than local landowners who reap the advantages of drilling. Logically, this severely **reduces incentives for locals to participate** in the development of mineral resources.

All in all, Europe faces a **great number of difficulties in the development of its unconventional gas reserves, and an immediate boom mirroring the North American one is unlikely**. Nevertheless, if a number of policies are instated by government and industry⁸, the IEA predicts that growth in unconventional supply in the EU will suffice to offset decline in conventional output by 2020. This will certainly not liberate Europe from its Russian gas ties. It is possible, though, that global market pressures may have some pricing effects in Russian-European gas trade.

⁵ See Part III of this series for a more detailed discussion of these concerns.

⁶ In the UK, for example, fracking was temporarily halted last year after seismic events were measured near a drilling site. In France, government action has gone further, instating an all-out prohibition on hydraulic fracturing in the Southeast Basin after an initial moratorium.

⁷ Gian Paolo Accardo of PressEurope, <http://www.presseurop.eu/en/content/editorial/2735131-shale-gas-mirage>

⁸ An example set of such policies are outlined in the IEA report '[Golden Rules](#)'.

Conclusion

The so-called ‘shale gas revolution’, which has dominated headlines recently, has huge transformative potential on many fronts. However, it is imperative to avoid sweeping declarations and one-dimensional views. **This revolution is not a panacea, on national or global level.** As Part II of this series of papers has shown, **the effects of a change in the energy-economy-geopolitics chain are far from straightforward and predictable.**

While some are proclaiming the arrival of long-desired **US energy independence** as a premise for something near isolationism and the revival of great power status, or at the very least as a license for the US to ‘go its own way’, in fact the country is inextricably collected to the world economy. The United States may indeed experience more freedom in its foreign policy movements and will undoubtedly benefit greatly from strong economic growth, but global oil prices and dependence on petroleum as a transport fuel – along with other strategic and humanitarian concerns – will likely ensure that the US remains involved to some degree in energy-producing regions such as the Middle-East for a long time yet.

Meanwhile, the strategic importance of the abovementioned region will increase for **China and the rest of Asia**, with their burgeoning populations, economies and consequently, energy needs. This may force China’s hand to step up its involvement in the Middle-East, perhaps even in providing the security of its maritime oil fairways. The country is also sure to invest in development of its vast unconventional resources, whose magnitude is yet unknown. The drive for ‘native’ energy resources could potentially hold a great deal of danger, especially with sovereignty rights over maritime resources (such as those in the South China Sea) undefined.

Then there is **Russia**, with its high reliance on gas and oil exports. In a way, the nation has its hands tied as it watches the world’s energy landscape transform, and this without strong export options (pipelines) to the promising Asian markets. However, it would appear that in absence of very strong development of **Europe’s** non-conventional reserves (an unlikely scenario, at present, due to geological and regulatory factors, as well as strong public opposition), Russia’s export market is guaranteed. Nonetheless, the conditions of the Russia-Europe gas trade may experience some change, especially if the gas market becomes more globalized.

All in all, this tentative snapshot of possible geopolitical implications suggests the dream of American ‘energy independence’ will not come about miraculously and abruptly, and that its geopolitical effects may not be as quick and momentous as some might suggest. Nevertheless, the energy revolution’s effects on the domestic American market may

significantly transform geopolitical dynamics which once seemed to be on a one-way track. In order to maintain competitiveness, other regions and countries of the world are sure to attempt to follow the American 'shale gas revolution'. However, the success of these efforts is far from assured, and will not be felt in the short term. Until then, China and Europe will remain dependent on foreign energy supply (and thus vulnerable). Furthermore, the ripple effects of the American shale gas revolution may mean China will have to step up its security role in the Middle-East, and that Russia may have to accept lower prices for its gas in Europe. It is certain that no country will be left untouched, in today's interconnected world.

Part III, the conclusion of this series of papers, will examine an aspect of the energy revolution which is often neglected, but which is of existential importance. Environmental concerns on the local and global levels are scrutinized, revealing a structure of incentives which could have significantly adverse consequences.

**For further information on ESADEgeo's Position
Papers, please feel free to contact:**

Marie Vandendriessche

ESADEgeo Center for Global Economy and Geopolitics

Av. Pedralbes 60-62, 08034 Barcelona, Spain

+34 934 95 21 46

marie.vandendriessche@esade.edu

www.esadegeo.com

<http://twitter.com/ESADEgeo>