

# **North American Energy Remakes the Geopolitical Landscape: Understanding and Advancing the Phenomenon<sup>i</sup>**

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## **Introduction**

Thanks to the boom in American unconventional oil and gas production, the United States is swapping its long-suffered vulnerability to imported energy in favor of a new strategic asset. Even if the technology behind this energy renaissance remains limited to the American space, its geopolitical consequences will go beyond American shores. U.S. adversaries and allies will be affected in different – and often unanticipated ways – given the variety of mechanisms through which American energy prowess will affect global energy markets and politics. Despite numerous uncertainties surrounding the trajectory of global energy, America's chance to capitalize on its new energy prowess offers significant new opportunities in the geopolitical realm.

## **The Unconventional Boom**

To the surprise of many, some of the most consequential innovations in energy today are happening in the domain of oil and gas. The United States has been the incubator of these innovations and the first to benefit from them. In less than a decade, the combined technologies of hydraulic fracturing and horizontal drilling have unlocked vast American resources that were, for decades or longer, considered by the energy industry uneconomical to extract. Despite declining production of conventional gas in the United States, overall natural gas production has increased significantly with the advent of shale. Representing only 1.6% of total U.S. gas production in 2000, shale gas constituted 40% of overall production in 2012;<sup>iii</sup> some expect this percentage to reach 53% by 2040.<sup>iv</sup> New flows of light, tight oil released by fracking have similarly reversed earlier declines in U.S. oil production. In the past five years, incremental U.S. oil production alone has totaled 2.4 million barrels a day, nearly the amount that Kuwait and the UAE each produce.<sup>v</sup>

This unconventional phenomenon is not just a U.S. marvel, but a North American one. Canada, more through reliance on its vast oil sands reservoirs than through fracking, is ramping up its own oil output, hoping to more than double its production of oil from 3.2 million barrels per day in 2012 to 6.7 million barrels per day in 2030.<sup>vi</sup> Mexico, too is believed to have vast reserves of unconventional resources, including 545 tcf of shale gas and 13 billion barrels of shale oil, respectively the world's 6<sup>th</sup> largest shale gas reserves and 8<sup>th</sup> largest shale oil reserves.<sup>vii</sup> Recent changes to Mexico's constitution are at least in part aimed at helping Mexico to develop this wealth.

The economic benefits of this newfound energy prowess have already been the subject of much study and celebration. IHS assesses that, in the United States, the unconventional boom added \$283 billion – or 1.7% of GDP – in 2012 and predicts more energy-driven growth could amount to twice that sum in the years to come.<sup>viii</sup> The same report estimates that 2.1 million jobs are supported by

unconventional oil and natural gas in the United States alone.<sup>ix</sup> Low energy feedstock prices have provided a strategic advantage to energy intensive industries, leading the United States to attract more investment in manufacturing.<sup>x</sup> The trade deficit, driven first by trade with China and second by energy imports, also stands to improve, although a stronger dollar and a more robust manufacturing sector will to some extent be a counterweight to these benefits.<sup>xi</sup>

In contrast to the economic rewards associated with the boom in unconventional energy, the geopolitical ramifications have garnered less attention. Russia's annexation of Crimea launched the first earnest debate about how the United States might harness its new energy strengths to drive not only its economic agenda, but also its global one. That debate demonstrated the nascent state of thinking about translating energy wealth into strategic power. Since becoming a consistent net importer of energy in 1957, and net importer of oil in 1971, the United States has considered its external energy dependence an Achilles heel;<sup>xii</sup> reconceptualizing America's relationship with energy from that of a vulnerability to that of a strength will take time.

The breadth and depth of the geopolitical consequences of the boom in unconventional energy will to a major extent depend on two factors. The first is the sustainability of U.S. and Canadian unconventional production. Current projections anticipate that U.S. crude oil production will level off and begin to decline around 2020, after rising by 800,000 barrels per day each year until 2016.<sup>xiii</sup> Many uncertainties, however, surround such projections. Given the new nature of these unconventional fields, little history exists on which to model future production, although early evidence suggests much quicker decline curves than conventional fields. In addition to geological uncertainties, advances in technology could significantly increase recovery rates of unconventional fields, while at the same time dampening costs. New policies will also influence the trajectory of the unconventional boom, be they increased regulations to protect the environment or decisions on key pieces of infrastructure to make the evacuation of increased production possible.

The other factor which will determine the impact of the unconventional boom on international affairs is the extent to which the North American phenomenon is replicated beyond the continent's borders. Unconventional resources are by no means confined to the United States, Canada, and Mexico. Geological surveys suggest that other countries have significant quantities of shale gas and shale oil. China – with 1,115 trillion cubic feet of shale gas – is believed to have nearly twice the amount as the United States; Russia is thought to have at least 75 billion barrels of tight oil, which constitute the world's largest known shale oil reserves.<sup>xiv</sup> Argentina sits on both sizable shale gas and oil reserves, as does Australia.<sup>xv</sup> Other countries – such as the UK, Algeria, and South Africa – have more modest deposits, but ones which can still be economically and strategically consequential if developed.

Although governments and companies have embarked on vigorous efforts to develop these unconventional resources, it is still early to predict with confidence the volume of resources that will come on line outside the United States or Canada, or the timing in which they will materialize. The unconventional boom in the United States was a confluence of fortuitous factors: propitious

geology, an unusual system of property rights granting land owners the rights to subsurface minerals, nimble innovative companies, available finance, and accessible water resources.

Few of these factors are found in tandem in other shale-rich countries. China's initial efforts to develop its shale gas have been slower than expected, due to the dominance of national oil companies in the energy sector, water and infrastructure shortages, and energy price controls. Nevertheless, Chinese production of shale gas is expected to surge in the 2020s.<sup>xvi</sup> Given its wealth in conventional gas, Russia has little interest in its shale gas and has instead focused on its tight oil; however, the complex operations and questions around the quality of the resource mean Russia's ability to exploit them will depend on the expertise of foreign companies – whose presence in the energy sector could be threatened by looming confrontation between Russian and western powers. Europe's success in developing its own shale gas resources will be mixed, with current estimates suggesting that such developments will essentially only allow Europe to make up for its decline in conventional gas production.<sup>xvii</sup> In the absence of EU-wide policy on the matter, member states have pursued strategies as varied as banning fracking completely (France) to aggressively seeking international help to develop the resource (Poland).

### **Three Mechanisms of Influence on Global Energy Markets**

There are three primary mechanisms through which the unconventional boom will influence global geopolitics: shifting patterns of energy trade, the integration of natural gas markets, and the price of oil. These avenues will be consequential, whether or not the unconventional boom remains limited to North America or is replicated beyond the continent.

Geopolitical commentary on the unconventional boom has thus far focused largely on the shifting trade patterns that are and will continue to be affected by the increase in American oil and gas production. These shifts are already profound, and are likely to increase in the coming years as the United States moves from being a net importer of energy to a net exporter. The International Energy Agency (IEA) and the U.S. Energy Information Agency (EIA) predict this threshold will be crossed by the late 2030s, while others such as Citi and Exxon believe the United States will achieve “energy self sufficiency” as early as 2020.<sup>xviii</sup> Together, the United States and Canada are moving to a position of joint self-sufficiency by 2020, from which they will meet all their energy needs by relying solely on one another.<sup>xix</sup>

Movement in this direction has already created at least short term friction for foreign suppliers once counting on American markets to absorb their energy exports. For instance, gas from Nigerian and Angolan liquefied natural gas (LNG) projects, once envisioned as supplying U.S. markets, now flow elsewhere in response to the shale boom. U.S. LNG imports from Egypt, Peru, and Norway have today declined to almost zero. In the oil market, the reversal has been similar. Given the similarity in quality of crude and comparable refining needs, U.S. light, tight oil has replaced nearly all of the Nigerian crude that used to flow to the United States.<sup>xx</sup> Neither Mexico nor Venezuela are immune from this trend; Mexican exports to the United States fell from their peak in 2006 to 2013 by nearly 800,000 b/d, while Venezuelan exports fell by nearly 1mn b/d between 1997 and 2013.<sup>xxi</sup>

The impact of these shifts in trade on geopolitics really depends on the extent to which such economic exchange really underpins political relationships. Some believe countries that trade with one another are less likely to go to war, although numerous historical examples suggest this rule is far from ironclad.<sup>xxii</sup> Gas trade, nearly two-thirds of which was transmitted by pipeline in 2012, is likely to have stabilizing effects on political relationships, given the massive infrastructure required and the inability to replicate it quickly.<sup>xxiii</sup> Oil trade, in contrast, should be less meaningful than trade in gas or other products in solidifying political relationships, due to the global nature of the oil market, the ubiquitous nature of oil, and the usual effortlessness with which it can be redirected to other destinations. Nevertheless, as the Saudi decision to discount oil sales to the United States in order to be its top oil supplier from 1991 to 2003 suggests, the *perception* that energy trade is at the core of political relationships remains strong.<sup>xxiv</sup>

Another potential political affect of changing energy trade relationships depends on the ease with which resources can find new markets. Depending on developments elsewhere, the unconventional revolution could, over time, help shift the global oil market from a suppliers' market to a buyers' market. In the first, the perception or reality is that demand growth will outpace production growth and producers need not fret about finding markets to absorb their excesses; this has been the general state of the market since China's demand for imported energy began to rise exponentially in the early to mid 2000s. Yet, gradually, as more unconventional oil has come online in the last three years, exporters of oil have needed to hone their marketing and prepare for potentially cutthroat competition with like suppliers for markets. Both Mexico and Venezuela, for example, are gradually being wedged out of the U.S. market by burgeoning American supply; this situation will intensify if the Keystone XL pipeline is approved and 800,000 barrels of heavy oil from Canada's oil sands flows to the Gulf coast.<sup>xxv</sup>

The second mechanism through which the North American unconventional boom is changing geopolitics relates to its transformative effects on natural gas markets. The shale gas boom in the United States, in combination with events at Fukushima in 2011 and the high price of oil, initially widened the gap between natural gas prices in the three regional gas markets – the Americas, Europe, and Asia; at their low point in April 2012, U.S. Henry Hub prices were \$1.95 per MMBtu while natural gas in Asia was, at the same time, \$18 per MMBtu.<sup>xxvi</sup> The anticipated emergence of the United States and Canada as significant LNG suppliers to the world market, however, alongside other global LNG developments in Australia and East Africa, will have the opposite effect. Estimates of the volumes of future U.S. LNG vary from 5.5 bcf a day to 12 bcf a day by 2020, while Canada could reach an ultimate liquefaction capacity of 4 bcf a day by around 2020.<sup>xxvii</sup>

These volumes, significant even at the lower bounds, will add liquidity to the global LNG market, give consumers more arbitrage opportunities, and encourage the development of more short term markets.<sup>xxviii</sup> Although price differentials will remain between the three markets due to transportation costs, developments in one market will increasingly affect the others. Prices will edge closer and oil indexation – a mainstay of gas markets for years – will continue to come under

pressure. More gas will make its way to consumers through the spot market, and the spot price will increasingly be figured into the pricing formulas of long term contracts.<sup>xxix</sup>

Finally, the unconventional boom in North America will influence global politics through its impact on oil prices and, consequently, its impact of the fiscal viability of certain regimes. There is, of course, no current consensus on the future price of oil, with credible voices predicting prices ranging from \$110 to \$75 per barrel over the medium term;<sup>xxx</sup> these diverse estimates reflect different assumptions about policy, technology, demographics, and global economic growth, all of which result in varying future supply and demand growth projections and different prices for oil. Although it may not be possible to definitively predict the impact of the unconventional boom on the price of oil, one can claim with conviction that this energy phenomenon has placed – and will continue to place – downward pressure on the oil price by introducing significant new sources of global supply.<sup>xxxi</sup> Analysis by Trevor Houser and Shashank Mohan suggest that, in the absence of the North American unconventional boom, the global price of oil would be 3-11% higher throughout 2013 to 2035.<sup>xxxii</sup> A scenario in which these new unconventional sources, accompanied by significant increases in Iraqi conventional production, lead to a lower price of oil is certainly plausible, if not inevitable.<sup>xxxiii</sup> Given growing fiscal break-even prices for many world producers, a sustained drop in the price of oil could have major political ramifications.

## **Implications for Major Power Centers**

### *The Middle East*

The unconventional boom, even if only limited to North America, will affect the geopolitics of the Middle East across several dimensions. The most widely anticipated geopolitical impact of this new American energy prowess is a diminished role for the United States in the region in the years ahead. Given the central role of energy in U.S. policy toward the Persian Gulf, and the longstanding energy-for-security arrangement between Washington and Riyadh, many will be surprised that the United States is likely to nevertheless maintain a presence in the Gulf even once it no longer needs to consume Middle East energy.<sup>xxxiv</sup>

America's new energy circumstances *will* create political pressures and prompt a re-examination of the U.S. role in the Gulf. Yet, those undertaking such a reassessment will almost certainly conclude that the United States remains highly invested in a stable Middle East, particularly the Gulf region. The United States will continue to have many critical non-energy interests in the region, such as counterterrorism, counterproliferation, the security of Israel, and the success of Arab states in transition. Moreover, given that the price of oil will continue to be set according to global dynamics, U.S. economic prosperity will remain linked to stability in that part of the world. Should political crises in Iran, Saudi Arabia, or other large producers lead to a rapid decline in production, the United States will suffer the consequences of rising global oil prices, even if it is not consuming any Middle Eastern oil. The fact that nearly all the spare capacity in the global market is concentrated in the Gulf, and that key allies will be more dependent than ever on Middle Eastern oil, will reinforce U.S. interests in the Middle East for decades to come. Perhaps ironically, the real difference between the pre-and-post unconventional eras may be that while the United States finds

it has continued interests in the region, it will now have diminished influence with which to advance them; already it has yielded its status as the largest consumer of Saudi oil to the Chinese in 2010.<sup>xxxv</sup>

The real geopolitical impacts of the American unconventional boom in the Middle East may result not primarily from changes in the patterns of trade, but from other dynamics. For instance, the increase in unconventional oil production in the United States and Canada will affect OPEC and its member states;<sup>xxxvi</sup> the magnitude of that effect will be somewhere on the scale from devastating to merely complicating. Should the unconventional boom drive down oil prices as a result of added supply outstripping demand growth, OPEC members will be faced with one of two options.

First, OPEC states could decide to cut back production in order to maintain prices in the range of \$110 per barrel, where they have hovered for the past three years; doing so will involve a net loss in revenue for OPEC and require a discipline that will elude many OPEC members, given growing social expenditures and the need of many to stave off pressures for political reform. If past is prologue, Saudi Arabia will end up bearing most of this burden.<sup>xxxvii</sup> In the wake of Arab revolutions, however, Riyadh has also dramatically increased wages and social spending. If, as the IEA posed in 2013, OPEC countries (read mainly Saudi Arabia) could be required to hold 7mn of its current 12.5mn of production capacity as spare capacity for a prolonged period in order to bolster prices, tensions in the region and political problems in the Kingdom could ensue.<sup>xxxviii</sup> Although Riyadh has huge foreign reserves to help it manage any deficits, it is already anticipating having to dip into them in the absence of such spare capacity requirements.<sup>xxxix</sup>

Alternatively, Saudi Arabia and other OPEC states could conclude that exercising such discipline in the face of current political pressure was impossible, and plan to ride out any price decrease that occurs. This approach may be viable for countries with significant reserves, such as Saudi Arabia, as long as the unconventional boom is a temporary phenomenon. Even if, as many are predicting, U.S. oil production plateaus and begins to decline after 2020, three to five years of prices well below fiscal break-even prices could be destabilizing for many member states, including Iran and Iraq (as well as Venezuela and Nigeria). If technological advances push out American unconventional production, even Saudi Arabia could find its finances wobbly in the face of demographic growth and increasingly expensive efforts to sustain the social contracts that have been the key to its political longevity.

Even if OPEC member states weather the uncertainties of the global market without revenue-induced political crises, the American unconventional boom will complicate OPEC's efforts to keep global price within the range its members need to meet their fiscal break even prices.<sup>xl</sup> Since OPEC's inception in 1960, the calculations of the organization have been simplified by the fact that non-OPEC producers have always produced as much oil as they can, regardless of price. When assessing how much production needs to be curtailed in order to bolster price, or added to slacken price, OPEC has been able to depend on stable and predictable non-OPEC production. Now, American oil production *is* sensitive – even highly sensitive – to price. Given the constant drilling required to maintain unconventional production, a drop in the price of oil will result in a decline in production much more quickly than would be the case for conventional resources. OPEC must now

seek to factor these very new sensitivities into its strategy. The global market will be less sensitive to both OPEC's production increases designed to lower prices and its production curtailments engineered to raise prices.<sup>xli</sup>

The impact of America's unconventional boom on the Middle East likely goes far beyond the dynamics described above. It will include exacerbating OPEC's looming challenge of integrating Iraq back into its quota structure; in the absence of added unconventional supply, global demand might have been sufficient to absorb burgeoning Iraqi production without the need for Saudi Arabia and others to force a resistant Iraq to curtail its production in the years ahead. Moreover, the growing fluidity of the LNG market may be one of many pressures weighing on Tehran to reach a nuclear deal with the international community before it is too late for Iran to capture a slice of an increasingly competitive market and monetize its vast natural gas reserves, which are the second largest in the world.<sup>xlii</sup> Given the impending entry of U.S. and Canadian LNG into the Asian markets, Qatar may be unable to fulfill its ambition to be the dominant supplier of natural gas to Japan and China, but instead shift gears toward the Indian market.<sup>xliii</sup> Finally, desires to develop Middle East unconventional resources could add to nascent pressures in countries like Saudi Arabia to welcome foreign investment into the energy sector.<sup>xliv</sup>

### *China*

In contrast with the Middle East, China stands to benefit from the unconventional boom, even if the energy renaissance does not move beyond the shores of North America. The first and most obvious point is that China, as the world's largest importer of oil and largest consumer of energy overall, will benefit from the downward pressure on price that added U.S. and Canadian supply will have, whether the effect on prices is an absolute one or simply relative to what prices would have been in the absence of these new resources.<sup>xlv</sup> For the ruling Communist Party, cheaper, more accessible energy is a political imperative, given its fundamental relationship to growth. Avoiding energy bottlenecks to its economic development has been a key objective for Beijing, especially since the mid-2000s when a spike in energy demand caused unexpected power shortages and unsettled the leadership.

Less obvious, but also consequential, is how the unconventional boom will add to pressure on Beijing to move away from its long-held position against interference or involvement in the internal affairs of other states. China, in its thirst for energy, is becoming more and more reliant on external sources to meet its domestic needs; whereas U.S. oil import dependence peaked in 2005 at 60%, China's oil import dependence was approximately 40% in 2012 and is headed to 75-80% by 2020.<sup>xlvi</sup> Much of this energy will come from the Middle East; by 2030, almost 90% of Middle Eastern oil will flow to Asia. Some in China already (wrongly) interpret U.S. disengagement from the Middle East as a result of the improved energy position of the United States, fueling Chinese discomfort at the prospect of a power vacuum developing in the volatile region from which it plans to source much of its energy in the future.<sup>xlvii</sup> While China has already begun to deepen its ties with the Middle East, such links are for now primarily economic.<sup>xlviii</sup> Investment and trade will buttress China's standing in the region, and it will reinforce Chinese interests and influence there, adding to

pressures on Beijing to depart from its policy of non-interference and to play a stabilizing role in internal politics when such matters threaten oil production. China has already demonstrated a willingness to veer away from its stance of “neutrality” when energy fortunes demand it; Beijing played a positive role in mediating the conflict in Sudan, when it used its influence to convince Khartoum to accept UNAMID, the hybrid UN-African Union peacekeeping mission in Darfur.<sup>xlix</sup> More recently, in 2012, then-Premier Wen Jiabao warned Tehran against closing the Strait of Hormuz, at a period of high tension between the west and Iran, an unusual public admonition of a friendly country and major energy supplier.<sup>l</sup>

There are signs that China understands that its growing economic might requires greater burden-sharing and provision of public goods and specifically greater efforts to secure global sea lanes of communication.<sup>li</sup> China has appointed special envoys for the strategic regions of the Middle East and Africa, offered to host an Israel-Palestine summit in 2013, and made new contributions to global peacekeeping and anti-piracy efforts. Not all of these developments are connected to China’s growing external energy dependency, but its energy ties with the Middle East have unquestionably been one of the factors behind an articulated “March West” strategy of greater engagement in the region.<sup>lii</sup>

Similarly, the unconventional boom was one factor pushing Russia and China to overcome their historical mistrust and sign a major deal to pipe natural gas from Russia to thirsty markets in China. For more than a decade, the two countries discussed such a project, but political and economic impediments prevented closure on it. On May 21, 2014, however, the two powers concluded the deal. Many shifting factors were behind this breakthrough, including several that relate to the unconventional boom and decisively shifted the upper hand in the negotiations to China.<sup>liii</sup> Russia, nervous about the impact of shale gas on its European market and worried that imminent U.S. and Canadian LNG will soon flow to Asia, was more anxious than ever to finalize the agreement, which is a mainstay of its strategy to capture Asian markets. Although the specific elements of the deal are unlikely to be made public, the agreement between Presidents Vladimir Putin and Xi Jinping could go beyond commercial terms and encompass broader political arrangements detrimental to U.S. interests in that part of the world.<sup>liiv</sup>

While energy pressures are clearly creating new pressures in the South China Seas, elsewhere they have spurred unusual collaborations between China and its neighbors elsewhere. The regional disparities in gas pricing brought about by both the U.S. shale boom and the surge in demand from Japan following the Fukushima disaster have pushed China into cooperation with Asian efforts spearheaded by Japan and India to form a “buyers’ club” of LNG purchasers. In 2013, China, Japan, Taiwan, Korea, and India (countries which collectively purchase around two-thirds of the world’s LNG) met in India to discuss ways of using their aggregate market power to drive down LNG prices in Asia. This meeting was notable, given that there is virtually no other international issue on which these actors agree.

Finally, the unconventional boom also presents opportunities for the United States and China to cooperate on important agendas of mutual interest, perhaps building confidence which can serve as



the basis for working together in more contested realms. In the Persian Gulf, U.S. political pressures to curtail involvement and Chinese imperatives to ensure stability might result in occasions for burdensharing; the United States welcomed China's first steps in international piracy efforts in 2012 off the Horn of Africa when the two navies conducted a joint simulation exercise in which a U.S.-Chinese team boarded a pirated Chinese oil tanker. At a minimum, the Chinese will have a new appreciation for American hard power – and its vulnerability to domestic U.S. pressures – when the American navy is securing 80% of China's oil imports, the percentage of which flow through the Indian Ocean and the Strait of Malacca.<sup>lv</sup>

Although some U.S. foreign policy experts disagree, the United States also has an interest in helping China develop its vast quantities of shale gas. Such resources can be one quiver in China's efforts to address its crushing environmental problems and make a positive contribution to the global climate change agenda. Moreover, the development of Chinese shale gas can lessen competition in the South and East China Seas, to the extent that it is fueled by resource ambitions and China's desire to control the waterways through which its energy imports flow. The desire to harness its own shale wealth can also be – and is already beginning to be – a powerful impetus for the domestic economic reform which will help ensure that China remains an engine of global growth.

Finally, China's eagerness to invest in U.S. and Canadian energy firms to gain access to technology and large project know-how could provide another front for cooperation. After CNPC's embarrassing failed bid to buy UNOCAL in 2005, Chinese national oil companies (NOCs) focused their “going out” strategy on countries like Kazakhstan and Sudan, where it did not need to compete with western actors. Since 2008, however, Chinese NOCs have become more bold in their efforts, spending more on energy deals in North America than anywhere else in the world.

### *Russia and Europe*

The unconventional boom holds both promise and peril for Russia. Moscow could end up being a winner from the technology revolutions in oil and gas if it succeeds in developing its own tight oil.<sup>lvi</sup> Given difficulty anticipated in developing them, Moscow has recently signed contracts with international oil companies (IOCs) which not only have access to the needed technology, but also have the requisite large project management skills.<sup>lvii</sup> Continued efforts to bring in needed foreign assistance in this realm will depend on continued tax breaks and other measures.<sup>lviii</sup> The success of these efforts will also depend on a political climate in which IOCs are able to operate and invest for the long run. Events in Ukraine over the last months seriously call into question whether Russia will be able to both pursue its geopolitical agenda in gaining greater control over its near abroad and maintain the foreign investment it needs to develop its tight oil resources.

If Moscow's geopolitical agenda invites sanctions curtailing foreign investment in the energy sector, the unconventional boom presents only downsides to Russia, some of them already apparent. First, it creates added headaches in an already stagnant European gas market by complementing Europe's efforts to better integrate the continent's energy markets and diversify away from Russian

natural gas. Neither U.S. LNG nor domestic European shale gas production will supplant Russian gas imports, given that piped Russian gas will remain one of the cheapest options available to Europe and that market dynamics alone will not push huge quantities of U.S. LNG to European markets.<sup>lix</sup> But the American unconventional boom can, and already is, affecting Russian revenue streams by putting pressure on the oil indexation that has been Russia's preferred basis for pricing gas sales to Europe and has helped keep prices high.<sup>lx</sup> Such pressures will only intensify as more LNG from the United States, Canada, and other countries makes its way into global markets in the next several years. Even if this LNG flows to Asia and not to Europe, it will affect the European market by redirecting Qatari and other gas to Europe to compete with Russian gas.

Given Russia's overwhelming dependence on energy revenues to fuel its budget, the possibility of diminished revenues from gas and lower global oil prices could present real fiscal challenges to Moscow. Even before the crisis over Crimea, the Russian economy was suffering, with the link between high oil prices and Russian growth appearing to be severed for the first time.<sup>lxi</sup> Russian officials are projecting anemic growth for the next few years and the government has already instituted across the board budget cuts.<sup>lxii</sup> The effect of such fiscal austerity on Russian political stability is unknown; while Russians have endured economic hardship (particularly for geopolitical glory), Putin's inner circle may grow restless if the patronage which cements Putin's personalized rule dries up.

Fortunately, from Putin's perspective, other options may spare Putin from the need to prepare his closest allies for a period of unpopular austerity. A seemingly lucrative market rests on Russia's borders to the east; capturing it could serve the dual purpose of developing Russia's far east and augmenting or substituting for less reliable European revenues. President Putin has already ordered Gazprom and other gas producers to look east, and the ambitious LNG projects of Sakhalin and Vladivostok are geared toward meeting the growth in Asian markets. It is too early to tell if Russia will successfully substitute any losses in Europe with gains in Asia, as this outcome also in part rests on Russia's ability to forge new political relationships with Asian powers and to attract and maintain foreign investment. It also depends on whether U.S. and other LNG exports push down the price of gas in Asia and whether a fiscally-strapped Russian government is able to maintain current tax breaks. Both will influence whether such huge projects remain commercial.

Should this strategy look likely to fail, Putin and Russia may have more radical options to pursue in an effort to shore up energy revenues and the Russian economy as a whole. Moscow has long benefited from OPEC's endeavors to maintain a robust oil price, without having to reign in its own production as a member. Yet should oil price fall, and OPEC appear unwilling to stave off the drop, Moscow could revisit earlier proposals to join OPEC or to at least coordinate more closely with the cartel as a means of motivating it to take action.<sup>lxiii</sup> Alternatively, Moscow might seek to negotiate arrangements long term oil supply arrangements with China or other major suppliers at fixed prices or with major advances. By removing a significant proportion of oil transactions outside the global market, this move would have negative implications for the energy security of other consumers.

## *Other Regions*

It is not only the major global power centers in the Middle East, Asia, and Europe that are feeling the effects of the North American unconventional production, but also countries in Latin America, Africa, and elsewhere. In Latin America, the unconventional boom appears to be reversing the tide of resource nationalism. Mexico is the most prominent example, where the combination of the desire to develop its deepwater and shale gas resources and the need to compete with the United States for foreign investment to do so was one spur to radical reform of the energy industry. The surfeit of natural gas in the United States, moreover, could be sold to countries in the Caribbean and Central America, which now burn oil to generate electricity; this switch would not only increase efficiency, but it could help undermine Venezuela's Petrocaribe program to distribute discounted oil to the region and, therefore, dent Caracas' influence in the Organization of American States and other regional outfits. In Africa, one of the major consequences of the North American unconventional boom may turn out to be that it renders uncommercial some of the new discoveries of offshore gas in East Africa. Countries such as Mozambique and Tanzania may not get the boost they are anticipating to revenues and domestic development once U.S. and Canadian LNG exports enter the market and, presumably, bring down the price.<sup>lxiv</sup>

## **Conclusion and Policy Recommendations**

The geopolitical premium that can accrue to the United States from the boom in unconventional energy may be as significant as the improvements already apparent in its energy balance. The geopolitical reverberations of the boom have already begun to permeate the Middle East, China, Russia, Europe, and other countries and regions – and will continue to do so as the energy renaissance continues. Although not all consequences of these new energy realities boost U.S. power, many unequivocally do. Much of these positive (and negative) implications will continue to occur without action on the part of policymakers to consciously advance them. But, given the transformative potential (and some inherent dangers) to these outcomes for both the U.S. energy standing and its foreign policy, American policymakers would be remiss if they did not deliberately strategize about how to best turn the energy power of the continent into geopolitical heft.

Policymakers intent on this exercise may find that a number of broader debates first need to be aired in public and policy circles before major changes can be made. For instance, policymakers, business people and opinion leaders may need to openly debate the virtues of a freely functioning global energy market against those of tweaking the market in order to advance pressing geopolitical agendas. They may also need to contemplate whether North America's interests are better advanced in a world where the unconventional boom is limited to the United States, Canada, and Mexico – or whether the free flow of fracking technology and widespread unconventional production is superior.

In the course of such debates, tradeoffs will be exposed – sometimes large, sometimes minor – between advancing geopolitical interests with energy tools and promoting economic efficiency and domestic growth. Inevitably, tensions will also exist between the promotion of certain foreign

policy and national security goals. However, those looking to maximize the ability of the United States to use its energy prowess to its geopolitical advantage should consider the following policy actions:

- *Lift current restrictions on the export of most U.S. crude oil.* The primary motivation of such action is not to enable the United States to direct crude oil to allies, as the nature of the global market and the free flow of oil makes this largely unnecessary. But taking such steps will increase the efficiency of the overall energy market, help inoculate America from challenges under the WTO, and provide the United States with more credibility in opposing export bans of others (such as Chinese restrictions on rare earth minerals).
- *Expedite the approval process for U.S. LNG projects.* The laborious and expensive process of securing approval for LNG export projects in the United States is the focus of much debate. While certain environmental and regulatory considerations must be met, other requirements can be removed or reduced. For example, the current system provides expedited consideration for projects intended to ship LNG to countries with which the United States has a free trade agreement. This requirement should be eliminated, even though it would remove a possible incentive for countries to conclude trade agreements with the United States; given that gas markets will be very crowded in the coming years, the difference between successful and unsuccessful projects may well come down to timing. Those concerned that huge volumes of U.S. LNG exports will push up the domestic price of gas should take solace from the fact that it is not the number of projects receiving approval which will determine how much U.S. LNG goes abroad, but market conditions. Undoubtedly, many of the projects approved will not become operational because the global market will not absorb an infinite amount of American natural gas exports.
- *Consider ways in which U.S. LNG exports to Europe can be subsidized.* This recommendation is likely best directed to European policymakers rather than American ones. As discussed above, large volumes of U.S. LNG will not likely flow to Europe based on current commercial terms alone. If European governments believe American LNG is critical in helping the continent diversify away from dependence on Russian gas, they will need to find ways to make the importation of such gas competitive with other, lower priced sources. European consumers have thus far not demonstrated a willingness to pay a premium to change the composition of their suppliers; the recent crisis with Ukraine may well have changed these calculations.
- *Join efforts to advance the interconnectedness of global gas markets.* Market forces and large volumes of LNG coming on line in the next few years will in themselves help narrow the gap in gas prices between the three regional markets and create pressure on the practice of oil indexation which has served Russia, Qatar, and others so well. Governments and companies, however, can help create the conditions which further advance these market forces, particularly by promoting open access to infrastructure. The United States could seek to join nascent conversations among gas importing countries of Asia to help ensure

their productivity and continuity. (Although the United States will be an exporter of gas, unlike most other producers, it will not be reliant on oil-indexed prices.)

- *Refashion energy and climate to be a major pillar of U.S.-Chinese relations.* The unconventional boom provides many possible avenues for deeper Sino-American cooperation; U.S. policymakers should seek to capitalize on them and to bring them together as an integrated whole. The two countries stand to benefit from more reciprocal investment, trade related to energy, and technical exchanges. Washington and Beijing have mutual interests in helping China address its enormous environmental challenges and, in the process of doing so, bring down its burgeoning carbon emissions through the displacement of coal by natural gas. The unconventional boom gives the United States a platform from which it can discuss issues of climate, investment, and trade with China in a conversation of mutual benefit. Policymakers on both sides should expand current energy dialogues to be more ambitious, viewing them as vehicles for defining and developing a broader partnership on energy and climate.
- *Replace the oil-for-security compact between the United States and Saudi Arabia with a new basis of partnership.* Gulf powers are convinced that the United States is withdrawing from the region on account of its enhanced domestic energy position. This perception is important to address if the United States is to maintain leverage and influence in the region. American rhetoric about the centrality of the region to U.S. interests will be important, but so will more tangible manifestations, such as a continued, if modified and streamlined, military presence. But rather than focusing on perpetuating the oil-for-security compact beyond its use, the United States should look for more constructive ways to demonstrate its commitment to stability in the Gulf and to create new modes of American leverage in the region. In particular, the United States should find ways of supporting critical Saudi efforts to develop alternative energy, boost innovation and employment, and increase energy efficiency of its economy; rising domestic energy demand among Middle Eastern countries is a major concern. The U.S.-Saudi non-oil economic relationship can and should grow beyond energy and arms to create a central place for the private sector.
- *Re-prioritize the U.S. relationships with Canada and Mexico.* Despite the rhetoric of many U.S. presidents, Canada and Mexico have not attracted the time, attention, and political capital their standings warrant from American policymakers. Maximizing the geopolitical (and other) benefits of the unconventional boom should reverse this comparative neglect, spurring officials to invest in detailed conversations about how to further integrate the energy economies of the three countries. Lifting the ban on crude exports, for instance, will help both Canada and Mexico, which are frustrated by unintended consequences of this policy. Approving and building infrastructure to transport energy across borders will be important, for both Canada and Mexico. And finally, it makes sense to ensure that Mexico benefits from the same energy benefits and arrangements as Canada within the context of NAFTA.

- *Reconceptualize the Strategic Petroleum Reserve (SPR) to prepare for a post-OPEC world.* Many westerners will celebrate the demise of OPEC which could result, at least in part, from the new supplies brought to the global oil market by the unconventional boom. Consumers will, however, likely lament the fact that OPEC can no longer be relied upon to smooth out peaks and troughs in the oil price. In a world in which no country any longer holds spare capacity, disruptions in supply will only be met by increases in price, causing the oil price to be much more volatile than it has been in past years. Given that volatility in energy prices can be as detrimental to economic growth as steady high prices, the United States should consider how it could expand and transform its SPR so that this tool could play more of an active role in balancing the market in the absence of Saudi Arabia's ability or willingness to do so in the future.
- *Formulate contingency plans for a world in which regional powers are more unstable.* Russia, Nigeria, Venezuela, Iran, and even Saudi Arabia could all be facing a difficult decade if increased global oil supply continues to put downward pressure on energy prices. Although the scenarios that could unfold in each instance vary widely, a world in which regional powers are under domestic threat could translate into a more problematic global landscape. In some cases, the United States may wish to look for ways to help friendly nations deal with the potential shock of lower energy revenues, while in others it may simply seek greater understanding with neighbors about how to handle unhinged regimes.
- *Seize the initiative on climate change.* Huge increases in the production of U.S. shale gas drove down the price of American natural gas and incentivized a major shift from coal-fired plants to natural gas ones. This move had a tremendous effect on U.S. carbon emissions, bringing them down to per capita levels not seen since the early 1990s. Although natural gas – as a fossil fuel – cannot be the answer to climate change, this transition once again puts the United States in a credible position to be a global leader on this issue. While a global compact is unlikely to be the most practical vehicle for progress, the United States should make accords among smaller groups a priority and use its ability to help countries exploit their own shale gas reserves as an incentive in this process.
- *Put the production of American unconventional resources on more stable footing.* If the U.S. unconventional boom is challenged by an environmental calamity or proves to be unsustainable for other reasons, none of the geopolitical benefits to America will be realized. For this and other reasons, federal and state policymakers need to work together to ensure the right set of regulations and incentives are in place to promote the industry and future technological advances, to increase public confidence in fracking, and to protect the environment.

The boom in unconventional oil and gas took nearly everyone – in industry and in policy – by surprise. This energy renewal can yield many more benefits than are already apparent. Yet realizing those advantages will require a pro-active attitude, a willingness to revisit and revise long-

standing approaches and policies, and a vigorous effort to link business and government. The United States needs to rise to meet this opportunity.

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<sup>iii</sup> Zhongmin Wang, and Alan Krupnick, “A Retrospective Review of Shale Gas Development in the United States: What Led to the Boom?” 1.

<sup>iv</sup> “ANNUAL ENERGY OUTLOOK 2014- Market Trends: Natural gas,” U.S. Energy Information Administration (EIA).

<sup>v</sup> “Overview data for United States,” EIA.

<sup>vi</sup> “Crude Oil Forecast, Markets and Transportation,” Canadian Association of Petroleum Producers (CAPP), 2..

<sup>vii</sup> “Technically Recoverable Shale Oil and Shale Gas Resources: An Assessment of 137 Shale Formations in 41 Countries Outside the United States,” EIA.

<sup>viii</sup> John W. Larson et. al., “America’s New Energy Future: The Unconventional Oil and Gas Revolution and the US Economy Volume 3: A Manufacturing Renaissance - Executive Summary, 1.

<sup>ix</sup> Ibid.

<sup>x</sup> Julie M. Carey, “How Unconventional Oil And Gas Is Supercharging The U.S. Economy.”

<sup>xi</sup> See Robert Lawrence, Implications of Reduced Oil Imports for the U.S. Trade Deficit and Trevor Houser and Shashank Mohan, *Fueling Up: The Economic Implications of America’s Oil and Gas Boom*.

<sup>xii</sup> “April 2014 Monthly Energy Review,” EIA, 9.

<sup>xiii</sup> “AEO2014 Early Release Overview,” EIA, 1.

<sup>xiv</sup> “Technically Recoverable Shale Oil and Shale Gas Resources: An Assessment of 137 Shale Formations in 41 Countries Outside the United States,” EIA.

<sup>xv</sup> Ibid.

<sup>xvi</sup> “Golden Rules for a Golden Age of Gas,” IEA, 11.

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<sup>xvii</sup> Ibid.

<sup>xviii</sup> American companies, however, will not be shipping U.S. oil abroad anytime soon. A number of laws still make crude oil exports illegal. Moreover, since coal, gas, and oil are not completely interchangeable, the United States will still be connected to the global market and will therefore not be immune from oil price shocks even once it is “self-sufficient.” See Michael Levi, “Does ‘Net Energy Self Sufficiency’ Mean Anything?”; “North America leads shift in global energy balance, IEA says in latest World Energy Outlook,” IEA; Jeff McMahon, “U.S. Will Meet Energy Needs by 2020: Citi Researcher;” Ben Geman, “Exxon Chief: U.S. Nears Energy Self-Sufficiency,”

<sup>xix</sup> *World Energy Outlook 2013*, IEA, 76.

<sup>xx</sup> Imports from Nigeria have plummeted from over 1 million b/d in June 2010 to approximately 55,000 barrels per day in February 2014. *THE LNG INDUSTRY IN 2013*. The International Group of Liquefied Natural Gas Importers, 17.; “U.S. Imports from Nigeria of Crude Oil and Petroleum Products.” EIA.

<sup>xxi</sup> These declines also reflect significant downturns in Mexican and Venezuelan production over the same time period. “U.S. Total Crude Oil and Products Imports.” EIA; “Mexico,” EIA; “Venezuela,” EIA.

<sup>xxii</sup> See, for instance, Richard N. Rosecrance, *The rise of the trading state: commerce and conquest in the modern world*.

<sup>xxiii</sup> “Statistical Review of World Energy 2013,” BP Global.

<sup>xxiv</sup> Saudi Arabia began to sell its crude to the United States at a discount starting in the 1990s. See Amy Myers Jaffe and Jareer Ellass, “Saudi Aramco: national flagship with global responsibilities,” *The Changing Role of National Oil Companies in International Energy Markets* (2007), 77- 81. Michael Levi and Blake Clayton discuss how “the suspicion that oil and international politics are tightly intertwined is often self-fulfilling.” See Clayton, Blake, and Michael Levi, “The Surprising Sources of Oil’s Influence,” *Survival* 54, no. 6 (2012): 113.

<sup>xxv</sup> In 2013, according to the EIA, Mexico is only exporting 917,000 b/d to the United States and Venezuela 797,000; these volumes are down from a peak of 1.7mn b/d for Mexico in 2006 and 1.8 mn b/d for Venezuela in 1997. See “U.S. Imports from Mexico of Crude Oil and Petroleum Products.” EIA.

<sup>xxvi</sup> “Henry Hub Natural Gas Spot Price (Dollars per Million Btu).” EIA; Javier Blas, “Japan pushes Asia gas price close to high.”

<sup>xxvii</sup> “Shale Gas Production Stirs Up the LNG World,” IHS Unconventional Energy Blog; also see “An Overview of the World LNG Market and Canada’s Potential for Exports of LNG,” CAPP, 24.

<sup>xxviii</sup> Medlock III, Kenneth B. “Impact of Shale Gas Development on Global Gas Markets.” *Natural Gas & Electricity* (2011); Hartley, Peter R.. *The Future of Long-term LNG Contracts*. Harvard University’s Belfer Center and Rice University’s Baker Institute Center for Energy Studies. October 2013.

<https://128.42.206.130/media/files/Research/05fcc1b0/CES-Pub-GeogasLNG-110113-1.pdf> (accessed May 20, 2014).

<sup>xxix</sup> Already, the price of more than 50% of the volume of gas that is traded in Europe is linked, at least in part, to spot prices. Because of the capital required for gas projects, long term contracts will continue to play an important role in facilitating gas trade. The pricing formula of these contracts, however, will change in response to these new pressures.

<sup>xxx</sup> See, for instance, Steven Kopits, “Citi vs. Chevron: two opposing views of the oil price future”; *World Energy Outlook 2013*, IEA, 489.

<sup>xxxi</sup> *World Energy Outlook 2013*, IEA, 490-491.

<sup>xxxii</sup> Trevor Houser, and Shashank Mohan. *Fueling up: the economic implications of America’s oil and gas boom*, (Washington, DC: Peterson Institute for International Economics, 2014), 45.

<sup>xxxiii</sup> *World Energy Outlook 2013*, IEA, 490-493. An alternative high price scenario would be if all the looming geopolitical scenarios in the Middle East (Iran, Iraq, Libya) curtailed country production, the Chinese and European economies grew more robustly than predicted, and other countries did not bring any unconventional production on line.

<sup>xxxiv</sup> In 2012, the IEA estimated that “US imports from the Middle East, which have already declined from around 2.8 m/d in 2000 to 2 mb/d in 2011” could possibly fall to 0.3 mb/d in 2025. *World Energy Outlook 2012*, IEA, 79.

<sup>xxxv</sup> “The Energy Report for Thursday, September 30, 2010,” NASDAQ.com.

<sup>xxxvi</sup> It is important to note that not all OPEC members are countries in the Middle East.

<sup>xxxvii</sup> Past history about when OPEC discipline is the best/worst and what it says about the above scenario.

<sup>xxxviii</sup> See Michael Levi, “Bullish energy headlines should be taken with grain of salt,” *Dallas News*, 13 May 2013.

<sup>xxxix</sup> Economist Intelligence Report, *Saudi Arabia Country Report*, May 2014.

<sup>xl</sup> See Jamie Webster, 4 December 2012.

<sup>xli</sup> When OPEC increases production to bring down price, it will inadvertently also drive some unconventional production off line, which will put some upward pressure on global price; when OPEC decreases production to increase the price, it will encourage more unconventional production, which will create a dampening effect on the price.

<sup>xlii</sup> Currently, Iran’s natural gas reserves are underdeveloped due to lack of foreign investment and technology, and are mostly used to meet domestic demand. “Iran- Analysis.” EIA.

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<sup>xliii</sup> See Amy Jaffe, Jareer Elias, and Keily Miller, "The Gulf Cooperation Council Natural Gas Conundrum: Geopolitics Drive Shortages Amid Plenty" Geopolitics of Energy Case Chapter, Harvard/Baker Institute Study, November 2013. [http://belfercenter.hks.harvard.edu/publication/23550/gulf\\_cooperation\\_council\\_natural\\_gas\\_conundrum.html?breadcru mb=%2Fregion%2F150%2Fmiddle\\_east](http://belfercenter.hks.harvard.edu/publication/23550/gulf_cooperation_council_natural_gas_conundrum.html?breadcru mb=%2Fregion%2F150%2Fmiddle_east) (accessed May 21, 2014).

<sup>xliv</sup> See "Russia's Lukoil hopeful of new gas deal in Saudi Empty Quarter," Reuters, March 18, 2014. <http://www.reuters.com/article/2014/03/18/saudi-russia-gas-idUSL6N0M602F20140318> (accessed May 20, 2014).

<sup>xliv</sup> "China- Analysis." EIA. February 4, 2014. <http://www.eia.gov/countries/cab.cfm?fips=ch> (accessed May 20, 2014).

<sup>xlvi</sup> Gabriel B. Collins et. al., *China's energy strategy: the impact on Beijing's maritime policies*, (Annapolis, Md.: Naval Institute Press, 2008), 64; "This Week In Petroleum," EIA.

<sup>xlvi</sup> China imports more than half of its oil from the Persian Gulf; Saudi Arabia alone makes up about one-fifth of China's imports.

<sup>xlviii</sup> According to the Chinese Ministry of Commerce, trade between China and the Arab world exceeded \$222 billion in 2012, up 12 times from 2002. "China-Arab trade continues to grow." China Daily US Edition. September 17, 2013. [http://usa.chinadaily.com.cn/business/2013-09/17/content\\_16977114.htm](http://usa.chinadaily.com.cn/business/2013-09/17/content_16977114.htm) (accessed May 20, 2014).

<sup>xlix</sup> See Large, Dan. "China's role in the mediation and resolution of conflict in Africa." Oslo Forum. <http://www.osloforum.org/sites/default/files/Dan%20Large%20China%20in%20Africa%20WEB.pdf> (accessed May 20, 2014), Page 39.

<sup>i</sup> "Wen says China against 'any extreme acts' at Hormuz," Chinadaily US Edition.

<sup>ii</sup> In 2005, Deputy of Secretary of State Robert Zoellick called on China to be a "responsible stakeholder." "Whither China: From Membership to Responsibility?" Robert B. Zoellick, Remarks to National Committee on U.S.-China Relations, 21 September 2005.

<sup>iii</sup> Yun Sun, "March West: China's Response to the U.S. Rebalancing."

<sup>iii</sup> See Morena Skalamera, "Booming Synergies in Sino-Russian Natural Gas Partnership."

<sup>liv</sup> See Alexei Anishchuk and Fayen Wong, "Putin yet to seal gas deal on China visit, wins support on Ukraine."

<sup>lv</sup> Buszynski, Leszek. "The South China Sea: Oil, Maritime Claims, and US-China Strategic Rivalry." *The Washington Quarterly* 35, no. 2 (2012): 139-156. Page 145.

<sup>lvi</sup> As mentioned earlier in the article, Russia is believed to have 285 trillion cubic feet in shale gas and 75 billion barrels in tight oil respectively, the world's 9<sup>th</sup> largest shale gas reserves and largest shale oil reserves. "Technically Recoverable Shale Oil and Shale Gas Resources: An Assessment of 137 Shale Formations in 41 Countries Outside the United States," EIA.

<sup>lvii</sup> In December 2013, Rosneft and ExxonMobil signed a joint venture and in March 2014, Lukoil and Total signed a memorandum, both to develop the Bazhenov shale oil fields in western Siberia. "Rosneft and ExxonMobil Complete JV Formation to Develop Tight Oil Reserves in Western Siberia." Rosneft; "Lukoil, Total agree to work on Siberian Bazhenov shale oil-report," Reuters.

<sup>lviii</sup> Mandal, Sujoyini, and Marika Semerdzhian. "Developments in Unconventional Gas: Challenges and Opportunities for Russia." Harvard Kennedy School. November 2013.

[http://www.hks.harvard.edu/var/ezp\\_site/storage/fckeditor/file/Mandal\\_Semerdzhian\\_PAE.pdf](http://www.hks.harvard.edu/var/ezp_site/storage/fckeditor/file/Mandal_Semerdzhian_PAE.pdf) (accessed May 20, 2014). Page 15.

<sup>lix</sup> Less than 25% of the capacity of Europe's LNG regasification terminals are used today, because Russian gas is cheaper than any LNG, including prospective U.S. LNG. Should Europe want to pay a security premium for its gas, more LNG could flow to continental markets.

<sup>lx</sup> In 2010 and 2011, natural gas exports originally developed with the U.S. market in mind were redirected to Europe, creating larger than usual opportunities on the spot market for European consumers. Before these volumes were redirected to gas-thirsty Asia, they provided leverage to European utilities in renegotiating pricing mechanisms in their long term contracts with Russian suppliers. Although Gazprom was more resistant than Statoil in including the spot price in renegotiated long term contracts, some contracts are now not only linked to crude prices, but also to light fuel oil, oil derivatives, and spot market prices. See Skalamera, Morena. "EU-Russia Cooperation in a Rapidly Changing Interregional Gas Market." *Economics and Policy of Energy and the Environment* no. 3 (2013).

<sup>lxi</sup> Since 1991, the ups and downs of the Russian economy have mirrored the fluctuations in oil prices. Today's departure of growth projections from oil prices suggest that oil rents may not long be sufficient to spur economic growth in Russia. See Lidia Kelly and Maya Nikolaeva, "UPDATE 2-Russia's stagnation raises pressure for new growth model."

<sup>lxii</sup> Kramer, Andrew. "Russia Cuts Budget to Try to Spur Growth." The New York Times. September 19, 2013. <http://www.nytimes.com/2013/09/20/business/global/russia-cuts-budget-to-try-to-spur-growth.html> (accessed May 20, 2014).

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<sup>lxiii</sup> In 2009, when after oil prices hovered around \$40-\$50, Russia was invited to join OPEC, but expressed little interest in doing so. “Russia in no hurry to join OPEC,” RT News; “Cushing, OK WTI Spot Price FOB,” EIA.

<sup>lxiv</sup> See David Ledesma. “East Africa Gas – Potential for Export.” Oxford Institute for Energy Studies. March 2013.