

The U.S. Shale Gas Revolution: Consequences and Opportunities for Korea and Asia

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This essay addresses the U.S. shale revolution, the consequences for Korea in the Asian regional context, and energy opportunities in the pending negotiations for a Trans-Pacific Partnership.

Is the U.S. Shale Gas Revolution for Real?

In recent years, the Wilson Center Press and the Johns Hopkins University Press published two editions of a book, which I co-edited with David Goldwyn, entitled [*Energy and Security*](#). The first edition was published in 2005² and focused on how to manage the growing energy dependence – felt just as much in the United States as in Asia, the world’s two top energy consumers – on the energy producers inside and outside the Organization of Petroleum Exporting Countries (OPEC).

The second edition, published in 2013³ and now in its second printing, is all about the energy revolution which is making the United States the top oil and gas producer – ahead of Russia and even Saudi Arabia within its OPEC limits. The United States has reached this position as a result of ultra-deepwater offshore drilling and the development of shale

gas and tight oil through horizontal drilling and hydraulic fracturing, otherwise known as “fracking.”



Just since 2008, U.S. oil production has increased by 3.9 mbd (millions of barrels of oil per day), Canadian oil production by another 1 mbd, and Mexico promises to increase greatly as well if its planned energy reforms are implemented. This offers the prospect of meeting North American energy needs for well over 100 years – some say up to 300, depending on economic growth rates.⁴ It also presents the reality of a shift in the axis of the energy balance of power from Riyadh and Moscow to the Bakken, Eagle Ford, and Gulf of Mexico.

But like other fuels, shale requires investment to develop. Most analysts believe that it is sustainable over \$70 per barrel of oil or \$5 per thousand cubic feet of natural gas, but it will slow down below those

levels.⁵ As demand grows in the future, we can expect higher prices to sustain shale and other development in both oil and gas.

Of course, other complex projects face similar downsides and upsides – and will depend in turn on whether there are increased growth, increased energy consumption, and increased energy prices over the longer term. Despite immediate financial challenges, this can be expected as China, Japan, Britain, and the EU plan to follow the United States with large economic stimulus packages of their own.⁶ The U.S. economy has already demonstrated positive growth effects, and East Asian economies will likely follow.

This is the backdrop for expressing confidence that the U.S. shale gas revolution is and will be for real, even if its growth rate will be sensitive to world energy prices – as indeed are other fossil and non-fossil fuels.

Is the Shale Gas Revolution Real Elsewhere in the World?

This leads to the question whether shale gas and oil can be developed in other parts of the world. If not in the United States, why not other countries where shale deposits exist – including Argentina, Mexico, South Africa, Saudi Arabia, the United Kingdom, Russia, Ukraine and, indeed, China?

The short answer is that it all depends on what kind of shale, on related resources and infrastructure, and on the legal environment.



For example, is the shale rock sufficiently porous? Is there enough water to produce the shale fuel? Are there rigs to develop it and pipelines to transport it? The

infrastructure question is solvable if the geology and resources are right.

Like with the United States, the only real answers will come not from geological surveys, but from actual exploration and drilling – and the truth is we have a ways to go before we can make a confident judgment on countries outside North America.⁷

The legal environment is also particularly important. The United States is unique in that landowners can also own mineral rights. Significant numbers of entrepreneurial energy companies exist in only a few places besides the United States – Australia, Canada and the UK are examples – as opposed to national champions or a few major companies. Financing is also challenging for risky exploration and development.

All this is not meant to discourage – in fact it is a call to action to get going with shale development, and the essential energy, legal, and financial work still ahead of us.

What are the Consequences for Korea and Asia?

From South Korea's standpoint, and that of other countries in East Asia, the consequences of the shale gas revolution can only be positive. Like increased offshore production, shale production adds large amounts of oil and gas to the international market. In oil, the market is already global. In natural gas it is globalizing, so current price differentials among Asian, European, and American markets will tend to diminish over time.

As shale develops, there will be downward pressure on the so-called "Asian premium" for natural gas – where South Korea and Japan, for example, pay four times the natural gas price in North America and nearly twice the price paid in Europe.⁸

In addition to amounts of natural gas, the critical question is the variety of sources. In liquefied natural gas or LNG, for example, it was only a plus when Australia and other regional producers supplemented Qatar as primary sources of the fuel. The same is true for natural gas from Sakhalin and, likely in the future, other parts of Russia. As Winston Churchill

observed over a century ago, energy “safety and certainty...lie in variety, and in variety alone.”⁹

The Russian-Chinese gas deal, announced earlier this year by presidents Putin and Xi, continues to face major questions from gas price to credits and implementation. In turn, it remains to be seen whether the deal can increase the chances of additional fuel supply to South Korea and even the Korean peninsula on the whole, which could encourage de-nuclearization through secure, non-nuclear energy supplies to both South and North Korea.¹⁰

Additional energy imports are also likely from North America. As a Free Trade Agreement partner, South Korea already qualifies for automatic U.S. approval of natural gas contracts, and its advocacy of additional energy trade partners will enhance its relations with them. In fact, a new LNG export facility is already planned in Kitimat, British Columbia, which is envisioned to export natural gas from the United States to Asia and the broader Pacific.¹¹

On the other hand, the U.S. Congress has banned oil exports since 1975, following the Arab oil embargo. This ban is now under growing debate in light of the greater supplies now in the United States – and the imbalance between light and heavy inventories. Already, the United States

permits product exports, and the Commerce Department is accepting minimally processed exports pending this debate and further review.¹²

Therefore, South Korea is in a well-placed position to import both oil and natural gas from the United States as well as other suppliers. Just as important, South Korean as well as other Asian companies are prudently pursuing investments in oil and gas shale plays, in the United States and elsewhere.¹³ As in the case of energy trade, cross-investments can and do increase the positive interdependence and security of South Korea and the United States.



Regional and Global Approaches to Energy Trade and Energy Security

Beyond these important national factors, it is important to move from bilateral to broader regional and indeed global approaches to energy trade and energy security.

What would such approaches mean? Regionally, the Trans-Pacific Partnership (TPP), which the United States and its Asia-Pacific partners plan to negotiate, should provide for free energy trade as well as free trade in other goods and services. Indeed, free energy trade could be a good candidate for South Korean leadership in TPP – which will have benefits for the entire region. Free energy trade and TPP together would contribute to both energy security and economic growth in Asia.

Naturally, a free energy chapter in TPP would face challenges – though ones that can be overcome. First, the Obama administration will need Presidential Trade Authority. The newly elected Congress, with its Republican majorities in both chambers, is likely to grant this authority because of Republicans' traditional support for free trade.

Second, as noted above, the United States can already export natural gas to free-trade partners, which benefits South Korea – but not Japan or China. Though China currently advocates an alternate Asia and Pacific

free-trade area, we should nonetheless seek to include Beijing in the TPP negotiations. The TPP will qualify all its members for the same natural gas benefits already accorded to South Korea.

Third, also as noted above, U.S. oil export prohibitions do not extend to oil products or even slightly modified crude shipments (as a form of product), which are already coming to South Korea's shores. Even if a complete lifting of the oil export ban takes time to occur, incremental steps under administrative authority can do much to liberalize U.S. energy trade.

This is where South Korea, as a close ally and partner of the United States, can play a positive and constructive role. Just as there should be a free energy trade "push" from the American debate, there should be a free energy trade "pull" from America's Pacific partners.

Consulting first with the Obama administration, South Korea could set forth a forward-looking initiative for free energy trade in the TPP. The trade would encompass all forms of energy, from fossil fuels to renewables.

While Seoul would benefit from the fossil fuel component of a free energy trade chapter, it will also have the opportunity to contribute new technical advances in renewables, such as solar and wind energy.¹⁴

An added benefit of a free energy trade chapter in the TPP is that it could provide a further platform for trans-Pacific consultations on future

types of energy exports. From an environmental standpoint, for example, all TPP partners could cooperate in reducing the coal component, high in carbon dioxide; increasing the low-CO2 natural gas component; and increasing proportions of renewables which do not contribute to greenhouse gases. The recent U.S.-Chinese agreement to limit greenhouse gas emissions is an encouraging step in the right direction.¹⁵

Not least, a free energy trade chapter would complement the investment protections found in bilateral investment treaties and likely to be an important TPP component as well. South Korean and U.S. companies already have significant joint ventures, for example GS Caltex, and they are looking, as noted above, to invest further in each other's energy sectors. Shale plays in the United States offer attractive potential upsides in a low oil price environment. As a consequence, investment and trade will be mutually reinforcing not only bilaterally, but also potentially in a TPP context.

Historically, the United States and Europe have taken the lead in trade negotiations, and OPEC countries have taken the lead in energy trade. Propelled by the energy revolution now underway, Asian countries can and should play a larger role. As one of America's closest partners, South Korea is well placed to take the first step.

Last but not least, regional approaches should be a weigh station to a more coherent global energy trading and security system. Right now, the world energy structure is clearly out of date. The consumers' club – as embodied by the International Energy Agency – does include South Korea and Japan, but it does not have China, India, or other major consumers as members.

The producers' club – as represented by OPEC – does not have the United States, Canada, Mexico, or Russia as members. In fact, it now accounts for only a third of the world's oil exports. So we need to modernize our international energy institutions, using for example an enhanced producer-consumer International Energy Forum.

But complementary global energy security approaches are also needed. In *Energy and Security*, we call for a global energy security system, which we have named "GESS." GESS has



five main components:

First, to propagate unconventional energy, specifically shale, in other countries.

Second, to create a competitive global gas market.

Third, to coordinate greater emergency response measures.

Fourth, to help end energy poverty; over 1.4 billion people have no electricity.

Fifth, to globally engage and protect international sealanes.¹⁶

Underlying GESS is the proposition that purely national energy policies are insufficient in today's world. We need strong bilateral, regional, and global energy relationships. These relationships need to focus on the real world of production (including, notably, shale), and the real world of consumption (including energy efficiency and the phasing out of the most highly polluting fuels, notably coal in electric power plants).

In sum, U.S. shale gas development offers positive prospects not only for South Korea and Asia, but for the global energy balance on the whole, where production is shifting from east to west. Instead of treating energy and trade separately, Seoul (or another Asian trade partner) has an opportunity to propose, in concert with Washington, a new energy chapter for the planned Trans-Pacific Partnership. Shale development can further

trade and investment ties – bilaterally, regionally, and globally. The international energy architecture needs to be updated as well, through an enhanced International Energy Forum but also through a series of concrete, cooperative steps in a new global energy security system.

Notes

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² Jan H. Kalicki and David L. Goldwyn (eds.), *Energy and Security: Toward a New Foreign Policy Strategy* (Washington and Baltimore: Wilson Center Press and Johns Hopkins University Press, 2005).

³ Jan H. Kalicki and David L. Goldwyn (eds.), *Energy and Security: Strategies for a World in Transition* (Washington and Baltimore: Wilson Center Press and Johns Hopkins University Press, 2013).

⁴ Stanley Reed, "North American Energy Rebound Catches Industry Attention," *New York Times*, November 13, 2012,

<http://www.nytimes.com/2012/11/14/business/global/north-american-energy-rebound-catches-industrys-attention.html>; Marek Strzelecki, "IEA Sees Bleak Outlook for Unconventional Gas Output in Europe," *Bloomberg News*, June 5, 2012, <http://www.bloomberg.com/news/2012-06-05/iea-sees-bleak-outlook-for-unconventional-gas-output-in-europe.html>.

⁵ Edward L. Morse, "Welcome to the Revolution: Why Shale is the Next Shale," *Foreign Affairs* May/June 2014, 4.

⁶ Jack Ewing, "For Draghi, Promises Are Still His Main Policy Option," *The New York Times*, November 6, 2014,

<http://www.nytimes.com/2014/11/07/business/international/ecb-interest-rate-announcement.html>; Shen Hong, "How China's Trying to Boost Its Economy: 'Quantitative Easing,'" *The Wall Street Journal*, August 11, 2014, <http://blogs.wsj.com/chinarealtime/2014/08/11/how-chinas-trying-to-boost-its-economy-qualitative-easing/>.

⁷ U.S. Energy Information Administration, *Technically Recoverable Shale Oil and Shale Gas Resources: An Assessment of 137 Shale Formations in 41 Countries Outside the United States* (Washington, June 2013),

<http://www.eia.gov/analysis/studies/worldshalegas/pdf/fullreport.pdf>, 11.

⁸ International Energy Agency, *Developing a Natural Gas Trading Hub in Asia: Obstacles and Opportunities*, by Warner ten Kate, Laszlo Varro, Anne-Sophie Corbeau (Paris, 2013), http://www.iea.org/media/freepublications/AsianGasHub_WEB.pdf, 6.

⁹ Winston Churchill, "Shipbuilding, Repairs, Maintenance, etc. – Personnel, - (Vote 8, Section 1)", *House of Commons Debate*, July 17, 1913, vol. 55, http://hansard.millbanksystems.com/commons/1913/jul/17/shipbuilding-repairs-maintenance-etc#S5CV0055P0_19130717_HOC_377, 1477.

¹⁰ Jan H. Kalicki and Jonathan Elkind, "Eurasian Transportation Futures," in Kalicki and Goldwyn, *Energy and Security* (2005) 169-170.

¹¹ U.S. Energy Information Administration, *Canada Country Analysis* (Washington, 2014), <http://www.eia.gov/countries/analysisbriefs/Canada/canada.pdf>, 9-11.

¹² Christian Berthelsen and Lynn Cook, “New Oil Shipment Shows Cracks in U.S. Export Ban: BHP Signs Deal to Sell \$50 Million of Lightly Processed Ultralight Crude,” *The Wall Street Journal*, November 4, 2014, <http://online.wsj.com/articles/bhp-to-sell-texas-oil-overseas-without-formal-u-s-government-approval-1415140850>; Christian Berthelsen and Lynn Cook, “U.S. Ruling Loosens Four-Decade Ban On Oil Exports,” *The Wall Street Journal*, June 24, 2014, <http://online.wsj.com/articles/u-s-ruling-would-allow-first-shipments-of-unrefined-oil-overseas-1403644494>.

¹³ U.S. Energy Information Administration, *South Korea Country Analysis* (Washington, 2014), http://www.eia.gov/countries/analysisbriefs/South_Korea/south_korea.pdf, 5; Robert D. Blackwill and Meghan L. O’Sullivan, “America’s Energy Edge: The Geopolitical Consequences of the Shale Revolution,” *Foreign Affairs*, March/April 2014, 113.

¹⁴ This proposal is consistent with the global Energy Charter Treaty (ECT), which focuses on transit but also addresses trade, investment, and energy efficiency. The ECT has not progressed as far as its original framers had hoped, primarily because of the contentious nature of transit issues in Europe. In Asia, only Japan has ratified the ECT; Russia, the United States, China, South Korea, and Indonesia have not, but they all hold observer status.

¹⁵ Secretary of State John Kerry, “China, America and Our Warming Planet – Our Historic Agreement With China on Climate Change,” *New York Times*, November 11, 2014, <http://www.nytimes.com/2014/11/12/opinion/john-kerry-our-historic-agreement-with-china-on-climate-change.html>; The White House, “FACT SHEET: U.S.-China Joint Announcement on Climate Change and Clean Energy Cooperation,” *Office of the Press Secretary*, November 11, 2014, <http://www.whitehouse.gov/the-press-office/2014/11/11/fact-sheet-us-china-joint-announcement-climate-change-and-clean-energy-c>.

¹⁶ Kalicki and Goldwyn, *Energy and Security* (2013), 558-9.