



PACIFIC ENERGY SUMMIT

2016 Summit Working Paper

The Impact of Low Oil Prices on Natural Gas and the Implications for the Asia-Pacific

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This working paper was commissioned by the National Bureau of Asian Research (NBR) for the 2016 Pacific Energy Summit. The author is grateful for the valuable comments from Philip Andrews-Speed, Vivek Chandra, Hari MP, John Pexton, Jonathan Stern, Yongping Zhai, Clara Gillispie, and Andy Nguyen. The views in this paper are those of the author and do not necessarily reflect those of NBR or any other organization.

EXECUTIVE SUMMARY

This paper examines the current prolonged period of low oil prices and assesses its effect on the natural gas sector in the Asia-Pacific.

Main Findings

The dramatic fall in oil prices has significantly affected the natural gas sector, particularly in the Asia-Pacific, where the liquefied natural gas (LNG) trade is dominant and natural gas plays a significant role in national and global gas markets. This is because in Asia gas prices are indexed to the price of oil and there is competition between gas, coal, and oil products. The oversupply of natural gas in Asia is unlikely to change in the short run, and the glut is expected to continue until at least 2020 due to existing contract arrangements, high capital requirements for projects, and long lead times for project development. In the medium to long term, however, disruption in the gas supply may occur. On the demand side, low gas prices will increase consumption of natural gas from existing markets—a trend that will be accelerated by the global momentum to combat climate change—and additional demand will come from the development of new markets. These efforts, however, could suffer from coal limitations, emissions restrictions, and subsidy removal. Although total investment in natural gas will be depressed, structural changes favor the gas sector. Low oil and gas prices have affected trade dynamics in contract flexibility, U.S. LNG, and market liberalization. Shifts of bargaining power and economic competitiveness could also emerge as outcomes. The exporters may be more aggressive, and global energy governance needs to be reformed to achieve sustainable natural gas markets.

Policy Implications

- Additional demand for natural gas should be developed either through new markets or by boosting consumption in existing markets to rebalance and develop a sustainable and robust natural gas sector in the Asia-Pacific.
- Stakeholders should continue to eliminate destination restrictions on gas exports and use this low-price opportunity to transition the natural gas pricing mechanisms from oil indexation to hub indexation.
- Asia needs to accelerate gas market liberalization and hub building to improve the future sustainability of its gas markets. Priority areas include separating transportation from commercial activities, allowing third-party access to pipeline and LNG terminals, and liberalizing gas prices.
- Holistic energy and environmental policies are needed to avoid backfire effects. For example, cross-country policy coordination is needed to avoid having the replaced coal from countries undergoing significant efforts to mitigate climate change simply move to other countries and crowd out gas consumption.

Over the past two years, the world has witnessed oil prices plunge more than 70%—with international benchmarks dipping below \$30 a barrel in early 2016—and natural gas prices have plummeted along with them. In January 2016, liquefied natural gas (LNG) spot prices for the first time fell below \$5 per million British thermal unit (mmbtu), plummeting from a high of \$19.70 per mmbtu in February 2014.¹ In addition, on April 18, 2016, the free-on-board Singapore SGX LNG Index Group for June 2016 fell below \$4 per mmbtu. Although oil prices have rebounded slightly in the second quarter of 2016, the year-long drop and expected prolonged period of low prices have severely affected global gas markets and will continue to do so for the foreseeable future.

Fluctuations in the price of oil have an especially significant impact on natural gas in the Asia-Pacific for at least two major reasons: (1) gas trading and retail prices are usually linked to the price of oil, and (2) natural gas competes with coal and oil products in the power, industrial, and even transportation sectors. While gas prices in the United States and some European markets are set by hubs based on gas-on-gas competition and thus are relatively independent from oil prices, Asia's imported gas and LNG are traded under oil-indexed contracts. In fact, the oil-indexed gas trade (both LNG and pipeline) in East Asia as a percentage of the total gas trade reached 88% in 2014, much higher than the global average of 65%, while in Europe more than 60% of the gas trade in wholesale markets is based on gas-on-gas competition, or hub prices.²

¹ Tsuyoshi Inajima and Emi Urabe, "Biggest LNG Buyers Seek Alliance to Boost Bargaining Power," Bloomberg, February 25, 2016, <http://www.bloomberg.com/news/articles/2016-02-25/biggest-lng-buyers-seek-alliance-to-boost-bargaining-power>.

² International Gas Union, "Wholesale Gas Price Survey—2015 Edition," 2015; and Howard V. Rogers, "The Impact of Lower Gas and Oil Prices on Global Gas and LNG Markets," Oxford Institute for Energy Studies (OIES), OIES Paper, NG 99, 2015, <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2015/07/NG-99.pdf>.

With this in mind, understanding the impact of low oil prices on natural gas in Asia is important for three notable reasons. First, natural gas plays a key role in the energy mixes of many Asian countries, and major fluctuations in markets may shape this role. In 2014, gas as a share of the total primary energy supply was approximately 75% in Bangladesh, 40% in Malaysia and Thailand, 20% in Japan and Indonesia, and 15% in South Korea and Vietnam.³

Second, Asia is a critical player in global gas and LNG markets. The region is an important developing market for natural gas, possessing the world's fastest growth rate in natural gas demand in recent year—a trend that is expected to continue in the years to come.⁴ For instance, according to BP's 2015 "Statistical Review of World Energy," East Asia's share of the global gas market is expected to increase from 18.8% in 2012 to 26.3% in 2035.⁵ Since the overall scale of Asia's demand for natural gas vastly outstrips intraregional supplies and most countries in the region—except for China and Singapore—have no pipeline imports, the region has relied heavily on LNG imports to satisfy gas demand. In 2015, 72% of globally traded LNG went to Asia, with the world's top three LNG importers—Japan, South Korea, and China—residing in the region and importing 56.5% of globally traded LNG, despite a decline in gas imports in Japan and South Korea for the

³ BP, "Statistical Review of World Energy," June 2015, <https://www.bp.com/content/dam/bp/pdf/energy-economics/statistical-review-2015/bp-statistical-review-of-world-energy-2015-full-report.pdf>.

⁴ Iván Martén and Daniel Jiménez, "Low Oil Prices Are Challenging Natural-Gas Markets," Boston Consulting Group, BCG Perspectives, March 30, 2015, https://www.bcgperspectives.com/content/articles/energy_environment_low_oil_prices_challenging_natural_gas_markets.

⁵ BP, "Statistical Review of World Energy."

first time since 2009.⁶ The International Energy Agency (IEA) predicts that Asia may absorb 80% of the incremental LNG imports over the medium term, with China alone absorbing 30%.⁷

Third, natural gas is viewed as an important fuel in Asian strategies for meeting rising energy demand to sustain economic growth while minimizing negative environmental impacts. In major emerging gas markets in Asia, such as China and India, gas demand has become sensitive to oil prices due to fuel substitution in electricity generation, industrial use, and the transportation sector. Moreover, although in 2014 gas only accounted for 5% and 9% total primary energy supply in China and India, respectively, the demand for natural gas in Asia is expected to surge due to increasing pressure to immediately reduce air pollution and mitigate climate change and coal emissions in the long run.

With these concerns in mind, this paper will examine how low oil prices will affect the development of natural gas in Asia. The results are discussed in terms of supply and demand, investment, trade and pricing dynamics, and geoeconomic and geopolitical implications.

Market Dynamics: Supply, Demand, and Investment Outlooks

Supply

Although many have expressed concern that low gas prices could disrupt gas supplies in the medium to long run due to lack of investment, few expect that the LNG glut will disappear, at least

⁶ International Group of Liquefied Natural Gas Importers (GIIGNL), “The LNG Industry in 2015,” GIIGNL Annual Report, 2016, http://www.giignl.org/sites/default/files/PUBLIC_AREA/Publications/giignl_2016_annual_report.pdf.

⁷ International Energy Agency (IEA), “Developing a Natural Gas Trading Hub in Asia: Obstacles and Opportunities,” IEA Partner Country Series, 2013, https://www.iea.org/publications/freepublications/publication/AsianGasHub_FINAL_WEB.pdf.

until 2020. For instance, the IEA projects that global LNG export capacity will increase by more than 40% by 2020, with 90% of the additions coming from Australia and the United States.⁸ The gas supply glut is particularly relevant to the Asian LNG market because most of these planned LNG development projects are in Australia and Papua New Guinea, which could introduce roughly 90 billion cubic meters of new supply per year to the market.⁹

A number of reasons could contribute to an ongoing glut despite low gas prices. One key reason is the long lead time required of LNG projects. The projects that have already received a final investment decision and that are under construction are unlikely to be stopped. These sites will come online over the next few years since large portions of their volume have usually been committed to buyers. A considerable number of liquefaction projects in Australia and the United States are already under construction and will go ahead despite low gas prices, which will further add to the LNG supply glut up through 2020.¹⁰ In Australia alone, 14.4 million tonnes per annum (mtpa) of new production capacity has been added to the market and 42 mtpa are expected to come on stream in 2016.¹¹ In the United States, gas prices are relatively independent from oil prices, and the U.S. Energy Information Administration forecasts that U.S. natural gas production growth will rise from late 2016 through 2017 despite current low gas prices.¹²

⁸ IEA, “Gas: Medium-Term Market Report 2015,” 2015.

⁹ Martén and Jiménez, “Low Oil Prices Are Challenging Natural-Gas Markets.”

¹⁰ Alex Cull, Patrick Nevins, and Richard Tyler, “Impact of Declining Oil Prices—Issue 5: Liquefied Natural Gas,” Lexology, Hogan Lovells, April 1, 2015, <http://www.lexology.com/library/detail.aspx?g=abe2c420-8005-48d2-9255-8541b0c2bcb4>.

¹¹ GIIGNL, “The LNG Industry in 2015.”

¹² U.S. Energy Information Administration, “Short-Term Energy Outlook (STEO),” May 2016, https://www.eia.gov/forecasts/steo/pdf/steo_full.pdf.

A second reason is the presence of take-or-pay (TOP) liability, which requires that buyers pay for a set minimum volume such that the volume of gas must be taken regardless of demand. These TOP obligations delink supply from prices and further contribute to the supply glut: sellers have to produce gas at the minimum required levels and take on the added risk of low prices.

Third, gas projects are capital intensive, which means they have low variable (operational) costs and thus low shutdown prices for gas exports; producers will usually not shut down production as long as operating costs are covered. Therefore, natural gas extraction from fields will continue despite the fact that prices are below the full cost incurred by off-takers.¹³

Furthermore, technological innovation could reduce the production costs of gas. It has been reported that drilling efficiencies and well performance have been improved in the United States, which has reduced the unit cost of gas production.¹⁴

However, the decline of new investment will lead to slower production growth over the medium and long term. Many more companies will have to reduce their investment in new natural gas and LNG projects due to difficulty accessing capital, regardless of the investment value of these projects. Furthermore, market volatility and low gas prices will make it difficult to start new projects. Industry analysts have observed that final investment decisions for large greenfield projects in high-cost areas such as Australia and Canada are likely to be postponed or permanently canceled, whereas investment decisions for projects in relatively low-cost areas, such as the United States, are likely to continue.¹⁵

¹³ Australia's coalbed methane-to-LNG plants will be exceptional as these plants have extremely high ongoing operational costs due to the need to drill hundreds of wells every year to maintain feed gas production.

¹⁴ Anne-Sophie Corbeau, Rami Shabaneh, and Sammy Six, "The Impact of Low Oil and Gas Prices on Gas Markets: A Retrospective Look at 2014–15," King Abdullah Petroleum Studies and Research Center, May 2016.

¹⁵ Cull, Nevins, and Tyler, "Impact of Declining Oil Prices."

Given that the supply of natural gas is unlikely to change in the short run and the glut is expected to continue until at least 2020, generating new demand will be a necessary way to rebalance the market.

Demand

Lower oil prices can provide a stimulus to demand for at least three reasons. First, low-cost LNG will cause increased demand from LNG-importing countries. For example, the low price of LNG makes natural gas competitive in India’s power sector. In 2015, India recorded high LNG imports, and its imports in 2017 are expected to be double 2010 levels.¹⁶

Second, low LNG prices will push the development of new markets to new destinations—such as Bangladesh, Egypt, India, Jamaica, Pakistan, the Philippines, Panama, South Africa, and Vietnam—that are sensitive to prices. These markets have been or will be developed and will help offset the supply glut.¹⁷ The emergence of new technologies and infrastructure has enabled a breakthrough into these new markets, which often cannot afford the immense scale and costs associated with natural gas infrastructure. Floating LNG terminals, for instance, could provide a low capital cost (but not a low operational cost) solution for LNG importers in these less developed countries. Egypt, Jordan, and Pakistan started to import LNG through floating terminals in 2015. Nevertheless, technological innovation may not be enough. For instance, in order to further

¹⁶ Howard V. Rogers, “Asia’s LNG Demand: Key Drivers and Outlook,” OEIS, OIES Paper, NG 106, April 2016, <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2016/04/Asian-LNG-Demand-NG-106.pdf>.

¹⁷ Michael Stoppard, “Low Oil Prices and LNG: Withstanding the Rough Seas Ahead,” IHS Energy, available at <http://online.wsj.com/ad/article/ceraweek-low-oil-prices-lng-withstanding-rough-seas-ahead>.

develop the natural gas sector in less creditworthy emerging economies, LNG developers may also need to provide credit and investment support in downstream infrastructure.¹⁸

Third, expanding the use of LNG in the transportation sector is another possible way to utilize a seeming overabundance of viable natural gas resources. For instance, just a 10% switch of transportation fuels to gas globally would create demand for 70 million tonnes of LNG equivalent, a size similar to Japan's LNG imports and 30% of global LNG trade in 2015.¹⁹

As the IEA predicts, low import prices for natural gas could turn gas into an increasingly attractive option from an environmental standpoint.²⁰ The demand for cleaner air, which is seen in China and India, could be a significant driver of natural gas demand since natural gas produces fewer emissions per unit of energy than coal. According to recent data from the World Health Organization, 56 of the top 60 globally polluted cities (in terms of particulate matter 2.5) are located in Asia, and most of these cities are in either China or India.²¹ Natural gas is the immediate solution to replace coal and can help reduce air pollution in these countries.

In the long run, the 2015 UN Conference on Climate Change (COP21) could provide the necessary momentum to spur natural gas development due to the growing global consensus and push toward cleaner energy sources. According to a recent IEA report, coal combustion generates more than 40% of carbon dioxide emissions despite constituting only around 30% of total primary

¹⁸ Stoppard, "Low Oil Prices and LNG."

¹⁹ "Asia Energy Stories of the Day," Reuters, April 16, 2016.

²⁰ IEA, "Gas: Medium-Term Market Report 2015."

²¹ World Health Organization, "WHO Global Urban Ambient Air Pollution Database," 2016, http://www.who.int/phe/health_topics/outdoorair/databases/cities/en.

energy supply.²² Since natural gas has about half the emissions intensity of coal, a shift from coal to natural gas could be an immediate strategy to meet COP21 targets without limiting the energy needed for economic growth, especially for developing countries.

That being said, there are also some factors that will limit new demand. One key factor is price control in the final markets, which limits the impact of low gas prices on gas consumption. According to a report from the International Gas Union, about 35% of global gas consumption in 2014 had been under various regulated prices.²³

Another salient case is that the climate change efforts that limit coal use in one country may backfire in others. For instance, U.S. coal that was crowded out of U.S. markets ended up displacing natural gas in European power generation.²⁴ With the global effort to limit coal consumption, coal prices could further slump, thus making coal a more competitive alternative to gas, especially in the power sector. Recently, coal has become popular even in developed countries. For example, in South Korea and Japan, demand for LNG recently declined due to greater use of cheaper coal in power generation.²⁵ Exchange rates also play a role in the battle between coal and natural gas. Due to weak currencies, gas prices in local currencies increased in some developing

²² IEA, “Key Trends in CO₂ Emissions from Fuel Combustion,” IEA Statistics, 2015, <http://www.iea.org/publications/freepublications/publication/CO2EmissionsTrends.pdf>.

²³ Meanwhile, the share of consumption under gas-on-gas competition prices and oil indexation was 43% and 17%, respectively, according to data from the International Gas Union from 2015.

²⁴ Stephen Fidler, “Rising Coal Use Clouds Europe’s Future,” *Wall Street Journal*, February 6, 2014, <http://www.wsj.com/articles/SB10001424052702304450904579367074233771140>.

²⁵ “South Korea’s KOGAS Cuts 2015 LNG Imports by 13.5% to 31.41 Million Mt on Weaker Demand,” S&P Global Platts, February 15, 2016; and Osamu Tsukimori and Aaron Sheldrick, “As Japan’s Oil, Gas, Power Use Stalls, Coal Imports Hit New Record,” Reuters, January 25, 2016, <http://uk.reuters.com/article/uk-japan-energy-demand-idUKKCN0V30N6>.

countries that represented 20% of the world’s total consumption.²⁶ While uncertain factors such as oil prices, Chinese demand, and the implementation of COP21 will shape the future of the gas industry, one key determining factor is the cost competitiveness between coal and gas in local markets.

Investment

Total investment in the natural gas sector is expected to decline due to low prices. With lower oil or gas prices, companies will logically cut capital expenditures and refocus on lower costs assets, despite the slight possibility of counter-cycle investment.²⁷ According to a report from Bain & Company published in November 2015, the oil and gas industry deferred or canceled \$200 billion worth of planned investments over the past two years and another \$1.5 trillion of future spending due to calculations that these projects might not be economically viable given oil prices at that time.²⁸

While there is a reduction of total investment in natural gas projects, four structural changes may occur. The first is the potential increase of investment in infrastructure by development banks. In contrast to private banks, development banks may perceive low gas prices as a positive force for developing countries in need of energy from imports. One recent example is the signing of an

²⁶ Corbeau, Shabaneh, and Six, “The Impact of Low Oil and Gas Prices on Gas Markets.”

²⁷ However, counter-cycle investment could occur to help prepare for a future rebound in prices. A prominent past example is the go-ahead decision on Gorgon LNG made in 2009 after the oil price crash. See more in Stoppard, “Low Oil Prices and LNG.”

²⁸ Lodewijk de Graauw, John McCreery, and Brian Murphy, “Capital Productivity for Oil and Gas in a Low-Price Environment,” Bain & Company, Insights, November 25, 2015, <http://www.bain.com/publications/articles/capital-productivity-for-oil-and-gas-in-a-low-price-environment.aspx>.

investment agreement on April 7, 2016, for the Turkmenistan-Afghanistan-Pakistan-India gas pipeline, a project financed by the Asian Development Bank (ADB).²⁹ However, it is unlikely that development banks will invest in natural gas exploration and production projects, as they often support projects that target economic development and poverty alleviation in developing Asia and not those that are more commercial. For example, the ADB has not invested in gas exploration projects, which could be undertaken by commercial banks.³⁰ However, given the limit of financial resources in development banks, their more active participation will not change the overall financial picture in the gas sector.

The second structural change is the entrance of new players into the oil and gas market, and the investment from these new players could mitigate some investment reduction due to the financial losses of oil and gas companies. The retreat of oil and gas majors could make room for new players to enter into projects or areas where they were previously disadvantaged. The lower asset value makes traditional oil and gas projects more affordable to many investors, both inside and outside the oil and gas industry. For example, in March a private Chinese oil and gas company announced its bid to take over Bankers Petroleum Ltd. in a deal worth C\$575 million.³¹ National oil companies from importing countries like China, India, Japan, and Thailand will have an opportunity to acquire and develop LNG for their domestic markets under attractive terms and

²⁹ ADB, “TAPI Pipeline to Help Turkmenistan Diversify Gas Exports, Support Growth,” April 7, 2016, <http://www.adb.org/news/tapi-pipeline-help-turkmenistan-diversify-gas-exports-support-growth>.

³⁰ ADB, “Our Work,” 2016, <http://www.adb.org/about/our-work>.

³¹ “Bankers Petroleum Ltd. Enters into Definitive Agreement to Be Acquired by an Affiliate of Geo-Jade Petroleum Corporation,” PR Newswire, May 20, 2016, <http://www.prnewswire.com/news-releases/bankers-petroleum-ltd-enters-into-definitive-agreement-to-be-acquired-by-an-affiliate-of-geo-jade-petroleum-corporation-572824801.html>.

may partially fill the gap created by reduced activities from international oil companies.³² The new players that are building, or proposing to build, LNG export projects in the United States and Canada are not traditional players and have access to the requisite technology and financing.³³ Since tolling fees have been committed for a long period and thus become sunk costs, those exporters may continue to export, at least for a short period, without recovery of the tolling fees. These players will be producing a majority of incremental LNG in the next ten years if they can overcome and absorb their own financial strains.

The third structural change is a shift from debt to equity financing, giving more opportunities for infrastructure funds and private equity players that have capital ready to deploy (and that also need earlier realized returns, thus preferring smaller projects).³⁴ Due to the reliance on equity investment, financial investors will be more active and have more control over the relatively small gas projects than banks. Furthermore, the need to develop markets with limited creditworthiness and access to financing for upstream and infrastructure could lead to closer integration between buyers and sellers as producers could invest in downstream to secure their markets. If gas prices remain, or look likely to remain, low for a longer period, then financing arrangements could be restructured and some projects rejuvenated despite financial loss to investors.

³² ADB, “TAPI Pipeline to Help Turkmenistan Diversify Gas Exports, Support Growth.”

³³ U.S. LNG exports are supplied by independent companies—not international and national oil companies—and operate under tolling models.

³⁴ Cull, Nevins, and Tyler, “Impact of Declining Oil Prices.”

Last, some major oil companies, such as Total and Shell, have shifted their focus from oil to natural gas due to the momentum toward “cleaner” fuels. This trend has added financial resources for gas.³⁵

Trade and Pricing Impacts

Low prices and associated oversupply have affected trade dynamics in many ways. First, low gas prices may facilitate the removal of destination clauses from LNG contracts because sellers are no longer able to insist that destinations be restricted under oversupplied markets.³⁶ While destination restriction clauses provide energy security for both buyers and sellers, this period of prolonged low prices is giving more negotiating power to buyers and the destination restriction is now being challenged. The largest buyer of LNG in the world, JERA—a joint venture between Tokyo Electric Power Company and Chubu Electric Power Company—announced that it will no longer accept contracts with destination clauses, with the understanding that commercial risk has been shifted from volume to flexibility.³⁷ Other Asian stakeholders are also considering relaxing destination restrictions in long-term LNG contracts in order to facilitate the development of LNG spot markets and make LNG easier to trade. On top of this, U.S. LNG exports that have started to

³⁵ Rakteem Katakey and Tara Patel, “Big Oil’s Plan to Become Big Gas,” Bloomberg, June 1, 2015, <http://www.bloomberg.com/news/articles/2015-06-01/big-oil-becomes-big-gas-as-climate-threat-spurs-tussle-with-coal>.

³⁶ In typical long-term LNG contracts, not only are buyers locked in for what is often a twenty-year agreement, but destination clauses in these contracts also prohibit buyers from reselling this cargo. That is, cargo has a fixed final destination.

³⁷ “Asia Energy Stories of the Day,” Reuters, April 16, 2016.

come to the market in early 2016 lack destination clauses and therefore have added liquidity to Asian LNG spot markets.

A second significant consequence of low gas prices is that U.S. LNG has become more expensive than Asian buyers' expectations and thus less attractive to these buyers. Even if U.S. Henry Hub prices remain at the \$2 level, the U.S. LNG cost, insurance, and freight prices to Japan will be at least \$6.5 per mmbtu given the prevailing tolling fee of liquefaction (currently between \$2.37 and \$3 per mmbtu³⁸) and freight (another \$2–\$3 per mmbtu, including boil off).³⁹ However, this could change if either oil prices increase to above \$60 a barrel or U.S. LNG export costs are reduced through technical and financial innovations. When oil prices are above \$60 a barrel, U.S. LNG will be competitive with LNG in Asia based on Japan Customs-cleared Crude prices. However, the challenge is that U.S. LNG will have to compete with spot LNG prices that may be less than \$6 per mmbtu over the next several years. Therefore, reductions in supply cost are the key factor for the successful delivery of U.S. LNG to East Asia. Another factor that affects the competitiveness of U.S. LNG is shipping cost, which accounts for a larger share of the final delivery cost to East Asia in the low price period.⁴⁰

Nevertheless, U.S. LNG may be in demand for other reasons such as supply security and diversification, flexibility from destination clauses, liquidity of spot markets, and non-oil-linked

³⁸ Valery Nemo, "U.S. LNG—The Wild Card for the European Gas Market", *Gazprom Export Global Newsletter*, 2016, 9 (2):11-12.

³⁹ Cull, Nevins, and Tyler, "Impact of Declining Oil Prices." Transactions used on a cost, insurance, and freight basis mean that the price includes all costs of transporting the goods from the point of origin to the destination.

⁴⁰ The shipping cost from Sabine Pass to Tokyo ranges from \$0.88 to \$3.52, mainly depending on LNG tank day rate. See Ronald D. Ripple, "U.S. Natural Gas (LNG) Exports: Opportunities and Challenges," *IAEE Energy Forum*, 2016.

pricing. This part of U.S. LNG demand will not likely be affected by low gas prices. Furthermore, LNG export facilities that were developed earlier, such as Cheniere’s Sabine Pass LNG and Freeport LNG, are less affected by low gas prices because they are already fully contracted.⁴¹ Nevertheless, the United States may become the swing LNG producer and put a ceiling on world LNG prices in the future.

Third, low prices may facilitate market liberalization and development of competitive domestic gas markets. The development of trading hubs that can offer Asian benchmark prices for gas and LNG is underway, with Singapore, Japan, and China leading the hub initiatives.⁴² Japan is one pioneer in this liberalization effort because it found the current energy system to be insufficient, costly, and inflexible after the Fukushima Daiichi nuclear accident. Fukushima challenged Japan’s traditional energy security model, which had relied on strategic state intervention in the energy markets to overcome the country’s resource vulnerability.⁴³ The development of an Asian benchmark price, however, needs a functional competitive wholesale gas market, and this does not yet exist in Asia.⁴⁴ One major limitation is that the major Asian gas markets—such as China, India, Japan, and South Korea—are not liberalized. Market liberalization is more promising during low price periods, as it is unlikely to have a shock on domestic gas prices.

⁴¹ Susan L. Sakmar, “Will U.S. LNG Exports Find a Warm Welcome in Asia?” *Gastech News*, October 4, 2015, <http://www.gastechnews.com/homepage-slider-featured-articles/will-us-lng-exports-find-a-warm-welcome-in-asia>.

⁴² IEA, “Developing a Natural Gas Trading Hub in Asia.”

⁴³ Hikaru Hiranuma, “Japan’s Energy Policy in a Post-3/11 World,” Tokyo Foundation, October 15, 2014, <http://www.tokyofoundation.org/en/articles/2014/energy-policy-in-post-3-11-world>.

⁴⁴ Another limitation of East Asia is the lack of an integrated gas transportation system allowing gas to move cheaply and easily between hubs and demand/supply points.

Unlike the clear interest in removing destination restriction clauses in LNG contracts, efforts to decouple LNG prices from oil prices may be more controversial. Motivated by market needs and the significant gaps that existed between Asia’s oil-indexed LNG prices and hub-indexed prices in the United States and Europe when oil prices were high, East Asia has started transitioning to hub indexation for gas imports and creating its own prices by establishing gas trading hubs.⁴⁵ However, with the convergence of spot and long-term contract prices with the low oil price period, Asian buyers may be less interested in changing the pricing mechanism since they are comfortable with paying the low oil-linked LNG prices.⁴⁶ This situation, however, is not desirable because there is considerable risk if oil-indexed gas prices rise again relative to spot LNG prices. Instead, today’s convergence of spot and oil-linked gas prices should be utilized as a window to change the pricing mechanism in Asia, as it is now more convincing for producers to argue that hub prices are preferred because they reflect Asia’s own market fundamentals and are not simply meant to reduce gas prices.⁴⁷ Today’s era of low prices is a great opportunity because low oil-indexed prices minimize the immediate pain for sellers. Given the common challenges that stem from low oil prices, it would be in the interests of gas exporters to delink gas prices from oil prices. In fact, despite its long-standing defense of oil indexation, Gazprom agreed to supply hub-indexed gas to Engie in April 2016.⁴⁸

⁴⁵ Shi Xunpeng, “Gas Hub Initiatives in East Asia: Motivation, Competition and Cooperations,” Energy Studies Institute, National University of Singapore, ESI Bulletin, February 2016, 7–8

⁴⁶ Martén and Jiménez, “Low Oil Prices Are Challenging Natural-Gas Markets.”

⁴⁷ Shi, “Gas Hub Initiatives in East Asia,” 7–8.

⁴⁸ Mark Smedley, “ENGIE Breaks Oil Price Link in Gazprom Contract,” Natural Gas Europe, April 12, 2016, <http://www.naturalgaseurope.com/engie-breaks-oil-price-link-in-gazprom-contract-29028>.

With the accelerated transition of gas markets, existing market players will have little time to prepare for these new dynamics. For example, they must decide whether to sign the next long-term contract, and if the contract is signed, for how long and at what percentage of TOP. All these are new and important questions that buyers and sellers must now consider.

Geoeconomic and Geopolitical Implications

Asian gas importers and consumers in oil-importing countries could benefit largely from lower-cost oil and gas. Low prices are shifting bargaining power from producers to consumers, particularly as Asian buyers are trying to gain additional bargaining power by forming a buyer's coalition. As reported in March 2016, JERA, the Korea Gas Corporation, and China National Offshore Oil Corporation—which together import about one-third of world LNG—were in talks to form a coalition on LNG procurement and investment.⁴⁹

In addition to shifting bargaining power, there is also a potential shift in the competitiveness of businesses in Asian countries. As was demonstrated in the United States, the competitiveness of the manufacturing industry benefits from lower energy prices. If a similar gas revolution can be replicated in Asia, the increased competitiveness from Asian energy-consuming industries would help Asian energy importers that are now battling slow economic growth.

Moreover, the change in gas pricing dynamics could encourage exporters to be more aggressive in the gas market. Although the Gas Exporting Countries Forum (GECF) currently has no power to influence the world gas market, it could eventually be an instrument to influence

⁴⁹ Inajima and Urabe, “Biggest LNG Buyers Seek Alliance to Boost Bargaining Power.”

markets if Russia, Qatar, and even Australia come together.⁵⁰ Once gas prices in Asia become more independent from oil prices, the role of the GECF could be more important as its decisions could affect independent gas prices.

The volatility of the gas market and the demand for it to become more sustainable justifies improving global energy governance. Rising consumption from emerging countries such as China and India, increasing production from IEA members, and the increasing demand from OPEC countries have blurred the line between producers and consumers. The premises of Asian energy security have also been changed by Southeast Asia's increasing dependence on oil imports and North America's growing energy self-sufficiency. Therefore, the existing global energy governance architecture, including both the IEA and OPEC, needs to be restructured to better reflect current realities.⁵¹

Conclusion

Given abundant gas resources, growing demand, and the need to mitigate greenhouse gas emissions from fossil fuel use, there are strong incentives—and needs—to ensure continued development of natural gas and LNG as an attractive low-emission fossil fuel source. Today's

⁵⁰ The GECF is an international governmental organization that includes the world's leading gas producers, and its objective is to increase the level of coordination and collaboration among members. The member countries of the forum include Algeria, Bolivia, Egypt, Equatorial Guinea, Iran, Libya, Nigeria, Qatar, Russia, Trinidad and Tobago, the United Arab Emirates, and Venezuela. Azerbaijan, Iraq, Kazakhstan, the Netherlands, Norway, Oman, and Peru are observer members. Altogether, the natural gas reserves of the member countries account for 67% of the world's proven natural gas reserves.

⁵¹ Philip Andrews-Speed and Shi Xunpeng, "What Role Can the G20 Play in Global Energy Governance? Implications for China's Presidency," *Global Policy* 7, no. 2 (2016): 198–206; and Tom Cutler, "The Architecture of Asian Energy Security," in "Adapting to a New Energy Era: Maximizing Potential Benefits for the Asia-Pacific," National Bureau of Asian Research, NBR Special Report, September 2014, <http://www.nbr.org/publications/element.aspx?id=773>.

prolonged period of low oil prices has had a massive impact on natural gas, particularly in the Asia-Pacific, where it plays a significant role in countries' energy mixes.

Low oil and gas prices have created turbulence in global markets, and the supply glut is expected to continue until at least 2020. The supply outlook will not likely change in the short run due to TOP arrangements, high capital requirements for projects, and long lead times for project development. However, delayed or reduced investment for new projects could disrupt the gas supply in the medium to long run.

The demand for gas can be boosted by increased consumption from existing markets and also opportunities to develop new markets and expand sectoral consumption. This trend will be accelerated by efforts throughout the region to reduce pollution and mitigate climate change. Low gas prices also create the essential environment to drive innovations that reduce costs and open up new markets. That being said, weakening coal prices will cause a competition among resources and potentially depress demand for gas. Climate change efforts in one country could also lead to backfire on gas demand in other countries.

Although total investment will be depressed, some structural changes could work in favor of the gas sector. Development banks could perform some of the roles of commercial banks by working to help developing Asia-Pacific countries finance gas infrastructure. The retreat of current market players makes room for new oil and gas companies—even non-oil and gas players—and financial investors to enter the gas sector. The fact that traditional oil companies are transitioning to the gas business is also a positive trend for the industry.

Low oil and gas prices have affected trade dynamics in many ways. They have helped phase out destination restrictions, reduced the attractiveness of U.S. LNG, and facilitated market liberalization in the Asia-Pacific. Although perceptions of efforts to transition Asia's pricing

mechanism from oil-indexed to hub-based pricing may be mixed, this initiative should nevertheless proceed. The low price period is an opportunity to change the pricing mechanism without causing a significant shock to buyers and sellers because the difference between oil-indexed prices and competitive hub prices will no longer be significant. Despite the perceived benefits of the current mechanism producing low gas prices in line with low oil prices, importing countries should still transition to hub indexation in order to better reflect local market fundamentals. While a regional LNG spot market may provide much-needed benchmark prices, the lack of liberalization will delay the pricing transition process in domestic markets, which will further discourage the optimal utilization of gas. Therefore, Asia needs to accelerate gas market liberalization and hub building to improve market sustainability.

The geoeconomic and geopolitical consequences of low oil prices for natural gas in the Asia-Pacific are significant and dynamic. Low oil and gas prices are shifting bargaining power from producers to consumers, and exporters may be more willing to negotiate with importers for alternative pricing mechanisms. The volatility of gas markets and the demand for more stability justify improving global energy governance.