

Leslie Palti-Guzman, Director Global Gas, Rapidan Group, United States
(Opinions are my own and not the views of my employer)

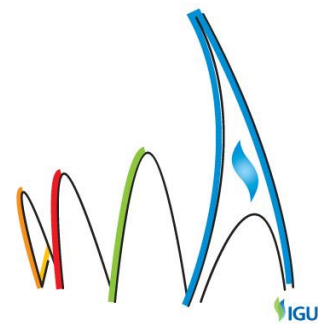
The US is helping to usher in a new gas reality

Washington will use US LNG as an opportunity, not a weapon

Table of Contents

Background.....	1
Aim.....	2
Methods	2
Results	2
Conclusions.....	13
References.....	14

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Background

Two of the most important developments that will affect global gas markets in coming years — the start of a period of unprecedented LNG supply growth and the start of US shale-to-LNG exports — have put a spotlight on a new gas order that features the democratization of gas¹ and lower prices. These developments have led to speculations about the opportunities and obstacles for the US to accelerate the transformation of the new gas order and influence its shape in its image — freer, more transparent, market-oriented and competitive.

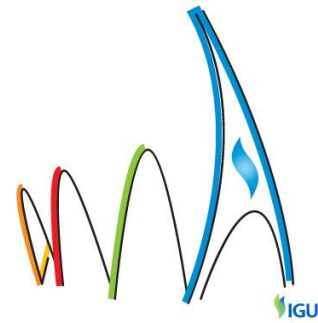
The US energy revolution has quickly transformed the US energy landscape by making it nearly self-sufficient in gas². The US is the world's largest natural gas producer for the fifth consecutive year and is likely to become by 2020 the world's third-largest liquefied natural gas (LNG) exporter, behind Australia and Qatar. These rapid energy transformations have led to an intense debate in the United States over gas export policies and the use of the gas bounty in the country's foreign policy at a time when the ongoing Ukraine-Russia crisis has increased fears of potential short-term disruption to Europe.

The premise of this paper is that although US energy diplomacy, export policies, and environmental regulations are still in the process of catching up to the new reality of the US's new-found gas superpower, Washington's emerging gas doctrine will have unparalleled power to restructure global gas markets for the better.

A key finding of this essay is that the US will still use gas as a tool to serve its national interests and create geopolitical dividends — but more subtly than any other major gas-producing nation. True, gas made in the US will create foreign policy opportunities for Washington, but it will also create many beneficial positive externalities for the world. The US will strive to create a global gas market with more competition, market rules, liquidity and

¹ In this context, democratization means the increase in the number of LNG exporters and importers.

² The US will become energy self-sufficient in 2021. BP, "BP Energy Outlook 2035," 17 Feb. 2015, www.bp.com/energyoutlook (accessed 5 Mar. 2015). The US produced 687 billion cubic meters (bcm) (66 bcf/d) of natural gas in 2013 while it consumed 737.2 bcm. BP, "BP Statistical Review of World Energy 2014," 18 Jun. 2014, <http://www.bp.com/en/global/corporate/about-bp/energy-economics/statistical-review-of-world-energy.html> (accessed 5 Mar. 2015).



efficiency, which in turn will improve global energy security. Far from weaponizing natural gas, the US boom may lead in part to the disarmament of the energy wars.

Aim

This paper aims at making sense of US gas diplomacy by identifying how global gas markets will be transformed by the arrival of US LNG supplies. It will provide an overview of the major geopolitical implications of the US gas story, as it reshapes trade patterns between major oil and gas importers and exporters. The paper will focus on tangible structural and institutional changes that US gas supply could create.

Methods

Data have been collected from interviews, conferences, news articles, and published reports. I use two major research strategies: (1) empirical analysis of events and (2) case studies.

Results

1. Washington will use gas as an opportunity, not a weapon

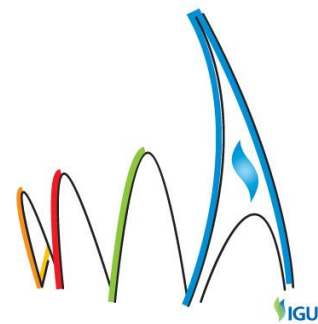
a) The Foreign Policy uses of energy is not new

The involvement of Washington in energy diplomacy is not new but has become very topical with the advent of the US shale gas revolution³. After the 2009 Russia-Ukraine gas crisis which left several European countries without gas for roughly 13 days, the US State Department under former Secretary of State Hillary Clinton created the bureau of Energy Resources (ENR) within the State Department to manage the geopolitics of energy, expand energy good governance and access⁴. Central to the bureau's mission is also to look at better articulating how and when the US should exert its emerging energy superpower status in foreign policy. Although there is no official statement on gas diplomacy, Washington's natural gas policies and actions over the past five years help to make sense of what could become a true US gas diplomacy doctrine.

Like any other energy power, Washington uses its gas to promote its national interests. US natural gas has become a strategic asset and the ability to export excess energy creates

³ As an illustration, US involvement in Europe's energy security is at least two decades old and has contributed to the advancement of several large infrastructure projects such as Baku-Tbilisi-Ceylan, Nabucco, the Southern gas corridor, and the Trans-Caspian gas pipeline.

⁴ Robin Dunnigan, event at *American Security Project* in conjunction with *LNG Allies*, "Beyond Rhetoric: How The U.S. Can Help Enhance European Energy Security," Jul. 30, 2014, <http://www.americansecurityproject.org/lng-policy-event-summary-videoaudio-included/> (accessed 4 Aug. 2014).



new geopolitical dividends for Washington. The attention on US natural gas is so widespread that it provides a tremendous opportunity for the US State Department to reach audiences and broach subjects that may otherwise not be as well received. It boosts the country's national security and improves Washington's bargaining position.

US energy diplomacy has a much broader focus than natural gas as it integrates other fossil fuels, alternative energies, and the fight against climate change.⁵ Also, the gas focus of the US State Department and of the US Congress is much broader than LNG, but for interest of concision, the author will only give an overview of the LNG diplomacy.

b) Gas can no longer be used as a coercive tool

For decades, countries with established export records have used natural gas as a powerful foreign policy tool to achieve political goals and influence. Yet, the twin forces of the global gas supply surge⁶ and the rise of the US gas superpower⁷ have accelerated the start of a new gas order where gas can no longer be used as a coercive tool.

The dominance of more politically stable suppliers, such as the US, Australia and Canada will reduce efforts by traditional suppliers to establish a cartel or exert their dominance to put pressure on prices.⁸ The share of OECD LNG exports in the global gas market could reach nearly 40% by 2020, up from 12% in 2013⁹.

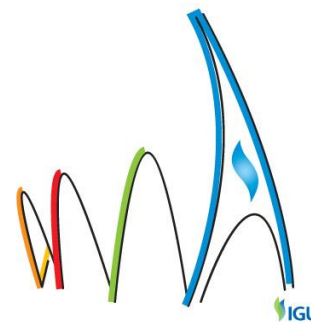
⁵ The State Department oversees the making of US energy diplomacy. Currently, Secretary of State John Kerry relies on senior officials from the Bureau of Energy Resources (ENR), including Amos Hochstein, who was appointed as special envoy and coordinator for international energy affairs in August 2014. U.S. Department of State, Media Note, "Appointment of Special Envoy and Coordinator for International Energy Affairs", 3 Dec. 2014, <http://www.state.gov/r/pa/prs/ps/2014/12/234623.htm> (accessed 8 Jan. 2015).

⁶ While 2014 was a transition year away from supply tightness, 2015 marks the start of a new gas order that features abundant LNG supply, along with the first shipments of US LNG cargoes, and a lower pricing environment. BG's *Global LNG Market Outlook 2015* gives details on the new supply wave: "Worldwide including Australia, 26 trains and 4 FLNG units are currently under significant construction, across 16 projects for a total of 122 million tons per annum (mtpa) of new supply capacity by 2020." Global liquefaction capacity was 290.7 mtpa at the end of 2013.

⁷ Cheniere's Sabine Pass liquefaction project will become the first operational US Gulf Coast export project by the end of 2015. As of March 2015, the Federal Energy Regulatory Commission (FERC) and the Department of Energy (DOE) have approved five projects for LNG exports to non-free trade agreement (non-FTA) nations. These five projects currently under construction will gradually ramp-up in the coming years to bring online a combined export capacity of 9.22 billion cubic feet per day (bcf/d) or the equivalent of 70 mtpa, compared to Qatar's existing export capacity of 77 mtpa, which is currently the world's largest LNG exporter. Other US LNG projects are proposed and are waiting for approval, but not all of them will be built, and the ones that will, are unlikely to become operational before the start of the next decade.

⁸ The gas OPEC, known as the Gas Exporting Country Forum (GECF) has lost steam. The rise of North America as a major alternative supplier diminishes the leverage that suppliers such as Qatar, Iran, and Russia would have in forming a gas cartel.

⁹ These are the author's own estimates.



In addition, the combination of increased supply diversification and liberalization of global gas markets puts an end to monopoly situations. The notion that nations can use gas effectively as a weapon to coerce others has started to become obsolete. For instance, the combination of a successful integration of the European gas market¹⁰ and true competition with more supply options for Ukraine and Central and Eastern Europe (CEE)¹¹ have reduced gas dependency on Russia and limited its ability to use energy as a political weapon. One can argue that the new parameters of the European gas market have decreased Russia's negotiating leverage and led Gazprom and Naftogaz to reach a negotiated agreement, which avoided a shut off to Europe in the middle of the winter. 2014 may be remembered as the last time when Russia could successfully create market anxiety and threaten to wage a gas war.

The defeat of Russia's gas weapon over the European winter 2014-2015 builds a strong case for the US's ideological crusade to make gas markets more integrated, institutionalized, free and open. The Obama administration sees changes in energy around the world and at home as a moment of opportunity to usher more stability and cooperation by establishing a real market and true competition¹². For sure, there are losers in this new gas reality. But there are more positive upsides to the US energy bounty for the world than negatives.

c) The geopolitical use of US LNG

The ongoing Ukraine-Russia conflict, with its increased threats of natural gas price volatility and shutoffs from Russia, has led to an intense policy debate in the United States about the geopolitical implications of US LNG.

White House's foreign policy use of the LNG bounty

¹⁰ The European Union's package of liberalization rules, called the Third Energy Package, has contributed to unify and integrate the European gas market since 2009.

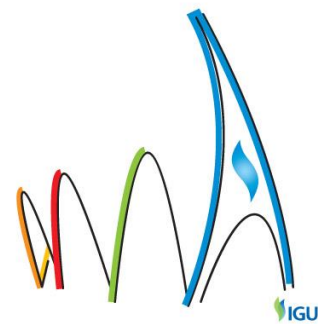
¹¹ One of the tangible successes of the Third Energy Package is that Russian gas is no longer bound to one specific country when it enters the EU, which means that gas can flow freely from West to East (and reverse), North to South (and reverse). It also translated into a new development: Hungary, Poland and Slovakia have been able to reverse flow some gas back to Ukraine since late 2014 thanks to the construction of new interconnectors, and a large portion of it is Russian gas. In the near future, Ukraine will also be able to receive some re-gasified LNG coming from Poland's import terminal, for instance.

¹² Amos Hochstein, event at the *Atlantic Council*, "US Energy Diplomacy Priorities for 2015," 8 Jan. 2015, <http://www.atlanticcouncil.org/news/transcripts/transcript-us-energy-diplomacy-priorities-for-2015> (accessed 15 Jan. 2015).

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On the executive branch side, although the revolution in US shale oil and gas had initially prompted Washington's energy policy to turn inward¹³, growing tensions in Ukraine have forced the Obama administration to reconsider its engagement in Europe's energy security.¹⁴

The ongoing crisis with Russia in Ukraine has bolstered the case for project approvals within the White House to symbolically challenge Russia's dominance of the European gas market.¹⁵ Over the past two years, the political environment in the US has become more conducive to LNG exports.¹⁶ Not only has the debate subsided over gas prices and the economic impact of LNG exports, but the Russia-Ukraine crisis has given US LNG exports the geopolitical momentum to counter Russia's energy dominance in Europe—at least in the rhetoric. The overhaul of DOE's approval process, decided in May 2014, has benefited the most commercially viable and advanced LNG projects.¹⁷ The change was also a way to streamline the process in order to more quickly undermine rival suppliers and alleviate concerns about political delays in the US. As a result, the White House has used its power to grant exports licenses to US LNG projects to control the number of gas infrastructure projects being built and the volume of gas being exported.¹⁸

However, the US government does not dictate investment decisions or contractual arrangements by American oil and gas companies, unlike in many other major gas-producing nations. The White House does not have a state-owned gas company that it can use as a foreign policy tool.¹⁹ The deals that have been made with US LNG export facilities are company-to-company deals and the government will not be able to influence the

¹³ Leslie Palti-Guzman, "Don't cry for the Nabucco pipeline," *Reuters*, 1 May. 2014, <http://blogs.reuters.com/great-debate/2014/05/01/dont-cry-for-the-nabucco-pipeline/> (accessed 12 Feb. 2015).

¹⁴ David L. Goldwyn, "Refreshing European Energy Security Policy: How the U.S. Can Help," *Brookings*, 18 Mar. 2014 <http://www.brookings.edu/research/articles/2014/03/18-european-energy-security-policy-goldwyn> (accessed 10 Feb. 2015).

¹⁵ Only symbolically, as these changes will not have any bearing on the pace of FERC's approval process. In contrast with DOE reviews that consider national interest issues that can apply broadly across projects, FERC accounts for site-specific issues and requires a public comment period for its EIS that make it a fundamentally longer process compared to DOE's reviews

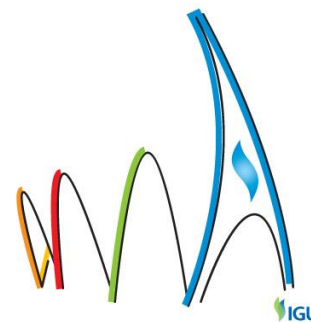
¹⁶ Between the conditional approval of the first US Gulf Coast LNG project, Cheniere's Sabine Pass, and the approval of the second, DOE conducted a two-year pause. During this pause, DOE commissioned a two-part study on the potential effect of a significant volume of LNG exports on the domestic economy (and notably on the domestic gas price).

¹⁷ US Department of Energy (DOE) announced on May 29, 2014, a proposal to review LNG export applications and make final public interest determinations only after projects have completed the environmental review process, handled by FERC under the National Environmental Policy Act (NEPA). In other words, DOE is now reviewing projects only after they are first approved by FERC.

¹⁸ Leslie Palti-Guzman and Robert Johnston, "The Foreign Policy Uses of an Energy Bounty," *Wall Street Journal*, 9 Jan. 2013, <http://www.wsj.com/articles/SB10001424127887324374004578217803412316408> (accessed 8 Jan. 2015). The White House also sets the regulatory and environmental framework for domestic production.

¹⁹ However, the size of Exxon Mobil's public affairs department and its reach raises questions.

Leslie Palti-Guzman, Director Global Gas, Rapidan Group, United States



destination of the gas. Washington will ultimately let the markets determine where the gas flows.

Although European allies, and notably countries in Central Eastern Europe (CEE), such as Lithuania²⁰, have pressured Washington to free up exports to alleviate these countries' dependence on Russian gas, market conditions will eventually determine destinations of those exports.

Less obvious is the use of LNG by the White House as a lever in negotiations, notably in trade deals, such as in the ongoing Trans-Pacific Partnership (TPP) and the Transatlantic Trade and Investment Partnership (TTIP) negotiations. It seems that ultimately the US has not used gas as a negotiating chip by promising freer access to US LNG exports to Japan as a deal sweetener. One explanation is because the impact of TPP on LNG (especially for Japan) will be more symbolic than commercially tangible. The DOE has already been issuing timely project approvals for the past year and a half, and the process has been expedited since the Ukraine crisis (and a proposed bill on Capitol Hill, which is likely to pass this year, will accelerate DOE's approval after the project was approved by FERC). The TPP would also open freer exports to the large Japanese market, but most US LNG projects would look for a broader customer set to justify investments. Nevertheless, the TPP would provide some symbolic relief to Japan. India is also very interested in getting this guarantee of unconstrained US LNG exports.

On balance, TPP will have relatively little impact on export volumes and destination of the gas, which are largely determined by other factors. Similarly, the proposed TTIP is pushing for the inclusion of an energy section "to promote open, competitive and transparent international energy markets and to enhance their access to US LNG"²¹.

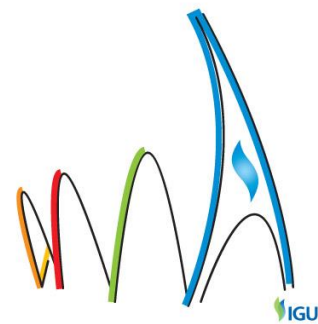
Congress advocates for the use of gas as a 'diplomatic tool'

In Congress, proponents of US LNG exports have opportunistically used the Crimea crisis to pressure DOE to accelerate the pace of the approval process because of the geopolitical benefits of US LNG exports²². By granting faster LNG export approval, the US will be able to

²⁰ Rokas Masiulis, The Lithuanian Energy Minister of Energy, "Independence through greater inter-dependence," *The Hill*, 25 Feb. 2015, <http://thehill.com/blogs/ballot-box/233733-independence-through-greater-inter-dependence> (accessed 28. Feb. 2015).

²¹ Tom Cutler, "The Trans-Pacific partnership as a pathway for US energy exports to Japan," *NBR*, 28 Jan. 2015, <http://www.nbr.org/research/activity.aspx?id=527> (accessed 9 Jan. 2015).

²² Some lawmakers have asked whether the US could use its gas reserves as a "geopolitical weapon" to "stand up to Russian aggression," as US Speaker of the House John Boehner said in a statement earlier this year.



help key strategic allies cut their dependence on one single source of gas supply.²³ The crisis in Europe has been a golden opportunity to renew the congressional goal of expedited LNG for American allies. Congress is likely to approve in coming months legislation aimed at streamlining federal processing of LNG export permits.²⁴

While streamlining the regulatory process would provide a symbolic boost to US exports, it is important to keep in mind that not all projects approved by the DOE and the FERC will be built²⁵. Another point to keep in mind is that the ramp-up of US LNG exports will be slow and incremental; delays could also happen due to the fact that several facilities will be built at the same time, stretching labor and resources.

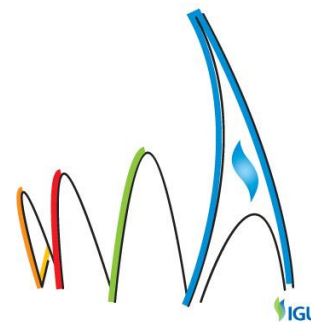
2) Washington's highest priority: A true competitive global gas market

The ongoing LNG supply surge means less concentration of natural gas export capacity in the hands of a few suppliers, it means also increased pricing competition between suppliers to retain market shares. This is a favorable environment for the organic growth of a more

²³ In Europe, LNG supplies from the US and elsewhere, will achieve the goals of increased gas-on-gas competition, improved supply diversification, and the dissolution of Gazprom's monopoly. As an example, Eastern Europe's independence has improved since end 2014 and early 2015 with its first two regasification terminals. Lithuania's floating facility at the Baltic Sea port of Klaipeda and Poland's Swinoujscie LNG terminal will both significantly improve supply diversification by importing LNG from countries such as Qatar, Norway, Algeria, and from the US when exports start. But even in the absence of meaningful European energy infrastructure investments, Europe will be a main beneficiary of the global LNG supply surge leading up to 2020. In a well-supplied market, it will receive many unsold cargoes, as Atlantic LNG will be displaced back to the West, in particular to Europe, to find a market.

²⁴ In June 2014, the House passed legislation that would have compelled the Department of Energy to act on LNG export permit applications within 30 days. The Senate failed to take up the bill, but a Republican senator has similar legislation — requiring a decision in 45 days — and has said that the Obama administration has indicated a willingness to cooperate on the issue. It seems probable there will be broad bipartisan agreement over legislation to expedite LNG exports in the first half of 2015. In January 2015, [the US House of Representatives passed H.R. 351, the LNG Permitting Certainty and Transparency Act](#), by a bipartisan vote of 277-133. The bill, among other things, requires the US Department of Energy to issue a final decision on LNG export applications within 30 days following the conclusion of the National Environmental Policy Act review of the related LNG facilities. Although market conditions will ultimately determine investments and exported volumes, the legislation would formalize the broad support at the federal level of natural gas production and export, which itself would be a boost for the industry. In addition, the changes would give better predictability to applicants on when they could expect a permit that will help inform investment decisions.

²⁵ The DOE has approved 42 applications to FTA countries for LNG exports. The DOE has also approved 9 LNG projects to non-FTA countries, with another 28 awaiting approval. FERC authorization has been issued for 5 of the 9 DOE non-FTA approved LNG projects. Beyond regulatory approvals, a commitment from customers of more than half of project volumes under long-term contracts, along with lining up financing, will still be required. For buyers, there is clearly an appetite for contracts based on US Henry Hub prices, but there are also limits to this preference due to uncertainty about the long-term trajectory of US gas prices, especially when considering the amount of new gas demand and exports (LNG and pipeline to Mexico) that will hit the market between 2014-2020.



liberalized international gas market. The US unconventional gas revolution and now the prospect of US LNG exports are accelerating the transformation toward this new gas market which is more open, efficient, and competitive. A level playing field favors new entrants in the market such as the US, but it also puts downward pressure on pricing, which benefits natural gas consumers worldwide. Creating a competitive international gas market is also the best way to fight the use of energy as a weapon.

One of the greatest impacts of US LNG will be the structural evolution of global gas pricing toward more pricing diversification and a greater incorporation of hub pricing.

US shale gas and the anticipation of US LNG exports, with prices linked to the benchmark of Henry Hub rather than the old oil-linked structure used in most other international LNG deals, have improved the bargaining position of European and Asian natural gas importers. Not only are the prospects of US gas exports already putting pressure on established suppliers to move away from the old structure of oil-indexed pricing formula, but the anticipation of US exports are also shaping the pricing for new projects that will come on line later this decade.

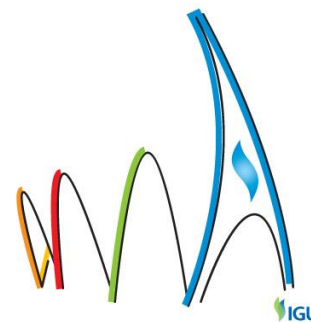
The evolution of global gas prices away from oil-indexation is already well-established in Europe and it resulted in lowering gas prices²⁶. Europe has reached a point in which 50% of gas prices are determined by the interplay of supply and demand rather than by oil indexation²⁷.

Pressure to amend traditional gas pricing formation in Asia has taken more time and it will not be accomplished solely as a result of higher US LNG exports, but a combination of factors including the emergence of a gas trading hub in Asia, and diversification of supply and pricing exposure. The pricing of US LNG has drawn significant attention from buyers, especially in Asia, as it will diversify the region's pricing exposure away from oil indexation²⁸, which in turn will further shake up traditional oil-linked price structures requested by established suppliers. After the great Fukushima disaster, Asian buyers have started to

²⁶ In 2013, the German border gas price — which is still partly indexed to crude prices — hovered around \$11.50-\$12/mmbtu, compared to European spot gas prices which were lower at an average \$10.60/mmbtu.

²⁷ "The majority of European gas contracts are indexed with a lag to crude and fuel oil, though the region gas increasingly moved towards a hybrid pricing system (particularly in the Northwest). This trend, which originally emerged in reaction to the drop in gas demand in 2009, and to a surge in LNG imports involved the incorporation of trading hub into pipeline gas prices. Under pressure from European buyers, major gas suppliers, including Gazprom and Statoil have since increased the share of hub pricing in the formulation of pipeline export prices for certain contracts." IGU, "World LNG Report," 2014 ed., 8-9, <http://www.igu.org/publications> (accessed 6 Mar. 2015).

²⁸ Until now, the vast majority of Asian import deals have been contracted at a price calculated as a certain percentage of the Japanese Crude Cocktail (JCC), which is used as a benchmark.



challenge oil indexation as part of ongoing negotiations for new uncontracted gas for projects coming on line around 2018.²⁹

US gas is also a force to be reckoned with in shaping more efficient markets. US LNG is not bound to any specific market and can be easily swapped or sold on the spot market, creating more liquidity and efficiency in the global gas market. In stark contrast, most of the Asian LNG contracts remain earmarked to a specific market, which creates less room for swaps and trading operations.³⁰

For now, Qatar remains the world's favored swing supplier.³¹ But the US will likely assume this role, and in a more transparent manner, within a few years, which will stabilize global gas markets in period of supply or demand shock. The ongoing Russia-Ukraine crisis has reminded gas importers that sufficient spare supplies are of great necessity to the constant flow of natural gas supplies.

The US is set to become the world's primary go-to supplier in times of crisis, which will be particularly helpful for European buyers. From 2016 onward, after the first US export facility will become operational, gas supply from the US will serve as a backup for the European market against any supply-side disruptions from Russia, North Africa, or the Middle East. Although Russia gas will remain Europe's main supply, Europe will increasingly rely more on LNG — supplied by the US and others — as an option, creating pricing competition in its market and improving the continent's energy security³². Europe will be one of the main beneficiaries of the global supply surge, because unsold cargoes in Asia³³, from the US and elsewhere, will try to find a home in Europe. However, extra US LNG in Europe will force Russia's hand, requiring Gazprom to further discount its gas in order to retain market share. Bottom line, a pricing war between US LNG and Russian gas into Europe is a strong

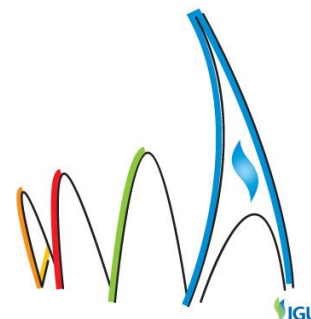
²⁹ South Korean, Chinese, Indian, and Japanese buyers have shown interest in gas-on-gas indexation in recent negotiations for new projects, particularly those in the US, Canada and Mozambique. Discussions over sales purchase agreements for these new mega-plays are underway and evolving toward greater pricing flexibility. But some producers are still uncomfortable with hub indexation because they fear it will not guarantee long-term cash flow to finance capital-intensive projects.

³⁰ Cheniere's Sabine Pass is setting up its trading arm to be ready to trade its uncontracted volumes by 2016.

³¹ Qatar met most of Japan's extra LNG requirement after the Fukushima nuclear disaster and is meeting the seasonal and emergency needs of many countries with no long-term contracts.

³² In order to stop US LNG cargoes from flowing to Europe, Russian gas would have to reach as low as \$6.1/mmbtu (US LNG cost as 115% of Henry Hub + \$1/mmbtu as maximum sea transportation cost if marginal shipping capacities are required, \$0.5/mmbtu, the rest being sunk costs) compared to the current Russian gas price of \$10-11/mmbtu in Central Europe. As a result, in order to price out US LNG, Gazprom would have to discount its gas by up to 40% from its 2014 prices—which were already discounted by 20% from their 2013 prices.

³³ US LNG will be sent to the highest-paying markets, currently in Asia and Latin America, unless European utilities enter into a bidding war. European utilities are more likely to match Asian premiums only in the event of crisis or supply-side disruptions from Russia, Algeria, and other suppliers.



possibility, which will lead to lower gas prices for European consumers. In turn, it could reduce the levels of US LNG sent to Europe, but is unlikely to totally eliminate them.

US LNG will thus further liberalize the market and provide a safety net.

3) US gas to stimulate demand and help fight climate change

The US government sees gas as a "transition fuel" toward a greener economy in the US and abroad.

a) Gas serves US domestic climate goals

First at home, the abundance of gas at affordable prices facilitates its role as a transition fuel and supports the US's climate action plan — at least in the medium-term. Increased use of natural gas has been widely credited with having reduced dramatically US carbon-dioxide emissions in recent years.³⁴ Notably, there is a consensus that coal-to-gas switching in power generation is the main driver behind the recent decline in US carbon emissions, although other factors are at play, including increasing energy efficiency and economic slow-down.³⁵

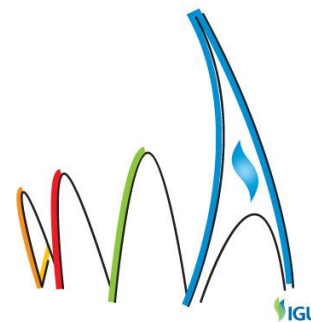
However, natural gas, which remains a fossil fuel, is responsible for worrying emissions of methane, a powerful greenhouse gas. Environmental opposition is concerned by the rise in methane emissions due to the US energy boom. Along with a series of climate change moves, the Obama administration is expected to announce this summer new rules designed to curb methane leaks. Although stricter regulations could put a more onerous cost on natural gas production, they will have little impact on supply output.

In the meantime, with no price yet on carbon emissions, the Obama administration has supported environmentally responsible production of natural gas as a way to meet energy needs, economic recovery and climate goals³⁶. Natural gas is part of "an all-of-the-above

³⁴ Russel Gold, "Rise in US gas production fuels unexpected plunge in emissions," *Wall Street Journal*, 8 Apr. 2013, <http://www.wsj.com/articles/SB10001424127887324763404578430751849503848> (accessed 2 Jan. 2015).

³⁵ "Compared to the average air emissions from coal-fired generation, natural gas produces half as much carbon dioxide, less than one-third as much nitrogen oxides, and one percent as much sulfur oxides at the power plant," US EPA, *eGRID*, 2000.

³⁶ But the trend of coal-to gas switching could be quickly reversed with higher natural gas prices or efficient development of clean coal technology.



energy strategy" developed by the Obama administration to integrate every source of American-made energy.³⁷

b) US LNG stimulates global appetite for gas, a boon for climate

Overseas, the Obama administration wants to grab the natural gas demand opportunity to reduce carbon emissions and transition towards a low-carbon economy.

US LNG exports could accelerate a demand revolution that could support an international carbon reduction agenda by promoting the switch from coal or fuel oil to natural gas in power generation, which will reduce dirtier fossil fuel consumption and improve carbon footprints. Many countries that were previously not thinking about importing gas are now reconsidering their energy policies because the ongoing transformation of the global gas market makes the fuel more affordable and accessible.³⁸

However, there will be wide regional variations within the expanded global LNG demand. Asia³⁹ will drive the incremental growth in demand, followed by Europe, which could also boost its appetite in light of its more aggressive diversification agenda. There will also be some interesting niche markets at play in the Middle East and Latin America⁴⁰. However, several key unknowns could mitigate overall LNG demand over the next five years, including the success of Chinese shale gas, the timing and scope of nuclear restarts in Japan, and the affordability of gas compared with other fuels, notably coal. But all the buyers share a common appeal for US LNG because of its flexibility and pricing novelty.

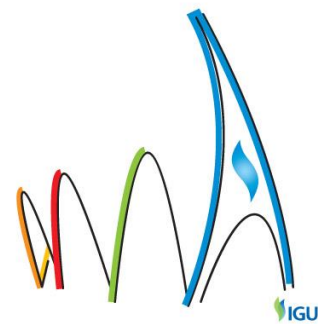
Beyond the historical markets, four niche frontier markets will support LNG demand growth and notably appetite for US LNG: Southeast Asia, the Middle East, Caribbean/Central

³⁷ Jason Furman and Jim Stock, "New Report: The All-of-the-Above Energy Strategy as a Path to Sustainable Economic Growth, the *White House, Council of Economic Advisers*, 29 May. 2014, <https://www.whitehouse.gov/blog/2014/05/29/new-report-all-above-energy-strategy-path-sustainable-economic-growth> (accessed 2 Dec. 2015).

³⁸ From a demand perspective, the lower price environment will not only benefit existing buyers, notably in Asia and South America, but also new countries entering the LNG importer club. This year, six new LNG importers are joining the market: Egypt, Pakistan, Jordan, Poland, Uruguay, and the Philippines. With ample spare LNG supply available, these small markets are less likely to enter into long-term contracts for most of their needs, and instead could rely more on spot purchases.

³⁹ In Asia, US LNG creates price competition by providing a source of hub-priced supply similar to that which has already benefitted Europe and provides an alternative to coal in power generation— though low gas prices will be needed.

⁴⁰ Latin America will also be attractive markets for US LNG, where it could lower the environmental costs of fuel oil consumption. It will also ease the financial burden of traditionally high oil-linked gas import prices in Mexico, Argentina, Brazil, and Chile. Brazil's state-owned energy company, Petrobras, will continue to buy record amounts of LNG in a seasonal fashion and whenever the country experiences severe drought that limits its hydropower. But further pre-salt development in Brazil and successful shale gas development in Argentina could displace LNG imports in the longer term.



America and, to a lesser extent, Africa. LNG has become more accessible and affordable due to lower prices, abundance of supply, and technological improvements. Additionally, LNG will not only be used for power generation in these regions, but also for industrial and transportation use. The main risks that will emerge with more reliance on those markets are related to these countries' internal political stability and creditworthiness.

The White House considers that in the Caribbean⁴¹, there is a moment of opportunity where US LNG could offset the reduction in the Petrocaribe program⁴² given the proximity of US Gulf Coast LNG projects and the fact that several of the island countries have free trade agreements with the US. The Dominican Republic is already relatively well positioned to weather a change in the terms of the program, having already started to shift its grid away from oil towards both coal and natural gas.

4) US gas as an opportunity for cooperation

The current phase of abundance of energy and market liberalization encourages cooperation instead of conflict over energy resources. Before the US shale gas revolution, competition was emerging due to the perception of petroleum as a declining resource and because the largest petroleum importers were preparing for an uncertain future⁴³. The outlook appears now less worrisome due to more supply availability and increased energy interdependence.⁴⁴

Take US-China relations, for example. The US energy bounty will improve relations with China by decreasing competition in at least one area of their relationship. By becoming more

⁴¹ The White House sees the energy changes in the Americas as a moment of opportunity: the US is emerging as a regional gas superpower for the Americas at a time when one powerful actor, Venezuela, reduces its Petrocaribe program which subsidized oil consumption in these countries. Vice President Joe Biden announced in June 2014 the Caribbean Energy Security Initiative (CESI) to create a more sustainable energy future for the island and open their markets to private investments. Several US LNG projects are specifically targeting these niche markets for exports, the Caribbean, Central America and to a certain extent South America. The White House, Office of the Vice President, "Remarks by Vice President Biden on the Caribbean Energy Security Initiative," 26 Jan. 2015, <https://www.whitehouse.gov/the-press-office/2015/01/26/remarks-vice-president-biden-caribbean-energy-security-initiative> (accessed Feb. 3 2015).

⁴² According to a study by AES, fuel oil comprises 85% of power generation in the Caribbean region.

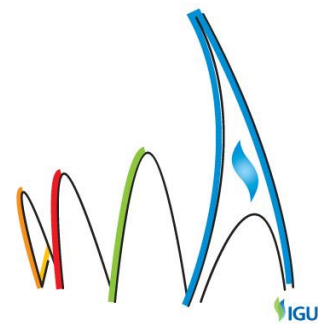
⁴³ Leslie S. Palti, "The Sino-Transatlantic energy game: energy relations among the United States, the European Union, and the people's republic of China," (MA diss., The Fletcher School, Tufts University, 2007), http://dl.tufts.edu/file_assets/tufts:UA015.012.073.00011 (accessed 10 February 2015).

⁴⁴ The climate accord between the US and China signed in November 2014 is a good illustration of collaboration in one area of their relationship. It is a partial success in pushing Beijing to address the environmental consequences of its growing energy use by making its own cuts in greenhouse gas emissions. It is also pushing China to take on global responsibilities. Mark Landler, "US and China reach climate accord after month of talk," *New York Times*, 11 Nov. 2014, <http://www.nytimes.com/2014/11/12/world/asia/china-us-xi-obama-apec.html> (accessed 6 Mar. 2015).

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energy-self-sufficient, the US has freed up resources that are now available to other buyers. As a consequence, key gas consumers, like China, are less likely to compete with the US and each other to lock in gas resources. China is keen to grab unwanted supplies that have been displaced by the US shale gas revolution.

Although there is still a trust issue between the US and China, and Chinese companies, for instance, have not invested directly in the US LNG play, China will be one of the primary recipients of US gas exports through third-party suppliers⁴⁵. The downside is that US energy may help reinvigorate America's economic and political power, dimming Chinese hopes for an international order without US hegemony⁴⁶.

While China is still pursuing an aggressive energy acquisitive strategy in some areas of the world (such as in the Caspian, Myanmar, Africa), it is also exploring the alternative, a market-based strategy in line with other energy actors in its region and beyond. Beijing is keen on promoting the potential of Shanghai to become Asia's gas hub. This is this kind of institutionalization and market-based structure facilitated by US LNG and other supply that will make energy markets more stable and open.

Conclusions

The evolution of the global gas market — amid supply surge and structural pricing changes — creates new opportunities to rethink the way natural gas is used in international relations and how it can benefit world prosperity. Although energy is only one dimension affecting geopolitical influence in the world, the relative fortunes of great powers such as the US, Russia, the European Union, and China are now tied to global gas developments that are likely to produce increased geopolitical stability and energy cooperation.

A leading force behind these changes is the revolution in US energy production, which has brought a lot of good news for the US. Dependence on imported oil and gas is falling, natural gas prices are drastically lower, and the ability to export excess supplies of energy creates foreign policy opportunities. But US gas will also create major benefits globally because Washington's main intention is to improve global energy security. US gas could be a positive transformational force for generating more efficient and liberalized markets, cooperation, development, and economic growth — which is in everyone's best interest.

That said, to temper this optimism on the US as a gas superpower, it is important to note a few limitations and risks (this list is not exhaustive):

⁴⁵ BG, BP, Total have signed deals with Chinese companies to supply them with US LNG

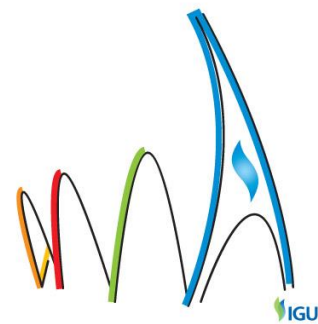
⁴⁶ There is the old idea in China that the world oil market is controlled by the Americans, therefore Beijing believes it serves better its interest to use non-market mechanism.

Leslie Palti-Guzman, Director Global Gas, Rapidan Group, United States

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- On the supply side, the risks to a US gas superpower hinges on continued supply growth with limited disruptions, which in turn means a lasting social license to operate despite growing environmental concerns.
- The influence of US gas could be negatively impacted by the arrival of another disruptive technology which would abruptly terminate the golden age of gas, in the US and abroad, as gas would no longer be seen as a transition fuel.
- The current pricing environment, with Brent below \$60 a barrel, boosts the competitiveness of oil-indexed gas, which in turn could reduce the appeal for US Henry Hub-linked US LNG.
- Weaker investment outlook in LNG facilities worldwide could postpone investment decisions in the US LNG play, beyond the projects that have already been sanctioned.⁴⁷
- A convergence of regional gas pricing could be a threat to the economics of US LNG. The current reduced arbitrage window makes the gas market less global and more disconnected as it has become unprofitable to ship spot cargoes point-to-point between the regions. As a result the business model of US LNG exports, especially for shipment to Asia, could be at stake whenever regional gas prices converge.⁴⁸
- The US power to influence the shape of world gas markets could be jeopardized if there is the perception that the world energy market is controlled by the Americans. Then, certain actors will believe that it better serves their interest to use non-market mechanisms or institutions that are not American-led. Some actors are already aiming at denting the hegemony of the US dollar and especially the petrodollar in the global financial system. China is taking the lead in creating a new investment bank that could become rival to the World Bank, the International Monetary Fund and the Asian Development Bank. China and Russia have also started to seal major energy deals in Yuan and Ruble such as with the two Sino-Russian pipeline deals signed in 2014, which is clearly undermining the dollar.

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⁴⁷ With lower oil and gas prices, many LNG investments are cancelled or postponed, notably in Australia, Canada and Mozambique. It has also already impacted the US LNG play. As a result the LNG surge post 2020 could be more modest. But US LNG projects are still the best positioned because of their cost structure, flexibility and business model. The US remains for now a driving force for the golden age of gas.

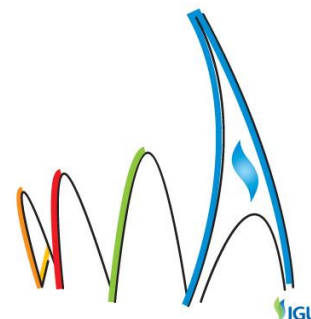
⁴⁸ Recent drops in both LNG spot prices and long-term oil-indexed gas prices, has narrowed so much the price gap between regions that prices are roughly equal between Europe and Asia. Spot LNG prices in northeast Asia have fallen in February 2015 to \$6.65/MMBtu from a record \$20/MMBtu early 2014, while European spot prices have tanked to \$7-8/MMBtu. Prices in the natural gas hubs of Europe and Asia are at their closest to the US benchmark since 2010. Meanwhile Nymex Henry Hub is lower than \$3/MMBtu.

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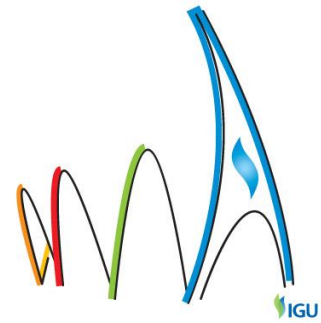
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