U.S. LNG Exports: Global Market Context, Geopolitics, and a Path Forward
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Chairman Wyden, Ranking Member Murkowski, and distinguished Subcommittee members:

Thank you for inviting me here to share my views on U.S. LNG export policy. My name is Charles Ebinger and I am the Director of the Energy Security Initiative at the Brookings Institution. These views are mine alone and do not reflect the views of the Brookings Institution, which does not take institutional positions on any policy issue. The Energy Security Initiative at Brookings has been studying issue of U.S. LNG exports for the past two years, having published an assessment of the case for LNG exports in May 2012 in our report, *Liquid Markets: Assessing the Case for Exports of Liquefied Natural Gas from the United States.*[1] In that report, we came to two primary conclusions: first, the negative implications of LNG exports from the lower 48 states, which we believe to be technically feasible, are marginal and outweighed by the benefits; second, as the lynchpin of the globalized economy the United States must continue to espouse free trade and avoid intervening in a global market. Ultimately we believe, as we stated in our report, "that the United States should neither act to prohibit nor to promote LNG exports."

In today's discussion, I will put U.S. LNG exports in an international context, giving a perspective on the global market for natural gas and the geopolitical implications of U.S. LNG exports. I will also offer some thoughts on how the United States can structure its export policy given today's realities of the natural gas market.

International Gas Markets

Although much fanfare is made about the number of proposed export terminals awaiting approval from the Department of Energy, the realities of domestic and international gas markets suggest that the economic case to export LNG from the United States is limited. The economics of these projects are determined by domestic natural gas prices and market conditions in potential importing countries.

It is important to first understand the pricing structure of the global gas market, which reflects three distinct sub-markets: North America, the Atlantic Basin (mostly Europe), and the Pacific Basin (including Japan, South Korea, Taiwan, China, and India). These markets are separated because of important technical differences that impact the pricing structure for LNG in each market. The North American natural gas market

[1] Charles Ebinger, Kevin Massy, and Govinda Avasarala, "Liquid Market: Assessing the Case for Exports of Liquefied Natural Gas from the United States," *The Brookings Institution,* May 2012. (Brookings 2012) (http://www.brookings.edu/research/reports/2012/05/02-lng-exports-ebinger)

is competitive and prices are traded in a transparent and open market. The Atlantic Basin is dominated by European LNG consumers such as the United Kingdom, Spain, France, and Italy, and is a hybrid of a competitive U.K. market that was liberalized in the mid-1990s and a Continental European market that is partially dependent on oil-linked, take-or-pay contracts. In recent years, the U.K. hub, the National Balancing Point (NBP), has traded at a premium to the U.S. Henry Hub. The Pacific Basin is a more rigid market that depends heavily on oil-indexed contracts that are more expensive than those used in the Atlantic Basin.

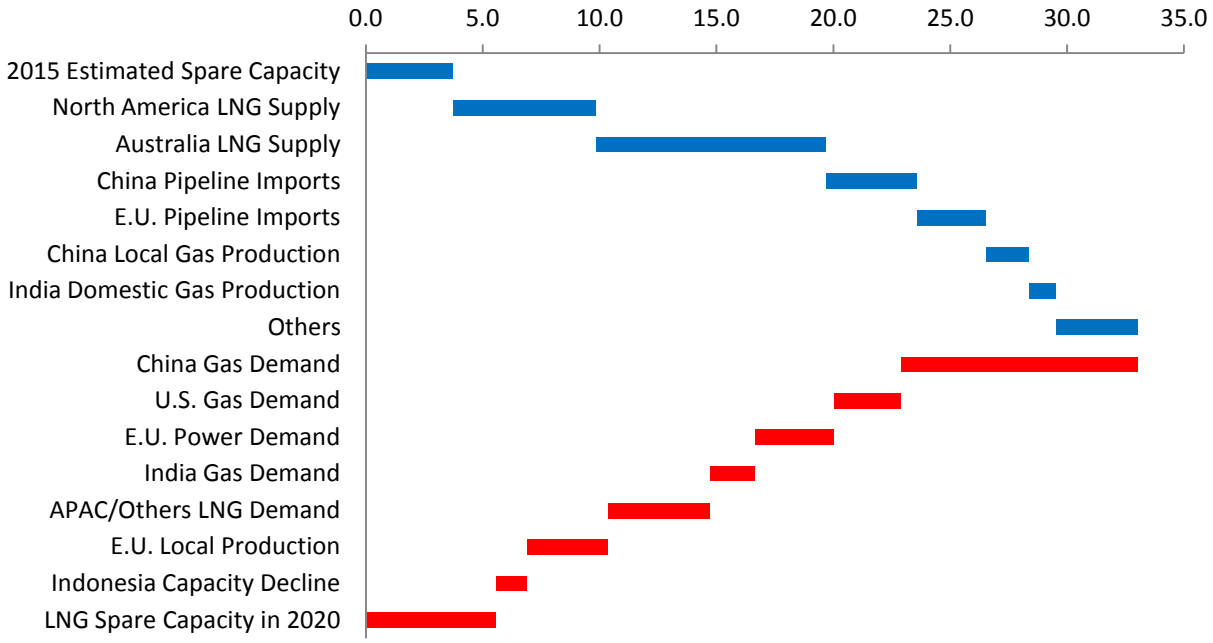
Let's start with Europe, where the outlook for consumers of natural gas has changed significantly over the past several years. For starters, owing to a protracted economic downturn and increased energy efficiency, natural gas demand in Europe has been relatively flat and isn't projected to increase substantially in the coming years. In the near-term in particular, coal remains a highly competitive fuel for power generation—especially with the low carbon prices the continent is experiencing—and some countries are still subsidizing the generation and purchase of renewable energy. Moreover, as a result of the U.S. shale gas "revolution," the availability of LNG cargoes previously destined for the United States has added supply options to the European market. The continent is also continuing to increase the integration of its natural gas pipeline system to better enable the cross-border trade of natural gas and improve the efficiency of the continental gas market. Together these factors have put pressure on the traditional suppliers of Russia, Norway, and Algeria to revise the terms of their long-term supply contracts, most of which are linked to the price of oil. Statoil of Norway has already agreed to sell its gas to the continent at spot rates; Russia's Gazprom and Algeria's Sonatrach have proven more reluctant to date. Current spot price for natural gas in Europe is roughly $10/MMBtu, roughly equal to the likely price of a hypothetical LNG cargo shipping U.S. LNG to Europe today. Given the supply and demand outlook for the continent, it is unlikely that Europe will be a major market for U.S.-sourced LNG.

Although there are a number of uncertainties in the countries of the Pacific Basin as well, prospective exporters are likely to be more optimistic about the Asian market. Very few major Asian LNG importers today benefit from competing pipeline supplies (China is one exception that we will get into in a moment). The spot price of natural gas—roughly $15/MMBtu in Japan—will still present an arbitrage opportunity for traders. Moreover, the dependency on long-term contracts linked to oil (or another commodity) is, to a large extent, likely to remain the norm: liquefaction facilities are highly capital-intensive investments and financiers and producers tend to require price security in the form of commodity-indexation to justify investment. Demand in Asia is also forecasted to rise more dramatically than in Europe. Both China and India are increasing the share of natural gas in the energy mix and there is a possibility that not all of Japan's nuclear power plants will come back online following the Fukushima nuclear accident. Owing to these demand signals and the expansion of the Panama Canal to allow for large LNG carriers to pass, any LNG exports from the U.S. would likely head to the Pacific Basin.

There are, however, a number of competing factors and uncertainties that will significantly limit the number of export facilities that will be built in the United States. First, prospective U.S. exporters are relatively late to the LNG 'rush': while there are a number of *proposed* projects to export gas from the United States, at least six Australian projects—with a combined capacity of roughly 6 bcf/day—are currently under

construction and will enter the market between 2015 and 2017, around the time that the first U.S. terminal will begin exporting. By 2020, our research suggests that we will see roughly 18 bcf/day of new, non-U.S. LNG capacity on the market. Further still, China will receive greater suppliers of pipeline gas from Turkmenistan and Myanmar, and coal will continue to be a stubbornly competitive fuel in Asia's power mix. Second, the outlook for the price of natural gas in Asia is still unclear. Although I am confident that oil-indexation will remain a staple of international LNG contract arrangements, the level of indexation is still unclear and an emerging surplus of supply suggests that consumers will have more leverage in contract negotiations (see Figure 1). Should new or renegotiated contracts take a smaller percentage of the oil price, or even take partial indexation to other commodities, the economic argument for a significant growth in U.S. liquefaction facilities will be weaker.

Figure 1: Global LNG Supply/Demand Balance, 2015-2020 (bcf/day)



Source: Brookings, IEA, EIA, Morgan Stanley, JP Morgan, Credit Suisse

Geopolitical Implications

So what would be the geopolitical implications of U.S. LNG exports? Although I don't foresee too many U.S. projects going forward I think that a policy that allows for LNG exports will have the potential to increase U.S. foreign policy interests in both the Atlantic and Pacific basins. Although Gazprom is already facing a commercial test from European consumers and alternative supplies, the opportunity for U.S. LNG to enter the market, when coupled with some of the other policy measures undertaken by European countries to integrate the continental grid, will be an added buffer against monopolistic economic or political practices. And while Western European consumers can be protected from these supply shocks, increasing optionality is critical for Eastern European states, particularly those formerly aligned with the Soviet Union such as

Poland, Hungary, and the Czech Republic, where the issue of reliance on imports of Russian gas is a primary energy security concern.

Increased LNG exports will provide similar assistance to strategic U.S. allies in the Pacific Basin. By adding supply volumes to the global LNG market, the United States will help Japan, Korea, India, and other import-dependent countries in South and East Asia to meet their energy needs. The desire on the part of Pacific Basin countries for the U.S. to become a gas supplier to the region has been underlined by the efforts of the Japanese government, which has attempted to secure a free-trade agreement waiver from the United States to allow exports. As with oil price-linked Russian gas contracts in Europe, U.S. LNG exports—to the extent they occur on a floating Henry Hub basis, have the potential to weaken the market power of incumbent LNG providers to Asia, increasing the negotiating power of consumers and decreasing the price. As U.S. foreign policy undergoes a "pivot to Asia," the ability of the U.S. to provide a degree of increased energy security and pricing relief to LNG importers in the region will be an important economic and strategic asset.

Beyond the basin-specific considerations of U.S. LNG exports, they will provide a source of predictable natural gas supply that is relatively free from unexpected production or shipping disruption. With Qatar representing roughly one-third of the global LNG market, a blockade or military intervention in the Strait of Hormuz or a direct attack on Qatar's liquefaction facilities by Iran would inflict chaos on world energy markets. While the United States government will be unable to physically divert LNG cargoes to specific markets or strategic allies that are most affected (gas allocation will be made by the market players), additional volumes of LNG on the world market will benefit all consumers. Further still, even if the volumes exported from the United States aren't large, there is an ideological geopolitical benefit to U.S. LNG exports. Exports will provide certainty to allies and economic partners around the world that the United States is a steadfast advocate for free trade.[2]

Part 2: Policy Solutions

I am on the record as saying that I believe the United States should continue to allow exports. Given the backlog of proposed projects and the uncertainty surrounding the Department of Energy's approval process, however, I believe that the existing rules pertaining to LNG exports need to be clarified and reformed.

As I mentioned in my testimony to the House of Representatives in March, I disagree with the two most extreme proposals: a volumetric cap or automatic approval of all applications. Both are treacherous to implement and may increase, rather than decrease, uncertainty. A balanced approach is one that accurately reflects the cost of building a facility at the beginning of the process without actually increasing the costs to export. As I said then, "a prospective exporter should have successfully gone through FERC's pre-filing process and have a portion of its supply contracts signed before being eligible to be considered by DoE for

[2] Some of the information on the geopolitical implications of U.S. LNG exports or on potential policy reforms has been taken from my testimony on "The Department of Energy's Strategy for Exporting Liquefied Natural Gas" to the House of Representatives Subcommittee on Energy Policy, Health Care, and Entitlements, House Committee on Oversight and Government Reform on March 19, 2013. (http://www.brookings.edu/research/testimony/2013/03/19-liquefied-natural-gas-ebinger)

an application to export to non-FTA countries. Both requirements are costly and will encourage only serious projects to move forward."[3]

There will also need to be more clarity on the "public interest" determination, which is currently too vague and creates investor uncertainty. One possibility is to allow the "public interest" to be dependent on the aforementioned two stipulations. In other words, if a company completes its pre-filing process and contracts out a given percentage of its capacity, the exports are deemed to be in the public interest.

One final consideration is to have an audit of natural gas export policy every five years. This would be an important information-gathering exercise. Such an audit would identify what happened to domestic natural gas supply, demand, and prices, and international markets during each five-year period.

Thank you once again for inviting me to share my thoughts and I am looking forward to the discussion.

[3] Charles Ebinger, testimony on "The Department of Energy's Strategy for Exporting Liquefied Natural Gas" to the House of Representatives Subcommittee on Energy Policy, Health Care, and Entitlements, House Committee on Oversight and Government Reform on March 19, 2013. (http://www.brookings.edu/research/testimony/2013/03/19-liquefied-natural-gas-ebinger)