Peterson Institute for International Economics

Policy Brief

NUMBER PB14-19 JULY 2014

US Policies toward Liquefied Natural Gas and Oil Exports: An Update

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Note: The authors would like to thank Adam S. Posen, William R. Cline, and Steven R. Weisman for helpful comments.

Unconventional extraction methods, namely horizontal drilling and fracking, are transforming global energy production, consumption, and trade. The extraction of large amounts of oil and gas from shale formations has led to an unprecedented surge of domestic production in the United States. The US Department of Energy (DOE) is now processing more than 40 applications from domestic producers to export liquefied natural gas (LNG). While experts still disagree about the magnitude and duration of the energy boom, we are at the "dawn of a US oil and gas renaissance" (Houser and Mohan 2014).

The foreseeable reduction of oil imports and increased access to cheaper natural gas have not only changed the traditional US energy trade balance but also have clear implications for US foreign policy and global energy security. In particular, by facilitating energy trade with Europe and lowering Europe's dependence on oil and gas from Russia, the United States can offset Europe's vulnerability to Russian energy diplomacy in the wake of President Vladimir Putin's adventurism in Ukraine and subsequent Western sanctions against select Russian targets.[1] Indeed, in the context of the Transatlantic Trade and Investment Partnership (TTIP), the European Union has renewed its push for the United States to make a "legally binding commitment" guaranteeing unrestricted crude oil and gas exports, with specific reference to the current crisis in Ukraine and "the delicate situation faced by the EU with regard to energy dependence."[2] More broadly, helping mitigate domestic vulnerability to oil shocks and high prices are another draw, especially given the potential for increased instability in the Middle East.[3]

By facilitating energy trade with Europe and lowering Europe's dependence on oil and gas from Russia, the United States can offset Europe's vulnerability to Russian energy diplomacy.

The central debate within the trade policy circle is whether the US government should expedite the approval of LNG exports to countries with which the United States does not have a free trade agreement (FTA). A question on the horizon is whether the United States should lift its long-standing restrictions on crude oil exports.

In a previous Policy Brief we argue that the United States should refrain from restrictions on exports of LNG for three reasons: (1) the United States regularly opposes export restraints

1. Energy trade is part of the ongoing discussions within the TTIP talks. Nondiscrimination for bilateral trade in raw materials and energy are among the stated objectives of the European Union for the TTIP, see European Commission (2013). A more detailed version of the EU position was leaked in June 2014; for a brief analysis see "EU Pursues Strong Energy Chapter In TTIP, Along The Lines Of Leaked Paper," *Inside U.S. Trade*, June 5, 2014, www.insidetrade.com (accessed on June 10, 2014).

2. Based on a leaked document from the European Commission dated May 27, 2014. See Lydia DePillis, "E.U. presses U.S. on oil-export ban," *Washington Post*, July 9, 2014, A11.

3. See Josh Zumbrun, "Upshot of Domestic Oil Boom: Fewer Shocks," *Wall Street Journal*, June 18, 2014, A2.

Table 1 Comparing US supply projections

Organization	Publication	Year	Scenario	Oil production (million barrels per day) 2020	Oil production (million barrels per day) 2030	Natural gas production (billion cubic feet per day) 2020	Natural gas production (billion cubic feet per day) 2030
Energy Information Administration (EIA)	Annual Energy Outlook	2014	Reference	9.6	8.3	79.7	94.3
International Energy Agency (IEA)	World Energy Outlook	2012	New policies	11.1	10.2	72.1	75.9
Wood Mackenzie	American Petroleum Institute Study	2011	Current path	8.8	9.0	67.3	74.5
			Development policy	10.7	15.4	75.0	96.9
Citigroup	Energy 2020	2012	n.a.	14.1	n.a.	76.0	n.a.
IHS CERA (Cambridge Energy Research Associates)	America's New Energy Future	2012	n.a.	12.2	11.8	81.9	92.9
ExxonMobil	Outlook for Energy	2012	n.a.	9.8	9.3	71.1	74.0
BP	Energy Outlook 2030	2013	n.a.	11.5	11.4	80.2	89.4
Peterson Institute for International Economics	Fueling Up: The Economic Implications of America's Oil and Gas Boom (2014)	2014	Conservative	9.6	9.4	68.6	73.8
			Optimistic	13.0	14.5	82.4	94.0

n.a. = not applicable

Source: Houser and Mohan (2014), table 3.1.

on natural resources by other countries; (2) contrary action by the United States would violate World Trade Organization (WTO) rules and lead other countries to follow in suit; and (3) LNG export restrictions would contradict the Obama administration's stated goal of expanding US exports (Hufbauer, Bagnall, and Muir 2013).[4] This same line of reasoning applies to crude oil. A recent decision by the Department of Commerce (DOC) to allow exports of a type of ultralight crude oil suggests that US officials may be reconsidering the merits of restrictions on crude oil exports, especially in light of the European developments. In this Policy Brief, we briefly assess the current outlook for US energy exports, namely LNG and crude oil, and the extent to which trade restrictions are being relaxed. We then summarize recent developments and challenges shaping the policy environment.

OVERVIEW

In its 2014 *Annual Energy Outlook*, the Energy Information Administration (EIA) projects that total domestic production of natural gas and crude oil could reach 79.7 billion cubic feet per day (bcf/d) and 9.6 million barrels per day (mmbbl/d), respectively, by 2020 (EIA 2014a).[5] This would represent growth of 21 percent and about 32 percent, respectively, since 2012. By 2040, natural gas production is projected to grow by 56 percent over its 2012 level. The growth in total production is largely due to tight oil and shale gas production. Specifically, tight oil would account for 4.8 mmbbl/d or 50 percent of the total crude oil production in 2020; shale gas production would account for 54.3 bcf/d or 53 percent of total natural gas production in 2040. However, the EIA projects that tight oil production will decline after 2020 and into 2040, suggesting there is still uncertainty about the potential for sustained export opportunities (Brown et al. 2014).[6] Indeed, estimates of US supply vary depending on supply, demand, and price assumptions and, of course, policy developments. Table 1 summarizes the range of estimates based on recent studies.

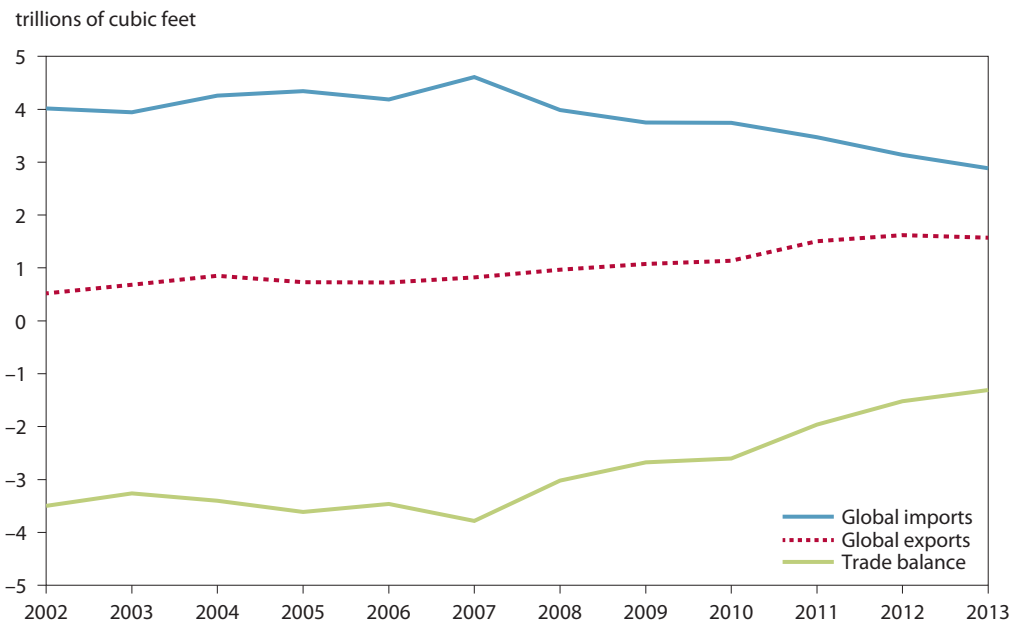
Figures 1 and 2 portray US oil and natural gas trade with the world over the past decade. Notable is the gradual convergence toward a positive trade balance. EIA (2014a) estimates suggest that the United States could become a net LNG exporter by 2016 and a net natural gas exporter by 2018. The increase in US production is shrinking the overall US energy trade balance, but

4. For a brief summary of the arguments, see Gary Clyde Hufbauer, Allie Bagnall, and Julia Muir, "LNG Exports: An Opportunity for America," Peterson Institute for International Economics, RealTime Economic Issues Watch, January 24, 2013, http://blogs.piie.com/realtime/?p=3315 (accessed on July 1, 2014).

5. These figures are from the EIA's base "Reference" scenario. Separate estimates are presented for "High Oil and Gas Resource" and "Low Oil and Gas Resource" scenarios.

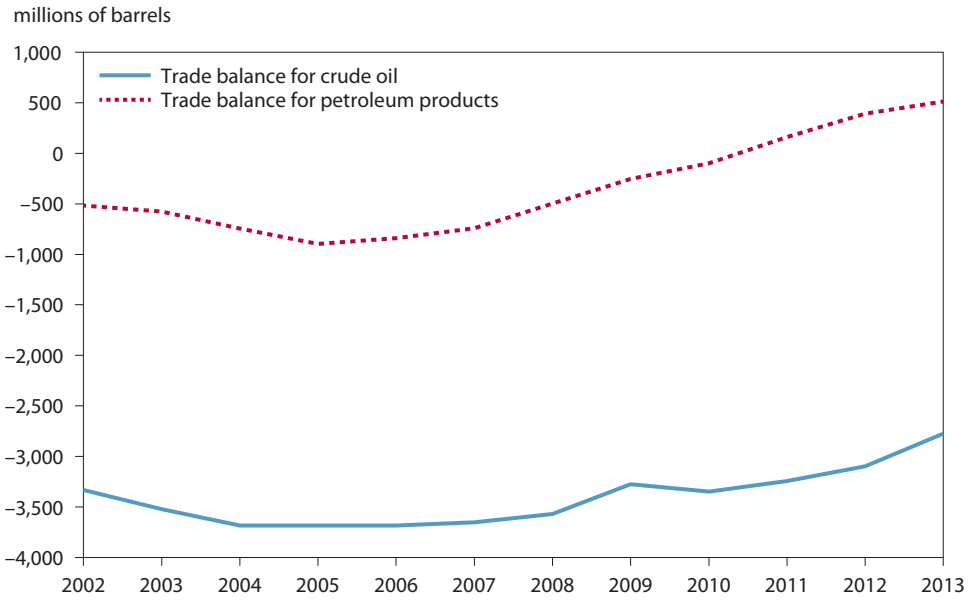
6. Uncertainty surrounds EIA assumptions involving US geographic regions and regional prices, the quality characteristics of tight oil, refinery configurations, and transportation infrastructure. See "Uncertainty Around U.S. Energy Boom Complicates Crude Oil Debate," *Inside U.S. Trade*, May 8, 2014, www.insidetrade.com (accessed on June 27, 2014).

Figure 1 United States global natural gas trade, 2002–13



Source: US Energy Information Administration.

Figure 2 United States global trade balance for crude oil and petroluem products



Source: US Energy Information Administration.

in bilateral terms this development has had a larger impact on energy sales by OPEC countries rather than Canada and Mexico (NAFTA countries), whose energy exports remain high.[7] Based on the EIA's revised upward estimates of export growth, the DOE commissioned new analysis to update its 2012 report. The DOE's 2012 impact study (EIA 2012) analyzed LNG exports ranging between 6 and 12 bcf/d. The initial study finds LNG exports entailed positive net benefits for the US economy across specified scenarios, taking into account the effects on downstream US users of oil and gas. The new study will assess the impact of potential exports between 12 and 20 bcf/d.

STATUS OF LNG EXPORTS

Applications to construct and expand export terminals or to export LNG require approval by both the DOE and Federal Energy Regulatory Commission (FERC).[8] The DOE determines whether the energy exports are consistent with the national interest,[9] while FERC assesses environmental and safety compliance for terminals operated onshore or in state waters. Pursuant to the *National Environmental Policy Act* (NEPA), all applications must pass an environmental impact review in the form of an environmental impact statement (EIS) or an environmental assessment (EA).

Starting in 2010, a handful of companies received authorization to reexport LNG cargoes that were imported from foreign countries. As of April 2014, 42 applications have been submitted to the DOE for long-term permits to construct new liquefaction facilities at existing LNG import terminals or to construct greenfield facilities to export domestically produced LNG (see table 2). The total capacity is 39.31 bcf/d for applications contemplating exports to FTA partner countries and 35.95 bcf/d for exports to non-FTA countries (there is considerable overlap in the applications and these numbers). The majority of applications have been approved for FTA countries, but 33 applications involve exports to both FTA and non-FTA trading partners.[10] Of these, the DOE has provided conditional licensing to seven companies, meaning they pass the "national interest" test. But only one, Cheniere's Sabine Pass LNG terminal in Louisiana, has obtained a green light from both DOE and FERC.[11]

On May 29, 2014, the DOE announced a proposal to streamline its process of issuing LNG export licenses.[12] Namely, the DOE will suspend its practice of granting conditional licenses prior to the finalization of the environmental review conducted by FERC. The proposed changes are intended to ensure that the DOE process is "efficient by prioritizing resources on the more commercially advanced projects" and to ensure "more complete information when applications are considered and public interest determinations are made."[13]

These changes allow projects that are in more advanced stages, and therefore more likely to undergo construction, to bypass the typical first-come first-served order of processing, for which the DOE has been criticized in the past. Some have lauded the changes, but others view the proposal as doing little to improve the status quo of slow approvals.[14] Several congressional proposals to amend the regulatory process are under debate.[15] One is the H.R. 6 bill, put forth by Representatives Fred Upton (R-MI) and Cory Gardner (R-CO), which would permit the export of LNG to all WTO members and impose a strict 90-day time frame on the DOE for completing LNG export applications once the public comment period ends or once the act is passed for those applications already in process-

7. John Normand, "US energy exports and FX: some balance of payments context for yesterday's news report," J.P. Morgan, June 25, 2014 (accessed on June 25, 2014).

8. Other agencies are also involved in the regulatory process, including the Department of Homeland Security, the US Coast Guard, the Department of Transportation, the Office of Pipeline Safety, and the Environmental Protection Agency.

9. Several factors are considered in the DOE assessment, including domestic consumption needs and adequate supply, environmental impact, geopolitics, and energy security (Ratner et al. 2013).

10. Only five FTA partners currently import LNG—Korea, Mexico, Canada, Chile, and the Dominican Republic—with Korea accounting for the lion's share. It is widely recognized that the largest energy export opportunities are within non-FTA countries, including Japan, India, and possibly China (Hufbauer, Bagnall, and Muir 2013).

11. Approval was granted for new construction of an export terminal next to Cheniere's import terminal in Cameron Parish, Louisiana. See Brian Wingfield and Joe Carroll, "Cheniere Wins Approval for Biggest U.S. Gas-Export Terminal," *Bloomberg Businessweek*, April 17, 2012 http://www.businessweek.com/news/2012-04-16/cheniere-wins-u-dot-s-dot-approval-for-natural-gas-export-terminal (accessed on June 11, 2014).

12. For the complete text of the changes, see "Proposed Procedures for Liquefied Natural Gas Export Decisions," *Federal Register* 79, no. 107, June 4, 2014, available at energy.gov/fe/proposed-procedures-liquefied-natural-gas-export-decisions (accessed on July 1, 2014).

13. Christopher A. Smith, "A Proposed Change to the Energy Department's LNG Export Decision-Making Procedures," May 29, 2014, http://energy.gov/articles/proposed-change-energy-departments-lng-export-decision-making-procedures (accessed on June 2, 2014).

14. For more detail, see "DOE Aims to Prioritize LNG Export Reviews For Shovel-Ready Terminals," *Inside U.S. Trade*, June 4, 2014, www.insidetrade.com (accessed on June 6, 2014).

15. A number of federal bills have been proposed in the 113th Congress, some of which call for broadening the federal role in regulating unconventional extraction methods, while others seek to limit federal involvement. For an overview, see Ratner and Tiemann (2014). The argument is made that states can better consider local geology, climate, and water resources than federal agencies. Many states have implemented new measures to regulate fracking, including stricter requirements for the construction and operation of well sites, and guidelines for wastewater storage and disposal, coupled with mandatory disclosure of chemical use.

Table 2 Liquefied natural gas (LNG) long-term export applications, as of April 18, 2014

	Company	Quantity (billion cubic feet per day)	DOE FTA approval[b]	DOE non-FTA[c] approval
1	Sabine Pass Liquefaction, LLC	2.2	Approved	Approved
2	Freeport LNG Expansion LP and FLNG Liquefaction, LLC	1.4	Approved	Approved
3	Lake Charles Exports, LLC	2.0[a]	Approved	Approved
4	Carib Energy (USA), LLC	0.03 (FTA); 0.06 (non-FTA)	Approved	Under review
5	Dominion Cove Point LNG LP	1.0 (FTA); 0.77 (non-FTA)	Approved	Approved
6	Jordan Cove Energy Project LP	1.2 (FTA) 0.8 (non-FTA)	Approved	Approved
7	Cameron LNG, LLC	1.7[a]	Approved	Approved
8	Freeport LNG Expansion LP and FLNG Liquefaction, LLC	1.4 (FTA); 0.4 (non-FTA)	Approved	Approved
9	Gulf Coast LNG Export, LLC	2.8[a]	Approved	Under review
10	Gulf LNG Liquefaction Company, LLC	1.5[a]	Approved	Under review
11	LNG Development Company, LLC (Oregon LNG)	1.25[a]	Approved	Under review
12	SB Power Solutions Inc.	0.07	Approved	Not filed
13	Southern LNG Company, LLC	0.5[a]	Approved	Under review
14	Excelerate Liquefaction Solutions I, LLC	1.38[a]	Approved	Under review
15	Golden Pass Products, LLC	2.6[a]	Approved	Under review
16	Cheniere Marketing, LLC	2.1[a]	Approved	Under review
17	Main Pass Energy Hub, LLC	3.22[a]	Approved	Not filed
18	CE FLNG, LLC	1.07[a]	Approved	Under review
19	Waller LNG Services, LLC	0.16 (FTA); 0.19 (non-FTA)	Approved	Under review
20	Pangea LNG (North America) Holdings, LLC	1.09[a]	Approved	Under review
21	Magnolia LNG, LLC	0.54	Approved	Not filed
22	Trunkline LNG Export, LLC	2.0[a]	Approved	Under review
23	Gasfin Development USA, LLC	0.2	Approved	Under review
24	Freeport-McMoRan Energy, LLC	3.22[a]	Approved	Under review
25	Sabine Pass Liquefaction, LLC	0.28[a]	Approved	Under review
26	Sabine Pass Liquefaction, LLC	0.24[a]	Approved	Under review
27	Venture Global LNG, LLC	0.67[a]	Approved	Under review
28	Advanced Energy Solutions, LLC	0.02	Approved	Not filed
29	Argent Marine Management Inc.	0.003	Approved	Not filed
30	Eos LNG, LLC	1.6[a]	Approved	Under review
31	Barca LNG, LLC	1.6[a]	Approved	Under review
32	Sabine Pass Liquefaction, LLC	0.86[a]	Approved	Under review
33	Delfin LNG, LLC	1.8[a]	Approved	Under review
34	Magnolia LNG, LLC	0.54 (FTA); 1.08 (non-FTA)	Approved	Under review
35	Annova LNG, LLC	0.94	Approved	Not filed
36	Texas LNG, LLC	0.27[a]	Approval pending	Under review

(continues on next page)

Table 2 Liquefied natural gas (LNG) long-term export applications, as of April 18, 2014 *(continued)*

	Company	Quantity (billion cubic feet per day)	DOE FTA approval[b]	DOE non-FTA approval[c]
37	Louisiana LNG Energy, LLC	0.28	Approval pending	Under review
38	Alturas, LLC	0.2	Approval pending	Not filed
39	Strom Inc.	0.02	Approval pending	Not filed
40	Strom Inc.	0.02	Approval pending	Under review
41	Strom Inc.	0.02	Approval pending	Under review
42	SCT&E LNG, LLC	0.54	Approval pending	Not filed
Total capacity (billion cubic feet per day) of applications received[a]			**39.31**	**35.95**

FTA = free trade agreement; DOE = Department of Energy

a. According to the DOE, requested approval of this quantity in both the FTA and non-FTA export applications. Total facility is limited to this quantity, i.e., FTA and non-FTA volumes are not additive at a facility. Hence, there is significant overlap in the total capacity figures as designated for FTA and non-FTA applications.
b. For applications to export to FTA countries, exports are deemed to be in the public interest and applications are authorized without modification or delay.
c. Applications to export to non-FTA countries require DOE to post a notice of application in the Federal Register for comments and to evaluate whether the application is consistent with the public interest.

Note: Companies are listed by the date the application was filed, from most recent to least recent.

Source: US Department of Energy, Office of Fossil Energy, http://energy.gov/fe/downloads/summary-lng-export-applications.

ing.[16] If the DOE fails to issue a decision within the deadline, the US Court of Appeals within a given circuit can mandate a decision be issued within 30 days. On June 25, 2014, the bill was voted through the US House of Representatives and passed on for Senate deliberations. The Senate counterpart S. 2083 bill has seen little movement by comparison.

CRUDE OIL EXPORTS: THE NEXT FRONTIER?

Much of the focus has been on opportunities for LNG exports, but calls to reconsider current restrictions on crude oil exports are gaining traction (for example, see Clayton 2013, IHS 2014, and Murkowski 2014a).[17] IHS (2014) reports that US crude oil production has increased by 64 percent since 2008, while US dependence on oil imports has decreased from 60 percent of demand in 2005 to less than 30 percent in 2014. Proponents argue that—as a leading exporter of refined petroleum products (for example, diesel fuel and gasoline) and now as a new leading producer of light crude oil—the United States should end short-supply controls and restrictions on crude oil, which are a vestige of the conservation policies of the 1970s.[18] Among the Organization for Economic Cooperation and Development (OECD) countries, including net importers, the United States remains the only country that continues to ban the export of most domestic crude oil (Murkowski 2014b). As with other energy exports, crude oil exports must first be deemed "consistent with the national interest and the purposes of [the Energy Policy and Conservation Act]" by the DOC.[19] Between October 2007 and September 2013, more than 300 licenses for exporting crude oil were issued based on qualifying exemptions, mainly for exports to Canada or for reexports of foreign-origin oil (Brown et al. 2014). Within the debate over crude oil export restrictions, several policy options are under consideration, including exempting types of light crude oil from export restrictions (as was done by the DOC in June 2014), modifying the DOC's definition of crude oil subject to the ban,[20] or permitting exports for a set time period (for details, see Brown et al. 2014).

16. For the complete text of H.R. 6 bill *Domestic Prosperity and Global Freedom Act*, see https://beta.congress.gov/bill/113th-congress/house-bill/6 (accessed on July 1, 2014).

17. These debates are not new. Following an interagency review of petroleum exports conducted in 1981 (46 FR 49108), led by the DOC, quantitative export restrictions on refined petroleum products were not deemed to be in the national interest and were lifted by President Ronald Reagan. The recommendation was based on determinations that "the domestic economy is no longer threatened by an excessive drain of scarce petroleum supplies and that foreign demand will not cause a serious inflationary impact on the economy." See Jennifer A. Dlouhy, "Few clues on 1981 oil export decision remain," Fuel Fix, CH2M Hill Oil & Gas, June 6, 2014, http://fuelfix.com/blog/2014/06/06/history-of-gasoline-and-oil-exports-murky/ (accessed on June 30, 2014).

18. Crude oil export restrictions were initially intended to conserve domestic oil reserves and limit foreign imports. Exports are still restricted primarily under the *Energy Policy and Conservation Act* of 1975 and the *Export Administration Act* of 1979. The general prohibition of oil exports and qualifying exemptions are detailed within the Short Supply Controls of the Bureau of Industry and Security's (BIS's) Export Administration Regulations (EAR).

19. In addition to a few other niche cases, cases in which exports of crude oil are permitted include (1) exports from Alaska's Cook Inlet; (2) exports to Canada; (3) exports in connection with strategic petroleum reserve oil; (4) heavy crude oil exports from California not to exceed an average volume of 25 mmbbl/d; (5) exports consistent with certain international agreements; (6) exports consistent with a presidential decree under certain statutes; and (7) reexports of foreign crude oil. For an overview of the pertinent federal laws and regulations, see Vann, Shedd, and Murrill (2013).

20. The BIS Short Supply Controls define *crude oil* as "a mixture of hydrocarbons that existed in liquid phase in underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities

Recent studies attempt to quantify the potential impact on the US economy in the event restrictions on crude oil exports are eased. IHS (2014) estimates that lifting the current US export ban could increase US production from 8.2 to 11.2 million barrels per day in 2022 and spur additional investment of nearly $750 billion over the next eight years. The reasoning is that the current export ban keeps domestically produced light tight oil from obtaining competitive pricing on the global market. Over many years, considerable investment was funneled into oil refineries designed to process heavy crude oil imports, as opposed to the light crude now being produced in bulk from shale. Thus US refineries in the Midwest and along the Gulf Coast currently have limited capacity to efficiently absorb the growth in production (Houser and Mohan 2014; Clayton 2013), and because of this, light tight oil is purchased at discounted prices, dampening the incentive for new investments.[21] One estimate by Bentek Energy projects that the oversupply of "ultralight oil" coupled with the continued export ban could lower the West Texas Intermediate oil price from $106 per barrel today to $80 by 2019, forcing some companies to end production.[22] Allowing tight oil to obtain world prices would enable revenues to funnel back into higher investment in US production (IHS 2014). Further, the boost of global oil supplies due to US exports would in turn lower global oil and gasoline prices, translating to an estimated reduction of the domestic gasoline price by 8 cents a gallon on average during the period 2016 to 2030.[23]

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Indeed, a key concern is the capacity of the United States to absorb the increased production of light oil. EIA (2014b) reports that new production in recent years has generally been absorbed by reducing oil imports of like grades, increasing the API (American Petroleum Institute) gravity (the measure of density of liquid petroleum products; the higher the API gravity the lighter the substance) of crude oil; and increasing utilization rates at US refineries (utilization went from 86.2 percent in 2011 to 88.3 percent in 2013).

EIA (2014b) reports that other options to manage the increase in production include: (1) investments in refineries that enable the processing of light crude rather than heavy crude; (2) new splitter refineries to convert light crude oil into heavier fractions for other uses; and (3) increases in crude oil exports, which invariably depend on a loosening of the current export ban.

In late June 2014, the DOC took steps toward easing restrictions by permitting two companies, Pioneer Natural Resources and Enterprise Products Partners, to export minimally processed condensate (meaning it must be stabilized and distilled) from shale formations in Texas.[24] Condensate is a byproduct of fracking and exists as an underground gas that condenses to a liquid at atmospheric temperature when it reaches the surface. Export advocates argue that it should not technically qualify as "crude oil" as defined by the BIS (see Brown et al. 2014). But Commerce has indicated this move signals "no change in policy on crude oil exports."[25] The "minimal processing" is an important condition that treats condensate as a refined petroleum product, since condensate left unprocessed is still considered to qualify as crude oil and thus subject to export restrictions.[26] However, this small exception is perceived by many as a testing of the waters, which could lead toward future changes to crude export policy through broader permissions.

At this juncture, with the challenges of LNG front and center, the political appetite for the complete liberalization of

and which has not been processed through a crude oil distillation tower. Included are reconstituted crude petroleum, and lease condensate and liquid hydrocarbons produced from tar sands, gilsonite, and oil shale. Drip gases are also included, but topped crude oil, residual oil, and other finished and unfinished oils are excluded" (Brown et al. 2014). A recent debate has been whether lease condensate should technically qualify as crude oil, since it exists as an underground gas that liquefies only at atmospheric temperature.

21. In late 2013, discounts for light tight oil approached 20 percent when refineries in the Gulf Coast went offline just for scheduled seasonal maintenance, which was perceived as a clear warning sign of potential discounts to come. Daniel Yergin and Kurt Barrow, "Why the U.S. needs to Lift the Ban on Oil Exports," *Wall Street Journal*, June 19, 2014, A15.

22. Alison Sider and Nicole Friedman, "Fracked U.S. Oil Proves a Volatile Variety," *Wall Street Journal*, June 25, 2014, B1.

23. For more on the price dynamics of the oil and gas markets, see IHS (2014).

24. For detail see Christian Berthelson and Lynn Cook, "U.S. Ruling Loosens Four-Decade Ban On Oil Exports: Shipments of Unrefined American Oil Could Begin as Early as August," *Wall Street Journal*, June 24, 2014, http://online.wsj.com/articles/u-s-ruling-would-allow-first-shipments-of-unrefined-oil-overseas-1403644494 (accessed on June 27, 2014); and Lynn Cook, Christian Berthelsen, and Alison Sider, "Rulings on Oil Exports Roil Industry: Companies Struggle to Understand Implications Amid Glut Spurred by Fracking," *Wall Street Journal*, June 25, 2014, http://online.wsj.com/articles/rulings-on-oil-exports-roils-industry-washington-1403740013 (accessed on June 27, 2014).

25. "BIS Opens Door To Certain Oil Exports With New Classification," Inside U.S. Trade, June 26, 2014, www.insidetrade.com (accessed on June 27, 2014).

26. Still, experts point out that regardless of the classification change, condensate is "virtually always processed." See "BIS Opens Door To Certain Oil Exports With New Classification," Inside U.S. Trade, June 26, 2014, www.insidetrade.com (accessed on June 27, 2014).

crude oil exports may still be weak—but that's not an argument for abandoning reform. Beyond regulatory hurdles, the industry needs to overcome significant infrastructure limitations. Strained capacity of pipelines and delayed approvals are other adverse factors that have channeled the transportation of petroleum products into rail and truck, at higher cost and with additional safety risks.

CHALLENGES ON THE HORIZON

US energy exports face several challenges. We outline three important ones here.

Infrastructure. Infrastructure development is essential for handling the surge of oil and gas production, both in regards to pipelines and processing facilities. But domestic production of oil and gas is currently outpacing the approval rate of new pipelines and the capacity of existing infrastructure. Vern Grimshaw and John Refuse (2014) argue that regulatory gridlock is slowing the pace at which new technology can improve the safety and efficiency of energy transport. For LNG exports, the regulatory process has seen modest improvement. But pipelines remain integral to the efficient and safe transport of products both to ports and across borders. Political opposition to the Keystone Pipeline suggests that these issues will not be resolved easily or expeditiously.[27] The House of Representatives, controlled by Republicans, is trying to speed up approvals, but the Senate, controlled by Democrats, is inclined to leave matters in President Obama's hands.[28] If there is any method in the madness of regulatory gridlock, it would have to be found in the generalized opposition to fossil fuels.

Environmental concerns. Concerns over the environmental and health impact of unconventional extraction of oil and gas continue to be significant. These include potential water contamination from chemicals; the disposal of large amounts of byproduct wastewater; air pollution from methane emissions; and the potential inducement of seismic activity. Broader concerns are that cheaper natural gas will undermine the competitiveness of renewables and counter efforts to reduce carbon dioxide emissions, even though natural gas is widely accepted as a bridge fuel that is cleaner-burning compared to coal (Ratner and Tiemann 2014). These issues are intrinsic to shale gas and oil and are being addressed by environment and safety regulations; they are not unique to US exports of oil and gas.[29]

In another attempt to address these concerns, the DOE recently released two studies to supplement the mandatory environmental review on LNG exports required by NEPA (see DOE 2014a and 2014b). DOE (2014b) assesses the greenhouse gas (GHG) footprint of LNG exports compared to regional coal and other LNG sources used for power generation in Europe and Asia. The report reaches the preliminary conclusion that "the use of US LNG exports for power production … will not increase GHG emissions, on a life cycle perspective, when compared to regional coal extraction and consumption for power production" (DOE 2014b, 18). However, since fracking is widely perceived as a facilitator of global fossil fuel consumption, it seems likely that environmental concerns will continue to be voiced. But restricting exports is not an effective way to curb harmful emissions. Policies that encourage the eventual transition from natural gas to less carbon dioxide–intensive energy sources—namely through price incentives, carbon taxes, and subsidies for renewable energy sources like nuclear, solar, and wind power—will have a much greater long-term impact than limits on LNG exports.

Political commitment. The geopolitical dimensions of energy trade are well known. The biggest push for reassessing US policy stems from European concerns over its energy dependence on Russia. Following the US-EU summit in Brussels in March 2014, both sides released a joint statement, which reasserts support for "cooperation on energy security" and welcomes the "prospect of U.S. LNG exports in the future."[30] This falls short of Europe's hope for a strong declaration by the United States to commit to an immediate change in LNG and oil regulations in advance of TTIP. It seems likely that the Obama administration will continue to proceed cautiously, reflecting its underlying opposition to fossil fuels, and let the internal regulatory process play out at a slow pace.

27. See Jim Snyder, "Pipeline Wars Seen Spreading After Fight on Keystone XL," *Bloomberg*, May 7, 2013, http://www.bloomberg.com/news/2013-05-07/pipeline-wars-seen-spreading-after-fight-on-keystone-xl.html (accessed on June 11, 2014).

28. H.R. 3301, the *North American Energy Infrastructure Act*, seeks to streamline the regulatory and approval process by circumventing the presidential permit required for cross-border oil and gas pipelines and electric transmission lines. The bill was passed by the House on June 24, 2014. For more detail, see "H.R. 3301, the 'North American Energy Infrastructure Act,'" Committee on Energy and Commerce, http://democrats.energycommerce.house.gov/index.php?q=bill/hr-3301-the-north-american-energy-infrastructure-act (accessed on June 27, 2014).

29. For a lengthier discussion of the environmental debate, see Hufbauer, Bagnall, and Muir (2013).

30. For the complete text, see "EU-US Summit: Joint Statement," White House, Office of the Press Secretary, March 26, 2014, http://www.whitehouse.gov/the-press-office/2014/03/26/eu-us-summit-joint-statement (accessed on June 10, 2014).

RECOMMENDATIONS

EIA (2014a) projects LNG exports to reach a peak level of 3.5 trillion cubic feet in 2030, representing a 124 percent growth compared to 2012. Exports of crude oil are projected to reach a peak of 0.15 mmbbl/d in 2020, representing 150 percent growth compared to 2012. Free exports of LNG, crude oil, and other energy products are an essential complement of US international economic policy, which has long advocated free trade in raw materials, unconstrained by export barriers or restrictions. Free exports to Europe are a geopolitical necessity in the wake of Russia's annexation of Crimea and its continued adventurism in East Ukraine. Moreover, free exports will stimulate hundreds of billions of dollars of investment in drilling, pipeline, and processing facilities, at a time when the US economy badly needs any investment stimulus it can muster, and at a time when the United States must energetically expand exports.

Global warming is a serious problem that cannot be ignored. And sound regulations are essential to mitigate any potential for adverse effects on the environment from fracking. But restricting US fossil fuel exports will not, as a by-product, hasten the transition to renewable or nuclear energy. If anything, US restrictions will push industry in Europe and elsewhere back toward heavier reliance on coal.

Rather than allow regulators to follow their accustomed slow pace, the Obama White House should prod DOE, DOC, FERC, and other agencies to speed up their approvals on a much faster timetable. Before his second term ends, President Obama should be able to declare that the United States is open to free trade in all forms of energy. As first steps, LNG shipments from the United States to Europe should be permitted by granting Europe status equivalent to a free trade agreement. Moreover, efforts should be made to conclude a provisional bilateral agreement on energy in advance of concluding a final TTIP deal. In the interim for crude oil exports, short of lifting full restrictions, Commerce should build on its recent exemptions for ultralight oil condensate and exempt light crude oil from the current export prohibitions with determination that sales to Europe are consistent with the US national interest.[31]

31. Precedents for executive action along these lines have been set in the past. Through an executive order, President George H. W. Bush permitted the export of up to 25,000 barrels per day of heavy crude from California (Brown et al. 2014).

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