

Summary for Policymakers

AN EXCERPT FROM THE CSIS REPORT “NEW ENERGY, NEW GEOPOLITICS:
BALANCING STABILITY AND LEVERAGE”

In the last nine years, U.S. shale gas and tight oil production has skyrocketed. Between 2005 and 2014, U.S. production of crude oil and natural gas has risen by nearly 65 and 34 percent, respectively, due to tight oil and shale gas development.¹ The shale gas supplies from Pennsylvania alone equal the entire natural gas export capacity of Qatar, the world’s second largest natural gas exporter in 2012.² And the increase from light tight oil production in places like North Dakota and Texas over the last five years is equivalent to Iraq’s current production levels. These increased energy supplies have fed not only national but global markets, helping to offset other market disruptions and stabilize prices, to the benefit of many.

The benefits thus far could pale in comparison to those that might arise in the future. New production techniques have meant that resource deposits around the world previously considered uneconomic to access have become “technically recoverable,” significantly adding to the global resource balance sheet. According to one preliminary assessment, 137 shale formations in the United States and 41 other countries hold around 10 percent of technically recoverable global crude oil and 32 percent of global natural gas.³ Deposits beyond the countries examined increase these recoverable amounts still further. For a world increasingly dependent on energy to drive economic growth and prosperity, this is a good-news story.

For those who look at the world through a geostrategic lens, however, assessing the impact of these new resources is more complex. They raise questions about who stands to gain, who stands to lose, and what opportunities for advantage might emerge in both the energy and geopolitical realms. Since the advent of the so-called “shale gale” or “unconventionals revolution,” myriad energy analysts, geopolitical strategists and foreign policy experts, industry titans, and government officials, including heads of state, have offered their views on the potential strategic impact of the changing energy landscape on global economic and geopolitical relations. Some see limited significance, while others predict profound and radical change.

** In addition to the full report, CSIS will publish three additional “contributing reports”—one on energy, one on geopolitics and national security, and one on scenarios, strategies, and pathways. These contributing reports will offer greater detail to the analysis presented in this report. They will be posted on the CSIS website in spring 2014 (<http://csis.org/program/geostrategic-implications-unconventional-oil-and-gas-revolution>).

1. Calculations based on U.S. Energy Information Administration (EIA), *Annual Energy Outlook 2014* (Washington, DC: EIA, 2014), <http://www.eia.gov/forecasts/aeo/er/pdf/tbla14.pdf>.

2. BP, *BP Statistical Review of World Energy 2013* (London: BP, 2013), http://www.bp.com/content/dam/bp/pdf/statistical-review/statistical_review_of_world_energy_2013.pdf.

3. EIA, “Technically Recoverable Shale Oil and Shale Gas Resources: An Assessment of 137 Shale Formations in 41 Countries Outside the United States,” June 13, 2013, 10, <http://www.eia.gov/analysis/studies/worldshalegas/>. Notably, this assessment captures only a portion of the new energy potential, as it does not include some of the most hydrocarbon-rich countries in the Middle East and elsewhere.

Given the scope and intensity of the discourse surrounding this new source of energy production and its potential effects, the Center for Strategic and International Studies (CSIS) believed its expertise in energy, regional affairs, and national security could provide a useful and unique synthesis of the complex interactions under debate. Assembling a broad multifunctional team, CSIS undertook a year-long exploration of the potential geostrategic implications of shale gas and tight oil, with the intention of providing policymakers with a structured way to consider the potential risks and rewards of the new shale gas and tight oil resources.⁴ The analysis does not span the entire globe, but represents an overarching survey across categories of key international players, with deeper analysis in certain cases.⁵

Energy Impacts to Date

Though still relatively new, the U.S. shale gas and tight oil revolution is leading to major changes in the energy landscape, the most significant of which are summarized below.

SHIFTING ENERGY MARKETS, TRADE FLOWS, AND INVESTMENTS

U.S. tight oil and shale gas production along with slower demand growth has decreased the United States' need for imports. As a result, traditional U.S. suppliers are increasingly servicing other markets.⁶ At the same time that U.S. energy imports are falling, its exports are rising. New sources of energy are also altering commercial competitiveness and investment decisions for both companies and countries. As a result, the hierarchy of energy projects is being reordered, at least temporarily shifting capital investments to the U.S. energy sector and away from more expensive and/or risky locations. The sudden surge in U.S. energy supply and consequent reduction in natural gas prices have made North America among the most attractive and competitive places in the world to locate energy-intensive endeavors.

CAUTION ABOUT FORECASTING FUTURE PRODUCTION

It is risky business to extrapolate long-term conclusions from a resource with such a short production history. While the resource potential is large, there remains considerable uncertainty regarding any given reservoir's ultimate production. Thus far, however, technology and production practices have exceeded expectations, resulting in higher and higher production estimates as experience grows.

4. For the purposes of this report, when we discuss unconventional oil and gas in the context of the United States, we use the terms shale gas and tight oil as they are at the heart of the U.S. oil and gas production surge under examination and are responsible for much of the impacts analyzed in this report. When we discuss the potential for the production of unconventional resources outside of the United States, we use the term "unconventionals" because the authors recognize that oil sands, heavy oil, coal bed methane, and other types of unconventional oil and natural gas have significant potential around the world and are often included under the "unconventional" category. Similarly, when discussing the future trajectory of production, we use the term "unconventionals" because future assessments look at the global potential in addition to the United States.

5. This report focuses on North America, Asia, Europe, the Middle East, and Russia. Though it does not go in depth on Africa, Latin America, or Southeast Asia, these regions are touched on throughout the report.

6. Imports of gas and oil are down 28 and 16 percent, respectively, since 2005, based on calculations data from EIA.

ADDING URGENCY TO ALREADY-ONGOING REEXAMINATIONS OF ENERGY POLICY

The massive potential for additional development of unconventional oil and gas resources is prompting many countries to rethink their energy policies to either take advantage of their own unconventional resource base or respond to some of the changes brought about by the impact of the U.S. oil and gas production surge.

REORDERING OPTIONS TO DEAL WITH CLIMATE CHANGE

Many in the public and private sector alike are seeking ways to prioritize the role that natural gas plays in the energy economy, and proponents of the “green agenda” have split over whether to endorse or resist natural gas as a possible “bridge fuel” that promotes near-term emissions reduction as cleaner energy solutions are developed. Natural gas substitution in some economies is driving higher coal usage elsewhere, complicating previous positions on how best to navigate a path to a lower-emission future.

The Geopolitical Impacts of Global Energy Shifts

While concrete geostrategic impacts thus far have been limited, there have clearly been changes in national and international perceptions that may or may not align with new realities. Big energy producers like Russia and Saudi Arabia, producers aspiring for a greater role in world markets like Iran, Iraq, and Mexico, revenue-dependent countries like Nigeria, Yemen, and Algeria, large energy consumers like China, Europe, and Japan, and, as already discussed, the United States, have all shifted their domestic or foreign policies in response to perceived changes in strategic context resulting (or expected to result) from tight oil and shale gas development.

BIG PRODUCER: RUSSIA

- Reinforces pre-existing reorientation toward Asian markets
- Adds to existing energy-sector pressures, reinforcing the necessity of reform
- Lessens others’ interests in the Arctic, to Russia’s possible advantage

BIG PRODUCER: SAUDI ARABIA

- Reinforces a reorientation toward Asian markets that were already underway
- Complicates Saudi Arabia’s role as a market balancer
- Feeds a broader concern over the United States’ continued commitment to stability in the Middle East

REENTRANTS: IRAN, IRAQ, AND MEXICO

- Raises the stakes for each of the reentrants to get back on the market

- Puts increased pressure on Organization of the Petroleum Exporting Countries (OPEC) cohesion
- Accelerates internal pressures for reform

REVENUE-DEPENDENTS

- Raises concern for potential modest future price decline and risks of instability

CONSUMER: CHINA

- Enhances China's energy security position but does not alleviate its overall vulnerability
- Dampens China's "United States in decline" narrative
- Offers new possibilities to shift the U.S.-China energy conversation from competition to cooperation

CONSUMER: EUROPE

- Helps the United States to rebound economically in ways that widen the gap with Europe and exacerbate competitiveness concerns
- Increases pressures on Europe's green agenda
- Does little to alleviate concerns with unpredictable suppliers in Russia and the Middle East and North Africa

CONSUMER: JAPAN

- Aided Japan after Fukushima, but unlikely to offer long-term price relief
- Complicates intra-Asian dynamics

The Shale Gas and Tight Oil Revolution and U.S. National Security

The link between energy and national security is multifaceted, complex, and often opaque. In general terms, there are two broad areas where the shale gas and tight oil revolution has raised questions at home and abroad: those relating to changed perceptions and those relating to changed realities.

PERCEPTIONS

- Presents limited examples of a greater ability for the United States to exercise global leadership due to the shale gas and tight oil revolution
- Raises questions around the world about U.S. willingness to exercise global leadership

REALITIES

- Has done little to relieve pressures on traditional allies and partners in Europe and Asia
- Increases the potential for market instability, strained governance, and unrest for energy import- and export-dependent states
- Exacerbates the gap between U.S. national and popular interests

Scenarios, Pathways, and Policy Recommendations

The evolution of shale gas and tight oil production has occurred at such a rapid pace that U.S. policymakers have been challenged to respond with a largely unexpected new energy posture for the United States. The difficulty of setting a clear path is compounded by the uncertainty around the future of unconventional oil and gas development: Will it remain essentially a U.S. phenomenon, or will other countries begin to realize their own production potential? How long might production continue to rise, how long would it take to decline? To craft an energy strategy moving forward, the study team evaluated a range of potential futures in regard to global unconventional oil and gas production to better inform assessments of the most robust strategy going forward.

SCENARIOS

The study evaluated detailed models for four potential futures out to 2025,⁷ augmented by a higher-level projection of how each might extend through 2040. The scenarios are illustrative and not meant to encompass the full range or complexity of possible energy futures. Their basic features are as follows:

Baseline Scenario: This scenario assumes that unconventional oil and natural gas production is basically and predominantly a U.S. (in the case of oil) and North American (in the case of natural gas) story.

Breakthrough Scenario: This scenario assumes that the U.S. experience continues apace, but also that the vast stores of unconventional oil and gas around the world are unlocked as other nations successfully overcome the cost, technological, and environmental barriers inhibiting current production.

Failure Scenario: In this scenario, unconventional oil and gas around the world remain undeveloped, and the success experienced in the United States begins to reverse itself toward the end of this decade. By 2025, the United States is back to an oil and gas production profile that looks very similar to what was expected before the current boom took off (i.e., the strategic outlook of 2005–08).

7. For the purposes of this analysis, the study team, in cooperation with the original authors, used modified versions of scenarios proposed in Energy Research Institute of the Russian Academy of Sciences (ERI RAS), *Global and Russian Energy Outlook up to 2040* (Moscow: ERI RAS, 2013), http://www.eriras.ru/files/Global_and_Russian_energy_outlook_up_to_2040.pdf; and International Energy Agency (IEA), *World Energy Outlook 2011: Are We Entering a Golden Age of Gas?* (Paris: IEA, 2011), <http://www.worldenergyoutlook.org/goldenageofgas/>.

Gas Breakthrough Scenario: Finally, this scenario assumes that unconventional gas production increases globally, but that tight oil maintains a minimal share of global oil production.

Each of these scenarios could arise from a variety of factors and trends, and could be significantly altered by factors that include national policies, political instability, economic shifts (either global or regional), and technological advances.

SCENARIOS' IMPLICATIONS

The four scenarios collectively portray a wide range of potential outcomes for unconventional production, with different implications and potential winners and losers.

Overarching Insights:

- A natural gas breakthrough scenario could be transformative
- The variation in unconventional oil outlooks is not that significant
- The shift toward markets in the East is the defining feature of every possible future
- A failure scenario is most likely to create additional impetus for conflict or tension
- Climate goals must be more actively pursued no matter how the future unfolds

Producers:

- The United States is most sensitive to alternative futures
- The next decade will prove critical for Russia
- Implications for OPEC countries vary

Reentrants, new entrants, and resource-dependents:

- Shale failure is preferable for certain producers if unconvensionals don't exist at home
- New Africa production will face near-term challenges but is likely to work out in the long run

Consumers:

- All major consumers benefit from abundance
- Promoting unconventional oil and gas development could reduce import dependence in some places, especially China
- Resource competition in Asia could intensify and shift to the Indian Ocean over time
- Europe will continue to face challenges in every possible scenario explored

PATHWAYS

U.S. policymakers face a choice between two paths for managing this new energy posture—what this report terms “energy stability” or “energy leverage.” The energy stability pathway suggests the United States’ energy advantage should be used to enhance energy security around the world, on the theory that more stable energy markets will foster strong economies and enhance geopolitical stability. The energy leverage pathway views the energy advantages presented by the U.S. oil and gas production as tools that can be employed in the service of broader geopolitical or economic objectives.

Ultimately, either by design or by accident, the United States and other countries are unlikely to pursue a purely energy-stability or leverage-oriented pathway. This is because energy policy is a mix of complex domestic and international factors, and geopolitics is even more complicated by the larger universe of energy- and non-energy-related elements that influence the relationships among countries. Rather than all this uncertainty leading to stasis, however, it is precisely the unknown nature of energy developments, geopolitical forces, and national security interests that argues for steering as much as possible toward an energy-stability pathway.

Recommendations

U.S. policymakers should take the following actions to implement this approach:

1. Promote greater production and more efficient energy use at home and abroad. The United States has a well-established track record of promoting common energy principles, albeit with mixed success. The recommendation points to direct U.S. support for energy reform among the big-producer, reentrant, revenue-dependent, and consumer countries outlined in this report (and others).
2. Further encourage, beyond current activities, production of unconventional oil and gas abroad. Indeed, the United States has already been active in this area of diplomatic and technical engagement since the early days of shale gas development. These efforts are most effective when they involve companies that are on the front line of developing these new resources.
3. Encourage trade in energy resources to promote flexible, adaptable, and efficient markets. Ideally this would include an expansion of natural gas exports, as well as the initiation of exports of crude oil, at the very least it requires a more flexible and expeditious approach to exports and a more direct explanation of the country’s longer-term policy on the export of these commodities.
4. Maintain continued and clear U.S. commitment to protect sea lanes of communication. In the near term it is important to instill confidence in both the willingness and the capability of the United States to maintain its role as lead provider of this global common good, while working toward more collective approaches to the greatest possible extent over the longer term.

5. Scale back domestic rhetoric on the “independence” afforded by new energy posture. Public appreciation for the United States’ continued reliance, both direct and indirect, on global energy markets is critical if efforts to deter threats to regional stability, or to respond to instability if necessary, are to be successful.
6. Bolster commitment to a culture of innovation. The United States should continue to support investment in and application of new technologies that helped to make this and other types of frontier energy “breakthroughs” possible, including clean and efficient energy technologies that will be central to a long-term strategy on climate change.
7. Utilize the opportunity to bolster foreign policy ties or geopolitical dynamics where energy has traditionally played a central role. This new energy trend alters energy-related trade ties. To the extent that those trade shifts are disturbing or even potentially destabilizing to certain relationships or regional dynamics, seek out opportunities to shore up new areas of cooperation and ways to deepen engagement despite the shifts in commercial trade ties.

About the Authors

PRINCIPAL AUTHORS

Sarah O. Ladislaw is director and senior fellow in the CSIS Energy and National Security Program, where she concentrates on the geopolitics of energy, energy security, energy technology, and climate change. She has been involved with CSIS's work on the geopolitics portion of the 2007 National Petroleum Council study and the CSIS Smart Power Commission, focusing particularly on energy security and climate issues. She has published papers on U.S. energy policy, global and regional climate policy, clean energy technology, as well as European and Chinese energy issues. She teaches a graduate-level course on energy security at the George Washington University.

Ms. Ladislaw joined the Department of Energy (DOE) in 2003 as a presidential management fellow, and from 2003 to 2006 worked in the Office of the Americas in DOE's Office of Policy and International Affairs, where she covered a range of economic, political, and energy issues in North America, the Andean region, and Brazil. While at the department, she also worked on comparative investment frameworks and trade issues, as well as biofuels development and use both in the Western Hemisphere and around the world. She also briefly worked for Statoil as its senior director for international affairs in the Washington office. Ms. Ladislaw received her bachelor's degree in international affairs/East Asian studies and Japanese from the George Washington University in 2001 and her master's degree in international affairs/international security from the George Washington University in 2003 as part of the Presidential Administrative Fellows Program.

Maren Leed is senior adviser with the Harold Brown Chair in Defense Policy Studies, where she works on defense-related issues. From 2011 to 2012, she served as senior adviser to the chief of staff of the U.S. Army. From 2009 to 2011, she was a senior fellow and director of the New Defense Approaches Project at CSIS, where she led projects on topics as diverse as military personnel costs, the future of ground forces, reforming the military personnel system, strategic forecasting, organizing for electromagnetic spectrum control, amphibious capabilities' contributions to deterrence and shaping missions, and service cultures. She also supported the U.S. Department of Defense (DOD) inquiry into the shootings at Fort Hood. She previously served as an analyst at the RAND Corporation, where she led projects relating to intelligence, surveillance, and reconnaissance (ISR) and countering improvised explosive devices (IEDs).

From 2005 to 2008, Dr. Leed was assigned as a special assistant to the vice chairman of the Joint Chiefs of Staff and was responsible for a range of issues including IEDs, ISR, cyber operations, biometrics, rapid acquisition, and Iraq policy. From 2001 to 2005, she was a

professional staff member on the Senate Armed Services Committee, where she handled the operation and maintenance accounts and conducted oversight of military readiness, training, logistics, and maintenance for committee members. She was an analyst in the Economic and Manpower Analysis Division of the Office of Program Analysis and Evaluation in the Office of the Secretary of Defense from 2000 to 2001, where she conducted macroeconomic analyses relating to military manpower and coordinated DOD performance contracts with defense agencies. She was a doctoral fellow at RAND from 1995 to 1999, analyzing military manpower issues, training for operations other than war, and leader development, and providing strategic planning support for the military and private-sector organizations. Dr. Leed received her A.B. in political science from Occidental College and her Ph.D. in quantitative policy analysis from the RAND Graduate School.

Molly A. Walton is a research associate with the CSIS Energy and National Security Program, where she provides research and analysis on a wide range of projects associated with domestic and global energy trends. Her current work focuses on the energy-water nexus, unconventional oil and gas, environmental risk mitigation and industry best practices, clean energy, and global climate change. She also serves as editor in chief of *New Perspectives in Foreign Policy*, a CSIS journal written by and for the enrichment of young professionals. Prior to joining CSIS, Ms. Walton was a research analyst for Circle of Blue, an affiliate of the Pacific Institute, where she focused on the intersection of U.S. water and energy issues. Ms. Walton received her M.A. in international relations and environmental policy from Boston University and holds a B.A. in international relations and communications from Wheaton College (IL).

CONTRIBUTING AUTHORS

Michelle Melton is a research associate with the Energy and National Security Program at the Center for Strategic and International Studies (CSIS). She provides research and analysis on a wide range of projects associated with domestic and global energy trends, including the global oil market, unconventional fuels, U.S. energy policy, Iraq, U.S. electricity markets, and global climate change. Prior to joining CSIS, Ms. Melton held positions in the nonprofit, private, and public sectors, including with Statoil, the Government Accountability Office (GAO), and the Georgetown University Center on Education and the Workforce. She was also a Peace Corps volunteer in Zambia. Ms. Melton received an M.S. in foreign service and an M.A. in international history from Georgetown University and a B.A. from Johns Hopkins University.

Andrew Metrick is a research assistant and program coordinator with the Harold Brown Chair in Defense Policy Studies at CSIS. His work covers a broad range of issues including U.S. ground forces, rotary-wing aviation, and unmanned systems. Prior to CSIS, he was the team lead for the 2012–2013 Global Go To Think Tank Report responsible for a global survey process and the production of the final report. Additionally, he served as a teaching assistant for a capstone writing and research class at the George Washington University. He holds a B.A. in international affairs from the George Washington University with concentrations in conflict and security and international politics.

Jane Nakano is a fellow in the Energy and National Security Program at the Center for Strategic and International Studies (CSIS). Her research focus includes nuclear energy policy and technology trends globally, energy security issues in Asia, and shale gas development in the United States.

Prior to joining CSIS in 2010, Ms. Nakano was with the U.S. Department of Energy (DOE) and served as the lead staff on U.S. energy engagements with China and Japan. She was responsible for coordinating DOE engagements in the U.S.-China Strategic Economic Dialogue, U.S.-China Energy Policy Dialogue, and U.S.-Japan Energy Dialogue. She also worked on U.S. energy engagements with Indonesia, North Korea, and the Asia-Pacific Economic Cooperation. From 2001 to 2002, she served at the U.S. embassy in Tokyo as special assistant to energy attaché. Her recent publications include *Prospects for Shale Gas Development in Asia* (CSIS, August 2012); *Civil Nuclear Energy Cooperation between the United States and Japan* (Stimson Center, February 2012); *Rare Earth Trade Challenges and Sino-Japanese Relations* (National Bureau of Asia Research, September 2011); and *China—Leader or Laggard on the Path to a Secure, Low-Carbon Energy Future?* (CSIS, September 2011). Ms. Nakano holds a bachelor's degree from Georgetown University's School of Foreign Service and a master's degree from Columbia University's School of International and Public Affairs. She is fluent in English and Japanese.

Frank A. Verrastro is senior vice president and the James R. Schlesinger Chair for Energy and Geopolitics at the Center for Strategic and International Studies (CSIS). From 2003 to 2012, he served as director of the Energy and National Security Program at CSIS. He has extensive energy experience, having spent over 30 years in energy policy and project management positions in the U.S. government and the private sector. His government service included staff positions in the White House and the Departments of Interior and Energy, including serving as deputy assistant secretary for international energy resources. In the private sector, he has served as director of refinery policy and crude oil planning for TOSCO (formerly the nation's largest independent refiner) and more recently as senior vice president for Pennzoil.

Mr. Verrastro holds a B.S. in biology/chemistry from Fairfield University, a master's degree from Harvard University, and he completed the executive management program at the Yale University Graduate School of Business and Management. He served as a member of the Coordinating Committee for the 2011 National Petroleum Council (NPC) study on the *Prudent Development of North American Energy Resources*, as chair for the Geopolitics and Policy Task Groups for the 2007 NPC report, *Hard Truths: Facing the Hard Truths about Energy*, and as a Task Force member for the Council on Foreign Relations report, *National Security Consequences of U.S. Oil Dependency*. He has authored papers on energy and security topics and currently serves on the Advisory Board for the National Renewable Fuels Laboratory (NREL) in Golden, Colorado, and as a member of the Council on Foreign Relations.

Acknowledgments

This report is the result of a year-long project by the CSIS Energy and National Security Program and the Harold Brown Chair in Defense Policy Studies called the “The Geostategic Implications of Unconventional Oil and Gas.” Over the course of the past year, we were able—through workshops, in-depth sessions, and meetings—to illuminate the multiple dimensions and alternative outcomes of the shifting energy landscape. We are grateful for the valuable time and insights we received from a wide array of leaders in industry, government, academia, and nonprofits and to the Smith Richardson Foundation, whose generous support made this study possible.

We would like to thank and recognize Tatiana Mitrova, head of the Oil and Gas Department at the Energy Research Institute of the Russian Academy of Sciences (ERI RAS), and her staff for their insights, assistance in the formulation of the potential energy scenarios used in this report, and contribution to our Russia-specific analysis.

The authors also gratefully acknowledge the valuable assistance of their CSIS colleagues throughout this project and the production of this report: Edward Chow, David Pumphrey, Annie Hudson, Lisa Hyland, Andrew Gossett, and Scott Mann; and our studious interns Fernando Ferreira, William Hicks, Hong Yang, Chance Fowler, and Ariel Robinson.

Finally, we would like to thank our regional scholars at CSIS: Jon Alterman, Zbigniew Brzezinski Chair in Global Security and Geostrategy and director of the Middle East Program; Heather Conley, director and senior fellow with the Europe Program; Chris Johnson, senior adviser and Freeman Chair in China Studies; Andrew Kuchins, director and senior fellow with the Russia and Eurasia Program; and Murray Hiebert, deputy director and senior fellow with the Sumitro Chair for Southeast Asia Studies. Their insights and analyses on the geopolitical impacts of the unconventional energy revolution in each of their respective regions were a critical input into the report.

As part of this report, CSIS will publish three additional “contributing reports”— one on energy, one on geopolitics and national security, and one on scenarios, strategies, and pathways. These contributing reports will offer greater detail to the analysis presented in this report. They will be posted on the CSIS website (<http://csis.org/program/geostrategic-implications-unconventional-oil-and-gas-revolution>) in spring 2014.