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Conflict, cooperation, and change in the politics of energy interdependence: An introduction☆

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ABSTRACT

This article lays out the core insights of the group of papers included in this special issue. It lays out the logic of the project and highlights how an energy and security approach to energy policy—as opposed to one emphasizing "energy security through energy independence"–shifts our perspective on likely energy policy.

Editors' note: This special issue of Energy Research and Social Science is a bit of an experiment. As co-directors of the Energy and Security Initiative at North Carolina State University, our aim is to promote a research agenda on the ways in which the production and consumption of energy affects human and national security. Toward that end, with the support of an International Studies Association workshop grant and from the Kenan Institute for Engineering, Technology & Science at NC State, we hosted an initial workshop at an ISA meeting with one central task. Participants would use whatever tools we normally use for political analysis and apply them to a research question that takes the link between energy and security as a central concern, i.e., takes an energy-related topic as our independent and/or dependent variable. Some would consider themselves energy experts; others would not. We would derive policy implications from those analyses. After a successful workshop and with the help of ERSS *editor Benjamin Sovacool, we circulated a call for more papers to complete this special issue of* Energy Research and Social Science.*To help us judge the experiment, we asked two life-long policy practitioners to comment along the way. As they explain it, their careers have not been as "policy makers" but as "policy implementers." They have careers that include various posts throughout the US State Department, with international governmental organizations related to energy and non-proliferation, as researchers and teachers, and as private consultants. They provided commentary at the original workshop that spawned this project. We have included their final impressions here as a conclusion. As such, this special issue in some ways is not a "normal" social science product. We have asked contributors to be concise, limit citations only to those necessary, and push themselves to derive policy implications from their research. Likewise, this introduction does not aim to make an original research contribution, nor is it meant to be a review of the "state-of-the-art," as many special issue introductions are. We aim instead to delineate the gap that we see in existing research avenues and which we hope this special issue helps narrow. We highlight a few important themes that we believe the papers, taken as a whole, bring forward. And we aim to whet the appetite of readers so that they will read, consider, and engage the articles included here. We trust readers will join in this experiment by reading this special issue in this spirit.*

1. Energy, energy security, or energy and security? A research/policy gap

Social scientists for a long time have worked to understand the many aspects of energy production and consumption. Energy still does not receive the attention it deserves on the pages of journals or course syllabi, but social scientists have considered the environmental impact, the economic costs and benefits, the social implications, and the geopolitical repercussions, to name just a

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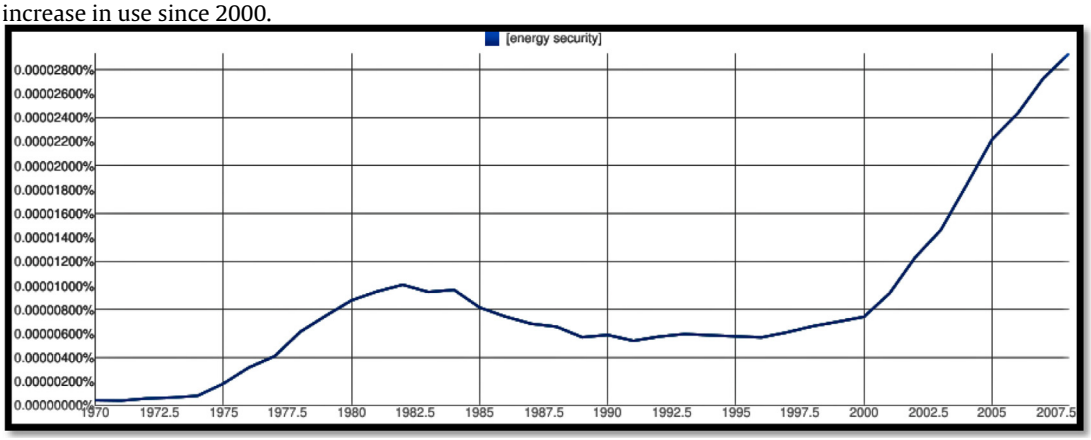
few common topics.[1] The kinds of questions analysts address are shaped by world events.[2] The OPEC oil embargo in 1973 led to the creation of the Department of Energy in the United States. Scholars began more seriously studying energy and its national strategic implications. The fall of the Soviet Union disrupted traditional supplier relations within the US and Soviet spheres of influence, as well as the pre-existing nuclear security regimes. Scholars therefore began thinking about the viability of a common pool of the materials needed for nuclear energy production. The effects of climate change became visible through acid rain and forest dieback, the environmental movement became a factor politically, and social scientists analyzed its impact.

This special issue of *Energy Research and Social Science* finds its focus in the increasing emphasis on "energy security." Made popular initially in response to the oil crises of the 1970s, it has taken on new life in the 2000s. Consider the following chart, produced using Google Books Ngram Viewer, which tracks the usage of a word or phrase in a sample of 5.2 million books from Google's library of 15 million.[3] Even readers of this journal, who are very familiar with the term "energy security," may still be surprised by the term's striking increase in use since 2000.



Readers of *ERSS* also have a rough idea of what "energy security" means. There seems to be a broad area of consensus around the IEA's conceptualization of energy security as "the reliable supply of energy at an affordable price." Beyond that, however, there is considerable debate, especially regarding the measurement of central concepts.[4] This conceptual cloudiness has allowed energy security to become an "umbrella term" for a variety of policies and policy goals, many of which conflict with one another.[5]

As analysts focused largely on political phenomena, we are struck in particular by the gulf we perceive as separating that academic consensus from political discourse on the topic. Energy and energy security are current topics in political circles, because it is an exciting time for energy policy. The hydrofracturing (i.e., fracking) revolution for some seems a magic bullet that promises energy security at affordable prices, while others see it as the new alchemy and fear its greatest impact will be environmental degradation. Concerns about scarcity continue to mount as experts argue that the end of conventional oil supplies is in sight. The human and political impact of that shift would be unparalleled. An aggressive Russian foreign policy seems undergirded by Russia's relative strength in energy markets and European dependence on Russian resources. The election of Donald Trump in the US heightened fears of an aggressive Russia. Intensifying all of these reactions is the rising pressure on limited energy supplies and on the environment generated as non-OECD economic development intensifies the environmental degradation that OECD energy consumption set in motion.

As Sovacool has noted, however, politicians are quick to talk about energy security, but loathe to define it.[6] So what do politicians mean when they say it and how do they understand the term differently than do academic experts? It is, of course, impossible to generalize to all politicians who have talked about "energy security," as we discuss below. We believe it is accurate, however, to argue that policy makers focus more than most academics on the strategic aspects of energy production and consumption. For example, the academic work cited above as debating the conceptualization and measurement of energy security still seems built largely on assumptions of global production and consumption. The policy questions then become how to ensure the resilience of energy markets, promote the discovery and distribution of diverse energy sources, and mitigate environmental degradation and negative social impact. For many of these observers, properly functioning global markets mean greater flexibility, resilience, innovation, and efficiency. In short, global markets mean greater energy security.

In contrast, the political discourse around energy more often treats energy interdependence as problematic.[7] Relying on other countries for energy, even on allies, makes us vulnerable to disruptions in supply.[8] Some of those disruptions, e.g., maritime piracy, could be non-strategic; the driver of the disruption is not its polit-

[1] See the call for greater attention by scholars studying International Political Economy found in: Hancock, Kathleen J. and Vlado Vivoda. 2014. "International political economy: A field born of the OPEC crisis returns to its energy roots." *Energy Reseach & Social Science* 1: 206–216.

[2] Cherp, Aleh and Jessica Jewell. 2011. "The three persepctives on energy security: intellectual history, disciplinary roots and the potential for integration." *Current Opinion in Environmental Sustainability* 3: 202–212.

[3] For more information on this, see: books.google.com/ngrams.

[4] We do not intend to provide a review of this debate here. For guides to that debate, however, see: Sovacool, Benjamin K. and Ishani Mukherjee. 2011. "Conceptualizing and measuring energy security: A synthesized approach." *Energy* 36: 5343–5355; Kruty, Bert, D.P. van Vuuren, H.J.M. de Vries, and H. Groenenberg. 2009. "Indicators for energy security." *Energy Policy* 37: 2166–2181; Winzer, Christian. 2012. "Conceptualizing energy security." *Energy Policy* 46: 36–48; Sovacool, Benjamin K. and Marilyn A. Brown. 2010. "Competing Dimensions of Energy Security: An International Perspective." *Annual Review of Environment and Resources* 35: 77–108.

[5] Winzer 2010, *supra* n. 4.

[6] Sovacool, Benjamin K. 2010. "Introduction: Defining, measuring, and exploring energy security" in Sovacool (ed.) *The Routledge Handbook of Energy Security*. London: Routledge. Pp. 2–3.

[7] Cohen, Gail, Frederick Joutz, Prakash Loungani. 2011. "Measuring energy security: Trends in the diversification of oil and natural gas supplies." *Energy Policy* 39: 4860–4869.

[8] See Loungani's review of books that make this argument: Loungani, Prakash. 2009. "The elusive quest for energy independence. *International Finance* 12(2): 291–299.

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ical impact.[9] Other disruptions may be either calculated attempts to inflict social or economic harm on a specific target or the result of such strategies elsewhere in the supply chain.[10] This is not to say that academics ignore strategic questions. But again it seems safe to argue that political discourse around energy security is more likely than the academic conversation to consider energy autarky as a policy goal for those reasons.

The policy conclusion that energy autonomy is a better route to energy security than energy interdependence is by no means a consensus among policymakers, but neither is it a fringe opinion. One need look no further than the presidency of Donald Trump in the United States. His campaign opponent, Hillary Clinton, framed her energy policy in terms that aligned with the academic debate.[11] She talked of energy as a national security issue, but more often as a human security issue because of the environmental impact of fossil fuels. She emphasized a transition to renewable energy sources while compensating the communities once dependent on the production of coal. She supported the conclusions and obligations of the Paris Accord.

In contrast, Trump's banner energy goal was to "Make America energy independent."[12]; This independence was not understood to mean that the US would balance energy imports and exports. Energy independence is an extension of a more general skepticism of international cooperation that characterizes Trump's policies on topics including trade, environmental protection, and immigration. Trump's stated goal for his energy policy was to "Become, and stay, totally independent of any need to import energy from the OPEC cartel or any nations hostile to our interests."[13]; For Trump and his supporters, true energy independence means energy autarky.[14]

While the Trump presidency in many ways represents an extreme, this debate is not unique to the United States. Perhaps the most dominant political phenomena in the developed world in the past year was a populist push back against an open, liberal international order. In that context, energy and security are tied together in a very direct way: many believe that energy interdependence makes a country less secure. For those who see energy interdependence as a source of energy security, however, that conclusion takes us in precisely the wrong direction. This connection—this dilemma—provides the real motivation for this special issue and the research agenda it promotes.

2. Constructing an energy security dilemma: the foundations of "energy independence"

The logic of energy autarky creates what we call an "energy security dilemma." In a classic article, Jervis explains how arms races, a sub-optimal outcome, occur due to a "security dilemma."[15]; States stockpile defensive weapons to protect against attack. Their potential adversaries cannot distinguish between offensive and defensive weapons and so also stockpile weapons as a result. The result is an arms race that leaves everyone less safe. It is a Prisoners' dilemma. Based on a reasonable, but faulty interpretation of information, actors pursue their best interests and, in doing so, end up with a sub-optimal outcome. If energy security is best achieved through energy interdependence, the push for energy autarky or even just greater energy autonomy may also yield sub-optimal outcomes. The articles here suggest that may be the case. The articles here also suggest ways around such gloomy conclusions, however.

We start, then, with the core logic behind arguments against energy interdependence and in favor of energy autarky. It rests on two important assumptions. This special issue questions both. First, that stance assumes that the politics of energy is an inherently zero-sum, conflictual arena: that we cannot negotiate through those conflicts to find cooperation. In reality, however, cooperation on energy is probably more common than conflict, although that is difficult to measure precisely. At a minimum, most of the papers here highlight the basic point that energy politics is not inherently conflictual. The debate, however, raises a series of important questions that deserve sustained attention from social scientists. When do interactions in the production, transportation, and consumption of energy generate conflict and when do they generate cooperation? What role do policymakers have in contributing to these outcomes?

The second assumption of those stressing energy independence is that energy autarky is possible in a strategically meaningful way. In reality, however, barring some energy revolution, for nearly every state, "independence" in energy production can exist only on ledger sheets: a function of balancing total energy exports and total energy imports against total energy needs. A hypothetical state that exports as much energy in the form of natural gas and coal as it imports in oil-based energy is energy independent on the books. This ledger-sheet energy independence is significant, but energy sources are not fungible across applications. Strategically, our hypothetical "ledger-sheet energy independent" state remains dependent on other states to meet its energy needs. The politics of energy production, transport, and consumption will be influenced more strongly by that functional (inter)dependence than by mathematical independence.

Regardless of the faulty assumptions that underlie moves toward energy independence, the debate reminds us that the production, transportation, and consumption of energy strongly affects human and national security. This collection of papers points out the continued salience of that conceptualization of the energy-security nexus. Beyond that, however, we believe these papers provide a few important insights—for some they are perhaps reminders—that should inform foreign and energy policy in the coming years. We hope they also serve as avenues of research, analysis, and debate.

The first insight is that cooperation on energy is possible, perhaps even likely. For some this will be obvious, but those promoting energy autarky ignore the remarkable amount of cooperation that we see across different energy sectors: from private firms working across borders to international organizations like the International Energy Agency or the Nuclear Energy Agency. For example, Stulberg highlights the restraining effects of natural gas ties even among energy interdependent Russia-Ukraine-EU member states locked in confrontation across other policy domains.[16] Similarly, Meierding examines joint development agreements forged by enduring rivals, revealing that though significant hydrocarbon cooperation is scarce, these agreements prevent resource-related militarized

[9] For an example of discourse on this connection, see the sound commentary by Donna Nincic: http://www.ensec.org/index.php?option=com_content&view=article&id=180:maritime-piracy-implications-for-maritime-energy-security&catid=92:issuecontent&Itemid=341.

[10] See, for example, the European Commission's Energy Security Strategy: https://ec.europa.eu/energy/en/topics/energy-strategy/energy-security-strategy.

[11] See her stances as laid out on the campaign website: https://www.hillaryclinton.com/issues/climate/.

[12] https://www.donaldjtrump.com/policies/energy. Accessed 12/8/16.

[13] https://www.donaldjtrump.com/policies/energy.

[14] For a side-by-side comparison, see: https://www.brookings.edu/blog/order-from-chaos/2016/06/09/the-presidential-candidates-views-on-energy-and-climate/.

[15] Jervis, R., 1978. "Cooperation under the security dilemma." *World Politics* 30(02): 167–214.

[16] Stulberg, Adam. "Russia, Natural gas and the Russia-Ukraine Crisis: Strategic restraint and the emerging Europe-Asia gas network." *Energy Research and Social Science* (in press, this volume).

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confrontations.[17] Both authors show how cooperation on energy can happen even in the most contentious political contexts. Early, Nance, and Cottrell show how governance of the supply chain for dual-use technologies through UNSCR 1540 is a case of cooperation in which knowledge creation and diffusion are key mechanisms of change, rather than enforcement and coercion.[18] Boettcher highlights the often intertwined nature of energy interests among states and the multinational energy companies they host. He examines the extent to which conflict can be ameliorated and negotiations extended by these enmeshed ties.[19]

This point entails serious policy implications. If energy is conflictual, then energy independence in the name of energy security might make for good grand strategy. On the other hand, if cooperation is possible or even likely, then the best policies are probably those that aim at market-making, environmental protection, and technical innovation and diffusion.

A second, related point that articles emphasize is that energy's impact on security is more complex than we generally imagine. To borrow from computing technology, while the energy security policy debate is often in binary terms, the reality is that the connection between energy and security is more akin to quantum logic, where one object (i.e., policy) can have multiple states (effects) simultaneously. For example, Kester's research on gasquakes in the Netherlands reminds us that the definition of "security" is contingent and a "national" policy of energy security may put elites and those focused on national security writ large at odds with "local" citizens where energy is produced in ways that threaten human security.[20] Hawker, Bell, and Gill highlight how national efforts to promote energy security might be undermining the efficiency of Europe-wide energy markets, falling prey to the classic collective action problem.[21] Moore's analysis of cross-boundary electricity markets in Morocco shows how a focus on energy independence can lead policy makers to ignore the equally important, deleterious impact that such strategies can have on the sustainability of the region.[22] She offers an alternative perspective on energy security in the developing world, tied less to state-based threats than to economic and environmental hardships. Van de Graaf and Colgan show how Russia's energy dominance did not cause its belligerence vis-à-vis Ukraine.[23]

This complexity also reflects the multidimensionality of interstate relations. States in bilateral or multilateral relationships have a diversity of interests, some in conflict with others, and many trending on different paths within an overall foreign policy. As Stulberg's article suggests, emerging gas networks create new forms of vulnerability, power, and influence that are altering the strategic significance of "point-to-point" pipeline politics.[24] These diverse interests also will be expressed by domestic actors in competition with one another and occasionally allied with their counterparts in another state. A monolithic "national interest" will seldom become evident through a foreign policy produced by negotiation and compromise. Boettcher's analysis of the US-South Korean nuclear cooperation negotiation shows this quite clearly.[25] He observes the actions of multinational constituencies actively framing the policy debate and facilitating communication across state boundaries to identify palatable comprises and avoid "red lines." In part for this reason, Gholz, Awan, and Ronn's work on China's loan-for-oil deals underscores the difficulty, even danger, in making foreign policy based on the assumed intent of other states, rather than on a systematic analysis of actions.[26] As a whole, then, the research presented in this special issue suggest that energy autarky as a means toward energy security is far from the obvious policy choice that public discourse makes it out to be. It neither provides immunity against aggression nor enables aggression with impunity.

Third, the papers underscore the critical role that policy elites play in shaping energy geopolitics. In more academic terms, policy elites construct the geopolitical reality of energy, an esoteric sounding process, to be sure, but one that occurs through the everyday acts of politics that shape public opinion and government policy. Especially through discourse and policy promotion, this construction has very real effects, including which energy sources are considered critical and which are not, or which are plentiful and which are scarce. Consider, for example, the use of nuclear technology. Is it a security question? If so, is it a question of promoting deterrence, preventing proliferation, or both? Or is it an environmental question? If so, is nuclear energy a green technology or a long-term environmental hazard? How do we navigate the nuclear dilemma—of one fuel cycle for good or ill—so that we maximize benefits and minimize costs? Our responses to these questions will strongly influence nuclear security policy, environmental policy, and how important nuclear energy is in our energy portfolio. Cottrell's essay on the potentially conflicting goals of the Global Zero versus the environmental movements underscores this role of elites.[27] And yet, these decisions will be made in an environment of significant risk and uncertainty, contextual constraints with which policy elites and academic researchers will both struggle to overcome. Reardon's contribution shows the challenges of policymaking in such an environment by looking at the prominence of problematic threat assessments in US-Iran negotiations.[28] The same is true of international reactions to China's loan-for-oil deals, as Gholz, Awan, and Ronn show.[29] These are just two examples of how policy elites will together shape the rules of the game by which the geopolitics of energy and security will be played out. At the same time, Kester's article on "gasquakes" demonstrates that elite views are not isolated from local movements.[30]

Policy makers also matter because, as the articles here emphasize, energy politics is long-term politics. Policymakers sensitive to the costs of foreign policy or driven by short-term interests may find bad news in the insight that effective action in these realms

[17] Meierding, Emily. "Joint development in the South China Sea: Exploring the prospects of oil and gas cooperation between rivals." *Energy Research and Social Science* (in press, this volume).

[18] Early, Bryan R., Mark T. Nance, and M. Patrick Cottrell. "Global governance at the energy-security nexus: Lessons from UNSCR 1540." *Energy Research and Social Science* (in press, this volume).

[19] Boettcher, William A. "Resolving potential energy conflicts among allies: The 2015 United States-Republic of Korea nuclear cooperation agreement." *Energy Research and Social Science* (in press, this volume).

[20] Kester, Johannes. "Energy security and human security in a Dutch Gasquake context: A case of localized performative politics." *Energy Research and Social Science* (in press, this volume).

[21] Hawker, Graeme, Keith Bell, and Simon Gill. "Electricity security in the European Union: The conflict between national capacity mechanisms and the Single Market." *Energy Research and Social Science* (in press, this volume).

[22] Moore, Sharlissa."Evaluating the energy security of electricity interdependence: Perspectives from Morocco." *Energy Research and Social Science* (in press, this volume).

[23] Van de Graaf, Thijs and Jeff D. Colgan. "Russian gas games or well-oiled conflict? Energy security and the 2014 Ukraine Crisis." *Energy Research and Social Science* (in press, this volume).

[24] Stulberg *supra* n. 16.

[25] Boettcher *supra* n. 19.

[26] Gholz, Eugene, Umul Awan, and Ehud Ronn."Financial and energy security analysis of China's loan-for-oil deals." *Energy Research and Social Science* (in press, this volume).

[27] Cottrell, M. Patrick."The tragedy of nuclear politics." *Energy Research and Social Science* (in press, this volume).

[28] Reardon, Robert J. "Inflating the Iranian proliferation threat: Why an over-reliance on technical assessments leads to threat inflation." *Energy Research and Social Science* (in press, this volume).

[29] Gholzet al., *supra* n. 26.

[30] Kester *supra* n. 20.

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generally requires sustained, long-term investment of resources. Meierding, for example, argues that long-term engagement is required to help smooth cross-border resource disputes, even when the parties have signed on to develop the resources jointly.[31] Stulberg argues that solutions to the Russia-Ukraine crisis likely require longer-term, non-market investments in building out the energy infrastructure, particularly in Europe.[32] Early et al., argue that the mechanisms of UNSCR 1540 are a potentially effective, but slow moving processes.[33] Boettcher highlights the willingness of allies engaged in conflict to postpone looming deadlines and table unresolved disagreements, even to the extent that they create new intergovernmental commissions to foster long-term collaborative resolutions.[34] Hawker et al., show how short time horizons are undermining more sustainable long-term solutions.[35] Finally, Van de Graaf and Colgan follow the U.S. effort to lift its 40-year ban on oil exports.[36] Despite the widespread recognition that the export ban was a policy anachronism, it took the confluence of three policy streams and concessions to environmental opponents before the ban was eliminate din 2015. Effective leadership at the nexus of energy and security today clearly requires a long time horizon.

As a final, over-arching point, this project emphasizes the need for a sustained dialogue between and among scholars and policymakers on the connection between energy, energy security, and energy and security. Part of this project was an experiment in how existing political science research could generate insights that policy makers would find accessible and relevant. Nearly all of the papers here provide analyses of energy-related politics that vary from the easy explanations: energy cooperation happens even in the midst of conflict; soft governance tools like persuasion and learning can matter; there may be no national definition of energy security; or national energy security strategies may undermine long-term regional security.

Our policy community critics, Chris Kessler and Carol Kessler, remind us of the bad news that bridging this gap is not an easy task.[37] The timelines of policy implementers, maybe even more so than for policy makers, are much shorter than those of academics. The nuance of academia is sometimes at odds with the imperative to act that policy implementers face on a daily basis. Our own success with this is still to be seen. The good news, however, is that there is much to keep all of us occupied in the foreseeable future. How do we explain variation in governance across energy and security issues and how does that variation matter? What dimensions of statecraft are more salient or most effective in energy and security relations? What non-market factors are most important in making decisions about the supply and consumption of energy? Perhaps most importantly, what, if anything, is fundamentally different about security questions in the context of energy that both energy and security experts need to be thinking about? A more robust dialogue between policy makers and scholars would help generate better answers.

3. Conclusion

Our goal with this special issue is to boost interest in a research agenda that looks more carefully and more critically at the ways in which the global production and consumption of energy affects human and national security. Even a casual glimpse around the world reveals a pattern of turmoil. As we were putting the finishing touches on this introduction, electors around the United States were making official the election of Donald J. Trump as the next President of the United States. The Trans-Pacific Partnership and the Transatlantic Trade and Investment Partnership are dead in the water. In Europe, the impact of Brexit remains a source of great uncertainty. The many right-wing populist movements that have sprung up across the European continent also have led many observers to wonder about the future of the open, liberal international order. Democracy in Erdogan's Turkey, another vital player in global energy, seems under assault. Iraq remains a long way from stability following the US invasion and withdrawal. The new democracies across Northern Africa are still trying to find firm footing, even as ISIS, a movement that is funded in large part by the sale of energy sources, continues to threaten the peace and security of millions in the Middle East. Sudan and South Sudan are on the precipice of all-out war, both within each country and between the two. Venezuela faces a revolt from its people as food is increasingly hard to come by. Brazil's political system is so rife with corruption that they seem unlikely to provide any regional leadership.

In such a context, it may be time to put aside the assumption that the primary security issue associated with energy is ensuring properly functioning markets. In this context, misunderstandings about the dangers of energy interdependence further encourage the closing of borders. Belligerence may be more likely when leaders believe that domestic energy sources translate to strategic security advantages. Such "rational" responses will lead to more insecurity, not less. But we have only just begun to understand the myriad ways in which global energy production and consumption interacts with human and national security. We hope that the articles in this issue show that we have the tools to improve our understanding, if we will use them for that end. If we are able to do that, then academics will have made a substantial contribution to constructing a discourse around the link between energy and security that is more nuanced, more productive, and more effective at providing a secure future for the planet and the people who live here.

Perhaps the most productive point of continued conversation would be around the changing structures of the international system and the implications for the exercise of different forms of power. In other words, what will effective leadership look like in the 21st century? We do not claim to answer or even address all of these questions here. Rather, we aim to remind scholars and practitioners alike that overcoming the obstacles to deeper conversations about these issues can lead to better research and better policy on problems that affect us all in profound ways.

[31] Meierding *supra* n. 31.
[32] Stulberg *supra* n. 32.
[33] Early et al., *supra* n. 18.
[34] Boettcher *supra* n. 19.
[35] Hawker et al., *supra* n. 21.
[36] Van de Graaf, Thijs and Jeff D. Colgan."A crude reversal: The political economy of the United States crude oil export policy."*Energy Research and Social Science* (in press, this volume).
[37] Kessler, J. Christian andCarol Kessler."Foreign policy making with the Academe." *Energy Research and Social Science* (in press, this volume).

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