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Exploring the Frontiers of U.S.-China Strategic Cooperation:

Energy and Climate Change

Edited by Melanie Hart November 2014

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Introduction: Time to Take U.S.-China Energy and Climate Cooperation to the Next Level

The United States and China have a unique window of opportunity to achieve measurable progress on energy and climate change and to upgrade the U.S.-China relationship across the board. The two nations currently share more interests in this space than in any other. On military issues, for example, dialogue has improved tremendously in recent years. But at a strategic level, the United States and China are still primarily just trying to avoid destabilizing incidents in the Asia-Pacific. On cyber security, the government-to-government working group under the Strategic and Economic Dialogue, or S&ED, has been unable to even schedule meetings, much less think about actual policy deliverables. On economic issues, commercial complaints are growing on both sides of the Pacific and making it increasingly difficult to agree on anything new and concrete that would deepen market integration in the near-to-medium term.

If U.S. and Chinese leaders want their meetings to produce something new and concrete, there is a growing consensus in both capitols that energy and climate cooperation is the only track that can reliably deliver. The range of energy and climate deliverables rolled out thus far is truly breathtaking. Current bilateral projects include cooperation on advanced vehicle technology, clean coal, building efficiency, greenhouse gas-emission monitoring, smart grid technology, shale gas development, and many others. There is virtually no area of this domain where the two nations are not cooperating in some way. Most importantly, this cooperation is in the form of real projects that involve people from both sides getting together to actually do something. By any measure, this area of the relationship has become a true action track, not an empty-talk track.

At the same time, however, it is important to make sure that this growing array of action-oriented projects eventually adds up to something more than a steady stream of deliverables for high-level meetings. On climate change, in particular, bilateral cooperation will not be considered a true win unless those activities have an impact that goes far beyond the bilateral relationship. Most importantly, other nations around the world are looking to the United States and China to break

down the current impasse between developed and developing countries and serve as the poles around which the rest of the world could rally to form a new global climate agreement in 2015.

Unfortunately, it is specifically on those big-picture issues where the United States and China are still coming up short. Looking beneath the surface of this new action track, the two nations still do not see eye to eye on issues of principle such as how to divide climate responsibility among nations or how to best structure global energy institutions.

In October 2014, the Center for American Progress convened a group of rising U.S. and Chinese scholars to discuss these and other difficult issues in the bilateral relationship. This essay collection presents the views of the energy and climate experts who led the discussion on these issues. For more detail on critical themes that emerged from the closed-door track II discussions, see "Expanding the Frontier of U.S.-China Strategic Cooperation Will Require New Thinking on Both Sides of the Pacific."

The scholars in this essay collection all agree that, although recent progress in the energy and climate space has been admirable, that progress has focused primarily on low-hanging fruit, and it is now time to kick cooperation up a notch and start chipping away at the truly difficult issues that still divide us.

Melanie Hart, director for China Policy at Center for American Progress, starts off this essay collection by arguing that the reason U.S.-China energy and climate cooperation has been able to flourish at the bilateral level is because those projects primarily involve a transfer of knowledge or assistance to the Chinese, with China playing the developing economy role it is most familiar with. When U.S. leaders try to carry that spirit of cooperation over to multilateral forums for reducing greenhouse gas emission, they run into two problems. First, although China's economy is still developing, in a larger group, China looks like a major power. That brings international demands for China to take on new responsibilities, which Chinese leaders are wary of at their current development level, particularly since there are no clear models for what level of responsibility a major-power, but middle-income nation should have. Second, when the goal is reducing greenhouse gas emissions, U.S. and Chinese leaders want to make sure any action they take at home is reciprocated abroad, and U.S. and Chinese leaders are particularly suspicious of one another in this regard. Melanie recommends that the United States and China take near-term action to fill in these information gaps. In the

multilateral arena, the United States can utilize small-group forums such as the Arctic Council to help Chinese leaders experiment with new models of climate responsibility, thus building up their comfort level for more ambitious action in larger-group, higher-impact forums such as the U.N. Framework Convention on Climate Change, or UNFCCC. Melanie also recommends that U.S. and Chinese leaders launch a bilateral climate impact assessment program to give both sides more information about their counterparts' political interests in the climate space.

WANG Ke, assistant professor at the Renmin University School of Environment and Natural Resources and Research Fellow at the Renmin University National Academy of Development and Strategy, points out that from a Chinese perspective, the biggest problem is not how to increase China's climate leadership role but rather how to get the United States and other developed nations to recognize that they also need to do more. He argues that a significant portion of China's carbon footprint comes from producing goods that are then exported to consumers in the United States and other developed nations. In the globalized era, emissions and emission-reduction responsibilities cannot be perfectly divided among nations because the industrial processes that produce those emissions are part of a global supply chain. He recommends more integrated emission-reduction approaches that include technology transfers and other forms of assistance for emerging markets such as China since those nations are working to reduce not only their own carbon footprints but those of the entire global value chain.

Joanna Lewis, associate professor of Science, Technology and International Affairs at the Georgetown University Edmund A. Walsh School of Foreign Service, offers suggestions for how to better leverage the bilateral relationship between the United States and China in order to influence both the outcome of the international climate negotiations and the likelihood that any targets pledged may actually be achieved. She argues that while the bilateral cooperation that has occurred to date in the clean energy and climate space has facilitated constructive dialogue, it has been modest in scope, so far lacking the types of commitments that could be truly game changing when viewed from an international context. As a result, she thinks it is worth considering the types of high-impact announcements that might be more politically and economically feasible within the next year, that could get bilateral buy in from the two largest emitters, and that could have global reverberations. Joanna recommends that U.S. and Chinese leaders set up a joint clean energy research and development fund, expand cooperation on climate adaptation and resilience, and look for opportunities to link domestic implementation of national climate policies.

YU Hongyuan, professor and deputy director of the Institute for Comparative Politics and Public Policy at the Shanghai Institutes for International Studies, or SIIS, concludes this essay collection by focusing on an issue that has not received as much attention as it should in recent high-level energy and climate talks: how to structure the global energy regime and what that means for global fossil-fuel markets and China's energy security. The Chinese economy is still primarily dependent on fossil fuels. Due to its growing domestic demand, China recently surpassed the United States as the world's largest oil importer. From a Chinese perspective, that opens their nation up to new security risks because they are growing increasingly dependent on a set of global institutions and global sea lanes that, in their view, are predominantly controlled by the United States. Some of the steps China is taking to hedge against those risks—such as strengthening its energy partnership with Iran—are creating a new source of tension between China and the United States. Hongyuan suggests that U.S. and Chinese leaders should cooperate to reform current energy institutions to improve representation for China and other non-OECD nations. Where reform is not possible in the current structure, the United States and China should look for new, more representative forums.

The October 2014 Center for American Progress U.S.-China dialogue also covered regional and global security challenges. For essay collections on those topics, see:

- Exploring the Frontiers of U.S.-China Strategic Cooperation: Visions for Asia-Pacific Security Architecture

- Exploring the Frontiers of U.S.-China Strategic Cooperation: Roles and Responsibilities Beyond the Asia-Pacific Region

Expanding U.S.-China Climate Cooperation Beyond the Bilateral

By Melanie Hart

By any measure, energy and climate cooperation is one of the most productive areas of the U.S.-China relationship. When President Barack Obama and President Xi Jinping met at the Sunnylands estate in California in June 2013, climate change was the only topic that presented enough common interest for a new agreement.[1] In summit after summit, cooperation on energy and climate change has become the new action track for U.S.-China relations. The two countries share more common interest in this space than in any other, and that makes it possible to identify and quickly pursue joint actions that benefit both sides. On other critical issues, such as North Korean denuclearization or cyber security, one can only dream of that type of action-oriented progress.

However, the problem on the climate front is that, although the United States and China are taking an increasing array of joint actions at the bilateral level, those actions are not enough to actually slow the pace of global warming.[2] The United States and China are the world's largest greenhouse gas emitters—so any actions taken together will certainly have an outsized impact—but real progress requires global solutions. The United States and China need to be able to work together, not only on small bilateral projects, but on bigger multilateral efforts that mobilize other major emitters and have a measurable impact on global temperatures as well. The most important type of climate action the United States and China could take would be to cooperate within a broader multilateral context, and that is exactly where they are coming up short.

When taking a closer look at the bilateral projects moving forward in this space, a pattern emerges: The two countries can make substantial progress in areas where the United States has a comparative advantage and can offer some form of assistance to China. For example, the Clean Energy Research Center, or CERC, projects give Chinese enterprises and research institutes more exposure to advanced U.S. clean energy technologies. Collaboration between the U.S. Environmental Protection Administration, or EPA, and China's Ministry of Environment Protection aims to help China build better technical and regulatory capacity for pollution reduction. The projects under the Ten-Year Framework for Cooperation on Energy and Environment and the Strategic and Economic Dialogue, or S&ED, Climate Change Working Group follow a similar pattern: The initiatives making the most progress are those that involve a transfer of knowledge or assistance from the United States to China.

To be sure, the United States benefits from these initiatives as well. By helping China clean up its environment, the United States is also cleaning its own because pollution is mobile. When the United States helps China expand its energy economy, new market opportunities are created for U.S. businesses. From an American perspective, this arrangement allows the United States to make the most of its strengths and to help China move in a direction that benefits both nations.

When U.S. leaders try to carry this success over into a multilateral climate negotiation context, however, they run into two problems. First, in a multilateral environment the dynamic is completely different. The only time China can claim to be on the weaker side of the table is when it is dining alone with the United States. As soon as more players come to the table, China suddenly becomes a great power. With great power comes great responsibility, and that appears to make Chinese leaders very uncomfortable in a climate context because there are no preexisting models of a major economy taking on aggressive emission-reduction actions at China's current level of development. Chinese leaders are well aware that the rest of the world expects China to take on more climate responsibilities, but they fear that more responsibilities is a slippery slope with no clear end point. Without a clear model to move toward, Chinese leaders would rather stay exactly where they are.

Second, the purpose of multilateral climate negotiations is to encourage all major emitters to take reciprocal action, and U.S. and Chinese leaders still do not have enough information about one another's political incentives in the climate space to trust that their actions will truly be reciprocated. The U.S.-China climate information deficit is a major barrier to global progress on emission reduction because the

United States is the world's biggest emitter among developed countries and China is the biggest emitter among developing countries—if these two nations can make ambitious reciprocal emission-reduction commitments there is a high probability that other nations will follow suit. Unfortunately, the reverse also applies: If the United States and China do not take sufficiently ambitious action under the U.N. Framework Convention on Climate Change, that will likely dial down ambition among other nations and make it much harder to slow the pace of global warming.

There are steps the United States can take in the very near term to address both of these challenges.

China needs practice sessions

From Beijing's perspective, the Chinese economy is still in a critical and very sensitive transitional phase. As a middle-income nation, China still has difficult barriers to overcome before it can hope to move up the development ladder to become a high-income economy. Chinese leaders repeatedly state that they feel they are in a more vulnerable position than their counterparts in developed nations. They face an array of problems—such as crippling environmental pollution—that U.S. leaders successfully tackled decades ago. However, due to China's massive geography and population, it is on track to become the biggest economy in the world. Internally, China is an awkward teenager, still experiencing growing pains. On the world stage, China is a great power, and other nations are looking to China to play a leadership role. That role brings glory but also heavy responsibilities, particularly on climate change issues.

Multilateral climate forums put China in a very difficult position. China is now the world's largest greenhouse gas emitter, so it faces major international pressure to take aggressive emission-reduction actions.[3] Other nations look to China to play a great power role and make aggressive first moves—in the form of strong emission-reduction commitments—that will set a positive precedent for other nations to follow. That makes Chinese leaders very nervous because they do not yet see themselves as a great power in an economic sense, and climate policy is closely tied to economic policy. They worry that their domestic economy will falter in the near future, that they will need every tool in their policy arsenal to keep the engine running, and that behaving as a great power on the climate front would require them to give up policy tools they may later need during a future economic crisis.

These fears are understandable. It is difficult to take on external leadership roles when the situation at home feels shaky. Unfortunately, the global community cannot afford to step back, give the Chinese economy more time to traverse the treacherous middle-income phase, and ask China to play a leadership role at some future point when it feels more comfortable doing so. Global temperature trends are rising too quickly to allow any major greenhouse gas emitters to take a time-out. For the sake of the planet, all major emitters must do more, particularly the United States and China.

The big question is what doing more to reduce emissions should look like for a nation such as China, a great power in terms of climate impact yet economically insecure at home. That question is difficult to answer in forums under the U.N. Framework Convention on Climate Change, or UNFCCC. There are 196 parties to the UNFCCC. A decision that directly affects 196 nations—and the fate of the entire planet—is a very high-stakes decision. When the stakes are that high, the natural inclination is to stick with the role or strategy that is the most familiar. From Chinese leaders' perspective, the role they are most familiar with is the low-pressure, sidelines role that China and other developing countries have been able to play under the Kyoto Protocol. Chinese leaders appear to understand that they will need to take a different approach for the post-Kyoto climate negotiations, which aim to create a new beyond-2020 global climate agreement by December 2015. However, it is hard to figure out what that new approach might look like.

Due to their still-developing economy, Chinese leaders do not feel they should be held to the same high standards for reducing emission as developed nations, but previous climate negotiations have only offered two choices: the developed-economy fast lane and the developing-economy slow lane. What the climate community is lacking is a clear transition path that allows growing economies to gradually ramp up their commitments in line with their development status. However, the problem is that formulating such a new model requires a degree of experimentation, and China is understandably nervous about making any experimental moves in the middle of a high-stakes negotiation.

What Chinese leaders need are some practice sessions—opportunities to try on different climate roles and responsibilities in multilateral contexts that are not as high pressure and thus allow for more experimentation. That is what Chinese leaders do in a domestic context: They generally test new policies in small-scale pilot programs before rolling them out nationwide. There is less risk involved in small-scale trials, so political leaders can be bolder. The same principle applies in the international climate space. The United States needs to find good bridge

projects that give China a chance to try out new climate roles in a lower-pressure context. Chinese leaders should be more willing to experiment in multilateral forums where other nations do not consider the Chinese contribution to be the make-or-break element of success and where the focus is narrow enough to eliminate Chinese negotiator fears that experimental action in one forum will create precedents that carry over into others, particularly the UNFCCC.

The United States has an immediate opportunity to engage China in this type of low-risk experimentation under the Arctic Council. The United States is one of eight Arctic Council member states and will take over the rotating chairmanship role next year.[4] China is 1 of 12 non-Arctic observer nations. Arctic temperatures are warming at twice the global average, which speeds the melt of Arctic ice, increases sea levels around the world, and threatens coastal communities in the United States and China. One particular task Arctic Council member states and observer nations could work on together to slow these rising temperatures is to jointly reduce black carbon and methane emissions, both of which have an outsized impact on ice melt.[5] Making black carbon and methane pledges under the Arctic Council would give China an opportunity to make new international commitments that closely track the actions China is already taking at home to address domestic air pollution. Although China is not an Arctic nation, it is hugely impacted by sea-level rise, and the black carbon and methane emissions that speed melting in the Arctic also affect the Tibetan plateau and cause melting that severely threatens China's food and water security.[6] Joint action on these specific pollutants under the Arctic Council would greatly benefit China, but since it is not an Arctic Council member state, Chinese negotiators should have wide leeway to experiment with how they structure any new commitments under that forum.

The Arctic Council is a pre-existing turnkey institution that is already perfectly set up for this type of experimentation. New forums could also be created. For example, the United States and China could work together to create a new forum for regional climate impact assessments and coordinated disaster response in the Asia-Pacific region. At present, security discussions in the Asia-Pacific region focus primarily on maritime conflicts. The United States and China have not paid enough attention to the areas where the strength of all nations—including China—can act as an extremely useful public good for addressing common crises. U.S. Admiral Samuel J. Locklear III, commander of the U.S. Pacific Command, has called climate change the biggest threat to long-term security in the Asia-Pacific region.[7] The Asia-Pacific region already has more national disasters than any other region in the world, and disaster rates are expected to increase with accelerating global warming and sea-level rise. The United States, China, and other nations in

the Pacific could build a regional climate-security mechanism that brings together climate information agencies, such as the U.S. National Oceanic and Atmospheric Administration, and climate response agencies, such as the U.S. Agency for International Development Office of Foreign Disaster Assistance, from each nation to facilitate routine information sharing and coordinate disaster-response activities. From a U.S. perspective, the U.S. Pacific Command is well positioned to serve as a local representative for a multilateral Asia-Pacific climate security program. As with the Arctic Council, the narrow security focus of this forum—and the diversity of bureaucratic actors involved—should allay Chinese negotiator fears that taking on new responsibilities in this space would trigger automatic demands for parallel actions under the UNFCCC.

Regardless of the specific forum or format, some experimentation is needed to help China try different roles and responsibilities in the multilateral climate space and figure out which type of great power role China can play at its current development level. The United States should work proactively to create those opportunities. At a minimum, by creating new opportunities for China to gradually increase its climate commitments in smaller, lower-stakes multilateral settings, it will be possible to chip away at the factors that contribute to the rising global temperature. It is also possible that the models that work well for China in lower-stakes settings will provide lessons that carry over to other forums. If so, that could have big impacts not only in the climate space but also in other issue areas where Chinese leaders are trying to figure out how their nation should behave as the world's new great power.

Leverage climate impact assessments to reduce mutual suspicion

The second challenge restraining U.S.-China cooperation in this space is an informational challenge. There is still a high degree of mutual suspicion between the United States and China regarding their respective climate responsibilities and emission-reduction programs.

Some politicians in Washington still tend to view climate action as a constraint on economic development, and those politicians resist signing on to new emission-reduction actions in the United States due to fears that China will not reciprocate and the net effect of one-sided action will be that the United States will cede an economic advantage to China.[8] On the Chinese side, some Chinese leaders and climate policy experts still believe that U.S. efforts to push China to take on more ambitious programs to reduce greenhouse gas emission are actually a foreign pol-

icy maneuver aimed at constraining China's economic rise. Although the United States is on track to meet its 2020 Copenhagen target based on executive actions taken thus far under the Obama administration, Chinese observers still look back at the fact that the U.S. Congress failed to pass comprehensive climate legislation in President Obama's first term—and has never tried to restart that effort—as evidence that the United States is shirking on the climate promises President Obama made in Copenhagen. Likewise, many U.S. political leaders interpret discrepancies in China's economic data and problems implementing its domestic energy, climate, and environment regulations as an indicator that China's climate promises cannot be taken seriously.

The problem is that too many U.S. and Chinese leaders are still thinking about climate commitments primarily as a global public goods issue. That makes emission reduction a collective action problem, which means all involved nations have an incentive to do as little as possible and free ride on the rest of the group. The reality is that climate politics are shifting dramatically, particularly in the United States and China. In both nations, the focus is shifting from benefiting the global public good to avoiding and mitigating specific climate impacts that are already happening and are projected to increase substantially in the near future. The United States and China are already feeling the impacts of extreme weather, sea-level rise, and other climate impacts, and Chinese leaders are also particularly concerned about air pollution.[9]

What U.S. and Chinese leaders need is a platform for exchanging information about how climate change is directly affecting both nations, how those impacts are projected to increase, and how policymakers and the general public are reacting to that information. Then the conversation can shift from who is doing more—which is difficult to determine when comparing two very different economic and political systems with different development trajectories—to what the two nations can do together to help each other out with common problems.

The United States is already extremely well positioned to launch a climate impact information exchange with China as it has already perfected this model at home: The Obama administration recently released the third U.S. National Climate Assessment, a comprehensive public report that drew on the latest scientific data to increase understanding of how climate change is affecting the United States.[10] The United States can and should partner with China to help Chinese officials launch a parallel program. China can use the U.S. process as a model for effective cross-sector, cross-bureaucracy coordination, and the United States can provide technical assistance if needed. In the United States, programs that assess climate impact have had a powerful affect on how local leaders think about climate

change, but Chinese leaders are generally unaware of that shift.[11] Once both nations are conducing these assessments and sharing the results, U.S. and Chinese leaders will gain an entirely new source of information about their counterparts' political incentives.

Unfortunately, as recent scientific studies make clear, climate change is no longer a problem of the distant future.[12] Communities in the United States, China, and around the world are already feeling the impacts of a changing climate. That gives U.S. and Chinese leaders a powerful reason to not only work together on this important global problem but to also take care of business at home. The sooner U.S. and Chinese leaders realize that common interest, the better. This is one area of the bilateral relationship where more accurate information can only lead to progress.

Melanie Hart is the Director for China Policy at the Center for American Progress.

Endnotes

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Building a New Type of Major Power Relationship Through Climate Cooperation Will Require New Thinking from the United States

By WANG Ke

In December 2012, parties to the U.N. Framework Convention on Climate Change, or UNFCCC, launched a negotiation process that aims to produce a new global climate agreement by December 2015 with the goal of putting multilateral greenhouse-gas reduction targets in place for the post-2020 period. Over the past two years, China, the United States, and the other UNFCCC parties have engaged in intensive global consultations regarding what that potential new agreement should look like. Over this same time period, China and the United States have also deepened their bilateral cooperation and dialogue regarding climate change issues. At the bilateral level, China and the United States are increasingly able to shift out of multilateral climate negotiation mode—which generally involves pointless quarrels and finger pointing—and behave as pragmatic partners. The expansion of China-U.S. bilateral climate engagement since the end of 2012 has been breathtaking. There are new programs moving forward at multiple administrative levels that involve multiple entities from both nations. That growing pragmatism and ability to consistently roll out new cooperative programs has moved climate change to the top of the bilateral political agenda. Now, in 2014, when Chinese and U.S. leaders meet at the highest levels, it is expected that there will be at least some kind of climate announcement. That represents great progress in this dimension of the China-U.S. relationship.

The problem, however, is that there is still a deep gulf of mistrust between the two nations on the issue of how to divide climate responsibilities between developed and developing countries and how that divide should be reflected in a potential new global climate agreement. To move forward and actually close that divide—which will be a crucial step toward a new global agreement—the United States and other developed countries will have to recognize and address the fact that they bear some of the responsibility for emission growth in China and other developing nations from the perspective of many developing countries. If the expanding array of bilateral activities can bring the United States and China closer to that objective, it would represent the highest measure of success.

Common interests provide strong foundation for bilateral cooperation

China and the United States share many common interests in the climate space. Both countries are bearing the adverse effects of climate change. As the world's two biggest energy consumers, both nations face very similar challenges on improving energy efficiency, expanding renewable energy development, and upgrading critical infrastructure to improve climate resiliency. When it comes to finding solutions to these challenges, the two nations possess complementary strengths: the United States generally excels at technological innovation, and China generally excels at deployment of these technologies in the production process. By working together, both countries can combine strengths in order to excel across the value chain. China's economy is shifting toward a cleaner and more efficient development model, and that is creating an enormous domestic Chinese market for clean energy technologies and products—a market that will generate large-scale demand for advanced U.S. systems, technologies, standards, and management expertise. China-U.S. collaboration on low-carbon technology brings together U.S. research, development, and business models with China's world-leading manufacturing strength and enormous market size. When both nations combine forces, it allows U.S. businesses to shape the global supply chain and global division of labor, to drive down the cost of low-carbon technology more quickly, and to expand the global market of low-carbon technology and products.

In turn, these market developments will help to reduce greenhouse gas emissions, promote economic prosperity, and create jobs. Low-carbon solutions will also help the United States upgrade its infrastructure at home and make its own low-carbon economic transition easier. As illustrated in a Pew report, the United States and China have already become very complementary in terms of renewable

energy production.[1] For example, in the solar sector, China is the main supplier of solar panels to the United States, and in turn, the United States is one of China's largest suppliers of high-value components such as polycrystalline silicon, chemicals, and manufacturing equipment. In the wind sector, Chinese manufacturers supply turbine brackets to the United States, while American businesses provide glass fiber and electronic control devices to China. China-U.S. cooperation in these sectors serves as a demonstration lab and driver for the global shift to low-carbon technologies.

China and the United States also share a common challenge in the multilateral climate regime. As the world's biggest greenhouse gas emitters, other nations expect the two nations to adopt robust domestic emission reduction policies at home, to play a positive role in global climate negotiations at the international level, and to sign major international climate agreements. As the world's largest developed country and largest developing country, respectively, other nations also expect China and the United States to forge new areas of agreement that the rest of the world can rally around. That is not an easy task, but the growing array of bilateral energy and climate projects between China and the United States can help in that regard. The more both countries work together away from the international media spotlight and the pointless quarrels and finger pointing that go on in international climate venues, the more chances both nations will have to create an environment for policy dialogue that is conducive to extensive exchanges and building trust. Concrete cooperation tends to promote mutual understanding, particularly regarding issues such as the challenges that the other side is facing and how both countries can seek common ground despite their differences.

When China and the United States are able to work together bilaterally in a concrete and positive way, it influences the global climate negotiation dynamics as a whole. It sets an example for other stakeholders involved in the negotiation process and will ideally help contribute to the successful conclusion of a 2015 global climate agreement. This is why Chinese and U.S. leaders released the "U.S.-China Joint Statement on Climate Change" in 2014, clearly stating that "both sides reaffirm their commitment to contribute significantly to successful 2015 global efforts to meet [the climate and air pollution] challenge."[2] To a certain extent, the global climate regime is an organic component of global development and governance. By joining forces to innovate the global climate regime, the United States and China are forging a path for global rebalancing and building a new type of global governance system.

Climate responsibility is still the big divide

Before these multilateral goals can be reached, however, the United States will need to adopt a more data-driven approach to climate responsibility. U.S. observers pay a great amount of attention to the size of China's carbon footprint, and U.S. officials often pressure their Chinese counterparts on this issue. China's current emissions level matches its development stage, energy endowment, and its role in the world's industrial chain. It is important to recognize that a significant amount of China's carbon emissions are from export manufacturing and are therefore not China's sole responsibility. According to a recent study by Renmin University, when China's carbon emissions doubled between 2002 and 2007, around half of that growth was driven by an increase in Chinese manufacturing exports after Beijing's admission to the World Trade Organization, or WTO, in 2001.[3] As the largest net importing country of trade-embodied carbon emissions in the world, net imported emissions into the United States through trade reached 382 million metric tons of CO2 in 2004,[4] which accounted for 6.6 percent of total U.S. domestic energy related CO2 emissions.[5] Among those total net flows, China alone accounted for 64 percent. According to the latest estimation, this proportion had furthered increased to 76.9 percent in 2007. In addition, high-income Organisation for Economic Co-operation and Development, or OECD, countries saw net carbon imports in 2010 rise to the equivalent of 18 percent of domestic emissions, up from about 2 percent in 1990.[6]

Therefore, one big factor driving China's rising emissions in recent years was the fact that companies from the United States and other developed countries were moving their emission-intensive production lines over to China. Those companies made their products in China to take advantage of China's cheap labor costs and then shipped their products back to the United States or out to other developed economy markets. Consumers in the United States and other developed countries were thus able to keep consuming products without breathing the emissions involved in producing them. A team of international scholars from Beijing University, the University of California, Irvine, Tsinghua University, Argonne National Laboratory, and the University of Illinois recently found that Chinese export manufacturing also contributes a significant amount of noncarbon air pollutants such as sulfur dioxide—exports accounted for 36 percent of emissions in 2006—and nitrogen oxide, where export manufacturing accounted for 37 percent of emissions in 2006.[7] This means that China and the United States are very closely linked together in combating climate change through bilateral trade relations. Although most developed nations have now entered a post-industrial stage where emissions are tracking down, it is important to recognize that one reason they were

able to track down is because those nations outsourced some of their production activities to China and other developing countries, therefore leading to upward emission trends in those developing nations. Now developing countries are working to shift their emission paths. Since their emissions are at least partly a product of globalization, the developed nations must shoulder some of this responsibility. Developed nations should serve as a role model on low-carbon technology innovation and adjustments to their energy-intensive lifestyles. At the same time, developed nations must also provide developing countries with the needed funding, technologies, and support for capacity building to help the latter adjust and steer away from the path of energy reliance. Both sides should also explore win-win mechanisms that help achieve low-carbon growth for the entire world.

This issue of how to divide responsibility for global emissions is a key area of China-U.S. disagreement. The United States and China have fundamentally different understandings of their respective responsibilities and obligations on climate change, and those different understandings have created mistrust. In order to move forward, China and the United States need to adopt a more flexible approach and sidestep debates on matters of principle, such as their respective responsibilities and obligations. The two countries should continue to engage in high-level dialogue on this issue. They should also continue to combine the difficult top-down search for common views on matters of principle with pragmatic, bottom-up bilateral projects that can yield quick results and serve as low-hanging fruit. Doing so allows peers from the two countries to work together side by side, to exchange and communicate ideas to improve mutual understanding, and to build trust and reduce suspicion. The U.S.-China Climate Change Bilateral Working Group, established in 2013, follows this line of reasoning. In addition to policy dialogue, the group has been working on heavy vehicle and other automobile emissions, smart grid, carbon capture, utilization and storage, greenhouse gas-emissions data collection and management, and energy efficiency in construction and the industrial sector.

It will take concerted effort by both sides to sustain and upgrade climate cooperation between China and the United States. Areas that should receive particular focus include:

Both nations should recognize climate change as a critical strategic issue and a long-term challenge that requires a long-term focus immune to short-term fluctuations in the bilateral relationship. As Joanna Lewis mentions in her essay, it is not clear to what degree future U.S. presidential administrations would support

continued cooperation with China on energy and climate change. The United States and China need to insulate this critical area of the bilateral relationship from changing political winds on either side.[8]

Both nations should build a broader network of bilateral cooperation that includes government-to-government programs, as well as programs involving businesses, think tanks, individuals, and institutions. Exchanges among think tanks should be particularly emphasized. They act as linchpins between government, business, academia, and the civil society at large and facilitate idea exchanges and deepen understanding on key differences in ideas. Subnational governments at the provincial or state and municipal levels should also conduct dialogue on climate policy, including domestic policy and project cooperation, which can help to tone down the political aspect of this global issue.

Both nations should eliminate barriers to cooperation such as market-access restrictions and intellectual property rights disputes, strengthen information sharing, explore win-win business models, and build public-private partnerships. At the project level, the step-by-step approach of research and analysis followed by project proposal, project demonstration, and experience dissemination should be followed so that cooperative projects can be duplicated and promoted and the effects maximized.

China and the United States should play different roles in steering the world to low-carbon development and play to each other's complementary comparative advantages. Through joint research and development on low-carbon technology, the two countries can ensure markets for their technology at a lower cost while also providing assistance to the less developed countries. Doing so will make low-carbon technology "understandable, affordable, accessible and effective" to developing countries at large.[9]

Both nations should focus more effort to turn the positive China-U.S. climate cooperation at the bilateral level into an organic part of the global climate regime. The goal of China-U.S. bilateral efforts should be to complement other multilateral channels instead of establishing a G-2. Both countries should aim to avoid triggering misunderstanding by other nations. The United States and China should use their bilateral strength to promote innovation of the global climate regime.

Given the long-term strategic significance of climate change and the complementary nature of China and the United States on this issue—including their shared interests—the room and potential for cooperation is fairly large. Since the issue is less sensitive than security issues and less likely to fall victim to short-term political dynamics, it is more stable and ready for cooperation and thus could become "a pillar of the bilateral relationship."[10] This pillar could help build mutual trust and respect, pave the way for further bilateral cooperation in the areas of international politics, economics, and finance and security, and promote a new type of major power relations between China and the United States.

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Changing the Paradigm for U.S.-China Engagement on Clean Energy and Climate Change

By Joanna I. Lewis

In November, President Xi Jinping and President Barack Obama are scheduled to meet for a much-anticipated summit following the Asian-Pacific Economic Cooperation, or APEC, meetings taking place in Beijing. This meeting will be the first time the two leaders have spoken at length since the Sunnylands summit back in June 2013 and will provide an important opportunity for the two leaders to discuss a variety of pressing issues of mutual importance to both countries. While clean energy and climate change may not be the top strategic issue in the U.S.-China relationship, it is perhaps the only issue in which there is more agreement than disagreement. As a result, both sides are increasingly focusing their efforts on this topic within the bilateral relationship, raising expectations for high-level deliverables. The looming deadline for the next multilateral climate change treaty, scheduled to be agreed upon at the climate change negotiations in Paris at the end of 2015, further raises global expectations placed on the two largest greenhouse gas emitters.

This essay reviews the current context for cooperation, including enduring constraints, and offers suggestions for how to better leverage the bilateral relationship between the United States and China in order to influence both the outcome of the international climate negotiations and the likelihood that any targets pledged may actually be achieved.

Context and constraints

Both China and the United States have begun to reveal the outlines of their own domestic strategies to address climate change, which will likely lay the groundwork for any forthcoming international pledges or commitments. In the United States, the June 2013 *Climate Action Plan* laid out an ambitious—but somewhat vague—strategy for addressing climate change.[1]

More refined details followed in the Environmental Protection Agency's, or EPA's, proposal for carbon standards on new power plants, and most recently on existing power plants, establishing a key part of the framework for a domestic approach to reducing carbon emissions.[2] In China, seven pilot cap-and-trade programs are under development, which are laying the groundwork for a national program after 2015. The 12th five-year plan, or FYP, period has brought about a notable shift away from fossil energy and toward non-fossil energy in the building of new plants, with additions to non-fossil energy capacity surpassing fossil energy installations for the first time in 2013. In addition, discussions of caps on coal, and even of carbon emissions peaks, are increasingly mainstream among Chinese scholars.[3] As a result, types of mitigation actions that were not on the table back in 2009, when countries looked toward 2020 emissions targets in Copenhagen, could increasingly be considered for the 2025–2030 timeframe being discussed in Paris at the upcoming climate negotiations in 2015.

In the midst of preparations for Copenhagen in 2009, the United States and China launched several new clean energy agreements that have allowed for a broad expansion of the bilateral channels for discussing energy and climate issues. Five years later, far from waning, U.S. Secretary of State John Kerry's added attention over the past year has reinvigorated cooperation.[4] At last year's U.S.-China Strategic and Economic Dialogue, or S&ED, the Obama administration and President Xi Jinping's incoming leadership team signed several new agreements. Most significantly, these agreements included the establishment of a high-level Climate Change Working Group, as well as new agreements to accelerate the phase out of hydrofluorocarbons, or HFCs, potent greenhouse gases that have replaced the chlorofluorocarbons, or CFCs, which were destroying the ozone layer.[5] During Secretary Kerry's trip to China in February 2014, the State Department announced that both countries "reaffirm their commitment to contribute significantly to successful 2015 global efforts to meet this challenge."[6]

Despite these truly positive developments and years of constructive dialogue, neither China nor the United States seems truly ready to take on the type of significant action on climate change that would likely be needed to mobilize a global response

in 2015 anywhere near the scale of what would be required to reduce dangerous anthropogenic interference with the global climate system. Both countries are still predominantly reliant on fossil fuels. While increasing shale gas use has recently reduced the share of coal in the United States, such a pattern is unlikely to be replicated in China anytime soon, due to the extremely small share of gas in China's energy system. Both countries have made real and important progress on climate policy in the past year, but perceived political and economic constraints have prevented any real action. Should the Democrats lose the next U.S. presidential election in 2016, the window of opportunity for significant action on climate change through bilateral agreements may close. It is perhaps this situation—in which China and the United States are partners in taking some actions to address climate change, while avoiding the more difficult issues—that makes China and the United States willing to collaborate. Both countries seem to agree with the eventual need for a low-carbon transition, but neither is willing to do so at the expense of economic development.

As a result, the types of bilateral cooperation that has occurred to date in the clean energy and climate space have been modest in scope, so far lacking the types of commitments that could be truly game changing when viewed from an international context. Certainly not all countries have the power to change the international dynamic with unilateral or even bilateral commitments. For example, the European Union's announcement at the September U.N. Climate Summit that it would cut greenhouse gas emissions by 40 percent from 1990 levels by 2030 was received with little international fanfare.[7] There are many reasons to believe that a comparable announcement, if it came from the United States and China, would elicit quite a different response form the international community.

It is unrealistic in the near term to expect numerical cuts along the lines of the E.U. pledge from China, due to real domestic constraints related to the current structure of its economy and its reliance on coal. However, it is quite possible that Chinese officials will put forward a peak year for carbon emissions, which according to recent studies could be achieved between 2025 and 2035. While discussions of coal caps and emissions peaks in China have brought new optimism to those watching China's seemingly ever-growing emissions, in is important to understand that a country under pressure to make an aggressive pledge may still have massive challenges to overcome in order to meet any goals announced. Even in the United States, if aggressive numerical targets are announced without a clear plan for how they will be met through domestic regulation, they will likely be received internationally with some skepticism.

As a result, it is worth considering the types of high-impact announcements that might be more politically and economically feasible within the next year, that could get bilateral buy-in from the two largest emitters, and that could have global reverberations. It is equally important, however, that significant domestic institutional support accompanies such actions in order to ensure follow- through. Many scholars of Sino-U.S. energy and climate cooperation, who often participate in such initiatives, have recommended important ways to improve upon the existing portfolio of activities.[8] There are important opportunities to expand technical clean energy cooperation, broaden the current scope of bilateral climate discussion, and improve the transparency and frequency with which information is exchanged. Such agreements are important and should be welcomed in the context of any deliverables prepared for the upcoming presidential summit. However, any new bilateral announcement by the United States and China is unlikely to have game-changing, regime-motivating implications, unless it is of a scale that far exceeds that of past cooperative initiatives in this field.

Possible examples of such agreements are briefly sketched below.

Thinking big: Recommendations for high-impact bilateral cooperation

1. Sino-U.S. joint clean energy research and development fund

One of the most ambitious bilateral clean energy cooperation initiatives to date between China and the United States is the U.S.-China Clean Energy Research Center, or CERC. While it is too early to comprehensively assess its efforts, it is increasingly evident that the CERC provides a model for collaborative clean energy research and development, or R&D, that is unique in the history of U.S.-China collaborations in this area.[9] Two of the most novel aspects of the CERC are agreements to share funding responsibility across the U.S. and Chinese participants and an agreement that governs intellectual property. These two key elements of the CERC could be expanded into a new mechanism in which the United States and China contribute to a joint clean energy R&D fund to support low-carbon R&D activities in both counties and in collaboration with other countries.

This pooled fund, with contributions from the United States and China, would differ from the CERC model where U.S. funds are directed to U.S. researchers and Chinese funds are directed toward Chinese researchers. But the principle of equal contributions would be similar. Review committees comprised of experts from

both donor countries could participate in project selection in a process similar to the U.S. National Science Foundation grant review process. It is possible to think big in terms of the scale of funding and to consider both public- and private-sector contributions. In 2013, the scale of financing directed to clean energy in China was $61.3 billion, down from 63.8 in 2012; and in the United States, the scale of financing the same year was estimated at $48.4 billion, down from 53 billion in 2012.[10] It is therefore possible to imagine a funding scale in at least the hundreds of millions of dollars range, if not larger.

2. Joint Sino-U.S. climate adaptation and resilience response initiative

At the U.N. Climate Summit in September, President Obama announced that the United States would expand its engagement in strengthening global resilience to climate change, and the Pentagon released an Adaptation Roadmap in October that includes a call for international collaboration on adaptation activities.[11] China is increasingly concerned about the impact that climate change will have on the country and the surrounding region. U.S.-China collaboration on climate adaptation and resilience that links the security communities and builds on existing military-military cooperation mechanisms that address disaster response, could be an important topic to grow strategic trust and cooperation.

In particular, the international community would likely welcome a joint U.S.-China response team that could help build climate resilience in poorer, developing countries and respond to climate-related disasters. Due to China's existing on-the-ground presence in Africa, a focus on sub-Saharan Africa might be a good place to start.

3. Linking domestic implementation of national climate change contributions

The next year is likely to see parties to the U.N. Framework Convention on Climate Change come forward with national climate change contributions, which could form the basis for the next international climate agreement. It will certainly be important for both the United States and China to demonstrate ambitious national targets and timetables. But perhaps even more important—particularly if an international treaty is either nonbinding or not strongly enforceable at the international level—will be domestic laws and regulations that will back up national pledges. As the United States and China prepare their international contributions, they would both benefit from coordination with respect to domestic plans for implementation. Both countries face unique challenges with implemen-

tation: China does because it is a vast country with often weak data collection and enforcement mechanisms, and the United States does because it may face legal and political challenges in implementing regulations with executive orders and without congressional legislation and support.

Coordinated national or subnational policies, such as power plant emissions and efficiency standards, fuel economy standards for vehicles, or even carbon-trading or -tax systems, could be implemented with similar stringencies and methodologies. This would not only help to raise confidence in the likelihood that international contributions can be met but also expand the understanding on both sides related to the challenges of implementation. In addition, the harmonization of carbon regulations could avoid potential trade disputes related to carbon leakage and avoid the need for border tax adjustments.

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Changing Chinese and U.S. Roles in the Global Energy Market: Careful Management Needed

By YU Hongyuan

The energy sector offers both challenges and opportunities for the China-U.S. relationship. On the one hand, the two nations share a common interest in the free flow of crude oil, natural gas, and other energy commodities around the world at stable prices. On the other hand, those commodities are available in limited supply. As nations pursue them, competitive dynamics can emerge and make cooperation difficult even on areas where there are common interests. At present, competitive risks between the United States and China are higher than they have ever been before. That is because we are in the middle of a major shift in the global energy market: the United States role as a global energy importer is decreasing as the United States becomes energy independent, China's role is growing to surpass that of the United States, and there are no good mechanisms in place to manage that shift.

Domestically in China, imports are supplying an increasing percentage of China's energy mix—58 percent of the oil that China consumed in 2012 was imported from the international market.[1] As China's energy demands increase in line with its growing economy, China's share of the global market is also growing: Chinese oil imports accounted for 14 percent of the global import market in 2013, up from 6.7 percent in 2005.[2] As of 2013, China was the third largest oil importer in the world, just after the European Union and the United States.[3]

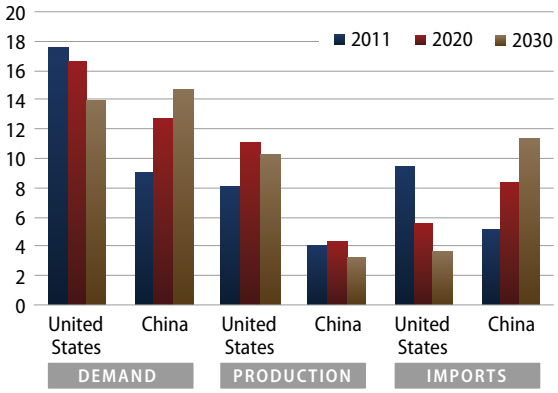
China has launched a diplomatic offensive to ensure its energy security. As a latecomer to the global energy market, China found that the resource-extraction opportunities in reliable countries were already occupied, so Chinese enterprises had to pursue resources in high-risk countries such as Iran, Sudan, Myanmar, and other energy sources that the United States considers unsavory. That triggered American anxiety and dissatisfaction to see China cooperating with countries that are hostile to the United States. Sen. Lisa Murkowski (R) from Alaska stated that "Chinese companies are enthusiastic about making profits without scruple in the countries disgusted by the west, which breaks geopolitical balance and also alienates the existing equilibrium relationship between oil-producing countries and world's leading oil companies."[4]

The United States believes that China aims to improve its access to oil by ignoring issues such as human rights, nuclear nonproliferation, and improvements to governance in oil-rich nations. U.S. officials also believe that China's rapidly increasing oil demands will lead to a redrawing of the world's oil political map in the coming decades.

FIGURE 1

The change in oil imports

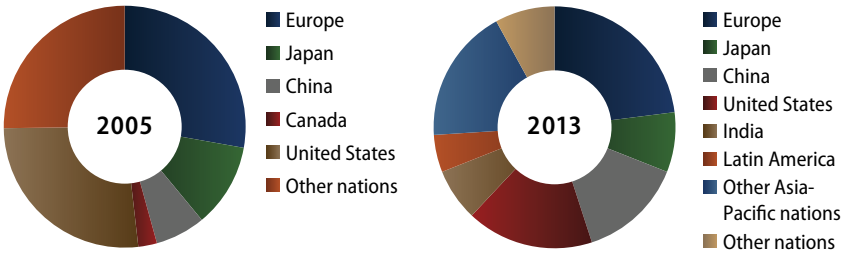
In millions of barrels per day



Source: International Energy Agency, "World Engergy Outlook 2012: Executive Summary" (2012), available at http://www.iea.org/publications/freepublications/publication/English.pdf.

FIGURE 2

The change global oil import percentage 2005–2013



Source: BP, "Statistical Review of World Energy June 2014" (2014), available at http://www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2014/BP-statistical-review-of-world-energy-2014-full-report.pdf.

Since China is heavily dependent on energy supplies from the Middle East—and since most of those supplies come through the insecure sea lanes—China must also increase its sea power to maintain the safety of its increasing oil and gas imports. China's growing naval strength will trigger U.S. concerns that China is challenging U.S. sea power. From a Chinese perspective, however, it seems that China's oil-transit channels are highly vulnerable to U.S. intervention.[5] After the Iraq War, the United States basically controlled the oil in the Middle East and its strategic output channels. China imports more than half of its oil from the Middle East—mainly via tankers traveling over long-distance sea routes—and those tankers must pass through U.S.-controlled chokepoints such as the Suez Canal, the Strait of Hormuz, and the Strait of Malacca.[6] If China-U.S. relations deteriorate, the United States is likely to use its oil hegemony to block China's oil imports. Under extreme cases, China could not get any oil from the Middle East at all.

China also sees a U.S. hand in Central Asia, its other major supply center. Pipeline projects from Central Asia provide China with a relatively safe onshore oil channel, but the United States often intervenes in those deals—such as China's shareholder projects with Kazakhstan and Turkmenistan—in order to cut off China's oil and gas supplies from Central Asia.[7] The United States has multiple strategic objectives in Central Asia, including:

- Gaining access to energy supplies
- Supporting central Asian countries to gradually get rid of Russia's influence and halt economic and political integration with Russia
- Controlling oil pipelines
- Promoting the North Atlantic Trade Organization, or NATO's, eastward expansion to squeeze Russia's strategic space to the south and west
- Continuing to suppress Iranian attempts to achieve a dominate position in central Asia and the Persian Gulf

It appears that from the U.S. perspective, those objectives are often not compatible with a growing Chinese energy presence in the region.

Chinese observers also worry that since the United States shale gas boom is reducing its need to import oil from Middle East, the United States may take actions that throw the Middle East into disorder, which would threaten China's energy security.

Suggestions for China-U.S. cooperation

The United States and China share common interests in maintaining the stability of oil-producing countries and critical sea lanes. It is noteworthy that ensuring ample supply of oil in the global market has been put in one of several U.S. energy policy priorities that could meet the needs of large oil consumers in the world. This provides spacious room for China-U.S. cooperation on international energy policy and guarantees the steady supply of oil, which is the biggest converging point of their interests with respect to energy issues.

First, one opportunity that deserves immediate attention is adjusting the multilateral energy governance system to fit the new market reality. The International Energy Agency, or IEA, is currently the most substantial and influential body for international energy cooperation. It is the only multilateral body that can address all aspects of energy policy and that maintains strong analytical capability

and a permanent secretariat. The problem with the IEA is that it does not represent emerging powers such as China. The United States and China should work together to reform the IEA and make it more representative. The G20 could also serve a larger role on energy. The G20 was formed in the modern era and more accurately reflects current market realities. The G20 could take on new roles such as facilitating data exchange and joint research on oil and gas data, tracking commodity market changes, monitoring energy reserves, and tracking financial and energy future market factor data. The United States often says that it wants to have an environment with fair competition in the energy sector. China, on the other hand, fears that it will be at a disadvantage if it competes with unequal competitors on a playing field where there are no handicaps and everyone plays by the same rules. The United States and China should work to find a multilateral institutional space where both nations feel they have a fair chance at success.

Second, China and the United States can work together to address price volatility by strengthening energy market transparency to improve energy market information by creating a China-U.S. oil data initiative affiliated with the IEA annual report. Additionally, China and the United States should make a joint statistics research on production and consumption, imports and exports, pipeline flows and stock volumes, as well as elements of financial markets such as derivatives, term structures, and trade contracts. China and the United States can conduct joint research on how to address the regulations, subsidies, and entrenched relationships that direct financing to fossil fuels and provide obstacles to alternative energy systems. China and the United States should also advance business cooperation in the energy sector. Outside of broader geopolitical cooperation, China should aim to avoid governmental action in the business space and mainly rely on nongovernmental organizations and companies to realize China's interests through cooperation with U.S. counterparts. Where state enterprises are the primary actors, China should take steps to reduce concerns.

Third, China and the United States should work collaboratively to develop new energy technologies and stronger energy efficiency policies that will reduce dependence on fossil fuels. The United States support clean coal technology for China to significantly reduce pollutant and CO2 emissions, China will take steps to reduce publicly funded loans and other financial support for coal. China and the United States can do more collaborative research and development to produce energy technologies and make them available license and patent free. They also should expand the Major Economies Forum work on clean energy[8] to include additional objectives such as an extended phase-out period for "inefficient fossil fuel subsidies," and G20 and APEC initiatives on inefficient fossil-fuel subsidy and marine

environment protection. To deal with genuine political obstacles, some of the inefficient subsidies should be reallocated within each country to "targeted support to the poorest,"[9] to R&D, and adjustments to more rigorous standards. China and the United States can work together to formulate a joint investment plan for global energy infrastructure and explore the possibilities to create new financial norms and standards using export credit agencies and sovereign wealth funds.

Looking into the future, the overall goal for both China and the United States should be preventing a scenario where competition between these two countries in the energy sector turns into an adversarial relationship. Although their market positions are diverging, that divergence can present more opportunities for cooperation if managed carefully. The United States and China should avoid the strategic doubts that come with changes in power and transformation of global economic ties. China should aim to play a constructive role in the U.S.-dominated system of energy governance. The United States, for its part, should guard against being an interference factor for China's overseas energy supply. As Daniel Yergin states, "it is advisable and urgent to make China participate in the global trade and investment system instead of making China like a peddler to bargain with every country," because at the end of the day, integration "is helpful to China and the other countries in the energy security system."[10]

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Endnotes

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5 Joshua Ho ,*The Security of Regional Sea Lanes* (Singapore: IDSS, 2005), pp. 2–6.

6 Benjamin Alter and Edward Fishman, "The Dark Side of Energy Independence?" *The New York Times*, April 28, 2013; Daniel Yergin," America's New Energy Reality," *Foreign Policy*, June 10, 2012.

7 Bruce Jones, David Steven, and Emily O'Brien, "Fueling a New Order? The New Geopolitical and Security Consequences of Energy" (Washington: The Brookings Institution, 2014) ,pp. 13–14.

8 It includes all G20 countries except Argentina, Turkey, and Saudi Arabia.

9 Clean Technica, "G20 Leaders Agree To Phase Out "Inefficient" Fossil Fuel Subsidies," September 25, 2013, available at http://cleantechnica.com/2013/09/25/g20-leaders-agree-phase-inefficient-fossil-fuel-subsidies/.

10 Daniel Yergin," Oil's new world order," *The Washington Post*, October 30, 2011, available at http://www.washingtonpost.com/opinions/daniel-yergin-for-the-future-of-oil-look-to-the-americas-not-the-middle-east/2011/10/18/gIQAxdDw7L_story.html.

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