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CONFERENCE REPORT: ENERGY, ENVIRONMENT AND SECURITY IN ASIA

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“Energy, Environment and Security in Asia” was the topic of a Foreign Policy Research Institute Asia Program Conference, held in cooperation with the Reserve Officers Association on April 5, 2012, in Washington D.C. Participants included:

- Kent Calder, Director, Reischauer Institution for East Asian Studies, School of Advanced International Studies, Johns Hopkins University
- [Felix Chang](#), FPRI Senior Fellow and Co-Founder, Avenir Bold
- [M. Terry Cooke](#), FPRI Senior Fellow and Principal Director, GC3 Strategy
- Sean S. Costigan, Lecturer, the New School University
- [Jacqueline Deal](#), FPRI Senior Fellow and President and CEO, Long Term Strategy Group
- [Jacques deLisle](#), FPRI Asia Program Director and Cozen Professor of Law and Professor of Political Science, University of Pennsylvania
- Erica Dingman, Associate Fellow, World Policy Institute
- Eric Feldman, Professor of Law, University of Pennsylvania
- Michael Kugelman, Program Associate, Asia Program, Woodrow Wilson International Center for Scholars
- [Gilbert Rozman](#), FPRI Senior Fellow and Musgrave Professor of Sociology, Princeton University
- Toufiq Siddiqi, Adjunct Senior Fellow, East-West Center and President, Global Environment and Energy in the 21st Century
- Kevin J. Tu, Senior Associate, Energy and Climate Program, Carnegie Endowment for International Peace
- Wojtek M. Wolfe, FPRI Senior Fellow and Assistant Professor of Political Science, Rutgers University

JAPAN AFTER FUKUSHIMA: ENERGY CHALLENGES, DOMESTIC POLITICS AND FOREIGN POLICY

Kent Calder argued that Japan has recovered rapidly—although still incompletely—from the earthquake, tsunami and Fukushima nuclear power plant disaster. The crisis produced sharply increased concern about nuclear power and its environmental risks and led to at least a temporary shutdown of each of Japan's 54 nuclear plants. Nonetheless, Calder contended, Fukushima will not bring a sharp reduction in Japan's relatively great reliance on nuclear power. Structural features of Japan's political economy entrench a pro-nuclear power orientation. First, partly in response to the oil shocks of the 1970s, Japan invested heavily in nuclear power beginning in the 1970s and 1980s and has continued to do so. The inertia of this policy choice remains formidable. Second, Japan's huge power companies are politically powerful, playing leading roles in influential business associations and enjoying much support in communities near plants where the companies have underwritten public expenditures and amenities. Third, Gilbert Rozman added that the weakened but still relatively powerful Liberal Democratic Party (LDP) was associated with the turn to nuclear energy during its long years in power and would not welcome wholesale repudiation. Although the currently ruling Democratic Party of Japan includes sharp critics of nuclear power, the party is divided and the government resisted calls to permanently shutter the plants after Fukushima. Fourth, Eric Feldman noted the pro-nuclear power orientation of significant portions of the Japanese bureaucracy that oversees the sector—another factor that weighs in favor of a continued role.

Calder argued that there are no alternatives to continuing reliance on nuclear power. Demand for power can only be reduced modestly through conservation, and there will soon be an end to the temporary dip in demand that followed the post-2008 economic downturn. The Asian Financial Crisis of the late 1990s devastated the means (including the Industrial Bank of Japan) for raising the immense capital that would be needed to build new power plants of any type. Moreover, no alternative source of energy offers viable substitutes for nuclear power. Liquefied natural gas (LNG) use is rising sharply but from very low baselines and with uncertain prospects in light of several potential bottlenecks. Exports from the United States are uncertain, given the long lead-time and high cost of constructing facilities for LNG exports, U.S. laws that might impose export conditions linked to broader trade liberalization, and political controversies over the environmental impact of shale gas development. Russian sources appear problematic in light of Japanese-Russian territorial disputes and past partial expropriation of foreign energy company investments in Russia. Renewable energy comprises a tiny share of Japanese supply and prospects for rapid expansion, and effective policy measures to support it, are weak. Coal raises serious environmental concerns, arguably on par with those posed by nuclear power. Oil imports from the Middle East—reliance on which had prompted the turn to nuclear power in the first place—also are not an answer.

Still, Fukushima has complicated the domestic politics of nuclear power and revealed or exacerbated weaknesses in Japan's troubled political order more generally. Calder noted that Fukushima struck at the strength and stature of the power sector which, along with steel and banking, had long been among the pillars of industrial Japan. Anti-nuclear organizations became emboldened. With traditional big business and local community support undercut by the Fukushima disaster (along with other factors), conservative politicians could feel besieged and might feel pushed to engage in sharper struggles in Japan's volatile and often stalemated politics, perhaps forcing a new round of elections sooner than they otherwise would have occurred.

Feldman warned of institutional and legal issues that remain unresolved and potentially volatile after Fukushima. Under a supportive LDP government, Fukushima plant owner Tokyo Electric Power Company (TEPCO) developed from a state entity into the world's fourth-largest power company, subject to fatally lax oversight by agencies that both regulated and promoted nuclear power. After the disaster, public opinion demanded greater attention to health and environment concerns and the government moved to reorganize regulation. But it remained unclear what shape reorganization would take, whether it would get beyond mere reshuffling, and what impact it would have on preventing another catastrophe. Legal issues complicated the response to Fukushima and, prospectively, to any new incidents. The massive liability TEPCO faced under Japanese law would overwhelm the company and the modest and natural disaster-excluding insurance it was legally required to carry, putting the government to a tough choice among legally permissible options: bailing out an unpopular but significant company, or letting the company collapse and bearing the compensation costs directly while increasing the likelihood that citizens would see the government as responsible for the harms caused by the catastrophe. Legal uncertainty also portended politically charged disputes over what injuries are compensable—harms to those who own property in the exclusion zone, who claim psychological injury, who face proof problems, and so on. Rozman and Calder doubted that Japanese politics would produce significant reform or avoid sliding back into policies of reliance on nuclear power.

In terms of foreign relations, Fukushima's impact is likely to be limited but problematic, including for the United States. Calder noted that Chinese Premier Wen Jiabao's visit to the afflicted areas improved Sino-Japanese relations and that China-Japan-Korea trilateral economic negotiations appeared to gain momentum—something that posed difficulties for the U.S.'s pursuit of a Trans-Pacific Partnership that would initially include Japan and Korea but not China. Rozman was skeptical that Fukushima would boost regional cooperation over the long run. Japan's concerns about energy supplies could exacerbate conflict with China over long-disputed territory in the hydrocarbon-rich East China Sea and tighten U.S.-Japan relations (as well as increase U.S.-China tensions). Or Japan's energy worries could bring new Chinese pressure to acquiesce in demands on contested sovereignty in return for cooperative resource exploitation in the contested maritime region. Japan's heightened interest in LNG has not brought greater willingness to engage Russia on territorial disputes, not least because prospects for substantial and reliable flows of energy resources from Russia are impeded by Moscow's troubled energy strategy and policies toward the Russian Far East. More broadly, to the extent that the Fukushima disaster and the energy and economic woes to which it contributes further weaken or distract Japan from its role as a regional power, this sharpens challenges of geopolitical reconfiguration that Tokyo had already shown itself ill-equipped politically to address.

ENERGY AND SECURITY IN CHINA'S FOREIGN POLICY

Jacqueline Deal argued that China's large and enduring dependence on imported oil significantly shapes its security policy and has prompted Beijing to pursue a strategy to reshape the geostrategic map in China's favor. China's Marxist-influenced reading of twentieth century history sees the quest for oil and the control (or lack of control) of oil resources as key factors in shaping the great conflicts and the rise and fall of great powers from World War I through the Cold War. Thus seeing secure access to foreign oil as a vital security concern, China has faced three options. It could rely on free international markets to continue to provide oil, but Chinese analysts see this as unacceptably risky and dangerously dependent on the cooperation of a potentially hostile United States. The behavior of China's three big state-linked oil companies, including their pattern of never competing with one another, reflects the state's mistrust of market-based approaches. Second, China could seek the military capacity to secure its energy supply lines, but such U.S.-style power projection capability is unattainable in the near term.

China is pursuing a third, "indirect strategy" of securing access to foreign oil by undermining hostile alliances, and creating a network of friends or clients, along its oil supply routes and among its oil suppliers, thereby making it more difficult and costly for potential enemies to disrupt China's access. This has meant forging closer ties with Central Asian states that had been part of the Soviet Union and closely tied to Russia in the post-Soviet period, with Himalayan and other South and Southeast Asian states that have traditionally been closely connected to India, and with other regional states as well, including Pakistan. At the same time, China has acquired access to sea ports—the so-called "string of pearls"—from the South China Sea and along the Indian Ocean toward the Middle East and Africa. China's pursuit of ties with these states on its inland and maritime periphery and beyond has been multifaceted, including energy sector investment, other economic ties, development aid, infrastructure construction, arms sales and military cooperation.

These approaches reflect China's appreciation of the theories of two great foreign strategists from the early twentieth century era of globalization: the continental strategy echoes Halford Mackinder and his imperative to dominate the heartland; and the maritime strategy evokes Alfred Thayer Mahan and his vision of maritime power based on a blue-water navy with access to strategic foreign ports. Both strategies also reflect the revived influence of the great strategist from China's Warring States period of competition among relatively equal states, Sun Zi and his views on the need to break up enemy alliances while building up one's own network of supportive states by all available means.

China's pursuit of this "indirect strategy" poses potential threats to the interests of many states, including the United States. Especially in an era of limited and declining naval resources, the U.S.'s most promising possible response likely is an "indirect strategy" of its own. Such a U.S. strategy can benefit from the concerns among China's neighbors about China's growing power, increasing assertiveness and unresolved territorial claims.

Wojtek Wolfe depicted China's efforts to secure access to oil from abroad (and energy security more generally) as an aspect of China's broader—and troubled—strategic hedging against the threats that China potentially faces from the international system's still-hegemonic power, the United States. Through its large, state-linked national oil companies, China has pursued purchase contracts and investments in oil (and other energy resources), including in

some problematic states. With many exploration and development opportunities in much of the world already taken up by established multinationals or host-country companies, China's national oil companies have invested relatively heavily in Sudan, Iran and other countries that the U.S. (and like-minded states) condemn as violators of human rights, sources of international instability, or seats of unfriendly regimes. China's relations with some of these states have extended beyond commercial transactions to development assistance, foreign aid, lines of credit, infrastructure building, arms sales, broader military cooperation, and diplomatic support.

As a second element in its hedging strategy, China has made investments in improving the PLA navy that have been cast, or understood, as designed to protect China's energy security, particularly its access to oil from the Middle East and Africa (on which China is now more dependent than the U.S. is). Developing a navy capable of such force projection has been seen, and portrayed, as a hedge against the possibility that the U.S. will cease to protect—and may seek to impede—China's free use of the sea lanes through the Indian Ocean and South China Sea.

While these hedging strategies have offered some benefits to China, they also have come with considerable costs. China's sharply rising demand for oil, its apparent preference for investing in "equity oil" under the control of national oil companies (which would be expected to follow state orders) rather than relying on international markets, and the support Beijing provides to states that are the object of U.S. sanctions or pressure have all exacerbated doubts about Beijing in Washington (and elsewhere). Even though much of the oil China and its national oil companies acquire either finds its way to international markets or helps keep prices lower in those markets, Chinese behavior has stoked concerns that China views oil resources as a potential political—or politically controlled—asset rather than a market commodity. Although they represent only a limited element of Beijing's foreign policy, China's oil-based entanglements with Sudan, Iran and other troublesome places have undercut China's efforts to present itself as a responsible stakeholder in the international system. Although the drive to build up the PLA navy has many underpinnings (some of them unthreatening and unobjectionable), the near-term unattainable goal of independent capacity to protect the sea lanes of communications from a potential U.S. blockade have made China's naval modernization drive appear confrontational and challenging to the status quo.

Jacques deLisle responded that China's "hedging strategy" as depicted by Wolfe was exacting a very high premium for an insurance policy—against U.S. moves that could threaten China's oil supplies—of limited value. The likelihood that the U.S. would threaten China's oil access for political reasons remains low and, as Wolfe noted, had likely been overestimated by Beijing in the wake of the U.S.'s apparent hypocrisy in invoking national security concerns to scuttle the Chinese National Offshore Oil Company affiliate's attempted takeover of Unocal while preaching to China that it should treat oil as an apolitical commodity. As several participants noted, Chinese national oil companies often have overpaid for assets, thus raising the cost of any hedging thereby achieved. Although such overpayment may have been due to inexperience or incompetence, rivalry for scale and market share among the big three Chinese companies, or the luxury of the soft budget constraint created by state subsidies, such overpayment also has fed suspicions that China has a political agenda in oil. This in turn has exacerbated concerns that China has a broader status quo-challenging or aggressive agenda in foreign policy. The oil security issue also sharpens a perceived security dilemma over the South China Sea sea lanes of communication that could be summarized roughly as: In the U.S. view, the U.S. is providing the international collective good of open sea lanes and China has no legitimate need to build the full capacity needed to replace, or challenge, the U.S. in that role; in the Chinese view, it is perfectly normal for a great power to take a major role in patrolling and securing the sea lanes relatively near its coast and it is somewhat aberrational—and therefore threatening—for the U.S. to maintain such a large and dominant naval presence on China's doorstep.

Kevin J. Tu added that China's motivations might be more complex than Wolfe's account indicated. China faces risks due to instability in its oil supplier countries, including in the volatile Middle East, and Chinese foreign policy generally reflects a combination of the diverse interests typical of a developing country, a large energy-deficit economy, and a rising great military power. Costs to other states might be higher than those discussed by Wolfe as well. For example, secure Chinese access to oil means potentially greater oil consumption and resulting global environmental impact (although this would be counterbalanced if oil partly substituted for cola consumption).

Wolfe concluded that China's partly failed hedging strategy has created opportunities for the U.S. and pressures on China. The shared interests of the U.S. and other energy importing states in well-functioning and accessible global oil and energy markets create common aims and bases for cooperation in countering possibly mercantilist or otherwise political or strategic elements in Chinese behavior. China's inability to acquire the military capacity to

protect its oil supply routes (or other far-flung maritime interests) on its own also creates pressure on China for renewed military dialogue with the United States and continued acquiescence in the U.S.'s role in providing the international public good of open sea lanes of communications.

ALTERNATIVE ENERGY AND CHINA-U.S. AND U.S.-CHINA-SOUTHEAST ASIA RELATIONS

Terry Cooke argued that there are modest reasons for hope for cooperation between the U.S. and China on clean energy. While naïve and flaccid approaches to cooperation by the U.S. will fail, pure competition ill serves both states' aims and interests. Realistic and muscular cooperation, amid competition, better serves U.S. interests and can appeal to China. On the U.S. side, Washington had no meaningful policy on renewable energy generally or with respect to China during the George W. Bush administration, when the administration's focus on frictions in economic relations also contributed to a relatively zero-sum mentality in the U.S.'s approach to bilateral relations. Against the backdrop of several think tank reports, the Barack Obama administration sought a more positive sum and multi-track approach to U.S.-China relations and saw green energy and its potential economic and environmental gains as a promising part of a reorientation toward greater cooperation amid competition. The administration's initial approach faltered with China, as well as in U.S. domestic politics, because it cast the environment and green energy largely as a moral imperative. The more recent recasting of the agenda in terms of economic gains, job creation and spurring innovation to create a more competitive American economy not only made more sense in domestic politics in the aftermath of the 2010 mid-term election setback, it also brought the thinking behind U.S. policy more into line with China's.

Beijing is deaf to moral appeals on energy and the environment. China has a deeply entrenched and self-serving position that the U.S. and other rich countries had enjoyed rapid development partly by disregarding the environment and thus have no standing to demand that China undercut its growth by curbing emissions. The regime's top goal is its own survival, which it sees as depending on rapid economic growth. And it knows that it must make the most of its current "demographic sweet spot" (when the percentage of the population that is too old or too young to work is relatively low, thanks to only recently improved life expectancy and a generation of restrictive population policies). Since the early 1990s, China has become a large and growing net importer of oil. Using domestic coal brings economically costly environmental damage and, given mining conditions, can fuel social strife. Although safety concerns have not dampened China's pursuit of nuclear power, its potential contribution to satisfying Chinese demand remains very limited. Although clean energy can offer only modest supply in the near term, green energy and thus green energy cooperation with the U.S. make sense from China's perspective because green energy can support economic growth by increasing both energy resources and energy security—principally by reducing reliance on imported, and therefore potentially unreliable, sources. Green energy is part of China's "everything and" approach to energy, which in some ways resembles Obama's "all of the above" approach.

Despite the energy-related and broader foreign policy reasons for pursuing cooperation (including China's desire to be seen as a responsible stakeholder in the international system), many formidable obstacles remain to U.S.-China collaboration on clean energy. The U.S.'s market-capitalist system and China's state-capitalist systems do not mesh well in tackling many problems, including clean energy technology development. Mutual mistrust and genuinely conflicting interests characterize much of the political relationship and the upcoming U.S. election and Chinese leadership transition entail risks of increased misperception and provocation. Events and shocks often get in the way of potential collaboration: the Global Financial Crisis distracted policymakers from environmental issues and increased emphasis on growth by any means; the failure of the Copenhagen environmental conference scuttled near-term hopes for an international accord that would encourage green energy development; and recurrent frictions in U.S.-China relations generally (such as those over Tibet, arms sales to Taiwan, renminbi valuation, and sanctions on Iran) have posed chronic obstacles. Key clean energy sectors—including wind and solar—have been the loci of conflicts between China and the U.S., as well as Europe. For example, leading European companies in the wind power sector saw their market share in China plummet in favor of Chinese producers who had benefited from European cooperation and China's new WTO-noncompliant domestic content requirements. For another example, solar power has made little headway in China's domestic market even as Chinese firms have come to dominate the world market in solar panels, thanks partly to Chinese state support for producers and the U.S.'s and other developed states' subsidies to support solar panel installation. China's wind power and solar power policies have both become targets of WTO disputes targeting China.

Rozman argued that the impediments to U.S.-China cooperation are still more fundamental and intractable. Fundamentally, China's strategic thinking is based in its assessment that the international balance of power is shifting in its favor and against the United States. China's approach reflects the impact of its geopolitical calculations and a national identity laced with strident nationalism. Although the fall of Bo Xilai as a potential member of the top leadership was a setback for relative hardliners in domestic politics and foreign policy (including relations with the U.S.), his political demise did not portend an end to the influence of such views. Even if the U.S. and China can avoid mutual demonization, the two countries have genuine differences in priorities, including on matters that are related to or affect clean energy cooperation. In this context, prospects remained dim for transformative U.S.-China cooperation in a potentially sensitive issue area such as green energy.

Felix Chang assessed the question of hydropower in Southeast Asia and its implications for relations among regional states, China and the United States. The Mekong River region has vast hydropower potential. China, at the upstream end of the waterways, was the first to tap the potential through dam-building projects. Until recent years, Southeast Asian states have been relatively acquiescent or cooperative. They have been cognizant of China's much greater power. Some have welcomed Chinese capital and technology to help develop their economies, including their hydropower capacity. Some have seen lucrative export markets in China for locally produced hydropower. China's "charm offensive" and soft power agenda through much of the 1990s (including its supportive approach to the Asian Financial Crisis) helped assuage regional states' concerns about the political implications of increased economic dependence on China. Faced with the prospect of rising Chinese influence in the region (and to address substantive worries about water resource management among downstream states), the U.S. launched the Lower Mekong Initiative (LMI).

Prospects are somewhat promising for the LMI and more so for the broader U.S. strategy to counter China's growing influence in Southeast Asia through offshore balancing. First, Southeast Asian states and China face different mixes of costs and benefits—and thus have diverging interests—in regional hydropower development. Hydropower development has brought significant—and threatens to bring much larger—human and environmental costs in some parts of Southeast Asia, impeding river-based transportation, harming agriculture and fishing, displacing local communities and so on. The mix of energy gains and collateral costs looks much more favorable for China. Second, China's and Southeast Asian states' definitions of security are different and partly conflicting. For China, the primary goal is sustaining economic growth, which can be advanced by tapping regional hydropower. With China's economy facing new challenges of slowing growth, provincial leaders face mounting pressure to increase GDP which, in Yunnan, might mean an aggressive push for hydropower development. For Southeast Asian states, security means national security, which has foundations in economic development but which can be undermined by the asymmetrical dependence that comes with some forms of development, including those that increase dependence on China. Southeast Asian states' national security goals require a complex mix of energy resources to support growth, regional security arrangements to provide a favorable environment for economic development, and a non-threatening relationship with the largest regional power, China. Third, Southeast Asian states' wariness of China has spiked as Beijing has become more assertive in pressing its preferences and interests in Southeast Asia, the South China Sea and elsewhere. This has spawned greater interest among regional states in hedging by strengthening ties to Washington.

Although China's increasingly imperious attitude creates opportunities for the U.S. (as does political change in Myanmar), significant impediments to U.S. policy objectives remain. The Association of Southeast Asian Nations (ASEAN) has some potential as a foundation for collaboration, but its utility and effectiveness are limited by its fractiousness. The LMI—which includes only Thailand, Laos, Cambodia and Vietnam among the states in the region—is another far from perfect vehicle for pursuing U.S. policy goals in the region and a strategy of offshore balancing. On issues of hydropower development and its environmental and economic consequences, and on relations with China, regional states have significant differences of interest and opinion that could entangle the U.S. in divisive local disagreements over development vs. environment and other issues. Although China's standing in the region has declined recently, Washington should not be surprised if Beijing finds ways to revive its appeal to Southeast Asian states. Tu noted that China's ravenous appetite for energy and the environmental and related foreign policy costs of reliance on coal give Beijing strong reasons to tap greater hydropower resources in Southeast Asia and to find the diplomatic means to do so. Tu also cautioned against overestimating Washington's ability to navigate complex conflicts in the region and to promote regional states' unity in engaging China.

The Mekong states / hydropower issue, deLisle argued, is potentially a telling case study in China's foreign policy

behavior. More than in relations with Southeast Asia as whole (where ASEAN plays a more central role and U.S. interests in the South China Sea are well articulated), or Northeast Asia (where Japan and Korea are more formidable powers and the U.S. alliance structure is in place), South Asia (where India is an increasingly powerful actor and rival, or at least counter, to China), or Africa and the Middle East (where China gets much of its imported oil but remains a remote and limited power), China is an increasingly dominant actor in the Mekong region. In such a context, clues to the foreign policy behavior of a future, more powerful China might be especially likely to be found. The Mekong region / hydropower case study suggests that: China is subject to the laws of Newtonian politics, with its growing power and assertiveness driving weaker neighboring states to react by hedging through closer ties with the U.S.; China is prone to overplaying its hand, with arrogance toward weaker neighbors or distrust toward the U.S. leading to postures that undermine potential for cooperation; and China is not immune to the kind of miscalculations that are familiar to other states (as illustrated by Beijing's having paid a relatively high foreign policy price for weak gains in energy security in Southeast Asia).

COMPARING THE ENERGY-ENVIRONMENT-SECURITY NEXUS: SOUTH ASIA, CHINA AND THE UNITED STATES

Toufiq Siddiqi argued that India, Pakistan, China and the U.S. should be considered together in an analysis of global energy, environment and security because each is a major factor in this closely interrelated set of issues. China and the U.S. are the world's largest users of energy. Demand in China has been growing rapidly for decades and has begun to rise sharply in India and Pakistan. All four are energy-deficit states. All import significant amounts of oil and have nuclear power plants, as well as nuclear weapons.

China and the United States are the largest emitters of greenhouse gases while India is a significant and growing source. China has become the world's largest source of greenhouse gases from fossil fuel while the U.S. remains the highest per capita emitter. All three rely heavily on coal—the energy source with the largest emissions per unit of energy—for power generation. As large and developing countries with vast populations of poor people and still relatively low per capita emissions, China and India have taken similar stances that resist sharp, growth-limiting restrictions on their fossil fuel consumption. These positions, in conjunction with the U.S.'s refusal to commit to reducing its emissions unless large developing countries do so too, have stymied pursuit of an international accord on climate change. All four states do, however, have comparatively significant and growing interest and investment in renewable energy, with the U.S., India and China all ranking among the top five countries in renewable energy capacity.

All four have interlocking security interests that are rooted in energy or environment issues. Natural gas pipeline projects in southern Asia are some of the most significant examples. An Iran-Pakistan-India (IPI) pipeline suffered setbacks when India withdrew in 2009, largely because the U.S. offered India nuclear power technology instead. Iran has essentially completed its part of the pipeline to the border with Pakistan, but Pakistan has yet to do so, largely because the U.S. threatened to cut off financial assistance. Underlying the U.S. moves to scuttle the IPI was Washington's desire to deny Iran revenues from energy exports. The U.S. promoted a Turkmenistan-Afghanistan-Pakistan-India (TAPI) pipeline as an alternative to the latter two states' reliance on Iran. But TAPI is unlikely to provide a viable alternative because of vulnerability to sabotage by the Taliban or local warlords, a possibly deteriorating security situation in Afghanistan with the impending American withdrawal, and the likelihood that Turkmenistan has overcommitted natural gas exports, including to China.

The environmental problem of water shortages in South Asia poses security challenges for the four nuclear armed states as well. Among the many points of contention between long-time rivals India and Pakistan are disputes over the inadequate waters of the densely populated Indus River basin region. Construction of new projects threatens to bring further loss of arable land, lower food production and, in turn, rising unrest. Any crisis between India and Pakistan risks drawing in China (Pakistan's "all weather friend") and the United States (long an essential backer of Pakistani regimes but increasingly close to India, a fellow democracy and a state with a complex relationship with China).

Increased cooperation is essential and difficult but not impossible. All four countries can reduce their reliance on the most environmentally damaging and international security-sensitive fossil fuels. If given enough time and access to affordable and environment-friendly energy sources, China, India, Pakistan and other developing countries can find a climate treaty acceptable. Large-scale development of renewable energy resources such as

wind and solar power is already taking place in China, the United States and India—albeit still on a limited scale. Natural gas—which has increased in supply and dropped sharply in price and is less environmentally harmful than other fossil fuels—can provide a “bridge fuel,” but it should be made available at a price that does not include a large premium reflecting U.S. security concerns, which is what Pakistan faces due to U.S. opposition to Iranian gas sales. Environmentally tolerable and reasonably priced energy—and water—resources in South Asia serve international security interests. (For example, hydropower resources in Nepal could be developed more rapidly and linked to a grid that India and Pakistan could tap, thereby enhancing energy security for all three countries and regional cooperation.) Developments of this type are essential to providing the economic capacity to serve basic human needs and thereby reduce extremism and the threat to international security that it generates.

Michael Kugelman addressed additional imperatives, opportunities and challenges to the development of renewable energy resources in South Asia. India and Pakistan have substantial wind and solar power capacity. Some types of renewable energy have unique potential to serve the many millions of poor South Asians who are not connected to conventional power grids and who currently rely on inefficient and highly polluting sources of energy such as dung and wood. Progress partly depends on regional states’ policy choices and infrastructure development. In this respect, Pakistan universities’ emphasis on environmental sustainability was a positive sign, but India’s meager market for electric cars (due to unreliable power for recharging and competition with the cheap and polluting gas-powered Tata Nano) was more disheartening. The international security-based impediments to the IPI and the TAPI seemed equally daunting and likely fatal. Both would run through politically unstable regions and Pakistan’s key ally and oil source—Saudi Arabia—joined the U.S. in opposition to a project that would benefit Iran. The Pakistan part of the IPI also faced funding problems, with the U.S. and Saudis opposed and China rebuffing requests to invest.

Finally, Kugelman stressed the overlapping character of energy, environment and security concerns in South Asia: hunger for energy was helping to drive Indian and Chinese expansion and, in turn, rivalry in the India Ocean; the India-China territorial dispute over Arunachal Pradesh focused on a rare regional area with rich water resources; and the same rivers that were a focus of conflicts over water rights also were rich in hydroelectric power that could increase conflict over water resources that would become all the more valuable if their power potential were to be tapped.

THE ARCTIC: REGIONAL STATES AND RISING ASIAN INTERESTS

Sean Costigan and Erica Dingman assessed the Arctic region’s emergence as a major focus of energy, environmental and security concerns for Asian states as well as the United States and other countries bordering the northern polar region. With an estimated one-eighth of the world’s undiscovered oil reserves and nearly one-third of the world’s undiscovered natural gas reserves, the Arctic holds significant energy resources. But prospects for exploiting them are, for now, limited given the economic costs and environmental risks involved. Partly due to increased energy production and use and other sources of climate change, the Arctic’s once-frozen waters are emerging as conditionally viable sea lanes and thus a zone of growing security interests, as well as potentially more exploitable economic resources. The melting Arctic has also made it a key focal point for international environmental diplomacy.

Although the stakes are, thus, significant and rising, the risk of conflict remains low. The principal regional international organization, the Arctic Council provides a locus for stakeholders, with Arctic-bordering states being full voting members, Arctic indigenous peoples groups having full consultation rights as “permanent participants,” and several non-Arctic states—including major Asian states—and non-governmental organizations pursuing “observer” status. Its agenda is evolving from an initial focus on environmental issues and indigenous peoples’ interests to include increased attention to energy, shipping and security concerns. The Council is sufficiently robust and its scope sufficiently broad and flexible that it can help avoid or ameliorate potential conflict. But its development as an institution of regional governance is nascent and Council members are hesitant to undertake resolution of contentious issues that could spur conflict.

Asian states’ growing interests in the Arctic are a significant force for possible change. Energy-deficit Asian states, including China, India and South Korea, have growing interest in the region’s hydrocarbon resources. China’s Arctic aims are an increasingly salient factor in China-Canada relations. China’s Arctic agenda appears broad and is a part of Beijing’s wider initiative to shape international organizations (such as the Arctic Council, where China has

sought observer status), issue-centered regimes (such as the nascent climate change regime) and the international security order. Such goals likely partly explain China's commissioning of polar research icebreaking ships to establish a Chinese physical presence in this increasingly strategically important space. This move allows China to gain a foothold in a relatively non-controversial way, given the international law of the sea's relatively capacious rules for "maritime scientific research." China's Arctic policy is also entangled with more contentious issues in Beijing's foreign relations, including rights of sea lane passage (where China's restrictive views on the Taiwan Strait and the Hainan Strait must coexist with its emerging positions favoring access to Arctic sea lanes) and exploitation of offshore hydrocarbons (where China's ambivalent stance on development in the disputed South and East China Seas must coexist with its emerging positions on Arctic reserves, and where a small handful of major international firms, including those based in China and in Arctic-adjacent states, are key players in exploration and potential development of undersea energy resources globally).

DeLisle argued that China's pursuit of such goals in the Arctic will prove very difficult to reconcile with China's positions on maritime zones closer to home. Focused on the South and East China Seas issues and rooted in a fading but ongoing era of strategic weakness, China has embraced positions favoring expansive rights of coastal states to limit or exclude foreign military operations, maritime scientific research and a potentially wide range of activities that might imperil a coastal state's security interests. Although a rising China might eventually take on the more U.S.-like views of a force-projecting maritime power (and China's modest forays into the Arctic were a possible harbinger of this), such a shift was not likely to occur soon. In the meantime, China's adherence to long-held positions on matters nearer its established core interests and its own shores would hinder its legal and diplomatic efforts in the Arctic.

Costigan and Dingman stressed that China is not alone among Asian states in seeking a foothold in the region. South Korea and India have joined China in establishing their own polar research stations. South Korea seeks and India plans to seek observer status at the Arctic Council. South Korea asserts a climate change-based interest in the region. Its shipbuilders have taken a leading role in producing icebreaking ships for polar duties. And its energy companies are focused on the region's LNG potential. The rising China-India rivalry threatens to spill over to the northern polar region, with Indian sources criticizing China's assertion of strategic interests in the Arctic. Such concerns about China have been echoed and amplified by some American politicians, including Alaska's Senator Mark Begich. Worries about China's and other states' growing assertiveness in the Arctic has increased calls in the U.S. for ratification of UNCLOS to give the U.S. the full benefit of the rights available under the principal law of the sea treaty. The U.S., Russia and other states are increasing their military research and planning for the Arctic region and enhancing their search and rescue capabilities, which will become more important as human activity in the region expands. For now, however, there are no more than incipient concerns about conflict in a region where the modest scope of near-term economic potential, the dispute-mitigating potential of the existing and emerging institutional order centered on the Arctic Council, the difficulty of conducting full-fledged military operations, and the relative strength of Arctic adjacent states (and the strength of their legal claims to sovereign rights over parts of the region) combine to limit conflict among interested states generally and to constrain the influence of Asian states more specifically.

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In final comments, deLisle noted that the Arctic region issues, like the South Asia issues Siddiqi addressed, show the dense and growing connection—and the growing parity of importance—among environmental, energy and security issues. The nascent interests of Asian states in the Arctic, along with China's geographically expanding quest for energy and its geopolitical consequences, the U.S.'s long-standing and multifaceted stakes in the South China Sea, elsewhere in Asia and beyond, and the nature of energy markets and climate change underscore the globalization of what once seemed to be merely regional energy, environment and security issues. Looking ahead, Asian states' quest for energy—and clean energy and energy security—face significant and diverse challenges. These include: technical difficulties in accessing resources (tapping polar resources or developing efficient and scalable non-traditional energy sources in an era of limited or falling investments and subsidies for green power, particularly in developed states); weak legal regimes (the failure of global climate change negotiations and the absence of agreements or rules to allocate access to resources in the maritime zones of East Asia and the northern polar region); political instability or uncertainty in supplier or pipeline states (Afghanistan, Iran, Pakistan, the Arab world, and parts of Africa); and still-inadequate institutional structures for managing conflicting claims and interests (the still merely emerging capacity of the Arctic Council, the questionable prospects for the Lower Mekong

Initiative, the lack of robust regional institutions in South Asia, and the still-marginal place of clean energy cooperation in the complex and often fraught U.S.-China bilateral relationship).

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