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Schlesinger Working Group on Strategic Surprises

Climate Change and U.S. Foreign Policy: The Heat is On

SCHLESINGER WORKING GROUP REPORT, SPRING 2008

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INTRODUCTION

We have watched the time-lapse images on the nightly news depicting glaciers melting in Greenland and ice-shelf disintegration in Antarctica. Observed changes like these have not only piqued the interest of the scientific community but also, slowly over the past fifteen years or so, awareness of the potentially catastrophic impacts of global climate change has arisen within international organizations, advocacy groups, corporations, government institutions, the media, and the public. According to the *Financial Times,* "The debate on climate change has changed in character."[1] Populations in many countries are pushing for more serious action on climate change, while corporations are increasingly engaged in dialogue with policymakers on climate issues.

The November 2007 publication of the findings of the UN's Intergovernmental Panel on Climate Change's (IPCC) Synthesis Report was a watershed. The panel, drawing on more than 3,500 leading climate change scientists, found that the evidence for climate change was "unequivocal" and that human activity in burning fossil fuels was responsible. According to the IPCC, global atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial levels. The report also noted that the average global sea level has risen since 1961 at an average rate of 1.8 millimeters per year and since 1993 at 3.1 millimeters per year (whether the faster rate for 1993–2003 reflects decadal variation or an increase in the longer-term trend is unclear). IPCC scientists found that of the twelve warmest years in the instrumental record of the global surface temperature (since 1850), eleven of them occurred in the 1995–2006 period. The one hundred year linear trend (1906–2005) of 0.74 [0.56 to 0.92]°C is larger than the corresponding trend of 0.6 [0.4 to 0.8]°C (1901–2000). The study further warned that anthropogenic warming by 2 degrees Celsius above pre-industrial levels would be "irreversible" and "catastrophic."[2]

To be sure, some measure of debate persists about the merits of various climate change scenarios and about the costs of taking (or not taking) action. Nevertheless, farsighted strategic planning is never based on 100-percent certainties. Given the potential for significant climatic change, it is, at the very least, prudent for foreign policy and international security analysts to examine the possible geostrategic impacts of global warming.

This question of the potential geopolitical effects of climate change is ideally suited to the goals and procedures of the Schlesinger Working Group on Strategic Surprise. In spring 2008, the

[1] Fiona Harvey and John Aglionby, "Who Bears the Load? Bali Leaves Big Concessions Needed on Climate Change," *Financial Times,* December 17, 2007.

[2] Lenny Bernstein et al., "Climate Change 2007: Synthesis Report: Summary for Policymakers," UN Intergovernmental Panel on Climate Change, Oslo, Norway, November 2007.

THE SCHLESINGER WORKING GROUP

The Institute for the Study of Diplomacy (ISD) of Georgetown University established the Schlesinger Working Group in 1999. This program recognizes the distinguished public career of Dr. James R. Schlesinger and his remarkable contributions to national security policymaking and strategic thought. The project is based on a multi-year working group initiative with a mandate to review and assess a range of possible scenarios that contain significant potential for strategic surprises and for unanticipated outcomes. The Schlesinger Working Group relies on a permanent core membership of generalists from the policy-making and research communities and academia (see page 2) who are sometimes joined by respected authorities on specific regional or functional topics under consideration. The meetings are chaired by Schlesinger Professor of Strategic Studies Chester A. Crocker and ISD Director Professor Casimir A. Yost.

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working group held two meetings (February 25 and April 28) to explore the topic. The purpose of these meetings was not to debate or develop climate science but rather to build upon the work of other studies and examine how the asymmetrical regional impacts of melting ice caps, dwindling mountain snow pack, dramatic weather events, and shifting migration patterns may shape global political relationships and alignments. Moreover, the group focused on the possible implications of these impacts for U.S. relations with (1) allies and major partners, (2) conflict parties and weak states, and (3) international institutions. As in all working group projects, the purpose was to identify, explore, and unpack possible strategic surprises that might arise due to nonlinear change, unanticipated side-effects of current trends and policies, trend reversals/accelerations, and decision-making blind spots or cultural obstacles to receiving readily apparent signals.

RECENT STUDIES AS A FRAME OF REFERENCE

Though many studies have examined the potential effects of climate change, few have attempted to investigate its impact on U.S. foreign policy and national security. One attempt was an April 2007 report by the CNA Corporation, in which a group of senior, retired military officers found that global climate change will serve as a "threat multiplier," increasing the likelihood of massive population shifts around the world, severe water scarcity, food and energy shortages, and political instability in weak/fragile states.[3] They argued that climate change will help produce the kind of military challenges that are difficult for today's conventional forces to handle: insurgencies, war-induced humanitarian crises, and global terrorism.

The Schlesinger Working Group used as a frame of reference another attempt—a November 2007 report prepared by the Center for Strategic and International Studies (CSIS) and the Center for a New American Security (CNAS) on the security implications of future climate change. In an effort to identify and examine the complex causal chains between climate change and security consequences, the CSIS/CNAS study developed three distinct scenarios on which to base its findings: (1) *Expected* Climate Change; (2) *Severe* Climate Change, and (3) *Catastrophic* Climate Change.[4] In their November 2007 report, they argued that climate change will deepen north-south tensions; increase global migration, which will in turn produce backlash; intensify resource conflicts and vulnerabilities; shift the balance of power in unpredictable ways; multiply challenges to global governance; and increase the occurrence of state failure. The report also argued that global warming will likely usher in the renaissance of civilian nuclear power plant construction, escalating proliferation concerns. Two factors that drive the use of nuclear power are high oil prices and energy insecurity. According to this report, climate change will contribute to both. At present, a dozen countries in the Middle East and Northern Africa have sought the International Atomic Energy Agency's (IAEA) assistance in developing nuclear energy programs.[5]

To help frame the discussion, the Schlesinger Working Group concentrated on the "expected" and "severe" scenarios, the first of which falls in the middle range of the most recent IPCC report.[6]

KEY OVERARCHING OBSERVATIONS

During the first meeting, participants identified several key overarching points. First, a majority of members agreed that there are unlikely to be long-term climate "winners." Though some countries may experience short-term gains in the agricultural sector, group members agreed that all countries will endure negative impacts of global warming, including powerful nations such as the United States and Russia. Countries like these may experience improved agricultural forecasts in the short-term due to rising temperatures, but they will also endure over time the rippling direct and indirect effects of global climate change. To illus-

[3] "National Security and the Threat of Climate Change," The CNA Corporation, 2007, available at http://securityandclimate.cna.org/report/National%20Security%20and%20the%20Threat%20of%20Climate%20Change.pdf

[4] Kurt Campbell et al., *The Age of Consequences: The Foreign Policy and National Security Implications of Global Climate Change,* CSIS/CNAS, Washington, DC, November 2007.

[5] William Broad and David E. Sanger, "With Eye on Iran, Rivals Also Want Nuclear Power," *New York Times,* April 15, 2007.

[6] One participant questioned employing these scenarios, pointing out discrepancies between them and the IPCC's full range of projections. The ensuing discussion underscored the tension between the desire for plausible scenarios within a reasonable margin of error, on the one hand, and the importance of not confining the geopolitical analysis to the highest likelihood probabilities, on the other.

trate, in terms of the worst-case scenario, regional stresses due to excessive drought or extreme flooding, water and food shortages, and natural resource limits will place tremendous pressure on the political and economic stability of Latin America, Africa, Asia, and the Middle East. Rising sea levels and accentuated storm systems may threaten China's industrialized coastal regions, while poor air quality will negatively affect the quality of health for urban residents in cities such as Beijing and Guangzhou. Conditions on the Indian subcontinent, as well as in China, will be severely threatened by water scarcity and contamination: The Indus and Ganges river systems, home to hundreds of millions of farmers, depend on Himalayan glacial melt. Continued loss of the Sierra Nevada snow pack and the diminished flow of the Colorado River may lead to more severe fresh water shortages in America's west. Moreover, there is the potential for major power rivalry or even confrontation over control of natural resource exploitation and naval or maritime commercial advantage in areas of the Arctic that become newly accessible. In the Middle East, Turkey's geopolitical position will be enhanced, as it is home to the major river basins that feed the region. Humanitarian disasters in Africa, where states already struggle to deliver basic goods and services, may overwhelm institutional capacities and create wastelands, migration outflows, and havens for terrorists.

Second, group members also agreed that for all nations there is an inevitable trade-off (at least in the short-term) between the up-front economic costs of mitigation/adaptation and the environmental cost of inaction, though it is recognized that there are also economic costs of inaction. Geopolitics and economics intersect where governments make decisions (or avoid them). There are inherent links between climate change and national security. But many members argued that more research is required to delineate these links fully, especially in terms of migration scenarios and energy policy.

Third, group members agreed that global population growth combined with unprecedented levels of economic development are major factors behind the accelerating rate of environmental degradation and climate change. According to the World Bank, between 1980 and 2000 total world population grew from 4.4 billion to 6 billion. The world's population is growing by two hundred thousand people per day. By 2015, at least another billion people will be added for a total of more than seven billion, with the majority of this increase occurring among the urban middle class in the developing world. Such population growth and economic development correspond with an upward trend in the demand for food, energy, clean water, and other natural resources (especially fossil fuels). To ease the burden of this new demand, governments have had to expand industrial outputs, convert huge tracts of rain forests into farmland, and search for oil and gas in regions once left untouched by humans. Participants agreed that such an expanding human footprint will continue to place tremendous pressure on a planet already straining through over-utilization.

REGIONS AT A GLANCE

Building on the conclusions from the first discussion, during the second meeting working group members explored some concrete regional examples of potential impacts from global climate change. The two regions examined were the Arctic and China.

The Melting Arctic

Climate change has different degrees of effect in different parts of the world. According to several studies, the Arctic has been experiencing exponentially faster warming patterns than other regions of the globe. A new National Aeronautics and Space Administration (NASA)-led study found that between 2006 and 2007 the region experienced a record 23-percent loss in the extent of the Arctic's perennial sea ice.[7] Moreover, the depth and thickness of the ice continue to decline. The decomposition of the ice means that the Arctic will eventually become like the Baltic Sea, covered only by a thin layer of seasonal ice in the winter and therefore fully navigable year-round.[8] Such melting threatens both Arctic species and indigenous ways of life, contributes to rising sea levels, and has the potential to impact global weather patterns. Paradoxically, continued melting may yield access to more of the same natural resource that the IPCC believes to have precipitated it: fossil fuels. The U.S. Geological Survey

The Schlesinger Working Group extends a special thanks to those core members and guest presenters whose opening remarks laid the groundwork for the series' discussion. The group would also like to thank all guest participants who contributed both their highly relevant experience and their personal perspectives to the overall discussion. Finally, the group would like to acknowledge the assistance of John Florio in the preparation of this report.

Core members of the Schlesinger Working Group were not asked to approve this Report. The Report, however, relies heavily on the discussions of the group. As such, this document reflects the general ideas of working group members, but is not a consensus document and cannot be ascribed to any individual member.

[7] NASA, "NASA Examines Arctic Sea Ice Changes Leading to Record Low in 2007," October 2007, available at http://www.nasa.gov/vision/earth/lookingatearth/quikscat-20071001.html

[8] Scott Borgerson, "Arctic Meltdown: The Economic and Security Implications of Global Warming," *Foreign Affairs,* vol. 87, no. 2 (March/April 2008).

and the Norwegian company StatoilHydro estimate that the Arctic holds as much as one-quarter of the world's remaining undiscovered oil and gas deposits. With the depletion of perennial Arctic sea ice, new strategic shipping routes will also become readily available. Beneficial trans-Arctic shipping would lower costs and reduce the need for sailing through unstable choke-points such as the Strait of Malacca or the pirate-infested waters of the South China Sea. Similarly, mega-ships that are unable to fit through the Suez and Panama canals would also be able to pass through the Arctic with great ease, further reducing shipping costs but also raising the spectre of mega-environmental disaster along the same lines as the 1989 Exxon Valdez oil spill.

Group members argued that perhaps the greatest geopolitical concern is how to create a governance structure or regime to manage access to the region's untold resources and create fair standards for shipping royalties among countries with Arctic coastlines.

To fully understand the growing geopolitical stakes in the Arctic, participants discussed the argument of Scott Borgerson[9] on the need to alter one's world view from the traditional Mercator projection, where the region is portrayed as far removed from traditional high politics, to an asymmetrical equal-area projection where one sees the Arctic Ocean as the nexus of five powers (United States, Russia, Canada, Denmark, and Norway). The potential for untold access to oil and gas has also attracted attention from energy-seeking newcomers such as China. Combined with the melting of Arctic ice, an ever-increasing demand for fossil fuels has instigated a new scramble over maritime boundaries and subsea (ocean floor) resources. Russia has already submitted a claim to the United Nations (UN) for 460,000 square miles of resource-rich Arctic seabed. Though the UN rejected its claim, the Kremlin sent submarines this past August to plant a flag on the North Pole's sea floor. While such fifteenth-century gesturing has no significance in modern-day international law, it provoked a strong backlash from other Arctic powers. For example, the Canadians have approved funding for Arctic naval patrol vessels, a new deep-water port, and a cold-weather training center.

Group members argued that perhaps the greatest geopolitical concern is how to create a governance structure or regime to manage access to the region's untold resources and create fair standards for shipping royalties among countries with Arctic coastlines. They debated whether such a structure can be created at the national, regional, or multinational level (or some combination of all three). Members envisioned that basic standards of safety and building rights for drilling platforms would be best managed at the national level. In terms of regional structures, many agreed that there is a strong possibility that Canada, the United States and the European Union (EU) may combine in creating a governance regime that could balance the assertive Russian claims in the Arctic. This, however, is impeded by a basic difference between the United States and Canada over the latter's assertion that the Northwest Passage traverses Canadian waters and not the high seas, a point that creates significant concerns for U.S. naval planners. The political and strategic differences between these close allies and neighbors will need to be addressed if there is to be a common approach on the broader issues mentioned above. At the multinational level, group members for the most part agreed that the UN Convention on the Law of the Sea (UNCLOS)[10] provides a strong foundation for an Arctic governance structure.

Working group members, however, also noted that some experts believe the regime created under UNCLOS was not designed to deal with a rapidly melting Arctic or to mitigate political disagreements over Arctic resources and shipping lanes. Some experts believe that while UNCLOS provides an elegant foundation, reforms are needed to formulate overarching political and legal structures that can permit the orderly development of the region. For example, UNCLOS, as it stands, may actually encourage a degree of volatility in the next decade, because signatories have only seven years to make sovereign claims under its purview. Moreover, the cumbersome UN Commission on the Limits of the Continental Shelf, established for reviewing claims to the continental shelf, is probably not able to reach conclusions before unilateral action takes on a life of its own.

Still, these participants remained convinced of the importance of the U.S.'s signing on to UNCLOS. They argued that, by ratifying the treaty, the United States would be in a better position to assert and defend its interests and have a seat at the table. Furthermore, the U.S. Navy has a particular stake in this in terms of certain principles, such as the adherence to freedom of navigation. If the United States were to compromise on this issue, Iran would most certainly assert itself

[9] Ibid.

[10] The UN Convention on the Law of the Sea is the leading international treaty on maritime rights.

in the Strait of Hormuz. Moreover, U.S. private interests would also benefit if UNCLOS were able to create a stable business environment.

Despite these major geopolitical considerations, the United States remains largely on the sidelines, for a myriad of reasons. First, the American navy's icebreaker fleet consists of one seaworthy vessel, which severely limits the U.S.'s ability to project a naval presence, support sovereignty claims, and deal with environmental disasters that may occur in the region (for example, oil spills). Second, the United States is not yet a signatory to UNCLOS, which entered into force in 1994. Hence, the United States has no ability formally to assert any rights to the resources and continental shelf off Alaska's northern coast beyond the two hundred nautical miles of its exclusive economic zone (EEZ).

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Overall, members agreed that America's general disinterest in the Arctic is perhaps the U.S.'s greatest weakness. Such ambivalence impedes our ability to work both bilaterally with our key allies (Canada and the European Union), and greatly enhances Russia's ability to project its influence in the region. Furthermore, it impairs the U.S.'s ability to react and respond accordingly in the event of an Arctic-based catastrophe or a strategic surprise.

ARCTIC SURPRISE SCENARIOS

Participants enumerated four possible Arctic strategic surprises:

Scenario 1: An ice free Arctic summer by 2013
Should more advanced climate prediction models[11] prove to be accurate, the Arctic may be ice free during the summers five years from now. Participants noted that such an occurrence, combined with continued high demand and prices for energy, could lead to a heightened race for control of and access to Arctic resources both in the forms of fossil fuels and more cost-efficient shipping lanes. Such an accelerated melt would also place tremendous pressure on the already overburdened UN Commission on the Limits of the Continental Shelf. Given the U.S.'s laggard position in terms of UNCLOS and its depleted icebreaker fleet, members warned that America may be left out in the proverbial cold, with no ability to claim territory beyond its EEZ.

Scenario 2: Greater oil and gas reserves found—enhancing anarchy
Should current estimates of the potential oil and gas reserves prove to be extremely low, the stakes of the competition will be elevated to levels that may threaten greater regional volatility. Such a scenario of instability would only be enhanced without a functioning governance regime to manage competing sovereignty claims. Without regulations to manage the harvesting of resources, there is also an increased threat of environmental degradation in a time when Arctic species and the indigenous peoples who live amongst them are already struggling to survive.

Scenario 3: There is an incident (terrorism, political instability, or natural disaster) in other strategic shipping routes, pushing activity toward the Arctic
If an event occurred causing the closure of key shipping routes such as the Panama or Suez canals, the market would drive investment toward improving the possibility of trans-Arctic shipping, participants argued. Given the U.S.'s disadvantages in terms of its dilapidated icebreaker fleet, combined with major lag times (up to five years) in America's ability to build new ships due to complicated permit systems, U.S. commerce might become totally reliant on foreign fleets and subject to higher transport fees.

Scenario 4: Russia becomes the unipolar naval force in the Arctic
It is clear from the map that Moscow has a tremendous stake in the Arctic. Former Russian President and current Prime Minister Vladimir Putin has already described the urgent need for Russia to secure its "strategic, economic, scientific, and defense interests" in the Arctic. Should diplomatic distraction or policy gridlock prevent the United States and other powers from balancing Russia's force projection, then the region risks being dominated by the Kremlin.

China—Asphyxiating on Growth

Moving from a region that is largely ignored by U.S. foreign policy makers, participants next focused on China, a country that occupies a primary place on the American geopolitical radar screen. Members noted that emerging markets are the fastest-growing source of greenhouse gas emissions. According to the World Bank, sixteen

[11] Unlike previous estimates, these models take into account the forces of Arctic oscillation, oceanic warm water intrusion, and incident solar radiation.

of the world's twenty most polluted cities are in China, which has most likely surpassed the United States as the largest source of CO_2 emissions. Expanding car ownership, heavy traffic, and low-grade gasoline have made autos the leading source of air pollution in major Chinese cities. Another culprit is coal, on which China relies for about two-thirds of its electric-power generation needs. China has abundant supplies of coal and already burns more of it than the United States, Europe, and Japan combined. According to John Ashton, the top climate change official at the UK's (United Kingdom) Foreign Office, China is now building about two power stations every week. Furthermore, many of China's newest coal-fired power plants and industrial furnaces operate inefficiently and use pollution controls considered inadequate in the West. Complicating matters further, China's growth is anchored in the production of energy-intensive materials such as steel, cement, and chemicals. Such inefficient use of energy continues to be encouraged through government subsidies that sponsor massive, wasteful, state-owned firms.

Several members argued that Chinese leaders are trapped in the unanticipated consequences of exponential growth.

For the Communist Party, the political calculus is daunting. Reining in economic growth to alleviate pollution and environmental degradation may seem logical, but the country's authoritarian system is addicted to fast growth, and its burgeoning middle class is quickly becoming keen on consumption. Delivering prosperity placates the public, provides spoils for well-connected officials, and forestalls demands for political change. A major slowdown could incite social unrest, alienate business interests, and threaten the Communist Party's rule. Nevertheless, pressure is mounting for China to change course.

Working group members argued that the strongest pressure is domestic in nature and stems from the grassroots level. Environmental nongovernmental organizations (NGOs) are at the forefront of strengthening civil society in China, drawing hundreds of thousands of Chinese citizens into environmental activities, forging nonstate linkages across provincial boundaries, and establishing the Chinese people as political actors independent of state-directed policies.[12] Participants also noted that there is concern at the international level. In August, China will host the 2008 Summer Olympics in Beijing. Though many government officials believe this event will be a coming-out party for modern China, others worry that the games will also showcase China's many challenges, including asphyxiating pollution. Many analysts believe that Communist Party officials will eventually have to choose between the current growth model and the quality of China's air and water. Whatever decision they make, the effects will have tremendous geopolitical consequences for the United States and the rest of the globe.

There was a discussion among participants regarding the time frame for when China would come to terms with this choice. Several members argued that Chinese leaders are trapped in the unanticipated consequences of exponential growth. One case in point is the country's controversial Three Gorges Dam Project. Originally built to control the Yangtze's regular flooding, produce electricity to fuel China's booming economy, and (not incidentally) serve as a symbol of the nation's emerging engineering prowess, the project has faced a host of problems. An estimated 1.4 million residents have been displaced by the 640-kilometer-long reservoir forming behind it, and the water quality of the Yangtze's tributaries is deteriorating rapidly, as the dammed river is less able to disperse pollutants effectively. Domestic backlash against the dam resulted in a June 2007 announcement by Chinese Premier Wen Jiabao that solving environmental problems surrounding the controversial dam project should be a priority for the country.

Despite official rhetoric that recognizes the environmental issues related to unencumbered growth, most group members agreed that the trade-offs involved in addressing them have proven too costly and will remain so for some time. These members also pointed to the argument made by Chinese policymakers that states that developing countries should not be penalized for the environmental mistakes of the West. They also argued that the per capita demand for goods and energy in China remains much less than that of the United States. Moreover, group members pointed out that even if the government did get the message and started implementing effective policies to address environmental concerns, the reach of such mandates would be limited. The writ of the central government in provinces like Guangdong is considerably less dominant than is appreciated by many western policymakers.

[12] Elizabeth Economy, "China's Environmental Movement," testimony before the Congressional-Executive Commission on China, *Roundtable on Environmental NGOs in China: Encouraging Action and Addressing Public Grievances,* 109th Cong., 1st sess., February 7, 2005.

Still, other participants suggested that though China and the United States have edged closer to what energy analyst Joe Romm titles "a mutual suicide pact"—in terms of both governments' continued refusal to take serious action to curb emissions and increase energy efficiency— the fragility of China's society may cause it to blink first. These members pointed to the fact that China's population of 1.3 billion lives on one-third of the arable land available in the United States. Moreover, what limited arable land China possesses is now threatened by global warming that may cause Himalayan glacial melt, resulting in short-term regional flooding and in long-term depletion of water runoff that feeds China's rivers and irrigation systems. The potential for environmental catastrophe, especially in terms of food supply, is real. Water scarcity, combined with high levels of water contamination as a result of unrestricted economic growth, may push China to a tipping point—that is, toward the national securitization of climate issues. These members believe that such vulnerabilities will eventually force the Chinese government to work with other nations at both the multilateral and bilateral levels.

[S]hould global climate change severely impact China, it may trigger unpredictable domestic political change and a sharp shift in the growth and stability trajectory that is conventionally assumed for China.

Participants discussed whether China would look to the United States, the European Union, or Japan for models of environmental governance and for mitigation and adaptation assistance. Some members argued that China may turn to the European Union, believing it has better credentials in these areas. They also suggested that Japan has much to offer in terms of environmental issues, arguing that Tokyo has a greater stake in China's environmental health and would like to take the lead on environmental issues in Asia. A few members argued that the Chinese would not turn to the United States, believing that America has no credentials for leadership in this regard. Others suggested that such a situation would present an opportunity for both countries to break their "suicide pact" and work together to invest in the ingenuity required to adapt to global warming and mitigate climate change surprises.

Possible changes in U.S. domestic policy across three dimensions will heavily influence the ability of the United States to take an international leadership role on climate change. At the federal level, Congress is now working through many new pieces of legislation addressing climate change, energy policy, and climate adaptation. At the state level, initiatives such as California's commitment to a cap-and-trade system for carbon emissions can also help drive national policies. In addition, the 2008 presidential election may prove to be a watershed event, as presidential candidates in both parties have voiced support— in one form or another—for policies that could be more proactive on climate issues than the Bush administration has been. Thus, it is possible that we will see a significant shift in the U.S.'s stance on global climate issues, thereby increasing the potential for working with the Chinese to address the effects of global warming.

CHINA SURPRISE SCENARIOS

Having examined the implications of climate change and environmental degradation in China, participants listed two possible scenarios that may occur.

Scenario 1: A green dragon

If the emerging middleclass states of Asia (especially China) are convinced to balance demand growth against environmental concerns, then there may be a chance to mitigate global warming impacts and drive a new green market model. Under this scenario, China could produce a strategic surprise by taking the lead in driving a green revolution.

Surprise 2: Past the point of no return

If the planet has in fact passed a point at which the human ability to mitigate climate change has lapsed, there may be tremendous geostrategic consequences even with a meaningful Chinese response to the climate change challenge. As the CSIS and CNAS report describes, the expected climate change model cannot be reversed. Though the scope of the crisis could become less severe under the assumption of a concerted and sustained policy response, with this scenario there will likely be balance of power shifts, climate-induced migration, and concerns over energy security. Above all, should global climate change severely impact China, it may trigger unpredictable domestic political change and a sharp shift in the growth and stability trajectory that is conventionally assumed for China.

FUNCTIONAL IMPLICATIONS OF CLIMATE CHANGE

During the second meeting, participants also examined the impact of climate change in terms of migration, energy, and natural shocks.

Migration

Group members argued that migration occurs as a result of many factors. According to the UN

Population Division, in 2005, 191 million people, representing 3 percent of the world's population, were living outside their countries of origin—a significant shift compared to 75 million in 1960. Participants agreed this trend is likely to continue and accelerate as more people are forced to move to adapt to climate change.The official British *Stern Review* cites an estimate that by the middle of the century, two hundred million people may become permanently displaced "climate refugees," due to rising sea levels, heavier floods, and more intense droughts.[13] Some participants argued that this figure was too low. Others cautioned that there has been remarkably little focus on potential migration effects from global climate change. Specifically, these members believed that this was partially due to the methodological problems of distinguishing drivers and causes. Because the historical record of migration patterns does not allow for enough certainty, participants favored prudent predictions over alarmist forecasts, especially because migration is viewed as an intermediary variable between climate and security issues.

Because the historical record of migration patterns does not allow for enough certainty, participants favored prudent predictions over alarmist forecasts, especially because migration is viewed as an intermediary variable between climate and security issues.

When discussing migration induced by climate change, a migration expert underscored the importance of considering the issue from two different dimensions. First, climate change will directly lead to migration in the event of the occurrence of natural disasters, as witnessed in the aftermath of Hurricane Katrina in 2005 and the Indian Ocean tsunami in 2004. Such instances of migration are immediate, and they subside in the short-term. Second, climate change will also have an indirect impact. Group members agreed that it is the indirect link that will be most important. Drought, desertification, or rising sea levels may not necessarily cause people to move spontaneously in one major event, but disruption in livelihoods and food shortages will certainly drive large numbers to migrate. Migration will also emerge where climate change causes conflict over resources. Indirect migration will generally occur over the long-term as migrants search out new lands in pursuit of viable opportunities. Participants agreed that the indirect links will be most severe in the developing world, where even a relatively small climatic shift can trigger or exacerbate food shortages, water scarcity, disease spread, natural resource competition, and eventually human migration.

There is resistance in the expert community to the concept of "climate refugees" to define environmental migrants. "Refugee" is a term with a specific set of criteria and legal considerations. Several participants argued that only a small portion of climate change-induced migrants would meet the criteria necessary to be considered refugees. Because the effects of climate change will take place over the long-term, migration will be more planned at the individual level as a result of rational decisions on the micro-economic level, with local governments serving as key players in helping citizens to cope with the implications. Others believed that using "refugee" terminology offers value in that it evokes emotion, thereby attracting the attention of policymakers.

Group members agreed that there were many security implications surrounding climate change-induced migration. First, there is a great risk for destabilization in countries that fail to anticipate migration flows or that force movements of local populations without properly consulting or assisting them. Here members pointed to countries such as Bangladesh and China (ranked seventh and first for having the largest populations that live along low-lying coastlines). Should sea levels rise to heights that threaten coastal communities, both nations will need to have a plan for the orderly movement of citizens to safer locations. Second, there is also a tremendous risk for the destabilization of neighboring countries that receive large numbers of migrants. For example, stability in Russia's Far East could be threatened by China's need to resettle many migrants from its flooding southern coasts. A small Russian population in that region might have substantial difficulty in preventing China from asserting control over much of Siberia. Third, increased long-term migration from less developed countries to more developed nations may result in heightened levels of friction between native and immigrant populations. It may also encourage an overall shift in government policies. For example, the geopolitical complications of a large influx of Middle Eastern and African refugees in Europe, as well as Hispanics into the United States, could create a sharply heightened social backlash and cause dramatic shifts in the policies of allied nations.

Several members argued that it is also important to discuss the positive geopolitical implica-

[13] Nicholas Stern, *Stern Review Report on the Economics of Climate Change* (2006), HM Treasury Department, available at http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm.

tions of migration. Remittances from migration now exceed $250 billion per year. In many countries, remittances far exceed foreign aid donations. These participants also argued that the supply of and demand for labor in different regions will play a major role in influencing where climate migrants relocate. In the end, participants agreed that migration has always been and will continue to be a form of adaptation to climate change and that it would be in the interest of governments to incorporate plans for receiving migrants as part of their national climate adaptation plans.

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MIGRATION SURPRISE SCENARIOS

Surprise 1: Transnational threats and migration

In the event of an emergency evacuation caused by a natural shock, there would be an increased likelihood of the spread of transnational threats, ranging from global health epidemics to international criminal networks trafficking in both persons and other black market goods. Such threats typically affect the most vulnerable members of society, and group members agreed there is no multinational infrastructure to deal effectively with them.

Surprise 2: Hollow states

In the event that long-term, climate-induced migration results in the hollowing out of weak states, for example Chad or Mali, there is a chance for increased regional instability. Long-term migration of skilled laborers and leaders, otherwise known as the "brain drain," deprives already fragile states of the very resource they require the most. Such nations risk the complete erosion of government institutions that are required to deliver basic public goods and services.

Energy

Given the major technological and political uncertainties related to the question of alternative energy supplies and the inherent complexity of the topic, participants generally agreed that the demand side of the energy equation warrants more attention than it gets. Convincing publics to reduce their energy consumption, as well as increasing energy efficiency in products and industry standards, would go further toward reducing carbon emissions than solely focusing policy on shifting to alternative sources of energy. However, several participants also recognized the enormous political will that would be required to pursue aggressive, demand-side energy policies. Though the domestic public debate points to a fundamental change toward accepting that climate change is a serious matter, the political dialogue and political will for action remain nascent at best.

ENERGY SURPRISE SCENARIOS

Surprise 1: A global green revolution

A strategic surprise would occur if wealthy consumers sharply curtail demand for energy, making possible a significant mitigation of the effects of global climate change. This scenario would have the potential to drive a new market, as these consumers will invest in green technologies and energy-efficient industries.

Surprise 2: Collapse in oil prices

If surprise 1 should occur, the group noted that this scenario would have potentially significant destabilizing effects on various leading hydrocarbon energy exporters—for example, heavily populated states highly dependent on energy production to fuel their economies (such as Algeria, Russia, Iran, Venezuela, and Nigeria). The effects on sparsely populated oil states could also be profound.

Severe Weather Events and Natural Shocks

An environmental historian in the group underscored the sometimes lasting political and geopolitical effects of natural disasters and epidemics. The way governments manage or fail to manage such happenings can shape their fate. Natural shocks such as Hurricane Katrina, which struck the U.S. Gulf Coast in August 2005, Cyclone Nargis, which struck Burma one week after the April 28th meeting of this working group, and most recently the 7.9-magnitude earthquake in the Chinese city of Chengdu are obvious cases in point. The consequences of events like these put tremendous pressure not only on the surviving residents who have to rebuild their lives but also on the governments that have a small window of opportunity to respond in order to avoid further devastation as a result of disease, dehydration, and starvation. Participants agreed that resilience to such natural shocks varies from country to country, with the most obvious vulnerabilities being present in the developing world. For example, the lack of durable infrastructure in Burma beyond Rangoon, combined with the military junta's initial refusal to allow international assistance, has magnified the severe levels of devastation in the aftermath of Cyclone Nargis.

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Beyond the risks of unimaginable human casualties, there are potentially significant political and geopolitical consequences. The flood of refugees from Burma to surrounding countries risks destabilizing the region. The spread of infectious diseases from the Irrawaddy delta to other heavily populated areas in the bordering states may also lead to a regional pandemic. The Burmese junta's initial refusal to permit international assistance may prove costly to the regime's survival as citizens' desperation mounts. Rejecting offers of international relief is politically risky. It threatens to fuel popular anger-even among erstwhile regime supporters and the security forces. A scenario of state collapse cannot be ruled out in such cases.

The unpredictable nature of natural shocks such as hurricanes, cyclones, earthquakes, and volcanic eruptions should receive greater attention from U.S. policymakers. With Hurricane Katrina proving that even the richest countries will have difficulties responding without proper institutional coordination, participants agreed that more work is needed at both the national and international level to build institutional strategies to coordinate and improve resilience measures in all parts of the world, with special attention to low-lying coastal areas, river deltas, and other severe-weather-prone localities. Studies and experience have shown that due to globalization, the problems of weak states are not confined within their borders. The successful international response to the Indian Ocean tsunami provides a wealth of information on how to build cooperation in preparation for the inevitable occurrence of the next natural disaster. Furthermore, Burma's experience may convince similar regimes that they, too, have a stake in international efforts to build resiliency.

NATURAL SHOCKS STRATEGIC SURPRISE

Surprise 1: Nature impacts politics

Group members agreed that severe weather events and other natural shocks are surprises in and of themselves. They argued, however, that the degree of political impact in the aftermath of such events is often the greatest surprise. The impact can be either positive or negative. In the aftermath of Katrina, the Republican Party (which controlled both Houses of Congress) suffered a major defeat in the elections that followed. On the other hand, analysts argue that the 2004 Indian Ocean tsunami helped trigger the Aceh peace agreement between the government of Indonesia and the Free Aceh Movement (Gam). It remains to be seen what the exact political ramifications of Cyclone Nargis in Burma and the earthquake in Chengdu, China, will be.

IMPLICATIONS FOR U.S. POLICY

After a careful review of the various regional and functional impacts from climate change, group members explored what the implications would be for U.S. foreign policy. Members agreed that should the United States decide to take a leadership role to address climate change, there are several options policymakers can pursue. There was little support for the United States to approach the problem from the unilateral perspective. Rather, group members discussed the pros and cons for U.S. policymakers of addressing climate change by working (1) with our closest allies, (2) with other major carbon emitters, or (3) at the multilateral level. Because all members agreed that there will be no clear climate change "winners," most argued that it is imperative that U.S. policymakers work together with their counterparts in other countries to find ways to help mitigate and adapt to climate change. They agreed that any viable solution to the challenge of global warming rests on the ability of the international community-particularly the United States, China, India, the European Union, Russia, Brazil, Japan, and Indonesia-to engage each other to combine their strengths, experiences, and perspectives into a post-Kyoto framework.

TECHNOLOGY SHARING AND ASSISTANCE PROGRAMS

Group members agreed that, although the scope of the crisis could become less severe under the assumption of a concerted and sustained policy of mitigation, there will inevitably be shifts in the balance of power, climate-induced migration, energy concerns and—above all—uneven effects on the stability, growth, and power of individual nations and groups of states. Thus, policies that encourage innovation and technology sharing will be critical for the United States and other countries in order to adapt to the unavoidable consequences of climate change.

Concern for energy security may raise the prospects of a bilateral breakthrough between China and the United States. Both countries have much to offer in the way of advanced technology to increase energy efficiency, combat global health pandemics, and provide aid to other nations less equipped to deal with the potentially devastating and irreversible effects of global warming. Participants noted that technology

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sharing will be paramount in this effort and that the United States should continue to have a dialogue with China and India to improve protection of and respect for intellectual property rights, which are critical to motivating the private market to invest in such innovations.

In the end, the problem remains how to provide leadership for collective action when there is a tendency for states to pursue their own interests rather than to recognize the advantages of working together. ■

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Climate Change and U.S. Foreign Policy: The Heat Is On

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