# Green Dragons

## The Politics of Climate Change in Asia

A Report of the CSIS Asian Regionalism Initiative


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Charles W. Freeman III
Amy E. Searight

AUTHORS
Kiyoaki Aburaki
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Zhu Feng
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Center for Strategic and International Studies
1800 K Street, N.W., Washington, D.C. 20006
Tel: (202) 775-3119
Fax: (202) 775-3199
Web: www.csis.org

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# 1 INTRODUCTION

## NAVIGATING THE DOMESTIC POLITICS OF CLIMATE CHANGE IN ASIA

Charles W. Freeman III, Michael J. Green, and Amy E. Searight

*Politics is the art of postponing decisions until they are no longer relevant.*
—Henri Queuille

The negotiations held under the United Nations Framework Convention on Climate Change (UNFCCC) in Copenhagen in December 2009 fell well short of global expectations. The stormy negotiations turned into a series of high-stakes political showdowns between major global actors, with an end-game effort to "salvage" a deal at a closed-door meeting among the leaders of the United States, China, India, Brazil, and South Africa.[1] In the end, the negotiations failed to produce a new international treaty with binding targets for greenhouse gas (GHG) emissions, although they did produce a nonbinding accord that lays out an aspirational goal of limiting global warming to 2 degrees Celsius. Still, the Copenhagen Accord does not specify global targets or define the national actions that would be needed to achieve this goal. Instead, nations are asked to make voluntary pledges on actions they plan to take to reduce GHG emissions.

Unlike other multilateral negotiating frameworks, such as the negotiations that led to the establishment of the World Trade Organization, the UNFCCC framework does not offer individual countries a clear opportunity to serve discrete national interests by making concessions in order to gain a broader package of material benefits that will be realized in the near term. Rather, the UNFCCC process is intended to reach an agreement in which near-term national interests are set aside in the interest of future generations of the world as a whole. Concluding a successful UNFCCC process would therefore require the leaderships of participating countries to exercise considerable political courage.

Indeed, the result of the Copenhagen Conference on Climate Change seems to have its roots less in the science of climate change or in disagreements over appropriate methodologies to reduce global GHG emissions and more in a highly complex interplay of domestic politics carried out on a global stage. The inability of countries to resolve the most contentious issues pertaining to global action on climate change raises the question of whether the UNFCCC framework will work as the main negotiating forum for achieving further progress on mitigating global climate

This introduction is a summary of chapter 2 in *Asia's Response to Climate Change and Natural Disasters: Implications for an Evolving Regional Architecture,* ed. Robert S. Wang and Jeffrey D. Bean (Washington, D.C.: CSIS, 2010).

1. Sarah O. Ladislaw, "Post-Copenhagen Pathways," available at http://www.csis.org/energy.

change. Whether or not other frameworks at the regional or global level may be better suited to forge consensuses on key issues, such as emissions targets and an equitable distribution of obligations among countries, ultimately the success of any of these frameworks depends on the domestic politics surrounding climate change issues in key participating countries.

The chapters that follow address the climate change debates in seven key countries in the Asia-Pacific region—Australia, China, India, Indonesia, Japan, South Korea, and the United States. These countries collectively represent more than 50 percent of global GHG emissions and, with one exception, are members of all relevant framework discussions on climate change.[2] Therefore, reaching a consensus among these countries will be crucial to achieving progress on climate change action at the global and regional levels. Yet these players have taken strikingly different positions on international climate change issues. As a general matter, the sources of national variation among these players can be broken down into 12 broad areas.

1. *Developed versus developing economies*. The most-discussed variation among participating nations is over the responsibility of developing countries to mitigate GHG emissions on the same scale as developed countries that have been the historical source of most atmospheric carbon. China and India have taken the lead in defending the principle of differential obligations for developing countries, and the United States has been the advocate for imposing shared and equal obligations. Yet variation between countries on either side of this traditional cleavage is also striking—and growing. South Korea and Indonesia demonstrate that some developing and emerging economies outside the original Kyoto Protocol framework may seek to defy expectations and play leading roles in global efforts to mitigate climate change. Among the developed economies, the political dynamics in Japan and Australia have been more supportive of aggressive climate change policies than those in United States, although these two governments' abilities to implement their proposed policies remain in question.
2. *Large-scale versus lesser GHG emitters.* The ability of smaller countries or those that have already significantly reduced their overall emissions to dramatically affect overall global emissions by reducing their own output is limited, and therefore political support for domestic emissions reduction is somewhat captive to the commitment to reduce GHG output by larger-scale emitters. An example of this point is Japanese prime minister Yukio Hatoyama's conditioning of his own ambitious GHG reduction targets on the efforts of the major emitters.
3. *Strength of political leadership.* The personal involvement and commitment of top political leaders has been a driving force in shaping forward-leaning policies on climate change. Thus, leaders in South Korea and Indonesia have each played a central role in shaping domestic debates, by defining the issue in particular ways and placing climate change policies and ambitious targets at the tops of their political agendas. In 2008 and 2009, newly elected leaders in Australia, the United States, and Japan have also given a push to climate change issues and moved the agenda forward, but their efforts have floundered as the leaders' own political positions have weakened.
4. *Strength of domestic public support for action on climate change.* Cross-national polls have shown strong global levels of support for action on climate change, with a surprisingly small

2. Indonesia is not a member of the Asia-Pacific Partnership on Clean Development and Climate. All seven countries are members of the Major Emitters Forum, the Group of Twenty, and the Asia-Pacific Economic Cooperation forum.

variation across developing and developed countries (with one outlier, the United States, where the public has ranked climate change policies well below other national priorities in some national polls).[3] The Asia-Pacific nations poll the highest level of support for climate change actions. However, the significance of these polls should be somewhat discounted, perhaps, when they are considered against the relative lack of willingness of the public in all these countries to pay more in order to reduce GHG emissions.

5. *Skepticism about the science of climate change.* Outside the United States, skepticism about the science of climate change has not been a significant factor shaping policy. However, in the wake of "Climategate," in which e-mails from leading researchers on climate change suggested an effort to exaggerate its dangers, public skepticism about the scientific consensus spiked in Australia as well as in the United States.

6. *Economic linkages—"green growth" versus costs.* The way climate change policy issues are framed, by both advocates and opponents, can have a decisive impact on the way they are viewed by domestic publics. Framing the issues in purely environmental terms often fails to resonate with broader publics, aside from those who are already committed to environmental causes. Activist governments and other proponents have thus sought to create linkages between climate change and economic growth—for instance, by promoting green-technology development as a national economic strategy and linking that strategy to other issues, such as national security and international prestige. Conversely, opponents have sought to define climate change policy issues in terms of their economic costs and negative impact on growth.

7. *Opportunities for international prestige as a domestic political priority.* The Asia-Pacific cases in this report offer striking examples of how international considerations can outweigh purely domestic concerns in shaping climate change debates and policy choices. Two countries in particular, Indonesia and South Korea, defined their interests to a large degree in response to opportunities at the international level. Japanese leaders have also sought to enhance their nation's image by putting forward bold targets for GHG emissions. Similarly, the Barack Obama administration has sought to use climate change policies to improve America's image abroad, but it has been hampered by a lack of congressional support.

8. *Impact of the business community.* The business communities in these Asia-Pacific countries are active participants in debates over climate change policy. In most cases, they are the most active and vocal opponents of legislation to curb GHG emissions, although a growing number of green-technology industries and financial-sector interests in some countries balance against other industrial interests in support of aggressive climate change policies and carbon trading programs. The impact of the business community thus varies depending on how well organized and unified it is in defining business interests.

9. *Role of civil society and environmentally focused nongovernmental organizations.* Environmentally focused nongovernmental organizations are active participants in the climate change debate in most of the key Asia Pacific countries. They are especially influential and media-savvy in the United States and Australia, but they also have a strong voice in South Korea, Japan, and Indonesia. In the United States, environmental groups play varying roles in support of climate mitigation policies, with some focusing on clean energy technology and energy efficiency and others on the conservation of natural lands and deforestation.

3. Pew Research Center for People and the Press, "Economy, Jobs, Trump All Other Priorities in 2009," January 22, 2009, available at http://www.people-press.org.

10. *Ecological and strategic factors.* The Asia-Pacific region as a whole is highly vulnerable to the ecological effects of climate change, and it is second only to Africa in the predicted negative impact. Some countries, like Australia, are already experiencing significant ecological ill effects attributed to climate change, which is increasing the urgency of efforts in these countries to find near-term solutions.
11. *Stable energy supply.* Countries with stable supplies of fossil-based energy are less likely to push for aggressive climate change actions. By contrast, energy disruptions and price spikes help push governments toward energy conservation and developing renewable energy resources.
12. *Central-local government relations.* The relationship between central and state/provincial or local governments often creates political obstacles to enacting or implementing effective climate change policies.

As is suggested by this brief review of 12 key areas accounting for the very different positions taken by the Asia-Pacific nations on climate change issues, the politics of climate change in Asia are as wide-ranging and varied as the region's economic, political, and social diversity. These political differences raise significant obstacles to serious collaboration on climate protection. And yet some commonalities and shared approaches, and a few underappreciated and particularly important factors, shape the political dynamics of climate change in the region. Four key findings of the following chapters suggest that there is at least some hope for a pathway forward, but they also highlight the challenges.

- *Strong public support for climate change policy in the Asia-Pacific region*. Publics in all seven countries show high levels of concern about the impact of global warming and would like their governments to take stronger measures to address the issue. This may in part be due to the shared ecological vulnerability of these Asia-Pacific states to climate change. Public support is especially high in Australia, China, South Korea, and Japan. Public opinion in the United States and India lags behind the support shown in other countries, with lower levels of acceptance of the scientific consensus on climate change and smaller majorities supporting costly actions. But even in these two countries, sizable majorities want their governments to adopt stronger measures to curb GHG emissions. Public opinion in India appears to diverge from the more cautious approach taken by the Indian government, and the gap appears even wider in China.

  Of course, polls may not capture the full dynamics of public opinion in the face of rapidly rising energy costs. Moreover, polling on climate change is very sensitive to the framing of the issue, and thus may shift rapidly in response to actual policy proposals and their estimated (or disputed) costs. In other words, government behavior in some Asia-Pacific states may be overly cautious, or it may reflect a more savvy calculation of the true *political* costs of moving forward. Asia-Pacific governments that have succeeded in boosting public support for environmental policies have framed the issue as opportunities for green growth and jobs.
- *Increased difficulty of advancing domestic legislation built on the Kyoto Protocol framework and cap-and-trade approaches.* Despite the comparatively strong public support for action on climate change in the Asia-Pacific countries, governments have had difficulty enacting legislation that would initiate domestic cap-and-trade programs. In the United States, the Obama administration thus far has been unable to move the climate bill in the House of Representatives, despite efforts to reframe the issue in the Senate in the wake of the oil spill disaster in the Gulf of Mexico. In Australia, Prime Minister Kevin Rudd's climate legislation also came apart

in the Senate, which led to an announcement that the government would delay introducing a domestic GHG emissions trading program until at least 2012. Further, in Japan, former prime minister Yukio Hatoyama had pledged ambitiously to cut GHG emissions 25 percent from 1990 levels by 2010; nonetheless, the change of administration resulted in a delay in introducing a climate change bill.

- *Importance of leadership and of opportunities on the international stage for leaders to shine.* Dynamic political leadership that is committed to a climate change agenda is the single most important ingredient for achieving policies to reduce GHG emissions. The seven cases in our study suggest that providing an opportunity for these leaders to "shine" on the international stage is also important. Leaders supporting ambitious climate change policies benefit from the opportunities to demonstrate international leadership on the issue by hosting summits and receiving widespread international recognition. This rising international prestige in turn boosts public support for climate change mitigation policies. Designing international frameworks to enhance this prestige and these leadership opportunities may augment this effect.

  This also suggests that, in addition to the UNFCCC process, the Group of Twenty may hold significant value for promoting climate change cooperation. It also raises the possibility that regional groupings may also play a valuable role, especially those with summit-level meetings like the Asia-Pacific Economic Cooperation forum and the East Asian Summit.

- *Importance of technological leadership and of recognizing early-mover advantages.* Many countries in the region are vying for technological leadership in environmental industries. Japan, the United States, China, and South Korea are all at the forefront of climate change technology, and India would very much like to join their ranks. These countries recognize the early-mover advantages of developing environmental technologies and of gaining a competitive edge on their rivals in what is likely to be a rapidly expanding global market. This shared focus on technology may provide motivation for collaboration, but it could also create competitive dynamics that inhibit the diffusion of technology.

  In combating the effects of climate change, it is extremely important to promote technological innovations and ensure their early adoption. China's and India's rapid growth will result in massive investments in industrial and energy infrastructure, which will lock in carbon-intensive technologies for a long time unless new low-carbon technologies can be quickly developed and diffused.

  The critical importance of developing and rapidly diffusing technology that mitigates the effects of climate change and the keen interest of many Asia-Pacific nations in technological innovation and its market-based promotion suggest that regional institutions may contribute in important ways to these efforts. The Asia-Pacific Partnership for Clean Development and Climate was created with these goals in mind. This public–private partnership of seven countries—Australia, Canada, China, India, Japan, South Korea, and the United States—aims to promote cooperation in developing and diffusing more efficient technologies. However, because this partnership only seeks to lower the energy intensity of production rather than reduce overall GHG emissions, it can only be considered a supplement to more ambitious climate change mitigation efforts. But it still has several key advantages: its limited number of participants, its inclusion of the major emitters, and its focus on the technology and market issues that are critical for winning support from China and India.

In sum, in their stances toward mitigating the effects of climate change, the key Asia-Pacific countries define their interests differently, and often in ways defying standard expectations, depending on their varying opportunities at the international level and their diverse domestic political situations. Therefore, to reach a consensus on the solution to the challenge of climate change, the political leaders in these countries need to effectively present the collective benefits of climate change amelioration while convincing their publics to accept the pain that this amelioration will almost certainly entail. Thus far, approaches focusing on cap-and-trade programs have been derailed or diluted by domestic legislatures in the United States, Japan, and Australia, but convergence on technological and market-oriented solutions might be harnessed by political leaders determined to respond to public support for mitigation policies.

# 2 THE POLITICS OF CLIMATE CHANGE IN JAPAN

Kiyoaki Aburaki

In September 2009, the newly elected prime minister of Japan, Yukio Hatoyama, made a pledge at the United Nations Summit on Climate Change that his country would make a 25 percent reduction in its greenhouse gas (GHG) emissions by 2020 compared with the 1990 level.[1] This is a very ambitious goal for Japan. According to the calculations of the Research Institute of Innovative Technology for the Earth in Tokyo, Japan's marginal abatement cost (MAC) to achieve the 25 percent reduction target is much higher than the corresponding cost for the United States and the European Union; Japan's MAC is $476 per ton, 8 times as much as that faced by the United States if it were to achieve a 17 percent reduction from the 2005 level, or 3.5 times the EU's MAC to reach its target of 20 percent below 1990 levels by 2020.

## The Politics of "Leading the World"

With this ambitious commitment, Prime Minister Hatoyama aims to play a leading role in the international negotiations to create a post-2012 framework for mitigating climate change. Thus, at the Sixty-Fourth Session of the United Nations General Assembly, he explained that "Japan announced this ambitious pledge because it wishes to serve as a 'bridge' among countries with varied interests and to preserve the planet for future generations."[2]

Katsuya Okada, who is currently serving as secretary general of the Democratic Party of Japan (DPJ), led the internal discussions of the party on climate change policy. In a meeting hosted by Nippon Keidanren (the Japan Business Federation) in August 2009, a few weeks before the general election, Okada said, "The DPJ will set a target of the 25 percent reduction and will take leadership at international negotiations. [Former] prime minister Taro Aso declared Japan would cut 15 percent of GHG emissions by 2020 from the 2005 level. This policy, however, had no impact or influence on discussions at the [Group of Eight] summit meeting in July [2009]."[3]

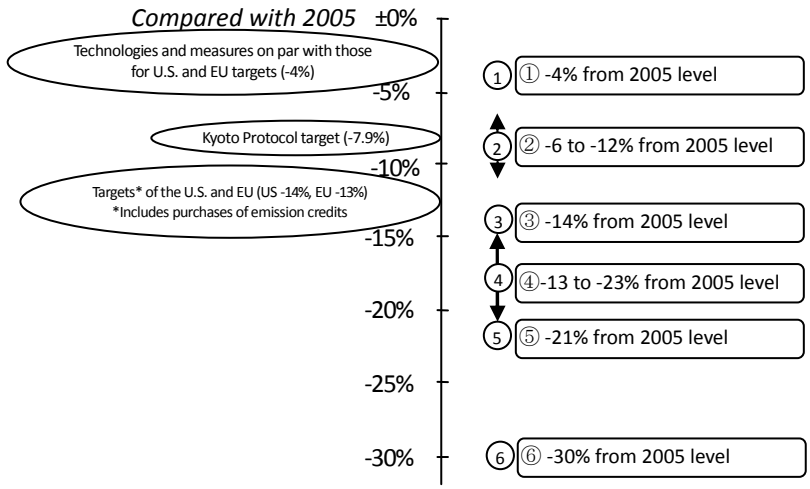
The Liberal Democratic Party (LDP), when it was in power, was also very active on the issue of global climate change, and tried to establish Japanese leadership in various international negotiations. To make a decision on Japan's midterm target, Prime Minister Aso had requested experts to analyze effects of reductions of GHG emissions and had received six options of targets (figure 2.1). In a public opinion poll conducted by the Cabinet Office in the spring of 2009, 70 percent of respondents expressed their support for the first option—a 4 percent reduction from the 2005 level—because the costs to achieve this target would be comparable to those for the EU and the

1. This is equivalent to a 30 percent cut from the 2005 emissions.

2. September 24, 2009, http://www.kantei.go.jp/foreign/hatoyama/statement/200909/ehat_0924c_e.html.

3. Katsuya Okada, remarks delivered at a meeting with Nippon Keidanren's Kigyoujin Seiji Forum [Business People Political Forum] on August 4, 2009.

**Figure 2.1. Options for Japan's Midterm Target** (reduction levels without emission credit purchases from other countries)




Source: Web site of Prime Minister's Office, Aso Administration, http://www.kantei.go.jp/foreign/asospeech/2009/06/10kaiken_e.html.

United States. However, Prime Minister Aso chose a more ambitious target of a 15 percent reduction from the 2005 level "to lead the world in the low-carbon revolution."[4]

It is very important to note that the current DPJ government and the previous LDP government have the same goal: to lead the world in climate change policies. The priority of both governments has been to lead the world, not to achieve equity of households' burdens among major GHG-emitting countries.

The DPJ government enjoyed strong public support for its climate change policy. According to a public opinion poll conducted by *Yomiuri Shimbun* (Japan's largest-circulation daily) in November 2009, 75 percent of respondents expressed their support for Prime Minister Hatoyama's ambitious reduction target.[5] This high level of support can be explained by another poll conducted by the Cabinet Office in October 2009, in which 63 percent of respondents said Japan should play a key role on the global climate change issue.[6] The 25 percent reduction was one of the selling points in the DPJ's campaign manifesto in 2009. Because a large majority in Japan support pursuing a leadership role in climate change policies, this is a good political strategy for the DPJ.

## The Costs and Benefits of Climate Change Policies

A question arises here. Why does a large majority of the Japanese public support such a bold target of the Hayotama administration, despite choosing only a 4 percent reduction among options proposed by former prime minister Aso? An important clue for solving this puzzle lies in how the political parties showed the costs, as well as the benefits, of climate change policies to the public.

4. Prime Minister Aso's press conference, June 10, 2009.
5. *Yomiuri Shimbun*, November 10, 2009.
6. Cabinet Office of Japan, "The Public Opinion Poll on Foreign Policies" (Gaiko ni Kansuru Yoron Cho-sa), October 2009.

**Table 2.1. Proposed Options and Their Economic Impacts**
(from the 2005 emissions level)

| | Option 1<br>-4% | Option 3<br>-14% | Option 5<br>-21% | Option 6<br>-30% |
|---|---|---|---|---|
| Private sector capital investment | Reference case | +0.1% | ±0% | -0.4% |
| Disposable income | | -¥40,000 p.a. per household | -¥90,000 p.a. per household | -¥220,000 p.a. per household |
| Lighting and heating expenses | | +¥30,000 p.a. per household | +¥70,000 p.a. per household | +¥140,000 p.a. per household |

Source: Web site of Prime Minister's Office, Aso Administration, http://www.kantei.go.jp/foreign/asospeech/2009/06/10kaiken_e.html.

## The Burden of the 25 Percent Reduction

Although the DPJ has proposed a very ambitious goal, it has not presented the actual burden that the Japanese people and companies would have to bear. By contrast, the LDP was more transparent about cost. When Prime Minister Aso announced his emissions target in June 2009, he clearly showed the burden on Japanese households of meeting this target. He explained the economic impact of the six proposed options (of which options 1, 3, 5, and 6 are shown in table 2.1; options 2 and 4 are not shown because emissions reduction goals of these options allow latitude). Because his choice was a 15 percent reduction, a slightly more difficult target than option 3, he explained that each household would be required to pay an additional ¥76,000, or $835, annually.[7] *Kyodo News,* responding to Aso's announcement, conducted an opinion survey and then found that 58 percent of respondents viewed the reduction target as too ambitious and costly. Only 27 percent of respondents viewed Aso's target as appropriate.[8]

The above-mentioned option 6, a 30 percent cut from the 2005 emissions, is equivalent to the DPJ's emissions target, a 25 percent cut from the 1990 level. The LDP's trial calculation indicated that the DPJ's plan would require every Japanese household to pay an additional ¥360,000, or roughly $4,000, annually.

## For Economic Growth

Climate change measures, such as environmental taxes, will result in higher energy bills for households. In addition, climate change policies may mean huge costs for Japanese industries, which in turn could hurt their international competitiveness. Having noted this, there is a widespread view in Japan that climate change policies can promote economic growth and create great opportunities for Japan—the social requirements of energy efficiency improvements and moving toward low carbon footprints would lead to innovations that could grow the Japanese economy. This understanding also serves as a basic factor underlying support for the ambitious reduction target of the Hatoyama administration.

7. $1 = ¥91.
8. Kyodo News Survey conducted June 13–14, 2009.

Japan's experiences of the oil crises in the 1970s are often cited by DPJ leaders. A surge of oil prices encouraged Japanese automobile manufacturers to produce more fuel-efficient vehicles, which attracted a vast number of U.S. consumers. Therefore, the oil crisis provided an opportunity for Japan's manufacturers to obtain a leading position in the global auto industry. Mr. Katsuya Okada, a former official of the Ministry of International Trade and Industry,[9] has insisted that "Japanese companies showed their abilities to adjust to the surge of oil prices. Their desperate efforts gave them great competitiveness. I believe in the prowess and flexibility of Japanese companies. They can achieve the goal [the 25 percent reduction of GHG emissions] even if it is difficult."[10]

Likewise, Prime Minister Hatoyama emphasized that "environmental challenges could be opportunities and Japan should build a world-leading environmental industry" when he announced a basic framework of the new growth strategy in December 2009.[11]

## Challenges for Japanese Companies

Japanese companies aggressively compete in the race to develop clean technology innovations. For instance, Fumio Ohtsubo, the president of Panasonic, has declared that his company's challenge in the next 5 to 10 years is to lead in "green innovation," which will realize virtually zero carbon dioxide ($CO_2$) emissions for homes and buildings, and will minimize $CO_2$ emissions in all business processes. Ohtsubo has indicated that energy-related activities are a core business for his company and that it is aiming for the top market share for solar cells in Japan in 2013 and to be in the global top three in 2016.[12]

Panasonic is known as the manufacturer of the Ene-farm, a household-use fuel cell cogeneration system that can produce up to 750 watts. Since May 2009, oil and gas companies have marketed this new system, which can reduce $CO_2$ emissions from houses by 30 to 40 percent. Nippon Oil is trying to lower the price of the Ene-farm from ¥3 million ($33,000) to about ¥500,000 ($5,500) and hopes to sell 2.5 million units by 2030.[13]

Rivalry or competition is intense in the "eco" market in Japan. Thus, Nippon Steel and Kyocera are collaborating to develop more efficient household-use fuel cells with 1 kilowatt capacities. Domestic shipments of Tokyo Electric Power Company's Eco-Cute, a heat-pump-using electric heater, increased 20 percent in 2008 (roughly 500,000 units) from the previous year. Though shipments of gas water heaters in 2008 decreased 7 percent from 2007, ones of Eco-jozu, which recycles and reuses heat for gas heaters, rose 20 percent in 2008. Domestic sales of hybrid cars grew to 208,876 in 2009, an increase of 186 percent compared with 2008.

## Government Assistance

The Japanese government promotes ecoconscious consumption by providing various incentives. Consumers are subsidized when they purchase ecoproducts, such as home-use fuel cells and heat-pump systems. Fuel-efficient cars are also subject to tax cuts. Purchases of high-energy-saving

9. Currently, the Ministry of Economy, Trade, and Industry.

10. The remarks were delivered at a Keidanren-organized meeting, "Minshuto-to-Seisaku-wo-Kataru-Kai," Tokyo, June 1, 2009.

11. The basic framework of a new growth strategy, "Shining Japan," December 30, 2009.

12. Fumio Ohtsubo, "Management Policy for Fiscal 2011," January 8, 2011.

13. The Ene-farm system is subject to governmental subsidies up to ¥1.4 million ($15,400) per household in 2009.

home appliances are rewarded under an ecopoint program. These incentives were introduced by the previous LDP government and have been continued by the DPJ's Hatoyama administration. The DPJ government recently decided to expand the scope of incentives; purchases or renovations of houses with energy-saving technologies are now rewarded with ecopoints.

Assistance with technological innovation is another key area for the government. Since 2008, under the name of "Cool Earth: Innovative Energy Technology Program," initiated by the previous LDP administration, the government of Japan has poured its financial resources into research and development efforts for 21 technologies that can contribute to low-carbon energy utilization and improvements in energy efficiency, which are listed in table 2.2.

Among these innovative energy technologies, high-efficiency coal-fired power generation is one of the most promising because it can greatly contribute to the reduction of GHG emissions. Because of its stable supply and its superiority in economic efficiency compared with other fuels, coal is the largest source of electricity generation in the world.[14]

The most advanced coal-fired power generation technology commercially available today is Ultra Super Critical (USC), which improves efficiency by raising the steam pressure and temperature of steam turbines above that of conventional supercritical steam turbines. The Isogo No. 2 Thermal Power Plant of J-Power in Yokohama uses a new cutting-edge USC technology.

Japan's clean coal technology has the potential to contribute dramatically to cutting GHG emissions. According to the Federation of Electric Power Companies of Japan (FEPC), $CO_2$ emissions could be reduced by roughly 1.3 billion tons a year if the United States, China, and India were to apply Japan's USC technology and best practices to all their coal-fired power plants. This would account for 5 percent of total global $CO_2$ emissions.[15]

Japanese companies are particularly eager to find export opportunities for their clean coal technologies. For example, Mitsubishi Heavy Industries, which has already licensed its USC technology to Harbin Boiler in China and to India's L&T-MHI Boilers, is trying to explore overseas markets for its newly developed coal-fired, integrated-gasification, combined-cycle power generation system, which can function with even more thermal efficiency than USC.

# Prerequisites for Growth

The hope that climate change policies can promote economic growth is widespread in Japan. For these hopes to be met, however, the policies must meet important prerequisites.

## A Level Playing Field

When Hatoyama pledged a 25 percent GHG emissions reduction, he presented two important preconditions: first, that there be a fair and effective international framework in which all major emitters participate and, second, that all major emitters pledge ambitious target reductions.

14. Coal produces 41 percent of electric power in the world. International Energy Agency, *Energy Balances of OECD Countries 2005–2006, Energy Balances of Non-OECD Countries* (Paris: International Energy Agency, 2006). Cited in Energy White Paper 2009.

15. According to the FEPC, $CO_2$ emissions from coal-fired thermal power in the United States will be suppressed to 1,562 metric megatons (metric MT) from 1,949 metric MT in 2004, from 2,269 metric MT to 1,493 metric MT in China, and from 572 metric MT to 388 metric MT in India if Japanese technologies and practices are introduced.

**Table 2.2. Twenty-One Innovative Energy Technologies**

**Power generation and transmission**

- High-efficiency natural gas-fired power generation
- High-efficiency coal-fired power generation
- Carbon dioxide capture and sequestration
- Innovative photovoltaic power generation
- Advanced nuclear power generation
- High-efficiency superconducting power transmission

**Transportation**

- Intelligent transport system
- Fuel cell vehicle
- Plug-in hybrid vehicle/electric vehicle
- Production of transport biofuel

**Industry**

- Innovative iron and steelmaking process
- Innovative material and production/processing technology

**Commercial/residential**

- High-efficiency house building
- Next-generation high-efficiency lighting
- Ultra high-efficiency heat pump
- Stationary fuel cell
- High-efficiency information device and system
- Home energy management system/building energy management system/ local-level energy management system

**Crosscutting technologies**

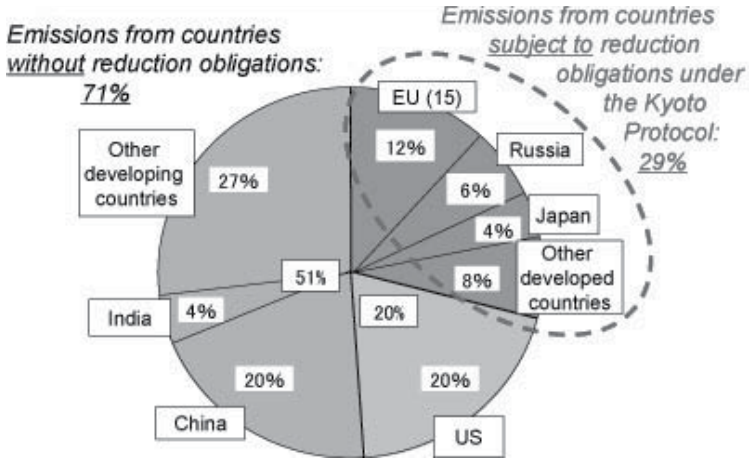
- High-performance power storage
- Power electronics
- Hydrogen production, transportation, and storage

Source: Ministry of Economy, Trade, and Industry.

Immediately after Hatoyama's inauguration, Nippon Keidanren urged the government to conduct comprehensive and scientific analyses on the impact of the 25 percent reduction and to have a "national debate" about the international fairness and appropriateness of the burden on the Japanese people. Keizai Doyukai (the Japan Association of Corporate Executives) also stressed international fairness and proposed achieving cost equity for marginal $CO_2$ abatement among developed countries.[16] Major trade associations for industries such as steel, electronic power, and petroleum followed Nippon Keidanren's call and pointed out that "Japan may become the only

16. Keizai Doyukai, "Towards the COP 15," November 17, 2009.

**Figure 2.2. Global CO2 Emissions Volumes and the Kyoto Protocol**




Source: Web site of Prime Minister's Office, http://www.kantei.go.jp/foreign/asospeech/2009/06/10kaiken_e.html.

country to bear a huge burden while fairness in targets is not ensured among major nations" at the Fifteenth Conference of the Parties (COP 15) to the United Nations Framework Convention on Climate Change.[17]

The business community's views are shared by the nation's labor unions, which provide strong political support to the DPJ. The Japanese Trade Union Confederation (Rengo) declared its position on a post-2012 framework in December 2009. It noted that the target of the 25 percent reduction of the Hatoyama administration was "premised on an international framework with participation by all major GHG emitters on the basis of their common but differentiated responsibilities." Rengo continued that the target "might lead to considerably high national burdens and GHG emissions reduction expenses, and in this context it is essential to secure fairness with other countries."[18]

Business and labor share views on the flaws of the Kyoto Protocol, under which reduction commitments are made by countries only representing three-tenths of the world's total emissions. The world's largest emitters, the United States and China, do not have any obligations under the protocol, even though they account for 40 percent of global emissions (figure 2.2).

## How to Get There

The DPJ government has not revealed a comprehensive strategy to achieve the 25 percent GHG reduction. Though the government has publicly showed its intention to create a cap-and-trade emissions trading system in Japan and to introduce a global warming tax, it does not clarify the extent to which they will reduce emissions.

The DPJ has insisted on both instruments because, as Mr. Okada says, "Japan should employ all policy instruments to achieve the goal of the 25 percent reduction." In terms of a cap-and-trade

17. "Japan's Industry Groups Opposed to New Commitments under Kyoto," Japan Economic Newswire, December 16, 2009.

18. Japanese Trade Union Confederation, "Delegation's Statement to COP 15," December 16, 2009.

emissions trading system, he added, "as shown in the EU and the United States, the usage of the system is now a 'major trend' in the international community. . . . If Japan does not implement cap and trade immediately, it will be largely behind the United States and the EU and will be forced to use a system designed by other major powers."[19]

The major associations of Japanese manufacturers strongly oppose both a cap-and-trade system and a global warming tax. For example, the Japan Iron and Steel Federation (JISF) has said, "As indicated by a report of the International Energy Agency,[20] the Japanese steel industry had the smallest potential of $CO_2$ emissions reduction in the world. . . . If the government caps emissions too rigidly, the Japanese steel industry will have to purchase emissions quotas from other countries. This would lead to a huge drain on national wealth, loss of industrial competitiveness and occurrence of carbon leakage."[21] And with respect to a global warming tax, the JISF criticized the government for not revealing the results of a detailed examination of its various effects, such as on international competitiveness, people's daily lives, and emissions reduction.[22]

Nippon Keidanren shared these views with the JISF, pointing to a very basic issue: "There is no need to introduce a cap-and-trade emissions trading system and new taxes since Japan's target in the first commitment period of the Kyoto Protocol could be achieved with policies currently being executed." Nippon Keidanren added that policy measures to achieve Japan's midterm target should be discussed "after major emitters agree with a post-2012 framework and their midterm targets."[23]

The financial and other service industries seem to respect the voices of Nippon Keidanren and the industrial associations. However, the associations for bankers, for life and general insurance companies, and for general trading companies have not publicly stated their stances on climate change policy instruments.

## Structural Differences from the Oil Crises

Will the climate change policies of the DPJ government contribute to economic growth? An answer could be suggested by comparing climate change with the oil crises of the 1970s, which, as mentioned above, created opportunities for Japan to upgrade its industrial competitiveness. The oil crises affected everyone, and surges of oil prices were not selectively applied. In this sense, all countries were equally affected by the crises and the burden each country bore could be appropriate because it was not artificially decided.

The case of the Hatoyama government's climate change policies is markedly different. International fairness is not assured, because the participation of all major GHG emitters in a post-2012 framework is not secured. If the degree of difficulty in achieving midterm targets varies largely by country, it cannot be said that burdens were appropriately or "fairly" shared. Adjustment to surges in oil prices is relatively easy if a country has an energy-efficient socioindustrial system and technologies, which could serve as a basis of its international competitiveness. In the case of GHG emissions reduction, however, Japan is poised to plunge itself into a more difficult situation than

19. Okada's remarks at a meeting hosted by Keidanren, August 4, 2009.

20. Japan's potential to cut $CO_2$ emissions indicated is 0.07 tons per ton of steel produced, whereas the potential of the United States is 0.14 tons, Europe's is 0.15 tons, and China's is 0.48 tons. International Energy Agency, "Energy and Technology Perspectives 2008," http://www.jisf.or.jp/en/activity/warm/iea/index.html.

21. "JISF's Statement on the Proposed Global Warming Basic Law," December 25, 2009.

22. Ibid.

23. Keidanren comments on the Global Warming Framework bill, December 28, 2009.

that of the United States, the European Union, and China, and it thus might be forced to shoulder disadvantageous obligations.

## The Products of COP 15 and Lessons Learned

The Fifteenth Conference of the Parties to the United Nations Framework Convention on Climate Change ended on December 19, 2009. Although it failed to produce a legally binding treaty for a post-2012 framework, the conference left important lessons.

### The Basis for a Future Framework

COP 15 issued a 12-paragraph document, the Copenhagen Accord, which indicates (1) a long-term goal of restricting temperature increase below 2 degrees Celsius; (2) a commitment of the developed countries, including the United States, to submit their GHG emissions targets for 2020 to the UN by the end of January 2010; and (3) a commitment of the developing countries, including China and India, to submit their climate change mitigation actions to be implemented to the UN.

Japan's environment minister at the time of COP 15, Sakihito Ozawa, put a positive spin on the outcome of COP 15 because all the major emitters, including China and the United States, "took note" of the Copenhagen Accord.[24] Fujio Mitarai, then chairman of Nippon Keidanren, supported Ozawa's assessment, noting that "COP 15 produced a direction that all countries will follow."[25] The Japanese government and business leaders anticipate that the accord will serve as the basis of a post-2012 international framework, whereby all the major emitters can accept common but differentiated responsibilities.

A voice of a frank assessment was offered in a critical commentary in *Yomiuri Shimbun* on January 12, 2010, noting that the accord "was better than making a pledge that would put Japan at a disadvantage."[26] As noted above, the business community was concerned about an extension of the current international framework, which placed a disproportionate burden on Japan. In the *Yomiuri* editorial, the Kyoto Protocol was described as "a typical example of an unequal treaty."[27]

### Mis-Expectations

The realities of international politics did not allow negotiations at COP 15 to proceed in line with Hayotama's expectations. With his 25 percent cut goal, Hatoyama aimed to take leadership in the international negotiations for GHG emissions, to encourage other major emitters to raise their own midterm goals, and to bridge conflicting interests among developed, emerging, and developing countries. But the reality was that other major emitters, such as the United States and China, only offered far lower goals than Japan.

What COP 15 demonstrated was that "in the shadow of the diplomatic game between the world's two largest emitters, Japan was invisible. It had been unreasonable to begin with for Japan, representing merely 4 percent of global emissions, to try to have world influence by setting out a

24. *Kankyo Shimbun*, January 1, 2010.
25. Keidanren Web site, http://www.keidanren.or.jp/japanese/speech/comment/2009/1219.html.
26. "COP 15 Avoids Collapse by Delaying Decision," editorial, *Yomiuri Shimbun*, January 12, 2010.
27. Ibid.

powerful target."[28] The *Yomiuri Shimbun* editorial mentioned above criticized Hatoyama's "lack of foresight."[29] A *Mainichi Shimbun* editorial on December 20, 2009, also questioned Japan's influence at COP 15, saying that "despite declaring the 25 percent cut goal, Japan could not realize Chinese concessions in Copenhagen."[30]

At COP 15, Prime Minister Hatoyama and Environment Minister Ozawa made clear their intention to stick to the 25 percent GHG emissions reduction as Japan's target. However, COP 15 tells us that Japan's bold goal had only a nominal effect on diplomatic bargaining over numerical targets. This suggests that Japan needs new strategies if it wants to lead the world in climate change talks. Moreover, it also suggests that the DPJ government should prepare itself for a day when the midterm targets of other major emitters will remain practical and thus will not fulfill the precondition of Japan's bold international commitment.

## A Consensus and New Ideas

Environment Minister Ozawa summed up COP 15 as a "confrontation between developed and emerging [market] countries."[31] Emerging market countries such as China and India refused to accept any obligations to reduce their GHG emissions under a post-2012 framework but emphasized their need for technological and financial support from developed countries. The Japanese media observed that they "undoubtedly hampered discussions" at COP 15.[32] Therefore, Ozawa said "the UN process, a decision made by unanimity, is unwieldy in global climate change talks."[33] Only a limited number of countries opposed an "adoption" of the Copenhagen Accord, claiming procedural injustice at the Copenhagen meeting.

Ozawa's comments represent widely shared views among climate change policy elites in Japan. Among them, there is an emerging consensus about the shortcomings of UN norms mandating unanimous decisionmaking. And they are also discussing several ideas to overcome this problem. Ozawa thus proposes forming an official "core" group of UN member countries that will be in charge of drafting treaties. The existence of the UN Security Council, which leads security discussions and decisionmaking, inspired him with this idea.

Another idea is to promote bilateral and limited multilateral processes. A strong advocate of this idea is Shinji Tarutoko, a DPJ House member who served as the House Environment Committee chairman. Tarutoko proposes bilateral or limited multilateral efforts to generate international carbon offset credits, which are counted toward achieving the national GHG emissions reduction targets of the participating countries. He offers a scenario in which "both the U.S. and Japan jointly contribute financial and technological resources for an emissions reduction project in a developing country. The carbon offset credits that are generated will be shared by the three."[34] His idea is in line with the basic concept of international carbon offsets described in the Clean Energy Jobs and American Power Act, the so-called the Kerry-Boxer Bill, and the American Clean

28. Akihito Sawa, executive senior fellow, "Agenda after COP 15; Forget Numerical Targets, Give the World a Framework," 21st Century Public Policy Institute, *Nikkei*, December 24, 2009.
29. "COP 15 Avoids Collapse by Delaying Decision."
30. "Ayaui-Gimu-Naki-Kyotei," editorial, *Mainichi Shimbun*, December 20, 2009.
31. *Kankyo Shimbun*, January 1, 2010.
32. "Build Foundation for Break from Oil, Coal," editorial, *Yomiuri Shimbun*, January 12, 2010.
33. *Kankyo Shimbun*, January 1, 2010.
34. Author's interview with Shinji Tarutoko, Tokyo, January 2010.

Energy and Security Act, the Waxman-Markey Bill. Tarutoko envisions a new plan that is more flexible and conveniently designed than the UN's clean development mechanism, and he notes that "climate change provides new and huge possibilities for United States–Japan collaboration. Climate change should be a core issue of our alliance relations."[35]

Nippon Keidanren developed Tarutoko's idea. In its policy paper issued on March 16, 2010, it proposes the creation of new, independent programs to supplement the UN's clean development mechanism. Nippon Keidanren urges the DPJ government to conclude agreements with other countries to "quantify cuts achieved by GHG reduction projects meeting certain requirements or the export of energy-saving devices and facilities," and to "create a mechanism for counting these reduction as a contribution by Japanese companies."[36] The Ministry of Economy, Trade, and Industry has adopted this idea and incorporated the same bilateral or limited multilateral plans into its "Industrial Structure Vision 2010," issued on June 3, 2010.[37]

## Climate Change and Japan–China Relations

On January 21, 2010, the Chinese government announced that its economy grew at a rate of 8.7 percent in 2009. China has served as an engine of the world's economic recovery from the global financial and economic crisis of 2007–2008. In 2010, China will take the second seat of the world's top economic powers from Japan, which will now be "number three."

An editorial in *Nihon Keizai Shimbun (Nikkei)* emphasized the responsibilities of China, remarking that "it is not a far target for China to exceed the size of the U.S. economy. China is already the largest exporter and the largest emitter of GHG. It is time for China to realize its responsibilities as Number One." It continues, "the recent behaviors of the Chinese Communist Government are disappointing. At COP 15 late last year, China never tried to convince other developing countries to resist proposals by major countries."[38] China is a developing country and, at the same time, an economic giant with great capacity for growth. The *Nikkei* editorial, which represents widespread views in Japan, strongly urges China to understand its special position in the world.

There are criticisms in Japan that the country's money was drained out into the emerging giant China to purchase GHG emissions quotas. A leading DPJ lawmaker who has been critical of the flow of Japanese money overseas says, "Japanese companies should use their financial resources for local communities."[39] A journalist for a major broadcasting company warns that many Japanese people will be shocked when they come to know that the size of the Chinese economy has surpassed Japan's. "Probably, lack of growth policies of the DPJ administration will be more criticized," he added.[40]

In short, China's approach to climate change will be a critical political variable in Japan's own approach. If China cannot demonstrate a more proactive approach to climate change and agree to further commitments at international negotiations, the voices represented by the *Nikkei* editorial will surge in Japan, calling for "the Japanese Government [to] take firm actions against China."[41]

35. Ibid.
36. "Achieving Growth through Green Innovation," Keidanren, March 16, 2010.
37. Ministry of Economy, Trade, and Industry, "The Industrial Structure Vision 2010," June 3, 2010.
38. *Nikkei* editorial, January 22, 2010.
39. Author's interview, Tokyo, November 2009.
40. Author's interview, Tokyo, December 2009.
41. *Nikkei* editorial, January 22, 2010.

Though the editorial only gives vague meanings to "firm actions," it is clear that such actions will have negative effects on political and economic relations between China and Japan. It is a time for both countries to set a positive agenda and to produce tangible results of collaborations.

## To Build a Domestic Consensus

Climate change policies in Japan yielded complicated political interactions among important actors such as the government, political parties, business community, and labor unions. As stated before, the biggest issue for Japan's climate change policies becomes the following—a lack of domestic consensus. A recent debate on the Global Warming Basic Bill is a symbol of the current Japanese political situation.

### The Global Warming Basic Bill

On March 12, 2010, the Hatoyama Cabinet agreed upon a Global Warming Basic Bill and sent it to the Diet. The Basic Bill incorporates all the main policy instruments, such as a cap-and-trade emissions trading system, a global warming tax, and the 25 percent reduction target for GHGs.

The Basic Bill is, however, just an "index without a detailed description of policy measures."[42] The government announced that it would spend one year discussing concrete measures. Having announced this, Prime Minister Hatoyama "looked satisfied" and said, "What's most important is to clearly spell out the 25 percent reduction goal."[43]

Industrial representatives have opposed the Cabinet's decision. Nine major trade associations—including those representing the steel, electronic power, and petroleum industries—have stated: "It is very regrettable for the Cabinet to adopt the Basic Bill. The government did not show any basis for judgments to Japanese nationals on appropriateness of the 25 percent reduction goal."[44] An executive of Rengo also criticized the Cabinet decision: "Japan's emissions goal is far too strict compared with major emitters such as China and the United States. The government has to drop the 25 percent goal" if preconditions, including agreements among all major emitters on a fair and effective international framework and ambitious goals, are not met.[45] The story of the Basic Bill illustrates that the nation is divided.

### "Leading the World" or "Reviving Japan's Economy"?

On June 2, 2010, Prime Minister Hatoyama announced his intention to resign. His inability to relocate the U.S. Marines' Futenma Air Base in Okinawa and the money scandals of Ichiro Ozawa, the powerful secretary-general of the DPJ, and Hatoyama himself led to his resignation.

Naoto Kan replaced Hatoyama as prime minister. Kan's inauguration may affect Hatoyama's climate change policies because Kan's vision centers on a strong economy. At his first press confer-

42. Author's interview with Shinji Tarutoko, chairman, House Environmental Committee, Tokyo, March 2010.

43. "Basic Climate Bill Still Has Much to Cover," *Yomiuri Shimbun*, March 14, 2010.

44. "About the Cabinet Adoption of the Global Warming Basic Bill," March 12, 2010, http://www.fepc.or.jp/about_us/pr/sonota/__icsFiles/afieldfile/2010/03/12/0312press.pdf.

45. "Basic Climate Bill Still Has Much to Cover."

ence as prime minister, Kan emphasized the need "to revive Japan's economy."[46] Although he mentioned the 25 percent reduction target, he did not repeat a favorite phrase used by his predecessor, "to lead the world in climate change policies." Moreover, in the upper house campaign manifesto issued on June 17, 2010, the DPJ led by Kan categorizes climate change policies as having been "achieved," because Japan announced the 25 percent reduction goal at the UN meetings last year. The manifesto does not show any further actions or policies to reach the goal, while stressing the need "to revive Japan's economy."[47]

Prime Minister Kan displays a more probusiness attitude, and thus said "my door is always open for you" on June 17, when he received a courtesy visit from Hiromasa Yonekura, the newly elected chairman of Nippon Keidanren. This is a stark contrast with the early days of the labor-backed Hatoyama administration.[48] When the Kan Cabinet decided on a new growth strategy on June 18, Yonekura praised it for "showing specific quantitative targets and time frames for working to solve the major problems facing the Japanese economy."[49]

At this moment, it is not clear how Prime Minister Kan will implement Japan's climate change policies. His degree of flexibility to modify the Global Warming Basic Bill is also unclear. What is clear, however, is that he is trying to realize his vision of "strong economy," and that the ambitious goal of the 25 percent GHG emissions reduction would seriously affect corporate activities in Japan. This could be an opportunity to build a domestic consensus on climate change policies.

46. See http://www.kantei.go.jp/foreign/kan/statement/201006/08kaiken_e.html.
47. See http://www.dpj.or.jp/special/manifesto2010/index.html.
48. "Kan Quick to Reach Out to Business Community," *Nikkei*, June 19, 2010.
49. "Japanese Business Groups Urge Quick Action on Growth Plan," *Asia Pulse News*, June 21, 2010.

# 3 GREEN GROWTH AS A PANACEA? THE POLITICS AND ECONOMICS OF CLIMATE CHANGE IN SOUTH KOREA

Wonhyuk Lim

Climate change is a long-running global problem characterized by pervasive externalities over time and space. Once emitted, greenhouse gases (GHGs) such as carbon dioxide ($CO_2$) remain in the atmosphere for centuries and contribute to global warming. Actions taken by past generations in both close and faraway places affect the well-being of current and future generations. A unilateral action by an individual country would make little difference unless other countries work together now and in the future to mitigate climate change. International coordination, with significant distributional consequences, is an essential part of any solution to climate change.

A cost-effective, efficient, and fair solution to climate change[1] would require advanced industrial nations to provide the lion's share of financing and technology to make systematic emissions cuts in developing countries as a way of living up to their historical responsibilities and of curbing developing countries' current and future emissions at low cost before accumulated emissions lead to catastrophic consequences.[2] For advanced industrial nations to cut their own emissions would be only a small part of the solution. Moreover, the global community should make concerted efforts to develop technological solutions that would greatly reduce GHG emissions while containing the negative impact on living standards, most likely by making a decisive shift away from fossil fuels. An ambitious and comprehensive strategy to curb GHG emissions is economically rational but costly, and uncoordinated climate change mitigation may cause "carbon leakage" from countries that take abatement action to countries that do not.

Yet, despite the global nature of the problem, there are significant national variations in responding to climate change. It appears that differences in the relative influence of major actors in the climate change debate largely account for these national variations in responses. For instance, a country whose domestic politics is dominated by GHG-intensive industries may be reluctant to adopt an ambitious abatement target and instead be supportive of scientific inquiries that question the existence of climate change. By contrast, a country dominated by service-oriented industries, especially financial services providers that could benefit from a global emissions trading system, and strong environmental groups may champion deep emissions cuts around the globe.

1. For a more detailed discussion on what constitutes a cost-effective, efficient, and fair solution to climate change, see Organization for Economic Cooperation and Development (OECD), *Climate Change Mitigation* (Paris: OECD, 2008); OECD, *The Economics of Climate Change Mitigation* (Paris: OECD, 2009); and Commission on Climate Change and Development, *Closing the Gaps* (Stockholm: Commission on Climate Change and Development, 2009).

2. Today's advanced industrial nations are largely responsible for the rise in GHG concentration since the Industrial Revolution. Annex I countries under the Kyoto Protocol have contributed approximately 70 percent of GHG accumulations. However, developing countries now account for two-thirds of the flow of new GHG emissions into the atmosphere.

In addition to these domestic political dynamics, international considerations may have a significant impact on shaping the domestic debate and framing solutions to the climate change problem. In particular, international considerations may encourage major actors to think outside the box and come up with responses that may not have been obvious in purely domestic discussions.

South Korea's response to climate change shows how the country has internationalized its domestic debate on climate change and decided to take proactive measures to become "an early mover" and "a bridge between the developing and developed countries" in the new green age. Straddling developing and developed status, South Korea had initially taken a defensive stance in climate change negotiations in the 1990s. However, as an export-oriented economy with strong GHG-intensive industries, South Korea has come to realize that purely defensive measures would only worsen its GHG dependence and aggravate its negotiating position. Although the business community continued to support minimal abatement action, the South Korean government, under presidential leadership, changed the tone of the debate by promoting "low-carbon green growth" as a national vision.

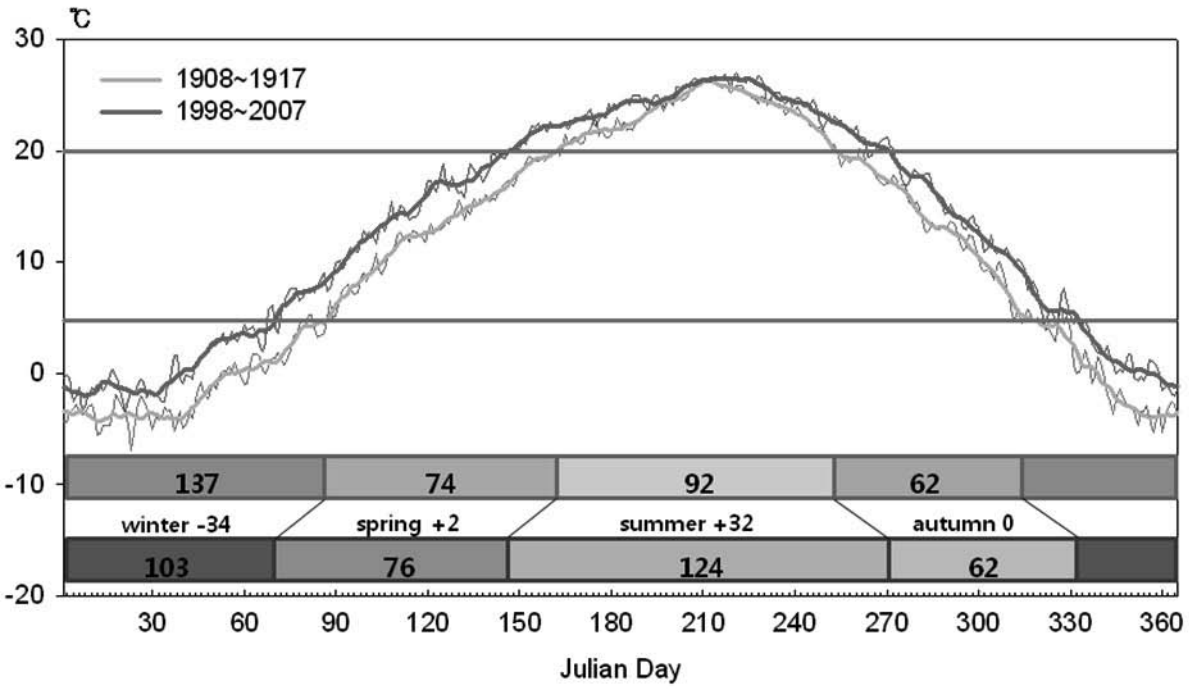
Instead of defining "green growth" as environmentally sustainable economic growth, where a trade-off between environmental protection and economic growth was inevitable, the government argued that "green growth" offered new engines of growth and that synergy existed between "green" and "growth." Although climate change mitigation may have a negative effect on economic growth around the globe, the technologies required to implement abatement actions would create new business opportunities for early movers. By investing heavily in green technologies ahead of other countries, the government posited, South Korea could take a large share of the emerging global market for clean energy solutions and thereby accelerate its economic growth. Of course, under unabated global warming, the world economy may suffer catastrophic consequences, and the apparent trade-off between environmental protection and economic growth may not really be a trade-off after all. However, that was not the government's point in emphasizing the synergy between "green" and "growth."

In short, in South Korea, international competitiveness and considerations of prestige designed to better position the country within a newly green international economy have overridden narrowly protective domestic economic concerns in shaping responses to climate change. The government presented "green growth" as an overarching solution and championed proactive measures to make Korea "an early mover" and "a bridge between the developing and developed countries." Korea did not—and still does not—necessarily want to lead global responses to climate change, but it has sought to take proactive measures to improve its competitiveness and international stature before it was caught in a vulnerable position as a large emitter of GHGs.

## South Korea's Place in the World of Climate Change

South Korea is one of a few countries that straddle developing and developed status in the world of climate change. As a non-Annex I country under the Kyoto Protocol, Korea has no obligations to make mandatory emission cuts, but as a large emitter of greenhouse gases and a member of the OECD, it is likely to face increasing international pressure to reduce greenhouse gas emissions and make financial and technological contributions to climate change mitigation around the globe.

**Figure 3.1. Average Temperature in Seoul: 1998–2007 (bold) versus 1908–1917 (plain)**




Note: The bold line and plain line denote the average daily temperature in Seoul in the 1998–2007 interval and 1908–1917 interval, respectively.

Source: National Institute of Meteorological Research, *Understanding Climate Change III: Climate Change in Seoul* [in Korean] (Seoul: National Institute of Meteorological Research, 2009), 56.

## Scientific Evidence and Projection

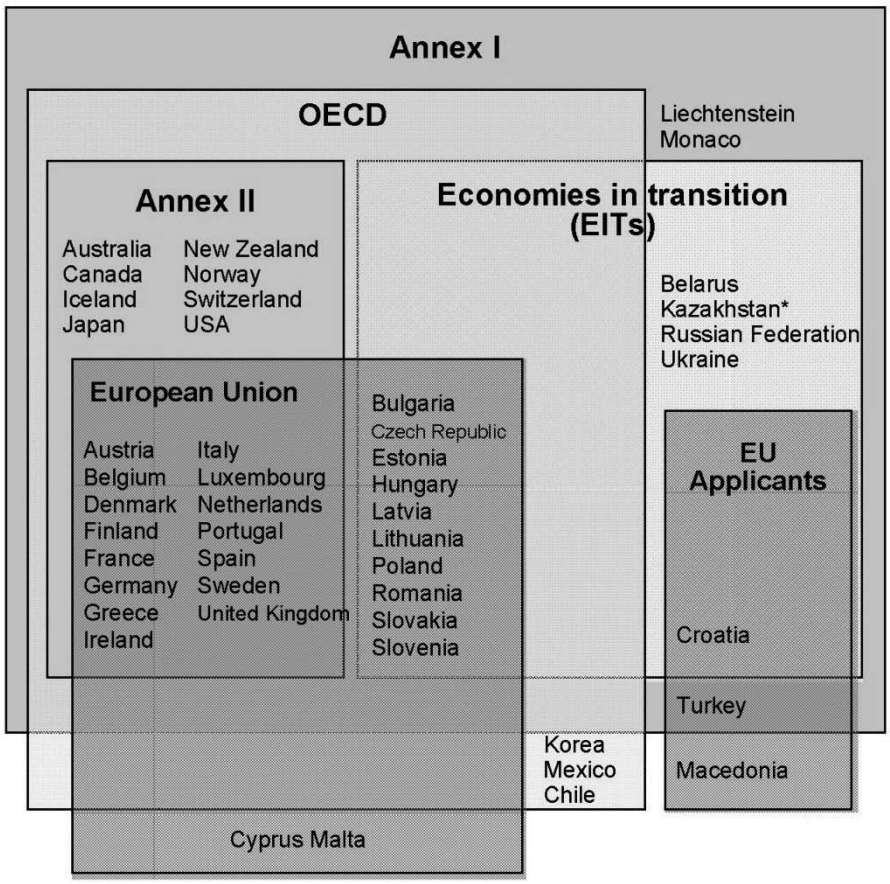
South Korea is not immune to the effects of global warming, and examples of climate change are not difficult to find. During the past century (1906–2005), the average world temperature has increased by 0.74 degree Celsius, whereas in Korea it has increased by 1.5 degrees. For the six largest cities in Korea, the average temperature increased by 1.7 degrees during the 1912–2008 period. The effect of urbanization is estimated to account for only 20 to 30 percent of this temperature rise. Also, according to the Korea Hydrographic and Oceanographic Administration, the sea level along the coast of Jeju Island in the southern part of Korea rose by 21.9 centimeters (approximately 9 inches) between 1964 and 2006.[3] If we define an average temperature on a summer day to be 20 degrees or above and winter to be 5 degrees or below, the summer has increased by 32 days between the 1908–1917 interval and the 1998–2007 interval in Seoul, while the winter has decreased by 34 days during the same period (see figure 3.1).[4]

Under the Intergovernmental Panel on Climate Change's A1B scenario, which projects an "intermediate" rise in global atmospheric $CO_2$ concentration to 720 parts per million in 2100, the National Institute of Meteorological Research forecasts that South Korea's average temperature will

3. Presidential Committee on Green Growth (PCGG), "Green Statistics: Greenhouse Gases," http://www.greengrowth.go.kr/www/policy/result/tong01/tong01.cms.

4. National Institute of Meteorological Research, *Understanding Climate Change III: Climate Change in Seoul* [in Korean] (Seoul: National Institute of Meteorological Research, 2009), 55–56.

**Figure 3.2. Current Country Groupings in the Climate Change World**




Source: Niklas Höhne, *What Is Next after the Kyoto Protocol? Assessment of Options for International Climate Policy Post 2012* (Amsterdam: Techne Press, 2006), 26, with Chile added due to its joining the Organization for Economic Cooperation and Development in 2009.

have increased by 4.2 degrees in the 2080s. The country will then have a subtropical climate, and its annual precipitation will increase by 12.4 percent. If and when the average temperature increases by 6 degrees, a great number of forest species will become extinct.[5]

Few South Korean scientists express skepticism about the science and urgency of climate change. In fact, in an interview with the author, a climate scientist said that he could not remember any Korean scientist presenting serious scientific evidence against climate change.[6] These scientific observations and consensus have shaped public opinion, and thus even the opponents of drastic GHG abatement actions do not go so far as to deny the existence of climate change.

5. National Institute of Meteorological Research, *Understanding Climate Change II: Climate Change on the Korean Peninsula* [in Korean] (Seoul: National Institute of Meteorological Research, 2009), xi–xiv.

6. Author's interview with Rokjin Park, professor of atmospheric science, Seoul National University, March 25, 2010.

**Table 3.1. South Korea's Greenhouse Gas Indicators** (based on carbon dioxide emissions)

| Greenhouse Gas Indicator | Year | Level | Rank | Source |
|---|---|---|---|---|
| Emissions per capita (tons/person) | 2007 | 10.09 | 23 | International Energy Agency |
| Cumulative emissions per capita (tons/person) | 1900–2000 | 146.5 | 64 | World Resources Institute |
| Emissions (million tons) | 2007 | 499.0 | 9 | International Energy Agency |
| Cumulative emissions (million tons) | 1900–2000 | 7,041.7 | 23 | World Resources Institute |

Sources: International Energy Agency (IEA), *$CO_2$ Emissions from Fuel Combustion—Highlights* (Paris: IEA, 2009); World Resources Institute, Climate Analysis Indicators Tool (Washington, D.C.: World Resources Institute, 2009).

## The Country's Place in Country Groupings

South Korea occupies a rather interesting position in international climate change negotiations. The United Nations Framework Convention on Climate Change, established in 1992, designated the members of the Organization for Economic Cooperation and Development (OECD) and economies in transition at the time as "Annex I" countries and demanded that they make mandatory emissions cuts. Furthermore, it designated OECD members at the time as "Annex II" countries and required that they provide financial and technical assistance to non–Annex I countries. Korea was classified as a non–Annex I country because it did not join the OECD until 1996. As figure 3.2 shows, Korea, Mexico, and Chile are the only OECD members that are not classified as belonging to Annex I. However, it would be difficult for Korea to maintain this status given its GHG emissions, gross domestic product, and other measures of economic power.

## Greenhouse Gases and Economic Indicators

South Korea is the 9th-biggest emitter of GHGs as of 2007. In terms of cumulative GHG emissions from 1900 to 2000, Korea is the world's 23rd-biggest emitter. According to the International Energy Agency and the World Resources Institute, per capita figures for annual and cumulative emissions place Korea at numbers 23 and 64, respectively; for the data, see table 3.1.

Moreover, South Korea's GHG emissions increased by 96.8 percent between 1990 and 2005—the highest rate of increase among the OECD members during the period. This is mainly due to the rapid growth of energy-intensive sectors. In particular, steel, cement, and petrochemicals make up 8.0 percent of Korea's GDP, compared with 4.6 percent in Japan and 3.1 percent in the United States. Also, due to Korea's inefficient road system and consumer preference for large cars, its average fuel efficiency for cars is only 11 kilometers per liter of gasoline, or 70 percent of Japan's.

With regard to overall energy efficiency (defined as GDP divided by energy consumption), South Korea belongs to a low energy-efficiency group within the OECD. As of 2006, the country's energy efficiency was approximately 40 percent of Japan's level and 55 percent of Germany's. As shown in table 3.2, a comparison of energy efficiency by sector shows that Korea is 55 percent as

**Table 3.2. International Comparison of Energy Intensity by Sector, 2006**
(metric tons of oil equivalent per value-added in thousands of dollars)

| Sector | South Korea | Japan | Germany |
|---|---|---|---|
| Mining and manufacturing | 1.51 | 0.85 | 0.81 |
| Steel | 4.92 | 3.94 | 4.99 |
| Chemicals | 3.59 | 2.48 | 1.47 |
| Nonferrous metals | 9.53 | 2.99 | 3.3 |
| Services | 0.46 | 0.2 | 0.15 |
| Agriculture and forestry | 0.76 | 0.41 | 1.25 |
| All industries | 0.89 | 0.38 | 0.35 |
| Transportation | 13.6 | 4.75 | 11.92 |
| Residential | 11.61 | 2.75 | 10.88 |
| Overall economy | 1.58 | 0.63 | 0.89 |

Source: Korea Institute for Industrial Economics and Trade, "An International Comparison of Sectoral Energy Efficiency and Its Implications," Industrial Economy Information No. 437 [in Korean] (Seoul: Korea Institute for Industrial Economics and Trade, 2009).

efficient as Japan and Germany in the mining and manufacturing sector and 44 and 32 percent as efficient as Japan and Germany, respectively, in the services sector. Korea also suffers from low energy efficiency in the residential sector when compared with Japan. However, in some GHG-intensive sectors, such as steel, Korea has a level of energy efficiency comparable with those of Japan and Germany.

In terms of GDP at purchasing-power parity (PPP), South Korea was the 13th-largest economy in the world as of 2008. Although its per capita GDP places it 32nd in the world, it is still in the relatively high-income echelon of non–Annex I countries under the Kyoto Protocol (table 3.3).

Drawing attention to South Korea's rather large GHG and economic indicators, the international community has demanded that Korea adopt significant measures to mitigate GHG emissions. In particular, the European Union has urged Korea, along with all other advanced industrial nations, to reduce its emissions by 25 to 40 percent by 2020 compared with 1990 levels and developing countries to make 15 to 30 percent cuts compared with business-as-usual (BAU) scenarios.

## Technical and Economic Solutions to Climate Change

Like many other countries around the world, South Korea has been exploring technical and economic options to mitigate climate change. The International Energy Agency has presented nine

**Table 3.3. South Korea's Economic Indicators**

| Indicator | Year | Amount | Rank | Source |
|---|---|---|---|---|
| Gross domestic product per capita (dollars, purchasing power parity) | 2008 | 27,692 | 32 | International Monetary Fund |
| Gross domestic product (billion dollars, purchasing power parity) | 2008 | 1,344 | 13 | International Monetary Fund |
| Human Development Indicators (index value) | 2007 | 0.937 | 26 | United Nations Development Program |

Sources: International Monetary Fund, World Economic Outlook Database (Washington, D.C.: International Monetary Fund, 2009); United Nations Development Program, *Human Development Report* (New York: United Nations Development Program, 2009).

technical solutions to reduce GHG emissions in the energy-burning industrial sector as follows: improvement in combined heat and power; introduction of high-efficiency motors; introduction of high-efficiency steam systems; improvement in the efficiency of producing basic materials such as steel; improvement in process technology; fuel switching; improved efficiency of materials and products; feedstock switching; and carbon capture and sequestration technology. The agency has estimated that these technical solutions could cut GHG emissions by a third by 2050 relative to BAU. Improved energy efficiency would account for 46 percent of this reduction. Carbon capture and sequestration technology, fuel and feedstock switches, more efficient uses of basic materials, and process improvements would account for 27 percent, 18 percent, 5 percent, and 4 percent, respectively.[7]

According to South Korea's Ministry of Science and Technology, the adoption of technical solutions other than carbon capture and sequestration technology and fuel and feedstock switches could reduce GHG emissions in the Korean industrial sector by 6.3 percent by 2015 and by 17.0 percent by 2030, all relative to BAU (these projections were made in 2006). A significant aspect of these solutions would involve the use of high-efficiency boilers. Although high-efficiency boilers cost 50 percent more than ordinary boilers, they can make up for the greater cost in three to five years with their efficiency. This cost structure may suggest that firms will adopt high-efficiency boilers voluntarily and that BAU calculations should reflect this anticipated "rational behavior." In other words, because high-efficiency boilers can pay for their improved efficiency, GHG emissions under the BAU scenario should accordingly be reduced due to the anticipated adoption of high-efficiency boilers, and no additional cut will be achieved relative to the BAU level.

However, as Dan Ariely has noted in his book *Predictably Irrational*, people's choices are often shaped by "irrational" factors, such as a conservative mindset and miscalculations of benefits and costs,[8] and it may thus take proactive government measures to facilitate the adoption of high-efficiency solutions. This theory is in line with Michael Porter's hypothesis that environmental

7. International Energy Agency (IEA), *Energy Technologies at the Cutting Edge* (Paris: IEA, 2007).

8. Dan Ariely, *Predictably Irrational: The Hidden Forces That Shape Our Decisions* (New York: HarperCollins, 2008).

**Table 3.4. The Impact of a Carbon Tax on $CO_2$ Emissions** (percent)

| Technological Condition | Aspect of Impact | 2013 | 2020 |
|---|---|---|---|
| With the adoption of mitigation technologies | Manufacturing output | –1.13 | –0.87 |
| | Employment | –0.63 | –0.49 |
| | CO2 emissions | –10.70 | –16.79 |
| Without the adoption of mitigation technologies | Manufacturing output | –1.20 | –0.98 |
| | Employment | –0.69 | –0.57 |
| | CO2 emissions | –3.70 | –3.08 |

Source: Dong-Soon Lim et al., *The Sectoral Impact of Mandatory Cuts in Greenhouse Gas Emissions and Industrial Structure Upgrading Strategy* [in Korean], KIET Research Report 535 (Seoul: Korea Institute for Industrial Economics and Trade, 2008).

regulations can induce corporate innovation and improve competitiveness.[9] In fact, a survey by the Korea Energy Management Corporation shows that the country's firms have a low demand for high-efficiency boilers and that their adoption would be delayed without proactive government measures to nudge them to think outside the box.

The adoption of a carbon tax targeting power generation and industrial sectors will also have a significant effect on $CO_2$ emissions. As shown in table 3.4, a carbon tax on the amount of 52,000 won (approximately $50 at the prevailing exchange rate in 2007) per ton of $CO_2$ will reduce emissions by 10.70 percent in 2013 and by 16.79 percent 2020 if mitigation technologies are also introduced. Manufacturing output will be reduced by 1.13 and 0.87 percent, respectively. If mitigation technologies are not introduced, the emissions cut will be considerably smaller, at 3.70 percent in 2013 and 3.08 percent in 2020. Under this scenario, manufacturing output will be reduced by 1.20 and 0.98 percent, respectively. In other words, for comparable declines in manufacturing output, the adoption of a carbon tax along with mitigation technologies will achieve approximately three times as much emissions cuts as the adoption of a carbon tax alone, without the introduction of mitigation technologies.

## The Politics and Economics of Policy Responses to Climate Change

Although South Korea took a defensive stance in climate change negotiations in the 1990s, its rising GDP and GHG emissions have made it difficult to maintain this position. Despite continued reservations expressed by the business community, Korea has taken increasingly proactive measures to respond to climate change in recent years.

9. Michael E. Porter and Claas van der Linde, "Toward a New Conception of the Environment-Competitiveness Relationship," *Journal of Economic Perspectives* 9, no. 4 (Autumn 1995): 97–118.

In fact, the South Korean government under President Roh Moo-hyun used the Fifth Ministerial Conference on Environment and Development in Asia and the Pacific, held in Seoul in 2005, as an occasion to launch the Seoul Initiative on Green Growth. Noting that the conventional approach to "grow first, clean up later" is no longer the solution, the Seoul Initiative called on the Asia-Pacific region to embrace "green growth" or "environmentally sustainable economic growth." It provided a framework for policy consultations, capacity building, and networking for the promotion of green growth at regional level. The Seoul Initiative on Green Growth was based on the conceptualization of sustainable development as defined by the United Nations' World Commission on Environment and Development in *Our Common Future*: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[10]

## Presidential Commitment to Green Growth

After the Roh government had put forth the Seoul Initiative on Green Growth, the Lee Myung-bak government went on to take another giant step and presented "low-carbon, green growth" as a national vision, transforming the concept of "green growth" along the way. The watershed event was President Lee's address on August 15, 2008, marking the 63rd anniversary of national liberation and the 60th anniversary of the founding of the Republic of Korea.[11] In his address, the president noted that the republic had exhibited "great capacities in turning crises into opportunities" and urged the nation "to turn the recent surge in oil prices into an opportunity to transform economic fundamentals and create new growth engines," putting forward "'Low-Carbon, Green Growth' as the core of the Republic's new vision." Although he cited the conventional definition of green growth, his conceptualization of green growth seemed to posit a synergetic relationship between "green" and "growth," rather than a trade-off between them. In fact, green growth was put forward as a solution that would facilitate technological development, job creation, and social cohesion as well as economic growth:

> Green growth refers to sustainable growth which helps reduce greenhouse gas emission and environmental pollution. It is also a new national development paradigm that creates new growth engines and jobs with green technology and clean energy. Green technology puts together information and communications technology, biotechnology, nanotechnology and culture technology, and transcends them all. Green technology will create numerous decent jobs to tackle the problem of growth without job creation. . . . In the information age, the gap between the haves and have-nots has widened. On the contrary, the gap will narrow down in the age of green growth.[12]

To enable South Korea to move ahead of other nations and lead green growth, President Lee put forth ambitious targets in his speech. For instance, he committed himself to raising the energy self-sufficiency rate from 5 to 18 percent during his term in office and increasing the share of new

10. World Commission on Environment and Development, *Our Common Future* (Oxford: Oxford University Press, 1987), 4.

11. Address by President Lee Myung-bak on the 63rd anniversary of national liberation and the 60th anniversary of the founding of the Republic of Korea, http://english.president.go.kr/pre_activity/speeches/speeches_view.php?uno=270&board_no=E03&search_key=&search_value=&search_cate_code=&cur_page_no=7.

12. Ibid.

and renewable energy in primary energy consumption from 2 percent to more than 11 percent by 2030. He also promised that he would more than double research and development (R&D) investment in green technology, to make Korea "a leading powerhouse in the green technology market, which is expected to amount to 3 quadrillion won by 2020."[13] In his conclusion, the president remarked: "Admittedly, Korea has lagged behind in the carbon era, but the country should move a step ahead in the coming hydrogen era. . . . If Korea makes an audacious and swift move just as it did to advance its information capabilities to make up for belated industrialization, the country will undoubtedly be reborn as a green power."[14]

Although some observers were surprised that President Lee put forth "low-carbon, green growth" as the centerpiece of his speech commemorating the 60th anniversary of the founding of the Republic of Korea, they should not have been, for he had already made a commitment to green growth during the Group of Eight's Extended Summit in Toyako/Hokkaido on July 9, 2008. In his remarks to global leaders, President Lee expressed vigorous support for "the long-term goal of cutting in half global GHG emissions by the year 2050" and committed to announcing South Korea's midterm mitigation target for 2020 sometime in 2009. He declared that his aim was to make Korea "an early mover" on climate change and energy issues and "faithfully play a bridging role between developed and developing countries." He emphasized that "the keys to a successful design of a post-2012 global climate regime are the provision of clear midterm reduction goals by developed countries and the introduction of incentive programs that will encourage the participation of developing countries," for instance, by recognizing carbon credits for verifiable mitigation actions made by developing countries. The president concluded his remarks by announcing a $200 million "East Asia Climate Partnership" comprising policy consultation, technology innovation, financial support, and pilot projects.[15]

## The Implementing Institution and Plan

In January 2009, the Lee government established the Presidential Committee on Green Growth (PCGG) to implement the vision of "low-carbon green growth." The creation of the PCGG merged the National Committee for Combating Climate Change, the National Energy Committee, and the Presidential Commission on Sustainable Development. The PCGG is cochaired by the prime minister and a private-sector representative and consists of 29 members from the private sector and 18 from the public sector.

In February 2009, the PCGG finalized the government's draft of the Framework Act on Low-Carbon Green Growth, and in July, it presented the National Strategy on Green Growth and the Five-Year National Plan for Green Growth (table 3.5). In the National Strategy, the PCGG set forth three objectives in its conceptualization of green growth: (1) to maximize synergy between the environment and economy, by developing green technologies and promoting green industries and by

13. On September 22, 2008, the Lee government unveiled a plan to foster the development of 22 new sectors covering a wide spectrum of manufacturing, energy and service industries as "future growth engines" to achieve "low-carbon, green growth. The 22 sectors included pollution-free coal energy, marine bio fuel, solar cells, nuclear power plants, green cars, next-generation wireless communications, cultural contents, software designs, and health care.

14. Ibid.

15. Remarks by President Lee Myung-bak on the occasion of the Group of Eight Summit in Toyako, July 9, 2008, http://english.president.go.kr/pre_activity/speeches/speeches_view.php?uno=255&board_no=E03&search_key=&search_value=&search_cate_code=&cur_page_no=7.

**Table 3.5. South Korea's Strategic Priorities and Policy Directions for Green Growth**

1. Adapt to climate change and secure energy independence
   - A. Efficiently reduce greenhouse gases
   - B. Reduce oil dependence and improve energy self-sufficiency
   - C. Build capacity to adapt to climate change
2. Generate new growth engines
   - A. Develop and commercialize green technologies
   - B. Greenize industries and promote green industries
   - C. Upgrade industrial structure
   - D. Establish the base for green economy
3. Improve quality of life and national image
   - A. Green land use and transportation
   - B. Green revolution in everyday life
   - C. Global role model through green growth

Source: Presidential Committee on Green Growth, *Green Growth National Strategy* [in Korean] (Seoul: Presidential Committee on Green Growth , 2009), 49.

"greenizing" the nation's industrial structure and expanding the use of clean energy; (2) to enhance South Korea's international stature by actively participating in international climate change discussions and by exercising global leadership as "a green bridge state"; and (3) to improve the quality of life and green-revolutionize everyday life, by undertaking the low-carbon development of land and expanding ecological areas, by promoting green mass transportation, and by encouraging green consumption.[16]

Drafting the midterm mitigation target for 2020 presented the next major challenge to the PCGG. In preparing the midterm target, the PCGG warned that inaction on the climate change front would not only pose environmental and health threats but also aggravate South Korea's energy dependence and vulnerabilities to GHG-based trade barriers, and risked a loss of business opportunities in the emerging green market, which is projected to expand from $77.3 billion in 2007 to $254.9 billion in 2017, based on a 2008 study by Clean Energy Trends. The PCGG noted that the European Union had strengthened the GHG emissions standard for automobiles to 130 grams per kilometer (effective 2012) and 95 grams per kilometer (effective 2020). The PCGG also cited French president Nicolas Sarkozy's support for a carbon tax on imports as well as a provision for GHG-based border taxes in the Waxman-Markey Bill in the United States.

On November 5, 2009, the PCGG announced the midterm mitigation target for GHG emissions, and it presented three options for reaching this target. Of these three options, which are summarized in table 3.6, the PCGG recommended more ambitious options 2 and 3 to the government—which was finalized at the Cabinet meeting on November 17.

16. PCGG, *Green Growth National Strategy* [in Korean] (Seoul: PCGG, 2009), 41.

**Table 3.6. South Korea's Midterm Target for Greenhouse Gas Emissions**

| Option | 2020 Target against: 2020 business as usual (percent) | 2020 Target against: 2005 base (percent) | Mitigation Tools |
|---|---|---|---|
| 1 | –21 | +8 | "Greenize" buildings and homes<br>Strengthen demand-side management<br>Introduce low-carbon transportation system<br>Increase the share of renewable and nuclear energy<br>Introduce smart grid |
| 2 | –27 | 0 | Remove fluoride gases<br>Expand the supply of biofuel<br>Introduce carbon capture and sequestration |
| 3 | –30 | –4 | Introduce next-generation green cars<br>Expand the supply of high-efficiency appliances<br>Institute rigorous demand-side management |

Source: Presidential Committee on Green Growth, Seoul, 2009.

The PCGG put forward three major mitigation tools: the introduction of an energy consumption target management system, the expansion of clean energy (renewable and nuclear energy), and the establishment of a smart grid. The energy consumption target management system, to be applied progressively from 2010 to large users of energy, sets sector- and firm-level targets in conjunction with the national midterm mitigation target. In power generation, the share of nuclear power in terms of installed capacity is to be raised from 24 percent in 2008 to 41 percent in 2030. As table 3.7 shows, nuclear energy provides a relatively inexpensive source of power with minimal GHG emissions. South Korea has 20 nuclear power stations in operation, 8 under construction, and 11 more planned. Also, the share of new and renewable energy in primary energy consumption is to be raised from 2.49 percent in 2008 to 11 percent in 2030. Compared with the world technology frontier as assessed by field experts, Korea is at the 70 percent level in fuel cells, 85 percent in solar power, 80 percent in wind power, and 77 percent in biomass energy. To facilitate the expansion of available new and renewable energy sources, the government plans to increase R&D and provide a demand base by introducing the renewable portfolio standard in 2012, mandating the use of clean energy. Finally, a smart grid is expected to lead to energy savings through real-time interaction between power producers and consumers. The total GHG emissions cut from these mitigation tools is projected to be 60.1 million tons, compared with the BAU level of 813 million tons in 2020. The debate on these numbers is only beginning.

The PCGG also presented tentative sectoral plans for discussion. For buildings and homes, which account for 25 percent of South Korea's GHG emissions, the target abatement is 31 percent compared with the BAU level. For transportation, which accounts for 17 percent of GHG emissions, the target reduction is 33 to 37 percent compared with the BAU level.

**Table 3.7. South Korea's GHG Emissions and Cost per Unit of Electricity by Power Source**

| Measure | Unit of Measure | Nuclear Power | Wind Power | Solar Energy | Liquefied Natural Gas | Oil | Coal |
|---|---|---|---|---|---|---|---|
| Unit GHG emissions | Grams of CO2 equivalent / kWh | 10 | 14 | 57 | 549 | 782 | 991 |
| Unit cost | Won/kWh (2008) | 39.0 | 53.7 | 107.3 | 143.6 | 195.0 | 647.0 |

Source: Presidential Committee on Green Growth, Seoul, 2009.

Note: kWh = kilowatt-hours.

The government plans to invest a total of 107 trillion won from 2009 to 2013 to promote low-carbon green growth. The secondary production effect is projected to be 182–206 trillion won. According to the PCGG, the mitigation of GHGs will directly reduce GDP by 0.29 to 0.49 percent; however, the green growth that results from the expanded R&D investment will more than make up for this direct effect.

## A Consensus-Forming Process

In drafting the midterm mitigation target, the PCGG held 30 interministerial meetings to project GHG emissions and mitigation technologies in the future. The PCGG also hosted 44 public debates and hearings after releasing the three GHG emissions scenarios or options in July 2009: (1) –21 percent, compared with the BAU level in 2020 (+8 percent compared with the base figure in 2005); (2) –27 percent (0 percent); and (3) –30 percent (–4 percent) (see table 3.6). In addition, the PCGG conducted two opinion surveys, in August and October 2009. These surveys involved the general public, civil society, and the business community.

*The general public*. In the August 2009 survey, the general public supported option 1, while experts were in favor of option 2. However, the October 2009 survey produced a strikingly different result. The general public now overwhelmingly supported option 3. Of the 1,000 respondents, only 14.7 percent (44.4 percent in August) were in favor of option 1; 27.0 percent (34.1 percent) favored option 2; and 52.5 percent (18.3 percent) favored option 3. Apparently, the UN Leadership Summit in September 2009, where a number of countries announced ambitious mitigation targets, and Korea's selection as the host for the Group of Twenty's Leadership Summit in 2010 had helped to turn the tide. International considerations, including national prestige, had likely become more important in the minds of the general public during the period of two months.

*Civil society*. In contrast, from the early stage of the public debate, nongovernmental organizations emphasized South Korea's responsibility as the world's ninth-biggest emitter of GHGs and as a member of the OECD, and called for a 25 percent cut from the 2005 level, which was far more ambitious than the 4 percent cut presented in option 3.

*The business community*. In response to the government's proposal, Sung il-Hong, a representative of the Federation of Korean Industries (FKI) asserted that the government should give priority to industrial competitiveness instead of national prestige considerations, adopt cost-effective measures to reduce GHG emissions, and provide R&D support to facilitate the discovery and

dissemination of mitigation technologies. According to him, although South Korea's energy intensity (0.36) is worse than that of the United States (0.21) and Japan (0.11), this is not due to Korea's wasteful use of energy. Rather, Korea has a much higher GDP share of manufacturing (28.4 percent) than the United States (14.4 percent) and Japan (21.0 percent), with a higher share of energy-intensive industries such as steel and petrochemicals in the manufacturing sector. However, the energy efficiency of Korea's steel, petrochemical, cement, and oil-refining industries, which account for 70 percent of its GHG emissions, is on a par with that of Japan and better than that of the United States and Europe. The FKI representative urged the government to face these realities. He also noted that the marginal cost of reducing GHG emissions in buildings and homes and the transportation sector would be lower than in the industrial sector, and the government should use the principle of cost-effectiveness in achieving the mitigation target. As for R&D support, he said it would be imperative that the public and private sector work together to develop green technologies.[17]

Because the business community was concerned that the proposed emissions cuts would erode South Korea's industrial competitiveness, it recommended that the country maintain its developing status and go for the least ambitious target presented in option 1—*or below*. In an FKI survey, to which 211 out of 413 member companies responded, only 4.8 percent of the respondents supported the more ambitious options 2 or 3. Of the respondents, 22.0 percent supported option 1, and 49.8 percent felt that it would be difficult to achieve the mitigation target presented in option 1. A total of 3.3 percent even objected to the announcement of the national mitigation target. A total of 20.1 percent responded that they did not know.[18]

These responses were in line with the FKI's earlier position, well before the release of the draft midterm mitigation target. In July and August 2008, the FKI conducted an opinion survey of 350 nonfinancial member companies regarding climate change and GHG reduction. A total of 189 companies responded. On the most significant question regarding the impact of climate change efforts on corporate strategy, 58.8 percent of the respondents pointed to increased costs due to investments in GHG reduction. A total of 17.5 percent identified new business opportunities such as the development of renewable energy. A total of 12.8 percent saw chances to improve their corporate image by taking actions to mitigate GHG emissions. And a total of 6.6 percent were concerned about the negative effects on exports due to strengthened environmental and trade regulations.

As shown in table 3.8, corporate leaders and practitioners in GHG-intensive sectors such as power generation, steel, oil, petrochemicals, cement, semiconductors, paper, and automobiles tended to worry most about increased costs, whereas leaders and practitioners of firms in nonmanufacturing industries tended to see new business opportunities in GHG reduction efforts. In other words, there were important variations in responses to climate change in the business community.

This difference between GHG-intensive and manufacturing sectors on the one hand and nonmanufacturing sectors on the other shows up in their choice of desired modes of GHG mitigation, as shown in table 3.9. GHG-intensive and manufacturing sectors strongly prefer voluntary approaches, whereas nonmanufacturing sectors favor cap allocation and mandatory reduction and a more binding government–business accord.

17. Sung-il Hong, "Policy Directions to Achieve the Mid-Term Target for Greenhouse Gas Reduction" [in Korean], *FKI Focus* (Federation of Korean Industries), November 2009.

18. Seung-han Yeom, *Industrial Survey on Climate Change* [in Korean] (Seoul: Federation of Korean Industries, 2008).

**Table 3.8. Opinions in the South Korean Business Community about the Most Significant Firm-Level Impact of Climate Change Mitigation** (percent of respondents to survey)

| Type of Industry | Negative Effect on Exports | Increased Costs | New Business Opportunities | Improved Corporate Image | No Effect | Don't Know |
|---|---|---|---|---|---|---|
| GHG-intensive industries | 7.7 | 78.5 | 6.2 | 7.7 | 0.0 | 0.0 |
| Other manufacturing | 7.8 | 61.1 | 13.3 | 2.2 | 2.2 | 2.2 |
| Nonmanufacturing | 3.6 | 32.1 | 37.5 | 17.9 | 5.4 | 3.6 |

Source: Seung-han Yeom, *Industrial Survey on Climate Change* [in Korean] (Seoul: Federation of Korean Industries, 2008).

Note: GHG-intensive industries consist of the electric power generation, steel, oil, petrochemical, cement, semiconductor, paper, and automobile industries.

**Table 3.9. Opinions in the South Korean Business Community about the Desired Mode of Greenhouse Gas Mitigation** (percent of respondents to survey)

| Type of Industry | Cap Allocation and Mandatory Reduction | Government-Business Accord | Voluntary Business Community Accord | Don't Know | No Response |
|---|---|---|---|---|---|
| GHG-intensive industries | 7.9 | 18.4 | 68.4 | 0.0 | 5.3 |
| Other manufacturing | 7.4 | 42.6 | 50.0 | 0.0 | 0.0 |
| Nonmanufacturing | 20.0 | 55.6 | 20.0 | 2.2 | 2.2 |

Source: Seung-han Yeom, *Industrial Survey on Climate Change*.

Note: GHG-intensive industries consist of the electric power generation, steel, oil, petrochemical, cement, semiconductor, paper, and automobile industries.

On June 25, 2008, the business community made a voluntary declaration to reduce GHGs. This declaration targeted an improvement (i.e., a decline) by 2020 in GHG intensity (defined as GHG emissions divided by value added in the industrial sector) by 40 percent compared with the 2005 level. Because GHG intensity improves (i.e., declines) as long as value added increases faster than GHG emissions, the absolute amount of GHG emissions need not decrease to achieve the target. The business community benchmarked Nippon Keidanren (the Japan Business Federation), which had similarly made a voluntary declaration.

*"Consensus."* During the final two parliamentary hearings organized by the Special Committee on Climate Change, a "consensus" began to emerge around option 3, so as to give a strong policy signal for green growth and befitting South Korea's international stature as an OECD member and host of the Group of Twenty summit. On November 17, 2009, a month before the UN's Copenhagen Conference on Climate Change, President Lee Myung-bak formally announced that by 2020, Korea would cut its GHG emissions by 30 percent compared with the BAU level, or 4 percent below the 2005 level.

## A Post-Copenhagen Assessment

Although the Copenhagen Conference on Climate Change put forth the long-term goal of holding the increase in global temperature below 2 degrees Celsius, the Copenhagen Accord failed to resolve a number of key issues in climate change negotiations: the legal framework and provisions of the post-Kyoto system; global and country-level emissions cuts; the architecture for measuring, reporting, and verifying; and financial and technical cooperation. At the same time, what the accord did achieve contains important clues for future policymaking.

In the area of mitigation, the Copenhagen Accord retains the distinction between Annex I and Non–Annex I parties; further strengthens the emissions reductions initiated by the Kyoto Protocol for Annex I parties; and recognizes voluntary mitigation actions taken by Non–Annex I Parties, "with provisions for international consultations and analysis under clearly defined guidelines that will ensure that national sovereignty is respected." In the area of financial cooperation, the accord makes a distinction between developed and developing countries, calling for a mobilization of "100 billion dollars a year by 2020 to address the needs of developing countries." As for technological cooperation, the accord offers little detail, other than the establishment of a "Technology Mechanism to accelerate technology development and transfer."

The Copenhagen Accord implies that South Korea, as a non–Annex I party, does not have to make mandatory emissions cuts and instead can voluntarily pledge mitigation actions based on environmental, economic, security, and international prestige considerations. At the same time, it suggests that Korea, as a developed country, may face increased pressure to make financial contributions to abate climate change.[19] On the technology side, the Copenhagen Accord basically places no burden on Korea. As such, the accord generated hardly any debate in Korea and only affirmed the relevance of green growth as a national vision. Thus, even if the global community fails to reach an agreement on the post-Kyoto system, South Korea will continue seeking to become "an early mover" and "a bridge between the developing and developed countries," taking proactive measures to improve its competitiveness and international stature.

19. Yong-gun Kim, Ijin Kim, and Siwon Park, *Climate Change Negotiations for the Post-Kyoto Regime: Key Issues and Implications I* [in Korean] (Seoul: Korea Environment Institute, 2009).

# 4 CLIMATE CHANGE, CLIMATE POLITICS, AND THE CLIMATE BUSINESS
## DOMESTIC VARIABLES AND CHINA'S EMISSIONS REDUCTION POLICY

Zhu Feng

Much of the existing scholarly work on climate change policy is premised on a commitment to curb carbon emissions and has focused on technical policy prescriptions for achieving reductions. But as the December 2009 Copenhagen Conference on Climate Change showed, it is the political judgments of state actors that will determine whether these recommendations will be implemented. This appears to be particularly true in the case of China. Beijing was roundly condemned in the West for demonstrating a supposedly "rigid" and "arrogant" attitude in the Copenhagen negotiations.[1] This criticism reveals a failure to understand the political landscape in which the debate about carbon emissions operates in China. In other words, questions about political capability—and, possibly more important, political will—are central to the debate about climate change policy but remain underanalyzed in the literature. Building a better understanding of the politics of climate change will ultimately encourage more realistic policymaking.

There is a strong political will in China to curb carbon emissions. The government recognizes that building an ambitious environmental policy is both in its own self-interest and will also encourage others to view it as a responsible global stakeholder. As Premier Wen Jiabao proclaimed to the Third Plenary Session of the Eleventh National People's Congress on March 5, 2010, "China will insurmountably commit to conserving energy and reducing emissions to boost climate change positively."[2]

However, several factors complicate the realization of this aim. China continues to view environmental policy as an issue of sovereignty and is reluctant to submit to an international oversight regime of norms and regulations, particularly if it is shaped by the developed nations primarily responsible for climate change. Considering China's historical sensitivity to sovereignty issues and the central place the principle of "noninterference" plays in its foreign policy, there is no sign that China will change the position it put forward in Copenhagen.

At the same time, Beijing has been forging ahead with its own plans to make China more carbon-efficient through the development of environmental institutions, the adoption of new technology, and the imposition of binding domestic environmental targets. The result is an apparent contradiction between China's strident position in international negotiations and a set of domestic

1. On the rebuff of China's role at Copenhagen, see John Lee, "China Fears Climate Change Openness," *The Guardian*, December 30, 2009; Lenore Taylor, "China's Climate Stonewall," *The Australian*, December 21, 2009; Mark Kynas, "How Do I Know China Wrecked the Copenhagen Deal? I Was in the Room," *The Guardian*, December 21, 2009; Edward Miliband, "China Tried to Hijack Copenhagen Climate Deal," *The Guardian*, December 20, 2009.

2. Chinese premier Wen Jiabao, "Reports on the Work of Government," delivered at the Third Session of the Eleventh National People's Congress on March 5, p. 4, http://www.docin.com/p-46144189.html.

environmental policies that are widely acknowledged to be among the most progressive in the developing world. What accounts for this anomaly? My research suggests that Beijing's awareness of its own economic insecurity leads to this ambivalence.

## The Chinese Perception of Carbon Emissions Reduction: A Double-Edged Sword

The most important factor in defining Beijing's response to climate change is its persistent awareness of China's economic insecurity. This observation is not meant to repudiate the significance of carbon emissions reduction or environmental protection but to reveal Beijing's anxiety that fully accepting a Western climate regime might impede China's economic and trading competitiveness and consequentially leave its economic development harnessed to purely Westernized standards. Despite Beijing's state efforts to raise efficiency of energy consumption by forcing emissions cuts since 2005, the desirability of its economic autonomy, particularly at the level of local governments, explicitly set the tone for its endorsement of the principle that, as a developing country, it should accord its obligation of protection equality with its economic priorities. This sense of economic insecurity in confronting Western economic and trading superiority still lingers and thus encumbers Beijing's capabilities for innovation and problem solving on climate change.

China's insecurities on climate change derive from a growing anxiety about a global carbon tax and a concern that it may come under increasing economic pressure as other governments develop strong green policies. Because its industrialization is progressing with great momentum, China's energy consumption will be persistently growing, and climate pressure will unequivocally increase. Thus, coal-fired electricity and oil sales each climbed 24 percent in the first quarter of 2010, on the heels of similar increases in the fourth quarter of 2009. The country's surging demand for power from oil and coal has led to the largest six-month increase in the tonnage of human-generated greenhouse gases ever recorded for a single country.[3] The pressures for emissions reduction that the country faces will be immensely heavy and intense.

Beijing believes that the global conversation about climate change and greenhouse gas emissions reduction has now gone beyond well-intentioned environmentalism and turned into a deeper and broader debate about the future international economic order. It is widely believed in China that international emissions cuts and changes in energy technology will eventually remake global economic dynamics. Future economic competition among nations will be shaped by access to new energy technology. That is why, since the late 1990s, Beijing has made enormous investments to bolster domestic research and development in the energy sector. As a result, China is sprinting past every other country in the world in the race to develop clean energy.[4] Thus, the International Energy Agency has expressed cautious optimism about global emissions, partly because of slower world economic growth and partly because of China. China is able to slow the growth of its emissions much faster than commonly assumed due to its rising investment in wind and nuclear energy and newfound emphasis on energy efficiency.[5]

3. Keith Bradsher, "China's Energy Use Threatens Goals on Warming," *New York Times*, May 6, 2010.

4. Bob Herbert, "Watching China Run," *New York Times,* February 13, 2010; Shai Oster, "World's Top Polluter Emerges as Green Technology Leader," *Wall Street Journal*, December 18, 2009.

5. Jad Mouawad, "Climate Agency Sees China's Efforts Paying Dividends," *New York Times*, October 7, 2009.

That China can no longer rely, as it did previously, on the George W. Bush administration to hinder international progress on climate change is also important. The Chinese government is keenly aware that the new U.S. president, Barack Obama, has made the development of innovative energy resources and technology a focus for investment in an effort to build a green economy that can propel America's future economic growth. This reality is more likely to force China to face a growing raft of green trade barriers, encounter tougher industrial standards, and struggle for a more challenging energy-driven market.[6]

From Beijing's perspective, the response to climate change is now not so much about the environment but about development.[7] In its view, the real motivation of the Western powers, masked by a powerful ethical discourse, is to regain the economic cutting edge from Asia and strengthen their traditional predominance. As a result, Beijing has shaped its response to climate change by prioritizing the enhancement of its economic advantages, avoiding green marginalization, and preserving its autonomy as the global economy moves from high energy consumption to a more efficient use of energy. China's chief climate representative, Xie Zhenghua, has clearly stated China's goals as being long-term cooperation to fulfill the aims of the UN Framework Convention on Climate Change and the enforcement of five key elements: a "slowdown in emissions," "adaptation to change," access to "capital and technology," "common but different responsibility," and "developed countries moving first."[8]

The majority of China's analysts concur that carbon emissions are making the Earth warmer and that climate change will endanger all countries, including China. Although they also point to weather variations as a key factor in climate change, they agree that a cut in emissions is desirable and that improvements in energy technology will be essential to safeguard China's environment.[9] They are confident that it is a matter of when—and not if—new sources of noncarbon technology will be developed.

However, the reality is also that China is still going through its "industrial revolution" and that coal remains its most important source of domestic energy. By the end of 2009, China had surpassed Japan as the world's largest automobile producer and exceeded the United States as the world's largest market for car sales. China's increasing economic prosperity has brought increasing consumer expectations, which are unlikely to be curbed in the foreseeable future. This combination of factors means that China is destined to indefinitely be the world's biggest emitter of carbon dioxide. Beijing fears that this status will provoke international clamor for China to be subject to strident, internationally imposed emissions cuts. Particularly given the growing decentralization and intensive local economic protectionism across the country, the Chinese central government has lacked the confidence to strictly enforce and monitor emissions cuts with most of the local governments. Likewise, the fact that China has been shying away from international emissions reductions surveillance is largely the result of this fundamental challenge of governance.

6. Li Daogui, "Zai Huanbao Wenti shang Zhongguo yao you zhanlue qianzhanxing" [China should have a strategic vision to handle climate change], *Journal of the Green Leaf* (Lvye) 3 (2009): 2–5.

7. Pan Jiahua, "Diudiao Huanxiang: Zhongguo yingdui qihou bianhua yao zou dulizizhu zhilu" (Get rid of any illusions: China's approach to climate change should be interdependent), *Journal of the Green Leaf* (Lvye) 3 (2009): 5–9; Ding Yifan, "Qihou Bianhua shang: Zhongguo yao yi wo weizhu" (China should consider "self" rather than "other"), *Journal of Green Leaf* (Lvye) 3 (2009): 9–12.

8. "Xie Zhenghua Explains China's Views on 'Common Prospect,'" Xinhua News Agency, December 12, 2009.

9. This is the impression that the author got from interviews with five Chinese top weather experts in 2009.

In addition, Beijing remains reluctant to embrace internationally imposed emissions cuts because any economic slowdown would likely add to the country's social unrest and even derail the legitimacy of the Communist Party. Continued economic growth is the key expectation that Chinese citizens have for their government. Thus, any domestic economic insecurity could engender political instability. China is in the midst of a huge transition, where industrialization has not only brought about environmental degradation but also growing inequality, corruption, and social unrest. In the eyes of the Chinese government, all these developments need to be managed incrementally. If economic growth can be retained, they hope that social and political problems can be resolved in a "harmonious" manner.

Nevertheless, environmental issues and climate change are in fact keys to China's ability to continue to develop and will affect the legitimacy of one-party rule if the government is unable to move from a high-energy-consumption economy to a more energy-efficient one. Increasing numbers of Chinese citizens care about environmental issues and judge their quality of life according to their access to fresh air, green surroundings, and clean environments. Thus, in recent years, environmental degradation has led to the rise of mass protests in China. Partly in response, the current leadership has moved from the former leaders' "growth at any cost" policy of the 1990s to embrace "scientific development," by which it means a growth model that combines increasing prosperity with wider "social harmony" and ecological and environmental protection. The consequence is that Beijing is trying to dramatically ride the tide of climate change momentum internationally while ever more steadily bracing to restructure its domestic economy by combining cheap labor with abundant capital investment in green technology.

In this context, Beijing launched a cleanup campaign in 2005 and adopted national guidelines for conserving energy and reducing greenhouse gas emissions. During the cleanup campaign, hundreds of small power plants and iron and steel factories were closed. The Communist Party verified local performance in the field and even clearly listed cleanup fulfillment as the primary factor in cadre promotion. This campaign, of course, was also much motivated by the goal of raising energy efficiency and lifting economic productivity. Building on this campaign, at this point, climate change has now motivated China's "Green Long March." The key goal is to spur a new wave of technological revolution, lower manufacturing costs, and strengthen economic competitiveness.[10]

Beijing's perspective on its responsibility vis-à-vis climate change is remarkably complicated. On one hand, emissions cuts comply with Beijing's desire to maintain long-term domestic political and economic security. But on the other hand, the recent global financial crisis and the U.S.-European concept of a green economy provoke panic that China could be behind the socioeconomic curve. Many Chinese experts warn that deep cuts in emissions may be appealing but are also fraught with economic risk. They are wary of what will happen to the Chinese economy if Beijing follows European-style climate change policies. Proposals in Europe and the United States to impose border adjustments on high-carbon imports are widely regarded as a protectionist move that might impose high tariffs on Chinese exports, an effort to build a "Great Wall of Carbon" to block incoming "made in China" goods.

10. Chinese vice premier Li Keqiang stressed that "new energy will herald future's industrial-technological revolution." Xinhua News Agency, "Li Keqiang: Future's Trend of the World Industrial Evolution Is Environment-Friendly, Renewable Energy," December 12, 2009, http://www.ep360.cn/news/content-15337.htm1; Chinese Commission of National Development and Reform, *China's Policy and Corresponding Action to Tackle Climate Change: Report 2009*, November 25, 2009, http://gb.cri.cn/news/live/20091127.htm.

To what extent and in what way China should cut its greenhouse gas emissions is an economic and political matter rather than simply scientific commonsense. The country's main consideration is that its emissions reductions should be designed to advance its economic and trading advantages by pumping new competitiveness into its economy. It should avoid inadvertently subscribing to Western superiority by passively succumbing to a deal packaged in the West. Thus, Beijing's strategic goal in undertaking emissions cuts now embodies a mercantilist approach of looking to raise its global market competitiveness.

This is why Beijing has bolstered its own climate change agenda. It has steadily integrated the principle of *jieneng jianpai* (energy efficiency and emissions cuts) into its governance system. Therefore, any local government's economic development index measures performance against previously set goals to improve energy efficiency and emissions cuts. The State Council annually publicizes the performance records of local governments on environmental issues. Climate change and energy efficiency have become a central task for the central government alongside a broader desire to transform the structure of the domestic economy. As President Hu Jintao urged in early February 2010, the key to a successful restructuring of the domestic economy is to "promote economic growth to shift from relying mainly on investment and exports to relying on a well-coordinated combination of consumption, investment, and exports; from secondary industry serving as the major driving force to primary, secondary, and tertiary industries jointly driving economic growth; and from relying heavily on the increased consumption of material resources to relying mainly on advances in science and technology, improvement in the quality of the workforce, and innovation in management."[11]

New investments in plants and machinery are now vastly more productive and efficient thanks to better technology. Almost all companies that are working on new energy research and development are able to get Chinese government subsidies or loan support. China, by some measures, has the most ambitious research and development policy on climate change in the world. It has dedicated about $220 billion, or one-third of its overall fiscal stimulus, to projects such as wind, solar, hydropower, and clean-coal technologies. This will help the country achieve its target of increasing the share of renewable energy in its annual overall energy use to 10 percent by 2010.[12] This is why China feels confident about promising a reduction in carbon dioxide emissions intensity per unit of gross domestic product by 40 to 45 percent by 2020 against 2005 levels. In the eyes of Beijing, the United States lacks such a solid commitment, particularly given concerns about political will in the U.S. legislative branch, yet Europeans still prefer to side with Washington against Beijing on the issue of reduction commitments. From a Chinese perspective, hard proposals for reductions from the developed world will be treated with suspicion as long as those countries are not willing to back up their words with action. Chinese skepticism at EU, Japanese, and U.S. emissions reduction commitments is therefore abundant,[13] and it contributes to Beijing's hesitation to accept a binding international instrument.

11. "President Hu Says Faster Economic Adjustment 'Brooks No Delay,'" Xinhua News Agency, February 3, 2010.

12. "Asia's Green-Tech Rivals," *The Economist*, November 13, 2009, 13.

13. As for Chinese criticism of the proposals by the developed countries, see Pan Jiahua, "Post-Copenhagen Direction of Climate Change Politics," *Waijiao PingLun* (Foreign Affairs Review) 26, no. 6 (December 2009): 1–4; Zhuang Guiyang, "Game Playing at Copenhagen and Reappraisal of China's Role," *Waijiao Ping Lun* 26, no. 6 (December 2009): 13–21; and He Jiankun, Liu Bing, and Wang Yu, "Global Climate Change and Its Challenge to China," *Qinghua Daxue Xuebao* [Tsinghua University Humanities and Social Science Journal], no. 5 (2007): 71–79.

## International Responsibility, Shifting Perceptions, and the Calculation of National Interest

Despite suffering condemnation in the West, Beijing still argues that its performance in Copenhagen was "glorious" and "commendable" because it held to the line outlined by developing nations in negotiating two earlier international agreements, the Kyoto Protocol and the Bali Road Map. These accords articulated the preferences of developing nations and evoked the most recognizable climate change "norms" to which signatures adhere. In other words, as many in China have argued, Beijing has actually been a solid defender—a status quo actor—of international norms that have incrementally accumulated since multilateral negotiations began in 1992. Some go even further by accusing the Western powers of conspiring to distort the will of developing nations by trying to impose their own criteria. Thus, speculation about a "conspiracy theory" abounded in the Chinese media shortly after the Copenhagen Conference on Climate Change adjourned.[14]

Beijing contends that holding firm to the principle of "voluntary" cuts is in compliance with international norms rather than a violation of them. Judging from some media coverage, one might believe that the events in Copenhagen reflected an increasingly assertive Chinese diplomacy. The reality, however, was that Beijing simply decided to only use existing international norms to support its position and that of other developing nations. Did Beijing's use of the language of international norms thus amount to a form of socialization? It is worth remembering that in 1992 China rejected the European notion of "sustainable development" and criticized it as an attempt to impose "alien values" on China. Beijing has come a long way since then. It now not only embraces that type of terminology but also realizes that it is only by abiding by international norms that it can legitimize its interests and even claim the moral high ground. Therefore, when China's leaders use international norms to defend their priorities for greenhouse gas emissions reductions, they are also helped to gain domestic support. Whenever the international media criticizes China's climate policy, it can be used by Beijing as evidence that is has safeguarded the national interests and opposed Western efforts to trap China into an "unaffordable" swamp.[15] Although the fact Beijing now evokes international norms might nominally be considered a positive development—evidence that China is not a system changer—critics are only inclined to see this as a realist strategy of provocation.

Indeed, China's fear of a "climate trap" and "green barriers" did hinder its flexibility in Copenhagen, although by allying with three other emerging economies—India, Brazil, and South Africa—China did not face Western pressure alone. Beijing prepared very seriously for the Copenhagen Conference on Climate Change, and from the beginning it had no intention of backing away from the line it had drawn with other developing nations based on the Kyoto Protocol and Bali Road Map. The Copenhagen Accord protects Beijing's interests by not submitting Chinese and Indian emissions reduction targets to an international legally binding template, thus weakening demands for international verification. China was also able to shift the focus from its position as the world's biggest emitter to a battle between the developed and developing nations. Most important, Beijing considers its inflexibility righteous because its position is consistent with the "norms"

14. Zhang Xiaowen, "Jingti Qihou xianjing" [Be aware of the climate trap], *Huanqiu Shibao*, October 21, 2009; Wang Dan, "Qihou Wenti de liangmian xin" [Two sides to the climate change story], *Ershiyi Shiji Jingji Baodao*, December 9, 2009; Huang Zhongxi, "Qihou he Fazhan xuyao gongtong yingdui" [Climate and economic growth needs to march in steps], *Renmin Ribao*, December 14, 2009.

15. Hua Zhangxin, "Bu yong weiju qihou de dabang" [Stand up to the stick of climate change], *Huanqiu Shibao*, December 21, 2009.

enshrined in the Kyoto Protocol and Bali Road Map. Apart from accusations against China made after the end of the Copenhagen conference, Beijing was otherwise "happy" with the result. Climate change is clearly an issue that shapes international perceptions about how China will manage its increasing global power. For the Chinese government, however, that is of secondary concern relative to its primary goal of making sure its national economic priorities are protected.

For China, apparently, global efforts to address climate change are purely "climate politics." China may fail in the test to meet international expectations about its climate responsibilities, but it will succeed in the domestic political test. China's leaders, like their counterparts in the United States and Europe, are protecting the interests of their people. Why should China's leaders be blamed if they are able to strategically finesse American and European leaders at international conferences? The Chinese leaders go to these international conferences to play "chess" and protect China's national interest; they must win because if they lose, 1.4 billion people will pay the price. Western governments should focus more on the failure of their own tactics rather than complain that they were "checked" by the Chinese. Those who disingenuously complained about such gamesmanship should have known that Copenhagen was always going to be a venue for climate politics, and it was unrealistic to presume otherwise.

India has never been shy to talk of the "China threat," and the Sino-Indian border dispute remains a stumbling block in efforts to build strategic trust between New Delhi and Beijing. Yet the alliance between India and China in Copenhagen seemed unbreakable. That these two, possibly antagonistic, Asian giants could work together is revealing of the "political" nature of climate change. There were 45,000 people in Copenhagen and more than 100 world leaders. But in the end it came down to an extraordinary personal showdown between the leaders of the world's "two superpowers" and biggest greenhouse gas emitters.[16] Ironically, this showdown was completely unintended by Beijing; in fact, a "failed ambush" was targeted at the leaders of emerging economies by the host nation Denmark. The "Danish draft," which was leaked to The Guardian during the conference, attempted to switch a new negotiating text for the existing UN texts.[17] Nothing better demonstrates that climate change is a political issue, rather than purely scientific, than this fact.

## Domestic Evolution: Toward a New Climate Change Regime?

The Copenhagen Accord, with its "broad, nonbinding, and vague" nature, heightens controversy about the nature of an international climate change regime. For its part, China will hold firm to its pledge to cut carbon emissions by 45 percent per unit of GDP by 2020, no matter what international conventions conclude. Along with India, Brazil, and South Africa, China has repeatedly stressed that the emissions reduction plan it has presented to the UN is "voluntary."[18] According to those who want China's domestic program to be more accountable, Beijing should offer more than this plan, but the reality is that China is not ready to be a central, highly visible player on a major global issue. China's domestic constraints condition this stance, which will not be easily changed by international clamor that Beijing should meet its responsibilities as a global stakeholder.

16. Lenore Taylor, "China's Climate Stonewall," *The Australian*, December 21, 2009.

17. Jonathan Watts, "Copenhagen Destroyed by Danish Draft Leak, Says India's Environment Minister," *The Guardian*, April 12, 2010.

18. Chinese premier Wen Jiabao forwarded the letter to UN secretary-general Ban Ki-moon on January 30, 2010, reconfirming Beijing's announcement on November 17, 2009, about its pledge to cut emissions.

The fact is, China is not alone—as Copenhagen demonstrated. India, the biggest democracy in the world, has aligned itself with China's position. The Climate Group of Four—China, India, Brazil, and South Africa—will continue to work out a compatible approach, and there are no signs that this coalition will falter. And this is not even to mention the diversity of actors in Copenhagen—ranging from ostracized regimes to the antiglobalization movement—that do not share the West's perspective on climate change. What is the world to do? Capitulate to the divergence of contending positions on climate change, or place hope in a new "power concert" to ease the dynamics of complicated multilateral negotiations? Or should we simply lower expectations and begin to sort out a more realistic road map?

China should not be worried about external verification. It would be prohibitively expensive to do a proper national audit of carbon dioxide emissions. In reality, it would be a statistical exercise, extrapolating from a few localized studies, which could easily be managed, if that is what the Chinese would want to do. It seems slightly difficult to believe that an emissions verification framework would automatically translate as no-holds-barred reportage, as described by Mark Kynas.[19] Thus far, the question of whether Beijing should accept international verification remains unsolved. Some people are opposed because any international verification would significantly highlight the desirability of a legally binding instrument. Chinese opposition to the binding nature of any climate instrument should equate with the objection to verification. Others worry that verification might anger China's local governments, which usually cede environmental goals to economic priorities. At the least, China's acceptance of verification depends largely on whether it is willing to welcome a binding responsibility with respect to climate change.

Dealing with human-made climate change is a classic problem of collective action. All countries would like to avoid the consequences of atmospheric warming, but they would also like someone else to pay the costs of addressing it. Furthermore, the most negative consequences will not be evenly distributed and will not occur for several decades. This means that today's leaders would have to impose costs on their citizens now in order to leave future generations better off, which may be technically feasible but is hardly a tempting prospect for most politicians. In addition, there is still no consensus on the best way to proceed; some nations favor cap-and-trade systems while other prefers a straightforward carbon tax. Finally, the main polluters can be in very different economic circumstances. The developed world created the problem, but now it wants to get rising powers like China and India to undertake potentially costly measures that could slow their own growth. Needless to say, this prospect is not attractive to Beijing or New Delhi. Toss in the fact that any agreement would be unwieldy, expensive, and rife with verification problems, and progress appears difficult.[20]

If international collaboration is to be enhanced, then scapegoating should stop and the world should begin to consider how to adopt a more realistic approach that could reenergize the multilateral process for climate change mitigation negotiations. The conspiracy theories held by some Chinese about Western intentions are unhelpful and groundless. Likewise, efforts to press China hard to submit to greater accountability about greenhouse gas emissions cuts are not as well intentioned as their advocates insist. China's apparent inflexibility in Copenhagen does not reveal a government wedded to the use of coal. The Chinese government is serious about pursuing renewable energy development and remodeling its export-centered economy, as described above.

19. Kynas, "How Do I Know China Wrecked the Copenhagen Deal?"
20. Stephen M. Walt, "What Happened in Copenhagen?" *Washington Post*, December 21, 2009.

There is also increasing pressure from the bottom up as the environmental consciousness of the Chinese people grows and civil society groups increase in number. It is time for a more pragmatic approach to prevail and for all involved to take a more mature view about the range of options available to governments in order to move this vastly overpopulated planet forward. For this purpose, the international community should calmly seek a realistic and operable methodology to proceed with the Copenhagen Accord "with many paths forward."[21] Rather, the goal of the UN Framework Convention on Climate Change, separating the developed countries from the developing countries in terms of reduction accountability, should remain. Meanwhile, a great number of governmental organizations aiming to promote clean and renewable energy around the world—including the Asia-Pacific Partnership on Clean Development and Climate, Renewable Energy and Energy Efficiency Partnership, Methane to Markets Partnership, International Partnership for a Hydrogen Economy, Carbon Sequestration Leadership Forum, Global Nuclear Energy Partnership, and International Thermonuclear Experimental Reactor—are all functioning well to offer the affordable paths to fulfill the required emissions reductions.

Power clubs, such as the Group of Twenty and the Group of Eight plus Five, could also play the leading roles in pioneering an initiative and building a consensus for collaborative actions to cut emissions. In particular, United States–China cooperation on climate change will likely champion the inclusion of constructive elements in Beijing's approach, and facilitate a multilaterally negotiated agreement.[22] Despite the controversy over China's role in climate change, the bigger lesson from China for the rest of the world is that once the population of a developing country crosses the crucial threshold of a per capita income of $3,000, democratic tendencies may begin to emerge—and then the clunking fist of centralized state control will not be left unchallenged. In fact, the increasing number of environmentally focused nongovernmental organizations have inspired the Chinese people to raise their environmental consciousness, and have even helped prevent local governments from ceding environmental protection to feverish economic growth.

Yet China is still unnerving the world with its basic stance of ultimately "accepting" or "rejecting" a legally binding instrument of emissions reduction in anticipation of the Copenhagen Accord's enforcement. Obviously, Beijing is more inclined to play by its own rules—not to unequivocally accept international monitoring and tailor its reduction commitments to the West's standards, but rather to rely on technological innovation and promote clean and renewable energy, to bolster its economic edge. This strategy will hardly change in the future. China's leaders seem determined to keep their pledge. Premier Wen Jiabao has promised tougher policies to enforce energy conservation, including a ban on government approval of any new projects by companies that fail to eliminate inefficient capacity. He vows that China will find a way to meet the target in its current Five-Year Plan of a 20 percent improvement in energy efficiency. In fact, Beijing has been struggling to dodge the label of being the biggest emitter of greenhouse gases and has objected to a commitment based on this alleged status. Thus, Beijing's approach has favored apportioning emissions reduction responsibilities not according to the current amount of emissions but rather to a country's length of industrialization and rank in wealth. But this does not necessarily mean that China's climate performance will worsen. Instead, with the world's top

21. Paula J. Dobriansky and Vaughan C. Turekian, "Climate Change and Copenhagen: Many Paths Forward," *Survival* 51, no. 6 (January 2010): 21–28.

22. Kenneth G. Lieberthal and David B. Sandalow, *Overcoming Obstacles to U.S.-China Cooperation on Climate Change* (Washington, D.C.: Brookings Institution Press, 2009).

polluter emerging as a leader in green technology, it is increasingly likely that China's emissions will continuously decline.[23]

The irony is the extent to which China's enduring approach in this regard will heighten global concerns, and even risk thwarting global efforts to make the Copenhagen Accord enforceable. But Beijing is not fundamentally opposed to any legally binding deal on climate change, as long as the Bali Road Map and the Copenhagen Accord proceed successfully. China's leaders have a profound belief in China's future success, but they face challenges. They know that weak domestic demand, an export-led growth model, and state-led bank lending, now flush with a huge stimulus, need to give way to something more diverse and durable.[24] With the domestic stakes so high, China is unlikely to sacrifice its national interests in multilateral talks, even if international criticism becomes more and more heated. Therefore, China will attempt to hold the line and retain its own.

## Conclusion

At the Copenhagen Conference on Climate Change, two years of planning fell victim to two weeks of big power negotiations. The hard-headed realism of both the United States and China and their reluctance to commit to industrial curtailments were forgotten in the idealism that surrounded the conference. But it has now been restated, and hopefully it can become the foundation for a more realistic approach. Clearly the high levels of interdependence and the shared nature of the problem mean that there is a necessity to keep going forward.

Copenhagen was not the death knell of efforts to reach a global climate change deal. However, without sounder negotiation skills and a more politically aware approach to climate change, future negotiations risk being simply hot air. Despite Beijing's controversial role in Copenhagen, no one can deny its seriousness in aiming to curb its growth in greenhouse gas emissions while still fostering continued economic advances. The consequences might be a bitter pill to swallow, but they are unavoidable given political realities. In the wake of Beijing's prioritized agenda of putting clean and renewable energy front and center, the world might see a preliminary success in the fact that China is fighting rising emissions. China's national cleanup campaign is working well so far to lower emissions intensity. Given its souring desire for energy and porous bureaucracy; however, it remains a big test in the days to come. Perhaps its strong economic motivation might pave the way for even deeper emissions cuts. Recently, for instance, the China Huaneng Group, the nation's biggest power generator, targeted a capacity to produce about 35 percent of its electricity from clean energy by 2020 as the country seeks to cut pollution.[25] The appeal of clean and renewable energy is thus unstoppable in China. In the coming 25 years, China is anticipated to require 2.7 billion more cars.[26] Not surprisingly, 20 to 30 percent of them will be electric powered. The prospect of this

23. Premier Wen Jiabao declared on March 5, 2010, that between 2006 and 2009, China's energy consumption per unit of gross domestic product fell 14.38 percent, and chemical oxygen demand and sulfur dioxide emissions decreased 9.66 percent and 13.14 percent, respectively. We made vigorous efforts to respond to climate change, and set forth our country's targets, policies, and measures for controlling greenhouse gas emissions by 2020. See Wen Jiabao, "Reports on the Work of Government."

24. Lord Mandelson, "The World Needs China's Lead," *New York Times*, February 12, 2010.

25. Ying Wang, "China Huaneng Aims to Produce 35% of Power from Clean Energy," Bloomberg News, March 20, 2010.

26. "Chinese State Council Unveils 2020 Carbon Reduction Aim, and Low-Carbon Business Thriving," *Ifeng Caijing* [Ifeng Financial Weekly], November 11, 2009.

huge market has driven all carmakers to develop hybrid or purely electric cars. This goal will be both real and aspirational as China further cuts emissions.

The world shares aspirations for a better and cleaner planet. But in the future, we must focus less on rhetoric and more on creating realistic and implementable plans. If so, the effort to deal with climate change will possibly revert to some combination of national, bilateral, and regional initiatives, along with negotiations among the groups of major greenhouse gas emitters.[27] Beijing will certainly involve itself in these "many paths." But it is unclear to what extent China will find the desired cooperation. At least the "many paths" framework will push Beijing to head in the right direction.

27. Kenneth G. Lieberthal, "Climate Change and China's Global Responsibility," Brookings Institution, December 23, 2009, http://www.brookings.edu/opinions/2009/1222_china_climate_lieberthal.aspx.

# 5 THE POLITICS OF CLIMATE CHANGE IN INDIA

Prem Shankar Jha

Some weeks before he left for the Copenhagen Conference on Climate Change, the Indian prime minister's special envoy for the talks, Shyam Saran, warned a closed-door meeting of scientific and industrial organizations that the conference had ceased to be about climate change and had become essentially a trade negotiation, in which each country was seeking to safeguard its current rights and privileges while imposing the burden of adjustment on others. A problem that could only be solved through wholehearted international cooperation was therefore being addressed through coercion, backed by veiled threats of trade and other sanctions. No one, therefore, was much surprised when the conference failed even before the first delegations arrived in the city.

Ultimately, Copenhagen and its effort to engineer a global consensus on climate change amelioration tripped up against the most basic of obstacles: differing national interests driven by domestic political realities. This chapter addresses the Indian political approach to climate change negotiations and argues that technology, and not a multilateral agreement on carbon dioxide ($CO_2$) emissions reductions, is the most realistic source of a solution to the problem of climate change, in both the Indian context and more generally.

## India's Energy Strategy after the Copenhagen Summit

In the last moments of the Copenhagen summit, India joined a hastily convened meeting of the major economies, chaired by U.S. president Barack Obama, and agreed to voluntarily set a target for reducing the growth of per capita emissions substantially before January 31, 2010. The news of this last minute volte-face was greeted with anger by the environmentalists. India, they said, had betrayed every principle for which it had fought in reaching previous accords, from Rio de Janeiro to Bali.

The principle that had underpinned these previous accords was that the polluter must pay: Because the industrial countries (the Annex 1 countries of the Kyoto Protocol) are primarily responsible for the dangerous accumulation of $CO_2$ in the air, they should bear the lions' share of the cost of arresting its future growth. This principle is enshrined in the UN Framework Convention on Climate Change, and in the Kyoto Protocol. The base year for calculating emissions reductions in the protocol is 1990. Thus, when the United States informed the rest of the world in Bangkok, only weeks before the Copenhagen Conference on Climate Change, that it intended to shift its base year for calculating emissions reductions to 2005, and adhered to this position in Copenhagen, it in effect blew the Kyoto Protocol out of the water.

The agreement that emerged from the last-minute confabulations in Copenhagen took the demolition of Kyoto a step further by allowing every country to set its own target for reducing

$CO_2$ emissions. The 17 percent cut over 2005 emissions that the United States offered has given the world a foretaste of how this "autonomy" can be used, for it amounts to a paltry 4 percent reduction over 1990. This has taken all the steam out of the European Union's attempt to get the industrial countries to agree to an absolute cut of 15 to 25 percent in their total emissions from 1990 levels.

If every country can set its own targets, there is nothing to prevent the industrial nations from setting relatively low targets for themselves and penalizing the developing countries when they fail to meet the targets they have set for themselves. Indeed, as the Chinese government correctly foresaw, a carbon tax on imports from "dirty" producers is already being talked about in the United States and the European Union.

Indian environmentalists are also outraged by the provision in the "agreement" that the $30 billion promised to the developing countries will only be available to those that sign it. They see this as a crude way of buying the agreement of the smaller developing countries.

Has India really done a volte-face on climate change, and if so, why? The answer is that India's position has evolved rather than changed. During the past four decades, Indian environmentally focused nongovernmental organizations have chalked up a long list of successes in their battle to minimize the damage inflicted by economic development on the environment. This began in the 1960s with a multipronged, and eventually successful, effort to slow and partly reverse the rapid deforestation of the country. This was followed by Project Tiger, which led (among other things) to the establishment of more than 300 national parks as well as a concerted bid to promote integrated watershed management in rural areas. These initiatives have become an integral part of rural development planning by all the state governments.

A similar battle, begun in the 1980s, led to a ban on the use of lead in gasoline, to the refinement of diesel fuel to meet the European standards of the late 1990s, and to a ban on the use of diesel fuel in all commercial vehicles plying the country's larger cities and its replacement with compressed natural gas.

But throughout these years, the focus of Indian environmentalists has remained national. The threat they have perceived is from the inexorable commercialization and exploitation of nature and its gifts to humankind. Their awareness of the threat posed to all humanity by the rising concentration of $CO_2$ and other greenhouse gases (GHGs) in the atmosphere was, and still is, limited. Even those who are aware of the global perils of climate change see themselves only as its victims and not its progenitors.

One example of this situation is the growing concern about the increasing variability and unpredictability of the monsoons. An elaborate monsoon forecasting model that the Indian Meteorological Office has been using for the past three decades has suddenly begun to fail. The office has observed two disturbing trends: the average number of hours of precipitation, which used to be about 100 hours, has begun to fall, but the frequency of torrential outbursts has increased. As a result, although the average precipitation has increased slightly, it has done so in ways that are not helping but harming agriculture. This is exactly what climate science had predicted would result from global warming. In 2009, it had forecast a near-normal monsoon with slightly below-average precipitation. Instead, at the end of June the deficiency was 55 percent. The year ended with a deficit of 24.9 percent. One of the causes was three cyclonic storms in May and June over northeastern India, which stopped the southwestern monsoon dead in its tracks. In living memory, such storms have almost never occurred before the end of summer.

The threat that global warming poses to humankind is a reality of which Indians—policymakers, environmentalists, and the general public alike—are still only dimly aware. They are therefore even less aware of its imminence. James Hansen's warning to the U.S. Senate in June 2008 that the world had at most 20 years to stave off catastrophe found not even a mention in the Indian media.[1] Few, even among the environmentalists, are aware that the Earth could be headed for abrupt (now rechristened "dangerous") climate change. To this writer's knowledge, the term "tipping point" has yet to enter the lexicon of the Indian media, let alone be discussed by it.

To some extent, the Indian media's preoccupied focus on the immediate is responsible. But in both the Indian government and the environmental community, this focus is fueled by a distrust of the motives behind the admonitions of the rich nations. This is because their very first encounter with global warming was a bruising one. In March 1990, three months before the Rio de Janeiro Conference on Environment and Development, a U.S.-based think tank, the World Resources Institute, published a study that held the developing countries responsible for fully 47 percent of the rise in the concentration of GHGs in the atmosphere. According to the report, while the developing countries did account for only a small fraction of the fossil fuels consumed by the human race, they contributed large amounts of GHGs through deforestation and the burning of biomass, and by way of methane emissions from their rice fields and from the digestive systems of cattle. Needless to say, the two main culprits were China and India.

Indian environmentalists were flabbergasted. But their surprise turned into anger when the Delhi-based Centre for Science and Environment revealed that the World Resources Institute had arrived at this conclusion by apportioning the annual GHG absorption by natural "carbon sinks" between countries on the basis of the amount they were already emitting, instead of on a per capita basis. What angered them most was the implicit assumption that the rich nations had a right to pollute because they had "got there first." Opposition to accepting any such status quo therefore became the cornerstone of the Indian position at both the Rio conference in 1992 and the Kyoto summit in 1997, and it remains the centerpiece of Indian policy today.

This lack of awareness and receptivity, and the consequent preoccupation with adaptation to the near-complete neglect of mitigation, were reflected in the National Action Plan on Climate Change released by the government on June 30, 2008. The plan proposed only two ways of reducing $CO_2$ emissions—harnessing solar energy and increasing energy efficiency. But even while he was releasing the plan, Prime Minister Manmohan Singh committed India to never exceeding the average per capita emissions of the countries that belong to the Organization for Economic Cooperation and Development (OECD). This commitment, which was derided in the Western media as a brazen declaration of sovereign rights, actually committed India to limiting per capita emissions to about twice the 2007 level of 1.2 tons, *provided* that the OECD countries also reduced their emissions by up to 80 percent by 2050. Singh's formulation of the Indian commitment has thus fused the principle that the polluter must pay with an acceptance of the need for the larger developing countries to also cap, and then reduce, their $CO_2$ emissions.

Singh's approach is based on a recognition that the outcome of the climate change negotiations, and therefore in all probability the future of the human race, will not be determined by impartial courts of law but by the exercise of brute power. However, the United States and the

1. James Hansen, briefing for the House Select Committee on Energy Independence and Global Warming, "Global Warming Twenty Years Later: Tipping Points Near," June 23, 2008, http://www.columbia.edu/~jeh1/2008/TwentyYearsLater_20080623.pdf.

European Union do not have a monopoly of power. China and India also have considerable countervailing power. In fact, either singly or together, they have the power to push the world across the tipping point at which global warming will become irreversible. In 2007, the two countries together emitted 7.5 billion metric tons of $CO_2$. With their energy consumption growing at 6 percent a year, their joint emissions will quadruple by 2031. But the Earth's present capacity to sequester $CO_2$ is no more than 20 million metric tons, and may even decrease. China and India, therefore, have the capacity to destroy the world.

Singh therefore believes that the fear being expressed by the climate change community is groundless. The United States and EU know that setting stringent targets for themselves is essential not only for theirs and the planet's survival but also to induce China, India, Brazil, Russia, and other major GHG emitters to set stringent targets for themselves as well.

Singh (echoed by the minister for the environment, Jairam Ramesh) began to talk about a 25 percent reduction in the energy intensity of growth some time ago. But India is likely to aim for a higher target. Singh has already increased the target for solar power generation from 1,000 megawatts (MW) by 2020, announced in 2008, to 20,000 MW. At the annual meeting of the Indian Science Congress on January 4, he declared that India would "accelerate its nuclear power programme." But India is also actively exploring other avenues for reducing $CO_2$ emissions. These center on the conversion of flue gas $CO_2$ and biomass residues into transportation fuels.[2]

But the technological avenues that India is actively exploring will only come into general use if they are adopted by industry, and that will not happen if they are not economically viable. To make them viable, it is not sufficient to offer tax breaks, subsidies, and carbon credits to the pioneering firms. It is also necessary to strip off the encrusted regime of subsidies and incentives promoting the exploitation of fossil fuels that has developed over the years. The overview of India's current energy-related policies that follows shows just how daunting this task will prove.

2. In August 2009, India formalized these avenues for reducing $CO_2$ emissions in a National Clean Coal Mission that is intended to explore every possible way of reducing $CO_2$ emissions both before and after combustion. The former is being done by replacing power generation from subcritical with generation from supercritical power plants. Of 183,000 megawatts of additional thermal generating capacity to be established by 2022, nearly one-third will be in supercritical power plants. These will lower $CO_2$ emissions by 15 percent or more, in relation to subcritical plants. However, an even more promising route is the conversion of a part at least of flue gas $CO_2$ into methanol through synthesis with hydrogen, and by gasifying biomass, specifically crop residues, to produce synthesis gas and convert the latter into fuels for transportation. In both routes, the savings in $CO_2$ emissions will result from the replacement of fossil with nonfossil fuels in the transportation sector. This sector accounts for more than a third of India's total fossil energy consumption today.

In a report recently submitted to the government, a task force constituted by India's research establishments concluded that "methanol generation from $CO_2$ and renewable energy has an unlimited potential for a future fuel supply." The government is also exploring the production of methanol and dimethyl ether from biomass, specifically from crop residues. These technologies also offer a route by which solar thermal power can be deployed profitably (to produce hydrogen through the electrolysis of water) without excessive reliance on subsidies. To cite just one example, India is the second-largest producer of sugar in the world, with an annual sugarcane crop of more than 320 million metric tons. After the cane is crushed, there is more than 200 million metric tons of bagasse left, which is currently fed into the boilers to produce steam. Gasifying this bagasse and transforming the synthesis gas obtained into methanol can, in a hydrogen-added process, yield more than 250 million metric tons of methanol—equivalent in energy terms to 125 million metric tons of gasoline. This is more than double of the transport fuel consumption of the country in 2007.

## Policy Hurdles in the Power Sector

By far, the highest hurdle that India faces in seeking to move away from fossil fuels in the power sector is the politicization of power pricing that has occurred during the past four decades. This has led to a significant underpricing of power and to mounting deficits that are routinely covered by subsidies given by the central and state governments. The states have been the main culprits, because when power prices need to be raised, it is they who have to face the wrath of the public.

Under the Indian Constitution, electric power is a subject that comes concurrently under both the central and the state governments. As a result, though power is generated in plants operated both by the central government and the states (there are as yet almost no wholly private plants of any size), its sale is entirely through the latter. Until the mid-1970s, state governments set tariffs for all categories of consumers that reflected the cost of generation. There were, as a result, no subsidies. But the cost of generation skyrocketed in the second half of the 1970s under the twin effects of a rapid devaluation of the rupee and the global inflation that was triggered by the decade's two oil price shocks.

By 1978, therefore, all state governments had begun subsidizing the sale of power to the agricultural sector, and to a lesser extent to domestic consumers in the cities. Today, farmers pay less than a sixth of the average cost of power generation in a thermal power plant. And because agriculture and a host of rural-based small industries that masquerade as farms now consume a third of all the power generated in the country, the net rate of return on investment in this sector is –18 percent (as of 2007–2008).

The central government has been trying to make the states charge market-based prices for power supplied to "agriculture" for almost two decades, but with an almost complete lack of success, for no sooner does a state government start raising tariffs for farmers than the opposition parties in the state start offering them free power. To stop this race to the bottom, the central government finally prevailed upon all the states to set a minimum price of 50 paise (1 U.S. cent) a unit for power supplied to agriculture. But this is still under one-sixth of the average cost of generation.[3]

The state governments' monopoly over power distribution is the most important single cause of India's failure to attract a single foreign investor in the power sector after opening its economy in 1991. Therefore, unable to raise tariffs, the states and the central government have resorted to framing bid documents that set wholly unrealistic prices at which the power must be sold. As a result, there have been very few takers. This situation is illustrated perfectly by the government's plan to set up nine 4,000 MW "Ultra Mega" Power projects (UMPPs) using supercritical carbon dioxide technology in partnership with the private sector, which was announced five years ago. This plan was originally intended to add 100,000 MW of generating capacity by 2012, but as of January 2010, construction had not begun on even a single UMPP. Even the bidding process for some of the nine projects had not been completed. One of the main hurdles has been the requirement in the tender notice that bidders should be able to supply power at less than 4 U.S. cents a unit (2 rupees). According to experts, Reliance, the first Indian company to have gone ahead and made a bid for three UMPPs on these terms, hopes to defray some of its costs for power generation in the first plant by selling surplus coal from its captive mines. It hopes to complete this project in 2016.[4]

3. Government of India, *Economic Survey, 2007–8* (New Delhi: Government of India, 2008), 213, 215.

4. See the Web site of India's Ministry of Power: http://powermin.nic.in/whats_new/pdf/development_of_project.pdf and http://www.powermin.nic.in/whats_new/pdf/ultra%20mega%20project.pdf.

India has also not been able to attract any bids for its nuclear power projects so far because the newly established, state-owned Nuclear Power Corporation of India initially set the purchase price of power in the tender notice on the basis of the current average cost of generation in the handful of indigenously designed, heavy water–based power plants that are in operation today.

Without a willingness to end the huge, politically motivated subsidies for power provided to agriculture and a lesser extent the domestic sector, and thereby raise the average realization from the sale of electricity to 8 to 10 cents a unit, India does not stand even a remote chance of being able to shift out of coal-based power generation. But the threat posed by global warming is vague, and too little understood by members of the central and state legislatures, to make any dent in these subsidies. And the vociferous campaigning by climate activists that this is entirely the West's responsibility is muddying the waters still further.

## The Struggle over Land

A low power tariff requirement is not the only hurdle to fresh investment in India's power sector. Another, which has assumed immense importance, is the nonavailability of land. Even the three UMPPs that Reliance has undertaken to build are stuck at this roadblock. Infrastructure projects are being resisted bitterly by local communities because the state governments are acquiring the land from the owners at prices decided by them instead of by the market. As a result, no matter what they offer, there is always a suspicion that the owners could have gotten more. This has led to endless litigation, which has held up infrastructure projects for a decade or more at a time.

The problem is even more intractable in the mineral–rich central belt of the country and the northeast, where 3 of the 7 UMPPs and a majority of the 207 government-proposed hydroelectric projects are to be located. This is because most of the people who have to be evicted from the land are tribal people who have customary usage rights but no formally recognized ones. As a result, they do not qualify for compensation. In central India, their resistance has turned violent and is feeding a "Maoist" insurrection. The insurgents now have the capacity to bring infrastructure development to a halt. The only way to prevent this is to recognize the rights of indigenous peoples in addition to those of recognized landowners and make them beneficiaries of the development that takes place on their land. But this realization has yet to dawn on the central, and most state, governments.

## Political Hurdles in the Transportation Sector

The near-impossibility of getting the state governments to eliminate the subsidies on electricity makes it all the more important to find ways of capturing flue gas $CO_2$ and converting it into methanol and dimethyl ether for the transportation sector. For this will not only lower emissions in the power sector but also replace fossil fuels in the sector. However, producing methanol from $CO_2$ becomes an expensive option if the power needed for producing hydrogen is obtained from solar thermal power stations. These costs can only be recovered if methanol and dimethyl ether command a sufficiently high price in the market when they are sold as transportation fuels in place of gasoline and diesel. But the transportation fuels sector is almost more riddled with subsidies than the power sector.

To begin with, prices are not determined by the market but are administered by the ministries of petroleum and finance. These prices attempt to cross-subsidize the sale of kerosene, allegedly the poor person's cooking and lighting fuel, and cooking gas (liquefied petroleum gas), the urban consumer's cooking fuel, with heavy taxes on gasoline. But this attempt failed long ago because gasoline accounts for only 10 percent of the total consumption of petroleum products. As a result, the subsidy (underrecovery less tax revenues) in the oil sector in 2008–2009 amounted to more than Rs 800 billion, or $18 billion.

The main reason is the heavy subsidy on diesel. Once considered the poor person's transportation fuel because it powers buses, trains, and farmers' tractors, it accounts for more than half the total consumption of oil products in India. If energy equivalence had been used as the basis for pricing, diesel would have been priced 10 to 15 percent higher than gasoline, yet it costs only two-thirds as much as gasoline at the pumps. As a result, the diesel-fueled sport utility vehicle has become the conveyance of choice for the country's new middle class.

Energy equivalence is not used to price even natural gas, whose price is also administered, and is therefore subject to political convenience. As Suneeta Narain, the head of the Delhi-based Centre for Science and Environment, pointed out in an editorial in her organization's magazine *Down to Earth* in 2007, "the government has differentiated between users—priority sectors like power and fertilisers, small users and users of [compressed natural gas] in transportation, and others like petrochemicals and industry. The price of transporting gas has also been fixed through the state-owned gas company, GAIL. *In this way, the gas price remains competitive against its replacement, coal in the case of power stations, petrol and diesel in the case of transport, and naphtha in the case of industry*" (emphasis added).[5]

In short, the purpose of India's gas pricing is to encourage the *replacement* of other fuels with natural gas. This is the very antithesis of the pricing policy that is needed to combat climate change.

## Preconditions for the Energy Shift

The Indian government is in the very early stages of planning for the shift away from fossil fuels. It has therefore been preoccupied with finding alternatives to fossil fuels, and with getting a sufficient number of projects under way to get an accurate idea of what they will cost. To do this, it is prepared to generously subsidize the pioneer enterprises in each new area of energy development. Thus, to promote the development of solar energy, it has announced a subsidy of Rs 12 (26 U.S. cents) per unit of power for a period of three years.

However, the government has not even begun to think of the hurdles that its existing pricing policies will create for the shift away from fossil fuels. There is a tacit assumption that the resolution of these problems can be left for later because, for the next decade at least, energy produced with solar, nuclear, $CO_2$ capture via value-added products, and biomass technologies will meet only a small part of the total demand for energy. Their higher cost can therefore be absorbed by making relatively small adjustments to the existing price and tax regime. This argument has been used to justify importing nuclear power plants from the United States, France, and Russia. There is

5. Sunita Narain, "Of Fixing Price for Natural Gas," *Down to Earth* (Centre for Science and Environment), June 15, 2007, http://www.cse.org.in/editor.asp?foldername=20070715&filename=Editor&sec_id=2&sid=1.

also a tacit, and on the whole well-founded, assumption that the capital cost of new plants can be brought down substantially by indigenizing their technology and construction.[6]

But changes at the margin will not suffice. Even with the steps toward mitigation that it plans to take in the next decade, India will exhaust its "carbon space" (roughly 3 to 3.5 billion metric tons of annual emissions) by the mid-2020s. If it does not want its future economic growth to endanger the planet, it will need to ensure that by that year, all the increase in its demand for energy will be met by nuclear and renewable sources of energy. India therefore has 15 years to tackle the politics behind its current energy pricing policies.

## Where International Policy Coordination Is Needed

Obviously, India is not the only country in the world where energy pricing is politicized. Nor is this politicization confined to the developing and formerly socialist countries. The virtual taboo in the United States on even the discussion of a federal tax on transportation fuels, and the stiff resistance from the coal, oil, and automobile lobbies to the unambitious $CO_2$ emissions caps contained in the Waxman-Markey Bill, demonstrate how politicized the issue of energy pricing is in the United States.

In the present author's opinion, if developing the most promising renewable energy technologies needs to be the first area for international cooperation on climate change, then coordinating domestic energy policies to eliminate subsidies and remove other hurdles to the adoption of new technologies needs to be the second. Only then can the two issues that have attracted the most attention so far be taken up. These are the incentives that need to be offered to jump-start the shift into renewable energy and the resources that will have to be raised every year to bridge the difference between the costs of currently established and new energy technologies during the initial, high-cost phase of their deployment.

## Conclusion

As the dust settles after the tumult of the Copenhagen Conference on Climate Change, the reason for its failure is becoming more apparent each day. Averting the threat of abrupt climate change, which remains a real possibility, requires an absolute cut in $CO_2$ emissions of close to 80 percent, at least a quarter of which must be achieved by 2020.[7] As long as fossil fuels remain the energy base of the global economy, neither improvements in energy efficiency that reduce per capita emissions nor any natural or forced greening of the planet will suffice to reduce emissions by the required magnitude. Only a reduction of consumption, implying a decline in living standards in the rich nations and a forgoing of future growth in the poor ones, could meet the required emissions targets. And as Copenhagen showed, not even the rich, let alone the poor, were prepared to accept such sacrifices.

6. According to some estimates, the capital cost of new plants can be brought down by as much as 40 percent.

7. UN Framework Convention on Climate Change, "Reordering and Consolidation of Text in the Revised Negotiating Text," September 15, 2009, 16, http://unfccc.int/resource/docs/2009/awglca7/eng/inf02.pdf.

What Copenhagen should have taught us is that the world has made a historic error. The only sure way to avert the threat posed by global warming is to shift away from fossil fuels altogether. This means that *technology*, and not carbon caps, finances, patents, and verification regimes, must be the centerpiece of international action. But in the entire run-up to Copenhagen, technology remained the undiscussed residual. In not a single discussion did anyone raise the crucial questions: What are the most promising technologies? At what stages of development are they? How long will it take to make them commercially viable? What will their likely costs be? If they are uneconomic today, what will their future cost curves look like? And how soon will their cost curves intersect with the rising cost curve for fossil fuels?

As a result, the all-important question—which technologies should the world concentrate on developing in the immediate future?—has remained unanswered. And without this answer, this master blueprint, trying to decide on $CO_2$ emissions caps, resource transfers, technology transfer terms, and systems for monitoring and verification is like trying to build a house without an architect's plan.

But selecting the technologies to develop first is only half the battle. The other, more difficult, half is to create an economic environment that is conducive to the rapid spread of the new technologies. At present, national governments are trying to do this in an ad hoc, piecemeal manner by offering incentives, ranging from tax breaks to subsidies, to hasten their adoption. It is the view of this author that such haphazard efforts to make new technologies cheaper will not suffice. It is also necessary to make energy based on fossil fuels more expensive. The oft-cited rationale for doing so is the need to make the private cost of consuming fossil energy reflect at least some of its social cost. But an even more important reason is that existing "market" prices are seldom products of the market alone. In most countries, they reflect the power of dominant political interests to extract subsidies for themselves at the cost of other groups in society. The market mechanism is therefore not neutral about the choice of technology but, in this all-important field at least, is biased against the introduction of new technologies. Therefore, it is necessary to identify the causes of these biases and to remove them, and thus create a level playing field for emerging, renewable energy technologies.

# 6 THE POLITICS OF CLIMATE CHANGE IN INDONESIA

Agus P. Sari

> *We must tell the world it is possible to cure the global economy and save the planet at the same time. . . . We are devising an energy mix policy including LULUCF (land use, land-use changes, and forestry) that will reduce our [greenhouse gas] emissions by 26 percent by 2020 from . . . BAU (business as usual). With international support, we are confident that we can reduce emissions by as much as 41 percent. This target is entirely achievable because most of our emissions come from forest-related issues, such as forest fires and deforestation.*
>
> —Susilo Yudhoyono, president of Indonesia[1]

As the first commitment period of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) ends in 2012, a new accord—an extension of the protocol or a new one—needs to be agreed upon to limit greenhouse gas (GHG) emissions and to devise international cooperative actions beyond 2012. In December 2009 in Copenhagen, the Fifteenth Conference of the Parties (COP 15) to the UNFCCC and the Fifth Meeting of the Parties to the Kyoto Protocol had been expected to be the finish line of the so-called Bali Road Map established in December 2007 at COP 13 and the Third Meeting of the Parties to the Kyoto Protocol. The Bali Road Map is a process to negotiate the climate agreement beyond 2012. But the resulting Copenhagen Accord left mixed feelings among analysts and keen observers.

However, the Copenhagen Accord itself still does contain a number of very important points. It limits future increases in the average temperature of the Earth to below 2 degrees Celsius. As such, GHG emissions need to peak as soon as possible in the next decade. For developing countries, the peaking time frame can be longer due to their overriding priorities for social and economic development and poverty eradication. But even for developing countries, low-emission development is indispensable to sustainable development.[2]

In addition, the accord commits developed countries to provide $30 billion in financing between 2010 and 2012—$10 billion a year. By 2020, this commitment will increase to $100 billion a year. This includes support for mitigation actions like "reducing emissions from deforestation and forest degradation" (REDD+), as well as the enhancement of carbon removals and adaptation to the effects of climate change. The funds will be managed by a new entity, which is still to be established, called the Copenhagen Climate Fund. This fund will mobilize a wide variety of sources

1. President Susilo Bambang Yudhoyono, speech at the Group of Twenty Summit, Pittsburgh, September 25, 2009.

2. United Nations Framework Convention on Climate Change (UNFCCC), "The Copenhagen Accord," http://unfccc.int/resource/docs/2009/cop15/eng/l07.pdf.

from the public and private sectors, bilateral and multilateral sources, and alternative sources, with a governance structure that provides for equal representation from developed and developing countries. Moreover, a soon-to-be-defined Technology Mechanism will also be created to accelerate technology development and transfer.

Some countries had difficulties accepting the Copenhagen Accord. Some even rejected it. For example, Lumumba Dia-Ping of Sudan viewed the limit of 2 degrees as "suicidal," and instead argued for 1.5 degrees. However, Indonesia associates itself very closely with the accord. Indeed, it was among the first countries, if not the first one, to set emission reduction targets for GHGs. President Susilo Yudhoyono's Group of Twenty statement made Indonesia the first developing country to embrace the quantitative targets that were reinforced at COP 15 in Copenhagen. How did Indonesia achieve such a bold international position? Is its target achievable? What is its plan?

## Indonesia and Climate Change

> *Mitigation by developed countries alone will not be enough. Developing countries must also do more, and they must commit to a low-carbon development path. . . . There can be no climate solution if developing countries do not take part. . . . In September this year Indonesia declared emission reduction target of 26 percent from business as usual by 2020, and this can be increased to 41 percent with enhanced international assistance. As a non–Annex I country, we did not have to do this ;. . . we wanted to be p*art of global solution.
>
> —Susilo Yudhoyono[3]

COP 13 to the UNFCCC, which also served as the Third Meeting of the Parties to the Kyoto Protocol, was negotiated in Bali, marking a new level of participation from Indonesia. Indonesia has many reasons to participate in a more assertive manner in the international climate change negotiations. The country is highly vulnerable to climate change. Because it is an archipelago with more than 17,000 islands, its major environmental threats include sea-level rise, coastal inundation, and seawater infiltration of coastal areas. And it may also be threatened by reduced food and water availability. Given its vulnerability, it may expect to be a recipient of transferred resources and technology.

Meanwhile, Indonesia has strong domestic reasons for reducing its major sources of emissions. Cutting down its rates of deforestation and forest degradation—most of which is illegal—will have great economic benefits. Similarly, reducing its GHG emissions from transportation and energy use by deploying renewable resources and improved efficiency may increase its energy security, while at the same time reducing local air pollution.

Nevertheless, Indonesia faces major concerns. First, there is a perception that it is a major emitter of GHGs. Several reports have identified it as the third-largest emitter globally, due to forest and peat-land degradation, including fires. This has raised concerns that the country is expected to make stronger mitigation commitments. The restrictions on future emissions may be perceived as conflicting with Indonesia's development priorities and thus as limiting its options. This is especially true for the conversion of forest land to plantations and the planned increase in coal-fired power capacity.

3. President Susilo Bambang Yudhoyono, speech at the COP 15 High-Level Segment in Copenhagen, December, 2009.

Internationally, Indonesia also occupies a unique position in climate change politics. It is at the crossroads of many—sometimes conflicting—interests, and it has commonalities with a diverse set of countries. Among the developing countries, it is the fourth most populous, with a high prevalence of poverty, putting it on a par with China and India (and Brazil, Mexico, and South Africa). It also has large forest coverage, making it similar to Brazil and other South American countries, and thus it is a founding member of the F-11 coalition of forested countries. The vulnerabilities of some of its 17,000 islands may be similar to those of the small island developing states. In addition, being a former member of the Organization of the Petroleum Exporting Countries, with an economy greatly dependent on fossil fuels, it shares similar concerns with other countries that produce fossil fuels.

As well as being a potential bridge builder, Indonesia can also be a champion of issues in which it has a particular stake. These include a consideration of the role of oceans in climate change, the treatment of peat-land emissions, and, most important, agreement on a reduction of emissions from deforestation and forest degradation (REDD+).

## Effects and Adaptation

Indonesia stands to lose a lot when climate change intensifies. Its annual mean temperature has been observed as relatively consistently increasing by about 0.3 degree Celsius since 1990. The decade 1990–1999 was already the warmest on record, and the steep increase of almost 1 degree Celsius in 1998 made it the warmest year in the century.[4] Yet even when the temperature increase is modest, disruptions to the weather cycle will be severe. The intensity of rainfalls is expected to increase, while the length of rainy seasons becomes shorter and the annual number of rainy days drops. This will lead to disrupted water and food security, an inundation of productive coastal areas, affected marine ecology, and disrupted farming and coastal livelihoods. Climate change will also intensify water- and vector-borne diseases such as malaria, dengue, and diarrhea.[5]

## Greenhouse Gas Emissions

In 2000, emissions of GHGs in Indonesia were dominated by those from land use, land-use changes, and forestry (collectively known as LULUCF), along with those from peat-land sectors (figure 6.1). The total emissions from these sectors were 0.82 gigatons (billion tons, GT) of carbon dioxide equivalent ($CO_2e$)—about 60 percent of the total emissions in the country. The rest of the economy contributed about 0.55 GT, leading to a total of 1.37 GT.

The official reference for Indonesia's GHG emissions can be found in the country's *Second National Communication,* which was issued in 2009. It reports that the largest emissions came from land-use changes and forestry sectors (48 percent), followed by the energy sector (21 percent), peat fires (12 percent), waste (11 percent), agriculture (5 percent), and industry (3 percent) (table 6.1).[6]

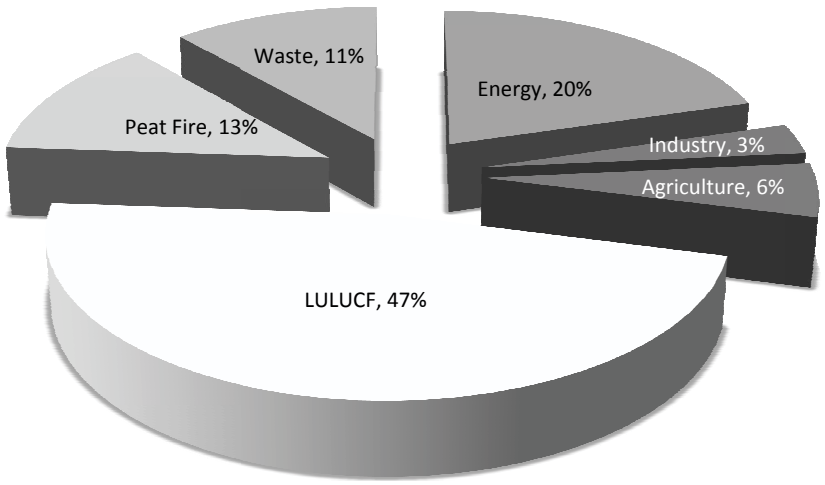
In the period 2000–2006, the energy sector grew the fastest, at an average annual rate of 5.7 percent, followed remotely by the industrial sector, at 2.6 percent; waste, at 1.2 percent; and agri-

4. PEACE, *Indonesia and Climate Change: Current Status and Policies* (Jakarta: World Bank, UK Department for International Development, and PEACE, 2009).

5. Ibid.

6. Ministry of the Environment, *Second National Communication* (Jakarta: Ministry of the Environment, 2009).

**Figure 6.1. Greenhouse Gas Emissions by Sector**




Source: National Council on Climate Change (NCCC), *Indonesia Country Study Final Report,* National Economic, Environment and Development Study (NEEDS) for Climate Change, December 2009, http://unfccc.int/files/cooperation_and_support/financial_mechanism/application/pdf/indonesia_needs_final_report.pdf, 17.

**Table 6.1. Summary of Greenhouse Gas Emission and Removal, 2000** (thousand tons)

| Sector | CO2 Emissions | CO2 Removal | CH4 | N2O | PFC | CO2e |
|---|---|---|---|---|---|---|
| Energy | 247,522 | | 1,437 | 10 | | 280,938 |
| Industry | 40,342 | | 104 | 0.43 | 0.02 | 42,814 |
| Agriculture | 2,178 | | 2,419 | 72 | | 75,420 |
| Land use, land-use changes, and forestry | 1,060,766 | 411,593 | 3 | 0.08 | | 649,254 |
| Peat fires | 172,00 | | | | | 172,000 |
| Waste | 1,662 | | 7,294 | 8 | | 157,328 |
| Total | 1,524,472 | 411,593 | 236,388 | 28,341 | | 1,377,754 |

Source: Ministry of the Environment, *Second National Communication* (Jakarta: Ministry of the Environment, 2009).

**Table 6.2. Summary of Greenhouse Gas Emissions from All Sectors, 2000–2005**
(billion grams $CO_2e$)

| Sector | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | Growth (percent per year) |
|---|---|---|---|---|---|---|---|
| Energy | 280,938 | 306,774 | 327,911 | 333,950 | 372,123 | 369,800 | 5.7 |
| Industry | 42,814 | 49,810 | 43,716 | 46,118 | 47,971 | 48,733 | 2.6 |
| Agriculture | 75,420 | 77,501 | 77,030 | 79,829 | 77,683 | 80,179 | 1.1 |
| Waste | 157,328 | 160,818 | 162,800 | 164,074 | 165,799 | 166,831 | 1.2 |
| LULUCF | 649,254 | 560,546 | 1,287,495 | 345,489 | 617,423 | 674,828* | Fluctuated |
| Peat fires** | 172,000 | 194,000 | 678,000 | 246,000 | 440,000 | | Fluctuated |
| Total with LULUCF | 1,377,753 | 1,349,449 | 2,576,952 | 1,215,460 | 1,721,179 | 1,991,371 | Fluctuated |
| Total without LULUCF | 556,499 | 594,903 | 611,457 | 623,971 | 663,756 | 665,544 | 3.2 |

*Estimated based on data from the Ministry of Forestry, 2009, and Badan Perencanaan Pembangunan Nasional (National Development Planning Board), 2009.

**Emission from peat fires was taken from G.R. Van der Werf et al., "Climate Controls on the Variability of Fires in the Tropics and Subtropics," Global Biogeochemical Cycles 22, GB3028 (2008): 1–13, as cited in the *Second National Communication*.

Source: Ministry of the Environment, *Second National Communication*.

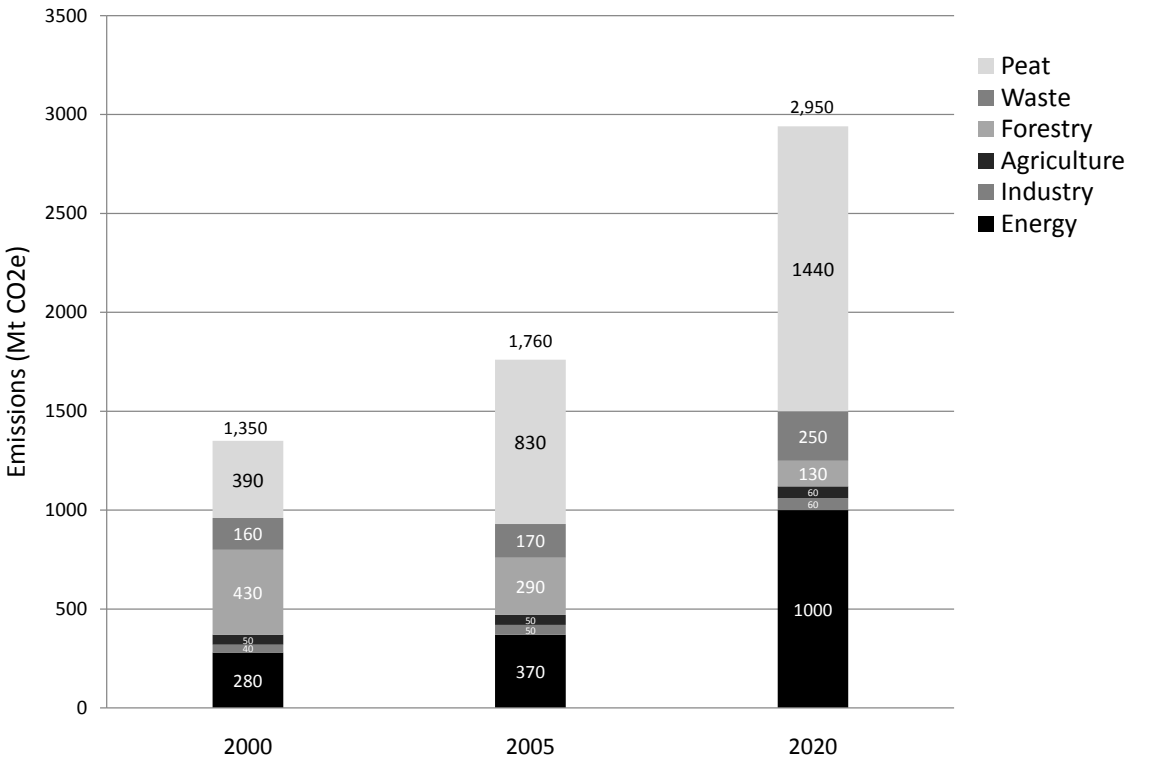
Note: LULUCF = land use, land-use changes, and forestry.

culture, at 1.1 percent. Emissions from land-use changes, forestry, and peat fires fluctuated considerably, but were a lot less certain. Various studies give a number of different figures, and there is a possibility that the official figures are underestimated. Table 6.2 summarizes the growth of emissions from 2000 to 2005 from all sectors, as officially reported in the *Second National Communication.*

Emissions due to LULUCF fluctuated sharply and thus were highly uncertain, but they are believed to be substantial. It was estimated that the main sources of $CO_2$ emissions in LULUCF sectors were deforestation (59 percent); soil, including peat oxidation (18 percent); peat fires (14 percent); and wood harvesting (9 percent). The official figures in the *Second National Communication* were that, in 2000, the rate of $CO_2$ emissions from forestry and peat-land sectors was higher than the removal rate. The total $CO_2$ emissions were 1.2 GT, while the rate of removal was 0.4 GT, resulting in net emissions of 0.8 GT. The National Greenhouse Gas Inventory study cited a study by Van der Werf and colleagues, which estimated that emissions from peat fires were about 0.2 GT, and that the average emissions from peat fires in the period 2000–2006 were 0.5 GT.[7]

7. G.R. Van der Werf et al., "Climate Controls on the Variability of Fires in the Tropics and Subtropics," *Global Biogeochemical Cycles* 22, GB3028 (2008): 1–13.

**Figure 6.2. Greenhouse Gas Emissions under the Scenario of Business-as-Usual in 2000, 2005, and 2020** (metric megatons of CO2 equivalent)




Source: NCCC, *Indonesia Country Study Final Report,* 18.

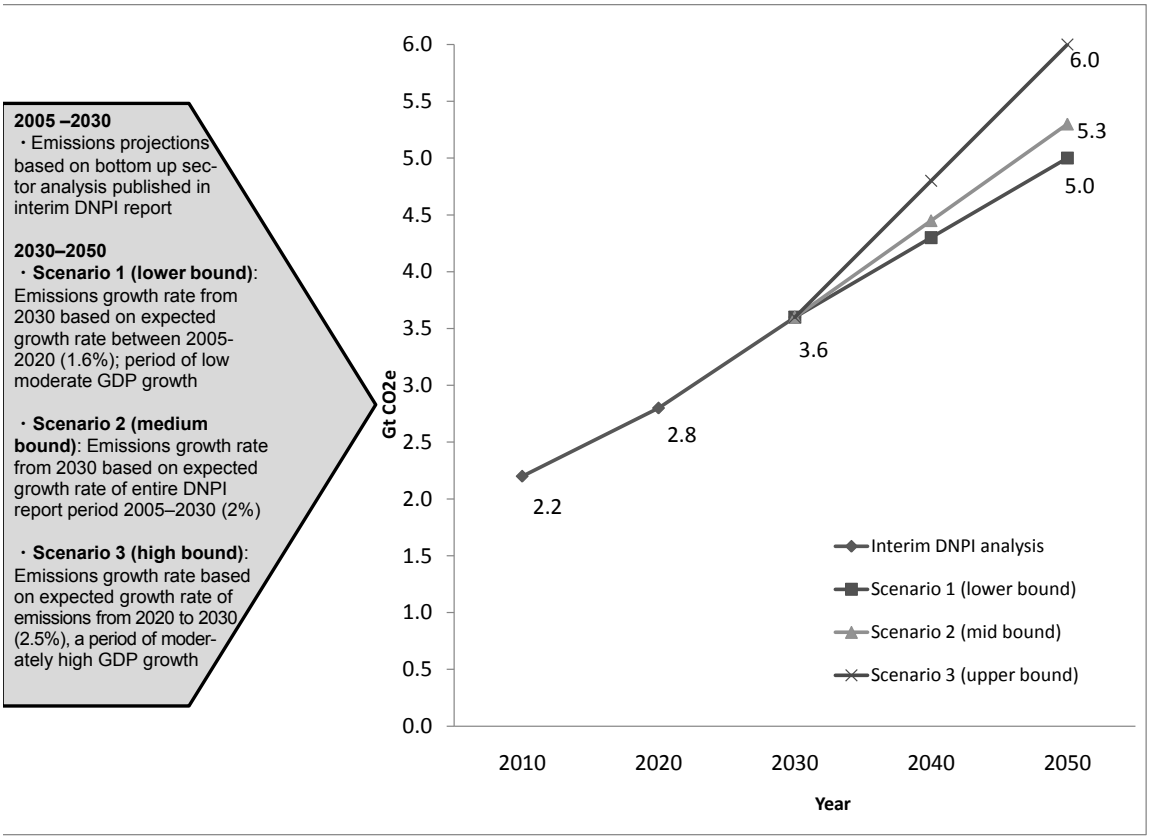
The remaining emissions were dominated by the energy sector, which was the second-largest emitting sector and had the fastest growth in emissions. From 2000 to 2005, emissions from the energy sector increased about 32 percent, or an average growth of 5.6 percent a year. Total emissions from the energy sector in 2005 were 0.37 GT, up from 0.28 GT in 2000, and of these emissions, 90 percent were from fossil fuel combustion. About 33 percent of the emissions from fossil fuel combustion were derived from energy production, 25 percent from manufacturing, 22 percent from transportation, 15 percent from residential and commercial, and 4 percent from unspecified sectors (agriculture, mining, construction, etc.). Cement production dominates emissions from the industrial sector, with 58 percent of the total industrial emissions.

## Projected Emissions in 2020

President Yudhoyono's targets are a reduction of 26 to 41 percent from what otherwise would occur under a "business-as-usual" (BAU) scenario, which has been developed for all sectors and was reported in the *Second National Communication.* Indonesia's GHG emissions were reported to be about 1.35 GT in 2000, and they had increased to 1.76 GT in 2005. It has been projected that emissions will grow to reach 2.95 GT in 2020. Figure 6.2 compares Indonesia's historical emissions in 2000 and 2005 and projection of the BAU scenario in 2020.[8]

8. Ibid.

**Figure 6.3. Projected Emissions for 2020, 2030, and 2050**
(metric gigatons of CO2 equivalent)



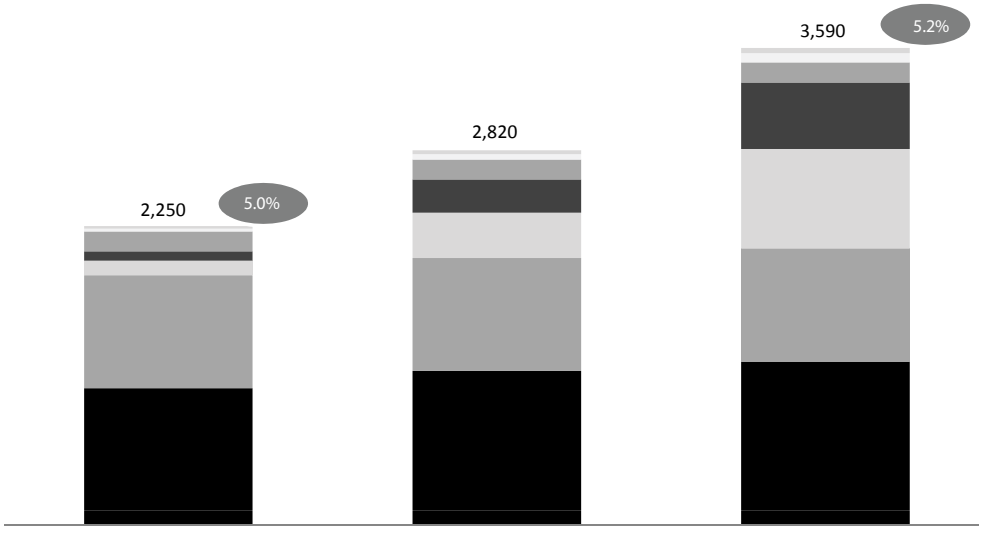

Source: Dewan Nasional Perubahan Iklim (DNPI) (National Council on Climate Change), *Indonesia's Greenhouse Gas Abatement Cost Curve,* Interim Report (Jakarta: DNPI, 2009); NCCC, *Indonesia Country Study Final Report,* 19.

A longer-term projection of emissions is presented in a study for the National Council on Climate Change (NCCC), albeit with different current emissions data.[9] The study projects Indonesia's emissions to grow to 3.6 GT by 2030 (figure 6.3). Using the same data and estimates, the study predicts Indonesia's emission to rise between 5 GT and 6 GT by 2050. The medium-bound scenario projects Indonesia's emissions to grow to 5.5 GT.

According to the NCCC study, Indonesia's increase in projected emissions in 2030 is mainly contributed by six sectors: buildings, cement, agriculture, transportation, power, forestry, and peat. These six sectors are considered to cover the majority of emissions and reduction potential. This assumption is thoroughly tested through interactions with more than 150 government agencies, nongovernmental organizations (NGOs), and donor and private-sector institutions. Figure 6.4 indicates the projected emissions increase for each sector; thus, while forestry contributes significantly to emissions, it will not experience a significant increase between 2005 and 2030. Meanwhile, the power sector is projected to experience a massive increase, more than sixfold from 2005 to 2030.

9. Dewan Nasional Perubahan Iklim (DNPI) (National Council on Climate Change), *Indonesia's Greenhouse Gas Abatement Cost Curve,* Interim Report (Jakarta: DNPI, 2009).

**Figure 6.4. Projected Greenhouse Gas Emissions by Sector** (million metric tons of CO2 equivalent)




| | 2005 | 2020 | 2030 |
|---|---|---|---|
| Buildings | 20 | 30 | 40 |
| Cement | 20 | 40 | 70 |
| Agriculture | 150 | 150 | 150 |
| Transport | 70 | 250 | 500 |
| Power | 110 | 340 | 750 |
| Forestry | 850 | 850 | 850 |
| Peat | 1030 | 1160 | 1230 |

Source: NCCC, *Indonesia Country Study Final Report,* 19.

## Abatement Scenarios

The *Second National Communication* of December 2009 shows that with the compiled sectoral mitigation plan, under different scenarios, Indonesia might be able to reduce its GHG emissions by 31 to 48 percent from the BAU scenario by 2020 (figure 6.5). From the 2.95 GT in BAU scenario emissions in 2020, the announced targets of 26 to 41 percent are to reduce it to 2.18 GT–1.76 GT by 2020, a decrease of 0.77 GT–1.44 GT.

The NCCC study also created the marginal cost curve to mitigate climate change in major emitting sectors in Indonesia. Based on the calculation and analysis of the cost curve of each sector in the study, Indonesia has the potential, if it applies the abatement scenarios, to reduce its emissions from about 3.6 GT to 1.4 GT, a reduction of 2.2 GT, in 2030.

More than 80 percent of the abatement potential is in the forestry and peat-land sectors. The power sector comes next, followed by agriculture, transportation, building efficiency, and cement. Abatement costs are negative (which means the abatement measures actually provide financial benefits) in the transportation, building, and cement sectors, with those in the transportation sector as high as €80 a ton. Abatement costs in the forestry and peat sectors are considerably lower, at

**Table 6.3. Share of Sector and Allocated Budget for Meeting the Non-Binding Emission Reduction Target**

| Sector | Emission Reduction Target (26%) | Cost (trillion rupiah) | Additional Emission Reduction (15%) | Cost (trillion rupiah) |
|---|---|---|---|---|
| Energy | 1.0 | 0.10 | 0.36 | 75.00 |
| Transportation | 0.3 | 10.00 | 0.28 | 10.00 |
| Industrial processes | 0.06 | 0.60 | 0.14 | 2.32 |
| Agriculture | 0.3 | 3.60 | 0.11 | 4.00 |
| Forestry | 13.3 | 46.40 | 11.02 | 36.93 |
| Waste | 1.6 | 6.10 | 1.07 | 5.00 |
| Peat | 9.5 | 16.50 | 2.03 | 35.00 |
| Total | 26.0 | 83.30 | 15.0 | 168.30 |

Source: Ministry of Finance, as quoted by Ministry of the Environment, *Second National Communication*.

€7 and €6, respectively, making them attractive sectors for mitigation. Table 6.3 shows the abatement costs for all sectors.

The 26 percent reduction commitment is a unilateral one. As such, the Indonesian government must commit to the target of 83.3 trillion rupiah (about $9 billion, or €7.8 billion). To finance more mitigation efforts to reach the 41 percent target, the government needs an additional 168.3 trillion rupiah, or about $18 billion or €15 billion. The average annual abatement cost of all sectors until 2020 is about €5.95 billion for the first 26 percent, and about €12.02 billion for the additional 15 percent.[10] These figures are about 1.4 percent and 2.8 percent, respectively, of Indonesia's projected gross domestic product in 2010, which is expected to contribute only 0.7 and 1.5 percent, respectively, in 2020. Indonesia's economy is expected to grow at 6 percent a year after 2014.[11]

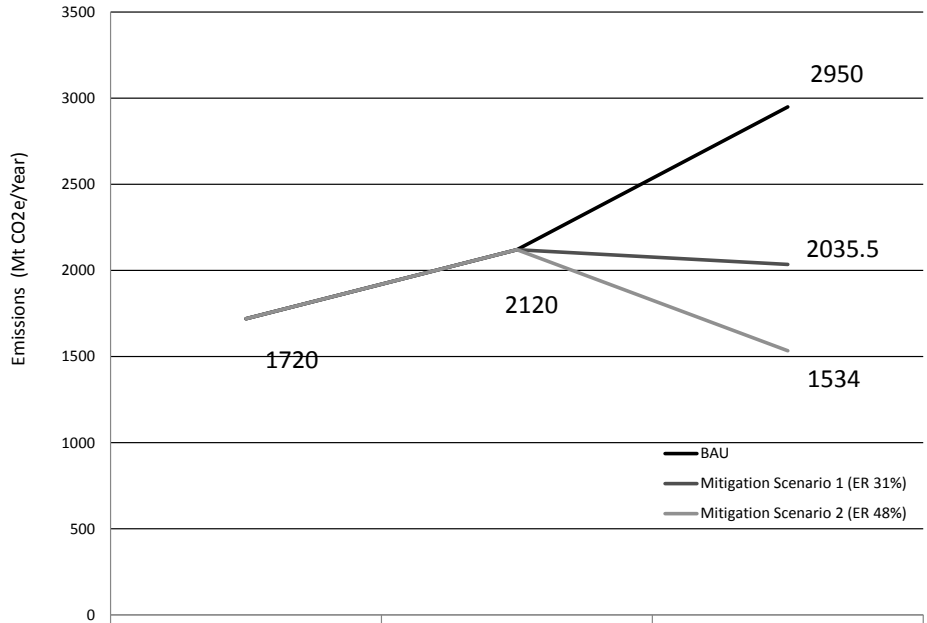
## The Development of Climate Change Policy in Indonesia

The road from Bali to Copenhagen and beyond had not been straightforward — it had not been flat either. The learning curve has been steep with the spread of information being rapidly expanded.

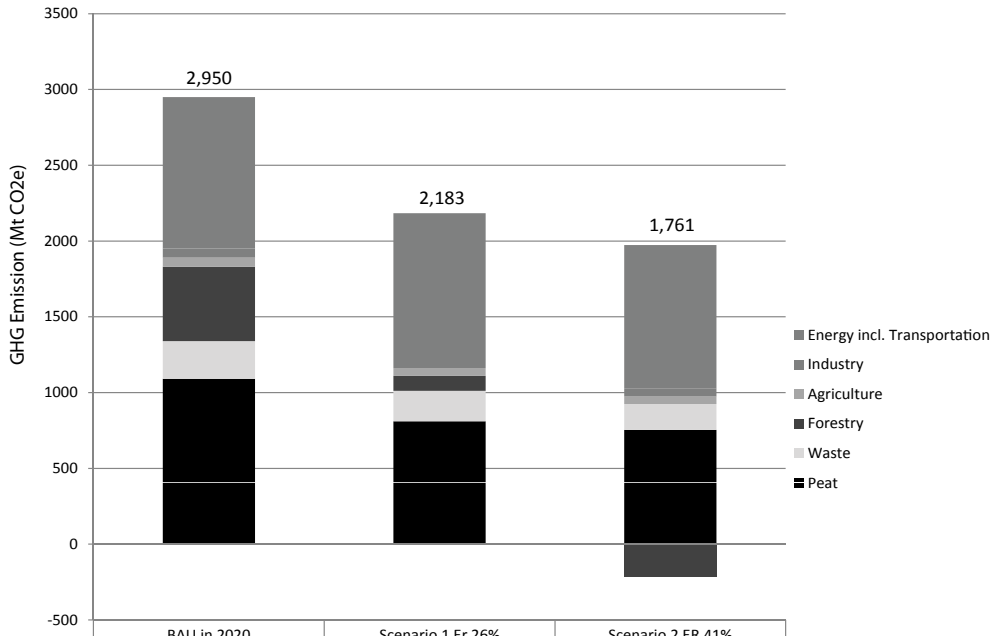
10. These amounts have been converted from rupiah at an exchange rate of €1 = 14,000 rupiah.

11. The GDP data (current value in dollars, converted to euros using historical value) real and projected values are taken from International Monetary Fund, *World Economic Outlook: Sustaining the Recovery* (Washington, D.C.: International Monetary Fund, 2009).

**Figure 6.5. Indonesia's Projected Emissions Business-as-Usual (BAU) versus Abatement Scenarios** (metric megatons of CO2 equivalent per year)




| | 2000 | 2005 | 2020 |
|---|---|---|---|
| BAU | 1720 | 2120 | 2950 |
| Mitigation Scenario 1 (ER 31%) | 1720 | 2120 | 2035.5 |
| Mitigation Scenario 2 (ER 48%) | 1720 | 2120 | 1534 |




| | BAU in 2020 | Scenario 1 Er 26% | Scenario 2 ER 41% |
|---|---|---|---|
| Energy incl. Transportation | 1000 | 962 | 944 |
| Industry | 60 | 59 | 55 |
| Agriculture | 60 | 52 | 49 |
| Forestry | 490 | 98 | -212 |
| Waste | 250 | 202 | 172 |
| Peat | 1090 | 810 | 753 |

Source: NCCC, *Indonesia Country Study Final Report,* 20–21.

Stakeholders were not standing still with the interplay of conflicting interests marred. The establishment of the National Council on Climate Change left the most significant mark on this road with the quality of the policies made increasingly high.

## The Political Dynamic of the Climate Change Stakeholders

Climate change was not an easy issue to elevate as a priority in Indonesia, where there are many more pressing issues. Indeed, environmental protection is not a developmental priority as compared with economic growth and poverty alleviation. Traditionally, the politics of climate change centered on the Ministry of the Environment, until the NCCC was established.

The politics of climate change goes back several years to 1989, when Indonesia joined the negotiating process under the UN General Assembly's Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC-FCCC), which led to the signing of the UNFCCC in Rio de Janeiro in 1992. Then–minister of environment Emil Salim was instrumental in starting public education in Indonesia.

NGOs also became involved in the climate change issue at about the same time. Among the first NGOs to become involved in the international process after late 1980s and early 1990s were Walhi, the Indonesian Environmental Forum, which is also the Indonesian branch of Friends of the Earth, and Pelangi, a think tank. These two leading NGOs eventually became the founding members of the Climate Action Network–Southeast Asia (CANSEA), a network of civil society groups working on climate change in Indonesia. CANSEA is a subnetwork of the Climate Action Network, which is a leading global network of NGOs working on climate change. Through CANSEA, the two Indonesian NGOs initiated public education about climate change and, eventually, they might even outsmart the government.

Indonesia signed the Kyoto Protocol in 1998, but it did not ratify it until 2004. Both shortly before and after 2000, developing countries began to notice the potential benefits of the clean development mechanism (CDM), whereby countries like Indonesia can benefit from a voluntary reduction of GHG emissions through CDM projects. However, because Indonesia had not ratified the protocol, it was not able to capitalize on the benefits of the CDM. At the time, Indonesian awareness of climate change and of the CDM was low, especially at the high political level. A national strategy study on the CDM, which was carried out by Pelangi under the auspices of the World Bank and funded by the government of Germany, managed to increase awareness of the program at high levels. A push to ratify the Kyoto Protocol then began to mount, which led President Megawati Sukarnoputri to submit a bill to the House of Representatives, and Law 17/2004 on the Ratification of the Kyoto Protocol was signed by the president on her last day in office.

The eventual signing of the Kyoto Protocol did not happen easily. For one, the coal industry—quite a strong political power in Indonesia—was not convinced that Indonesia should ratify the protocol, and argued that it would negatively affect the economy. Proponents of ratification argued that, because the emissions reductions—which may lead to reduced demand for coal—would happen outside Indonesia, blocking the ratification by Indonesia would not affect anything. If at all, it would negate the opportunity for Indonesia to benefit from the protocol provisions, such as the CDM, that might offset the reduced demand for Indonesia's coal.

## The Bali Road Map toward Copenhagen

Although Indonesia's participation in the process of negotiating the climate change agreement began in the very early days, it began to take assertive positions probably only when Rachmat Witoelar became minister of the environment, though it continued even beyond the end of his ministerial post. Before he took this post, there were already talks among those involved in the international negotiations about Indonesia hosting one of the Conferences of the Parties to the UNFCCC. That bid was challenged internally within the Ministry of the Environment itself, citing budgetary reasons. In the absence of Indonesia's bid, Thailand took the opportunity to bid to host COP 13, which also served as the Third Meeting of the Parties to the Kyoto Protocol. Thailand's bid was largely accepted by all countries, until a political crisis there made it almost impossible to organize the preparation for COP 13. Suddenly, Indonesia was back in the picture and was encouraged to bid. This time, Indonesia accepted the offer, made the bid, and received strong support from the rest of the world. Indonesia became the host of COP 13.

At the time, climate change information was not widely disseminated in Indonesia. Indeed, the environmental issue has always been a sideline compared with more immediate economic or political issues. For Minister Witoelar, there were at least two goals that could be achieved by hosting COP 13. First, it would generate massive publicity in Indonesia about the issue of mitigating climate change. Second, it would count as a "success story" for his ministry and ministerial office to host such an important event. COP 13 would likely be a good news story, given that President Yudhoyono had invested personal interest in the issue.

One interesting event that helped increase awareness on climate change among policymaking bodies was a paper called *The Peace Report*, which, using entirely secondary data, claimed that Indonesia was the third-largest GHG emitter in the world after the United States and China. This report—prepared by PEACE, a think tank, and sponsored by the World Bank and the United Kingdom's Department for International Development—was meant to provide a domestic backdrop to the visit by Nicholas Stern, the World Bank's chief economist. At the time, Stern was to talk about the global economics of climate change, and *The Peace Report* was to provide a domestic context for his presentation. The Ministry of the Environment was not happy about this situation, and it launched a campaign to dismiss the report's claim that Indonesia was the third-largest emitter. In the end, this polemic actually created an opportunity for an effective public education effort about climate change, and specifically about the role of the Indonesian forests.

At COP 13 in Bali, there was an allegation that there was a contest for leadership between the Ministry of the Environment and Ministry of Foreign Affairs for Indonesia's role as chair. Witoelar was the chair of COP 13, even though some people deemed him to be diplomatically unprepared, his background as ambassador to Russia aside. However, the minister of foreign affairs, Hassan Wirajuda, claimed to be more prepared and appeared to want to take over. In the event, there was indeed parallel diplomacy at COP 13. The formal negotiations were led by Witoelar, and the informal—hallway—diplomacy was led by Wirajuda. The fact is, there was a complex coordination between the two diplomatic channels, and at some crucial times there were coordination glitches. And in a negotiating climate as complex as COP 13, these glitches could have substantial effects.

In any case, however, COP 13 was deemed successful. It produced the Bali Action Plan, which consists of a series of issues to be negotiated and eventually agreed upon at COP 15 through a process called the Bali Road Map. The Bali Action Plan contained important points on mitigation, adaptation, finance, and technology to address climate change. In addition, the plan contained a

process that addresses the "shared vision for long-term cooperative action, including a long-term global goal for emission reductions."

## The Political Dynamics of the National Council on Climate Change

In the immediate aftermath of COP 13 in Bali, Indonesia prepared not only a national plan and strategic policy reform program but also set up the institutional framework to serve as the ultimate body for policy coordination among the key stakeholders in the country's climate change programs. In July 2008, the president issued Presidential Decree 48/2008 for the establishment of the National Council on Climate Change (Dewan Nasional Perubahan Iklim). The NCCC is chaired by the president himself, with Witoelar, as minister of the environment, serving as executive chair, and 16 cabinet ministers serving as council members. The NCCC has an Operating Secretariat and 7 Executive Working Groups on mitigation, adaptation, technology transfer, financial mechanism, LULUCF, the post-2012 program, and science basis and climate data inventory. Agus Purnomo, the head of the Organizing Committee of COP 13, became the head of the Secretariat of the NCCC. Witoelar was to chair it in his personal capacity.

The NCCC has become Indonesia's national focal point on climate change, with the primary responsibility of formulating national policy, strategy, and programs as well as coordinating all policy implementations related to climate change control, including mitigation, adaptation, technology transfer, and financing activities. The NCCC's working groups consist of multistakeholder members of key officials and professionals from sectoral ministries, academia, NGOs, the private sector, and other communities related to the group's tasks. Each working group has the tasks of collecting and screening data and information, providing analysis and policy inputs, and preparing draft guidelines and a regulatory framework on climate change policy issues, as well as monitoring policy and program implementations related to the scope of the working group to be reported to and decided by the NCCC. Administrative, technical, and operational support for the working groups and for the NCCC is provided by the Secretariat, which has four support management units, including communication, public awareness, outreach to key stakeholders, and outreach to the public.[12]

Indeed, the NCCC's leadership and authority have not been without challenges. Because climate change is a crosscutting issue, numerous government agencies claim ownership and authority over it. The largest overlap has happened with Bappenas, the National Development Planning Board (Badan Perencanaan Pembangunan Nasional), which claims that climate change is about development planning, and thus Bappenas, not the NCCC, should be the coordinating body for climate change issues. This problem similarly occurs to a lesser extent with the Ministry of the Environment.

Another challenge stems from the strong civil service culture in the Indonesian bureaucracy. There is a tendency that once you become a civil servant, you will always be one. And thus there is very little possibility for a midcareer professional from outside the bureaucracy to "jump" up in the bureaucracy. In this context, a number of the NCCC's staff members are not civil servants, which has tended to undercut their authority. Witoelar was spared because he was a minister, but everyone else underneath him, from the head of the Secretariat on down, were not. The fact that

12. National Council on Climate Change, *National Economy, Environment and Development Study* (Jakarta: National Council on Climate Change, 2010).

Agus Purnomo, the head of the Secretariat, is not a civil servant (in fact, he has strong nongovernmental background) made it difficult for him to assert his rightful authority. This problem also occurs with heads of working groups within the NCCC.

These challenges were not helped by the fact that the president has not even once led the NCCC's meeting. He has always delegated the task to the coordinating minister for public welfare, then Aburizal Bakrie. Having been involved in a number of high-level problems, Bakrie had his own challenges in asserting his authority among his fellow Cabinet members. Nevertheless, these challenges have not prevented the NCCC from performing well, mostly due to some exceptionally capable individuals within its Secretariat.

## Leading Up to Copenhagen: Issues in the Negotiations

Despite the apparent weaknesses, the NCCC has asserted its niche in the political dynamics of policy development on climate change. This assertion has even been stronger, and to some extent successful, in the development of Indonesia's negotiating positions. The process has been led by the Working Group on Beyond 2012, whose head, Tri Tharyat, has been temporarily transferred from the Ministry of Foreign Affairs.

Immediately before COP 15, a consultative process on formulating the negotiating positions was carried out by the NCCC. A series of meetings, workshops, and focus group discussion were organized to crystallize Indonesia's negotiating positions based on its domestic interests. Key issues were identified in this process, namely, financial architecture including the carbon market, mitigation, a reduction of GHG emissions from deforestation and the degradation of forests (REDD+), and adaptation.[13] The following key issues under negotiation were most relevant to Indonesia leading up to COP 15.

- *Nationally appropriate mitigation actions.* The Bali Action Plan mandates developing countries to consider "nationally appropriate mitigation actions . . . in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner" (paragraph 1b). The nationally appropriate mitigation actions, or NAMAs, are an attempt to define developing countries' "contributions" to achieving the ultimate objective of the UNFCCC. During the pre-Copenhagen deliberations, it was already recognized that a very high political commitment is needed for Indonesia to be able to formulate its positions on NAMAs—above the ministerial level. Without it, no position can be formulated, because no one wants to be the first to move on this. The Pittsburgh statement by President Yudhoyono cleared away many doubts regarding NAMAs and created a breakthrough, both internationally and domestically.
- *Financing mechanisms.* Indonesia believes that the major source for finance will be derived from public funds, which will eventually be used as leverage for new and additional sources through market mechanisms and other private sources. On allocation, Indonesia holds the position that a funding mechanism should be consistent with the policies, programs, priorities, and eligibility criteria adopted by decisions of the COP. On governance, Indonesia has no preferred mechanism, but it mentions that the new and additional funding must come under the

13. National Council on Climate Change, *Indonesian Climate Change Negotiating Positions* (Jakarta: National Council on Climate Change, 2009).

authority of the COP, and there must be transparency at the international level. Indonesia also prefers a decentralized system in which financial facilities are established in developing countries. This is consistent with the fact that Indonesia already has a number of financing facilities related to climate change.

- *Carbon markets.* On market-based approaches, the NCCC's submission gives a sign that Indonesia acknowledges and supports the expansion of international carbon markets and the auction of emissions allowances may offer a means to provide financial incentives at the scale required to effectively implement global mitigation actions. Indonesia also supports the continuation of carbon markets to enable the transfer of clean technology, including its associated financial flows to ensure that developing countries grow their economies in a sustainable manner. Carbon markets offer the potential for some cost-effective means to reduce emissions. If designed well, they can mobilize additional private finance. As such, Indonesia holds the position to maintain the (monetary) value of carbon at an appropriate level.

  The carbon market in Indonesia is developing slowly. According to a computer model, Indonesia might take about 2 percent of the world's carbon market; China, in contrast, was already expected to take the lion's share of the world's carbon market, more than 50 percent. Up to now, there have been 328,000 certified emission reductions (CERs) issued for six projects in Indonesia, out of the 33 projects already registered with the potential to produce 19.3 million CERs to 2012. The issued CERs in Indonesia represent about 1 percent of the number of projects worldwide, but only 0.1 percent of the world's issued CERs.

- *REDD+ and LULUCF.* Indonesia is the largest contributor of land-use-based emissions, which contribute the largest share in Indonesia, largely from peat lands. Negotiations on REDD+ and LULUCF, and the inclusion of REDD+ in the carbon market, are therefore strategic for Indonesia. It can support the "pluses" after the REDD because they may provide additional support to sustainable management of forests, but it is cautious that REDD+ may disproportionately benefit other countries with larger "plus" potentials. Indonesia is supportive of market mechanisms only in a staged approach, in which readiness and some pilot activities are first financed through public funds.

  Can peat-land emissions be addressed under REDD? Peat lands that are still forested can be protected under REDD through the preservation of forests. However, peat lands where forest covers have already been lost are falling through the cracks. Avoidance of peat-land degradation and peat-land fires through peat-land restoration is not currently a part of REDD+. Nevertheless, Indonesia would benefit from being able to access REDD+ funding for avoiding peat-land degradation.

- *Adaptation.* Indonesia recognizes that its agricultural and coastal areas are vulnerable to climate change. The extent of these vulnerabilities remains to be assessed. Financing for adaptation is crucial, as are capacity building and transferring adaptation technologies. With respect to differentiating developing countries for adaptation purposes, Indonesia may take the position that adaptation issues need to be applicable to all developing countries.

## Copenhagen and Beyond

In his speech at the Group of Twenty's meeting in Pittsburgh in September 2009, President Yudhoyono officially, voluntarily, and unilaterally committed Indonesia to GHG emissions reduction

targets of 26 percent, which would be extendable to 41 percent from what otherwise would occur as business as usual, provided there is also financing from other countries. This commitment was reconfirmed at COP 15 in Copenhagen in December 2009.

Indonesia sent its submission as requested by the Copenhagen Accord in January 2010, long before the deadline. On January 19, 2010, through the NCCC, Indonesia sent a letter to the UNFCCC affirming its support for the Copenhagen Accord, noting that it remains committed to the 26/41 percent reduction that will be achieved in the peat-land, forestry, agriculture, energy, industry, transportation, and waste sectors. The letter also reassured the UNFCCC that a National Action Plan is to be devised through a presidential decree.[14] On January 30, 2010, Indonesia sent another letter reiterating its earlier statement that it is committed to reducing its emissions by 26 percent below what otherwise would occur under the BAU scenario through seven NAMAs. The seven actions are (1) sustainable peat management, (2) reduction in the rate of deforestation and land degradation, (3) development of carbon sequestration project in forestry and agriculture, (4) promotion of energy efficiency, (5) development of alternative and renewable energy sources, (6) reductions of solid and liquid waste, (7) shifting to low-emission transportation modes.[15]

These letters were a reflection of a tedious domestic process to ensure that all sectors are involved in preparing and eventually implementing the National Action Plan for Greenhouse Gas Emission Reductions. As of the writing of this chapter, draft 10 of this plan has been issued by January 27, 2010. The plan has been formulated based on these legal mandates:

- Presidential Decree 5/2010 on the Mid-Term Development Plan 2010–2014, which is formulated based on Law 25/2004 on the National Development Planning System;
- Law 32/2009 on the Management and Protection of the Environment, which stipulates that the government has the authority and the task to decide and implement policies on climate change;
- Law 17/2007 on the Long-Term Development Plan 2005–2025, which, among other provisions, stipulates the need to protect the environment and to address global climate change in national development;
- Law 17/2004 on the Kyoto Protocol; and
- Law 6/1994 on the UNFCCC.

Indeed, President Yudhoyono has been quite serious in personally leading the process of preparing the Indonesian submission to the UNFCCC, as required by the Copenhagen Accord, to meet the deadline of February 15, 2010. The mandate for the general coordination of climate change policy, including the formulation of the National Action Plan for Greenhouse Gas Emission Reductions, has been given to the Coordinating Ministry of Economic Affairs and the Coordinating Ministry of Public Welfare; the coordination for planning and budgeting has been given to the National Development Planning Board; the coordination for implementation is under each relevant ministry (related to peat lands, waste, forestry, agriculture, transportation, industry, and energy), and the Ministry of Home Affairs is coordinating local governments; and coordination

14. Letter from the National Council on Climate Change to the Secretariat of the UNFCCC, January 19, 2010, http://unfccc.int/files/meetings/application/pdf/indonesiacphaccord.pdf.

15. Letter from the National Council on Climate Change to the Secretariat of the UNFCCC, January 30, 2010, http://unfccc.int/files/meetings/application/pdf/indonesiacphaccord_app2.pdf).

**Table 6.4. National Action Plan Reduction Targets by Sector**

| Sector | Net Emissions by 2020 (gigatons) | Emission Reduction Plan | | Action Plan |
|---|---|---|---|---|
| | | 26 percent | +15 percent (accumulated to 41 percent) | |
| Peat lands | 1.09 | 0.280 | 0.057 | Fire management |
| Transportation | 1.00 | 0.008 | 0.008 | Biofuels, efficiency standards, public transport, etc. |
| Energy | | 0.030 | 0.010 | Demand-side management, efficiency, renewables |
| Forests | 0.49 | 0.392 | 0.310 | Fire management, eradication of illegal logging, avoided deforestation, community development |
| Waste | 0.25 | 0.048 | 0.030 | 3R (reduce, reuse, and recycle) and integrated waste management |
| Industry | 0.06 | 0.001 | 0.004 | Energy efficiency, renewable, etc. |
| Agriculture | 0.06 | 0.008 | 0.003 | Introduction of variety of low-emitting rice, water efficiency, organic fertilizer |
| Total | 2.95 | 0.767 | 0.422 | |

Source: Ministry of the Environment, *Second National Communication*.

for monitoring and evaluation (measurement, reporting, and verification) is under the Ministry of the Environment and the NCCC. Regional Action Plans are to be devised by regional governments under the coordination of the Ministry of Home Affairs.[16]

Table 6.4 shows in detail how the GHG emissions reduction targets are to be achieved by the National Action Plan for Greenhouse Gas Emission Reduction, as indicated by the *Second National Communication.*[17] The number may change in the near future, given that the process of formulating the National Action Plan is still ongoing.

Since the reelection of President Yudhoyono to a second term, a new Cabinet has been appointed. Witoelar, while remaining chair of the NCCC, is no longer a minister. This means that he will no longer join Cabinet meetings because his chairmanship of the NCCC is not a Cabinet position. This poses a challenge when there is a need to coordinate other Cabinet ministers. A new structure is currently being devised in which the NCCC will be coordinated under the auspices of the Coordinating Ministry of Public Welfare, and the secretary-general of the ministry also serves

16. Interview with the head of the Secretariat of the National Committee on Climate Change, Agus Purnomo.

17. Ministry of the Environment, *Second National Communication.*

as secretary-general of the NCCC. In any case, it appears that the NCCC will be the home for future progressive policy developments on climate change.

## Conclusion

In comparison with the situation about five years ago, Indonesia has become more assertive on climate change. This is fitting, given its unique position with regard to climate change. Because it has common interests with quite a large range of countries, it has strong incentives to become a bridge builder among these (sometime conflicting) interests.

Indonesia became the first developing country to announce emissions reduction targets for GHGs. Its targets of 26 percent unilaterally and 41 percent with foreign assistance are entirely achievable because the largest emissions come from forests, peat lands, and land-use changes, and reducing emissions from these sectors will also benefit the economy. This has been enforced by the apparent personal commitment of President Yudhoyono himself. As such, there is a great potential for Indonesia to support initiatives for the reduction of emissions from REDD+.

Along with this bright forecast, however, the political dynamics remain unsettled. Coordination overlaps among governmental agencies, coordination challenges, and the like remain problematic. The president's personal leadership hopefully will help solve these problems. As a new coordinating institution, the NCCC is still weak, but it is growing stronger and more capable. And there is a need to empower it even further to take advantage of its great potential.

# 7 THE POLITICS OF CLIMATE CHANGE IN AUSTRALIA
## ONE OF THE GREATEST POLITICAL CHALLENGES OF OUR AGE

Malcolm Cook

During the past decade, climate change policy has moved from the wings of Australian political debate to center stage.[1] There is widespread acceptance publicly and among policy and political elites that Australia must act to address climate change. Yet the questions of when Canberra should introduce domestic climate change policies and how it should distribute their costs has become a source of partisan vitriolic mud-slinging even by Australian standards.[2]

Domestic climate change policy has proven to be extremely divisive within the Liberal Party and in its coalition relationship with the National Party. Unresolved differences over climate change policy knocked the Liberal Party asunder and were a decisive factor in the leadership spills in September 2008 and December 2009. The devilish details of climate change policy and its associated costs have also led to splits on the Labor Party political side, while faulty implementation of a key domestic energy efficiency program contributed to a fall in support for Labor, and to the minister for the environment, heritage, and the arts losing control of the major climate change policy under his portfolio. In April 2010, the Labor government of Kevin Rudd, then in election mode, announced a delay until at least 2012 for the introduction of a domestic greenhouse gas emissions trading program, despite having made the rapid introduction of such a program a key election promise in 2007.

Beyond the august halls of Parliament, climate change is also creating divisions within the Australian business community and its employer associations, and between the Commonwealth and state governments. In the last five years, public opinion on the importance of climate change has shifted more than once, further unsettling these uncharted policy waters. Recent coverage of inaccuracies in the process followed by the Intergovernmental Panel on Climate Change seems to have added to climate change skepticism. In a March 2010 poll in New South Wales, Australia's most populous state, 8 percent of respondents did not believe that climate change is real, while another 29 percent thought it is real but not caused by human activity. In 2008, these respective proportions were 2 and 14 percent.[3]

Throughout this tumultuous period, the domestic political debate and policy choices in Australia over how to address climate change have been greatly shaped by the global debate and the

1. In his speech at COP 13 in Bali, given moments after handing over instrument of ratification to the Kyoto Protocol to UN secretary-general Ban Ki-moon, Prime Minister Rudd argued that climate change "represents one of the greatest moral, economic and environmental challenges of our age." Kevin Rudd, Address to the High-Level Segment of the Thireenth Conference of the Parties to the United Nations Framework Convention on Climate Change, Bali, Indonesia, December 12, 2007.

2. A good example of this is Prime Minister Rudd's speech on "climate change deniers" delivered at the Lowy Institute on November 6, 2009, http://www.lowyinstitute.org/Publication.asp?pid=1167.

3. Stephanie Peatling, "Hot Air and Rise Tiding of Doubt Buoys Climate Cynics," *Sydney Morning Herald*, March 7, 2010.

outcomes of the negotiations for the United Nations Framework Convention on Climate Change (UNFCCC). In 2002, the conservative government of John Howard refused to sign the Kyoto Protocol on the grounds that the United States had not done so and that the protocol left major greenhouse gas emitters among the developing countries unburdened.[4] The first official act of the Rudd Labor government in December 2007 was to fulfill its campaign promise to sign the protocol. By December 2009, the Rudd government had tied Australia's domestic climate change policy process very closely to the possible outcomes of the the Fifteenth Conference of the Parties (COP 15) to the UNFCCC in Copenhagen.[5]

The lack of a politically credible outcome from Copenhagen has taken quite a bit of steam out of the partisan climate change policy debate. Indeed, the lack of a successful outcome at Copenhagen or any subsequent global movement on climate change policy was one of the rationales given by Prime Minister Rudd for delaying the introduction of his domestic emissions trading program until at least 2012. Under the Copenhagen Accord, Australia has committed itself to reduce greenhouse gas emissions by 5 percent by 2020 from a 2000 baseline, which, when taking into consideration projected population growth, would mean a reduction in per capita emissions from 28.9 metric tons in 2005 to 20.7 metric tons.[6] Climate change policy is likely to remain a point of policy differentiation and attack between the two main parties, Liberal and Labor, and of pressure by the parties on their respective fringes, the rural National Party and the urban Green Party.[7] However, the lack of a credible global deal and the complexities of domestic climate change policymaking and implementation suggest that the two main parties will find it even harder to craft effective policy platforms for climate change in the future.[8]

## Pulled in Different Directions

At the risk of parochialism, the domestic politics of climate change in Australia may be the most central and the most divisive of all the countries covered in this volume. It has cost political leaders their positions and political credibility, and it has garnered consistent coverage in the media as a whole and blanket coverage in the broadsheet media, featuring a steady flow of contending opinion pieces. Three structural features of Australia and its place in the world—geography, economic structure, and middle-power status—each containing contradictory climate change policy impetuses, largely explain the high level of concern with climate change in Australia and the difficulties successive governments have faced crafting a political consensus on what to do about it. It is useful to briefly examine each of these features.

4. "Press Release: Australian Hansard—PM Howard on Kyoto Protocol, 2002."

5. Richard Denniss, "Rudd Should Never Have Tied Carbon Cuts to Copenhagen," *The Australian*, January 7, 2010.

6. Bob Birrell and Ernest Healy, "Rudd Plays Lip Service to Emissions," *Australian Financial Review*, March 8, 2010.

7. The Labor Party's inner-city strongholds are under growing threat from the Green Party, which has seen its share of the national vote grow significantly in the last decade. See Lenore Taylor, "Greens Encroach on ALP's City Turf," *The Australian*, May 18, 2009.

8. In early 2010, the Rudd government's energy efficiency and global financial crisis response policy of subsidizing home insulation (i.e., the laying of pink batts) came under serious political and media attack after stories of contractor malfeasance and widespread "shonky instillation" come to light. Soon after, Peter Garrett had the responsibility for this program removed from his ministerial portfolio.

## Geography

Australians live in the most naturally inhospitable inhabited continent in the world routinely visited by extreme weather events. The struggle between modern human life and nature is a central theme in Australia's sun-burnt imagination. For example, the Australian Bureau of Meteorology's Web site warns: "Australia is the driest inhabited continent even though some areas have annual rainfall of over 1200 millimetres. Our climate is highly variable—across the continent generally, as well as from year-to-year. We must learn to live with drought!"[9]

With 70 percent of the Australian landmass being taken up by arid or semiarid rangelands unsuitable for intensive agriculture or habitation, more than 80 percent of Australia's growing population lives in the coastal zone—and this proportion is rising. The threatened death of the iconic Great Barrier Reef is often used by authoritative voices as an emotive example of the damage that climate change, if unchecked, could wreak on Australia.[10]

In late 2006, the Australian media reported "fears of the worst drought in a millennium," while experts from the Murray Darling Commission that oversees the Murray-Darling River system, Australia's most important and under-stress source of inland water, held that the present drought "may be even worse that a one-in-one-hundred-year event."[11] In the same year, the Lowy Institute Poll showed that improving the global environment was the most popular of 13 key foreign policy goals among Australians surveyed, with 87 percent choosing it as very important. In 2005, it also topped the charts, with 75 percent support. In 2006, when asked about threats to Australia's vital interests, global warming ranked third after international terrorism and unfriendly countries becoming nuclear powers, with 68 percent of Australians considering it a critical threat. The same percentage agreed that "global warming is a serious and pressing problem. We should begin taking steps now, even if this involves significant costs."[12]

It is likely that Australia's long history of drought and the existence of severe drought at the time of polling meant that many respondents viewed global warming as a present domestic threat to Australia and their way of life. The nation's harsh geography and its daily impact on people's lives, from water restrictions to bush fires to coastal erosion, make Australians particularly attuned to the natural threats associated with climate change and potentially keener for their government to address climate change mitigation and adaptation quickly and seriously.

However, geographical distance in Australia makes its policymakers and potentially affected sectors concerned about global responses to climate change. Australia is an isolated, trade-dependent country far away from its major trading partners and sensitive to the cost of maritime and air travel. European discussions about "food miles" have gained little support in Australia, and thus the government's Bureau of Agricultural and Resource Economics published a report in December 2009 opposing food mile labeling.[13] In line with this "tyranny of distance" and the Kyoto Protocol, the Australian Shipowners Association, in its official submission to the hearings on the Carbon

9. See http://www.bom.gov.au/climate/drought/livedrought.shtml.

10. Lenore Taylor, "We Must Act Now on Climate Change: Ross Garnaut," *The Australian*, July 5, 2008.

11. Sid Marris, "Fears of Worst Drought in a Millennium," *The Australian*, November 7, 2006.

12. Ivan Cook, *Australians Speak 2005: Public Opinion and Foreign Policy* (Sydney: Lowy Institute for International Policy, 2005); Ivan Cook, *The Lowy Institute Poll 2006* (Sydney: Lowy Institute for International Policy, 2006).

13. Lindsay Hogan and Sally Thorpe, *Issues in Food Miles and Carbon Labelling*, ABARE Research Report (Canberra: ABARE, 2009).

Pollution Reduction Scheme (the Rudd government's planned and now delayed greenhouse gas emissions trading program) called for shipping to be excluded.[14]

Not only must Australian exports and imports travel long distances; so too must Australians themselves and the goods they trade internally. Like North America, Australian cities, where more than 85 percent of the population resides, are comparatively low-intensity urban areas and heavily car-dependent. Australians also now own the world's largest homes.[15] Hence petrol (gasoline) and electricity prices are particularly sensitive issues politically. In 2006, Australia boasted the fourth-lowest gasoline prices among the countries belonging to the Organization for Economic Cooperation and Development—after the United States, Canada, and Mexico—while residential electricity prices are about half of those in Europe and a third of those in Japan.

There has been strong pressure to exclude gasoline from any domestic greenhouse gas emissions trading program, and much consternation has ensued about the effects of such a program on state-regulated electricity prices. Links between planned climate change policies and electricity price hikes have become a staple of particularly the tabloid media, including the new (for Australia) term "fuel poverty."[16] According to some estimates, the planned program could double electricity prices within two years,[17] something few state politicians want delivered to them by Canberra. The Rudd government has promised progressive federal compensation for households to cover the cost of any increases in gasoline and electricity prices stemming from an emissions trading program.

## Economic Structure

Australia's economic structure also produces contradictory pressures on climate policymaking. One the one hand, Australia is a major producer and exporter of primary products—from coal to liquefied natural gas to wheat to iron ore—that could see their price and demand structures seriously affected by climate change policies both globally and in Australia. Coal is king in Australia, with the country being the world's largest exporter of coal and black coal being its largest single export item, at a value of more than 50 billion Australian dollars in 2008–2009. Australia also has the largest known reserves of dirtier brown coal, the vast majority of which is still untapped. The allocation of mining rights is a state, not Commonwealth, responsibility.[18]

The predominance of coal in Australian power generation—where it accounts for about 80 percent, along with large houses and cars—goes a long way toward explaining why Australia is among the global leaders in per capita greenhouse gas emissions.[19] The predominance of coal, its major contribution to key local economies like the Hunter and La Trobe valleys, and its major and growing share of the country's exports to its largest markets, make coal interests, including energy retailers, politically powerful and very concerned with both global and domestic climate change negotiations.

14. "Submission to Carbon Pollution Reduction Scheme: Green Paper," Australian Shipowners Association, September 10, 2008.

15. "Australians Have the World's Biggest Homes: Study," Reuters, November 30, 2009.

16. John Rolfe, "Families in Fear as Energy Costs Soar," *Daily Telegraph*, March 14, 2010.

17. Emma Chalmers, "Electricity Prices Set to Double," *Courier Mail*, January 1, 2010.

18. In December 2009, the Victorian government ruled against plans to develop a brown coal project for export to India, citing environmental factors. "Victorian Brown Coal Export Plan Hits the Skids," December 11, 2009, available at http://www.miningcoal.com.au.

19. Olga Galacho, "Our Coal Emissions Are Worst, Says Global Study," *Herald Sun*, August 29, 2008.

The coal industry association and unions representing coalminers have been very active and effective participants in the climate change debate in Australia, including funding a nationwide advertising campaign—"Let's Cut Emissions, Not Jobs"—against particular elements of the Rudd government's planned domestic emissions trading program.[20] The importance of coal to both the domestic and export economies means that both the Howard and Rudd governments have focused much public attention and government funding on "clean coal technology," including setting up the Global Carbon Capture and Storage Institute in Canberra in 2009 and promoting this technology at COP 15 in Copenhagen.[21]

Australia is also a major agricultural exporter (agriculture accounting for 16 percent of total merchandise exports), with an influential employers' association, the National Farmers' Federation, and the National Party, which is based on representing rural and agricultural interests. In June 2009, the federation invited a local climate change skeptic, Ian Plimer, to speak at its National Congress. The president of the federation, David Crombie, argued in Copenhagen that the present Kyoto Protocol works against the interests of farmers and undervalues their contributions to climate change abatement. The federal government in both the Howard and Rudd years has successfully called for agriculture to be initially excluded from any domestic emissions trading program. As with coal, Canberra has also invested public funds to measure the positive effects of biosequestration (the capture and storage greenhouse gases by biological processes).[22] Coal and farming are at the front of a wide range of primary and secondary producers arguing for special consideration in or exclusion from the planned emissions trading program. All of them raise the threat of carbon leakage if Australia moves forward on climate change policy ahead of other, usually emerging market, competitors.

Conversely, powerful business voices in Australia are calling for Canberra to rapidly adopt a domestic emissions trading program and to take a leading role in global negotiations. Aided by pension legislation, the country's financial sector is abnormally large and controls the fourth-largest "contestable investment fund pool of assets" in the world. Defying its geography, the country has long harbored the desire to be an Asian financial center. In line with this, its financial interests and their employers' associations have strongly supported the early adoption of a domestic emissions trading program that can be integrated with other future domestic, regional, or global ones.[23]

The structure of the Australian economy and trade has meant that a wide range of sectoral interests have been deeply involved in all levels of the domestic political debate, but in ways that pull the government in different directions. Though the country's geography leads to views of climate change as an issue of domestic and even personal security, the active presence of so many different and powerful economic interests in the debate means that the economic implications—good and bad—of climate change for the country and responses to it also feature heavily.

In contrast to the export manufacturing powers in East Asia, Europe, and North America, the Australian debate has not yet featured a loud and sustained corporate voice promoting cli-

20. The present executive director of the Australian Coal Association, Ralph Hillman, was a chief negotiator for Australia on the Kyoto Protocol.

21. Cam Walker, "Australia Selling Clean Coal Pipe Dream at Copenhagen," Friends of the Earth Australia, December 9, 2009, http://www.foe.org.au/climate-justice/media/news-items/archive/2009/australia-selling-clean-coal-pipe-dream-at-copenhagen/?searchterm=coal.

22. David Crombie, "Farmers Part of Carbon Solution," *Canberra Times*, March 11, 2009.

23. Australian Financial Markets Association, "Response to Garnaut Climate Change Review Issues Paper 2: Financial Services for Managing Risk—Climate Change and Carbon Trading," 2008.

mate change policy as a means to enhance the country competitive advantage in environmental technology exports. Australia has a comparatively small and weak manufacturing sector. In 2009, manufactured goods only accounted for 15.5 percent of its exports but 58.0 percent of its imports. In the same year, primary products (excluding gold) accounted for 53.6 percent of its exports and 15.1 percent of its imports.

## Middle-Power Status

Australian foreign policy has long defined the country as a middle power—too large to be insignificant or able to free-ride unnoticed, but too small to change the regional or global situation unilaterally. This self-definition is behind the country's consistent record of actively supporting regional and global multilateral bodies, from the United Nations to the Asia-Pacific Economic Cooperation forum to the World Trade Organization.

When it comes to climate change, this description of Australia as a middle power fits well. The country has been an active participant in the UNFCCC negotiations; a founding member and continuing supporter of the Asia-Pacific Partnership on Clean Development and Energy, with its focus on technological solutions; and a participant in the Major Emitters Meeting / Major Economies Forum on Energy and Climate. Yet Australia accounts for less than 2 percent of annual greenhouse gas emissions, and this proportion is shrinking. It is widely appreciated that Australia can free-ride or wait—with insubstantial impact on climate change and its effects on the country—for substantial reduction moves by the truly major emitters.

This middle-power situation has created a great tension for the Australian approach to domestic and international climate change action. On one hand, the tradition of being a middle power has created high public, political, and bureaucratic expectations for Canberra to be a leading player in global negotiations and to be a "good international citizen." Both local civil society organizations and opposition politicians have effectively used this self-identity to criticize Canberra for not doing enough on climate change and hence hurting Australia's purported good international standing, a standing in which middle-power proponents put a lot of stock.[24] This argument for rapid action and for the country to announce deep cuts in its greenhouse gas emissions dovetails with the concerns about its own geographical vulnerability to climate change.

Yet Australia's inability to make a unilateral contribution of much concrete worth to addressing global climate change has meant that opponents of ambitious climate change action with significant up-front costs have also been able to effectively argue that it would be irrational for the country to act rapidly and comprehensively to reduce emissions until the truly major emitters have done so. Thus, the largest business association in Australia, the Australian Chamber of Commerce and Industry, argues: "This is because if we in Australia were to cut greenhouse emissions to zero, it would have minimal impact on the global climate change threat unless the major developing emitters follow suit."[25]

This wait-and-see approach dovetails with the geographical concerns about distance in and from Australia and the significant role emissions-intensive industries play in both the country's modern economy and its engagement with the world.

24. Bob Brown, "Lead on Environment, PM," *Sydney Morning Herald*, December 14, 2008; Andrew Hewett, "Australia's Climate Change Obligations," *OnlineOpinion.com.au*, November 21, 2007.

25. Australian Chamber of Commerce and Industry, *A Multilateral Solution to Climate Change Is Vital*, ACCI Policy Review (Canberra: Australian Chamber of Commerce and Industry, 2008).

### A Wicked Problem

Addressing climate change in Australia is a wicked problem. Neither of the country's political sides has been able to find an internal consensus on this policy area or craft a credible and attractive policy platform for the Australian public. The stark symbolic and lesser concrete differences between the Howard and Rudd governments on climate change stems from their leaders' different political personalities and choices on how to respond to the contradictory policy pressures emanating from each of these three structural factors—geography, economic structure, and middle-power status.

## The Conservative Coalition and Climate Change Policy

The conservative political side in Australia is represented by a long-standing coalition between the dominant Liberal Party and the smaller, rural National Party. The years of coalition rule under Prime Minister John Howard (1996–2007) started with the Kyoto Protocol negotiations and ended in the early build-up to COP 15 in Copenhagen. By the end of Howard's long term in office, his government's approach to climate change had helped push it to center stage of the domestic political debate and proved that politicians are not Pavlovian poll watchers. With a few wobbles late in its tenure, the Howard government determined Australia's climate change policies by clearly choosing to favor the geographical distance aspect of Australian geography, the emissions-intensive part of the economy, and the ability to free-ride part of middle-power status.

In the Kyoto Protocol negotiations for Annex 1 members, Australia successfully argued for an 8 percent increase in greenhouse gas emissions over the protocol's duration. Only tiny Iceland negotiated a more generous commitment, at +10 percent. This was consistent with the Howard government's desire not to hurt Australia's carbon-intensive domestic and export industries and the country's growing population. But in the last couple of years of the Howard government, pressure from the business sector grew on the government to consider a cap-and-trade program. The model program belatedly pitched by the Howard government was again consistent with its overall approach to climate change policy. It included providing one allocation of free carbon permits to emissions-intensive industries and letting them increase their emissions if they also invested in technology that over time would help reduce emissions intensity.[26]

Prime Minister Howard's decision to not sign the Kyoto Protocol, despite Australia's generous terms of commitment, fit with his focus on the country's continued economic prosperity, his unease with formal multilateralism, and his principled stand not to sign international treaties he thought were merely symbolic or unlikely to be followed by others. In 2004–2005, his government went through a similar process of personal principle versus diplomatic expediency when he initially refused to sign the Association of Southeast Asian Nations' Treaty of Amity and Cooperation, which had recently become the entry ticket to the East Asia Summit. In that case, however, he eventually signed the treaty, and it was ratified.

Because the Howard administration had come to view the multilateral level as a dead end that could lead Australia to make commitments not being matched by others, it instead focused

26. Department of Prime Minister and Cabinet, ed., *Report of the Task Force on Emissions Trading* (Canberra: Commonwealth of Australia, 2007).

on forming or joining regional organizations to address climate change. On this front, Australia worked closely with the United States to create the Asia-Pacific Partnership on Clean Development and Energy, which focused on technological development and transfer and included both Annex 1 and Annex 2 major greenhouse gas emitters, most notably the United States, China, and India. Most of the activity on the domestic front on climate change policy took place at the state level, given its control over the power sector. It was only really very late in the Howard government that the Commonwealth government, in a reactive manner, began to catch up with growing public- and private-sector concern regarding state-level activity on climate change. As the Energy Retailers Association noted in 2004, "The existing policy environment is characterized by a fragmented array of short-term State and Federal Government greenhouse base abatement measures. These measures tend to be poorly targeted, overly complex and as such, highly inefficient as mechanisms for reducing emissions."[27]

This reserved approach to climate change and its focus on practical cooperation with major partners fit very well with the Liberal Party's foreign policy traditions and helped paper over the divisions within the party. These included tensions between rural and urban concerns, and between party voices skeptical about climate change and the global approach to it, including the current Liberal leader, Tony Abbott, and those who felt strongly that Australia should take strong and quick action on climate change. Howard's dominance of the party meant that his position held sway with little public bickering until he stepped down in 2007.

This approach did not help the Liberals in 2007, for the Labor Party was able to effectively argue that the Liberals were out of step with actions being taken by other non-American countries, as well as with Australian public opinion. Even more damning was Labor's argument, supported by many in the media and academe, that this approach was due to Howard's overly close ideological association with the United States' George W. Bush administration (America was the only other Annex 1 country to not ratify the Kyoto Protocol), as was the Howard government's decision to join the invasion of Iraq. In the 2007 Lowy Institute Poll, 69 percent of respondents identified President Bush as a factor causing them to have an unfavorable opinion of the United States, and 63 percent also chose American foreign policies as a factor.[28]

In the post-Howard era, the conservative coalition has struggled to come up with a shared view of climate change policy that is publicly attractive. The biggest fights over this have been within the Liberal Party itself as it came to terms with life out of power. The first post-Howard Liberal leader, Brendan Nelson, adopted a position on climate change similar to that of Howard. He was quickly toppled by the more centrist Malcolm Turnbull, who is from a wealthy inner-city district of Sydney and who argued that the Liberals and the coalition needed to adopt a climate change policy much closer to that of the ruling Labor Party, including support in the Senate for Labor's greenhouse gas emissions trading program. This caused great friction with the National Party and was a key factor in the Liberal Party's room revolt against Turnbull, which led to his toppling by Liberal Party and conservative stalwart Tony Abbott.

Showing the importance of climate change policy to the coalition and in the Australian policy debate, climate change was one of the first areas on which Abbott issued a new policy platform, one that was in line with Howard and Nelson's positions and with the National Party's farming interests. Abbott's announced policy plan, which also aims for a 5 percent reduction in emissions

27. Energy Retailers Association of Australia, *ERAA Policy Position: Climate Change Policy*, Policy Position Paper (Sydney: Energy Retailers Association of Australia, 2004).

28. Allan Gyngell, *The Lowy Institute Poll* (Sydney: Lowy Institute for International Policy, 2007).

by 2020, includes opposing Rudd's planned domestic emissions trading program, planting 20 million trees by 2020, and establishing a fund worth 2.5 billion Australian dollars to help industrial producers and farmers reduce emissions, with a particular focus on biosequestration. For the foreseeable future, the coalition is likely to stay with a Howard-like line on climate change policy, emphasizing farming and carbon-intensive exporters' interests, especially given that public opinion on climate change and how to address it has become more ambivalent.

## The Labor Party and Climate Change Policy

Since the Labor Party came to power in late 2007 under Prime Minister Kevin Rudd, its climate change policy has been, paradoxically, the most difficult and criticized agenda item for its new government and yet also its greatest source of partisan benefit. In the early Rudd days, all was well. In the late Howard years, the Labor Party and its push for Australia to become more active both globally and domestically on climate change had been in line with public opinion trends and voters' frustrations with the tired Howard administration. Thus, Rudd signed and ratified the Kyoto Protocol to much domestic and global fanfare and with the grudging support of Parliament as a whole. But then the new Rudd government had to get down to making domestic climate change policy itself and explaining its choices and their costs to the public and affected sectors.

This shift from the symbolic to the concrete has led to a growing chorus of debate in Australia over the details of climate change mitigation efforts and a softening of public support for these actions. The Rudd government has not been helped by the fact that it does not control the Senate and has so far been unable to pass its key domestic climate change policies, despite threats of a double-dissolution election if the Senate did not bend to the government's will. Prime Minister Rudd ruefully noted that the Liberal Party's refusal to sign on to his emissions trading program was one of the key reasons for delaying the program's introduction until at least 2012.

Climate change has been at the center of the policy agenda from the first day of the Rudd government, as shown by the creation of the Department of Climate Change overseen by a minister for climate change and water. The Rudd government's decisions on how to address the conflicting policy pressures stemming from the three structural factors discussed above have been less coherent and more creative than those in the Howard years. On the side of geography, Australia's vulnerability to climate change has gained more traction with the government's strong push for a domestic emissions trading program with a higher carbon price than the 2007 Howard government's trial balloon, stronger commitments to renewable energy targets, and emotive use of the endangered Great Barrier Reef. The focus on an emissions trading program with more details on how carbon credits will be allocated has pleased the financial sector, while the numerous and growing list of emissions-intensive, trade-exposed industries that will receive special treatment reflects the large number of key industries that could be affected. However, the exclusion of small businesses from specific emissions trading program compensation and the treatment of the coal industry have led to a backlash from these sectors.[29]

On middle-power status, the commitment to taking action on domestic climate change, including the threat of a double-dissolution election if the Senate did not pass the Carbon Pollution

29. Peter Anderson, "CPRS Deal: Small Business Left Exposed," Australian Chamber of Commerce and Industry, November 25, 2009; Australian Coal Association, "Proposed Emissions Trading Scheme Amendments Will Sacrifice Regional Jobs but Not Cut Emissions," November 24, 2009.

Reduction Scheme legislation before COP 15 in Copenhagen, and the Rudd government's attempt to play a leading role in Copenhagen play to the activist side of this factor, a side that is consistent with Labor's foreign policy traditions. However, the commitment in the run-up to Copenhagen to only cut greenhouse gas emissions by 5 percent by 2020 (from the 2000 level) if there is no global agreement plays more to the wait-and-see side of the middle-power factor and to the economic concerns of Australia. The failure in Copenhagen to deliver a globally binding agreement left the Rudd government with the 5 percent reduction target that has been ridiculed by the Green Party and environmental activists and has removed any international impetus through the middle-power identity for rapid and radical climate change policy action in Australia.

To further complicate the Rudd government's desire for climate change leadership domestically and globally, Australian public opinion on this goal has softened as people have focused more on the potential costs of climate change policies and as the halo effect of signing the Kyoto Protocol and coming in from the international cold has dimmed—and in fact had done so even before Copenhagen. By 2008, climate change had plummeted in the Lowy Poll to sixth on the list of foreign policy goals, with only 66 percent identifying it as very important, down from 75 percent in 2007. Traditional pocketbook issues have surpassed it. In the 2009 poll, only 52 percent identified global warming as a critical threat to Australia, down from 68 percent in 2007. In a poll released by the Australian Chamber of Commerce and Industry in November 2009, 54 percent of small and medium-sized enterprises (a key swing constituency) supported delaying an emissions trading program until after the outcome of COP 15 in Copenhagen was known, while 49 percent believed it would cost jobs if Australia introduced one in isolation.[30]

Finally, the troubles the Rudd government has had with the climate change policies that it has been able to implement have taken even more luster off the climate change policy agenda. After Copenhagen, the focus in Australia on climate change shifted to the significant implementation problems the Rudd government faced in its major program for energy efficiency and climate change: the subsidization of housing insulation. This program quickly triggered a major media storm focused on stories of shoddy and dangerous installations, which led the prime minister to issue a public mea culpa promising to do better on policy implementation and to remove this policy area from the portfolio of the minister of environmental protection, heritage, and the arts. Unfortunately, the media then quoted the head of the Department of Climate Change, which gained control of the program, admitting to his staff that the department was ill equipped to manage this "hot potato." The significant media attention focused on the implementation failures of this program and a smaller green loans program that has been canceled are indicative of a shift in popular (and hence political) attention to the costs of climate change policy and the limits of government to effectively implement and manage it, especially when it aims at significant economic redistributions and social change.

In dealing with climate change, the government in Canberra is facing one of its greatest political challenges. Both sides of the political spectrum have acknowledged the importance of addressing climate change for a country like Australia and have largely stayed true to their philosophical and partisan traditions in their policy preferences for climate change mitigation. However, neither side has been able to craft a credible and attractive climate change policy platform. And this already-difficult challenge is only growing more intractable—given the failure of COP 15 in

30. Peter Anderson, "CPRS: Public Views Echo Business Concerns," ACCI Media Release, Australian Chamber of Commerce and Industry, November 23, 2009.

Copenhagen to deliver what its boosters had hoped; the shift in Australia from a focus on global symbolism to the nuts and bolts of this new, very ambitious, complicated policy area; and increasingly ambivalent public opinion about climate change and what should be done about it. The delay in introducing a domestic greenhouse gas emissions trading program until at least 2012 and the reasons given for this delay are the best example of this sobering political truth.

# 8 U.S. DOMESTIC POLITICS OF CLIMATE CHANGE

Sarah O. Ladislaw

At the beginning of 2009, there was a great deal of optimism about America's political will to reclaim the mantle of leadership within the international climate negotiations. For much of the last decade, the impetus for more action on climate change came from the environmental community and the grassroots movements they fostered at the state and local levels. U.S. national leadership under the Bush administration favored an approach toward climate change that emphasized establishing greater scientific certainty, instituting voluntary measures and programs, and investing and engaging in international technology research and development ventures. The international community, mostly Europeans and developing countries, viewed this stance and the perceived U.S. reluctance to engage in international climate negotiations within United Nations auspices as an abdication of U.S. global responsibility to deal with climate change.

The election of President Barack Obama in 2008, whose campaign included one of the most progressive climate change platforms, was taken by many as a sign that the United States would adopt a new and bold position. The Obama administration came in with a high level of ambition and has made significant strides in implementing new climate- and energy-related policies but, in many ways, has left the international community and many environmental advocates wanting. From the outcome of the international climate negotiations in December 2009 to the negotiations on domestic climate legislation in Congress, the domestic politics of climate change have played a prominent role in the first year of this administration and proved more complicated than many in the international community expected. The international community is now much more skeptical of the U.S. ability to adopt aggressive climate change policies and much more in touch with how difficult the domestic politics of climate change still is in the United States.

Climate change is not new to the United States' domestic or international agendas. How people perceive climate change as a national political issue is determined by their stances on a number of issues—whether they believe that the Earth's climate is changing, that human beings are the primary cause of these changes, that the changes will have a material impact on their lives, that society can take action to avoid these changes, and that those actions are cost-effective relative to the expected effects of climate change.

Over time, public opinion polls show that societal awareness of climate change has improved, as has the public belief in climate change. These same opinion polls show that the importance of climate change fluctuates relative to perceptions of economic strength, national security, energy prices, and other issues of national importance (e.g., health care). Climate change, on its own, does not consistently rank high enough with the general public to stand on its own—it usually lands near the bottom when people are asked to rank it in importance relative to other major policy issues. This is why many politicians and stakeholders emphasize the linkages between climate

change, security, economic strength and job creation, human health, and many other issues. The difficulty with public opinion polls is that climate change is too complex and daunting a subject for most members of the general public to deal with in meaningful detail. The challenge for climate change advocates has been to communicate the phenomenon and the potential solutions to the public in a convincing and understandable way.

In the United States, politicians, major businesses, and other stakeholders have a much more developed sense of climate change as a policy issue than does the public at large. For those who would be affected by climate change or efforts to combat climate change, a proactive stance for or against policy action has become a necessity. Political blocs (not necessarily along party lines but along regional lines) have solidified around various issues in the climate change debate. Those affiliated with industry continue to work hard to shape various aspects of climate or energy policies currently up for debate. Even state and local governments, the insurance industry, city planners, and religious groups have adopted stances or policies dealing with climate change. As the United States moves forward to implement some of these proposals, the positions of the various groups will be tested. Will states and local communities continue to pursue aggressive climate and energy platforms and be the "leaders" in U.S. climate policy? Will businesses that support cap-and-trade policy and have instituted their own "green" programs fulfill their promises and pledges? Will politicians who campaigned on green energy, green jobs, energy independence, and climate change pursue aggressive policies in a time of economic uncertainty? How much do action on the international scene and pressure from other countries—particularly those in the Asia-Pacific region—to do more on climate change actually affect the U.S. domestic politics of climate change? This chapter explores some of these questions and seeks to provide insights about the future path of climate change policies in the United States and the ramifications of these policies for the international climate debate.

## Domestic Politics

The United States is currently the second-largest emitter of greenhouse gases, having recently been surpassed by China, and the largest historical emitter. In per capita terms, the United States emits nearly four times more than China, approximately twice that of other industrial countries like those in Europe and Japan, and about four times more than the world average. U.S. emissions come from a combination of energy production and use, along with land-use practices. Over time, U.S. emissions intensity (defined as emissions per unit of gross domestic product) has declined due to structural changes in the U.S. economy (e.g., less heavy manufacturing) and increases in energy efficiency. According to the most recent report from the U.S. Energy Information Administration, energy-related carbon dioxide emissions intensity is expected to decline 40 percent between now and 2035 due to the impact of lower electricity demand, a higher share of renewables, higher transportation efficiency rates, and higher fuel prices. But energy-related emissions are still estimated to grow 9 percent between 2008 and 2035 unless there are further changes in energy and climate policies.[1]

The Barack Obama administration seeks to implement a cap-and-trade program as part of a comprehensive package of energy and climate legislation. With the advent of the global financial

1. Energy Information Administration, *Annual Energy Outlook 2009,* http://www.eia.doe.gov/oiaf/aeo/pdf/overview.pdf.

crisis in late 2008, many people expected then-candidate Obama to deemphasize his focus on energy and climate reform because of its potential to raise energy prices for U.S. consumers and households and thus hurt economic recovery. Instead, he elevated energy and climate change on his agenda and included it as one of his three pillars for rebuilding the U.S. economy (along with health care and education). Early in his administration, he was granted an unprecedented opportunity to invest record levels in energy efficiency, clean energy technologies, and green manufacturing through the American Recovery and Reinvestment Act (commonly referred to as the stimulus package). Nearly $80 billion of the $787 billion package went to green infrastructure, energy efficiency, and energy research and development programs. The U.S. Department of Energy received nearly $37 billion.

The Obama administration next announced its intention to put in place a cap-and-trade program in its fiscal 2010 budget. The budget included an economy-wide cap-and-trade program with a 100 percent auction of emissions allowances designed to generate significant revenues that could be invested in technology development and deployment, protecting consumers from higher energy prices, and deficit reduction. The Democratic-controlled U.S. House of Representatives proceeded early in 2009 to advance energy and climate legislation that included a cap-and-trade program.[2] The bill, formally the American Clean Energy and Security Act of 2009 or informally referred to as the Waxman-Markey bill after its cosponsors, passed the House by a narrow majority in June 2009. Despite the existence of several high-profile draft bills in various stages of formulation, as of September 2010 the Senate has yet to pass comparable legislation, and prospects for passing such legislation look dim. In the meantime, the administration has moved forward to advance its energy and climate priorities through a series of executive orders and other executive branch measures that include the following:

- It created the first-ever greenhouse gas and increased fuel economy standards for new cars and trucks. (Congress said to get to 35 miles per gallon in 2020; the administration proposed 35.5 miles per gallon in 2016.)
- It promulgated rules to promote the development of offshore renewable energy.
- It set aggressive new energy appliance standards and continues to move forward on setting more standards.
- It set greenhouse gas and energy efficiency standards for the federal government.

Perhaps most notably, the U.S. Environmental Protection Agency (EPA) has continued to move forward to regulate carbon dioxide as a pollutant. In 2007, the U.S. Supreme Court decided that the George W. Bush administration's decision not to regulate carbon dioxide under the Clean Air Act was not adequately justified. The result has been a widely publicized endangerment finding, finalized in mid-December 2009, which declares that carbon dioxide is a pollutant and clears the way for the EPA to regulate carbon dioxide emissions from vehicles and, eventually, stationary sources. This provides the Obama administration with recourse to regulate carbon dioxide regardless of whether Congress eventually passes cap-and-trade legislation. Pursuing regulation of greenhouse gases through the EPA is controversial and is already being challenged by states, interest groups, and companies within the courts. In the Senate, a number of Republican senators have introduced legislation to strip the EPA of its authority to regulate greenhouse gas emissions under the Clean Air Act, but their initial attempt to move the legislation forward in June 2010 fell

2. For more information, see http://thomas.loc.gov/cgi-bin/bdquery/z?d111:H.R.02454.

a few votes short. Such a challenge is likely to emerge again as the EPA continues to move forward, though President Obama has indicated he will veto any measure that seeks to tie the hands of the EPA in this regard. As the likelihood of comprehensive energy and climate legislation continue to diminish, the administration is exploring all options on the table for reducing emissions through existing executive branch authority.

## Interests and Stakeholders

Interest in climate change and energy policy has grown over the last decade, as has participation from the various constituencies with a stake in the outcome of those policies. The desire to shape policies and public opinion has created many strange bedfellows and alliances among these groups, and the dynamics and interplay continues to shift as the political debate heats up. The main factions within the debate include, but are not limited to, environmental groups, the scientific community, the energy industry, energy-intensive manufacturers, the agriculture community, major energy consumers, technology / venture capital / investment companies, insurance companies, and labor groups.

### Environmental Groups

The diverse members of the environmental community often come together in support of policies that promote climate change mitigation and adaptation efforts, but they may differ on the details. Some environmental groups have adopted a strategy to work with energy companies and politicians to craft middle-of-the-road compromise positions in the hope of advancing policies, while others seek to define the boundary of what is ultimately necessary to save the environment regardless of its political, technological, or economic feasibility. Environmental groups also differ in terms of focus. Some groups focus on efforts to promote clean energy technology, energy efficiency, and all other efforts to reduce emissions, while others focus on deforestation, adaptation, the impact of climate change on animals and ecosystems, the human rights aspect of climate change, and so on. This type of diversity and flexibility has allowed the environmental community to take a multipronged approach to pushing the climate change agenda in all facets of society.

### The Scientific Community

Along with the environmental community, the scientific community has been extremely influential in advancing the cause of climate change with both the public and private sectors. The most notable influential scientific organization is the United Nations Intergovernmental Panel on Climate Change, whose Nobel Peace Prize–winning work to bring some consensus on the knowns and unknowns about the climate change phenomenon, its impact on human society, and options for policymakers has done more to consolidate and simplify a range of views on this highly complex subject than any other effort. Several United States–based scientific organizations (e.g., the American Association for the Advancement of Science and the National Academies of Science), as well as groupings of prominent scientists, have sought to advance climate policy in the last several years, given their concern over the dire nature of climate change and its consequences if left unabated.

Like the environmental community, the scientific community also contains within it a range of views. The minority of scientists who oppose action on climate change on a scientific basis have

come to be known as "climate skeptics" and are derided by those who support climate change action. These climate skeptics have also organized and become proactive in the policy dialogue on climate action. Many both within and outside the scientific community dislike how involved many scientific organizations have become in the climate advocacy process, but it is hard to see how scientists could remain on the sidelines of the debate, given climate policies' high level of dependence on the scientific research base.

The recent "Climategate" scandal—in which computer hackers accessed e-mails from the East Anglia University Climate Research Unit and revealed the questionable and politically charged motivations of some scientists involved in their work on climate temperature records and apparent mistakes in the estimates of the rate at which the Himalayan glaciers are melting—has reignited what was once a subsiding debate on the validity of climate science as put forth by the Intergovernmental Panel on Climate Change. Although most people in the scientific community understand that these controversies do not undermine the validity of climate change theories per se, many who were already skeptical of the science have found a new reason to raise doubts and feel more empowered to speak out on them. Given the complexity of climate change science and the relative lack of understanding by most in the U.S. public, this controversy does provide those who want to doubt the science with a reason to do so and will ultimately make it more difficult for climate change policy advocates to win in the court of public opinion.

## The Energy Industry

The energy industry, another main voice in the climate change debate, is not nearly as unified in its stance toward climate change and is becoming more fractured by the day. Early on in the climate change movement, the response of fossil-based energy companies (oil, natural gas, and coal) was to deny the science of climate change and highlight the extreme cost of low-carbon alternatives. In their defense, for much of that time, the science of climate change and possible response measures was far less certain than it has become in the last several years. As the scientific consensus grew and cleaner energy alternatives became more popular, these companies sought to create a greener image for themselves by adopting climate responsible activities and policies (mostly increasing energy efficiency and investing in alternative or cleaner energy technologies).

In addition, many of these companies sought to join ranks with willing environmental organizations to formulate in-house climate focused programs and policies. Many of these companies were criticized for so-called green washing, that is, seeking to gain public recognition by adopting environmentally friendly policies that gave the perception of good stewardship but in reality had very little impact on the environmental responsiveness of their products and policies. As policies related to climate change grew more popular at the local and international levels (e.g., an emissions trading program in Europe, renewable fuels standards and emissions reduction policies in U.S. states), energy companies sought ways to influence climate change policies that now seemed inevitable. One of the most notable and perhaps most successful efforts to influence climate change policy at the federal level is a group known as the U.S. Climate Action Partnership.[3] This group, which is made up of several prominent oil and gas companies, power providers, and major energy consumers, came together in 2007 at the urging of a number of environmentally focused

3. For more information, go to the U.S. Climate Action Partnership Web site at http://www.us-cap.org/. The group, noted for its influential lobbying on the creation of climate policy within Congress, has recently suffered some notable setbacks with the departure of two major oil and gas companies and a machinery company.

nongovernmental organizations to shape policies that they believed would be acceptable for U.S. federal climate legislation (e.g., the group advocates an economy-wide cap-and-trade program). This partnership has been instrumental in showing that some of the very same companies that once actively lobbied against climate change policies are now more in favor of them and in fact want to have a seat at the table to help devise them.

It goes without saying that the energy industry is far from unified on the issue of climate change policy. Renewable energy companies (wind, solar, biofuels, geothermal, and hydroelectric) have long competed with one another for policies and financial incentives that will give an advantage to their particular renewable energy technology or fuel. During the past several years, climate change advocacy has brought many of these groups together in new ways. The American Council on Renewable Energy is a concrete manifestation of these groups' desire to find a common lobbying voice for all the renewable sectors. Climate change is a good common platform for these groups because the transition to a low-carbon economy would benefit the entire renewable sector in ways that they would never be able to achieve on their own. The nuclear power industry also saw a great opportunity to become advocates for climate change legislation because of nuclear power's proven ability to provide low-emissions, scalable, base-load power generation. The nuclear industry was even able to convert several environmental organizations and prominent environmental spokespeople, who previously opposed nuclear power due to unresolved nuclear waste and safety issues, to a pronuclear stance due to the potential climate benefits of nuclear power.

The oil and gas industry has not done as good of a job adopting proactive climate change policies. For much of the last decade, this industry was under a great deal of criticism not only because of its environmental footprint but also as a target of blame for record-high energy prices. This created a palpably negative environment for the industry and record-low levels of approval in public opinion polls. Several companies have tried to strike a proactive stance on energy and climate policies by supporting renewable fuel standards, creating in-house renewable energy ventures, and launching individual lobbying efforts (or joining groups like the U.S. Climate Action Partnership) to influence federal and state legislation. As a group, however, they continue to be perceived as forces against, rather than for, progressive climate legislation. The refining and petrochemicals portion of the industry is perhaps the most vocal component of the anti–climate change policy sentiment.

Another recent rift within the oil and gas industry is between the major oil producers and the smaller companies producing unconventional natural gas resources. The United States has a long history of developing domestic natural gas resources, but in the last several years, small and independent companies have made technological and operating improvements that have increased the potential for unconventional gas resources (shale gas, coalbed methane, etc.) by orders of magnitude. According to the most optimistic estimates, the United States has enough unconventional natural gas resources to provide fuel for the country at the current rate of consumption for another 100 years.[4] Natural gas releases fewer carbon dioxide emissions than coal or oil and is easily substituted or added to the current power sector as either base-load or peak power production. The companies involved in unconventional gas production are just now forming their own advocacy organizations, countrywide advertising campaigns, and policy proposals to ensure they are viewed in a better light than oil or coal for power production or transportation applications.

4. For more information on unconventional gas resource projects, see the Potential Gas Committee press release and report at http://www.mines.edu/Potential-Gas-Committee-reports-unprecedented-increase-in-magnitude-of-U.S.-natural-gas-resource-base.

However, the unconventional natural gas producers will need to catch up to the coal industry, which has long viewed climate change policy as a direct threat to its entire supply chain and has therefore engaged in the policy debate early and often. The coal industry is similar to the oil and gas industry in that there is a spectrum of companies and segments of the supply chain within the industry that have different views on how best to engage on the issue of climate change. Certain parts of the industry still seek to lobby against any kind of climate change or other environmental policies that might adversely affect the industry (coal currently supplies half of U.S. electricity needs). Others recognize that they can achieve considerable advantage if policies are crafted to recognize the benefits of clean coal (i.e., coal processes with relatively less pollution and greater efficiency) and to the promote the technology and applications for carbon capture and sequestration—which is viewed by some in the coal industry as its only hope for surviving the transition to a low-carbon energy future, because it is the only known process to remove carbon dioxide from the coal combustion process and store it underground, thereby eliminating the threat to the atmosphere.

The coal lobby is very influential at the federal and state levels because so many jobs and local communities in coal-producing and coal-consuming states depend on the industry. Coal is also abundant in the United States and therefore seen as a good source of energy security. The environmental community has mixed views on the role of coal. Some have chosen to support the advancements in clean coal technology and push for the demonstration and deployment of carbon capture and sequestration technology because they recognize the political importance of coal in the United States and want to help make the industry as clean as possible. Other environmental groups think the coal industry has oversold the promise of these technological solutions and thus want to reduce coal's market share and political influence.

Finally, the last voice in the energy industry is the energy efficiency community. This is perhaps the most difficult perspective to represent because no one industry or group of companies fully represents energy efficiency. All technology companies, every other energy company, and all energy end users have steps they can take to improve energy efficiency. There is a small and disparate but growing segment of companies and consultants who deal exclusively in energy efficiency products and services. Nongovernmental organizations have therefore picked up the mantle of energy efficiency within the public debate. Groups like the Alliance to Save Energy and the American Council on an Energy-Efficient Economy serve as convening groups for energy efficiency promotion. In the often big-money and high-influence lobbying efforts of the energy industry, energy efficiency is often squeezed out of the debate despite the fact that it is the cheapest, most readily available source of emissions reduction and energy supply. In 2008 and 2009, energy efficiency measures have realized a tremendous boost because of the linkages among energy efficiency, climate change, and economic recovery. For instance, weatherization programs (retrofitting houses to be more energy efficient), one of the most popular sources of green jobs, have received a great deal of stimulus financing at the state and national levels. Politicians who have realized the potential short- and long-term economic benefits of energy efficiency programs and policy incentives have raised the profile of energy efficiency efforts to reap such near-term benefits as cutting household energy expenditures, creating jobs, and reducing emissions.

As the decisions to implement climate policies and climate-related energy policies were made at the state and local levels and looked increasingly inevitable at the national level, the community of voices involved in the climate policy debate grew. Nearly every segment of society is affected by energy and climate policies, and most of them are represented in some way in the ongoing na-

tional debate. Some of the most influential groups among stakeholders include energy-intensive manufacturers, the agriculture community, major energy consumers, technology / venture capital / investment companies, insurance companies, and labor groups.

Because climate policy continues to be debated at the national level, stakeholders continue to refine their strategies for how to position themselves. Some coalitions that were formed to promote certain positions in the hopes of shaping what was once seen as inevitable climate policies have weakened or faltered as perceptions of federal inaction have grown. Other groups have formed new coalitions to promote or combat new initiatives that seem likely to evolve. Most of these stakeholders will be acutely affected by climate change and any policies enacted to deal with climate change, and therefore they continue to spend considerable time and resources developing strategies to shape the debate.

## Economics, Security, and the Environment

All the interests and stakeholders described above seek to influence the broader public, the business community, and policymakers, and they are therefore very interested in finding the messages that will best resonate with society at large. Because various segments of society respond to different messages, the climate change movement has included almost every conceivable angle. For a long time, the movement was relegated to arguing its cause from an environmental perspective and sought primarily to raise public awareness of the environment's importance. This resonated with people who already valued environmental causes, but it also expanded the community of people who were concerned about local environmental issues. The environmental perspective, however, is not persuasive with many Americans, who tend to view environmental issues as important but often too costly or burdensome to deal with on any serious level.

Opinion polls in the United States show that concern for the environment has grown but is still weak relative to other issues, such as economic strength, security, and health. The climate change movement received a significant boon in the last several years as advocates for change sought to connect climate change with other pressing issues of national importance. During the period between 2003 and 2008, when energy prices were on the rise and reaching record highs, energy security was a growing concern among the American public. Climate change advocates effectively exploited the linkages between climate change and energy security by arguing that the sources of insecurity—especially oil—were also major contributors to climate change. Many campaigns made the connection between the issues of energy security, climate change, and technological progress (given that the public feels relatively confident about U.S. capabilities in the area of technological advancement) under the slogan "energy independence."

Despite objections from experts in the field and those in the energy industry, this notion of energy independence plays extremely well among the public with claims that it will reduce energy prices, release the United States from reliance on foreign energy sources, utilize innovative clean energy technologies, and be better for the environment. The problem with linking climate change to energy security is that the public's concern for energy security wanes when energy prices go down. It is also unclear from public opinion polls what society is willing to do to address energy security. Promoting clean energy technologies is a clear winner, but not if it comes at a significant cost to consumers—and these are essentially the same answers the public gives about responses to climate change.

These public sentiments explain the strategic thrust of many energy and climate policies pursued by the George W. Bush administration. During the period 2000–2008 (especially the second half), climate change awareness and scientific certainty were growing, energy prices were rising, and the public felt confident in the promise of technological solutions as one of the strengths of the U.S. economy. Consequently, the Bush administration adopted policies that were increasingly designed to deal with energy security and the high price of energy, but it relied heavily on technological solutions for climate change and energy policy instead of policies that could risk raising energy prices for consumers.

Pocketbook economics is the clear winner in terms of public opinion, especially in the wake of the recent global financial crisis and economic downturn. In this context, the public's major preoccupations include concern over the state of the economy, prospects for economic growth and job creation, and the competitiveness of the U.S. economy relative to other countries. Although the Obama administration campaigned on a message of improved energy security and a proactive leadership role on climate change, the message has quickly shifted to emphasize the economic opportunity and green jobs potential of its energy and climate platform. Because energy security is not as predominant a concern right now, the climate community and politicians who want to advance a climate change agenda have brought in the security angle by talking about the national security implications of climate change effects, both in the United States and around the world. Prominent members of the defense community are speaking out about the potential security effects and widespread instability that could result from climate change that goes unabated. Likewise, several key reports from such defense-oriented groups as the Center for New American Security and the Center for Naval Analysis have played a high-profile role in highlighting the security implications of a changing climate. As a result of this growing concern, the National Intelligence Council has conducted several strategic reviews on the topic and the Defense Department's Quadrennial Defense Review includes a section on climate security.

Climate change discussions in U.S. society tend to bounce around among focusing on the environment, security, and economics, depending on which matters most to society at the time. The advocacy community has been very adept at exploiting all three of these angles, and the anti–climate change movement is also heavily engaged in refuting their claims on each front. The result is that the average American is encountering climate change in more and more areas of daily life and public discourse, which only serves to raise awareness if not cause some confusion by subjecting people to these intense debates.

## The Economic Impact of Current Policy Proposals

Given the U.S. public's historical and current high levels of concern over the health of the economy, the main source of opposition to proposed energy and climate legislation is its cost. Proponents of the legislation claim that it will cost very little and provide much-needed economic opportunities and jobs for ailing parts of the economy. Opponents claim that the costs will be much higher for individuals, households, small businesses, and ailing industries and that these costs will threaten the nation's economic recovery and long-term growth.

The legislative proposal in question here is the American Clean Energy and Security Act (HR 2454), also known as the Waxman-Markey Bill, which passed the U.S. House of Representatives in June 2009. (Draft legislation exists in the Senate, but the cost estimates are very similar to those of the House bill.) The bill includes several energy- and climate-related provisions, including tighter

efficiency standards, a renewable portfolio standard, energy research and development programs, and a cap-and-trade program to reduce greenhouse gas emissions. The economic impact of most of the major provisions is uncontroversial. The cap-and-trade program—which would cover 86 percent of the U.S. economy and reduce emissions by 17 percent in 2020, progressing to an 83 percent reduction by 2050 (both from a 2005 baseline)—is the main concern when it comes to economic impact. Several organizations have conducted studies about the economic impact of HR 2454 and have reached a wide range of conclusions. The most commonly cited costs estimates come from the EPA, the Energy Information Administration, the Congressional Budget Office, and the U.S. Department of Agriculture. Several private interest groups have also sponsored their own studies, which not surprisingly concluded that the costs of the policies would either be much lower or much higher, depending on the group's advocacy positions.

The EPA analysis estimates a projected cost of the policies for U.S. households somewhere in the range of $80–111 a year (i.e., somewhere between 22 and 31 cents a day).[5] In contrast, cost estimates conducted on behalf of the Heritage Foundation (a conservative think tank) and the National Black Chamber of Commerce assumed a much higher cost to households and society at large. The cost estimate done by CRA International for the National Black Chamber of Commerce, for example, puts annual household cost estimates at $830 and estimates that the policy would reduce gross domestic product by $350 billion by 2030.[6]

The cost estimates differ because each group uses different assumptions. Depending on how each modeler views the pace, potential, and costs for different energy technologies to come to market, assumed discount rates, the availability or cost of offsets, and several other issues, the results from these models can be wildly different. Unfortunately, concrete answers for many of these variables are not available, so the policies in question have inherent economic uncertainty. None of these analyses, however, take in to consideration the avoided costs of adaptation if these policies result in slower or less severe climate change. Future adaptation costs are expected to far outweigh the costs of near-term action to reduce the most dangerous effects of climate change.[7]

## The Role of Technology

Perhaps the largest single variable in the cost of climate change policy is the pace, scalability, costs, and potential breakthroughs of different energy technologies. Nearly everyone engaged in the climate change debate agrees that technology deployment and innovation are critical to a successful outcome. But this agreement among constituents and stakeholders comes undone when the

5. U.S. Environmental Protection Agency, Office of Atmospheric Programs, "EPA Preliminary Analysis of the Waxman-Markey Discussion Draft: The American Clean Energy and Security Act of 2009 in the 111th Congress," April 20, 2009, at http://www.epa.gov/climatechange/economics/pdfs/WM-Analysis.pdf.

6. David Montgomery et al., "Impact on the Economy of the American Clean Energy and Security Act of 2009 (HR 2454)," prepared for the National Black Chamber of Commerce by CRA International, May 2009, http://www.nationalbcc.org/images/stories/documents/CRA_Waxman-Markey_%205-20-09_v8.pdf. William W. Beach, David Kreutzer, Karen Campbell, and Ben Lieberman, "Son of Waxman-Markey: More Politics Makes for a More Costly Bill," *Heritage Foundation WebMemo*, no. 2450, May 18, 2009, http://www.heritage.org/Research/EnergyandEnvironment/wm2450.cfm.

7. The most noted study of the costs of adaptation versus mitigation is the *Stern Review of the Economic of Climate Change*, http://www.hm-treasury.gov.uk/sternreview_index.htm. The report itself is also controversial among economists.

issue turns to how best to deploy existing technologies, how to drive technological innovation, and which technologies are most worthy of promotion.

At an academic level, the question of how to deploy technologies and encourage innovation with new clean energy technologies has long been a debate about "push" versus "pull" incentives. Is it enough for the federal government and private industry to use push incentives to invest in new technologies and to drive down their costs? Or must the market pull these technologies into the marketplace through proper regulatory and market incentives? According to conventional wisdom, both push and pull incentives are necessary to deploy and develop technologies, but special government support might also be needed for technologies that are between the development and deployment phases on the innovation chain. Major technological applications like carbon capture and sequestration must first be tested and proven at scale before industry will have the confidence to deploy them in power generation or manufacturing applications.

Even with ample investment in research and development and the right market conditions (e.g., a price on carbon), the demonstration phases of these new technologies are critical for their eventual use. Current energy legislation is considering both special funding and a dedicated agency designed to promote these types of technologies as well as other aspects of the innovation chain. Both the House-passed Waxman-Markey Bill and a version of the now-languishing Senate bill include a Clean Energy Deployment Administration designed to help move technologies from the research and development phase into the market.[8] Technology promotion is a clear winner with the U.S. public, which has long had a great deal of confidence in the United States' ability to create new and innovative technological solutions for many problems facing society.

## Public Support for Climate Change Policies

Despite all this movement at the state and national levels on energy and climate policies, it is still difficult to determine the extent of public support for them.[9] Polling results vary depending upon how questions are asked. For example, if asked whether or not climate change or the environment is important, the majority of Americans say yes, but certainty is declining about the evidence that the climate is warming and the issue's overall importance. A Pew Opinion Poll conducted in October 2009 showed a decline in Americans who believe that there is "solid evidence the Earth is warming"—down from 71 percent who said yes in April 2008 to 57 percent. Previously, this proportion had been fairly consistently about 77 percent in 2006 and 2007.[10] The drop in confidence appears to come mostly from independents and moderate Republicans. Similarly, a smaller share of the public finds global warming to be "less serious," down from the 73 percent who viewed global warming as very or somewhat serious in the April 2008 poll to 65 percent in October 2009.

If people are asked how important climate change is relative to all other major national issues, it finishes somewhere in the top 10 or sometimes 20, but definitely not the top 5. In a January 2009 poll conducted by Pew, global warming ranked last among the top 20 priorities for the new administration, with 30 percent of the public believing it should be a top priority, down from 35

8. See http://energy.senate.gov/public/index.cfm?FuseAction=PressReleases.Detail&PressRelease_id=f85df78d-4766-4455-bbee-c298b360dd5b&Month=7&Year=2009&Party=0.

9. Special thanks to Leigh Hendrix for her help compiling the polling data discussed in this section.

10. Pew Research Center for People and the Press, "Modest Support for Cap and Trade Policy: Fewer Americans See Solid Evidence for Global Warming," October 22, 2009; available at http://www.people-press.org.

percent the year before. Support for global warming as a top priority is much higher for Democrats (45 percent) than Republicans (16 percent) or independents (25 percent)—it ranked last for both Republicans and independents and 16th out of 20 for Democrats.[11]

When asked about specific policy measures, however, the public is relatively ill informed about the major policy debates on climate change. Only 14 percent of the public claims to have heard a lot about a cap-and-trade program, 30 percent a little, and 55 percent nothing at all. Strangely enough, more Republicans and independents (20 and 17 percent, respectively) have heard a lot about cap-and-trade policy, compared with 8 percent of Democrats. Among political leaders, however, strong climate policies and the cap-and-trade agenda are much more closely aligned with the Democratic platform. Another strange finding is that among those who have heard little or nothing about a cap-and-trade program, most support it. When asked how much the public is willing to pay for an improved climate or energy security, the polls reveal an acceptance of some cost increase, but it is not entirely clear how much. Half of the Americans polled were in favor of setting limits on carbon dioxide emissions even if they led to higher energy prices, compared with 39 percent who opposed them.[12]

A January 2009 Pew poll showed that the economy and jobs trumped all other priorities for 2009.[13] The recent shift in the political debate away from climate change and energy security and toward green jobs and economic opportunity seeks to take advantage of this widespread public sentiment. In a recent (December 2009) Associated Press–Stanford University poll, 40 percent of respondents said that they believed U.S. action to slow global warming would create jobs and 46 percent said it would boost the economy. One-third of those polled believed it hurt the economy. However, though 75 percent of those polled said they support efforts to reduce greenhouse gas emissions, a full 59 percent said they would oppose such a measure if it raised their monthly electricity bill by $10.[14]

Unfortunately, polls are just like cost estimate projections, in that interest groups can commission polls to project any public sentiment they want. Polling responses depend a great deal on which questions are asked and how they are phrased. A recent study conducted by the Woods Institute for the Environment at Stanford University suggested that polls showing a waning public belief in climate change and support for climate change policies reflect those individuals' perceptions of how society feels, whereas their own feelings and beliefs were in fact much more favorable toward climate action (though the study did not indicate that people were any more willing to pay higher energy prices than do other studies).[15] With regard to climate change policy, the responses are much more difficult to analyze, given varying levels of knowledge about climate change and related policy issues and how climate change is being tied by the survey questions to security, the economy, or other issues that generally have a higher standing in the public's perception of importance.

11. Pew Research Center for People and the Press, "Economy, Jobs, Trump All Other Priorities in 2009," January 22, 2009; available at http://www.people-press.org.

12. Pew Research Center for People and the Press, "Modest Support for Cap and Trade Policy."

13. Pew Research Center for People and the Press, "Economy, Jobs, Trump All Other Priorities in 2009."

14. "Poll: Fighting Global Warming Good for the Economy," Associated Press, December 15, 2009; available at http://www.msnbc.com.

15. "Large Majority of Americans Support Government Solutions to Address Global Warming," June 10, 2010, http://woods.stanford.edu/research/americans-support-govt-solutions-global-warming.html.

## The International Context

Much to the dismay of many in the international community, the U.S. politics of climate change is only marginally influenced by what is going on around the world. The stakeholders most actively involved in the climate debate in America are perhaps the most aware of and concerned with progress and developments abroad. However, U.S. public opinion and still a relatively large portion of policymakers are less concerned or influenced by the international context of their actions.

At the level of the general public, in an October 2009 Pew poll, 56 percent of Americans said the United States should join the standards set by other countries to address climate change, while 32 percent said the United States should set its own policies.[16] A similar poll conducted by Gallup on December 15, 2009, when the Copenhagen climate change summit was very much in the news, found that 55 percent of Americans supported the United States signing a binding agreement in Copenhagen that would commit the United States to significantly reducing greenhouse gas emissions (compared with 39 percent who opposed it). The same poll results showed, however, that 85 percent favored improving the economy over reducing global warming when the two issues were pitted against one another (only 12 percent favored reducing global warming). A slightly lower proportion than in the Pew poll cited above, only 36 percent of respondents, believed that efforts to reduce global warming would help the economy, while 42 percent expressed a belief that it could hurt the economy.[17] Despite the willingness to sign a treaty, there is no evidence that the public at large understands the issues and implications of ongoing climate negotiations like those conducted under the UN Framework Convention on Climate Change.

## Washington's Concerns vis-à-vis Beijing and Copenhagen

The U.S. negotiators went to Copenhagen for the Fifteenth Conference of the Parties to the United Nations Framework Convention on Climate Change with a challenge: Satisfy the international community's desire for an ambitious and comprehensive climate agreement while not overstepping the bounds set by Congress. The expectations set by the international community had been laid out in the Bali Action Plan—an agreement reached in 2007 at Thirteenth Conference of the Parties in Bali. This document laid out a vision of how to reach a comprehensive, legally binding agreement for action on global climate change by the end of 2009 at the Fifteenth Conference of the Parties in Copenhagen. The Bail Action Plan stated that the next agreement should enable the world to limit global warming to 2 degrees Celsius, include all major emitters (both developing and developed countries) in actions to reduce greenhouse gas emissions, and cover the areas of technology transfer, financing for adaptation and mitigation efforts, forest and a land-use issues, monitoring and verification to ensure compliance, and adaptation.

The Obama administration supported this action plan and worked vigorously in its first days in office to make sure that it would be able to deliver on some of the key provisions of the eventual agreement. For example, it programmed new money for adaptation and mitigation assistance into its fiscal 2010 budget (approximately $1.3 billion) and pushed Congress to begin the long process of passing cap-and-trade legislation that would allow it to pledge to make ambitious emissions

16. Pew Research Center for People and the Press, "Modest Support for Cap and Trade Policy."
17. See http://www.gallup.com/poll/124712/americans-favor-signature-copenhagen-treaty.aspx.

**Box 8.1. The Copenhagen Accord**

- Aspirational 2-degree target (2015 review).
- Developed-country targets and developing-country action—country mitigation and financing pledges due by January 31, 2010.
- Vague terms for reporting and verifying action.
- $30 billion of "new and additional" resources from developed country between 2010 and 2012.
- Goal to mobilize $100 billion a year in public and private finance by 2020.
- Seeks to establish Green Climate Fund, High-Level Panel on Finance Goal, and new Technology Mechanism.

reductions within the context of international negotiations. The administration, however, only had 10 months to achieve its legislative aims, and Congress proved unable to pass legislation in time for the Copenhagen meeting.

During the House of Representatives' debate on the Waxman-Markey Bill, it became quite clear that the majority of those who opposed the bill did so on economic grounds (rather than refuting the science). A large number of representatives voiced their extreme concern that passing cap-and-trade legislation in the United States would not only hurt the U.S. economy but also send jobs and economic opportunity to China. During these debates and the subsequent negotiations on the bill in the Senate, it became quite clear that both Democrats and Republicans were concerned about the United States' competitiveness with China and the impact that climate policy would have on this dynamic if China did not also impose limits on its own greenhouse gas emissions. The bill's trade provisions—which include an option to impose border tariffs on energy-intensive goods from any country without comparable domestic emissions reductions policies (under certain conditions)—are a direct manifestation of the concern about U.S. competitiveness vis-à-vis China.

Given these concerns, for the U.S. Copenhagen negotiating team to satisfy Congress and maintain some hope of passing the Waxman-Markey Bill, it had to deliver an agreement that included emissions reduction activities from all major emitters (including China) and offered some level of assurance that those reductions would take place. The U.S. negotiating team was also constrained by Congress in what it could put on the table to secure an agreement. The major lesson from the U.S. experience trying to ratify the Kyoto Protocol at the end of the 1990s was that it could not negotiate an international climate agreement abroad and then try to sell it to Congress. Instead, the administration had to take its cues from Congress to first find out what kind of domestic climate policy would be feasible, and then use that as the basis for its international negotiating position. Without domestic legislation secured at home, the U.S. negotiating team went to Copenhagen with only provisional (and not very ambitious, by international standards) emissions reduction goals and financing pledges. The U.S. negotiators could not promise anything more ambitious or it would have risked creating an agreement that Congress would have rejected, yet at the same time it needed to deliver an agreement that included not only all the principles of the Bali Action Plan but also emissions reduction efforts from all major emerging market countries (especially China), complete with some sort of mechanism for ensuring those reductions take place.

From this perspective, Copenhagen was a success for the United States. Its negotiators went to Copenhagen with very little leveraging power, and yet they were able to deliver incremental progress on issues that matter to Congress while staying true to the principles of the Bali Action Plan. However, the Copenhagen Accord, the agreement that emerged (box 8.1), falls short in a number of areas—it is not legally binding, the emissions reduction pledges it gives do not necessarily yield

a limit of 2 degrees Celsius on the temperature increase, and it leaves the vast majority of the details about financing, technology transfer, forest issues, and adaptation largely unresolved.[18]

The U.S. public reaction to the Copenhagen Accord has been mixed, but it seems safe to say that most people do not fully understand what happened leading to the agreement or how to judge its significance. The chaotic nature of the Copenhagen meeting (most of the U.S. domestic press focused on the protests and riots outside the conference) and its confusing outcomes left many to conclude that it was at least a partial failure.

International reactions to the conference have been mixed. Immediately following Copenhagen, almost every head of state acknowledged that the negotiations did not meet expectations. Most chose to focus on the incremental progress that has been made and the need to go further, while others came close to declaring the entire conference a disaster. As of August 12, 2010, a total 138 countries have announced their intention to sign onto the Copenhagen Accord.[19] Several countries chose not to associate with the accord (i.e., they did not endorse it), and the rest did not voice an opinion. In subsequent negotiating sessions it appears that many countries have walked back from some of the key agreements of the Copenhagen Accord, causing negotiators to lose precious time negotiating various countries' interpretations of the agreement. The good news is that all the major emitters have pledged to carry out their emissions reduction pledges regardless of whether there is an eventual global agreement on climate change. The United States pledged the same emissions reduction targets put on the table in Copenhagen and, despite the lack of progress on passing domestic climate legislation, maintains it will meet those goals as promised.

The rest of the world is still waiting to see if the United States can deliver on its pledges by passing climate change legislation. The passage of ambitious U.S. legislation is furthermore captive to the domestic political reality that Congress is reluctant to undertake a major legislative initiative on climate while still reeling from a protracted battle to pass national health care legislation, facing a tough upcoming midterm election season with a weak economy and a prevailing nationwide concern over job losses and financial reform. Even in the wake of the catastrophic oil spill in the Gulf of Mexico and the Obama administration's attempts to use this disaster to breathe new life into its energy and climate legislative agenda, there have been clear signals from many members of Congress that the opportunity to pass climate change legislation during this Congress is slipping away and the likelihood of passage next Congress is even worse.

In many ways, the nations of the world are still left to negotiate many of the very same contentious issues that they went to Copenhagen to resolve. In the wake of Copenhagen, the negotiation process will proceed under the United Nations, with other major multilateral forums and bilateral arrangements playing a supportive and momentum-building role. Regional organizations like the Asia-Pacific Economic Cooperation forum and the Association of Southeast Asian Nations will still play important, though not pivotal, roles in moving negotiations forward. The Obama administration has adopted a strategy of pushing its energy and climate change agenda forward on multiple fronts, both at home and in international forums (much like the environmental movement in the United States). During its first year in office, the administration promoted strong and coordinated action bilaterally, regionally, and through specialized groups like the Major Economies Forum on Energy and Climate Change and the Group of Twenty. As long as the UN process seems

18. For a more complete analysis of the Copenhagen Accord, see the "Post-Copenhagen Pathways," commentary at http://www.csis.org/energy.

19. UNFCCC, http://unfccc.int/home/items/5262.php.

to be moving forward—especially if it is the venue where the major developing countries agree to submit pledges to some sort of review process—they will continue using it to pursue their goals. They will also continue to push hard for subsidy reform and market transparency and stability in the Group of Twenty process. The Major Economies Forum process will continue to be a useful venue for negotiations and collaboration on technology advancement outside the UN. The International Energy Agency, regional organizations, and special multilateral and bilateral agreements can all be avenues for driving progress. This might not be the sweeping change for which some have hoped after what transpired in Copenhagen, but the people who work on climate change make up a persistent and resourceful group and have learned that this issue must be tackled from a variety of angles to keep the momentum.

## Conclusion

In the wake of the Copenhagen Conference on Climate Change, the future of U.S. climate change and energy policy hangs in the balance. The prospects for domestic climate change legislation hinge not only on whether politicians and stakeholders can find effective political compromises but also on how the public views climate change legislation vis-à-vis its larger, more pressing concerns about the economy. If the public is convinced that the legislation is a good way to tackle environmental and energy security concerns while creating new jobs and economic opportunities, then it is likely to pass.

The international negotiations on climate change, in turn, still largely depend on whether the United States can pass domestic legislation or find another way to effectively reduce its greenhouse gas emissions and deliver on its promises to the international community. Major emerging developing countries like China (and to a lesser extent India, Brazil, and Russia) are important to both the U.S. domestic debate (in terms of competitiveness) and the future of international negotiations. It is likely that the Obama administration will continue to work through all available domestic and international channels to seek even incremental progress toward reaching its goals for energy and climate change.

# ABOUT THE CONTRIBUTORS

**Kiyoaki Aburaki** is a senior fellow and director of research at the 21st Century Public Policy Institute in Tokyo. He also serves as head of the Political Affairs Group of Nippon Keidanren (the Japan Business Federation) and research fellow of the Massachusetts Institute of Technology's Japan Program. He received a master's degree in political science from MIT and a bachelor's degree in economics from Keio University in Tokyo.

**Malcolm Cook** is a program director for East Asia at the Lowy Institute for International Policy in Sydney, where his research focuses on the political economy of Northeast and Southeast Asia, East Asian regionalism, Japanese foreign policy, and great-power relations in East Asia. He is originally from Canada, and before moving to Australia in 2000, he also lived and worked in the Philippines, South Korea, and Japan and spent much time in Singapore and Malaysia. Before joining the Lowy Institute in 2003, he ran his own consulting practice on East Asian political and economic policy reform and risk analysis. His recent publications include *Mindanao: A Gamble Worth Taking* (with Kit Collier; Lowy Institute Paper 17); *Koizumi's Legacy: Japan's News Politics* (Lowy Institute Analysis, 2006); and *Balancing Act: Taiwan's Cross-Strait Challenge* (with Craig Meer; Lowy Institute Paper 6). He received a Ph.D. in international relations from the Research School of Pacific and Asian Studies at the Australian National University. He received an M.A. in international relations from the International University of Japan and graduated with honors from McGill University in Montreal.

**Charles W. Freeman III** holds the Freeman Chair in China Studies at CSIS. He concentrates on the political economy of China and other parts of East Asia and on United States–China relations. He was formerly assistant U.S. trade representative for China affairs, in which capacity he oversaw U.S. efforts to integrate China into the global trading architecture of the World Trade Organization. He is currently a senior adviser to McLarty Associates and serves on the boards of directors of the National Committee on U.S.–China Relations and Harding Loevner, an emerging markets fund group. He holds a J.D. from the Boston University School of Law.

**Michael J. Green** is a senior adviser and holds the Japan Chair at CSIS. He is also an associate professor of international relations at Georgetown University. From January 2004 to December 2005, he served as special assistant to the president for national security affairs and senior director for Asian affairs at the National Security Council, after having joined the council in April 2001 as director of Asian affairs with responsibility for Japan, Korea, and Australia–New Zealand. His current research and writing focus on Asian regional architecture, Japanese politics, and U.S. foreign policy in Asia. He received an M.A. and Ph.D. in political science from the Paul H. Nitze School of Advanced International Studies at John Hopkins University.

**Prem Shankar Jha** has worked, during a distinguished career as a journalist and scholar in India, for numerous newspapers, various international agencies, and the Indian government. At different

stages in his career, he has served as the editor of the *Hindustan Times* and the *Financial Express*, the economic editor of the *Times of India*, and the deputy editor of the *Economic Times*. In 1990, he was appointed to the position of information adviser to the prime minister of India. Previously, he had worked for the United Nations Development Program as a consultant to the World Bank, as a member of the Indian National Commission for UNESCO, and as a delegate to the Indian Science Congress Association. He served as a visiting fellow at Harvard University's Center for International Affairs in 1995 and is currently a regular contributor to the *Hindu*, the *Hindustan Times*, the *Business Standard*, *Outlook* magazine, the *New York Times*, and the *Economist*. He is the author of several books on Indian democracy, Indian and global political economy, Indian economics, and the Kashmir dispute.

**Sarah O. Ladislaw** is a senior fellow with the Energy and National Security Program at CSIS, where she concentrates on climate change and the geopolitical implications of energy use. She joined the U.S. Department of Energy in 2003 as a presidential management fellow, and from 2003 to 2006, she worked in the Office of the Americas in the department's Office of Policy and International Affairs. She received a B.A. in international affairs and East Asian studies and Japanese and an M.A. in international affairs and international security from George Washington University as part of the Presidential Administrative Fellows Program.

**Wonhyuk Lim** currently serves as director of the Office for Development Cooperation at the Korea Development Institute in Seoul, having first joined the institute in 1996. Previously, he was a visiting fellow at the Center for Northeast Asian Policy Studies at the Brookings Institution and as a fellow at both the Korea Development Institute and the Korea National Strategy Institute. He taught at the Korea Military Academy until 1996 and also worked as a consultant for the World Bank and the Asian Development Bank Institute. He served as an adviser to the Presidential Committee on Northeast Asia and to the First Economic Subcommittee of the Presidential Transition Committee after the 2002 Election in South Korea. His recent publications include *Energy Scenarios for the DPRK: Report of the Working Group Convened by the United Nations* (University for Peace, 2005); *Economic Crisis and Corporate Restructuring in Korea: Reforming the Chaebol* (Cambridge University Press, 2003); and *Public Enterprise Reform and Privatization in Korea: Lessons for Developing Countries* (Korea Development Institute, 2003). He is an economic historian by training and received a Ph.D. in economics from Stanford University.

**Agus P. Sari** is country director for Indonesia at EcoSecurities in Jakarta, where he also sits on the Executive Committee. He has followed the climate change issue since the late 1980s and, since 1997, has been a part of the Indonesian delegation to climate change negotiations as an adviser. Before joining EcoSecurities, he was executive director of Pelangi, a prominent environmental think tank based in Jakarta. He has also been on various scientific and business committees, including the Intergovernmental Panel on Climate Change, as lead author in Working Group II (Adaptation) and Working Group III (Mitigation), and made contributions to the panel's work when it was awarded the Nobel Peace Prize in 2007. He served as an adviser to the Indonesian minister of the environment when the minister served as the president of the Thirteenth Conference of the Parties and Third Meeting of the Parties to the United Nations Framework Convention on Climate Change in Bali. He has taught environmental science at the Indonesia Institute of Technology and carbon politics at the Bren School of Environment at the University of California, Santa Barbara. He holds a graduate degree from the University of California, Berkeley, as a Fulbright scholar.

**Amy E. Searight** is an adjunct fellow with the Japan Chair at CSIS and adjunct professor at the Elliott School of International Affairs at George Washington University. Her research and teaching focus on Asian regionalism, Japanese politics, and international trade and financial relations. She served in the U.S. Department of State on the Policy Planning Staff, where she helped formulate U.S. regional policy toward Asia, and as special adviser to the U.S. ambassador for the Asia-Pacific Economic Cooperation forum. She received a Ph.D. in political science from Stanford University and has been a faculty member at Northwestern University, a research fellow at Harvard University, a visiting scholar at the Institute of Monetary and Fiscal Policy at the Ministry of Finance in Japan, and a vice president of Stonebridge International, a global strategy firm.

**Zhu Feng** currently serves as a professor at Peking University's School of International Studies and as deputy director of the university's Center for International and Strategic Studies. Earlier, he served as a research fellow both at CSIS and at the Fairbank Center for East Asian Studies at Harvard University and was a visiting scholar to Durham University in the United Kingdom. He writes extensively on issues related to regional security issues, nuclear North Korea, American national security strategy, China–United States relations, and missile defense. He is a leading Chinese security expert and senior research fellow at the Center for Peace and Development of China. He sits on the editorial boards of several scholarly journals, consults independently for the Chinese government and private sector, and comments frequently on television, radio, and print media on Chinese foreign affairs and security policy. His recent books include *Ballistic Missile Defense and International Security* (Shanghai People's Press, 2001); *International Relations Theory and East Asian Security* (People's University Press, 2007); and *China's Ascent: Power, Security, and the Future of International Politics* (coedited with Robert Ross; Cornell University Press, 2008). He received an undergraduate degree from the Department of International Politics at Peking University in 1981 and a Ph.D. from Peking University in 1991.

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1800 K Street, NW | Washington, DC 20006
Tel: (202) 887-0200 | Fax: (202) 775-3199
E-mail: books@csis.org | Web: www.csis.org

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