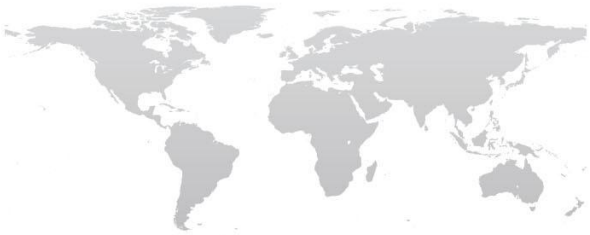
ISSUE BRIEF

Climate Change: Top 10 Precepts for U.S. Foreign Policy

U.S. Global Leadership: An Initiative of the Climate Policy Program at RFF

Daniel Bodansky

RESOURCES FOR THE FUTURE



January 2009
Issue Brief # 09-01

Resources for the Future

The Climate Policy Program at Resources for the Future (RFF) provides a framework for policymakers and stakeholders to better understand and address one of the most complex environmental issues of our time: climate change. The program has two core objectives: to develop domestic policies that are politically and economically viable and to articulate a new architecture for a global climate policy regime. Program scholars work to both support current policy efforts as well as fostering the evolution of these policies over time.

U.S. Global Leadership is one of four initiatives of the Climate Program. Its objective is to engage with policymakers to develop integrated U.S. foreign climate policy options and to conduct in-depth research on specific foreign policy issues to support development of these options.

The Climate Policy Program at RFF is funded by contributions from foundations, governments, corporations, and individuals. Current supporters include: the Doris Duke Charitable Foundation, Smith Richardson Foundation, David and Lucille Packard Foundation, Simons Foundation, Foundation for Strategic Environmental Research (MISTRA), G. Unger Vetlesen Foundation, Alcoa Foundation, U.S. Environmental Protection Agency, Center for Environmental Markets at Goldman, Sachs & Co., American Honda Motor Company, Inc., Cargill, Inc., Duke Energy, Salt River Project, ExxonMobil Corporation, Honeywell International, Inc., Novelis, Inc., and Pacificorp. For more information, contact Ray Kopp, senior fellow and director of the Climate Policy Program, at kopp@rff.org.

Climate Change:
Top 10 Precepts for U.S. Foreign Policy

Daniel Bodansky*

Introduction

Climate change presents both a challenge and an opportunity for U.S. foreign policy. Because the benefits of taking action depend on reciprocal efforts by others, international cooperation is essential. Resolving the problem will require a global effort of unprecedented scale, involving fundamental changes in the ways that countries produce energy, transport people and products, grow food, and manufacture goods. But many are still reluctant to act, and existing international institutions to organize and enforce cooperation remain weak. Therefore, breaking the international logjam on climate change poses a major challenge.

At the same time, a successful U.S. climate change policy promises enormous rewards. Most importantly, it would benefit the environment and human welfare. But such a policy could also be a boon to our energy security and even our national security because the droughts, floods, and other ecological catastrophes expected to result from climate change could exacerbate regional conflicts and cause states to fail. In addition, addressing climate change would provide economic benefits to domestic producers of clean energy technologies. And U.S. leadership to avert what has become the world's preeminent environmental threat would yield significant reputational dividends by helping to rehabilitate an international image battered by the Bush administration's actions, such as its rejection of the Kyoto Protocol.

In December 2007, the international community embarked on a new round of climate negotiations under the U.N. Framework Convention on Climate Change (UNFCCC) to address the period after 2012, when the Kyoto Protocol's first commitment period ends.[1] The aim is to reach agreement by the Copenhagen Climate Conference scheduled for December 2009. Meanwhile, climate change has become a prominent issue in

* Daniel Bodansky is the Woodruff Professor of International Law at the University of Georgia School of Law. This issue brief was prepared for the Climate Policy Program at RFF.

other forums, including the Group of Eight (G8), the World Bank, the major economies process initiated by the Bush administration, and environmental regimes such as the Montreal Ozone Protocol.

I propose that U.S. foreign policy to address climate change should be guided by 10 fundamental precepts.

1. U.S. foreign policy on climate change must grow out of domestic policy. Thus, developing a strong domestic climate policy is a top foreign policy priority.

2. The United States must ensure that the next phase of the international climate change regime covers a significantly greater share of global emissions than Kyoto, including emissions from major developing countries such as China and India.

3. Although adopting a long-term greenhouse gas (GHG) concentration target would be useful for internal policy development purposes, international agreement on a long-term target is not essential, and seeking such an agreement may be counterproductive.

4. Despite the UNFCCC's status as the official forum for the negotiations, the United States will need to use unofficial channels outside of this process to reach a deal on a new climate agreement.

5. The United States should pursue a more flexible international agreement than Kyoto, one which allows states to take action along multiple tracks.

6. Although binding international commitments to reduce emissions would be the best negotiating outcome, the United States should explore more informal arrangements as well, given the difficulty of obtaining consent to treaty commitments both from developing countries and from the U.S. Senate.

7. The United States should actively pursue opportunities to address climate change in other forums and institutions, rather than relying solely on the UNFCCC process.

8. The United States should give greater priority to the problem of adaptation.

9. The United States should use financial assistance as an incentive for greater action by developing countries.

10. The United States should consider, as a last resort, imposing trade measures against countries that fail to participate in or comply with the international climate change regime.

These precepts are not intended to address every question of climate change policy; many difficult issues will remain in working out the specifics of U.S. policy. Instead, the 10 precepts represent a foundation on which to build a new U.S. foreign policy in preparation for the Copenhagen Climate Conference in December 2009.

Precept 1: Seek Domestic Action First

In the past, international climate policy has been predicated on the belief that international agreements can drive domestic action. When the United States negotiated the Kyoto Protocol, for example, it lacked any meaningful domestic climate change policy. The unstated assumption was that international agreement would provide the impetus to develop the necessary domestic policies.[2]

In retrospect, this was a fundamental miscalculation. Perhaps such an approach would work for comparatively small states. But for the United States, causation typically operates in the opposite direction: effective foreign policy depends on a strong domestic base. This is particularly true for an issue such as climate change, which is not purely international in nature, but is intertwined with virtually every aspect of domestic policy, including energy policy, transportation policy, and agricultural policy.

For this reason, the United States must get its domestic house in order before concluding any international agreement. Adopting strong domestic legislation on climate change would thus be the most important single step forward in developing a successful U.S. foreign policy. Of course, in designing a domestic climate policy, policymakers should be mindful of the international dimension of the issue and the need for international regulation. For example, U.S. legislation might provide for greater emissions reductions if U.S. efforts are reciprocated by others through agreement to a new climate treaty.[3] But U.S. negotiators can determine what they can agree to internationally only after they know what the United States is prepared to do domestically. If a new climate agreement gets ahead of the U.S. domestic policy process, it risks the same fate as Kyoto.[4]

An initial emphasis on domestic action is also essential if the United States is to be successful in persuading other countries to act. To date, developing countries have been understandably reluctant to take action, arguing that the United States—as the world's biggest emitter and richest country— should go first. Adoption of a strong U.S. domestic climate policy is a necessary (though not sufficient) precondition for achieving broader international participation. If U.S. domestic legislation offered greater U.S. effort if other countries made reciprocal efforts, this would give the U.S. needed leverage in the international negotiations, and could serve as the quid pro quo of a new agreement.

Precept 2: Insist on Mitigation Commitments by All of the Major Economies

Perhaps the greatest failing of the Kyoto Protocol is that its emissions targets cover less than a third of global emissions as a result of nonparticipation by the United States and exclusion of large developing countries such as China, India, and Brazil. Just as unrealistically ambitious emissions targets would doom U.S. participation in Kyoto's successor, so too would continued failure to include China and other major developing countries. Ensuring that the international climate regime covers all of the major economies is thus a top—perhaps the top—foreign policy priority for the United States.

Broad coverage is critical for three reasons. First, participation by the major economies is essential to stabilizing GHG concentrations and preventing dangerous climate change. According to business-as-usual scenarios, developing countries will account for 80 percent of the growth in energy-related emissions

through 2030. The International Energy Agency (IEA) projects that energy infrastructure investments in China alone will total more than $3.7 trillion through 2030, mostly in the power sector.5 Even if Western countries were to cut their GHG emissions in half, global emissions would return to present within a decade if developing country emissions grew unabated.[6]

Second, failure to achieve global coverage would undermine the efforts of those accepting emissions limitations by creating the potential for emissions to "leak" from countries with emissions constraints to those outside of the international regime.

Finally, failure to include the major economies—particularly China—would create competitiveness concerns and make it politically difficult, if not impossible, for the United States to join a new climate regime. As reflected by most of the proposed bills in Congress, if the United States is to bear significant costs to reduce its GHG emissions, we will want our competitors to take comparable efforts.

To some degree, developing countries have begun to recognize that they will need to take further actions to address climate change. China, India, and South Africa have already put forward national climate change plans. And in the Bali Action Plan, developing countries accepted a negotiating mandate to consider "measurable, reportable, and verifiable" actions that they could take to address climate change.

Of course, a new climate agreement cannot reasonably expect developing countries to do as much as developed countries. The UNFCCC articulates the principle that commitments should be differentiated based on states' responsibilities and capabilities. Unless a new agreement reflects this principle of common but differentiated responsibilities, it will be neither politically acceptable to developing countries nor fair.

However, contrary to the claims of some developing countries, the principle of common but differentiated responsibilities does not preclude further mitigation commitments by developing countries. Nor does the Bali Action Plan exclude consideration of such commitments, in contrast to the negotiating mandate for the Kyoto Protocol.[7]

In formulating an approach for developing countries, two principles are critical. First, countries should not be differentiated in a rigid and unchanging manner. The categorical separation between developed and developing countries reflected in the Kyoto Protocol is not required by the principle of common but differentiated responsibilities; further, this separation ignores the tremendous variety within each group of countries. In fact, developed and developing countries fall along a continuum, with rapidly industrializing developing countries such as China closer in many respects to some developed countries than to the least-developed countries. Rather than putting countries into inflexible categories, the climate change regime should make a country's commitments a function of relevant variables, such as historical emissions and per capita income.

Second, differentiation should focus on the substance, rather than the legal character, of a country's commitments. Developing countries have a strong argument, based on both fairness and pragmatism, that they should not all be expected to assume the same commitments in the same time frame. Commitments will therefore need to be differentiated in their content, stringency, and/or timing. But in addressing a common threat such as climate change, no rationale exists for expecting some countries to make

commitments while exempting others. Such an expectation implies that developed and developing countries differ in kind rather than in degree, and undercuts the gradual evolution of the regime toward common commitments. For this reason, the United States should insist, as a condition of agreement, on commitments by all major economies.

Ensuring the participation of developing countries will, of course, be extremely difficult. The United States needs to be sensitive to the perspective of developing countries, which resent being asked to undertake significant efforts to address a problem they believe they did not create, particularly when the United States hasn't undertaken comparable action. The linchpin to progress is reaching an understanding with China, and this should be the initial focus of the new administration.

The national action plans put forward by China and South Africa, among others, reflect a growing self-awareness that taking action to prevent climate change is compatible with continued economic growth and can help address other domestic priorities, such as the reduction of urban air pollution and improvements in energy security. But, in addition to persuading developing countries that climate change actions are in their interest, success will depend on using a set of carrots and sticks that lower the costs for developing countries to participate and raise the costs for not participating. The following tools may be useful:

- giving developing countries the option of undertaking commitments other than a national emissions target, such as sectoral measures or efficiency standards;
- allowing different types of targets, such as emissions targets indexed to a country's economic growth, targets that provide "headroom" for the growth of developing countries' economies, and targets that give developing countries a longer timetable;
- financial assistance of various kinds, conditioned on undertaking additional commitments; and
- trade measures against countries that fail to participate in the international climate regime.

Precept 3: Establish a Long-term Objective for Internal Planning Purposes, without Seeking International Agreement on It[8]

For many, the starting point in developing a climate policy is to articulate a long-term goal that defines the overall level of the regime's ambition, expressed either as a target GHG concentration or an overall level of emissions reduction. E.U. climate policy, for example, aims to stabilize global concentrations of carbon dioxide (CO2) at 450 parts per million (ppm), whereas the 2008 G8 Declaration on Environment and Climate Change adopted the goal of a 50 percent reduction in global GHG emissions by 2050 (often referred to as "50 by 50").

A long-term goal can be articulated in two ways: either internally, as part of the foreign policy planning process, or by international agreement. The first makes considerable policy sense, but the second would probably have higher costs than benefits.

Identifying a long-term goal internally, as part of the policy process to develop a global climate strategy, would serve two important functions. First, this approach would help organize and guide decisions about more specific mitigation options, such as national emissions targets or sectoral measures. Without some idea as to where we want to end up—for example, whether we wish to stabilize atmospheric concentrations of CO2 at 450, 550, or 750 ppm—we will have no basis for determining shorter-term emissions reduction goals, such as reductions of 5 percent, 10 percent, or 30 percent by 2020. Establishing a long-term goal provides a basis for decisions regarding shorter-term emissions targets or other mitigation actions. Second, a long-term goal would provide a benchmark for assessing the success of the climate change regime and determining whether additional measures are needed.

In contrast, seeking a binding international agreement on a long-term target, as apparently envisioned by the Bali Action Plan negotiations, would be more problematic. On the positive side, a long-term goal, such as decarbonizing the economy by the end of the century, might help catalyze public opinion and increase political will, much like President Kennedy's 1963 pledge to travel to the moon by the end of the decade. If credible, a long-term objective could also provide a measure of predictability that would facilitate and encourage business planning.

But international agreement on a long-term goal is neither necessary nor sufficient to move forward. Regardless of which long-term goal we adopt, it is clear that we need to reduce emissions significantly. Moreover, even if states could agree to a long-term goal, choosing short-term targets would still be a primarily political process, which (as Kyoto itself illustrates) can be completed even without any agreement as to where we want to end up over the longer term. Therefore, the case for a long-term target is not overwhelming.

On the other side of the equation, negotiating a long-term objective would create considerable difficulties. Developing countries have resisted the adoption of a long-term target, fearing that it would be used to pressure them to reduce their emissions. To protect themselves, developing countries would likely insist, as a condition of accepting a long-term target, that developed countries in return accept an equity principle that prejudges the negotiation of future emissions reduction commitments by allocating the reductions required to meet the long-term target to developed countries, while allowing developing country emissions to grow. This would be a steep negotiating price to pay for agreement on a long-term goal, particularly because the goal might ultimately turn out to be mere rhetoric, with little actual influence on behavior.

Given the difficulties of negotiating a long-term goal, the limited prospects and uncertain benefits of agreement, and the likely price that developing countries would demand in return, U.S. foreign policy should seek to avoid negotiation of such a goal within the Bali Action Plan process. Instead, if others push for agreement on a long-term goal, this should be pursued informally, outside the UNFCCC/Bali Action Plan negotiations.

Precept 4: Pursue a UNFCCC Deal Outside of the UNFCCC Negotiating Process

Since the decision by the U.N. General Assembly in 1990 to initiate the negotiation of the UNFCCC, international climate change negotiations have been a U.N. process, open to any state. This has provided

global legitimacy, but at the expense of complicating the negotiations and making agreement more difficult. The inclusion of virtually every country in the world—even those with little, if any, interest in combating climate change—raises transaction costs and makes the negotiations even more complex and difficult than they would be otherwise. Although it is often said that climate change is a global problem requiring a global solution, in fact just 25 countries account for more than 80 percent of global GHG emissions. If climate change negotiations were limited to a smaller group of countries—the so-called big emitters or major economies, for example—this would simplify the negotiations considerably.

At this stage, the UNFCCC process has become so deeply ingrained, and most states are so heavily invested in it, that proposing to displace it with a different process, in a different negotiating forum, would be fruitless and counterproductive. With the adoption of the Bali Action Plan in December 2007, which initiated a new round of negotiations under the UNFCCC, the train has already left the station on this issue.

However, in developing U.S. foreign policy on climate change, it is important to recognize that the UNFCCC process is bogged down in highly ritualized discussions, involving little real negotiation, and includes countries with a strong interest in obstructing progress. As a result, although the UNFCCC could play a useful role in exploring options and preparing the ground for an agreement, it is almost inconceivable that the key political decisions necessary to move forward will be made in the negotiating process itself. Instead, a new climate agreement will require high-level, sustained involvement by key political leaders, and will need to be negotiated, informally, before official adoption by the UNFCCC.

Precept 5: Support a Flexible, Multitrack Architecture that Allows a Variety of Mitigation Approaches[9]

In the Bali Action Plan negotiating process, the various options for a new climate agreement can be arrayed along a spectrum. Some proposals envision a top-down process, like Kyoto, in which international commitments developed through multilateral negotiations drive action at the national level. In contrast, other proposals work from the bottom-up, allowing states to put forward whatever climate commitments they wish, based on their national circumstances. In contrast to either of these alternatives, an integrated multitrack framework approach would seek a middle course between these extremes, permitting greater flexibility than a top-down approach while imposing greater structure than a bottom-up approach.

One prominent option for the next phase of the climate change regime would be the negotiation of a second commitment period under the Kyoto Protocol that would extend beyond 2012 and expand its emissions targets to a wider array of countries. But, although Kyoto's market-based architecture makes considerable policy sense, it is unduly narrow from a political perspective because only a single type of commitment is allowed—that is, absolute, economywide emissions targets tied to historical emissions levels. As a result, states unwilling to accept a fixed target—for example, because they fear it would put a straightjacket on their economic growth—do not have the policy space to make commitments along other lines.

In response to the lack of flexibility in Kyoto's top-down approach, some have suggested that the climate regime be built from the bottom up, starting with nationally defined policies and measures. In a bottom-up approach, the function of an international agreement would not be to define commitments, but rather to aggregate and review commitments made at the national level. Because a bottom-up approach would give states maximum flexibility to design commitments that take account of their national circumstances, it would probably be acceptable to a wider array of states than Kyoto-style commitments, which are the product of international negotiations. The danger of such an approach is that states would not commit to anything beyond their current actions, leading to a weak level of commitment.

The United States should seek a middle ground by supporting an integrated multitrack approach.[10] Under a multitrack framework, the major economies would all agree to undertake commitments to reduce GHGs, but they would not all need to assume the same type of commitment. As an earlier study explained, "the integrated multitrack framework accepts the reality that different countries are likely to want to move ahead on the climate issue in different ways and at different speeds."[11] Therefore, such an approach would give countries the flexibility to assume different types of commitments, depending on their stage of development, per-capita income, economic structures, resource base, policy culture, and other differences in national circumstances. At the same time, the multitrack framework would aim to bring these commitments together "in a single integrated framework in order to produce greater political will (and thereby stronger action) as well as greater efficiency."[12]

A wide variety of tracks might be included in a multitrack framework, in addition to fixed, Kyoto-style emissions targets:

Non-absolute emissions targets: To alleviate the disadvantages of fixed targets, emissions targets could be pegged to one or more variables, such as gross domestic product (GDP), rather than defined in absolute terms. The Bush administration's carbon intensity target is an example of an indexed, GDP-based target. Such targets provide greater flexibility than Kyoto-style targets by allowing emissions to vary depending on whether the economy grows or shrinks. Emissions targets could also be formulated in conditional terms. For example, they could include a safety valve device that relaxes the target if the costs of compliance exceed a specified level.

Nationally defined policies and measures: In contrast to a target-based approach, countries could commit to undertake specific domestic policies and measures to mitigate climate change, tailored to their national circumstances and other domestic priorities, rather than to achieve any particular level of emissions reduction. Commitments of this kind represent obligations of conduct rather than obligations of result. For example, countries might commit to undertake the following types of national measures:

- carbon taxes,
- a domestic cap-and-trade system,
- efficiency standards,
- renewable portfolio standards,

- sustainable forestry measures,
- removal of energy subsidies, and
- funding of technology R&D.

To ensure that domestic policies and measures provide an adequate level of effort, an agreement might specify, for each participating country or group of countries, the percentage of national emissions and the level of emissions reductions that its domestic policies and measures must address. Furthermore, to increase the credibility of these domestic policy commitments, an agreement could require countries to enact their policies and measures into domestic law, ensure domestic enforcement, and provide an estimate of the emissions reductions resulting from their policies, which would be subject to international verification both ex ante and ex post.

International sectoral approaches:[13] Although the UNFCCC establishes a comprehensive framework, it does not disfavor, much less preclude, sectoral initiatives. Sectoral approaches could include a wide array of measures, including a long-term emissions objective, sectoral emissions targets, efficiency standards, or technology cooperation. Although sectoral approaches are less cost-effective than an economywide approach, they offer several potential advantages:

- First, they could help encourage participation by countries unwilling to accept an economywide target.
- Second, they might be easier to negotiate, particularly for sectors with relatively few actors.
- Third, they could allow states to target particular sectors that are easier to address or where international technology cooperation could be particularly helpful.
- Finally, sectoral approaches could address competitiveness concerns in energy-intensive, globally traded sectors by setting standards that establish a level playing field for actors within those sectors.

Technology initiatives and financial assistance: Finally, as discussed below, countries might pursue tracks concerning technological cooperation and financial assistance.

Precept 6: Pursue A Legally Binding Agreement, But Seek Congressional Buy-in First and Be Open to Nonbinding Approaches

The Kyoto Protocol negotiations aimed at reaching agreement on legally binding emissions targets,[14] and many assume that the outcome of the Bali Action Plan negotiations will be a new treaty. But the Bali Action Plan leaves open the final form of a new agreement and could be satisfied through the adoption of a declaration, program of action, or other nonbinding instrument.

Generally, the assumption in international climate negotiations has been that legally binding commitments are essential to a strong, long-term global effort; in essence, such commitments are the glue by which countries bind themselves to one another to take mutual action.[15] By comparison, nonbinding approaches suffer from several significant disadvantages.

First, they reflect a lower level of commitment than a legally binding agreement. As a result, they provide states with less assurance that if they undertake costly actions to combat climate change, others will take reciprocal action.

Second, because nonbinding arrangements are easier to reverse, they provide a weaker signal to the marketplace than a binding agreement and create uncertainties about future performance that may inhibit the growth of a carbon market.

Third, as a political matter, developing countries are unlikely to undertake significant actions if industrialized countries are not themselves prepared to undertake legal commitments.

But legally binding agreements have liabilities of their own. Although the Kyoto Protocol negotiations were completed in less than two years, international treaty negotiations are typically protracted affairs. Further, agreements often represent the least-common-denominator. Worst of all, domestic approval of treaties involves a potentially lengthy and uncertain ratification process. In the case of the United States, this process requires the advice and consent of two-thirds of the Senate. The Senate's refusal to approve a number of high-profile agreements, including the U.N. Convention on the Law of the Sea and the Comprehensive Test Ban Treaty, highlights the political reality that

U.S. acceptance of international treaty commitments has become an almost insuperable hurdle. The inconvenient truth is that negotiation of a legally binding agreement runs the considerable risk that the ultimate product of the negotiations will fail to achieve two-thirds approval by the Senate, even if the United States is successful in promoting the participation of developing countries and even if U.S. commitments mirror what the United States has already decided to do domestically.

In contrast, negotiating more informal arrangements, involving political rather than legal commitments, would avoid these problems. States might simply pledge internationally what they are committed to do domestically to combat climate change and agree to an international review process to verify how successfully they have fulfilled their domestic commitments, with no specific consequences (other than loss of reputation) flowing from noncompliance. Nonbinding approaches—although not as credible as legal commitments—can have a significant effect on behavior. For example, the nonbinding 1975 Helsinki Accord on human rights is widely credited with helping to strengthen human rights groups in Eastern European countries and thereby contributing to the fall of communism. Indeed, if countries were to put forward, as their contribution to the international climate effort, binding domestic legislation to reduce emissions (as suggested in Precept 5 above), then some argue that these binding domestic commitments would have greater—not less—credibility than an international treaty that lacks enforcement.

Despite these advantages, an informal arrangement involving pledged national commitments would have less international credibility than a binding treaty. After all, the pledge and review process established by

the UNFCCC had little effect on emissions; this is one reason why the Kyoto Protocol opted instead for legally binding emissions targets. Proposals for a new and improved process of pledge and review would be perceived by many as a step backward.

On balance, then, the United States should support a legally binding agreement to reduce emissions. But given the difficulties of obtaining Senate advice and consent, the administration should take three steps to maximize the prospects for domestic approval. First, it should seek to align our international commitments with whatever domestic climate legislation is adopted, as discussed in Precept 1 above. Second, it should seek approval of an agreement through congressional action (requiring a majority in both houses of Congress), thereby sidestepping the need for consent by two-thirds of the Senate. Third, the United States should seek as much buy-in as possible from Congress prior to the negotiations, to minimize the risk of later rejection—for example, through some type of fast-track authority, as is used for trade agreements.[16]

Precept 7: Explore Opportunities for Progress Outside the UNFCCC

Although the UNFCCC is and will remain the primary forum internationally for the climate change issue, the United States should not allow the UNFCCC process to absorb all of its negotiating energy. A tremendous variety of activities contribute to global warming, so there are many potential ways, outside of the UNFCCC negotiations, in which to respond to the climate change challenge. For example, according to some estimates, last year's decision by the Montreal Protocol parties to accelerate the phase-out schedule of hydrochlorofluorocarbons (HCFCs) will have a substantially bigger climate impact than the Kyoto Protocol's first commitment period. Going forward, U.S. foreign policy should actively explore opportunities such as these to control emissions of GHGs, both to supplement the UNFCCC process and as insurance against the possibility that the UNFCCC process will fail to reach meaningful agreement.

In developing a broader, multi-forum approach, the United States should first define its objective— the overall level of global emissions reductions it seeks to make within a given time period—and then identify and pursue a portfolio of policies that add up to the targeted level of reductions. Like the wedge methodology popularized by Robert Socolow and his collaborators,[17] this approach seeks to break down an overall emissions reduction figure into more manageable chunks—except that, in contrast to Socolow, it focuses on policy wedges rather than technology wedges.

If the United States were to decide on a target reduction of, say, 20 billion tons of carbon globally during the period from 2010 to 2020, it could then develop a portfolio of foreign policy measures to achieve that goal, including reductions resulting from the Bali Action Plan, regulation and phase-out of hydrofluorocarbons (HFCs) under the Montreal Protocol, measures by the International Maritime Organization to address black carbon from ships, and measures by the International Civil Aviation Organization (ICAO) to address aircraft emissions. These measures are detailed below.

Policy Wedges

OZONE REGIME

As the G8 recognized this year, the Montreal Ozone Protocol provides a significant opportunity to reduce emissions because ozone-depleting substances are also GHGs. The September 2007 decision by the Montreal Protocol parties to speed up the phase-out schedule of HCFCs will reduce emissions by 12–15 billion tons of CO2 equivalent (CO2e) by 2040, more than the effect of the Kyoto Protocol during its first commitment period.[18]

In their July 2008 declaration, the leaders of the major economies pledged to continue to promote actions under the Montreal Protocol that will benefit the climate system. One opportunity concerns the chlorofluorocarbons and HCFCs contained in existing refrigerators and air conditioners, which will emit an estimated 7.4 billion tons of CO2e emissions through 2015 as these products are discarded; a significant portion of these emissions could be avoided through recovery and destruction operations. Another proposal is to move regulation of HFCs from the climate regime to the ozone regime. The November 2008 meeting of the Montreal Protocol parties took initial steps to address both issues. The new administration should actively pursue these and other efforts to address the climate change problem through the ozone regime.

BLACK CARBON FROM SHIPS

By some estimates, black carbon emissions are the next biggest contributor to global warming after CO2.[19] By changing the albedo of highly reflective surfaces, such as ice and snow, black carbon emissions have a particularly dramatic effect on Arctic sea ice and glaciers.[20] Black carbon stays in the atmosphere for, at most, only a few weeks, so reducing emissions of black carbon would lower concentrations very quickly and have an immediate climatic effect; by comparison, CO2 and other GHGs regulated by Kyoto have atmospheric lifetimes of more than 100 years.

Black carbon emissions can be controlled through existing clean diesel and coal technologies and have already been reduced by a factor of five in developed countries over the last half century. The transfer of these technologies to developing countries—where most black carbon emissions now occur—together with assistance for better implementation and enforcement of existing laws, could reduce black carbon emissions dramatically in the relatively near term. Although this would not be a long-term solution to the climate change problem, it offers a means of buying time to adopt and implement longer-term measures to address CO2 and other long-lived GHGs.

The United States should give high priority to identifying opportunities to reduce black carbon emissions in developing countries through technology transfer and capacity-building programs. In addition, the United States should support efforts to address international emissions sources, such as proposals for the International Maritime Organization to address black carbon from ships.

AIRCRAFT EMISSIONS

The latest report of the Intergovernmental Panel on Climate Change (IPCC) estimates that emissions from aviation are responsible for two to eight percent of global warming. Civil aviation is one of the fastest-growing emissions sources, doubling since 1990, but is not covered by the Kyoto Protocol's emissions targets. Last year, ICAO established a Group on International Aviation and Climate Change. ICAO studies suggest that international aviation emissions could best be addressed through a global trading system, which would allow airlines to buy credits for emissions reductions from other sources. Thus far, however, ICAO has rejected E.U. proposals to create such a system because of opposition by the Bush administration (supported by China, Saudi Arabia, and Brazil). In response, the European Union recently decided to proceed on its own by incorporating international aviation emissions into its own emissions trading scheme, beginning in 2012, for flights to and from the European Union. The Obama administration should reverse the Bush administration's position and support efforts to establish a global emissions trading system.

TECHNOLOGY RESEARCH, DEVELOPMENT, AND DEPLOYMENT

Over the long run, solving the climate change problem will require a technological transformation on a number of fronts, including development of carbon capture and sequestration technologies to reduce the harmful impact of coal, cheaper photovoltaic panels, and possibly a new generation of nuclear reactors that provide an alternative energy source. Putting a price on carbon emissions through market-based mechanisms can help drive technological innovation by giving the private sector an incentive to produce less emissions-intensive technologies. But government technology policies are still needed for two reasons: first, to help fund basic research, which is undersupplied by the market because it provides a public good, and, second, to help deploy technologies, particularly in developing countries with weak market structures.

Cooperative R&D will probably involve a relatively small number of countries, and could best be pursued outside of the UNFCCC process. The Bush administration correctly emphasized the importance of technological innovation and the role of international cooperation on R&D, which it pursued through the Asia–Pacific Partnership on climate change. Although the level of funding the Bush administration sought did not always match its rhetoric, this is, nevertheless, one area in which the Obama administration might usefully build on the Bush administration's legacy.

ENERGY SUBSIDIES

Existing energy subsidies not only encourage wasteful uses of fossil fuels, they divert resources from other development priorities, place pressure on government resources, impede investment in the energy sector, and create trade and market distortions. A 1999 IEA study estimated that the total value of energy subsidies in eight of the largest non-OECD countries21 (covering almost 60 percent of non-OECD energy demand) was about $94 billion in 1998 and that removing these subsidies would reduce emissions from those countries by 16 percent and global emissions by 4.6 percent.[22]

Reduction of energy subsidies is extremely difficult politically but, if successful, would provide a wide variety of climate and nonclimate benefits. The United States should support efforts within the World Trade

Organization (WTO) to reduce energy subsidies as well as efforts by the U.N. Environment Programme (UNEP), the World Bank, and the IEA to develop better data on the environmental and social costs of energy subsidies. Doing so would raise public awareness of these costs and identify ways of assisting those who would stand to lose from reductions in subsidies.[23]

GEOENGINEERING

For those pessimistic about the prospects for an international agreement to limit emissions, geoengineering solutions provide a potentially important alternative. The term "geoengineering" refers to a variety of policies to alter the energy balance of the earth, either by removing CO2 from the atmosphere (seeding the ocean with iron to increase the growth of phytoplankton, for example) or reducing incoming solar radiation (one option would be injecting the atmosphere with sulfur aerosols that block sunlight and mimic the effect of volcanoes).

Attempts to manipulate the climate on a global scale have a "Dr. Strangelove" character and raise understandable alarm about the potential for unintended, harmful consequences. However, given the magnitude of the risks posed by global warming and the difficulties of reducing emissions, geoengineering could ultimately prove necessary, particularly as a means of buying time.

For this reason, the United States should support international collaboration on geoengineering research to improve understanding both here and abroad. Conversely, the United States should oppose international measures that prejudge geoengineering options, for example, by limiting research.

Precept 8: Vigorously Support Adaptation Efforts

Traditionally, adaptation has been the poor stepchild in climate change negotiations. Although countries often pay lip service to it, few have given it sustained attention. Recently, however, this has begun to change and adaptation is one of the four pillars of the Bali Action Plan (along with mitigation, technology, and finance).

Adaptation measures include planning exercises to develop risk reduction strategies, capacity-building efforts, and financial assistance for particular adaptation projects. Although adaptation assistance provides mostly local benefits to the recipient countries, several arguments support increased assistance. First, it is the right thing to do morally, given the historical contribution of the United States to the climate change problem. Second, it would garner goodwill among developing countries and thereby facilitate discussions on the mitigation side. Finally, it would reduce the risk that poor, vulnerable countries might collapse in the face of climate change, producing environmental refugees and regional insecurity.

The United States should therefore step up its efforts relating to adaptation and, in particular, develop a comprehensive strategy to address the adaptation needs of developing countries.

Precept 9: Use Financial Support as an Incentive for Action and Commitment from Developing Countries

Although the climate change regime has prompted the creation of a number of funds to help developing countries finance mitigation and adaptation measures, the total scale of financial transfers has been small (in the low billions of U.S. dollars), particularly relative to the magnitude of the threat posed by climate change. Given the opportunities for low-cost emissions reductions in developing countries, the United States and other developed countries could reduce emissions at a much lower cost by financing projects in developing countries than by undertaking mitigation actions at home.

The Kyoto Protocol's Clean Development Mechanism (CDM) seeks to encourage emissions reductions in developing countries by granting credits on a project-by-project basis. But, to date, the CDM's effectiveness has been limited because of the high transaction costs of documenting emissions reductions on these terms. To encourage greater funding through the CDM, the United States should support expanding the CDM to allow sectoral- or policy-based crediting—that is, crediting emissions reductions on a sectoral basis or as a result of general policies, such as energy efficiency standards. Credit should also be given for reductions in emissions from deforestation and degradation.

In addition to financial transfers provided in exchange for emissions credits, the United States should provide significantly greater direct funding for technology deployment and adaptation needs, as an incentive for greater action by developing countries. Recently, the United States, Britain, and Japan established a new Clean Technology Fund under the auspices of the World Bank, with funding of US$5 billion over five years. Although this effort is laudable, the level of funding remains small compared with the projected costs of clean energy deployment in developing countries.[24]

For this reason, the United States, preferably in conjunction with the European Union and Japan, should provide significantly greater resources to support mitigation and adaptation activities in developing countries that are willing to adopt national policies or international commitments to reduce emissions.[25]

Providing financial assistance would not only be the most effective way to encourage developing countries to move onto a lower-emissions trajectory, it would also enhance U.S. credibility internationally. Potential sources of funds include the proceeds from domestic allowance auctions or a small transaction fee on emissions trading. To gain maximum leverage from financial assistance, and to help ensure that the money is well spent, funding should be made conditional on the recipient country's adoption of strong domestic policy commitments (and possibly international commitments) to reduce GHG emissions, together with stringent provisions for reporting and verification.

Precept 10: Keep Trade Measures on the Table to Promote Participation and Compliance

Given the public goods character of climate change mitigation, countries have a significant incentive to "free ride" on the efforts of others, either by not joining or not complying with the international climate

change regime.[26] The Kyoto Protocol seeks to promote compliance, and limit the effects of noncompliance, through a variety of means.

Reporting and review: Countries with emissions targets must submit detailed emissions inventories, which are subject to international review.

"Subtraction of tons:" Countries that exceed their emissions target in one commitment period have their excess tons subtracted from their target in the next commitment period (assuming there is one).

Loss of eligibility to use market mechanisms: Countries that exceed their target lose their eligibility to engage in emissions trading.

Climate action plan: A country that exceeds its target must develop a detailed plan describing how it will come back into compliance.

Although the Kyoto Protocol's compliance system is generally considered one of the strongest to date in international environmental law, it depends on the assumption that countries will feel sufficient international and domestic pressure to stay in the regime and meet their targets, rather than simply dropping out. Whether this assumption proves to be correct remains an open question.

What additional means could be used to promote compliance? Financial penalties for noncompliance are not politically realistic, nor would they solve the compliance problem, because there is no assurance that countries that exceed their emissions commitments would pay their fines. Trade-based approaches constitute a more credible and effective tool, both to promote compliance and to encourage countries to join the regime in the first place. Levying a fee on imports from countries that fail to join or comply with the international climate change regime, based on the carbon dioxide emitted to produce the goods (so-called embedded carbon), would protect domestic producers from unfair competition and reduce the economic benefits of staying out of the regime. Moreover, by putting a price on embedded carbon, a border fee would help internalize the externalities associated with imported goods. Although the consistency of such fees with the General Agreement on Tariffs and Trade remains uncertain, a strong case can be made that they constitute a type of border adjustment, which would be permitted under the WTO regime.[27]

Whether the United States should ultimately impose import fees on products from countries that fail to participate fully in the climate change regime will depend on subsequent developments, including the contents of the international regime. Even raising the issue of trade measures is not without risk because the issue is fraught with controversy. On the downside, the threat of trade measures by the United States could create a contentious negotiating dynamic and help legitimize the possible use of trade measures against the United States.

But, given the stakes involved in climate change and the lack of strong alternatives to promote participation and compliance, the advantages of leaving the trade option on the table outweigh the risks. U.S. domestic climate change legislation should therefore provide for this possibility. Moreover, the administration should support technical work to calculate the carbon content of imported goods to provide the analytic basis for calculating any eventual import duties. Even if the option is never exercised, leaving it on the table and

undertaking the technical work necessary to implement it would, at a minimum, give the United States additional leverage in the negotiations.

Remaining Questions

The 10 precepts identified above address many, but not all, of the issues that face U.S. foreign policymakers. Many questions require further study, including the following:

1. For which long-term concentration target should the United States aim? Many scientists believe that a target of 450 ppm is necessary to prevent dangerous climate change. However, this target may no longer be achievable, and a less-stringent target may be more politically feasible.
2. How much should we expect other countries to do relative to the United States and to each other? What is a fair distribution of effort?
3. What is the best mechanism by which to provide financial assistance in a predictable, steady manner?
4. How can the international community best address the challenge of adapting to climate change?
5. What policies would best promote the necessary technological transformation to a zero-emitting future?

Conclusions

Looking ahead, the climate change issue presents an enormous opportunity for U.S. foreign policy. Many will welcome U.S. leadership, but leading will not be easy. Despite the growing scientific consensus and increasing public concern about climate change, international climate negotiations remain mired in mistrust.

To be effective internationally, the United States must first act domestically through the enactment of domestic climate change legislation. This is, perhaps, the most important lesson to be learned from the Kyoto Protocol process: adoption of domestic legislation is essential to give U.S. foreign policy both international credibility and a domestic political base.

Internationally, U.S. climate policy will have the delicate task of navigating between two competing perspectives in the Bali Action Plan negotiations. On the one hand, reluctance by China, India, and other developing countries to accept commitments to reduce their own emissions; and, on the other hand, E.U. proposals for sharp emissions cuts by the United States and other developed countries, which go beyond the domestic political consensus within the United States. To be successful, U.S. foreign policy will need to find middle ground, crafting an international regime that gives countries flexibility to pursue different tracks and incentivizes action through financial assistance.

Finally, U.S. foreign policy must recognize that the UNFCCC is not the only forum and identify policy wedges elsewhere that would help reduce emissions. Solving the climate change problem will require a full-court press, not merely action under the UNFCCC. And it will require not merely the application of existing models, such as fixed emissions targets and trading, but the development of creative alternatives.

Endnotes

1 The Bali Action Plan, adopted in December 2007 by the Conference of the Parties to the UNFCCC, initiates a comprehensive process to consider long-term cooperation under the convention. The action plan includes four pillars: mitigation, adaptation, technology, and finance.

2 The focus on international action derives from collective action theory, which argues that individual countries lack an individual incentive to address global environmental problems, such as climate change, and therefore need to cooperate through an international regime. But experience shows that, in fact, many important actors—including the European Union, some cities and states in the United States (e.g., California), and some companies—have decided to start taking unilateral action to reduce their own emissions.

3 E.U. climate policy for the period after 2012 takes this form: it commits unilaterally to a 20-percent reduction from 1990 levels by 2012 but offers to increase the E.U. reduction target to 30 percent as part of an international agreement in which E.U. reductions would be reciprocated by others.

4 For this reason, the United States may not be able to accept emissions targets that use 1990 as a baseline year (as in the targets proposed by the E.U.) because U.S. emissions are already 15 percent above 1990 levels.

5 International Energy Agency, *World Energy Outlook 2007* (Paris 2007).

6 *Confronting Climate Change: A Strategy for U.S. Foreign Policy*, Independent Task Force Report No. 61 (Council on Foreign Relations 2008), p. 15.

7 Although the Bali Action Plan explicitly calls for consideration only of developing country actions (as opposed to commitments), the inclusion of the phrase "inter alia" in the chapter for this provision confirms that it does not exclude consideration of other matters, including developing country commitments. Bali Action Plan, Decision 1/CP.13, para. 1(b), FCCC/CP/2007/6/Add.1.

8 See generally Jonathan Pershing & Fernando Tudela, *A Long-Term Target: Framing the Climate Effort," in Beyond Kyoto: Advancing the International Effort Against Climate Change*. Pew Center on Global Climate Change, 2003.

9 This section draws on Daniel Bodansky and Elliot Diringer, *Towards an Integrated Multi-Track Framework*. Pew Center on Global Climate Change, 2007.

10 The multitrack framework was outlined in the Climate Dialogue at Pocantico (Pew Center on Global Climate Change, 2005) and was further elaborated in Daniel Bodansky and Elliot Diringer, *Towards an Integrated Multi-Track Framework*. Pew Center on Global Climate Change, 2007.

11 *Towards an Integrated Multi-Track Framework*, p. 6.

12 Id.

13 Daniel Bodansky, *International Sectoral Agreements in a Post-2012 Climate Framework*. Pew Center on Global Climate Change, 2007.

14 Although the 1995 Berlin Mandate, which initiated the Kyoto Protocol negotiations, left open whether emissions targets would be legally binding, the participating countries agreed the following year (in the Geneva Declaration) to negotiate legally binding emissions limitation targets.

15 See generally the discussion of the question, “why commitments,” in Daniel Bodansky, “Climate Commitments: Assessing the Options,” in *Beyond Kyoto: Advancing the International Effort to Address Climate Change*. Pew Center on Global Climate Change, 2003, pp. 37–39.

16 Nigel Purvis, Paving the Way for U.S. Climate Leadership: The Case for Executive Agreements and Climate Protection Authority, RFF Discussion Paper 08-09. April 2008.

17 S. Pacala & R. Socolow, Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies,*Science*, vol. 305 (13 August 2004), p. 968.

18 Guus J.M. Velders et al., The Importance of the Montreal Protocol in Protecting Climate, Proc. National Academy Sciences 104 (2007, p. 4814); Donald Kaniaru, ed., *The Montreal Protocol: Celebrating 20 Years of Environmental Progress—Ozone Layer and Climate Protection*. Cameron & May 2007.

19 V. Ramanathan & G. Carmichael. Global and regional climate change due to black carbon. *Nature Geoscience* 221 (Mar. 23, 2008). The 2007 IPCC report estimated black carbon’s climate forcing at about a third of more recent studies (+0.3 W/m2, as compared to +1.0–1.2 W/m2). See generally, “Reducing Black Carbon May Be Fastest Strategy for Slowing Climate Change,” IGSD/INECE Climate Briefing Note, June 9, 2008.

20 The IGSD/INECE briefing note cites reports that the impact of black carbon on Himalayan glaciers may be as much as that of CO2.

21 China, India, Indonesia, Iran, Kazakhstan, Russia, South Africa, and Venezuela.

22 IEA, *World Energy Outlook 1999 Insights: Looking at Energy Subsidies—Getting the Prices Right*. 1999, p. 10.

23 UNEP/IEA, *Reforming Energy Subsidies* (2002).

24 A recent study by the UNFCCC secretariat estimated the cost of clean energy deployment in developing countries at US$65 billion in 2030.

25 Thomas C. Schelling. What Makes Greenhouse Sense? Time to Rethink the Kyoto Protocol. *Foreign Affairs* (Nov./Dec. 1997) (proposing climate “Marshall Plan”).

26 See generally Scott Barrett, *Environment and Statecraft: The Strategy of Environmental Treaty-Making*. Oxford Univ. Press, 2003.

27 Joost Pauwellyn. U.S. Federal Climate Policy and Competitiveness Concerns: The Limits and Options of International Trade Law. NI WP 07-02. Nicholas Institute for Environmental Policy Solutions. April 2007. www.nicholas.duke.edu/institute/internationaltradelaw.pdf.