OVERCOMING STICKING POINTS AT THE COP15: TARGETS, MARKETS, TECHNOLOGY AND FINANCING

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Executive Summary

To craft a post-2012 climate change agreement, four key sticking points will need to be addressed in advance of the COP15. First, a number of hurdles must be overcome to put in place global abatement targets for the near- and mid-term—and critically, to establish what countries are willing to do individually to achieve these goals. Next, a more comprehensive carbon market is needed to deliver cost-effective emissions reductions on a global scale and to engage developing nations (which are set to account for the majority of future emissions) in the process. Third, shifting away from high- to low-carbon technologies will require that clean technologies become cost-competitive, brought to sustainable scale, and effectively deployed. Finally, determining burden-sharing for adaptation finance, how revenues are raised, and how funds are governed will be a fourth sticking point for a global deal. Success in Copenhagen will depend on forging broadly acceptable approaches globally in the crucial months ahead with imagination and flexibility, as well as demonstrating substantial political will in the domestic political arenas.

Introduction

In the midst of a global economic downturn, the world's climate negotiators will descend on Copenhagen for the 15th Conference of the Parties

(COP) to the United Nations Framework Convention on Climate Change (UNFCCC) with the aim of crafting a post-2012 climate regime—and the stakes could not be higher.

Since the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report was released in 2007, a growing number of scientists believe that climate change forecasts may have been too conservative and that the rate of climate change may be closer to the worst-case scenarios. With the adverse effects of climate change already apparent in extreme weather, melting glaciers, and altered ecosystems, time is of the essence. Carbon emitted in the next decade will stay in the atmosphere for well over a hundred years, and power plants built in the next decade will determine the carbon intensity of our energy supply for years to come.

As governments struggle to revive their economies, policymakers have taken important steps toward green growth by allocating parts of their fiscal stimulus to key climate change investment themes. On the other hand, fear of unemployment and slower growth prospects may undermine the political resolve to tackle climate change in an ambitious way. On balance it is not clear how strong that resolve is—the events ahead will test it in the coming months.

Given the tight timeframe for action, it may be too much to hope for a comprehensive global deal that settles all of the major sticking points. Success will have to mean, however, that decisive progress is made with a clear roadmap for what is to follow, and that contrary to the Kyoto experience, all major players will have to be part of that roadmap.

Why Act Now?

The scientific evidence that our climate is changing is now overwhelming. The link between greenhouse gas (GHG) emissions and human activity is also well established. However, there still remains a huge amount of uncertainty regarding the processes that mediate between GHG emissions, their concentration in the atmosphere, the effects of different concentrations on climate, and what changes in climate will mean for biodiversity, agriculture, sea levels, and the many other "climate dependent" characteristics of our planet. There is also uncertainty as to how fast all of these processes will unfold; in some cases it seems the phenomena are happening faster than earlier IPCC reports had predicted.

The nature of this uncertainty is such that the decision to address climate change should not be perceived as a "marginal" investment decision aiming to smooth consumption or human well being optimally over time. Strategic global decisions about mitigation should be viewed, rather, as being largely about preventing catastrophic risk. In other words, though we do not know with certainty what will happen and when, we do know that catastrophic outcomes are *possible*. For example, the melting of the Greenland and West Antarctic ice sheets would result in large sea level rises changing the world's physical and human geography. Changes in the thermohaline circulations (the "conveyer belt" of ocean heat that determines much of the earth's climate) affecting the Gulf Stream would lead to dramatic changes in global weather patterns. Climate tipping points could be reached, unleashing self-reinforcing multiplier feedback effects—e.g., saturated carbon sinks, releases of methane from arctic permafrost thawing—that could dramatically amplify temperature increases.

Given that catastrophic events are possible and that the damage they can inflict could be devastating for the whole of humanity, acting to abate greenhouse gases should be viewed as insuring against uncertain but potentially catastrophic outcomes, rather than fine-tuning known consumption paths over time. It is in those terms that the political discussion should be conducted.*

A second, *conceptually distinct,* argument for urgent and ambitious action is grounded in the fact that the world's poorest people—those who are least able to cope—are going to suffer the most and soonest from climate change's adverse effects. Climate stability is in one sense a perfect example of a global public good, because a given quantity of heat trapping gas emitted in Chicago, Istanbul or Beijing, or for that matter anywhere in the world, will have the same effect on atmospheric concentrations. The impact, however, that these concentrations have on climate experienced in any given location as well as the effect of changes in climate on human well-being will be quite different from one region to another.

For example, according to Yale University economist Robert Mendelsohn, usually cautious and even conservative in his assessments of global warming, climate-driven changes in global agricultural output will acutely affect poor households in the developing world. Reductions will be especially severe in rain-fed crop farming (as distinct from irrigated farming and livestock management); for example, Chinese farmers on rain-fed farms will likely lose annual net revenue of $95 per hectare per degree Celsius, while their African counterparts will lose $28. Meanwhile, William Cline of the Peterson Institute for International Economics predicts that developing countries will suffer an average 10-25 percent decline in agricultural productivity under business-as-usual emissions (discounting carbon fertilization). The poor will also suffer from heightened water stress and scarcity. Changed runoff patterns and continued glacial melting will have significant implications on water availability, interacting with already severe ecological pressures on water systems. According to the IPCC, Central Asia, Northern China, and the northern part of South Asia face serious vulnerabilities associated with the retreat of glaciers whose river systems provide water and sustain food supplies for over two billion people.

Climate change projections also point to intensified tropical storms, more frequent and widespread floods, and drought where disaster risks are skewed toward developing countries: while 1 in 1,500 people were affected annually by climate disasters in OECD countries between 2000 and 2004, in developing countries as many as 1 in 79 people were affected. Monsoon floods and storms in South Asia during the 2007 season displaced over 14 million people in India and 7 million in Bangladesh. Globally, the one billion people who live in urban slums, on fragile hillsides, or flood-prone river banks are among the most vulnerable to such extreme weather events.

Climate change is also likely to adversely affect the health status of millions of people with low adaptive capacity. An increased prevalence of malnutrition is likely while changing pathogens and vector-borne diseases will extend the reach of malaria and dengue fever.

The richer parts of the world do not face such negative effects with the same intensity and within the same timeframe. They do, however, potentially face the danger of longer term catastrophic outcomes.

Moreover, the social and political instability that climate change could cause in the poorer parts of the world could have serious consequences for overall peace and stability the world over.

There are, therefore, two fundamental strategic reasons to address climate change. In the near future the consequences of climate change will be felt most acutely by the world's poorest people. In the longer term, the sustainability of development and well-being on our planet as a whole is at stake. On both counts, ambitious and urgent action is required.

Background on the International Climate Change Negotiations

At the COP14, agreeing "in extremis" to what is known as the "Bali Roadmap" or the "Bali Action Plan," Parties to the UNFCCC committed themselves to launching negotiations on strengthened action against climate change. The hope has been that this process would culminate in an ambitious negotiated outcome at the 2009 meeting in Copenhagen, which would enter into force before January 2013.

At the June climate talks in Bonn, a draft negotiating text circulated among negotiators quadrupling to just over 200 pages by the conference's end. This document will have to meet the political requirements of all participating countries and be must pared down to reflect areas of basic agreement. For this to happen in the short months before Copenhagen, a number of key sticking points must be addressed.

Sticking Point #1: Global Targets, Individual Commitments

There is broad recognition globally of the need to stabilize atmospheric concentrations of greenhouse gases below levels that will prevent what could be catastrophic impacts. Much debate remains, however, as to how to achieve this in a fair and equitable manner. There are huge historical as well as current differences in how much countries emit. Twenty-five economies (counting the European Union as one) account for 84 percent of current GHG emissions, yet their per capita incomes at market exchange rates varied by a factor of 58 and their per capita CO_2 emissions differed by a factor of 46 in 2005. This diversity, as well as competitiveness concerns in the major players' carbon-intensive tradable goods sector, has been central to the negotiations.

Many hurdles must be overcome to put in place global abatement targets for the near- and mid-term—and critically, to establish what countries are willing to do individually to achieve these goals. These hurdles include:

- Comparability of Effort Among Developed Countries:

  The critical metric used to determine the comparability of effort expended by developed countries in abating greenhouse gases is the individual emissions targets each country establishes—including, the base year against which developed country abatement commitments are measured. For example, the European Union is pledging to reduce emissions 20 percent below 1990 levels by 2020 (or 30 percent if others pledge equivalent targets) whereas draft U.S. legislation foresees reducing emissions 17 percent below 2005 levels by 2020 (about a 3 percent reduction from 1990 levels). The difference is significant and bridging it will not be easy.

- Differentiated Responsibilities between Developed and Developing Countries:

  A certain degree of consensus has emerged that developed countries will undertake firm commitments to reduce their emissions to agreed ceiling levels, while developing countries will undertake a set of unilateral actions through nationally determined mitigation plans, without at this stage committing themselves to specific emission ceilings. Full consensus, however, on this differentiated approach has not been reached.

  Strong political currents in several key developed countries favor "binding" emissions targets for major developing countries, in particular China. Without emerging market caps in place, some will be pushing to use trade barriers (such as border taxes on carbon content) to protect domestic industries. (Some might claim that the actual cost of carbon should be the same worldwide and that tariffs should equalize the user cost of carbon. Somewhat surprisingly, the Nobel Laureate and economist Paul Krugman recently supported this position. A single global carbon price would of course lead to the most efficient abatement worldwide. However significant distributional implications make this solution untenable for developing countries, which *everyone* at the negotiating table accepts. Large transfers to developing countries could compensate for immediately higher carbon prices, though in practice this remedy is unfeasible given the size of the aid flows that would have to take place.)

- Developed or Developing?

  Discussion also remains regarding which countries should be included in the "developed country" grouping and therefore undertake "legally" binding emissions reduction targets. In addition to current Annex I countries, proposals include adding all current European Union member states, candidate countries, and potential candidate countries (i.e. Bosnia, Croatia, Macedonia, Malta, Montenegro, Serbia, Slovenia, and Turkey); including all OECD members (i.e. Mexico and South Korea); or adding countries whose GDP per capita match the Annex I average (i.e. Bahamas, Israel, Kuwait, Qatar, Saudi Arabia, Singapore, Taiwan, and the United Arab Emirates).

Sticking Point #2: Improve and Broaden the Global Carbon Market

The need to contain mitigation costs in developed countries and to help finance abatement strategies in the developing world has made carbon markets and off-sets central to the post-2012 agreement. Because negotiators broadly agree that developing countries and developed countries have differentiated GHG mitigation responsibilities, the Kyoto Protocol established hard caps on developed world emissions and allowed for the purchase of off-sets in developing countries through the Clean Development Mechanism (CDM). These off-sets have the advantage of both facilitating developed world abatement at lower cost in the developing world, while channeling resources to developing countries that build their GHG abatement capacities.

Yet reform is needed in the successor to the Kyoto Protocol's CDM. Serious concerns have emerged about the current mechanism regarding whether or not credited reductions are additional, real, verifiable, and permanent. A reformed CDM could hold the key to linking regional carbon markets in the future, but much needs to change before that can happen.

Today, half the world's GHG emissions come from developing nations. But in 2030, carbon dioxide emissions from non-OECD countries are projected in the business as usual scenarios to exceed those from OECD countries by 72 percent. According to the U.S. Energy Information Agency, most of the emissions growth in rising powers is likely to come from the consumption of fossil fuels (mainly coal, gas, and petroleum), which are feeding power generation and transportation needs.

Given the importance of having an effective mechanism to help manage abatement costs and create incentives for developing country engagement, changes to the CDM should be included in any new agreement. Reform will hinge on overcoming a number of obstacles:

- Offsets:

  Developed countries can comply with their emission reduction targets at much lower cost by receiving credits for emissions reduced in developing countries as long as administration costs are low. But it is not easy to keep these costs low. Moreover, there is political resistance among environmentalists to allow the "softening" of the developed country ceilings through off-sets. On the other side of the political spectrum, there is resistance within some developed countries to transfer large sums to the developing world.

- Ensuring Additionality:

  In order for a project to qualify for CDM type financing, it must demonstrate that the financed reductions are additional and would not have occurred absent the CDM. This is often not easy to determine. One way forward is to develop off-sets of a broader sectoral nature. Developing countries would commit themselves to cleaner sectoral growth strategies, partly financed by the global carbon market. Going beyond the individual project level would help broaden and deepen carbon markets, and would achieve much more ambitious targets worldwide. There is considerable disagreement, however, on how and by whom sectoral programs should be evaluated.

- Defining Measurable, Reportable, and Verifiable:

  If mutually agreed on, measurable, reportable, and verifiable (MRV) criteria can ensure that developed countries are held accountable to meet their commitments to support developing country action and can improve the availability of information about the range and impacts of actions that countries are taking to mitigate climate change. Bridging divides on who should be monitored, how data should be reported, and what institutions are up to the task of holding countries to account is critical.

Sticking Point #3: Innovation and Technology Transfer

Developing and broadly deploying clean technologies will be critical to achieve sustained economic growth in a carbon-constrained world. Most notably, these technologies must be adopted in the world's largest carbon-emitting countries both in the near and long terms—namely, rapidly emerging and OECD nations. Shifting away from high- to low-carbon technologies will require that proven, clean technologies are cost-competitive, brought to sustainable scale, and are effectively deployed. And to avoid carbon lock-in, this transition must occur in short order.

Because developing countries have much more limited financial or technical capacity to adopt advanced energy technologies and energy-efficiency practices, support for technology transfer will be vital to achieve "green growth." Resolution at Copenhagen on a number of politically charged issues will be vital in driving technology cooperation and innovation forward:

- Intellectual Property Rights (IPR) and Competitiveness:

  For countries able to carve out a niche in the development and production of clean technologies, the economic gains could be immense making cooperation on this issue incredibly difficult. Despite a dearth of conclusive evidence demonstrating whether IPR is or is not a barrier to clean technology diffusion across the range of key technologies, disagreements abound; while many developing countries are in favor of compulsory licensing (including the G77 and China), key developed world officials fear that IPR violations (including IPR enforcement, patent application standards and processes, etc.) let alone compulsory licensing could undermine incentives for clean technology RD&D. (Compulsory licenses as established in the World Trade Organization Agreement on Trade-related Aspects of Intellectual Property Rights are non-voluntary licenses that are granted by an administrative or judicial authority to a third party who can then use the patented invention without the consent of the patent owner.) In order to strike an effective accord at Copenhagen, negotiators must balance countries' desires to secure economic gains with the need to maximize technology diffusion globally.

Sticking Point #4: Financing International Adaptation

Assigning responsibility for meeting adaptation finance needs will likely remain a central obstacle in forging a post-2012 climate change agreement. Although climate change threatens all people, its adverse effects will be felt most acutely in the world's least developed countries and small island states—those countries that are least able to cope. Developing countries believe that historic polluters should pay for the consequences of their actions on the most vulnerable populations. For their part, developed countries have agreed to help developing nations adapt, but the scale of the assistance contemplated so far falls well short of poor country expectations. Developed countries also want to use adaptation finance as an instrument to encourage poorer countries to incorporate mitigation policies into their national development program, introducing conditionality into adaptation aid. The nature of such conditionality as well as the determination of how the burdens are shared, how revenues are raised, and how funds are governed will likely play a central role in who participates in any post-Kyoto agreement. Success will depend on forging an international consensus and substantial political will on the answers to difficult and politically charged questions:

- Levels of Funding:

  High degrees of uncertainty make predicting the cost of adaptation extremely difficult for it will depend greatly on the extent of global warming. Compounding difficulties is the near impossibility of disentangling adaptation needs from traditional development challenges. As such, estimates of the level of funding needed to assist developing countries manage the adverse effects of

climate change vary widely: the UNDP estimates that additional adaptation finance needs will amount to $86 billion annually by 2015, while the UNFCCC places the annual cost between $28-67 billion by 2030.

The UNFCCC currently manages three adaptation funds: the Least Developed Country Fund, the Special Climate Change Fund, and the Adaptation Fund. The Global Environment Facility (GEF) has also started to fund small-scale adaptation projects through its core account. Yet as of June 2008, the $320 million pledged cumulatively since the GEF received its mandate from the UNFCCC in 2001 to pilot adaption action under the three financing mechanisms, only $154 million has been disbursed. Moreover, all are woefully under-funded relative to even the lower register estimates above. Additional funds will be needed to meet the task.

With the G7 Gleneagles aid commitments to Sub-Saharan Africa still $14.5 billion shy of the $21.5 billion 2010 target, the prospects for mobilizing an even greater amount on top of that for climate adaptation throughout the developing world is daunting. China, for instance, has proposed that developed countries allocate 0.5-1.0 percent of their annual GDP to support actions taken by developing countries to tackle climate change. This would currently amount to $185 billion per year for mitigation, technology transfer and adaptation combined—orders of magnitude greater than legislative proposals under consideration in the United States and the European Union. These gaps are another indication of how difficult it will be to reach consensus.

- Mechanisms:

Given the desire to mobilize large sums of money on an annual basis over a sustained period, resource mobilization mechanisms that have some degree of automaticity, such as an automatic share of carbon revenues or some kind of tax on certain transactions have considerable appeal in principle, although not much of a track record in practice. One long-standing proposal looks to link the creation of the International Monetary Fund's Special Drawing Rights (SDRs) with the financing of global public goods, most importantly climate protection. (George Soros has been a leading proponent of such a link to SDRs.)

In both the U.S. and the EU policymakers are considering legislation that would create new adaptation funds capitalized by revenues from auctioning emissions rights under national and regional cap-and-trade programs. According to EPA analysis, the American Clean Energy and Security Act of 2009 (also known as the Waxman-Markey bill, for its principle sponsors) would allocate approximately $3.4-5.4 billion annually by 2020 for direct climate change assistance from the U.S. government to developing countries ($476-786 million for clean technology deployment, $2.4-3.8 billion for international forest conservation, and $476-768 million for adaptation). In Europe, annual auction revenues from the Emissions Trading Scheme (ETS) are estimated at €75 billion ($105 billion) in 2020, of which 20 percent, or €15 billion ($21 billion), would be dedicated to climate-change related activities including adaptation. Taxes on international air travel and bunker fuels represent potential new sources for adaptation

funding that would be more predictable than yearly appropriations, much like cap-and-trade allowances. For example, establishing a levy of seven dollars on each international flight would result in $14 billion in additional revenues annually. Other tax-based proposals on carbon market transactions build on the two percent levy on CDM projects by either increasing the 2 percent levy to 3 to 5 percent or extending the levy to other mechanisms under the Kyoto Protocol (i.e. Joint Implementation and Emissions Trading). Researchers at the World Resources Institute estimate that a 5 percent CDM levy would generate $200-750 million annually between 2008 and 2012, while extending the 2 percent CDM levy to Joint Implementation and Emissions Trading would generate $10-50 million annually between 2008 and 2012 (to increase considerably post 2012).

- Governing Funds:

  Since adaptation planning and implementation must be done across sectors at national and local levels, assistance must be provided horizontally and must be integrated with national development planning. Moreover, for recipients to be active stakeholders, they should have considerable say over the allocation of the funds; something developing countries feel strongly about.

  The structure and governance of new adaptation funds has proven very controversial—witness the uproar within the climate change and development communities over the World Bank's G8-endorsed Climate Investment Funds in 2008. Donors were originally intended to manage the funds in accordance with World Bank precedent, but developing countries (that view adaptation assistance as compensation by polluters to which they are entitled) insisted that allocation decisions be made by national governments or, at a minimum, by global bodies in which developing countries have majority representation.

Overcoming Sticking Points: Recommendations for Action

Recent debates on "multilateralism versus minilateralism" (see Naim, *Financial Times*) and "formal versus informal" mechanisms of global governance are particularly relevant to climate change. The problem is rooted in the fact that a relatively small number of large emitters (counting the EU as one actor) account for more than 80 percent of all emissions. Moreover, China and the U.S. alone account for about 40 percent of GHG emissions. There is, therefore, a strong case for letting the group of major emitters, and particularly the U.S. and China, play a key and leading role in the global solution. It would be a mistake, however, to abandon or marginalize the UN-led, global UNFCCC framework.

Like with all cases of "minilateralism" or ad hoc coalitions, the boundaries of the group are almost by definition ill-defined. This is not a problem in and of itself, but it generates incentives for some members to drop out of a binding agreement on the grounds that some country, with relatively comparable emissions, is not participating. Boundary issues quickly become equity issues. Moreover, minilateral agreements have difficulty establishing broadly accepted and perceived legitimacy, not only among non-members of the coalition, but among members themselves. There is something about a universal or close to universal agreement that generates greater legitimacy than a treaty between a limited number of countries, par-

ticularly when it relates to the future of the planet. It is not unreasonable to suggest that a universal framework for the protection of climate and of related matters such as biodiversity will benefit from a degree of legitimacy and "emotional allegiance" that a simple minilateral treaty will not be able to attract.

The way forward should be to continue to work within the "universal" UNFCCC framework, but support that process with "minilateralist initiatives" and various practical and flexible approaches, with the aim of putting in place the building blocks of globally accepted and enforceable policies.

- Continue Bilateral Negotiations Between China and the U.S.:

  Reaching consensus on climate change between the world's two largest greenhouse gas emitters in a manner that serves the interests of both parties will be central to forging a strong agreement in Copenhagen. Echoing recommendations forwarded by Brookings scholars Kenneth Lieberthal and David Sandalow (now U.S. assistant secretary of energy for policy and international affairs), China and the U.S. should focus their bilateral negotiations on a number of flagship efforts to promote clean energy. Proposals include creating a new dialogue on climate change and energy to parallel the existing Strategic and Economic Dialogue, achieving one or two headline initiatives—such as developing commercial, operational carbon capture and storage projects—and promoting capacity development for monitoring and reporting GHG emissions. These efforts would go a long way toward overcoming issues of mutual mistrust between the two countries and could help significantly in shaping an agreement in Copenhagen. Nonetheless, this should not be presented or interpreted as the emergence of a Climate Change G2 that would impose its views on the rest of the world. Such a perception would generate political reactions that could undermine a broader agreement. U.S.-China cooperation should be explicitly designed to exert the kind of leadership that will bring other countries into a broader deal, not as something they will resent.

- Engage at the Major Economies Forum (MEF) on Energy and Climate Change:

  Continued engagement at the MEF (which includes Australia, Brazil, Canada, China, the Czech Republic, Denmark, the EU, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, South Africa, South Korea, Sweden, the U.K., and the U.S.) could catalyze significant movement on global and individual abatement targets. Mexico's recent commitment to reduce its CO_2 emissions by 50 million tons annually has made it the first developing country to make a unilateral commitment and has positioned Mexico to be a key interlocutor in the months preceding Copenhagen. With the majority of developed countries considering abatement targets well short of the 25 to 40 percent reductions (relative to 1990 levels by 2020) called for by developing countries, the MEF might be the appropriate venue (given its smaller size and Mexico's potential to play an outsized role) to broker palpable departures from current negotiating positions and reach a greater consensus in advance of Copenhagen.

- Base Year: 1990 vs. 2005:

  Given the need to arrive at abatement targets that require comparable degrees of effort within

developed countries, negotiators should consider adopting a new base year. As Elliot Diringer of the Pew Center for Global Climate Change has argued, measuring abatement targets against 2005 levels may prove a reasonable position in reaching a global deal. Relative to 2005, the EU's 20 percent represents a 14 percent reduction, which is roughly comparable to those cuts proposed in the Waxman-Markey bill. The fact that the EU achieved much faster reduction of GHG in the 1990s was due, in part at least, to particular and one-off circumstances, such as the collapse of communist Eastern Europe and the major downsizing of the U.K.'s high-cost coal industry. A 2005-based-year would also make it somewhat easier to compare developed country targets to developing country targets: the key emerging market economies have only "emerged" in the last 20 years—comparing their 2020, 2030 or 2050 emissions to 1990, will always make whatever efforts they undertake from now on look minimal.

- Consider 2030 Targets:

  Because 2050 global abatement targets are distant and 2020 is actually very soon, negotiators would do well to consider adding 2030 to 2020 as a key benchmark in international negotiations. With Waxman-Markey set to go into effect in 2012 *if* signed into law, 2030 provides time to demonstrate the U.S. commitment to economy-wide emissions caps that might elicit additional concessions from key developing world players in a time frame that is needed. A distant 2050 target alone will not be sufficiently credible.

- Re-envision Success:

  The desire to fully realize the Bali Roadmap and reach a broad and binding agreement in Copenhagen should not lead to an all-or-nothing approach at the COP15. While time is not on humanity's side relative to IPCC forecasts, agreement on a broad framework, including 2020, 2030 and 2050 global targets, national targets for all developed countries, agreement to develop national action plans by most large emerging market economies and more detailed consensus on some issues—including reducing emissions from deforestation and degradation in developing countries (which seems likely) and/or technology cooperation—would be welcome progress. Such a "deal" would have to overcome most of the sticking points mentioned in this brief. The exact mechanisms and specific institutional arrangements that will have to govern carbon markets and adaptation finance may require more work, more detailed design and further political compromise. As long as negotiators at the COP15 can craft strong guidelines and ensure follow-up work on these matters, Copenhagen could still be a historic success.

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Note

* Viewing policy choices from a catastrophic risk lens is difficult because accepted frameworks for analysis are scarcer than when investment choices are concerned with essentially marginal decisions on a given growth path (for example, whether or not to build a road) or when probabilities of given outcomes are well known so that one can quantify with much greater confidence the "most likely" outcomes. (The Harvard University economist Martin Weitzman has been a leading figure in the promotion of the catastrophic risk lens.)