Climate change is considered a serious threat to sustainable development, foreshadowing adverse impacts on the environment, human health, food security, economic activity, natural resources, and physical infrastructure. Scientists agree that rising concentrations of greenhouse gases (GHGs) in the earth’s atmosphere are leading to changes in the climate. In its fourth assessment report, the Intergovernmental Panel on Climate Change (IPCC) is stipulating that there is a more than 90% probability that human action has contributed to recent climate change and therefore precautionary and prompt action is necessary.

The international political response to climate change began with the adoption of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992, which was subsequently augmented in 1997 by the adoption of the Kyoto Protocol. With 2008–2012 being designated as the compliance period for the Kyoto Protocol and with many countries and organizations contemplating future commitments, a worldwide effort is underway to lay out a road map for a “post-Kyoto” agreement.

**IN THE BEGINNING, THE UNITED STATES LEAD THE WAY**

Ten years ago, the U.S. Administration under President Bill Clinton was a driving force in Kyoto, Japan, to negotiate the first international agreement to limit GHG emissions under the UNFCCC. Subsequently, the impetus for the Kyoto Protocol’s market-based emissions-trading provisions came from the United States, which had to overcome stiff opposition from the European Union (EU). Yet, it is the EU that has since embraced emissions trading as the cornerstone of meeting its GHG emissions reduction targets.1 Ever since its passage and subsequent entry into force, critics of the Kyoto Protocol are quick to emphasize that one of its major flaws is that it does not require developing countries to limit their emissions.2 This issue has become central to the United States’ formal rejection of the Kyoto Protocol and the Bush Administration’s withdrawal from the negotiations without proposing an alternative international mechanism.3

Despite U.S. position, the world moved on, and the Kyoto Protocol came into force on February 16, 2005.1 As of October 2007, 175 signatory countries (also known as parties) have ratified the protocol. The ratifying countries represent 61.6% of 1990 GHG emissions of the so-called “Annex I countries.”4 The United States and Australia were the lone holdouts among the Annex I countries that did not ratify the protocol; however, Australia has changed course following its November 24, 2007, elections. The new Australian Premier grabbed headlines at the most recent Conference of the Parties in Bali in December, when he announced Australia’s ratification of the Kyoto Protocol.

Since its entry into force, the international community has continued to negotiate many operational details for Kyoto compliance, while simultaneously starting to search for a way forward after the Kyoto Protocol expires. The goal of this new “post-Kyoto” regime would be to broaden the umbrella and engage the United States, as well as find a formula for assigning GHG reduction obligations to developing countries.
GHG EMISSIONS REDUCTIONS

The Kyoto Protocol requires participating Annex I countries to reduce their GHG emissions collectively to an annual average of 5% below 1990 levels during the period 2008–2012. Although the protocol is technically “in force,” the treaty compliance details are still being worked out in order to set up the methods by which ratifying parties will implement their obligations; therefore, it is not clear yet how the attainment of emissions reduction targets will be documented.6

The complexities of complying with the Kyoto Protocol are rooted in the fact that with economic development and growing demand for energy, worldwide carbon dioxide (CO₂) emissions are expected to grow. This is highlighted in Figure 1, showing the projected growth in CO₂ emissions for both the Organisation for Economic Co-operation and Development (OECD) and non-OECD countries to 2030. The overall OECD emissions are expected to increase at an average 0.8% annual growth rate, while for non-OECD countries, the projected annual growth of CO₂ emissions is expected to be 2.6%, on average. The highest growth rate is projected for China, at 3.4% annually from 2004 to 2030, reflecting the country’s continued heavy reliance on fossil fuels, especially coal. China’s energy-related CO₂ emissions are projected to exceed U.S. emissions by approximately 5% in 2010 and by 41% in 2030.7

Meeting the foreseeable energy needs, coupled with concerns over climate change, are driving a shift in addressing the world energy mix stemming from the recognition that future energy scenarios might have to take into account carbon emissions constraints. In recent years, many countries, companies, and the public at large have begun to express new interest in expanding their use of non-carbon-emitting technologies, including renewable energy sources such as solar, wind, and bioenergy, along with nuclear power and clean coal technologies that use carbon capture and geological sequestration.

Future energy strategies will therefore need to simultaneously account for
• stemming the growth of GHG emissions;
• diversifying national energy portfolios;
• improving energy security; and
• enabling sustainable development.

Based on current projections of global energy needs, and the rate of penetration of new technologies, overall emissions will not be lowered drastically, even under scenarios of high oil prices or low economic growth.8 All of these interlinked issues are the backdrop for the diverse issues that were discussed on the road to Bali.

ON THE ROAD TO BALI

The UN-sponsored 13th Conference of the Parties (COP 13) was convened in Bali, Indonesia, on December 3–14, 2007, with the goal of initiating negotiations on a successor to the Kyoto Protocol. As a prelude, many meetings were arranged—in different forums—to try and reach consensus ahead of the COP 13 in Bali. Here are some notable examples:

Group of Eight (G8) Summit 2007

At their 2007 annual summit, in Germany (June 6–8, 2007), the eight leading industrialized countries adopted a statement on climate change, energy efficiency, and energy security. The G8 expressed its commitment to move forward in the UN climate process and called for active and constructive participation in the Bali meeting with a view to achieving a comprehensive post-2012 agreement. The G8 also addressed issues such as adaptation, technology, deforestation, and market mechanisms.5

United Nations General Assembly

The UN General Assembly held an informal thematic debate on the subject of “Climate Change as a Global Challenge”
July 31–August 2, 2007, in New York. The debate included two panel discussions on adaptation and mitigation; general discussion; and statements on national strategies. Much of the discussion focused on the post-2012 negotiations, with some delegations calling for agreement on a “roadmap” at COP 13 in Bali for completing discussions by 2009.10

The Vienna Dialogue
This was the formal mechanism set up by the UNFCCC to prepare draft recommendations for Bali. It relied heavily on information from the IPCC, indicating that in order to stabilize GHG concentrations in the atmosphere (at the lowest levels assessed by the IPCC scenarios) global emissions of GHG need to peak within the next 10–15 years and be reduced to very low levels—well below half of the levels in 2000—by 2050. The key recommendations from this dialogue process were:

- To achieve the lowest stabilization level assessed by the IPCC to date, Annex I countries would be required to reduce emissions by 25–40% below 1990 levels by 2020, along with reductions by other parties. The required reductions ranges could be significantly higher for Annex I parties if the emissions reductions were to be undertaken exclusively by them.
- To keep intact the mitigation potential of the flexibility mechanisms (Clean Development Mechanisms, Joint Implementation and Emissions Trading).11

White House Meeting of the Major Economies
In September 2007, the U.S. government convened a meeting of the major economies to develop a new global approach to meeting the challenges of energy security and climate change. Some critics saw this as an “end run” to the Kyoto Protocol. The United States contends that if, by summer 2008, the heads of state of the major economies could finalize a long-term goal for reducing global GHG emissions and establish a strong and transparent system for measuring progress, then it will be possible to reach a global consensus at the UN in 2009.12 The crux of the U.S. perspective is that each nation should design its own strategies for making progress toward achieving a long-term goal. These strategies should be environmentally effective and measurable and reflect each country’s different energy resources, different stages of development, and different economic needs. The United States expects, under such a scenario, that each country would rely on a mix of mandatory, voluntary, and market-based policy tools.

This plethora of dialogues around the globe has helped to raise many issues and offered opportunities of discussion of differing viewpoints on how to proceed with the climate negotiations. Although no consensus has been reached on the approach, many agree on the key issues (see sidebar “Recurring Key Issues Discussed at Various Forums”).

EvolvE of the u.S. poSition
The U.S. administration rejected the Kyoto Protocol, in part, because it did not include commitments by China and other fast-developing countries to reduce emissions. China argues that mandatory emissions cuts would constrain economic development and that it should be allowed to use its energy resources—including huge coal reserves—to the maximum extent to achieve the prosperity enjoyed by industrialized nations.

With a shift in its makeup in the last interim elections, the U.S. Congress has begun to grapple with energy security issues and climate change. As the climate change debate moves to center stage lawmakers seem to be more interested in a menu of alternative and renewable energy options along with “low-carbon” fuels and higher vehicle fuel-efficiency requirements. The debate over the past year has culminated in landmark bipartisan legislation, known as The Energy Independence and Security Act of 2007 (H.R. 6). It was passed by Congress, and signed into law by President Bush, on December 17, 2007, immediately after the conclusion of the negotiations in Bali.13 This legislation, although not directly addressing climate change yet, contains incentives and measures that would have direct impact on U.S. GHG emissions intensities (i.e., emissions per unit of gross national product) and would start the economy moving toward commercial introduction of diversified energy sources.

While Congress is debating a myriad of other bills that address climate change, many in corporate America now also feel a sense of urgency. This is a result of the U.S. Supreme Court decision last spring that GHGs are pollutants that can, and should, be regulated by the U.S. Environmental Protection Agency (EPA).14 What many companies want is a “cap-and-trade” system for controlling GHGs. This marketplace concept is already popular on Capitol Hill, but finding the right balance in designing an economy-wide system is both technically complex and politically charged.

The United States went to Bali with an approach that is based on goals, aspirations, and voluntary initiatives, but it remained mired in controversy and could hardly exert a leadership role. The Bush Administration’s approach seemed to be at odds with Congress, other federal, and state initiatives, and in conflict with the European approach. It actually took

RECURRING KEY ISSUES DISCUSSED AT VARIOUS FORUMS
- What is the urgency of implementing climate change mitigation measures?
- How can the treaty be structured to ensure a future role for the United States?
- Is the current value of carbon emissions reduction credits adequate to spur action?
- What should be developing countries obligations?
- What is the role of technology, and can we rely only on market forces?
- How vital is certainty to the markets?
- How can the climate negotiations lead to avoided deforestation?
- What should be the role of adaptation measures in the overall negotiations framework?
- Does the evolving climate regime truly contribute to sustainable development?
a threat of an EU boycott of the next White House meeting of the major economies to get the United States to move toward a final consensus.

**OUTCOMES OF THE BALI CONFERENCE**

For two weeks the U.S.–EU spat over emissions limits dominated the discussions at Bali, in which the United States rejected a EU proposal for cuts of 25–40% from 1990 levels by 2020. This dispute was predictable, since the Europeans have used the UNFCCC negotiations for the past 15 years to call for substantial emissions cuts (without offering clear plans for implementing them). Although the EU has begun to implement a serious domestic program to cut GHG emissions, and is engaging its member states in the process, the jury is still out on its success in actually reducing emissions.

At the same time, if the United States is to accept any GHG emission targets in the next global climate agreement, they will be shaped mainly by those that are yet to be set forth in domestic climate change legislation, which is likely to emerge from Congress in 2009 or 2010.

Yet Bali produced three important outcomes:

1. **Developing countries stepped forward.** For years, many developing countries have fiercely resisted proposals that they be required to address emissions under any global climate treaty. In Bali, developing countries took a different tack, offering to include mitigation plans in the next agreement. The nature of those plans will depend—as they should—on actions by the industrialized countries that have caused the vast majority of global warming pollution to date. Steps to address emissions growth in developing countries will reflect the imperative of lifting desperate people from poverty. Much work remains to shape the role of developing countries in the next agreement, but the change in tone is worth noting.

2. **A consensus has emerged on deforestation.** More than 20% of GHG emissions come from deforestation. Cutting these emissions is cheap, helps the poorest of the poor, and protects biodiversity. In the 1990s, this topic was bitterly contested in global climate negotiations, with some seeing it as a distraction from the necessary focus on cutting industrial emissions, and as a consequence the Kyoto Protocol provides no credits to countries that fight global warming by preventing deforestation. In Bali, delegates adopted a decision on deforestation that moves beyond the debates of the past, by recognizing the urgent need to reduce emissions from deforestation and launching a series of steps to help harness substantial new resources to protect tropical forests.

3. **‘Adaptation’ moved toward center stage.** The world faces a sobering reality that even the most aggressive plans will not prevent some amount of global warming in the decades ahead. While the world is introducing new technologies, the interim consequences for developing countries are predicted to be severe. The Bali Declaration recognizes that reality and outlines a process for countries to work together in adapting to expected disruptions driven by climate change.

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**Bali AT-A-GLANCE**

**Roadblocks**
- Long-term cooperative action under the UNFCCC
- Technology transfer (IP rights)
- Mandatory emissions reduction targets
- Mitigation measures for developed and developing countries

**Consensus**
- Developing countries should undertake actions that are:
  - nationally appropriate mitigations;
  - in the context of sustainable development;
  - supported by technology;
  - enabled by finance and capacity building; and
  - measurable, reportable, and verifiable.

**Bali Roadmap**
- A process was established with guidance and direction for a series of meetings over the next two years under both the UNFCCC and the Kyoto Protocol.
- Aim is to produce a comprehensive outcome on “Post-2012” issues for consideration at COP 15 in Copenhagen, Denmark, in 2009.
7. Ending the United States—in searching for will move forward—with or without for the U.S. political calendar and input to the talks.

8. An agreement could provide detailed that will negotiate the next global at the earliest, before the U.S. team appointees in a new U.S. adminis more than a year. Indeed, given the table and obviously cannot be for

9. The U.S. scenario might change, particularly if the U.S. Congress passes legislation in the next few years mandating emissions reductions; and given the possibility that the next U.S. administration would support mandatory reductions and a cap-and-trade system. Yet a key player in the final negotiations—the next U.S. President—is not yet at the table and obviously cannot be for more than a year. Indeed, given the likely schedule for confirming key appointees in a new U.S. administration and the complexities of the issues involved, it will be spring 2009, at the earliest, before the U.S. team that will negotiate the next global agreement could provide detailed input to the talks.

However, the world will not wait for the U.S. political calendar and will move forward—with or without the United States—in searching for a global consensus on the wide-ranging issues that are interlinked under the climate change header.

Stay tuned!

REFERENCES


5. List of the UNFCCC Annex I countries: Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, European Community (EC), Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and the United States.


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