

# CRS Report for Congress

## Climate Change: Issues Underlying Negotiations at the Bali Conference of Parties

**November 26, 2007**

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Prepared for Members and  
Committees of Congress

# Climate Change: Issues Underlying Negotiations at the Bali Conference of Parties

## Summary

As climate change has gained widespread attention as a critical issue facing the nations of the world, the negotiations to be held in Bali, Indonesia, December 3-14, 2007, are widely regarded as a critical next step in continuing to chart an international course to mitigate global warming and deal with its impacts.

This report provides background on the negotiations in four sections:

- (1) a summary of the status of the 1992 United Nations Framework Convention on Climate Change (UNFCCC) and the 1997 Kyoto Protocol that established mandatory limits on the six major greenhouse gases for the major developed nations (listed in “Annex I” of the UNFCCC and generally referred to as “Annex I countries”);
- (2) a brief review of the science and economics underlying concerns about climate change and related possible future goals to reduce greenhouse gases;
- (3) the progress to date of Annex I and non-Annex I nations under the Kyoto Protocol; and
- (4) an overview of the upcoming negotiations at the 13<sup>th</sup> conference of the parties of the UNFCCC (COP-13) and third meeting of the parties to the Kyoto Protocol (MOP-3) in Bali.

At a preliminary meeting leading up to the December COP/MOP, four key elements were outlined as the focus for a “Bali road map”: 1) mitigation of climate change (agreeing on emission reduction commitments); 2) adaptation to impacts of climate change; 3) financial assistance issues; and 4) technology development and transfer. It is very likely that, while future negotiations will grapple with the effort to obtain some form of legally binding, mandatory commitments from all parties, the recognition of differing national circumstances and differing abilities of nations to take on various types of commitments will be major elements in the discussions.

It is widely expected that the outcome in Bali is likely to be decisions that focus only on the framework, procedures, and time frame for negotiations to follow on a post-2012 agreement. Substantive issues will be taken up in those future negotiations. All parties appear to agree that an agreement needs be completed by the end of 2009 in order to be ratified by the necessary number of parties by 2012, when the Kyoto Protocol commitment period ends.

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# Climate Change: Issues Underlying Negotiations at the Bali Conference of Parties

Climate change negotiations to be held in Bali, Indonesia, December 3-14, 2007, are widely regarded as a critical next step in continuing to chart an international course to mitigate global warming and deal with its impacts. This report provides background on the negotiations, including brief discussions of the Kyoto Protocol, the science underlying climate concerns, progress of nations in meeting Kyoto Protocol requirements, and an overview of key issues before the negotiations in Bali.

## **The UNFCCC and Kyoto Protocol: Background**

The Kyoto Protocol is the only agreement establishing legally binding reductions of greenhouse gas (GHG) emissions, which are major contributors to global warming. It was negotiated under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC), and the United States played a major role in shaping the provisions of the Protocol.<sup>1</sup> The UNFCCC, opened for signature at the 1992 Earth Summit in Rio de Janeiro, outlined a goal of voluntary reductions in greenhouse gas emissions to 1990 levels by the year 2000.

At the annual conferences of the parties (COP), participants soon concluded that the year 2000 goal of the UNFCCC would not be met, and that voluntary reductions would not suffice; negotiations began on a protocol that would provide for mandatory, legally binding emissions reductions for the developed countries listed in Annex I of the UNFCCC.

Negotiations on the Protocol were completed in 1997, and the United States signed it in 1998. However, it has never been sent to the U.S. Senate for advice and consent, and thus the United States has not ratified it. President Bush characterized the Protocol as “fatally flawed,” and rejected it in early 2001, citing economic burdens, competitiveness concerns, and the lack of mandatory emissions requirements for major developing countries such as China and India. The United States’ withdrawal from participation in the Protocol and its rejection of mandatory limitation of greenhouse gas emissions has remained a sensitive issue in U.S. relations with many nations, particularly the European parties to the Protocol. They continue to express the hope that the United States will rejoin the negotiations that

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<sup>1</sup> For additional detail on the Kyoto Protocol, see CRS Report RL33826, *Climate Change: The Kyoto Protocol, Bali Negotiations, and International Actions*, by Susan R. Fletcher and Larry Parker.

continue on the Protocol and particularly on measures to reduce GHGs after the Protocol commitment period ends in 2012.

A key element of both the UNFCCC and the Kyoto Protocol is “common but differentiated responsibilities,” which has meant that while all nations, developed or developing, have responsibilities for monitoring and reporting their emissions, only the developed [Annex I] nations have had an obligation to reduce GHG emissions. This has meant, in practice, that in negotiations relating to the Kyoto Protocol, no new commitments for developing countries have been under consideration. This concept arises from two basic principles accepted by all parties to the UNFCCC and the Kyoto Protocol: that the industrialized/developed nations are responsible for most of the greenhouse gases in the atmosphere (several of these gases remain in the atmosphere for decades or a century or more); and that nations have widely different capacities and resources to undertake the costs of mitigation,<sup>2</sup> with developed nations generally having the resources and technological infrastructure to undertake emissions reductions. As ways to involve all nations in post-Kyoto action are sought, it is likely that this principle will be the subject of much debate.<sup>3</sup>

The over-all reduction for the 38 industrialized nations specified in Annex B of the Kyoto Protocol is stated as 5.2% below 1990 levels, averaged over the five-year “commitment period” between 2008 - 2012. A target for each Annex B country was negotiated; the United States’ target in the Protocol would have been to reduce the six major greenhouse gases by 7% below 1990 levels. Because of the fact that “sinks,” which remove and store carbon from the atmosphere, are counted, and because emissions credit trading<sup>4</sup> would be allowed, the actual reduction of emissions within the United States that would have been required to meet the target was estimated to be lower than 7% — closer to 4%. But based on projections of potential growth of emissions, the actual required reduction in greenhouse gas emissions for the United States would have been an estimated 15 to 30 % below where their levels would otherwise be by the 2008-2012 period.

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<sup>2</sup> For more detailed discussion, see CRS Report RL32721, *Greenhouse Gas Emissions: Perspectives on the Top 20 Emitters and Developed Versus Developing Nations*, by Larry Parker and John Blodgett.

<sup>3</sup> In accord with the differentiated responsibilities principle, the Kyoto Protocol’s legally binding restrictions of greenhouse gases to 5.2% below 1990 levels in the period 2008 to 2012 apply only to the 38 industrialized nations listed in Annex I of the UNFCCC and Annex B of the Protocol (those that have ratified the Protocol) — and not to developing (“non-Annex I”) countries.

<sup>4</sup> Emissions trading allows nations to meet their emissions reductions targets by purchasing emissions credits from nations or entities that have met their obligations and have “credits” to spare. For more detail on emissions trading, in particular the system instituted by the European parties to the Kyoto Protocol, see CRS Report RL33581, *Climate Change: The European Union’s Emissions Trading System (EU-ETS)*, and CRS Report RL34150, *Climate Change: The EU Emissions Trading Scheme (ETS) Gets Ready for Kyoto*, both by Larry Parker.

The Kyoto Protocol obtained the necessary number of ratifications from Annex B countries in late 2004 and entered into force in February, 2005.<sup>5</sup> Some 169 nations have ratified or accepted the Kyoto Protocol, according to the UNFCCC Secretariat, representing 66% of the emissions of developed countries with obligations outlined in the Protocol.<sup>6</sup> As noted above, the Protocol's provisions apply only to those countries that have ratified it, which two of the Annex I countries — the United States and Australia — have not done.

Annual meetings of the parties to the UNFCCC and the Kyoto Protocol continue, and attention of the negotiations has turned in large part to “next steps” following the end of the commitment period in 2012 — in particular the extent to which developing countries (non-Annex I) would assume binding commitments, which most of the major greenhouse gas emitters among them remain reluctant to do. The United States has attended these annual meetings, participating in an observer status.

## **Climate Science, Economics and Future Goals to Reduce Greenhouse Gas Emissions**

Since the UNFCCC Conference of the Parties last met one year ago, major international technical assessments of climate change has been released by the Intergovernmental Panel on Climate Change (IPCC) — the panel of over 2000 scientists from around the world charged with providing the scientific basis for understanding changes in the Earth's climate and their impacts. The “Fourth Assessment Report” issued in November 2007 (AR4) critically reviewed and synthesized the research on science, impacts and mitigation strategies and underscored large areas of agreement on climate issues (as well as some important uncertainties and disagreements). The IPCC concluded unequivocally in its first report in 2007<sup>7</sup> that the Earth's climate has changed over the past century,<sup>8</sup> and that while natural factors, including changes in solar irradiance and volcanoes, have played roles in the observed changes, “most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic<sup>9</sup> greenhouse gas concentrations.”<sup>10</sup>

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<sup>5</sup> See [[http://unfccc.int/kyoto\\_protocol/items/2830.php](http://unfccc.int/kyoto_protocol/items/2830.php)].

<sup>6</sup> In order to enter into force, the Protocol had to be ratified by Annex B nations representing 55% of their 1990 emissions.

<sup>7</sup> Intergovernmental Panel on Climate Change (IPCC) Working Group I, *Climate Change 2007: The Physical Basis* (Cambridge, UK: Cambridge University Press, 2007), *Summary for Policymakers*, p. 8.

<sup>8</sup> The Earth's climate has warmed by 0.6 to 0.9° Celsius (1.1 to 1.6° Fahrenheit) since the Industrial Revolution. Precipitation has increased over the past century, although some regions have been wetter and some have become drier, consistent with scientists' understanding of how heightened greenhouse gas concentrations affect climate. Observed increased ocean temperatures, altered wind patterns, extreme weather events, melting glaciers and sea ice, and timing of seasons have been partially attributed by the IPCC to greenhouse gas forcing.

<sup>9</sup> Human-driven, i.e., caused by human activities.

<sup>10</sup> Intergovernmental Panel on Climate Change, *Summary for Policymakers of the Synthesis* (continued...)

The IPCC has dealt with both mitigation — measures that would reduce climate changes, largely involving reducing greenhouse gas emissions — and adaptation, which involves identifying impacts of climate change and taking measures to deal with the impacts. In its fourth report, the IPCC concluded, “There is *high confidence* that neither adaptation nor mitigation alone can avoid all climate change impacts; however they can complement each other and together can significantly reduce the risks of climate change.... Many impacts can be reduced, delayed or avoided by mitigation. Mitigation efforts and investments over the next two or three decades will have a large impact on opportunities to achieve lower stabilisation levels and increase the risk of more severe climate change impacts.”<sup>11</sup>

Elevated greenhouse gas (GHG) concentrations in the atmosphere (carbon dioxide is now about one-third higher than in 1880) result from fossil fuel use, land clearing, industrial, and agricultural emissions. Current levels of carbon dioxide are at approximately 381 parts per million (ppm) in the atmosphere, up from some 270 ppm in pre-industrial times. GHGs in the atmosphere remain there for many decades to centuries. The United States contributes almost one-fifth of net global greenhouse gas emissions. China emits about as much as the United States.<sup>12</sup> But, with its robust economic growth dependent on industrialization fueled largely by coal, China will likely become and remain the largest global emitter for the foreseeable future. Future greenhouse gas emissions will grow most rapidly from developing economies, as they strive to eliminate poverty and raise income levels towards those of the wealthier “Annex I” countries. Future GHG trajectories are widely uncertain, depending largely on the rate and composition of economic growth and technology choices; the plausible future range may be significantly influenced by policy decisions to limit emissions.

Scientists have found it very likely that rising greenhouse gas concentrations, if they continue unabated, will increase global average temperature above natural variability by at least 1.5° Celsius (2.7° Fahrenheit) during the 21<sup>st</sup> century (above 1990 temperatures), with a small likelihood that the temperature rise may exceed 5°C (9°F). The projections thought most likely by many climate modelers are for greenhouse gas-induced temperature rise of approximately 2.5 to 3.5°C (4.5 to 6.3°F) by 2100. Future climate change may advance smoothly or sporadically, with some regions experiencing more fluctuations in temperature, precipitation, and frequency or intensity of extreme events than others.

Many scientists expect that wet regions will get more precipitation, and dry regions are likely to become drier. Floods, droughts, storms and other extreme weather events are projected to increase, with impacts for ecological and human systems. Some impacts of climate change are expected to be beneficial in some

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<sup>10</sup> (...continued)

*Report of the IPCC Fourth Assessment Report.* See [<http://www.ipcc.ch/index.htm>].

<sup>11</sup> *Ibid.*, p. 20.

<sup>12</sup> While the U.S. emits less per unit of economic production than China (with “GHG intensities” of about 562 versus 703 metric tonnes of CO<sub>2</sub>-equivalent per million dollars of GDP), the United States emits about 24 tons of CO<sub>2</sub>-equivalent per person while China emits only about 4 tons per person.

locations with a few degrees of warming (e.g., increased agricultural productivity in some regions, less need for space heating, opening of the Northwest Passage for shipping and resource exploitation). Most impacts are expected to be adverse (e.g., lower agricultural productivity in many regions, drought, rising sea levels, spread of disease vectors, greater needs for cooling). Risks of abrupt, surprising climate changes, with accompanying dislocations, are expected to increase as global average temperature rises, disturbing both natural and socio-economic systems, with national and international security implications. Disparities across locations will increase pressure on international aid and migration, with possible implications for political stability and security. Impacts may be alleviated through investments in adaptation, although this strategy is thought to be more challenging as climate changes become more widespread, uncertain and severe.

The potential costs of adapting to climate change and the residual damages — including possible catastrophic events — lead many people to believe that actions are justified to reduce greenhouse gas emissions in order to limit climate change. Economic analyses of costs for mitigation interact with peoples' values and ethical considerations of disparities across populations already living and future generations, and across countries and income groups; ethical approaches also vary concerning how to weigh potential risks to ecological systems, such as expected increases in extinctions of species.

In order to mitigate climate change a variety of specific policy targets have been proposed. For example, the European Union (EU) has articulated a goal of avoiding more than 2°C (3.6°F) increase of global mean temperature above pre-industrial levels.<sup>13</sup> This is estimated to require stabilizing GHG in the atmosphere at between 450 and 550 parts per million (ppm), carbon dioxide equivalent. The AR4 of the IPCC concluded that:

Lowest stabilization targets require an earlier peak of CO<sub>2</sub> and CO<sub>2</sub>-equivalent emissions. In the majority of the scenarios in the most stringent stabilization category (a stabilization level below 490 ppmv CO<sub>2</sub>-equivalent), emissions are required to decline before 2015 and are further reduced to less than 50% of today's emissions by 2050. For somewhat higher stabilization levels (e.g. below 590 ppmv CO<sub>2</sub>-equivalent) global emissions in the scenarios generally peak around 2010 — 2030, followed by a return to 2000 levels, on average around 2040. For high stabilization levels (e.g. below 710 ppmv CO<sub>2</sub>-equivalent) the median emissions peak around 2040.....<sup>14</sup>

The debate over which countries and sources should begin to reduce their GHG emissions, at what rate, and when — in the post-2012 period — will underlie the discussions in Bali. Countries will position themselves in the debate on whether to set long-term temperature or concentration targets, and whether to set binding

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<sup>13</sup> Council of the European Union. Press Release 6272/07, February 20, 2007, Brussels, Belgium. P. 6.

<sup>14</sup> Brian Fischer and Nebojsa Nakicenovic, et al. "Chapter 3: Issues Related to Mitigation in the Long-Term Context," in *Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment* (New York: Cambridge University Press, 2007), p. 172.



medium-term emission caps, based on perceptions of the potential damages of climate change and mitigation costs.

All countries are concerned about the costs of policies to abate greenhouse gas emissions, and considerable research underlies understanding of the economics and uncertainties. The IPCC concluded that, “In 2050 global average macro-economic costs for multi-gas mitigation towards stabilization [of GHG concentrations] between 710 and 445 CO<sub>2</sub>-eq, are between a 1% gain to a 5.5% decrease of global GDP.”<sup>15</sup>

Delaying initiation of GHG limitations may decrease cumulative costs of meeting a given GHG target if the reductions are timed to minimize early retirements of productive capital and if lower-GHG technologies advance rapidly, or if better information on climate impacts allows relaxation of the GHG limit. However, aiming for a given GHG or temperature target, but delaying GHG emission limitations, may increase costs if hoped-for technological advances do not materialize, if the more rapid emission reductions required in later years accelerate early retirement of productive capital, or if climate change impacts appear to be worse than expected and there is a desire to ratchet down the GHG cap.

How allowable emissions are distributed among sources worldwide is not a strong determinant of future climate, but would strongly affect who pays. How the burdens of GHG reductions may be distributed is a critical political, economic and values issue. However, given the scientific and economic uncertainties, policymakers are not bound to make an immediate, single decision on long-term goals that must remain fixed for decades into the future. Once post-2012 goals are set, policy-makers may adapt them as scientific, technological and socio-economic information improves.

## **Progress to Date to Meet Obligations Under the Kyoto Protocol**

Compliance with the Kyoto Protocol is focused on Europe (particularly the European Union (EU) and Russia), New Zealand, Canada and Japan. These countries constitute most of the Annex B parties of the Kyoto Protocol. Preparations in these countries have been underway for the past several years for the “commitment period” of the Kyoto Protocol — 2008 to 2012 — during which their average annual emissions must meet their obligations under the Protocol

The most comprehensive effort at compliance has been in Europe. In October 2007, the European Commission (EC) completed its review of the 27 members’ proposed plans to achieve their Kyoto obligations and at least conditionally approved all of them.<sup>16</sup> The focus of the EU’s compliance efforts is the Emissions Trading Scheme (ETS) that is completing a three-year trial “learning by doing” period in

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<sup>15</sup> *Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment* (New York: Cambridge University Press, 2007), in *Summary for Policymakers*, p. 27.

<sup>16</sup> For more information on EU activities, see CRS Report RL34150, *Climate Change: The EU Emissions Trading Scheme (ETS) Gets Ready for Kyoto*.

preparation for Kyoto compliance<sup>17</sup>. If a country determines that it will exceed its emissions limit during the compliance period, emissions trading permits it to purchase emissions reduction credits, generally called “allowances,”<sup>18</sup> from another country that has determined it will achieve more emissions reductions than necessary to comply. With emissions trading, countries that can make relatively inexpensive emissions reductions have an incentive to reduce emissions below the level required by the Kyoto Protocol, and sell the extra allowances to other countries whose emissions control costs are more expensive. Thus, both the seller and the buyer will have lower costs by virtue of the seller’s profit and the buyer’s savings. This type of implementation scheme is commonly called a “cap-and-trade” program.<sup>19</sup>

After a rocky start, primarily resulting from data shortcomings, several positives have emerged from the “learning by doing” exercise that may assist the ETS in making the Kyoto compliance phase run more smoothly, including (1) greatly improving emissions data, (2) encouraging development of the Kyoto Protocol’s project-based mechanisms — Clean Development Mechanism (CDM) and Joint Implementation (JI) — and (3) influencing corporate behavior to begin pricing in the value of allowances in decision-making, particularly in the electric utility sector. However, several issues that arose during the trial phase remain contentious as the ETS moves into its Kyoto commitment period, including allocation schemes, shutdown credits and new entrant reserves, and others. In addition, the expansion of the EU and the implementation of the directives linking the ETS to the Kyoto Protocol project-based mechanisms created new issues to which the EC has had to respond.

In 2006, the European Environmental Agency (EEA) projected the 15 EU Members that had jointly agreed to reduce GHGs by 8% below 1990 levels during the Kyoto compliance period would meet their obligation as a whole. However, the EEA estimated that 7 of those countries would not meet their individual Kyoto obligations.<sup>20</sup> In contrast, the EEA estimated that all 10 of the new Member countries with obligations under the treaty would meet them.<sup>21</sup> The EEA also estimated that non-EU countries Iceland and Switzerland would meet their obligations, while Liechtenstein and Norway would not. In October 2007, the EC announced agreement on linking the ETS with emission trading systems in Norway, Iceland, and Liechtenstein.<sup>22</sup> The other major European signatory, The Russian Federation, is anticipated to meet its obligations under the treaty, although it will do so due in large

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<sup>17</sup> The ETS also provides that countries can obtain credits through the Kyoto Protocol’s other two flexibility mechanisms — Joint Implementation (JI) and the Clean Development Mechanism (CDM). Note that the EU nations address climate change both individually and collectively.

<sup>18</sup> An allowance equals one metric ton of carbon dioxide equivalent emissions.

<sup>19</sup> For a detailed discussion, see CRS Report RL33799, *Climate Change: Design Approaches for a Greenhouse Gas Reduction Program*, by Larry Parker.

<sup>20</sup> Austria, Belgium, Denmark, Ireland, Italy, Portugal, and Spain.

<sup>21</sup> Two countries, Cyprus and Malta, do not have mandatory reductions requirements under Kyoto.

<sup>22</sup> European Commission, *Emissions Trading: Commission announces linkage EU ETS with Norway, Iceland, and Liechtenstein* (Brussels, October 26, 2007).

part to economic contraction after the previous Union of Soviet Socialist Republics (USSR) collapsed. As its economy expands, these conditions are likely to change.

Outside Europe, the major Annex B parties are New Zealand, Canada, and Japan. In September 2007, the New Zealand government decided to phase-in an emission trading scheme beginning in 2008 (last stage beginning in 2013) to assist New Zealand in complying with its Kyoto obligations.<sup>23</sup> However, the Government's most recent analysis estimates New Zealand will not comply with its Kyoto obligations, although that projection only reflects policies adopted as of April 2007.<sup>24</sup> In contrast, Canada has simply stated it can not meet its Kyoto obligations and the government has adopted alternative goals.<sup>25</sup> Finally, Japan is anticipated to have difficulties meeting its Kyoto obligations and has been developing strategies to acquire substantial credits from the Kyoto flexibility mechanisms (JI and CDM) in an attempt to bridge the expected gap between Japanese emissions and Japan's Kyoto target.

## **Issues and Expectations for COP-13/MOP-3 Negotiations in Bali**

The Kyoto Protocol was always intended to be a first step in moving toward reducing global accumulations of greenhouse gases in the atmosphere. Negotiators recognized that the goals of the Protocol, even if met by all the parties, would not produce the stabilization of atmospheric greenhouse gases posited as the goal of the UNFCCC. The Protocol set forth a timetable for reviewing progress of actions undertaken to meet the Protocol's goals and to consider "next steps." As momentum and concern have built over the past year, strong expectations have been expressed by all parties that a positive outcome is critically important at the negotiations to be held this year in Bali, Indonesia, December 3 - 14, 2007. It is widely accepted by all parties that a post-Kyoto agreement needs to be completed by the end of 2009, and that the outcome in Bali is likely to consist primarily of a "road map" for future negotiations that will provide an agenda for identifying and resolving the substantive issues involving the nature of obligations to be undertaken by all parties and the methods to be used to achieve them.

Contributing heavily to a sense of increased urgency were both the scientific findings and reports of the IPCC over the year (as noted above), growing public concern, and the high priority given to climate concerns in numerous high level international meetings; in these meetings, high expectations were expressed by participating nations that the COP-13/MOP-3 in Bali would launch a process of negotiations that would culminate by 2009 in a post-2012 agreement on greenhouse gas emissions reductions. Key meetings included:

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<sup>23</sup> New Zealand Ministry for the Environment, *Emissions Trading Scheme* (Wellington, September 2007).

<sup>24</sup> New Zealand Ministry for the Environment, *Projected Balance of Emissions Units During the First Commitment Period of the Kyoto Protocol* (Wellington, September 2007).

<sup>25</sup> Governor General (Canada), *Strong Leadership. A Better Canada — Speech from the Throne* (Ottawa, October 16, 2007).

- The United Nations held two major meetings to express a high level of concern about climate change: In April, the Security Council held its first-ever debate on the relationship among climate change, energy, peace and security, and in early September the United Nations General Assembly held a high-level ministerial meeting on climate change.
- The G-8 meeting in June put climate change high on its agenda, and issued a declaration that was regarded as a compromise between the European proposal for a 50% reduction in GHG emissions by 2050 in order to limit global warming to an increase of some 3.6 degrees Fahrenheit, and the continuing insistence of the United States on voluntary actions to reduce greenhouse gas intensity. The final declaration suggested the European proposal would be “seriously considered” and recognized the continuing principle of common but differentiated responsibilities of nations, but also recognized “that the efforts of developed economies will not be sufficient and that new approaches by other countries are needed.”
- Just prior to the G-8 meeting, President Bush announced May 31, 2007, that the United States would convene a meeting in Washington in late September of “major economies” — those that are “major emitters” of GHG — on “Energy Security and Climate Change.”<sup>26</sup> This meeting occurred September 27-28, 2007; the U.S. summary of the Major Economies Meeting on Energy Security and Climate Change stated, “Discussion reflected a common understanding that any long term goal is aspirational, and that it should not be used as a basis for burden sharing.”<sup>27</sup> This continuing rejection of mandatory limits in favor of “aspirational goals” was a disappointment to those (in particular, the European participants) who hoped for a breakthrough in the U.S. approach. At the meeting, future meetings of these participants were discussed, to be held after the Bali meeting.

The challenge before the upcoming COP/MOP meeting in Bali remains how to find agreement on the nature of commitments, if any, that would be acceptable to all the major players — including Kyoto Protocol parties with existing obligations, developing countries that are major GHG emitters, and the United States, whose role is regarded as critical by all potential participants in the post-2012 period.

One key element in the negotiations that go forward at Bali and afterward, will be the extent to which low-carbon-emitting technological alternatives to the current energy and development patterns will be or can be adopted by both developing and developed countries. One major key to this question will be how developing

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<sup>26</sup> Nations and entities invited were the European Union plus France, Germany, Italy, and the United Kingdom; and Japan, China, Canada, India, Brazil, South Korea, Mexico, Russia, Australia, Indonesia, South Africa, and the United Nations.

<sup>27</sup> See Final Chairman’s Summary at [<http://www.state.gov/g/oes/climate/mem/93021.htm>].

countries can continue to make economic progress and enhance their prosperity while finding the additional resources to address the issue of technological change. It is the latter concern that prompts a major focus by these countries on the need for financial support from developed nations.

The major GHG-emitting Non-Annex I countries continue to reject mandatory requirements for themselves, while pushing developed Annex I nations to continue mandatory GHG reduction goals in the negotiations. There are concerns, expressed by advocates of mandatory obligations, that the U.S. “major economies” meetings, focusing as they do on voluntary measures, may serve to reinforce the resistance of developing countries to taking on mandatory obligations. There are further concerns that without U.S. agreement to mandatory GHG reductions, developing countries — and developed nations as well — may be less willing to take on new or continuing mandatory obligations. The latter concern is reflected in the expressed views of some observers that, although all parties agree on the goal of completing an agreement by the end of 2009, it may also be difficult to achieve until a new administration after U.S. elections takes office and takes a different approach to the issue of mandatory emission reduction requirements.<sup>28</sup>

At a preliminary meeting leading up to the December COP/MOP, four key elements were outlined as the focus for a “Bali road map”: 1) Mitigation of climate change (agreeing on emission reduction commitments); 2) Adaptation to impacts of climate change; 3) Financial assistance issues; and 4) Technology development and transfer. It is very likely that, while future negotiations will grapple with the effort to obtain some form of legally binding, mandatory commitments from all parties, the recognition of differing national circumstances and differing abilities of nations to take on various types of commitments, will be major elements in the discussions.

In summary, it is widely expected that the outcome in Bali is likely to be decisions that focus only on the framework, procedures, and time frame for the substantive negotiations to follow on a post-2012 agreement. Substantive issues will be taken up in those negotiations. All parties appear to agree that an agreement needs to be completed by the end of 2009, in order to be ratified by the necessary number of parties by 2012 when the Kyoto commitment period ends. In addition, as nations, businesses and societies consider their actions and investments in the future, it is regarded as important to provide some certainty about what the future national and international obligations are likely to be.

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<sup>28</sup> For example, the statement made by former Senator Timothy Wirth at a hearing by the Senate Foreign Relations Committee on November 13, 2007.