



**Testimony of**

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**Before the  
Committee on Foreign Affairs  
Subcommittee on Asia, the Pacific, and the Global Environment  
United States House of Representatives**

**Hearing on:  
“The Kyoto Protocol: An Update”**

**July 11, 2007**

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**Written Statement of  
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Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to appear before you today to discuss our efforts to address climate change.

**1. Introduction**

I would like to begin my testimony by providing a brief overview of the Administration’s approach to climate change. I will then address the international and domestic components of that approach.

As a party to the United Nations Framework Convention on Climate Change (UNFCCC), the United States shares with the other 190 Parties to the Convention its ultimate objective as stated in the Convention’s Article 2<sup>1</sup>: “to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.” This objective is qualified by stating that it “should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.” In February 2002, President Bush reaffirmed America’s commitment to the Framework Convention and to its ultimate objective.<sup>2</sup>

Given the complexity of the issue and its interlinkages with virtually all aspects of human activity, there is a broad international consensus that climate change cannot be dealt with in a vacuum.<sup>3</sup> Rather, it needs to be addressed as part of an integrated agenda that promotes

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<sup>1</sup>See <http://unfccc.int/resource/docs/convkp/conveng.pdf>, p. 4.

<sup>2</sup>See <http://www.whitehouse.gov/news/releases/2002/02/20020214-5.html>.

<sup>3</sup>See, for example, the 2005 G8 Gleneagles Communiqué on Africa, Climate Change, Energy and Sustainable Development at <http://www.g8.utoronto.ca/summit/2005gleneagles/communique.pdf>, and the Gleneagles Plan of Action: Climate Change, Clean Energy and Sustainable Development at <http://www.g8.utoronto.ca/summit/2005gleneagles/climatechangeplan.pdf>.

economic growth, reduces poverty, provides access to modern sanitation and clean water, enhances agricultural productivity, provides energy security, reduces pollution, *and* mitigates greenhouse gas emissions.

Meeting these multiple objectives will require a sustained, long-term commitment by all nations over many generations. To this end, the President has established a robust and flexible climate change policy that harnesses the power of markets and technological innovation, maintains economic growth, and encourages global participation.

Major elements of this approach include: (1) promoting international cooperation, (2) implementing near-term policies and measures to slow the growth in greenhouse gas emissions; (3) advancing climate change science; (4) accelerating technology development and deployment;

The President has requested, and Congress has provided, substantial funding for climate change science and observations, technology, international assistance, and incentive programs—approximately \$37 billion since 2001, more than any other nation. The President’s fiscal year 2008 budget requests nearly \$7.4 billion for climate-related activities.

## **2. Promoting international cooperation**

President Bush has repeatedly highlighted the importance of international cooperation in developing an effective and efficient global response to the complex and long-term challenge of climate change.<sup>4</sup>

Any effective international response to climate change requires both developed- and developing-country participation, which includes both near-term efforts to slow the growth in emissions and longer-term efforts to build capacity for future cooperation. The Administration also believes that well-designed multilateral collaborations focused on achieving practical results can accelerate development and commercialization of new technologies and advance climate change science.

**New International Framework:** On May 31, 2007, the President called upon the world’s major economies, both from the developed and developing world, to work together to develop a global goal on long-term greenhouse gas reductions.<sup>5</sup> This new international global strategy recognizes that the major emerging economies must develop and participate in an effective global strategy, and that economic growth, energy security and climate change must be addressed in an integrated way. The United States will host the first of a series of meetings with other countries—including rapidly growing economies like India and China—to establish a new framework for the post-2012 world. Progress towards a global emissions reduction goal will be underpinned by midterm national targets and programs that are tailored towards each participant’s current and future energy needs, and that will be subject to a robust review process. In addition, participants will work on sectoral approaches to energy intensive industries and

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<sup>4</sup>See <http://www.whitehouse.gov/news/releases/2001/06/20010611-2.html>, <http://www.whitehouse.gov/news/releases/2002/02/20020214-5.html>, and <http://www.whitehouse.gov/news/releases/2007/05/20070531-9.html>.

<sup>5</sup>See <http://www.whitehouse.gov/news/releases/2007/05/20070531-9.html>.

concrete steps to promote the development and deployment of clean energy technologies. The President believes that by encouraging and sharing cutting-edge technologies, the major economies will build the capacity to meet realistic reduction goals.

As part of his international initiative, the President also proposed strengthening climate-related initiatives at the UN that benefit all countries, including adaptation to climate change, deforestation and technology. Finally, the President's initiative addresses practical action necessary to advance the global development and deployment of clean energy technologies. This could include low-cost capital sources to finance investment in clean energy, mechanisms to share government-developed technology at low cost, or in some cases, no cost at all, and elimination of market barriers.

At the G8 summit in Heiligendamm, Germany in June, the leaders largely endorsed the President's initiative. Specifically, the G8 leaders agreed to a process for concluding by the end of 2008 a comprehensive post-Kyoto framework that includes all the major energy consuming and greenhouse gas emitting countries and that could contribute to a global agreement under the UNFCCC in 2009, and they welcomed the U.S. offer to host a meeting of the major economies this fall. The lengthy G8 declaration called for concrete action on many of specifics of the President's proposal and is consistent with the core approach President Bush has stressed throughout his presidency—that our efforts on climate change must be integrated within a broader context that includes energy security and development.

Under President Bush's leadership, the United States has brought together key nations to tackle jointly some tough energy and science challenges. These multilateral collaborations—including the Asia-Pacific Partnership on Clean Development and Climate (APP), the Carbon Sequestration Leadership Forum (CSLF), the Group on Earth Observations (GEO), the Generation IV International Forum (GIF), the Global Nuclear Energy Partnership (GNEP), the International Partnership for a Hydrogen Economy (IPHE), the Methane to Markets Partnership (M2M)—and our 15 bilateral and regional partnerships involve 79 nations and the European Union (see Attachment 1). They also mirror the main strategic thrusts of our domestic research programs, while addressing complementary concerns, such as energy security, climate change, and environmental stewardship.

**Asia-Pacific Partnership on Clean Development and Climate (APP)<sup>6</sup>:** The Asia-Pacific Partnership for Clean Development and Climate (APP), launched in January 2006 by ministers from Australia, China, India, Japan, Republic of Korea, and the United States, is one of our most consequential multilateral initiatives. It is a multi-stakeholder partnership working to generate practical and innovative projects promoting clean development and the mitigation of greenhouse gases. Through engaging private industry as well as government officials, the APP is using public-private partnerships to build local capacity, improve efficiency and reduce greenhouse gas emissions, create new investment opportunities, and remove barriers to the introduction of clean energy technologies in the Asia-Pacific region. What makes the approach unique is that APP activities are identified and supported using an innovative “bottom up” approach. Together, APP partner countries account for about half of the world's population, economic output, energy use, and greenhouse gas emissions.

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<sup>6</sup>See <http://www.asiapacificpartnership.org/> and <http://www.state.gov/g/oes/climate/app/>.

The APP has created eight task forces to achieve the Partnership's goals: (1) cleaner fossil energy; (2) renewable energy and distributed generation; (3) power generation and transmission; (4) steel; (5) aluminum; (6) cement; (7) coal mining; and (8) buildings and appliances. The Task Forces, with representatives from both the public and private sectors, have each prepared an Action Plan and identified an initial tranche of 98 projects that are in the implementation stage. The President's fiscal year 2008 budget request includes \$52 million to support APP.

**Carbon Sequestration Leadership Forum (CSLF)<sup>7</sup>:** CSLF is a U.S.-launched initiative that was established formally at a ministerial meeting held in Washington, DC, in June 2003. The Forum is focused on the development of improved cost-effective technologies for the separation and capture of carbon dioxide (CO<sub>2</sub>) for its transport and long-term safe storage. Its purpose is to make these technologies broadly available internationally, to identify and address wider issues relating to carbon capture and storage. CSLF, which includes 21 countries and the European Commission, has endorsed 19 international research projects, 13 of which involve the United States, and approved a technology roadmap to provide future directions for international cooperation.

**Group on Earth Observations (GEO)<sup>8</sup>:** Of particular importance is the need for a broad global observation system to support measurements of climate and other environmental variables. On July 31, 2003, the United States hosted 33 nations including many developing nations at the inaugural Earth Observation Summit, out of which came a commitment to establish GEO and an intergovernmental, comprehensive, coordinated, and sustained Global Earth Observation System of Systems (GEOSS). While the use and benefits of these observations are extensive, the climate applications of the data collected by the system include the use of the data to create better climate models, to improve our knowledge of the behavior of CO<sub>2</sub> and aerosols in the atmosphere, and to develop strategies for carbon sequestration. The United States was instrumental in drafting a ten-year implementation plan for a GEOSS, which was approved by nearly 60 nations and the European Commission at the 3rd Earth Observation Summit in Brussels in February 2005. The United States also released its contribution through the Strategic Plan for the U.S. Integrated Earth Observing System in April 2005 to help coordinate a wide range of environmental monitoring platforms, resources, and networks.<sup>9</sup>

**Generation IV International Forum (GIF)<sup>10</sup>:** GIF, formally established in July 2001, is a multilateral collaboration comprised of 10 countries and EURATOM (the European Atomic

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<sup>7</sup>See <http://www.cslforum.org/> and <http://www.fe.doe.gov/programs/sequestration/cslf/>. CSLF members are the United States, Australia, Brazil, Canada, China, Colombia, Denmark, European Commission, France, Germany, Greece, India, Italy, Japan, Mexico, Netherlands, Norway, Republic of Korea, Russian Federation, Saudi Arabia, South Africa, and the United Kingdom.

<sup>8</sup>GEO has 70 countries and the European Commission as Members, as well 46 as Participating Organizations in GEO (see <http://earthobservations.org>).

<sup>9</sup>See [http://usgeo.gov/docs/EOCStrategic\\_Plan.pdf](http://usgeo.gov/docs/EOCStrategic_Plan.pdf).

<sup>10</sup>See <http://www.ne.doe.gov/genIV/neGenIV2.html>. GIF member countries include the United States, Argentina, Brazil, Canada, France, Japan, Republic of Korea, South Africa, Switzerland, and the United Kingdom. In July 2006, the GIF voted unanimously to extend offers of membership to China and Russia. These two countries officially signed the GIF Charter in November 2006 at the Policy Group meeting in Paris and have one year to sign the Framework to become full members.

Energy Community) to fulfill the objective of the Generation IV Nuclear Energy Systems Initiative. GIF's goal is to develop the fourth generation of advanced, economical, safe, and proliferation-resistant nuclear systems that can be adopted commercially no later than 2030. Six technologies have been selected as the most promising candidates for future designs, some of which could be commercially ready in the 2020 to 2030 timeframe. GIF countries are jointly preparing a collaborative research program to develop and demonstrate the projects.

**Global Nuclear Energy Partnership (GNEP)<sup>11</sup>:** GNEP is a groundbreaking new effort that seeks to develop a worldwide consensus on enabling expanded use of economical, carbon-free nuclear energy to meet growing electricity demand. It has two major goals: (1) to expand carbon-free nuclear energy to meet growing electricity demand worldwide; and (2) to promote non-proliferation objectives through the leasing of nuclear fuel to countries which agree to forgo enrichment and reprocessing. A more fully closed fuel cycle model envisioned by this partnership requires development and deployment of technologies that enable recycling and consumption of long-lived radioactive waste. The GNEP initiative proposes international partnerships and significant cost-sharing to achieve these goals. On May 21, 2007, U.S. Department of Energy (DOE) and senior energy officials from China, France, Japan, and Russia issued a joint statement in support of GNEP.<sup>12</sup>

**International Partnership for the Hydrogen Economy (IPHE)<sup>13</sup>:** Recognizing the common interest in hydrogen research that many countries share, the United States called for an international hydrogen partnership in April 2003, and in November 2003, representatives from 16 governments gathered in Washington to launch IPHE. The Partnership's 16 countries and the European Commission (EC) are working together to advance research, development, and deployment of hydrogen and fuel-cell technologies, and develop common codes and standards for hydrogen use. The IPHE Steering Committee has officially recognized 23 collaborative projects to advance the Partnership's goals, and through the IPHE, the U.S. has assisted Brazil and China in developing hydrogen roadmaps.

**Methane to Markets Partnership<sup>14</sup>:** In November 2004, the United States and representatives from 13 countries launched the Methane to Markets Partnership, which is led on the U.S. side by EPA, with active participation from the U.S. Department of Agriculture (USDA), U.S. Agency for International Development (USAID), U.S. Trade and Development Agency (TDA), and the State Department. This Partnership, now with 20 member countries and over 550 public and private sector organizations, focuses on advancing cost-effective, near-term methane recovery and use as a clean energy source to enhance economic growth, promote energy security, improve the environment, and reduce greenhouse gases. The Partnership is targeting four major methane sources: landfills, underground coal mines, natural gas and oil systems, and agriculture (animal

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<sup>11</sup>See <http://www.gnep.energy.gov/>.

<sup>12</sup>See [http://www.energy.gov/media/GNEP\\_Joint\\_Statement.pdf](http://www.energy.gov/media/GNEP_Joint_Statement.pdf).

<sup>13</sup>See <http://www.iphe.net/>. IPHE Partner members are the United States, Australia, Brazil, Canada, China, European Commission, France, Germany, Iceland, India, Italy, Japan, New Zealand, Norway, Republic of Korea, Russian Federation, and the United Kingdom.

<sup>14</sup>See <http://www.epa.gov/methanetomarkets/> and <http://www.methanetomarkets.org/>. Methane to Markets member governments include the United States, Argentina, Australia, Brazil, Canada, China, Colombia, Ecuador, Germany, India, Italy, Japan, Mexico, Nigeria, Poland, Republic of Korea, Russian Federation, Ukraine, the United Kingdom, and Vietnam.



waste management). The Partnership has the potential to deliver by 2015 annual reductions in methane emissions of up to 50 MMTCE or recovery of 500 billion cubic feet of natural gas—equivalent to removing 33 million cars from the roadways for one year, planting 55 million acres of trees, or eliminating emissions from fifty 500 megawatt coal-fired power plants; or providing enough energy to heat approximately 7.2 million households for one year. These measurable results, if achieved, could lead to stabilized or even declining levels of global atmospheric concentrations of methane.

**Bilateral and Regional Partnerships<sup>15</sup>:** Since 2001, the United States has established 15 climate partnerships with key countries and regional organizations that, together with the United States, account for almost 80 percent of global greenhouse gas emissions. These partnerships encompass over 400 individual activities, and successful joint projects have been initiated in areas such as climate change research and science, climate observation systems, clean and advanced energy technologies, carbon capture, storage and sequestration, and policy approaches to reducing greenhouse gas emissions.

**Clean Energy Initiative<sup>16</sup>:** At the 2002 World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa, the United States launched a “Clean Energy Initiative,” whose mission is to bring together governments, international organizations, industry and civil society in partnerships to alleviate poverty and spur economic growth in the developing world by modernizing energy services. The Initiative consists of four market-oriented, performance-based partnerships:

- **Global Village Energy Partnership (GVEP)<sup>17</sup>** is an international partnership with over 700 public and private sector partners including the World Bank, the UN Development Programme, and leading energy companies. The U.S. implementation of GVEP, led by the USAID, is a ten-year initiative that seeks to increase access to modern energy services for those in developing countries in a manner that enhances economic and social development and reduces poverty. Through U.S. government support for GVEP and other energy access programs, 12.9 million people have received increased access to modern energy services since the 2002 Johannesburg Summit.
- **Partnership for Clean Indoor Air (PCIA)<sup>18</sup>:** Poor air quality caused by indoor and outdoor air pollution is related to approximately 1.6 million deaths annually and more than 3 billion people in the developing world face an increased environmental health risk due to breathing elevated levels of indoor smoke from home cooking and heating practices. The PCIA currently has over 140 public and private partners working together to increase the use of affordable, reliable, clean, efficient, and safe home cooking and heating practices to reduce the burden of disease. The partners are contributing their resources and expertise to improve health, livelihood and quality of life by reducing

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<sup>15</sup>Bilateral partners include Australia, Brazil, Canada, China, Central America (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama), European Union, Germany, India, Italy, Japan, Mexico, New Zealand, Republic of Korea, Russian Federation, and South Africa.

<sup>16</sup>See <http://www.sdp.gov/sdp/initiative/cei/28304.htm>.

<sup>17</sup>See <http://www.sdp.gov/sdp/initiative/cei/44949.htm>.

<sup>18</sup>See <http://www.sdp.gov/sdp/initiative/cei/29808.htm> and <http://www.pciaonline.org/>.

exposure to indoor air pollution, primarily among women and children, from household energy use. Ten U.S.-funded PCIA pilot projects have already resulted in: (1) more than 800,000 households educated about the health impacts of indoor air pollution from household energy use; (2) over 237,000 people with reduced exposure to indoor air pollution from cooking and heating; and (3) in the 58,000 homes in which improved cooking and heating have been adopted, over 440,000 people demonstrated an increased knowledge of indoor air pollution and mitigation solutions.

- **Partnership for Clean Fuels and Vehicles (PCFV)<sup>19</sup>:** The PCFV is working with developing countries to reduce vehicular air pollution by promoting the elimination of lead from gasoline, reducing sulfur from fuels, and introducing clean technologies into new and existing vehicle fleets. The U.S. Environmental Protection Agency (EPA) is a founding member and leading supporter of the PCFV, which has over 80 members from governments, industry, and civil society, representing more than 30 countries. Since the 2002 World Summit on Sustainable Development, PCFV has assisted in the elimination of lead in gasoline in the 49 countries of Sub-Saharan Africa, providing health benefits for over 733 million people. The Partnership's future targets include the global elimination of lead in gasoline by 2008, and the global reduction of sulfur in fuel to 50 parts per million or below globally.
- **Efficient Energy for Sustainable Development (EESD)<sup>20</sup>:** The EESD initiative aims to improve the productivity and efficiency of energy systems in developing countries, while reducing waste and pollution, saving money and improving reliability through energy-efficient and clean processes and technologies and production modernization. With more than 80 organizations committed to furthering the objectives of the EESD, this partnership has focused on project development, public leadership by example, building local commercial infrastructure for self-sustaining financing and developing sustainable integrated energy community systems.

**ITER<sup>21</sup>:** In January 2003, President Bush announced that the United States was joining the negotiations for the construction and operation of the international fusion experiment known as ITER.<sup>22</sup> If successful, this multi-billion-dollar research project, which is to be sited in Cadarache, France, would advance progress toward producing clean, renewable, commercially-available fusion energy by the middle of the century.

**Global Bioenergy Partnership (GBEP)<sup>23</sup>:** The 2005 G8 Summit at Gleneagles, Scotland, helped launch the GBEP, an Italian initiative to support wider, cost-effective biomass and

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<sup>19</sup>See <http://www.sdp.gov/sdp/initiative/cei/29809.htm> and <http://www.unep.org/pcfiv/>.

<sup>20</sup>See <http://www.sdp.gov/sdp/initiative/c17707.htm>.

<sup>21</sup> ITER member countries include the United States, China, European Union, Japan, Russian Federation, and the Republic of Korea.

<sup>22</sup>See <http://www.whitehouse.gov/news/releases/2003/01/20030130-18.html>.

<sup>23</sup>See <http://www.globalbioenergy.org/>. GBEP partners are Canada, China, France, Germany, Italy, Japan, Mexico, Russian Federation, the United Kingdom, and the United States of America, the International Energy Agency, UN Food and Agriculture Organization (FAO), UN Conference on Trade and Development, UN Department of Economic and Social Affairs, UN Development Programme, UN Environment Programme, UN Industrial Development Organization, UN Foundation, World Council for Renewable Energy, and the European Biomass

biofuels deployment, particularly in developing countries where biomass use is prevalent. GBEP partners include ten governments and nine international organizations and the United Nations Foundation.

**Renewable Energy and Energy Efficiency Partnership (REEEP)<sup>24</sup>:** REEEP seeks to accelerate and expand the global market for renewable energy and energy-efficiency technologies. To date, REEEP has funded over 50 projects in 44 countries that address market barriers to clean energy in the developing world and economies in transition. These projects provide new business models, policy recommendations, risk mitigation instruments, handbooks, and databases for advancing renewable energy and energy efficiency, in addition to delivering measurable greenhouse gas reductions. To further REEEP's agenda, the U.S. has been especially active in developing best practices for financing energy efficiency and renewable energy projects and an open network of affiliated organizations for distributed peer production of models and tools for energy smart community planning and development.

**Renewable Energy Policy Network for the 21st Century (REN21)<sup>25</sup>:** REN21 is a global policy network, which connects governments, international institutions and organizations, partnerships and initiatives, and other stakeholders on the political level with those "on the ground," and is aimed at providing a forum for international leadership on renewable energy. Its goal is to allow the rapid expansion of renewable energies in developing and industrial countries by bolstering policy development and decision-making on sub-national, national and international levels. To date, REN21 has produced several notable renewable energy analyses, the most noteworthy being its comprehensive "REN21 Global Status Report." The United States serves as one of the 13 national government entities on REN21's Steering Committee.

**Washington International Renewable Energy Conference 2008 (WIREC 2008):** On May 1, 2007, Secretary of State Condoleezza Rice announced that the State Department will host the WIREC 2008 in March 2008.<sup>26</sup> WIREC 2008 will be the third global ministerial level event on renewable energy and will be an important opportunity for world ministers to show their commitment to renewable energy. The ministers will discuss how renewable energy advances our shared goals for climate, sustainable development and energy security. WIREC 2008 goals include: (1) advancing energy security, climate change, air quality, and sustainable development goals, including agriculture and rural development; (2) demonstrating global leadership in renewable energy research, policy development, technology innovation, commercialization and deployment; and (3) fostering industry and government collaboration to help solve global energy challenges. The U.S. Department of State will host this event, assisted by other relevant Departments and agencies including the DOE, USDA, EPA, USAID, U.S. Department of Interior, and the U.S. Department of Commerce, and with the strong support of the American Council on Renewable Energy. The Department looks forward to cooperating with REN-21 and other relevant stakeholders.

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Industry Association. The FAO is hosting the GBEP Secretariat in Rome with the support of the Government of Italy.

<sup>24</sup>See <http://www.reeep.org/>.

<sup>25</sup>See <http://www.ren21.net/>.

<sup>26</sup>See <http://www.state.gov/r/pa/prs/ps/2007/may/84115.htm>.

Other examples of our engagement across the globe in advancing climate change science and addressing greenhouse gas emissions include our participation in the Intergovernmental Panel on Climate Change (IPCC), the Global Environment Facility (GEF) and activities under the Tropical Forest Conservation Act.

**Intergovernmental Panel on Climate Change (IPCC)<sup>27</sup>:** The IPCC was established by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) in 1988 to assess scientific, technical and socio-economic information relevant for the understanding of climate change, its potential impacts and options for adaptation and mitigation. It is open to all Members of the United Nations and of WMO. The United States has played an active role in the IPCC since its establishment and has provided more of its funding than any other nation. Dr. Susan Solomon, a senior scientist at the National Oceanic and Atmospheric Administration's Earth System Research Laboratory in Boulder, Colorado, serves as co-chair of the IPCC Working Group I, which is assessing the scientific basis of climate change. The United States hosts the Working Group's Technical Support Unit and hundreds of U.S. scientists are participating in the preparation of the IPCC's Fourth Assessment Report, which is due to be completed later this year.

**Global Environment Facility (GEF)<sup>28</sup>:** U.S. participation in the GEF, the financial mechanism under the UNFCCC, is another example of our engagement across the globe of addressing the threat of poverty and greenhouse gas emissions. Launched in 1991, the GEF provides funding (largely grants) for projects that provide global environmental benefits and support sustainable development. Since its inception, has approved over \$6.2 billion in grants, leveraging over \$20 billion in pledged co-financing to support more than 1,800 projects in over 155 countries, with about 33 percent of cumulative allocations supporting the reduction or avoidance of greenhouse gas emissions. For fiscal year 2008, the Administration is requesting \$80.0 million for the second of four payments toward a total U.S. contribution of \$320 million pledged during the fourth replenishment (GEF-4) and \$26.8 million to clear a portion of outstanding U.S. arrears.

**Tropical Forest Conservation Act (TFCA)<sup>29</sup>:** Many of our international activities also help to promote the biological sequestration of CO<sub>2</sub>, an important tool for addressing climate change that can have benefits both for conservation and climate change. The TFCA authorizes debt relief for low and middle-income countries with tropical forests to support conservation of endangered forests. Since 2000, the United States has concluded 12 TFCA agreements with 11 countries that will generate more than \$137 million for tropical forest conservation over time. Under the TFCA debt swap mechanism, a unique public/private partnership has evolved in which environmental NGOs such as The Nature Conservancy, World Wildlife Fund, and Conservation International have provide additional funds totaling approximately \$9.6 million for debt

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<sup>27</sup>See <http://www.ipcc.ch/>.

<sup>28</sup>U.S. Department of Treasury, Treasury International Programs, Justification for Appropriations, FY208 Budget Request, pp. 43-44, and 65 (see <http://www.treas.gov/offices/international-affairs/intl/fy2008/fy2008-budget.pdf>).

<sup>29</sup> U.S. Department of Treasury, Treasury International Programs, Justification for Appropriations, FY208 Budget Request, pp. 1, 23, 27, and 68 (see <http://www.treas.gov/offices/international-affairs/intl/fy2008/fy2008-budget.pdf>). TFCA agreements have been concluded with Bangladesh, Belize, Botswana, Colombia, El Salvador, Jamaica, Panama (two agreements), Paraguay, Peru and the Philippines. On July 3, 2007, in response to the Indonesian Government's request, the United States Government announced that Indonesia is also eligible to participate.

reduction, increasing the size of individual agreements, and contributing additional expertise in the management of resulting programs. Seven of the 12 TFCA agreements so far provide for debt swaps. In fiscal year 2008, the Administration has requested a total of \$20 million for TFCA.

### **3. Near-Term Policies and Measures to Slow the Growth of Greenhouse Gas Emissions**

In February 2002, President Bush set an ambitious national goal to reduce the greenhouse gas intensity—that is, emissions per unit of economic output—of the U.S. economy by 18 percent by 2012, a goal we are on target to meet. When announced, this commitment was estimated to achieve a reduction of 100 million additional metric tons carbon equivalent (MMTCE) emissions in 2012, with more than 500 MMTCE emissions in cumulative savings over the decade. To meet the President’s goal, the Administration is now implementing numerous programs—including voluntary partnerships, consumer information campaigns, incentives, and mandatory regulation—including the following:

- **Climate VISION (Voluntary Innovative Sector Initiatives: Opportunities Now)<sup>30</sup>:** In February 2003, President Bush announced that 12 major industrial sectors and The Business Roundtable had committed to work with four of his cabinet agencies (the Departments of Energy, Transportation, and Agriculture and the Environmental Protection Agency) to contribute to meeting his 18 percent intensity reduction goal by improving the energy efficiency or greenhouse gas emissions intensity of its sector. Today, business and trade associations representing 14 energy-intensive industry sectors that account for approximately 40 to 45 percent of total U.S. greenhouse gas emissions have issued letters of intent to meet specific targets. Participating sectors include: aluminum, automotive manufacturers, cement, chemical manufacturing, electric power, forest products, iron and steel, lime, magnesium, minerals, mining, oil and gas, railroads, and semiconductors.
- **Climate Leaders<sup>31</sup>:** Announced in February 2002, Climate Leaders is an EPA partnership encouraging individual companies to develop long-term, comprehensive climate change strategies. Under this program, partners set corporate-wide greenhouse gas reduction goals and inventory their emissions to measure progress. Climate Leaders has grown to include 135 partners whose revenues add up to almost 10 percent of the United States’ gross domestic product and whose emissions represent 8 percent of total U.S. greenhouse gas emissions. EPA estimates that GHG reductions by Climate Leaders Partners will prevent more than 11 MMCTE per year—equivalent to the annual emissions of more than 7 million cars.
- **SmartWay Transport Partnership<sup>32</sup>:** The SmartWay Transport Partnership is a public-private partnership that aims to reduce greenhouse gas emissions, fuel consumption, and criteria pollutants from ground freight transportation operations. Nearly 550 companies, including some of the nation’s largest shippers and carriers, have joined SmartWay. The

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<sup>30</sup>See <http://www.climatevision.gov/>.

<sup>31</sup>See <http://www.epa.gov/climateleaders/>.

<sup>32</sup>See <http://www.epa.gov/otaq/smartway/index.htm>.

efforts of these companies, which include the use of fuel efficient technologies and anti-idling devices, improved aerodynamics, and the next generation single wide tires, will reduce greenhouse gas emissions and fuel consumption. SmartWay is also working with truck stop owners to create “No Idling Zones” and install truck stop electrification systems, allowing tired drivers to take their required 10 hour rest period in comfort without having to operate their 450 horsepower engines. EPA estimates that by 2012, the companies that participate in the Partnership will cut CO<sub>2</sub> emissions by up to 66 million metric tons (18.0 MMTCE) per year, and nitrogen oxide emissions by up to 200,000 tons per year. It will save about \$9 billion in fuel costs and as much as 150 million barrels of oil per year—enough oil to heat 17 million houses for one year.

- **ENERGY STAR<sup>33</sup>**: In 1992, EPA introduced ENERGY STAR as a voluntary labeling program designed to identify and promote energy-efficient products. EPA has worked closely with its federal ENERGY STAR partner, DOE, to expand the program to new product categories which now total more than 50. Since the early 1990s, EPA has also promoted energy efficiency in commercial buildings. Through their ENERGY STAR partnerships, businesses and organizations of all sizes benefit from energy efficiency resources and guidance that help inform their decisions, enabling them to make cost-effective investments and reduce their energy use by as much as 30 percent. Central elements of EPA’s efforts include promoting energy management as a strategic business objective and promoting performance benchmarking of building energy use to help energy users target their investments.

In 2005, EPA announced a new national ENERGY STAR campaign in coordination with key professional associations and states. The ENERGY STAR Challenge is a call to action for building owners and operators to implement energy efficiency measures and reduce energy use by 10 percent or more. EPA estimates that if each building owner met this challenge, by 2015 Americans would reduce greenhouse gas emissions by more than 20 MMTCE—equivalent to the emissions from 15 million vehicles—while saving about \$10 billion. More than 30 states—along with many other organizations—are participating in the Challenge. They are benchmarking the energy use of their buildings, setting an energy savings target of 10 percent or more, and making the investments necessary to achieve this goal. All of these efforts are contributing to the growing results of the ENERGY STAR program. In 2006, Americans, with the help of ENERGY STAR, implemented energy efficiency measures that saved \$14 billion on their energy bills and prevented greenhouse gas emissions equivalent to those of 25 million vehicles—the number of cars in California and Illinois combined.

- **Green Power Partnership<sup>34</sup>**: Introduced in 2001 as part of the President’s National Energy Policy, the EPA’s Green Power Partnership is designed to increase the adoption of clean energy supply technologies across the United States. The Partnership assists organizations in demonstrating environmental leadership by choosing electricity products generated from renewable energy sources. It now has more than 750 partners committed to purchasing more than 10 billion kilowatt-hours of green power by the end of 2007,

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<sup>33</sup>See <http://www.energystar.gov/>.

<sup>34</sup>See <http://www.epa.gov/greenpower/>.

which would be enough electricity to power more than 620,000 average American homes annually. Achieving this goal will avoid the equivalent CO<sub>2</sub> emissions associated with more than 1.1 million passenger cars each year.

- **Combined Heat and Power (CHP) Partnership<sup>35</sup>**: Launched in 2001, EPA's Combined Heat and Power Partnership provides technical assistance to promote CHP projects along each step of the project development cycle in order to make investments in CHP more attractive. EPA also educates industry about the benefits of CHP, provides networking opportunities, and works with state governments to design air emissions standards and interconnection requirements that recognize the benefits of clean CHP. The Partnership now includes over 200 partners and through 2006 had assisted more than 250 projects representing 3,577 megawatts of new CHP capacity in a variety of sectors, including university campuses, heavy industry, and the hospitality industry, among others. On an annual basis, these projects will prevent the emissions of approximately 2.86 million metric tons CO<sub>2</sub> equivalent (0.78 MMTCE). This is equivalent to the annual emissions of more than 1.9 million cars, or the sequestration from more than 2.8 million acres of forest.
- **EPA State Clean Energy-Environment Partnership<sup>36</sup>**: In 2005, EPA launched the State Clean Energy-Environment Partnership Program, designed to help states adopt a variety of clean energy policies and deploy clean energy programs, including both energy efficiency and renewable energy initiatives. Through the State Clean Energy-Environment Partnership program, states use comprehensive guidance on successful, cost-effective policies and initiatives; measurement and evaluation tools for co-benefits of the policies; and peer exchange opportunities to explore and advance new policies. The partnership is working with 15 states which represent about 50 percent of the U.S. population and energy consumption.
- **EPA Domestic Methane Programs<sup>37</sup>**: The EPA works in collaboration with the private sector and state and local governments to implement several voluntary programs that promote profitable opportunities for reducing emissions of methane, a potent greenhouse gas and clean energy source, from landfills, coal mines, oil and gas systems, and agricultural operations. EPA's methane programs, including the Landfill Methane Outreach Program, Coalbed Methane Outreach Program, Natural Gas STAR, and AgSTAR, are designed to overcome a wide range of informational, technical, and institutional barriers to reducing emissions, while creating profitable methane recovery and use opportunities. The collective results of EPA's methane programs have been substantial. U.S methane emissions in 2005 were 11.5 percent below 1990 levels, in spite of economic growth over that time period. EPA expects that these programs will maintain emissions below 1990 levels in the future due to expanded industry participation and the continuing commitment of the participating companies to identify and implement cost-effective technologies and practices.

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<sup>35</sup>See <http://www.epa.gov/chp/>.

<sup>36</sup>See [www.epa.gov/cleanenergy/stateandlocal/](http://www.epa.gov/cleanenergy/stateandlocal/).

<sup>37</sup>See <http://www.epa.gov/methane/voluntary.html>.

- **Targeted Incentives for Greenhouse Gas Sequestration:** The USDA provides targeted incentives through its conservation programs to encourage wider use of land management and production practices that sequester carbon and reduce greenhouse gas emissions. USDA also provides financial and technical assistance to help farmers install renewable energy systems and make improvements in energy efficiency that help reduce greenhouse gas emissions. In 2007, USDA's Farm Bill reauthorization proposals would provide approximately \$4.4 billion in conservation activities on agricultural lands, and this level of funding represents an increase of about \$1.6 billion from 2002.<sup>38</sup>

Through the Conservation Reserve Program (CRP)<sup>39</sup>, USDA encourages farmers to remove environmentally sensitive lands from production, and also encourages installing vegetative covers that sequester carbon. CRP rules also give landowners the right to sell carbon credits generated from lands enrolled in the program. Also, under CRP, USDA has begun a program to afforest 500,000 acres of bottomland hardwoods. In the Environmental Quality Incentives Program (EQIP),<sup>40</sup> which encourages adoption of conservation practices on working lands, USDA is rewarding actions that provide greenhouse gas benefits. EQIP also provides financial and technical assistance to farmers for specific technologies and practices with greenhouse gas benefits—including installing anaerobic waste digesters and adopting management systems for residues, irrigation water, nutrients, crops, wetlands, and grazing land that mitigate greenhouse gas emissions. Finally, USDA provides Conservation Innovation Grants<sup>41</sup> to fund the application and demonstration of innovative technologies and approaches to conservation issues. Many of the awards made under this program have greenhouse gas benefits.

- **Improved Corporate Average Fuel Economy (CAFE) Standards:** On April 1, 2003, the Bush Administration finalized regulations requiring an increase in the fuel economy of light trucks for Model Years 2005 to 2007, the first such increase since 1996. The increase from 20.7 miles per gallon to 22.2 miles per gallon by 2007 more than doubles the increase in the standard that occurred between Model Years 1986 and 1996. The new increased fuel economy standards are expected to save approximately 3.5 billion gallons of gasoline over the lifetime of these trucks, with the corresponding avoidance of more than 30 million metric tons of CO<sub>2</sub> equivalent (8.2 MMTCE). The Administration also promulgated a new round of standards in March, 2006. The new standards cover model years 2008-2011 for light trucks and raise fuel economy to 24 miles per gallon for model year 2011. The rule is expected to save 10.7 billion gallons of gasoline over the lifetime of these vehicles, thereby reducing GHG emissions by 73 million metric tons of CO<sub>2</sub> equivalent (19.9 MMTCE).
- **Energy Policy Act of 2005 Tax Incentives to Reduce Greenhouse Gas Emissions:** The Energy Policy Act of 2005 includes over \$14.5 billion in tax incentives from 2005 to 2015. Many of these tax incentives and credits will have significant greenhouse gas

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<sup>38</sup>See Office of Management and Budget, *Fiscal Year 2008 Report to Congress on Federal Climate Change Expenditures*, May 2007, p. 25 at [http://www.whitehouse.gov/omb/legislative/fy08\\_climate\\_change.pdf](http://www.whitehouse.gov/omb/legislative/fy08_climate_change.pdf)

<sup>39</sup>See <http://www.nrcs.usda.gov/programs/crp/>.

<sup>40</sup>See <http://www.nrcs.usda.gov/PROGRAMS/EQIP/>.

<sup>41</sup>See <http://www.nrcs.usda.gov/programs/cig/>.



reduction benefits and are designed to spur investments in clean energy infrastructure, enhance domestic energy security, and promote deployment of conservation and energy efficiency technologies, renewable energy and alternative motor vehicles. The Act also provides authority to DOE to issue loan guarantees for a wide range of advanced technologies that avoid, reduce, or sequester greenhouse gas emissions. Further, it provides standby support coverage to indemnify against certain regulatory and litigation delays for the first six new nuclear plants. In addition, the Act establishes 15 new appliance efficiency mandates and a 7.5 billion gallon renewable fuel requirement by 2012.

- **Voluntary Greenhouse Gas Emission Registry (1605(b))<sup>42</sup>**: The Voluntary Reporting of Greenhouse Gases Program, authorized under Section 1605(b) of the Energy Policy Act of 1992, provides a means for utilities, industries, and other entities to establish a public record of their greenhouse gas emissions and the results of voluntary measures to reduce, avoid, or sequester greenhouse gas emissions. For the 2005 reporting year, 221 U.S. companies and other organizations reported that they had undertaken 2,379 projects and reduced or sequestered 294 million metric tons CO<sub>2</sub> equivalent (80.2 MMTCE) of direct reductions, 67 million metric tons CO<sub>2</sub> equivalent (18.3 MMTCE) of indirect reductions, 8 million metric tons CO<sub>2</sub> equivalent (2.2 MMTCE) of reductions from carbon sequestration, and 13 million metric tons CO<sub>2</sub> equivalent (3.5 MMTCE) of unspecified reductions. In April 2006, new guidelines were issued for the program. The new guidelines, which go into effect in 2007 for the 2006 reporting year, will strengthen the program by encouraging comprehensive, entity-wide reporting of emissions and emission reductions, including sequestration, and by increasing the measurement accuracy, reliability, and verifiability of reports.
- **American Competitiveness Initiative (ACI)<sup>43</sup>**: President Bush announced the American Competitiveness Initiative (ACI) in his 2006 State of the Union Address.<sup>44</sup> Its goals are to increase federal investments in research and development, strengthen education, and encourage entrepreneurship. Over 10 years, the Initiative commits \$50 billion to increase funding for research and \$86 billion for research and development tax incentives, some of which will be directed toward investments in clean energy technology research including solar, bioenergy, wind, hydropower, and hydrogen and fuel cell technology. This research will generate scientific and technological advances, ultimately helping to reduce greenhouse gas emissions both domestically and internationally.
- **Twenty in Ten Initiative<sup>45</sup>**: President Bush announced his Twenty in Ten Initiative in his 2007 State of the Union Address. The goal is to reduce the Nation's gasoline consumption by 20 percent in 10 years by: (1) increasing the supply of renewable and

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<sup>42</sup>See <http://www.eia.doe.gov/oiaf/1605/frmtvrgg.html> and <http://www.pi.energy.gov/enhancingGHGregistry/index.html>.

<sup>43</sup>See <http://www.whitehouse.gov/stateoftheunion/2006/aci/> and <http://www.ostp.gov/html/budget/2008/ACIUpdateStatus.pdf>.

<sup>44</sup>See <http://www.whitehouse.gov/stateoftheunion/2006/>.

<sup>45</sup>See <http://www.whitehouse.gov/stateoftheunion/2007/initiatives/energy.html>.

other alternative fuels by setting a mandatory fuels standard to require the equivalent of 35 billion gallons of renewable and other alternative fuels in 2017, nearly five times the 2012 Renewable Fuels Standard mandate established by the Energy Policy Act of 2005, to displace 15 percent of projected annual gasoline use in 2017; and (2) reforming and modernizing CAFE standards for cars, and extending the light truck rule to achieve a further 5 percent reduction. As a result of the recent Supreme Court decision in *Massachusetts v. EPA*, the President has directed EPA and the Departments of Transportation, Energy, and Agriculture to take the first steps toward regulations based on the 20 in 10 plan and to complete this regulatory process by the end of 2008.<sup>46</sup>

- **President's Budget<sup>47</sup>:** As noted earlier, from fiscal year 2001 to the end of fiscal year 2007, the U.S. Government will have devoted nearly \$37 billion to climate science and observations, technology, international assistance, and incentive programs. President Bush's fiscal year 2008 budget calls for nearly \$7.4 billion for climate-related activities, includes \$3.9 billion for the Climate Change Technology Program, over \$1.8 billion for the Climate Change Science Program, \$212 million for climate change-related international assistance programs, and nearly \$1.4 billion for energy tax provisions that may reduce greenhouse gas emissions.

We expect these efforts will contribute to meeting the President's 10-year goal to reduce the Nation's greenhouse gas intensity by 18 percent, which represents an average annual rate of improvement of about 1.96 percent. According to EPA data reported to the UNFCCC Secretariat, U.S. greenhouse gas intensity declined by 1.9 percent in 2003, by 2.4 percent in 2004, and by 2.4 percent in 2005. Put another way, from 2004 to 2005, the U.S. economy increased by 3.2 percent while greenhouse gas emissions increased by only 0.8 percent. Further, a May 21, 2007 preliminary "flash estimate" by the Energy Information Administration of energy-related CO<sub>2</sub> emissions—which account for more than four fifths of total greenhouse gas emissions—shows an absolute drop in these emissions of 1.3 percent and an improvement in CO<sub>2</sub> emissions intensity of 4.5 percent in 2006.<sup>48</sup> Although we are only a few years into the effort, the Nation is on track to meet the President's goal.

Progress in the U.S. since 2000 compares favorably with progress being made by other countries. *Trends in GHG [Greenhouse Gas] Emissions: 2000-2005* (Attachment 2) and *Trends in CO<sub>2</sub> Emissions: 2000-2005* (Attachment 3) show how GHG and CO<sub>2</sub> emission trends in the U.S. compare to other industrialized countries based on national data reported to the UNFCCC Secretariat. These data, which include countries that have obligations under the Kyoto Protocol, indicate that from 2000 to 2005 the major developed economies of the world are at about the same place in terms of actual greenhouse gas emissions. In some countries, emissions are increasing slightly, in others they are decreasing slightly. Contrary to some popular misconceptions, no country is yet able to decrease its emissions massively. Note that the U.S. has seen its actual greenhouse gas emissions increase by 1.6 percent—slightly more than that for the EU. In contrast, U.S. CO<sub>2</sub> emissions over the same period increased by 2.5 percent—less than the increase for the EU.

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<sup>46</sup>See <http://www.whitehouse.gov/news/releases/2007/05/20070514-2.html>.

<sup>47</sup>See [http://www.whitehouse.gov/omb/legislative/fy08\\_climate\\_change.pdf](http://www.whitehouse.gov/omb/legislative/fy08_climate_change.pdf).

<sup>48</sup>See <http://www.eia.doe.gov/neic/press/press284.html>.

#### **4. Advancing Climate Change Science**

The President established the U.S. Climate Change Science Program (CCSP)<sup>49</sup> in 2002 as part of a new ministerial-level management structure to oversee public investments in climate change science and technology. The CCSP incorporates the U.S. Global Change Research Program, established by the Global Change Research Act of 1990, and the Climate Change Research Initiative, established by the President in 2001. The Program coordinates and integrates scientific research on global change and climate change sponsored by 13 participating departments and agencies of the U.S. Government. It is responsible for facilitating the development of a strategic approach to federally supported climate research, integrated across the participating agencies. The President's budget requests \$1.836 billion for CCSP in fiscal year 2008.

Its principal aims are to investigate natural and human-induced changes in the Earth's global environmental system, monitor important climate parameters, predict global change, and provide a sound scientific basis for national and international decision-making. In 2003, CCSP released its strategic plan for guiding climate research. The plan is organized around five goals: (1) improving our knowledge of climate history and variability; (2) improving our ability to quantify factors that affect climate; (3) reducing uncertainty in climate projections; (4) improving our understanding of the sensitivity and adaptability of ecosystems and human systems to climate change; and (5) exploring options to manage risks. Since CCSP was created in 2002, the program has successfully integrated a wide range of the research and climate science priorities of the 13 CCSP agencies. CCSP has taken on some of the most challenging questions in climate science and is developing products to convey the most advanced state of knowledge to be used by federal, state and local decision makers, resource managers, the science community, the media, and the general public.

Twenty-one Synthesis and Assessment Products are identified in the Strategic Plan to be produced through 2008. The first of these, *Temperature Trends in the Lower Atmosphere: Steps for Understanding and Reconciling Differences*, was released in April 2006 and answers a set of key questions related to ongoing observations of the Earth's temperature. The reports, overall, are designed to address a full range of science questions and evaluate options for responses that are of the greatest relevance to decision and policy makers and planners. The products are intended to provide the best possible state of science information, developed by a diverse group of climate experts, for the decision community.

#### **5. Accelerating Climate Change Technology Development and Deployment**

While acting to slow the pace of greenhouse gas emissions intensity in the near term, the Administration is laying a strong technological foundation to develop realistic mitigation options to meet energy security, economic development, and climate change objectives.

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<sup>49</sup>See <http://www.climatechange.gov>.

The Bush Administration is moving ahead on advanced technology options that have the potential to substantially reduce, avoid, or sequester future greenhouse gas emissions. Over 80 percent of current global anthropogenic greenhouse gas emissions are energy related, and although projections vary considerably, a tripling of global energy demand by 2100 is not unimaginable.<sup>50</sup> Therefore, to provide the energy necessary for continued economic growth while we reduce greenhouse gas emissions, we will have to develop and deploy cost-effective technologies that alter the way we produce and use energy.

The Climate Change Technology Program (CCTP)<sup>51</sup> was created in 2002 (and subsequently authorized in the Energy Policy Act of 2005) to coordinate and prioritize the Federal Government's climate-related technology research, development, demonstration, and deployment (RDD&D) activities and to further the President's National Climate Change Technology Initiative (NCCTI). For fiscal year 2008, Administration has requested \$3.917 billion, about \$685 million of which is for the 12 discrete priority activities that make up the NCCTI.

CCTP's strategic vision has six complementary goals: (1) reducing emissions from energy use and infrastructure; (2) reducing emissions from energy supply; (3) capturing and sequestering CO<sub>2</sub>; (4) reducing emissions of non-CO<sub>2</sub> greenhouse gases; (5) measuring and monitoring emissions; and (6) bolstering the contributions of basic science. Ten Federal agencies support a broad portfolio of activities within this framework.

CCTP's principal aim is to accelerate the development and reduce the cost of new and advanced technologies that help to reduce, avoid, or sequester greenhouse gas emissions. It does this by providing strategic direction for the CCTP-related elements of the overall Federal technology portfolio. It also facilitates the coordinated planning, programming, budgeting, and implementation of the technology development and deployment aspects of U.S. climate change strategy.

The Administration continues strong investment in many strategic technology areas. As the President's National Energy Policy requires, the strategic technology efforts with respect to energy production and distribution focus on ensuring environmental soundness, as well as dependability and affordability.

**Advanced Energy Initiative (AEI)<sup>52</sup>:** In his 2006 State of the Union Address,<sup>53</sup> President Bush announced plans for the Advanced Energy Initiative (AEI), which will help reduce America's greenhouse gas emissions, pollution, and dependence on foreign sources of energy by accelerating advanced energy technologies. Examples of AEI investment include the Solar America Initiative, the Biomass/Biofuels Initiative, the Hydrogen Fuel Initiative, the FutureGen near zero-emissions coal-fired power plant; and Nuclear Power 2010. By investing in these and other advanced energy technologies, AEI will allow us to alter the way we power our homes and

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<sup>50</sup>See *U.S. Climate Change Technology Program Strategic Plan*, September 2006, p. 2 at <http://www.climatechange.gov/stratplan/final/CCTP-StratPlan-Sep-2006.pdf>.

<sup>51</sup>See <http://www.climatechange.gov/>.

<sup>52</sup>See [http://www.whitehouse.gov/stateoftheunion/2006/energy/energy\\_booklet.pdf](http://www.whitehouse.gov/stateoftheunion/2006/energy/energy_booklet.pdf)

<sup>53</sup>See <http://www.whitehouse.gov/stateoftheunion/2006/>.

automobiles within 20 years. The President's budget for fiscal year 2008 includes \$2.7 billion in the Department of Energy for the AEI, an increase of 22 percent above the 2007 enacted level.

**Energy Efficiency and Renewable Energy<sup>54</sup>:** Energy efficiency may have significant short-term potential to reduce energy use and greenhouse gas emissions. Renewable energy includes a range of different technologies that can play an important role in reducing greenhouse gas emissions. The United States invests significant resources in wind, solar photovoltaics, geothermal, and biomass technologies.

**Hydrogen<sup>55</sup>:** President Bush announced his Hydrogen Fuel Initiative in his 2003 State of the Union Address.<sup>56</sup> The goal is to work closely with the private sector to accelerate our transition to a hydrogen economy, on both the technology of hydrogen fuel cells and a fueling infrastructure. The President's Hydrogen Fuel Initiative and the FreedomCAR Partnership<sup>57</sup> which was launched in 2002 will provide \$1.7 billion through 2008 to develop hydrogen-powered fuel cells, hydrogen production and infrastructure technologies, and advanced automotive technologies, with the goal of commercializing fuel-cell vehicles by 2020.

**Carbon Sequestration:** Carbon capture and sequestration is a central element of CCTP's strategy because for the foreseeable future, fossil fuels will continue to be the world's most reliable and lowest-cost form of energy. A realistic approach is to find ways to capture and store the CO<sub>2</sub> produced when these fuels are used at centralized power generation and industrial applications. DOE's core Carbon Sequestration Program<sup>58</sup> emphasizes technologies that capture CO<sub>2</sub> from large point sources and store it in geologic formations. In 2003, DOE launched a nationwide network of seven Regional Carbon Sequestration Partnerships,<sup>59</sup> involving State agencies, universities, and the private sector, to determine the best approaches for sequestration in each geographic region represented and to examine regulatory and infrastructure needs. Today the partnerships include more than 300 organizations in 40 U.S. states, three Indian nations, and four Canadian provinces. The Regional Partnerships have progressed to a validation phase and are beginning an initial round of at least four large-scale field tests involving the injection of CO<sub>2</sub> into underground formations where it will be stored and monitored.

**Coal-Fired, Near-Zero-Emissions Power Generation:** The United States has vast reserves of coal, and about half of its electricity is generated from this fuel. Advanced coal-based power and fuels, therefore, is an area of special interest from both an energy security and climate change perspective. The Coal Research Initiative (CRI) consists of research, development, and demonstration of coal-related technologies that will improve coal's competitiveness in future energy supply markets. The Clean Coal Power Initiative (CCPI),<sup>60</sup> within the CRI, is a cost-shared program between the government and industry to demonstrate emerging technologies in coal-based power generation and to accelerate their commercialization. A major priority under

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<sup>54</sup>See <http://www.eere.energy.gov/>.

<sup>55</sup>See [www.hydrogen.gov](http://www.hydrogen.gov).

<sup>56</sup>See <http://www.whitehouse.gov/news/releases/2003/01/20030128-19.html>

<sup>57</sup>See <http://www.eere.energy.gov/vehiclesandfuels/>.

<sup>58</sup>See <http://www.fe.doe.gov/programs/sequestration/index.html>.

<sup>59</sup>See <http://www.fe.doe.gov/programs/sequestration/partnerships/>.

<sup>60</sup>See <http://www.fe.doe.gov/programs/powersystems/cleancoal/index.html>.

the CRI is the FutureGen project,<sup>61</sup> a 10-year, \$1 billion international government-industry cost-shared effort to design, build, and operate the world's first near-zero atmospheric emissions coal-fired power plant. This project, which cuts across many CCTP strategic areas, will incorporate the latest technologies in carbon sequestration, oxygen and hydrogen separation membranes, turbines, fuel cells, and coal-to-hydrogen gasification. Through the CRI, clean coal can remain part of a diverse, secure energy portfolio well into the future.

**Nuclear Fission:** Concerns over resource availability, energy security, and air quality as well as climate change suggest a larger role for nuclear power as an energy supply choice. While current generations of nuclear energy systems are adequate in many markets today, new construction of advanced light-water reactors in the near term and of even more advanced systems in the longer term can broaden opportunities for nuclear energy, both in industrialized and developing countries. The Nuclear Power 2010 program<sup>62</sup> is working with industry to demonstrate the Nuclear Regulatory Commission's new licensing process, and earlier this year the Nuclear Regulatory Commission approved the Early Site Permits for two new nuclear power plants.

The Generation IV Nuclear Energy Systems Initiative<sup>63</sup> is investigating the more advanced reactor and fuel cycle systems that represent a significant leap in economic performance, safety, and proliferation-resistance. One promising system being developed under the Nuclear Hydrogen Initiative<sup>64</sup> would pair very-high-temperature reactor technology with advanced hydrogen production capabilities that could produce both electricity and hydrogen on a scale to meet transportation needs. Complementing these programs is the Advanced Fuel Cycle Initiative<sup>65</sup>, which is developing advanced, proliferation resistant nuclear fuel technologies that can improve the fuel cycle, reduce costs, and increase the safety of handling nuclear wastes.

**Fusion<sup>66</sup>:** Fusion energy is a potential major new source of energy that, if successfully developed, could be used to produce electricity and possibly hydrogen. Fusion has features that make it an attractive option from both an environmental and safety perspective. However, the technical hurdles of fusion energy are very high, and with a commercialization objective of 2050, its impact would not be felt until the second half of the century, if at all. Nevertheless, the promise of fusion energy is simply too great to ignore.

Advances in these and other technology areas in the CCTP portfolio could put us on a path to ensuring access to clean, affordable energy supplies while dramatically reducing the greenhouse gas profile of our economy over the long term. Moreover, the deployment of cleaner energy technologies in developing economies like China and India can make a huge difference in altering the future global energy picture.

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<sup>61</sup>See <http://www.fe.doe.gov/programs/powersystems/futuregen/index.html>.

<sup>62</sup>See <http://www.ne.doe.gov/np2010/neNP2010a.html>.

<sup>63</sup>See <http://www.ne.doe.gov/genIV/neGenIV1.html>.

<sup>64</sup>See <http://www.ne.doe.gov/NHI/neNHI.html>.

<sup>65</sup>See <http://www.ne.doe.gov/AFCI/neAFCI.html>.

<sup>66</sup>See <http://www.energy.gov/sciencetech/fusion.htm>.

## **6. Concluding Remarks**

President Bush and his Administration are firmly committed to improving economic and energy security, alleviating poverty, improving human health, reducing harmful air pollution, and reducing the growth of greenhouse gas emissions levels.

The Administration has advanced policies that encourage research breakthroughs that lead to technological innovation, and take advantage of the power of markets to bring those technologies into widespread use. Our growth-oriented strategy encourages meaningful global participation through actions that will help ensure the continued economic growth and prosperity for our citizens and for citizens throughout the world. Economic growth enables investment in the technologies and practices we need to address these important issues.

President Bush has repeatedly highlighted the importance of international cooperation in developing an effective and efficient global response to the complex and long-term challenge of climate change. Under his leadership, the United States has brought together key nations to tackle jointly some tough energy and science challenges. Furthermore, on May 31, 2007, the President called upon the world's major economies to set a global goal on long-term greenhouse gas reductions. As part of this new international global strategy, the President proposed to convene a series of meetings with other countries—including rapidly growing economies like India and China—to establish a new framework for the post-2012 world. Each country would establish midterm national targets and programs that reflect their own current and future energy needs. The President believes that by encouraging and sharing cutting-edge technologies, major emitters will be able to meet realistic reduction goals.

Mr. Chairman and Members of the Subcommittee, I thank you for this opportunity to testify before this Subcommittee on behalf of the Department of State. I would be pleased to answer any questions you may have.





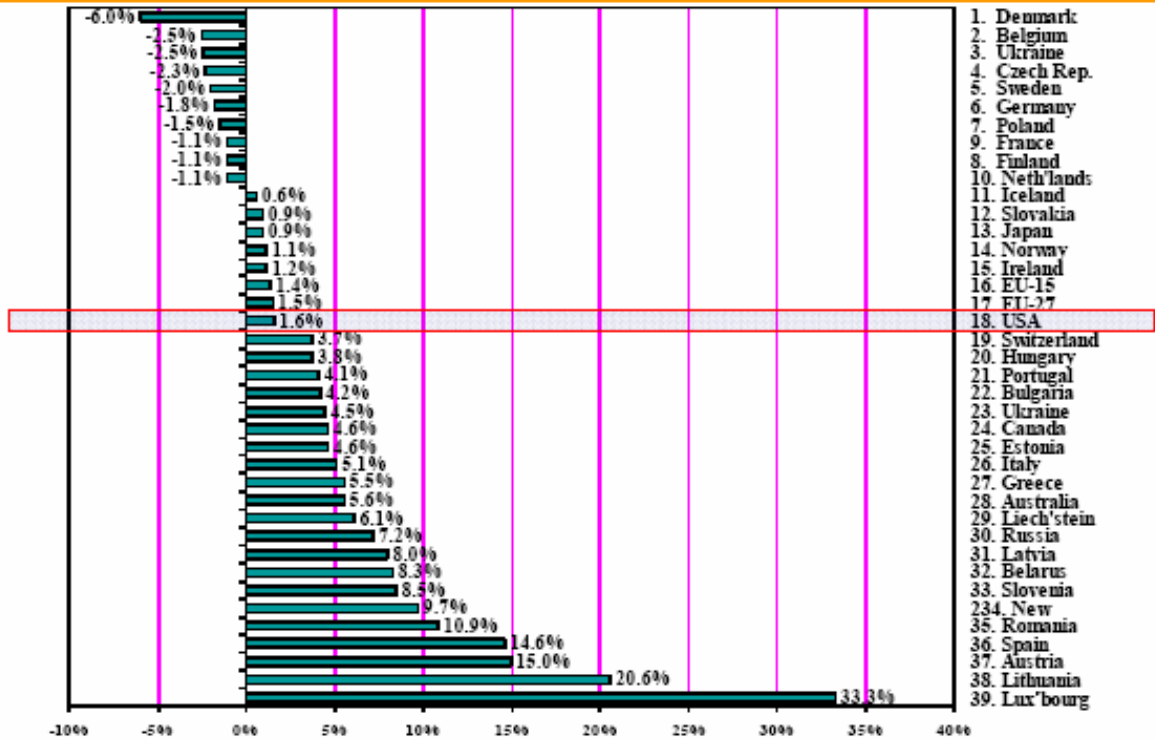
## Attachment 1: U.S.-Initiated Multilateral and Bilateral/Regional Partnerships—2 of 2

	APP	CSLF	GEO	GIF	GNEP	IPHE	M2M	Bilateral
Mail								
Mauritius								
Mexico								
Moldova								
Morocco								
Nepal								
Netherlands								
Nicaragua								
Nigeria								
New Zealand								
Niger								
Nigeria								
Norway								
Panama								
Paraguay								
Philippines								
Poland								
Portugal								
Romania								
Russian Federation								
Saudi Arabia								
Slovakia								
Slovenia								
South Africa								
Spain								
Sudan								
Sweden								
Switzerland								
Thailand								
Tunisia								
Uganda								
Ukraine								
UK								
Uzbekistan								
Vietnam								

APP: Asia-Pacific Partnership Clean Development and Climate  
 CSLF: Carbon Sequestration Leadership Forum  
 GEO: Group on Earth Observations  
 GIF: Generation IV International Forum  
 GNEP: Global Nuclear Energy Partnership  
 IPHE: International Partnership for a Hydrogen Economy  
 M2M: Methane to Markets Partnership

## Attachment 2

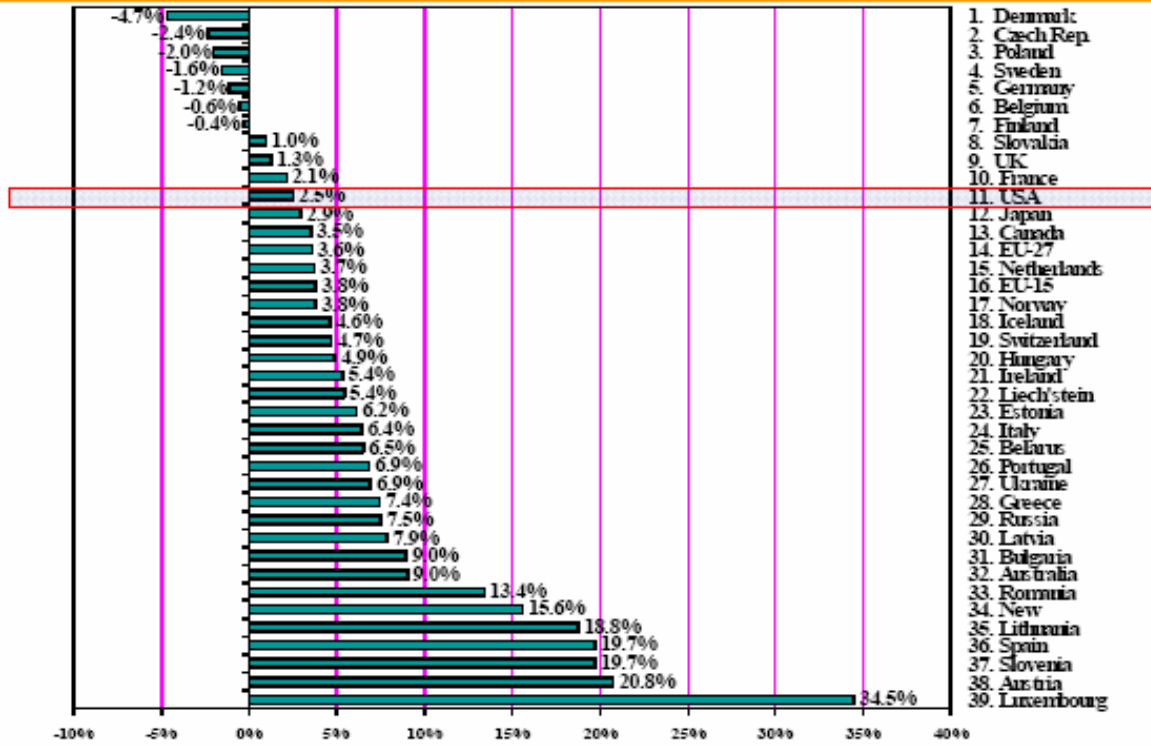
# Trends in GHG Emissions: 2000-2005



Source: 2007 National Inventory Reports and Common Reporting Formats at [http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/3929.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/3929.php).

### Attachment 3

# Trends in CO<sub>2</sub> Emissions: 2000-2005



Source: 2007 National Inventory Reports and Common Reporting Formats at [http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/3929.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/3929.php).