

ARMS 36

RECORD TYPE: FEDERAL (NOTES MAIL)

CREATOR: Phil Cooney ( CN=Phil Cooney/OU=CEQ/O=EOP [ CEQ ] )

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SUBJECT:: Final Interagency Review of the US National Communication to the UNFCCC

TO: Kameran L. Bailey ( CN=Kameran L. Bailey/OU=CEQ/O=EOP@EOP [ CEQ ] )  
READ: UNKNOWN

TEXT:

----- Forwarded by Phil Cooney/CEQ/EOP on 01/14/2002  
09:22 AM -----Breidenich.Clare@epamail.epa.gov  
01/14/2002 08:40:19 AM

Record Type: Record

To: See the distribution list at the bottom of this message

cc:

Subject: Final Interagency Review of the US National Communication to the UNFCCC

Hello All,

Attached for your reading pleasure is the close-to-final US National Communication to the Framework Convention on Climate Change entitled the US Climate Action Report. For those of you lucky enough not to have been drawn into this process to date, the U.S. Climate Action Report is the United States' third formal communication to the Framework Convention on Climate Change. Under the Climate Convention, Parties are required to submit periodic reports, or national communications, detailing their efforts to implement their commitments under the Convention. This report provides an update on key activities conducted by the U.S. since our last national communication.

After several months of interagency development, we are now at the stage of final interagency review. Please send any remaining edits, comments or outstanding issues to me by COB Friday, January 18th. If I do not receive comments by this time, I will assume that your agency has cleared the document. This date is required to enable the OMB review for the Executive Office of the President to occur on schedule. Following receipt of comments Reid Harvey and I will work with chapter leads and commentators to resolve any outstanding issues. The document will then be circulated to the Executive Office for their review.

Once you unzip the attached file, you will find folders for each chapter of the national communication containing the text for that chapter and any related graphics or appendices. Additionally, where substantive changes have been made since the previous draft, the author has included a note explaining these changes and the source/rationale for the change. A chapter list is included below. If possible, please identify your comments on each chapter by page number and paragraph, rather than inserting them directly into the texts.

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7/27/2004



Thank you for your time and attention to this, and please feel free to contact me if you have any questions.

Clare Breidenich  
 ph: 564 - 4029  
 fax: 565 - 6672/3

(See attached file: National Communication - Interagency draft.zip)

#### Chapters

1. Intro and overview
2. National circumstances
3. GHG inventory
4. Policies and Measures
5. GHG Projections
6. Vulnerability
7. Financial resources and Technology Cooperation
8. Research and observation
9. Education, training, and awareness

- National Communication - Interagency draft.zip

#### Message Sent

To: \_\_\_\_\_

"Richard.Bradley@hq.doe.gov" <Richard.Bradley@hq.doe.gov>  
 "William.Breed@hq.doe.gov" <William.Breed@hq.doe.gov>  
 "Lisa.Hanle@hq.doe.gov" <Lisa.Hanle@hq.doe.gov>  
 "Elmer.Holt@hq.doe.gov" <Elmer.Holt@hq.doe.gov>  
 "John.Millhone@ee.doe.gov" <John.Millhone@ee.doe.gov>  
 "Donald.Trilling@ost.dot.gov" <Donald.Trilling@ost.dot.gov>  
 Dieu.Martin@epamail.epa.gov  
 Buckley.Katherine@epamail.epa.gov  
 Schwengels.Paul@epamail.epa.gov  
 Fitzgerald.Jack@epamail.epa.gov  
 "Jim.Rubin@usdoj.gov" <Jim.Rubin@usdoj.gov>  
 "Linda.Moodie@noaa.gov" <Linda.Moodie@noaa.gov>  
 "Brent.Smith@noaa.gov" <Brent.Smith@noaa.gov>  
 "Ledbettg@osdgc.osd.mil" <Ledbettg@osdgc.osd.mil>  
 "Bruce.Harding@osd.mil" <Bruce.Harding@osd.mil>  
 Paul T. Anastas/OSTP/EOP@EOP  
 "Barrett, Ko" <KBarrett@usaid.gov>  
 "Lakich, Duane" <DLakich@usaid.gov>  
 "Gorsevski, Virginia" <VGorsevski@usaid.gov>  
 "Stokes, Carrie" <CStokes@usaid.gov>  
 "John.Horowitz@do.treas.gov" <John.Horowitz@do.treas.gov>  
 "Gretchen.Biery@do.treas.gov" <Gretchen.Biery@do.treas.gov>  
 "JHrubovcak@oce.usda.gov" <JHrubovcak@oce.usda.gov>

file://D:\SEARCH\_7\_28\_03\_CEQ\036\_f\_x9gs4003\_ceq.txt

7/27/2004



"'WHohenst@oce.usda.gov'" <WHohenst@oce.usda.gov>  
 Robert J. Tuccillo/OMB/EOP@EOP  
 "'IGoklany@ios.doi.gov'" <IGoklany@ios.doi.gov>  
 commcoll@aol.com  
 cstokes@usaid.gov  
 Coe.Edmund@epamail.epa.gov  
 howard.diamond@noaa.gov  
 Sullivan.Jamest@epamail.epa.gov  
 Samenow.Jason@epamail.epa.gov  
 jeff.dowd@hq.doe.gov  
 Thatcher.Jennifer@epamail.epa.gov  
 jhrubovcak@oce.usda.gov  
 john.conti@hq.doe.gov  
 Hogan.Kathleen@epamail.epa.gov  
 Adler.Ken@epamail.epa.gov  
 ledbettg@osdgc.osd.mil  
 lisa.hanle@hq.doe.gov  
 margot.anderson@hq.doe.gov  
 MaryBeth.Zimmerman@ee.doe.gov  
 mcintyrebd@state.gov  
 Gillenwater.Michael@epamail.epa.gov  
 mitchell.baer@hq.doe.gov  
 mmaccrac@usgcrp.gov  
 patel-weynandto@state.gov  
 Peter.Karpoff@hq.doe.gov  
 Phillip.Tseng@ee.doe.gov  
 Phil Cooney/CEQ/EOP@EOP  
 raymond.prince@hq.doe.gov  
 richard.ohlemacher@noaa.gov  
 rworrest@usgcrp.gov  
 Saile.Sharon@epamail.epa.gov  
 Laitner.Skip@epamail.epa.gov  
 talleyt@state.gov  
 todd.ramsden@ost.dot.gov  
 William A. Pizer/CEA/EOP@EOP  
 gornjm@t.state.gov  
 bobrainey@tva.gov  
 reifsnyderda@state.gov  
 watsonhl@state.gov  
 Grambsch.Anne@epamail.epa.gov  
 igoklany@erols.com  
 Harvey.Reid@epamail.epa.gov  
 Kruger.Joe@epamail.epa.gov

*ARMS 36 att ① is  
 a zip file of the entire  
 draft CAR represented here  
 by 1 page from each  
 chapter*

===== ATTACHMENT 1 =====  
 ATT CREATION TIME/DATE: 0 00:00:00.00

TEXT:  
 Unable to convert NSREOP0102:[ATTACH.D32]S  
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## Introduction and Overview

*"The Earth's well-being is ... an issue important to America - and it's an issue that should be important to every nation and in every part of the world. My Administration is committed to a leadership role on the issue of climate change. We recognize our responsibility and we will meet it, at home, in our hemisphere, and in the world."*

With this June 2001 pledge, President Bush reiterated the seriousness of climate change and ordered a Cabinet-level review of U.S. climate change policy. He requested working groups to develop innovative approaches that would: (1) be consistent with the goal of stabilizing greenhouse gas concentrations in the atmosphere; (2) be sufficiently flexible to allow for new findings; (3) support continued economic growth and prosperity; (4) provide market-based incentives; (5) incorporate technological advances; and (6) promote global participation.

The President's decision to take a deeper look at climate change policy arose from the recognition that the dialogue begun in 1992 at the Earth Summit in Rio de Janeiro lacked the requisite participatory breadth for a global response to climate change. At this historic summit, the United Nations Framework Convention on Climate Change was adopted, with the ultimate objective of providing a higher quality of life for future generations. Signatories pledged to:

“achieve ...stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a timeframe 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 Rio, ambitious plans were set in motion to address climate change. However, participation in constructing adaptive and mitigative measures for addressing climate change fell short of the breadth necessary to confront a problem that President Bush recently said has "the potential to impact every corner of the world." A global problem demands a truly participatory global response.

President Bush has pledged that the United States will act to address this global problem in a serious, sensible, and science-based manner, even though uncertainties may remain regarding the precise magnitude, timing, and regional patterns of climate change. But we need partners in this endeavor. All countries must actively work together to achieve the long-term goal of stabilizing greenhouse gas concentrations at a level that will prevent dangerous interference with the climate system.

For our part, the United States intends to continue to be a constructive and active Party to the United Nations Framework Convention on Climate Change. We are leading global research efforts to enhance the understanding of the science of climate change, as called for under the Framework Convention. We lead the world on climate science and in recent years have spent \$1.6 billion on federal research annually. Since 1990, the United States has provided over \$18 billion for climate system research -- more resources than any other country. In July 2001,



# 2001 U.S. Climate Action Report

## Chapter 2: National Circumstances

Although greenhouse gas emissions per unit of GDP have declined steadily during the 1990s due to economic growth, steady investments in new energy efficiency technologies, and an increase in the portion of GDP attributable to the non-manufacturing and less-energy-intensive manufacturing sectors, aggregate greenhouse gas emissions in the United States (U.S.) have continued to increase over the past few years. These increases are primarily as a result of economic growth and the accompanying rise in demand for energy.

The nation's energy needs and, hence, emissions of greenhouse gases are also heavily influenced by a number of other factors, including U.S. climate, geography, land use, resource base, and population growth. How the nation responds to the climate change issue is affected by the U.S. governmental, economic, and social structures, as well as the availability of technologies and wealth, which allows such technologies to be employed. All these factors also affect the nation's vulnerability to climate change and its ability to adapt to a changing natural environment.

Global climate change presents unique challenges and opportunities for the U.S. This chapter describes the national circumstances of the U.S. as they relate to climate change: historical developments, current conditions, and trends in those conditions.

### Climate Profile

The diverse U.S. climate zones, topography, and soils support many ecological communities and supply renewable resources for many human uses. The nature and distribution of these resources have played a critical role in the development of the U.S. economy, thus influencing the pattern of U.S. greenhouse gas emissions.

The U.S. has a wide variety of climate conditions representative of all the major regions of the world, except the ice cap. Average annual temperatures across different regions range from  $-1$  to  $+4^{\circ}\text{C}$  ( $30$  to  $40^{\circ}\text{F}$ ) in the North to  $21$  to  $27^{\circ}\text{C}$  ( $70$  to  $80^{\circ}\text{F}$ ) in the South, and have significant implications for energy demand across the country. In the North, heating needs dominate cooling needs, while the reverse is true in the South. The number of heating and cooling degree-days across regions in the U.S. is a measure of this climatic diversity, which is illustrated in Figure 2-1. Due to such a broad diversity in climatic conditions across the country, describing the effects of climate change on the U.S. as either positive or negative overall would be an oversimplification.

#### Figure 2-1 on Climatic Diversity in the Contiguous U.S.

The baseline rainfall levels also vary significantly by region, with most of the western states being arid. Although the eastern states only rarely experience severe drought, they are increasingly vulnerable to flooding and storm surges – particularly in increasingly densely populated coastal areas – as sea level rises. In recent years, although deaths due to tornadoes, floods, and tropical storms have declined substantially, insurance losses have increased. If extreme weather events of this kind were to occur with greater frequency or intensity --- which may or may not happen --- damages could be extensive.

### Geographic Profile

The U.S. has a total land area of nearly 920 million hectares (over 2 billion acres). Of this, the federal government owns a little over 20 percent. In Alaska, by contrast, the federal government owns over 65



### **Chapter 3: Greenhouse Gas Inventory**

Central to any study of climate change is the development of an emissions inventory that identifies and quantifies a country's primary anthropogenic<sup>1</sup> sources and sinks of greenhouse gases.

The *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-1999* (U.S. EPA 2001) adheres to both (1) a

comprehensive and detailed methodology for estimating sources and sinks of anthropogenic greenhouse gases, and (2) a

common and consistent mechanism that enables signatory countries to the United Nations Framework Convention on Climate Change (UNFCCC) to compare the relative contribution

of different emission sources and greenhouse gases to climate change. Moreover, systematically and consistently estimating

national and international emissions is a prerequisite for accounting for reductions and evaluating mitigation strategies.

In June 1992, the United States signed, and later ratified in

October, the UNFCCC. The objective of the UNFCCC is to achieve and stabilize greenhouse gas concentrations in the

atmosphere at a level that would prevent dangerous

anthropogenic interference with the climate system.<sup>2</sup> By signing

the Convention, Parties make commitments to develop,

periodically update, publish and make available and national

inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal

Protocol, using comparable methodologies . . . .<sup>3</sup> The United

States views the *Inventory of U.S. Greenhouse Gas Emissions and Sinks* as an opportunity to fulfill this commitment.

This chapter summarizes information on U.S. anthropogenic

greenhouse gas emission trends from 1990 through 1999. To

ensure that the U.S. emissions inventory is comparable to those of other UNFCCC signatory countries, the emission estimates

were calculated using methodologies consistent with those

recommended in the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (IPCC/UNEP/OECD/IEA 1997). For

most source categories, the IPCC default methodologies were



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# 2001 U.S. Climate Action Report

## Chapter 4. Policies and Measures

In the past decade the United States has made significant progress in reducing greenhouse gas emissions. In 2000 alone, U.S. climate change programs reduced greenhouse gas emissions by 242 million metric tons of carbon dioxide equivalent (MMTCO<sub>2</sub>) and have significantly helped the United States reduce carbon intensity, the amount of CO<sub>2</sub> emitted per unit of GDP (see Table 4-1; *Summary of Greenhouse Gas Reductions by Sector, 2000*).

While many policies and measures developed in the 1990's continue to achieve their goals, recent changes in the economy and in energy markets, coupled with the introduction of new science and technology, create a need to re-evaluate existing climate change programs to assure they effectively meet climate, economic, and other environmental goals in the future. Our experience with greenhouse gas emissions highlights the importance of creating climate policy within the context of the overall economy, changing energy markets, technology development and deployment, and R&D priorities. And because global warming is a long-term problem, solutions need to be long-lasting.

The United States government is currently pursuing a broad range of strategies to reduce net emissions of greenhouse gases (see Box 4-1 *U.S. Strategies in Key Sectors to Reduce Net Emissions of Greenhouse Gases*). In addition, businesses, state and local governments, and non-governmental organizations are addressing global climate change by improving the measurement and reporting of greenhouse gas emission reductions, through voluntary reductions, including preparation for emissions trading, and by actions to sequester carbon through tree planting and forest preservation, restoration, conversion of eroding cropland to permanent cover, and soil management.

### Box 4-1: U.S. Strategies in Key Sectors to Reduce Net Emissions of Greenhouse Gases

**Electricity.** Federal programs promote greenhouse gas reductions through the development of cleaner, more efficient technologies for electricity generation and transmission. The government also supports the development of renewable resources, such as solar energy, wind power, geothermal energy, hydropower, bio-energy, and hydrogen fuels.

**Transportation.** Federal programs promote development of fuel-efficient motor vehicles and trucks, research and development options for producing cleaner fuels, and implementation of programs to reduce the number of vehicle miles traveled.

**Industry.** Federal programs implement partnership programs with industry to reduce emissions of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases, promote energy efficiency, and advance the use of noncombustible and green building.

**Buildings.** Federal programs promote energy efficiency in the nation's commercial, residential, and government buildings, including incentives to financing financial institutions to work in the building of efficient products, efficient appliances, and efficient office buildings.

**Agriculture and Forestry.** The Federal government implements conservation programs that take the benefit of reducing agricultural emissions and implementing activities to make soil and off-farm energy, control greenhouse gas emissions.

**The Federal Government.** The Federal Government has taken steps to reduce greenhouse gas emissions from energy on Federal holdings and in the Federal transportation fleet.

### National Policy-Making Process

Shortly after taking office in January 2001, President Bush noted the seriousness of climate change and directed a Cabinet-level review of U.S. climate change policy and programs. The President established working groups and requested them to develop innovative approaches that would: (1) be consistent with the goal of stabilizing greenhouse gas concentrations in the atmosphere; (2) be sufficiently flexible to allow for new findings; (3) support continued economic growth and prosperity; (4) provide market-based incentives; (5) incorporate technological advances; and (6) promote global participation.

Members of the Cabinet, the Vice President, and senior White House staff, extensively reviewed and discussed climate science, existing technologies to reduce greenhouse gases and sequester carbon, current U.S. programs and policies, and innovative options for addressing concentrations of greenhouse gases in the atmosphere. They were assisted by a number of scientific, technical, and policy experts from the Federal government, national labs, universities, non-governmental organizations, and the private sector. To obtain the most recent information and a balanced view of the current state of climate change science, the cabinet group asked the National Academy of Sciences to issue a report addressing areas of scientific consensus and significant gaps in our climate change knowledge. (*Climate Change Science, An Analysis of Some Key Questions, National Academy Press, 2001*).

On June 11, 2001, the President issued the interim report of the Cabinet-level review (*Climate Change Review—Initial Report, Executive Office of the President, June 2001*). Based on the Academy Report and the cabinet's findings, President Bush directed the Department of Commerce, working with other federal agencies, to set priorities for additional investments in climate change research, to review such investments, and to maximize coordination among federal agencies to advance the science of climate change. The President is committed to fully funding all priority research areas that the review finds are underfunded or need to be accelerated relative to other research. Such areas could include the carbon cycle, climate modeling, and global water cycle.

The President further directed the Secretaries of Commerce and Energy, working with other federal agencies, to develop a National Climate Change Technology Initiative (NCCTI). The NCCTI, which is currently underway with a January 2002 deadline, will: (1) evaluate the current state of U.S. climate change technology R&D and make recommendations for improvements; (2) develop opportunities to enhance private-public partnerships in applied R&D to expedite innovative and cost-effective approaches to reduce greenhouse gas emissions and the buildup of greenhouse gas concentrations in the atmosphere; and (3) make recommendations for funding demonstration projects for cutting-edge technologies; (4) provide guidance on strengthening basic research at universities and national laboratories, including the development of the advanced mitigation technologies that offer the greatest promise for low-cost reductions of greenhouse gas emissions and global warming potential; (5) make recommendations to enhance coordination across Federal agencies, and among the Federal government, universities, and the private sector; and (6) make recommendations for developing improved technologies for measuring and monitoring gross and net greenhouse gas emissions.

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1 2001 U.S. Climate Action Report  
2 Chapter 5: Projections  
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5 **I. Introduction**  
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7 This chapter contains projections of greenhouse gas (GHG) emissions for the years 2005, 2010,  
8 2015, and 2020. The covered gases include carbon dioxide (CO<sub>2</sub>), methane, nitrous oxide,  
9 hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). The  
10 projections are taken from the published estimates of energy emissions prepared by the U.S.  
11 Energy Information Administration (EIA) (Annual Energy Outlook 2002, With Projections to  
12 2020), from the non-carbon dioxide emissions estimates of the Environmental Protection Agency  
13 (1999, 2001b,c,d) and from the carbon sequestration estimates of the U.S. Department of  
14 Agriculture (2000). For this report, emissions projections are converted to metric tons of carbon  
15 dioxide equivalents, in keeping with UNFCCC practice.  
16

17 The chapter provides estimates for national emissions under many of the implemented policies  
18 and measures (PAMs) for emission reductions through technology improvements and their  
19 dissemination, demand side efficiency gains of many specific types, more efficient regulatory  
20 procedures, and shifts to cleaner fuels. The anticipated expansion of the U.S. economy under the  
21 impetus of population and output growth at projected rates contributes to rising GHG emissions.  
22 These emissions are partially offset by reductions from ongoing efforts to reduce energy usage  
23 and from implemented policies and measures. Even with projected growth in absolute emissions  
24 there are near-term and continuing reductions in emissions per unit of GDP. In addition, the  
25 chapter describes policies contained in the National Energy Policy (NEP) (Report of the National  
26 Energy Policy Development Group, 2001) that have not yet been fully implemented and are not  
27 part of the projections.  
28

29 **II. The NEMS model and Policies Coverage**  
30

31 The AEO 2002 presents midterm forecasts of energy supply, demand, and prices through 2020  
32 based on results from EIA's National Energy Modeling System (NEMS). The NEMS is an  
33 integrated model that looks at all determinants of carbon emissions simultaneously, accounting  
34 for interaction effects, feedback effects, but in some cases under different assumptions about  
35 diffusion and adoption rates than have been used for the independent PAMs estimates of Chapter  
36 4. The NEMS uses a market-based approach that balances supply and demand with competition  
37 between fuels and sectors via prices. NEMS is a comprehensive, but simplified, representation of  
38 the energy economy. NEMS does not explicitly include each and every transaction, but rather  
39 measures aggregate impacts using empirically developed statistical proxies. The model does not  
40 replicate every energy transaction, but its strength is the consistency it brings in representing and  
41 accounting for the large number of concurrent, inter-related, and competing energy transactions,  
42 investment transactions, production decisions and consumption decisions and that occur in the  
43 national energy sector. The AEO 2002 projections are based on the assumption that the trend in



# 2001 U.S. Climate Action Report

## Chapter 6: Impacts and Adaptation

### Overview

In its report in June 2001, the Committee on the Science of Climate Change, which was convened by the National Research Council of the National Academy of Sciences, concluded that "[h]uman-induced warming and associated sea level rises are expected to continue through the 21<sup>st</sup> century" (NRC, 2001). At the same time they recognized that there remains considerable uncertainty in current understanding of how the climate varies naturally and will respond to projected, but uncertain, changes in the emissions of greenhouse gases and aerosols. They also noted that "[t]he impacts of these changes will be critically dependent on the magnitude of the warming and the rate with which it occurs" (NRC, 2001). To develop an initial understanding of the potential impacts of climate change for the US during the 21<sup>st</sup> century, the US Global Change Research Program (USGCRP) has sponsored a wide-ranging set of assessment activities since the submission of the Second National Communication in 1997. These National Assessment activities examined regional, sectoral and national components of the potential consequences to the environment and key societal activities in the event of changes in climate consistent with projections drawn from the Intergovernmental Panel on Climate Change (IPCC). Regional studies ranged from Alaska to the Southeast and from the Northeast to the Pacific Islands. Sectoral studies considered the potential influences of climate change on land cover, agriculture, forests, human health, water resources, and coastal areas and marine resources. A national overview drew together the findings to provide an integrated and comprehensive perspective.

These assessment studies recognized that accurate prediction of potential outcomes is not yet feasible as a result of the wide range of possible future levels of greenhouse gas and aerosol emissions, the range of possible climatic responses to changes in atmospheric concentration, and the range of possible environmental and societal responses. These assessments therefore evaluated the narrower question concerning the vulnerability of the US to a specified range of climate warming, focusing primarily on the potential consequences of climate scenarios that projected global average warming of about 2.5 to almost 4°C (about 4.5 to 7°F). While narrower than the full 1.4 to 5.8°C (2.5 to 10.4°F) range of estimates of future warming projected by the Intergovernmental Panel on Climate Change (IPCC, 2001a), the selection of the climate scenarios that were considered did recognize that it is important to treat a range of conditions about the mid-range predicted warming, which was given by the NRC as 3°C (5.4°F). Similarly, assumption of a mid-range value of sea level rise of about 48 cm (19 inches) was near the middle of the IPCC range of 9 to 88 cm (about 4 to 35 inches) given by the IPCC (2001a). Because of these ranges and their uncertainties, and because of uncertainties in understanding potential impacts, it is important to note that this chapter cannot present absolute probabilities of what is likely to occur, but instead can only present judgments about the relative plausibility of outcomes in the event that the projected changes in climate that are being considered do occur.

To the extent that actual emissions of greenhouse gases turn out to be lower than projected or that climate change is at the lower end of the projected ranges and climate variability about the mean varies little from the past, the projected impacts of climate change are likely to be reduced or delayed and continued adaptation and technological development are likely to be able to reduce the projected impacts and costs of climate change within the US. Even in this event, however, the long lifetimes of greenhouse gases already in the atmosphere and the momentum of the climate system are projected to cause climate to continue to change for more than a century. Conversely, if the changes in climate are toward the upper



## U.S. Climate Action Report 2000

## Chapter 7

## Financial Resources and Transfer of Technology

Introduction

The United States is committed to working with developing countries and countries with economies in transition to address the challenge of global climate change. The U.S. Government has participated actively in the Technology Transfer Consultative Process under the United Nations Framework Convention on Climate Change (FCCC), and has implemented international programs and activities to facilitate the transfer of environmentally sound technologies and practices that reduce growth in greenhouse gas emissions and address vulnerability to climate impacts.

Under Article 4.5 of the FCCC, Annex I Parties such as the United States committed to "take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties." The Parties defined technology transfer at COP-2 in Geneva as follows:

The term "transfer of technology" encompasses practices and processes such as "soft" technologies, for example, capacity building, information networks, training and research; as well as "hard" technologies, for example, equipment to control, reduce or prevent anthropogenic emissions of greenhouse gases in energy, transport, forestry, agriculture, and industry sectors, to enhance removal by sinks, and to facilitate adaptation.

This chapter summarizes efforts undertaken by the United States in support of its strong commitment to technology cooperation and transfer. It also reports financial flows from the U.S. to different international bodies, foreign governments, and institutions that support climate-friendly activities.

Between 1997 and 2000 the U.S. Government provided \$285.8 million to the Global Environment Facility, much of which has been dedicated to climate-related activities. It provided nearly \$4.5 billion to multilateral institutions and programs, such as the United Nations and affiliated multilateral banks, to address climate change and related international development priorities. Direct, bilateral, and regional assistance provided by the U.S., including commercial sales, amounted to a total of \$1.3 billion in 1997, \$1.4 billion in 1998, \$3.2 billion<sup>1</sup> in 1999, and \$1.8 billion in 2000 for activities addressing emissions mitigation, adaptation, and cross-cutting activities. Over this same period, the US leveraged indirect financing in the amount of \$954.3 million through government-based financial instruments.

Some important highlights of U.S. assistance described in this chapter include:

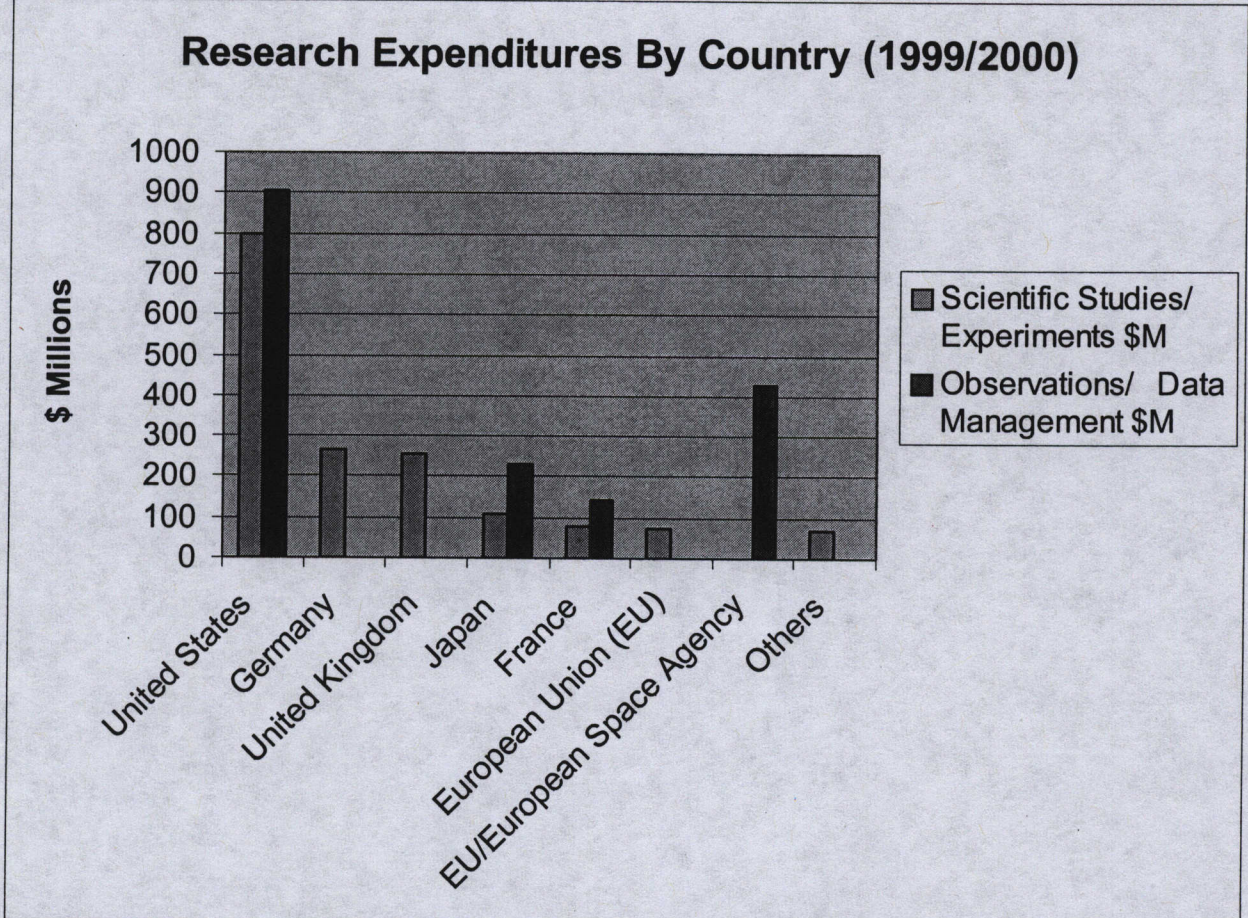
- The U.S. Initiative on Joint Implementation (USIJI), accepting 52 pioneering projects in 26 countries, with substantial cooperation and financial support from U.S. and host country governments, non-governmental organizations (NGOs), and the private sector;
- The U.S. Country Studies Program (CSP), which has helped 56 countries meet their FCCC obligations to report climate trends;
- The USAID Climate Change Initiative, a program to leverage \$1 billion-worth of development



# 2001 U.S. Climate Action Report

## Chapter 8: Research and Systematic Observation

The United States leads the world in research on climate and other global environmental changes, spending approximately US\$1.6 billion annually on its focused climate change research programs. Insights from U.S. researchers fuel scientific advances worldwide. The United States is responsible for roughly half of the world's focused climate change research expenditures, three times more than the next largest contributor and larger than the contributions of the Japan and all 15 nations of the European Union combined.



Source: International Group of Funding Agencies (IGFA), "National Updates" (2000)

Most of the U.S. federal government's research on climate and other global environmental changes is coordinated through the United States Global Change Research Program (USGCRP). Definition of the program began in the late 1980s and Congress codified the program in the Global Change Research Act of 1990. The USGCRP was created as a high-priority, national research program to:

- address key uncertainties about changes in the Earth's global environment, both natural and human-induced;