

Originally Processed With FOIA(s):
2005-0336-F

FOIA Number:
2005-0336-F

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Record Group/Collection: George H.W. Bush Presidential Records
Collection/Office of Origin: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: Global Climate Change Files - Conferences/Meetings

OA/ID Number: 62059
Folder ID Number: 62059-007

Folder Title:
Global Change: Working Group Meeting - 12/19/89

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THE WHITE HOUSE
WASHINGTON

Global Change Working Group

December 19, 1989

AGENDA

1. President's 1990 International Environmental Initiative
2. Private Sector Task Force Report
3. Legal Precedents Task Force Report
4. Schedule for briefings by private sector
5. Other business

CLOSE HOLD

December 19, 1989

ISSUE

A review and approval of the elements of the President's 1990 International Environmental Initiative is needed.

BACKGROUND

The Cabinet-level DPC Working Group on Global Change was first convened in October to formulate and coordinate United States policy on global change and other selected environmental issues. As part of its charge, the Working Group was assigned the task of developing options to fulfill the President's campaign pledge to host an international conference on the environment and to seize the initiative on the international environmental agenda. The group developed a consensus recommendation for a series of three events to be held during 1990, which was presented to the President prior to his departure for Malta. After his discussions with Chairman Gorbachev, the President chose to announce two of the initiatives identified by the Working Group - an international meeting at the White House next spring of government science, economics and environmental officials and an offer for the U.S. to host the first negotiating session for an international convention on climate change, to be held after the Second World Climate Conference.

RECOMMENDATIONS

The President's 1990 International Environmental Initiative (the Initiative) has been developed within the context of the U.S. commitment to the Intergovernmental Panel on Climate Change (IPCC) as the principal international forum to address the issue of global change and the Administration accomplishments on global change (set forth in greater detail at Appendix A). The Initiative represents a coherent omnibus process by which the President can address the full range of international environmental issues.

A representative task force convened by Dr. Bromley has refined the initial consensus proposals of the Working Group, as outlined below, for further review and final approval.

- I. **Address to the February 1990 IPCC Plenary Session in Washington.**

The President will address the opening plenary session of the IPCC in February 1990. His speech will explain U.S. policy on global change and promote the enormous investment the U.S. has made both in understanding the scientific elements of global change and in beginning to take

mitigating actions. It represents a clear opportunity for the U.S. to assert its leadership role on global change and reinforce its commitment to the IPCC as the principal forum for addressing this problem.

II. White House Science/Economics Conference.

The general purpose of the conference, which will be co-chaired by Drs. Bromley and Boskin, will be to advance the quality and understanding of the analytical tools and data necessary to confront international environmental problems, primarily global change. Analytical techniques and research will be shared in an effort to develop a common integrated approach that takes a balanced account of scientific, economic and environmental factors. National delegations attending the conference will be comprised of the senior scientist, the senior economist and the senior environmentalist in the governments of the participants.

A. Timing of Conference

In his announcement of the conference, the President simply specified that the meeting would be held next spring. To avoid conflicts with the various events already on the international and domestic environmental calendar (Appendix B), and to take advantage of the worldwide attention on environmental issues that will accompany the 20th anniversary of Earth Day (April 22), the conference should be held during the week following Earth Day.

B. Participants at Conference

The conference was announced by the President as international in nature, without any elaboration as to invitees. It bears emphasis from the outset that it will be a scientific and economic conference focusing on problems of the environment. To that end, it will be important to bring together nations and organizations that have internationally recognized expertise and have developed data relevant to the required analysis of the available tools for confronting the scientific and economic aspects of the global change issue. It will also be critical to include nations or representatives of nations that, because of their land masses, large populations or heavy future energy needs, will be compelled to deal with environmental problems having a global magnitude and impact. Finally, in order to avoid duplicating the work of the IPCC, a smaller number of participants is more appropriate.

Based on these criteria, the following nations and organizations will be invited: the G-7 nations, China, Brazil, India, the Soviet Union, Nigeria (or another African nation), Mexico, the European Community, the Organization for Economic Cooperation and Development (OECD) and the Council for Mutual Economic Assistance (Comecon).

C. Objectives of Conference

The objectives of the conference are both general and specific.

General Objectives

- o To identify gaps and uncertainties in the science and economics relating to environmental matters, particularly the scientific gaps that impact economic analysis and vice versa, and establish priorities for compiling specific data and information to resolve these uncertainties.
- o To review actual products and deliverables, including real data and models, in both science and economics.
- o To raise the level of attention given by the major scientific, economic and environmental policymakers to the problems posed by global change and to foster a more inclusive dialogue leading up to negotiations of a framework convention.
- o To seek agreement on common assumptions (e.g., CO2 equivalencies) that can be used when making decisions regarding responses to global change.
- o To provide background and guidance for the Second World Climate Conference, to be held in Geneva in November, and other international meetings.
- o To increase general awareness of the scientific and economic parameters that impact national and international environmental policy-making.
- o To ensure that it supports the work of the IPCC.

Specific Objectives

Science. The scientists will focus on the largest gaps and uncertainties in the current understanding of global warming and greenhouse phenomena and on such topics as:

- o The range of predicted temperature changes under the current major world climate models, the uncertainties in

these predictions and the primary sources of these uncertainties. This will yield greater awareness of these uncertainties among the participant economists and environmentalists.

- o The relative sensitivity of the climate models to their input parameters and the most critical new experimental measurements required to address existing gaps and uncertainties.
- o The expected global impacts from different global warming scenarios in such areas as agricultural and oceanic productivity, sea level change, vegetation patterns and migration, changes in storm patterns and severity and occurrence of droughts.
- o The availability and inter-comparability of national data bases pertinent to environmental research.
- o Improvement of current climate and weather models to begin to address regional changes on a larger time horizon than is currently possible.
- o The possibility of developing an integrated, coherent international plan of research to build upon the expertise, experience and relevant data available in the participant countries. This plan could form a structure within which the contributions of all interested nations could be used with greatest effectiveness and form the basis for coordinated resource allocation and implementation.
- o The development of greater awareness on the part of participating scientists of the economic aspects of global change and the relative economic value of improved understanding and predictive capability in different areas.

Economics. The participation of economists should enhance four useful information flows:

- o Best-practice methods of estimating the costs of action, including adaptation and mitigation costs, and the methods and costs of transferring or aiding in the development of technology. Discussions of this topic should serve to advance the state of the art, to lead to a greater standardization of methods and to enhance awareness of robust results.
- o Greater familiarity on the part of economists with the actual state of scientific knowledge, increasing their ability to render it more faithfully in their modeling.

- o Greater awareness on the part of environmentalists of the benefits to both the economy and the environment of adopting flexible, market-based response strategies.

- o Greater interaction among economists with scientists working in areas where resolution of scientific uncertainties will have the greatest impact on economic modelling and costs.

Environment. With a great deal of work on environmental effects, particularly in the area of global change, already underway, the primary objective with respect to the environmental officials at the conference will be to engage them in a dialogue on scientific and economic issues, thus providing them with greater familiarity with and sensitivity to those factors as they consider environmental policies and response options.

D. Structure

Pre-Conference Actions

- o To give greater visibility to the conference, the invitations to government officials will come directly from the President.

- o To refine the scope of the conference, a questionnaire requesting specific information (e.g., major uncertainties in the areas, major gaps in existing information, new developments, activities in both science and technology relating to the environment in the recipient country, and identification of the proposed national delegation members) will be sent to all participants.

- o Assignments for the preparation of a limited number of short papers will be made, with the authors presenting these papers at the conference.

- o To finalize the presentations and preparations for the conference, a pre-meeting of a limited number of scientists and economists will be held.

Conference Activities

- o To ensure full discussion of the issues, the conference will extend over three days.

- o The conference will begin with an opening plenary session, a key portion of which will be keynote addresses pulling together the current state of the science and economics on global change and highlighting the uncertainties and gaps in current knowledge. The responses

to the questionnaires circulated prior to the conference will serve as the basis for these keynote addresses and the initial discussions. The participants will then break into mixed groups of science, economic and environmental officials, ensuring that representatives of each of the disciplines is sufficiently exposed to the others. At the end of each day's proceedings, all participants will reconvene in plenary session for summary discussions.

o Presidential involvement will be a key factor in heightening the visibility of the conference. The President should address the opening plenary session, participate in the concluding session, and host the conference reception and banquet at the State Department.

III. President's International Conference on the Conservation of Nature

In the fall of 1990 (probably October), the President will host an international conference, in the tradition of Teddy Roosevelt, focused on the twin goals of the conservation of nature and sustainable development. The announcement of this conference will be a major event, made in a separate speech prior to the State of the Union/will be one of the highlights of the State of the Union message. The announcement should declare that the U.S. is leading the world on the atmosphere and global change through participation in the IPCC and its offer to host the initial framework convention negotiating session; what remains for international consideration is conservation and the preservation of nature, natural resources and biodiversity. The President could at the same time announce that the U.S. will also host negotiations for an international convention on biological diversity, planned to begin in 1991, which the United Nations Environment Programme has offered to the U.S.

The emphasis of the conference will be on energy conservation, biological diversity, reforestation, wetlands and oceans, highlighting as models successful domestic programs, international ventures (e.g., the pending U.S.-Brazil agreement for assistance in the management of Brazilian national forests, banning of ivory imports and debt-for nature swaps), and future initiatives (e.g., the reforestation initiative to be announced in the State of the Union and the America the Beautiful initiative to be included in the 1991 budget). Attendance will include local as well as national officials and representatives from non-governmental environmental groups. It will focus attention on issues the general public traditionally thinks of when discussing the environment and could include a significant "thousand points of light" volunteer component. The

conference will also provide developing nations and environmental groups, which have special expertise and have achieved notable successes in these areas, an opportunity for more active participation.

This approach is consistent with a coherent overall approach to international environmental issues. It supports established forums for issues relating to the atmosphere, such as the IPCC and the ongoing Montreal Protocol negotiations, separating these volatile issues from the event with which the President will be most closely identified.

In preparation for the conference, the White House will host a series of open meetings with "constituents" of the conference -- conservationists, environmentalists, business, economists, scientists and international organizations -- to build support, consensus and media attention. These meetings, or selected parts of the meetings, which would be open, could be attended by the President to show his commitment and desire to lead the public with his agenda.

To ensure that both this conference and the Science/Economics Conference are successful, a full-time White House coordinator will be designated through detail or otherwise; another professional to coordinate the logistics of the conferences is also required, either through detail or contract.

U.S. ACTIONS ALREADY UNDERWAY TO CUT GREENHOUSE GASES

In the first 11 months of the Administration, the U.S. has already taken several actions unilaterally which, in addition to being meritorious in their own right, will reduce CO₂ emissions and address the global warming problem.

- o The Administration's proposed Clean Air Act, by significantly reducing pollution from coal-fired power plants and placing a permanent cap on emissions, creates a powerful incentive for conservation. This alone could reduce CO₂ emission by several percent a year. No other nation has adopted such an ambitious clean air strategy.
- o The Administration's action to increase required corporate average fuel efficiency (cafe) standards to 27.5 miles per gallon will cut CO₂ emissions from automobiles.
- o The Administration has not only called for a worldwide phase out of CFC's by the year 2000, but the Administration's February 9th budget included a unilateral fee on CFC emissions, which will sharply reduce U.S. production and emissions of CFC's. The CFC fee has been adopted by the Congress. Scientists believe that CFC's are responsible for 20% of the greenhouse problem. In addition, the Administration has proposed expanding the Montreal Protocol to cover additional greenhouse gases which deplete the ozone layer.
- o The Administration has sharply increased funding for global climate change research. The fiscal year 1990 budget contains almost \$1/2 billion for this effort, a 21% increase over 1989 levels. We expect another increase in the FY 1991 budget, with the amount to be determined. No other nation is spending nearly this much on research.
- o The Administration is now developing a national energy strategy, to be released in April. One of the clear goals in developing the strategy is to increase energy conservation.
- o Clean coal technologies proposed by the President in his Clean Air proposal and federally funded will reduce the production of greenhouse gases which are a by product of current, older technologies. Current technologies can add approximately 3% to greenhouse gas production per plant.
- o The President's proposed alternative fuels program for automobiles has the potential to reduce CO₂ emissions from automobiles.

- o The Administration is preparing a major reforestation initiative for possible inclusion in the State of the Union address. The initiative will include funding of approximately \$175 million annually under a program called "America the Beautiful." This program will encompass a national partnership for tree planting. We hope to work hand in hand with state and local governments, foundations, corporations, and private citizens to reforest urban and rural areas, on public and private lands.

1990 ENVIRONMENTAL CALENDARMajor International and Domestic Events

[Events, dates and locations in brackets are tentative]

January 25	State of the Union
February 5-8	Plenary Session of Intergovernmental Panel on Climate Change (IPCC) - Washington
[February 6]	[Presidential Address to IPCC]
[April]	White House Science/Economics Conference - [Washington]
April 22	Earth Day 1990 (20th anniversary; events are scheduled throughout country several days before and after April 22)
April 29-May 2	Interparliamentary Conference on the Global Environment - Washington (sponsored by U.S. Senate)
May 8-16	Conference on Action for our Future - Bergen (ministerial-level meeting; follow-up to conference on sustainable development previously held under auspices of Prime Minister Brundtland)
[June 18-30]	Summit Meeting between Bush and Gorbachev
June 20-29	Second Meeting of Parties to Montreal Protocol - London (negotiating session to expand Montreal Protocol under Vienna Convention to ozone-depleting substances other than CFCs)
July 9-11	G-7 Economic Summit - Houston
August	Final IPCC Plenary Session - Stockholm
[September-October]	[President's International Conference on Conservation of Nature]
November 12-13	Second World Climate Conference - Geneva
[December 1990-January 1991]	First Negotiating Session for Framework Convention on Global Change

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measurements required to address existing gaps and uncertainties.

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o Greater awareness on the part of environmentalists of the benefits to both the economy and the environment of adopting flexible, market-based response strategies.

o Greater interaction among economists with scientists working in areas where resolution of scientific uncertainties will have the greatest impact on economic modelling and costs.

Environment. The sole objective with respect to the environmental officials at the conference will be to expose them to the scientific and economic issues discussed, thus providing them with greater familiarity with and sensitivity to those factors when considering environmental issues. This is consistent with the need for this conference to have a clear purpose and defined products distinct from policy decisions considered in other forums.

D. Structure

Pre-Conference Actions

- ERIC/Stanford econometric models.*
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TASK FORCE ON THE PRIVATE SECTOR
OF THE
WORKING GROUP ON GLOBAL CHANGE

PRELIMINARY REPORT
of the
TASK FORCE

EXECUTIVE SUMMARY

December 1989

TASK FORCE ON THE PRIVATE SECTOR
of the
WORKING GROUP ON GLOBAL CHANGE

TASK FORCE MEMBERS

Mr. Lou Gallegos, CHAIRMAN
Assistant Secretary (Policy, Budget and Administration)
US Department of the Interior

Dr. Charles Hess
Assistant Secretary (Education and Science)
US Department of Agriculture

Dr. John Knauss
Under Secretary for Oceans and Atmosphere (NOAA)
US Department of Commerce

Mr. Jeffrey N. Shane
Assistant Secretary (Policy and International Affairs)
US Department of Transportation

Ms. Linda Stuntz
Deputy Under Secretary
US Department of Energy

TASK FORCE PROCESS

1. Developed a "script" for guiding consultations
2. Identified and consulted with private sector organizations
 - active in global climate change research, policy studies
 - potentially affected by global climate change, governmental policies
3. Addressed Global Climate Coalition, an industry association
4. Interviewed President of the Climate Institute
5. Accepted written materials from organizations

TASK FORCE REPORT

1. Highlights
2. General Findings, by sector
3. One-page Summaries, by organization, of:
 - materials received
 - comments received
 - experts recommended
4. Appendix: Written Submissions, filed by sector
5. Issues to be Addressed by the Working Group

HIGHLIGHTS

SCIENTIFIC RESEARCH

1. Electric Power Research Institute (EPRI): Research Framework on Predictions and Impacts; in-house research inventory
2. Gas Research Institute: methane release study
3. National Council on Air and Stream Improvement (NCASI): forest products industry research program
4. Battelle/PNL: CO2 inventory for Japanese utility

ECONOMIC RESEARCH

1. Global Climate Coalition: major economic study due April 1990
2. Manne-Richels: CO2 Emission Limits: An Economic Cost Analysis for the USA; building a 5-region model
3. The Aluminum Association: competitive effect of CO2 fees

OTHER NOTEWORTHY ACTIVITIES

1. Environmental advocates: policy studies
2. American Forestry Association: Global ReLeaf campaign
3. U.S. Chamber of Commerce and GCC: industry initiatives
4. Water users: "Conserv 90" conference on water supply and climate change (August 1990)

PROPOSALS FOR FEDERAL COOPERATION

1. Chemical Manufacturers Association: CES counterpart for economics
2. Global Climate Coalition: incentives to private action; opportunities for coordinated study
3. EPRI: computational capability initiative (George Marshall Institute study)

UNDER-REPRESENTED IN SURVEY

1. Agriculture chemicals: proprietary research?
2. Farmers and related industries: e.g. food processing
3. Financial community/capital markets: except insurance
4. Construction and Engineering
5. Communications: except information processing

GENERAL FINDINGS, BY SECTOR

1. BUSINESS AND INDUSTRY
2. TRANSPORTATION
3. ENERGY SUPPLIERS
 - coal, oil, gas
 - utilities including nuclear
 - alternative energy sources
4. AGRICULTURE, FORESTRY, WATER RESOURCES
5. PROFESSIONAL SOCIETIES
6. ENVIRONMENTAL ADVOCATES
7. RESEARCH INSTITUTES AND UNIVERSITIES
8. OTHER INTEREST GROUPS

GENERAL FINDINGS, BY SECTOR

BUSINESS AND INDUSTRY

IN GENERAL: This sector is represented by the National Association of Manufacturers, the Chamber of Commerce, and a variety of industrial trade associations, including major energy users. For purposes of focusing their efforts on the "snowballing" issue of global climate change, they have created the Global Climate Coalition, an association of the most affected industries, with 56 members as of November 16, 1989. Consequently, there is a high degree of awareness of this issue and of government activities, and a well developed network for information exchange.

Scientific and technical research to date is highly variable, and industry specific, usually relating to the expansion of the supply of the goods and services each provides (including control technologies); economic analysis deals with the adverse competitive effects of increases in energy costs. However, these groups are jointly sponsoring a major economic study on the impacts of the various strategies under consideration for controlling emissions of greenhouse gases, which will not be available until April 1990, at best.

They are concerned about the absence of government-wide economic analysis of the impacts of global climate policies and potential agreements, but want to play a constructive role in carrying out coordinated efforts in cooperation with the federal government to determine what these impacts will be. Some expressed an interest in determining what reasonable actions can be adopted in the nearer term that could contribute to mitigating climate change. Others are interested in actively participating in scientific research programs. But there is uncertainty about the proper forum in which to pursue cooperative efforts.

TRANSPORTATION

IN GENERAL: This sector includes associations in the air, rail and trucking transportation industry, motor vehicle equipment (including emission controls) suppliers, and gas transmission. The extent of awareness and interest in global climate change issues varies widely; however, there do seem to be some industries that are taking an active role through consultants, or in house staff who are developing expertise, and with whom consultations may be productive.

ENERGY SUPPLIERS

IN GENERAL: This group included the conventional fossil fuel energy suppliers (coal, gas, oil), the electric utilities including nuclear, and the alternative energy sources, such as wood, biomass, cogeneration, solar, wind. As a group, this sector is fully aware of the public policy issues involved. But most research to date focuses on increasing the supply of the "premium" fuels of the individual industry as a response to global climate change; less has been done on reducing emissions of greenhouse gases, although some work is being planned (e.g., methane releases from natural gas operations.) Scientific and economic research sponsored by this sector is mainly performed by the research institutes supported by the industry, such as the Electric Power Research Institute and the Gas Research Institute, which are nevertheless quite independent in the way they operate. EPRI stands out in terms of being prepared to take a major role in global climate research and analysis.

AGRICULTURE, FORESTRY AND WATER RESOURCES

IN GENERAL: This sector includes land and water resource interests likely to be impacted by global climate change and governmental policies and proposed response strategies; moreover, activities undertaken by this sector may play an important role in mitigating the emissions of greenhouse gases.

The absence of evidence of activity in the agriculture sector (e.g. agriculture chemical industry, soap/detergent manufacturers) may reflect a reluctance to share research and other information that may be proprietary and potentially patentable. The Farm Bureau is not active; however, the Cattlemen are preparing papers based on university research on the topics of methane emissions, rainforest destruction, imports of foreign beef, associated with the cattle industry.

The National Council for Air and Stream Improvement, a 30-year old research arm of the pulp and paper industry, conducts research on tightening all air emissions from pulping, integrated pulp and paper operations and converters, including energy conservation.

Several water research organizations and trade associations (water delivery, equipment suppliers) have mobilized to address the issue of global change in the context of water supply, particularly in the West. Four of these are sponsoring a conference on water supply and global change in August 1990.

PROFESSIONAL SOCIETIES

IN GENERAL: Includes associations of professional scientists and engineers who are capable and interested in performing research on global climate, and whose work is often funded by the federal government through universities, non-profit institutions and for-profit research and consulting firms. In general, these organizations believe that our understanding of the science is inadequate and that more research is needed. Identified experts among their membership to consult.

ENVIRONMENTAL ADVOCATES

IN GENERAL: Global climate change is at the top of the environmental community's agenda, as expressed in the "Blueprint for the Environment" presented to the President soon after taking office. Increasingly, environmental organizations are conducting studies and other activities under the rubric of "global climate change"; however, many of these activities are natural extensions of the traditional issues that were the specialty of a group all along. Nevertheless, some of the most active organizations devote substantial personnel resources to this issue, including creating new programs dedicated to global climate studies, and have developed in-house expertise in support of their public policy advocacy on a variety of global climate change issues. Several have noted the absence of sufficient information concerning the feasibility and relative economic costs of actions that could be taken to deal with the effects of climate changes, and the importance of better defining the effects themselves and the associated technical issues. The experts they recommend tend to be with other environmental groups.

RESEARCH INSTITUTES AND UNIVERSITIES

IN GENERAL: This group includes institutions that conduct scientific research and economic and policy analysis relevant to global climate change, or want to. The research institutes may perform contract research for the private sector and often for the government (e.g., Battelle/PNL); through government and foundation grants (e.g., Resources for the Future); or are supported by the particular industry they serve with considerable independence in selection of projects and methods (e.g., Electric Power Research Institute). The leadership of several institutes take strong advocacy positions on global climate issues (e.g., Woods Hole Research Institute). Universities are strongly oriented to government sponsored research in this field. Many names have been offered as experts from this group, some with highly specialized expertise, others with a broad understanding

of the natural systems and the relevant research programs and proposed responses.

OTHER INTEREST GROUPS

IN GENERAL: Includes organizations that have come into existence contemporaneously with the public development of the global climate change issue, or have recently started programs to keep up with developments on this issue. Their principal activities are policy studies, networking, sponsoring conferences, and publishing information, such as newsletters, on relevant research, programs and government activities dealing with global climate. Their officers are highly knowledgeable about the issue and well connected to the known experts in and out of government. Some receive government support. They tend to favor and even advocate activist governmental policies to address the issue.

ISSUES TO BE ADDRESSED BY THE WORKING GROUP

1. Should the task force continue to identify and contact interested private sector organizations?
2. How should the Working Group follow through with private sector organizations consulted to date?
3. Should the Working Group meet with any of the organizations? If so, which ones? Should the task force make recommendations on topics/experts?
4. Should guidance be given to Federal Departments and Agencies with respect to private sector organizations interested in global climate change? For example: to establish a follow-through mechanism? to undertake jointly funded projects? to encourage coordinated efforts? to create incentives to voluntary private response strategies?
5. Other issues with respect to the private sector?

LIST OF ENTRIES

Business and Industry	1
Allied Chemical Fluorocarbon Program Panel	1
The Aluminum Association, Inc.	2
Chemical Manufacturers Association	3
Global Climate Coalition	4
National Association of Home Builders Research Center	5
National Association of Manufacturers	6
The Travelers Insurance Company	7
United States Chamber of Commerce	8
Transportation	9
Aerospace Industries Association of America	9
Air Transportation Association of America	10
American Trucking Association	11
Association of American Railroads	12
Hazardous Materials Advisory Council	13
Manufacturers of Emissions Controls Association	14
Motor Equipment Manufacturers Association	15
Compressed Gas Association	16
Interstate Natural Gas Association of America	17
National LP-Gas Association	18
Energy Suppliers	19
American Petroleum Institute	19
Edison Electric Institute	20
Independent Oil and Gas Association	21
National Coal Association	22
National Ocean Industries Association	23
National Solid Waste Management Association	24
National Wood Energy Association	25
Passive Solar Industries Council	26
U.S. Council for Energy Awareness	27
Agriculture, Forestry, Water Resources	28
American Forest Council	28
American Forestry Association	29
Industrial Crops International Corporation	30
National Cattlemen's Association	31
National Council on Air and Stream Improvement	32
National Fisheries Institute	33
National Well Water Association	34
Professional Societies	35
American Geophysical Union	35
American Meteorological Society	36
American Society of Civil Engineers	37
American Society of Heating, Refrigerating, and Air- Conditioning Engineers, Inc.	38
Marine Technology Society	39

Environmental Advocates	40
Environmental Defense Fund	40
National Wildlife Federation	41
Natural Resources Defense Council, Inc.	42
The Oceanography Society	43
World Resources Institute	44
World Wildlife Fund	45
Research Institutes and Universities	46
Atmospheric and Environmental Research	46
Battelle-Pacific Northwest Laboratory	47
Electric Power Research Institute	48
Gas Research Institute	49
Joint Oceanographic Institutions	50
National Association of State Universities and Land Grant Colleges	51
Resources for the Future	52
University Corporation for Atmospheric Research (UCAR) .	53
Other Interest Groups	54
The Alliance to Save Energy	54
Climate Institute	55
United States Energy Association	56
Woods Hole Research Center	57

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DOOR

Davies

Kearney

Bloch

Grady

Card

Gray

Bracken

Knauss

Schmitz

Jones

Duggan

McBee

Myers

Maynard

Watkins

Bromley

Deland

Truly

Porter

Demarest

Schmalensee

Danzansky

Bernthal

Stewart

The Roosevelt Room

Dawson

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December 18, 1989

*Hand delivered
at 3:30
messengers
12/18*

MEMORANDUM FOR THE GLOBAL CHANGE WORKING GROUP

FROM: D. ALLAN BROMLEY
Chairman

SUBJECT: Meeting of the Global Change Working Group

There will be a meeting of the Global Change Working Group on Tuesday, December 18, 1989 from 11:00 to 12:30 PM in the Roosevelt Room for principals only. The issues to be discussed include 1) the President's 1990 International Environmental Initiative, 2) Reports from the private Sector Task Force and the Legal Precedents Task Force, and 3) a schedule for briefings by private sector interests.

Attached is a paper on legal instruments and a draft concept paper on international legal measures. A paper on the President's 1990 International Environmental Initiative will be available for review by Working Group members at 10:45 AM in the Roosevelt Room.

Please be advised that this is a close hold document. Please refrain from making additional copies. Call Dean at 456-6722 if you are able to attend.



U.S. Department of Justice
Land and Natural Resources Division

Office of the Assistant Attorney General

Washington, D.C. 20530

December 18, 1989

MEMORANDUM

TO: Hon. D. Allan Bromley
Assistant to the President
for Science and Technology
Chairman, Domestic Policy Council Working Group
on Global Change

Members of the Domestic Policy Council
Working Group on Global Change

FROM: Richard B. Stewart *RS*
Assistant Attorney General

SUBJECT: International Approaches to Global Climate Change

In an effort to develop a new approach to possible international agreement on global climate change, representatives of the Environmental Protection Agency, the State Department, and the Justice Department have met with each other and with the Counsel to the President. This memorandum transmits to you the materials produced by those meetings, and identifies certain issues to which the DPC Working Group may need to give special attention.

Timetable

In the first week of February 1990, the United States will host a meeting of the Response Strategies Working Group ("RSWG") of the Intergovernmental Panel on Climate Change ("IPCC"), followed by a plenary meeting of the IPCC. At its February meeting, the RSWG will consider additional submissions to its October, 1989 Report. Such submissions must be made by a deadline of January 1, 1990.

Follow-up actions in the coming months include further deliberation by the RSWG and the full IPCC over the spring and summer, the President's spring conference on the science and economics aspects of global environmental change, the IPCC conference in the autumn, possible related activities by the United Nations Environment Programme ("UNEP"), and the international conference on a "framework convention" on climate change to be hosted in Washington, D.C. in the fall of 1990. These meetings and others are listed in the last attachment to the memorandum dated December 14, 1989, described below.

Materials Attached

Attached please find the following materials:

- Memorandum from Richard B. Stewart to C. Boyden Gray, dated December 14, 1989, describing and analyzing the proposed new approaches for international agreement.
(Tab 1)

Related to this memorandum are the following attachments:

- Comments to be proposed for inclusion in the RSWG Report. The deadline for adding such comments is January 1, 1990.
(Tab 2)
- "Concept Paper" briefly summarizing the proposed approaches for international agreement, to be submitted for inclusion in the RSWG Report, also by January 1, 1990.
(Tab 3)
- List of significant meetings and conferences in the coming months.
(Tab 4)

- Memorandum from Richard B. Stewart to C. Boyden Gray, dated December 18, 1989, outlining the next steps that should be taken to develop the proposed approaches.
(Tab 5)

Issues for DPC Working Group Consideration

We respectfully suggest that the DPC Working Group on Global Change consider the proposed approaches contained in the above documents, and the discussion of the strategic questions, advantages and drawbacks related to our approaches contained in those documents. It should be noted that the impacts on the

United States of international adoption of the proposed approaches have not yet been analyzed in detail, and no quantitative predictions of such effects are yet available. Our recommendations are therefore tempered by the need for further research.

In particular, we recommend special attention to the following concerns:

1. Should the United States favor the traditional approach to environmental regulation when addressing potential global climate change, involving a framework convention followed by successive protocols each directing nations to limit their emissions of a separate specific pollutant? That approach has been employed, with some variations, by the Vienna Convention and the Montreal Protocol on Substances Depleting the Ozone Layer, and was proposed by other nations for dealing with global climate change at the Noordwijk Ministerial Conference on Atmospheric Pollution and Climate Change.

Or should the United States actively promote a "comprehensive" approach to collective treatment of all greenhouse gases, their sources and sinks, in which each nation must meet a national performance-based target, but is left to choose its mix of domestic policies to meet that target? This approach is described in the attached materials, and it is the one we recommend.

2. Assuming the United States Government adopts the approach we recommend, should the proposed approach outlined be presented to the RSWG and/or the IPCC as the official United States position, or should it be put forward more tentatively, as an issue for consideration by the RSWG and/or the IPCC?

3. Should the "international trading" approach, as described in the above materials, be proposed as an integral part of the United States submission, firmly linked to the "comprehensive" approach, or should it be treated as an important and useful idea which may nevertheless be deferred for further consideration? This question is discussed more fully in the memorandum dated December 14, 1989, listed above, particularly at pp. 3-4.

TAB 1



U.S. Department of Justice
Land and Natural Resources Division

Office of the Assistant Attorney General

Washington, D.C. 20530

December 14, 1989

MEMORANDUM

TO: C. Boyden Gray, Esq.
Counsel to the President

FROM: Richard B. Stewart *RS*
Assistant Attorney General

SUBJECT: International Approaches to Global Climate Change

As requested at the December 6, 1989 meeting in your office, an informal group of representatives of EPA, Justice and State have developed materials to promote discussion and adoption of a comprehensive, performance-based approach in international agreements dealing with global climate change. This memorandum is submitted to transmit these materials to you, and to highlight some of the issues raised by such an approach.

SUMMARY

Under a comprehensive, performance-based approach, all greenhouses gases, sources and sinks are addressed together. Each international legal instrument produced -- whether convention or protocol -- deals, to the maximum extent possible, with the entire array of gases, their sources and sinks.¹ This approach employs the concept of a "global warming potential index" to compare gases, their sources and sinks along a standardized spectrum, and the concept of "net emissions" to adopt performance targets that would not be limited to any one gas or source or sink, but would permit attainment of the target through policies aimed at all scientifically understood

¹As explained below, limitations in data and scientific understanding may preclude use of a truly comprehensive approach, incorporating all sources and sinks, at the outset.

greenhouse causal factors. Such net emissions performance targets would be set, at least initially, for each nation, and would leave to each nation the choice of internal policies desired to attain the target. Thus, using the "global warming potential index," each nation could devise a set of policies that would reduce "net emissions," through restriction of sources or expansion of sinks or both.

Such an approach would provide maximum flexibility for developing diverse, innovative, cost-effective measures for dealing with global warming. It would encourage, but not require, internal use by participating nations of emissions reduction or contract credits and trading programs, on the model of the Administration's Clean Air Act proposal for acid rain.

In addition, international trades² (on a bilateral, regional or multilateral basis) could be authorized as a method for attaining national net emissions targets in order to achieve further environmental and economic benefits from the use of the trading principle.

This approach is reflected in the following attachments:

- Comments to be submitted for addition to the "Legal Measures" section of the most recent Report of the Intergovernmental Panel on Climate Change ("IPCC") Response Strategies Working Group ("RSWG"), due by January 1, 1990. (Tab A)
- A concept paper to be submitted for attachment as an Appendix to the "Legal Measures" section of the RSWG Report, due by January 1, 1990. (Tab B)
- A revised Draft Framework Convention embodying these approaches. This document is an internal State Department draft, not cleared through interagency review and not for distribution. (Tab C)
- An itinerary of significant upcoming meetings and deadlines. (Tab D)

²The term "international emissions trading" is used throughout this memorandum in its general sense, to refer to trades across national borders without regard to whether the trade is conducted by governmental or private actors.

These materials contemplate the following actions in the international community:

- Proposal by the United States that the comprehensive, performance-based approach and a system of international emissions trading be analyzed and discussed by the RSWG and by the full IPCC.
- Inclusion of obligations in a "framework convention" on climate change requiring the parties to develop the comprehensive approach and the trading approach .
- Implementation, through a protocol to the framework convention, of the comprehensive approach for all scientifically understood greenhouse gases, their sources and sinks.
- Further authorization, either in the initial protocol or in subsequent documents, of international emissions trading.
- Protocol amendments to include additional greenhouse gases, their sources and sinks (or to exclude previously included items) as scientific understanding advances.

There is an important question whether international agreement on responses to global climate change should take the form of one or more than one legal instrument. We recommend flexibility on this question, permitting the use of more than one instrument, so long as each instrument incorporates the comprehensive, performance-based approach outlined here. The use of more than one legal instrument -- a framework convention, followed by one or more protocols -- is not itself inconsistent with our "comprehensive" and "trading" approaches. The pace of scientific research may require some time between the signing of a convention and the adoption of substantive protocols.³ As discussed below, many nations may view our proposals -- particularly the proposal for a system of international trading -- with suspicion, and it may be to our advantage to propose a trading system in a later document after the comprehensive

³The United States could propose that the international community continue to work on developing the scientific basis for the comprehensive, performance-based approach while the convention is being negotiated, with the possibility of signing the first protocol at the time the framework convention is signed, or as soon as possible thereafter.

approach has been adopted. Further, there is value in gaining signatories to the framework convention even if those nations do not all sign the subsequent protocols, because the framework convention includes participation in research and monitoring activities that will prove useful to those seeking the data base from which to make policy in the protocols and in national legislation. How far to attempt to tilt the framework convention toward our preferred approaches remains a difficult tactical question.

DISCUSSION

A. "Comprehensive" Approach.

A comprehensive performance-based approach stands in contrast to a piecemeal pollutant-by-pollutant approach, such as that proposed at the November 1989 conference in Noordwijk, Netherlands, which focused on adopting targets for one greenhouse gas, carbon dioxide (CO₂), alone.⁴ The comprehensive approach would set a target for "net emissions" of greenhouse gases, for achievement by each nation or by multinational groups such as the European Community. This target could, for example, consist of a phased-in cap, possibly followed by subsequent reductions. The contributions of various sources and sinks to the achievement of this target would be measured by a "global warming potential index."⁵

⁴The Noordwijk conference urged pollutant-by-pollutant control rules, starting with CO₂. It did suggest possible development of a method for comparing the effects of other gases to the effects of CO₂, similar to the "global warming potential index" recommended in this memorandum, but did not attempt to employ that concept in a collective approach to all greenhouse gases.

⁵The "global warming potential index" is a system for computing the contribution to total climate change of any alteration in the emissions of any particular greenhouse gas. It assigns a value to each greenhouse gas describing the contribution of each additional molecule of that gas to the total warming of the atmosphere. The value depends on variables such as the molecular composition of the gas, the lifetime of such molecules in the atmosphere, and the existing atmospheric concentration of the gas and related gases at the time the additional molecule reaches the atmosphere. All the greenhouse gases can then be characterized and compared by their "global warming potential index" values. This method is discussed further in the EPA's attached Concept Paper.

The advantages of this approach are several. First, it allows each nation to use that combination of source and sink controls and other measures that is best adapted to its economic and other circumstances, achieving greenhouse environmental protection at significantly lower cost than a pollutant-by-pollutant strategy. This approach maximizes the opportunity for and encourages the adoption of diverse, flexible, innovative, and cost-effective solutions to global warming.⁶ The economic and social costs of dealing with global warming are likely to be great. It is thus particularly important in this case to use institutional strategies that will maximize the incentives and opportunities for development of new technologies and other innovative responses that will reduce these costs. Performance-based standards, a comprehensive approach, and net emissions trading will each contribute to achieving this goal.

Second, this approach reserves to each nation freedom to employ whatever institutional mechanisms it wishes to use to achieve its target objective. This flexibility takes account of the widely varying legal and cultural systems present in different nations, and avoids the obstacles to international agreement among sovereign states that would be raised by dictating to each nation how it must institutionally manage its climate-related policies and industries. A free market economy is not required to employ strict command and control regulations. By the same token, a centrally planned economy is not required to employ market measures.

⁶For example, an approach that mandated specific percentage reductions in each gas -- such as a 20% reduction in CO₂ and a 30% reduction in methane -- would be more costly than an approach that required a reduction in each nation's contribution to total warming (as measured by the "global warming potential index") and permitted each nation to adopt its least-cost mix of choices achieving the target overall. Some nations might be able to reduce CO₂ emissions much more than 20% through substitution of non-fossil fuels, but be unable to reduce methane output (e.g., a nation importing oil and dependent on rice crops, but endowed with untapped solar power opportunities). Those nations would meet their net targets by reducing CO₂ more rapidly than methane; reducing each the same amount would prove much more costly (perhaps in terms of higher taxes, or reduced rice production) and would leave available CO₂ reductions unexploited. Other nations might find themselves in the opposite situation, able to reduce methane but not CO₂. A similar analysis applies to approaches mandating specific changes in sources alone or sinks alone, rather than combining them in a "net emissions" requirement that leaves the domestic policy mix to each nation.

Third, dealing with all greenhouse gases, sources and sinks at once will achieve substantially better environmental protection. Past experience indicates that attempts to control one cause of an environmental problem while leaving others unregulated often results in shifting residuals or other forms of degradation to the unregulated mode. For example, attempts to reduce water pollution have induced industry to convert liquid pollutants into sludge, creating toxic waste disposal problems.⁷ Similarly, attempts to regulate one greenhouse gas at a time might induce shifts to practices that create other greenhouse gases, possibly contributing more to climate change per unit of economic output than the ones they replace. A comprehensive approach is necessary to ensure proper protection of the environment.

Fourth, a comprehensive approach is more equitable, and greatly reduces the potential for nations to manipulate the design of international regulatory measures in order to achieve competitive or other economic advantage. An approach that set targets first for certain sources or sinks and progressed to others later would unfairly burden those nations whose economies are comparatively more burdened by the initial measure.⁸ Moreover, a pollutant-by-pollutant command and control approach makes it more difficult to arrive at international consensus, because each nation will attempt to "game" the standard-setting agenda in its favor. Nations' efforts to "game" the design of international regulatory controls are also likely to distort trade and reduce global welfare as well as impede environmental improvement.

There are, however, possible drawbacks to a comprehensive approach that should be reviewed. First, there may be difficulties in arriving at "global warming potential index"

⁷In the United States we have traditionally followed a medium-by-medium and pollutant-by-pollutant approach, recognizing many of its problems, but the EPA is now attempting to devise a more integrated strategy to address what have come to be "cross-media" defects in our system of environmental control. Although a "comprehensive" approach to greenhouse gases is focused on the single medium of atmospheric temperature change, it is a vast improvement over pollutant-by-pollutant control.

⁸For example, an approach that first mandated 20% reductions in CO₂ emissions would pose much greater burdens for those heavily committed to using fossil fuels, and for those whose economies depend on exports of fossil fuels; alternatively, an approach that first mandated 20% reductions in methane emissions would pose much greater burdens for those heavily dependent on rice crops and ruminant animal husbandry.

values. These difficulties include the scientific problem of determining consensus values,⁹ the practical problem of assigning values sensitive enough to yield efficient environmental policy,¹⁰ and the political implications of the fact that assigning different values to different gases will effectively alter the costs to different nations of achieving their performance targets. The committee conducting this work could be engaged in a highly politicized enterprise. It should therefore be staffed with the best scientists, and must produce a legitimate conclusion in the eyes of the world.

Second, the problem of the environmental "second-best" may persist even in our "comprehensive" approach, the adoption of a comprehensive agreement, which would not deal with the non-greenhouse environmental impacts of restricting greenhouse gases.¹¹ The IPCC or other appropriate body could be directed to monitor these problems and report back to the international community at regular intervals.

Third, the "comprehensive" approach might be branded a stalling tactic, because some nations believe that the best approach is to adopt protocols quickly for substances we can

⁹As mentioned above, the index values depend on a variety of complex and sometimes interrelated variables. As described in the attached EPA Concept Paper, current efforts to define the index have reached different results. There are also likely to be differences of opinion as to the proper list of greenhouse gases. Further work will be necessary before consensus results are produced.

¹⁰The "global warming potential index" measures could be expressed as functions -- instead of constant values -- to incorporate the several variables on which they depend, such as ambient atmospheric concentrations of that gas and related gases, other atmospheric phenomena, expected lifetime of the gas in the atmosphere, and so forth. As sources and sinks are, in turn, assigned performance values for their contributions to total warming, those values must also be adjustable to take account of variables such as diverse combustion techniques, scrubbing methods, and the varying regional characteristics of forests, or else the value set will discourage investment in advances that could reduce net greenhouse gas emissions. The source and sink values must, furthermore, be flexible enough to take account of long-term investments in emissions-affecting policies, such as sink development, which may have inherently long lead times.

¹¹For example, the generation of nuclear waste. An analog is the history of chlorofluorocarbons (CFCs): developed to replace highly toxic chemicals, they ultimately proved to have serious effects on the stratospheric ozone layer.

agree on now, and proceed to thornier issues as we go. Our approach might be seen as proceeding at the pace of the "slowest common denominator." We might respond that our approach will in fact proceed more quickly, because it raises the potential for broad consensus by eliminating the inequitable effects of single-pollutant protocols. In addition, we might answer that our approach will achieve better results (even if it takes slightly longer to achieve than the first single-pollutant protocol would take) because it will prevent cross-pollutant shifts.¹² In order to make our commitment to action credible to the international community, we might consider unilateral domestic initiatives, such as energy conservation, tree-planting programs, and the like to deal with global warming in advance of the adoption of a comprehensive agreement. A later agreement could give "credit" for such efforts through use of appropriate baselines.

Fourth, the comprehensive approach might not actually end up favoring U.S. interests. We might find ourselves party to a treaty restricting all of US industry instead of one allowing us to shift to other unrestricted fuels. We recommend that the relevant federal agencies be requested to prepare an economic analysis showing the likely impacts on the United States and the world¹³ of several scenarios, including no action, adoption of a CO2 protocol alone, adoption of a comprehensive approach as described here, and other relevant possibilities, in order to provide the Administration with effective means for evaluating these options.

¹²We might also attempt to blunt the "stalling" criticism by focusing efforts now on developing scientific consensus on the comprehensive approach, with an eye toward completing the first protocol at the same time as the convention, or soon thereafter. We might further blunt this criticism by considering including in the convention, depending on the status of development of the first protocol, a requirement that within a specified period after the convention enters into force the parties will agree on the scope and timetable for the first protocol. It may, on the other hand, be impractical to ask parties to bind themselves to future agreement; and specifying too early a date might hinder our efforts to gather all greenhouse gases, their sources and sinks into a comprehensive approach.

¹³The analysis might also estimate costs for other major nations and blocs in order to inform our negotiating strategy. This calculation should also include the cost to the United States and others of not regulating other greenhouse gases, i.e., the costs of consequent added global warming. And as discussed above, even under a comprehensive approach, the calculation of the global warming potential index values could have important implications for U.S. performance under the treaty.

Fifth, a multi-pollutant agreement complicates the task of monitoring compliance, because it covers many more gases and sinks which must be watched, lest countries assert reductions without actually achieving them. This concern points to the need to ensure a scientifically credible method of monitoring emissions of various sources, changes in sinks, and their effects on global climate. In this respect, a comprehensive approach reinforces our interest in basing response agreements on sound science and data. The effects of some gases, sources and sinks may not be sufficiently well understood to include them in an initial agreement limiting net emissions. The ideal of total comprehensiveness may thus be limited by gaps in knowledge. As scientific knowledge advances, however, additional gases, sources and sinks could be included in the basic agreement.

B. "International Trading."

The second approach emphasized in our submissions is the development of "international trading" in greenhouse gas emissions. As explained below, the trading concept is not well understood by many nations, who have viewed U.S. proposals for trading with considerable suspicion. It may therefore not be advisable to press for adoption of international trading at the outset, reserving it for a later protocol, after the comprehensive approach has been launched and more nations have used trading domestically. International trading in environmentally related commodities is already a feature of the world economy, with "debt-for-nature" swaps being perhaps the best known example. The Montreal Protocol on Substances Depleting the Ozone Layer contains "industrial rationalization" provisions allowing limited substance trading among the parties. Domestically, we have instituted trading in the new source "bubble" offset program and the lead phasedown program under the Clean Air Act, and the Administration has proposed a more ambitious trading program in the acid deposition reduction title of the Clean Air Act reauthorization. The concept of "trading" has already been placed before the RSWG by the United States, as part of the subgroup discussion of "Economic (Market) Measures."

The proposal discussed here is to expand the use of this approach by promoting a international trading program in net greenhouse gas emissions, for consideration by the "Legal Measures" subgroup of the RSWG.

In sum, one nation might find it less costly to exceed its net emissions target by N units and to purchase a commensurate N unit reduction from another nation -- the latter able to reduce further than its target at less cost than the price the first nation is paying it. The "purchase" might involve debt being forgiven in return for afforestation, or cash

paid for investments in energy efficiency, or for lower-warming potential fuels (such as Europe paying the Soviet Union to pipe in natural gas), or technological trade secrets offered in return for investments in scrubbing technology, or other similar and innovative techniques. There would be no requirement that every nation "take part" in the trading avenues permitted; those who see no economic need to engage in international trades, or who are philosophically opposed, could demur. Such trades could be arranged on a bilateral, regional, or multilateral basis.

The primary advantage of this approach is that it extends to the international arena all of the benefits which a comprehensive, performance-based approach affords domestically. These include maximum incentive and opportunity for diverse, flexible, innovative, least cost solutions to global warming. The economic advantage of trading may serve as an inducement or palliative to nations concerned about the cost of restricting their emissions. As with the Administration's acid rain proposal, the trading system would permit faster reductions in net emissions at lower cost, potentially easing the way to adoption of significant reduction targets.

There are, however, important concerns regarding an international trading system. First, it may be difficult to monitor the trades -- a problem distinct from the difficulty of monitoring compliance with the emissions targets actually set or arrived at through trades. There is a considerable question as to whether an international institution could keep track of who had traded what rights to whom. Possible options include a "World Climate Bank" to keep track of credit accounts, or even to make credit loans itself; or an annual auction of emissions credits. Existing institutions, such as the UNEP or the WMO, might undertake this monitoring function.

Second, international trading may be limited or distorted by various forms of market failures. For example, a large nation or power company might quickly purchase the rights to large quantities of land in a poor nation, with the goal of planting trees on the land to generate net emissions credits; if other bidders are not on the scene, the farmland may be sold at an undervalued price; and even with multiple bidders, there may be other relevant social concerns, such as the provision of food to the residents, that may not be incorporated in the price of the land. Some of these problems might be alleviated by allowing only nations to trade, by requiring nations to approve all trades made by their nationals, or by requiring a period for open bidding after each offer is made and announced. Such measures are, however, likely to reduce the extent of trading.

Third, some nations at the RSWG meetings have attacked trading ideas as evil "licenses to pollute," because nations

could pay others for permits to allow their own emissions to grow. We might respond that a single-pollutant approach is an even larger "license" because it begins by permitting unrestricted emissions of the as-yet-unregulated gases, which might increase even faster as industry shifts to systems producing them. Also, we could dispute the "license to pollute" philosophy. All regulation involves a "license to pollute;" trading is a morally superior form of regulation because it increases human welfare in both environmental and economic terms. The best responses may involve demonstrations that trading is not a "trick": it promises real benefits to all nations, with safeguards against coercive deals or cheating. Past experience indicates that considerable education may be required before some participants are persuaded of the value of a trading system. The conference of climate experts to be held in Washington next spring could provide an opportunity to showcase trading systems and share experience with their operation.

The concerns expressed by other nations over trading imply an important tactical decision for the United States: how closely to link the "comprehensive" approach to the "international trading" approach. If international sentiment is unswervingly opposed to international trading, it may be advisable to propose the two ideas in a way which treats them as conceptually separate (which in fact they are). On the other hand, combining the two approaches in one proposal may help demonstrate their respective attractive features, and might increase the chances of successful adoption of both ideas.

C. Additional Issues.

Of course, there are numerous other issues to be resolved in any international climate agreement, whether or not it is "comprehensive" and permits "trading." These issues are potentially serious and deserve careful consideration.

First, net emissions targets for each country must be arrived at through a process that is perceived as fair and that produces economically efficient and internationally and intergenerationally equitable outcomes. This process raises the questions of how high to set a global net emissions target, how to set national net emissions targets, timetables and baselines, and how to deal with the special concerns of developing nations, for example by permitting them to proceed on a deferred timetable, or giving them targets significantly above present levels.

The issues regarding setting national targets are not fundamentally different under a "comprehensive" as opposed to a piecemeal approach. Indeed, the expanded focus and greater flexibility of the "comprehensive" approach may make it easier to

deal with them. On the other hand, national standards may be complicated by the need to take account of nations' past activities reducing greenhouse gas emissions, such as planting trees, restricting CFC use, and developing nuclear energy generation.

Similarly, promoting the international emissions trading approach could ease adoption of national emissions targets by promising nations the flexibility of attaining their targets through cost-saving trades. On the other hand, such an approach could also complicate the setting of national emission targets by enabling or encouraging some nations to seek added resource transfers through trades by pressing to reduce the targets assigned to other nations.

Second, arrangements for financial assistance and technology transfer to developing economies must be addressed, in order to respond to developing countries' concerns that global warming measures will limit their economic growth, and proper arrangements for financing and technology transfer could alleviate some of those concerns. Financial arrangements and technology transfer are also central to the environmental objective of preventing undue global climate change. For example, financing may be important because some current developing nation debt is repaid through sink-destroying activities such as timber cutting and grazing of forest lands, because investments in new technology or in sustainable agriculture may require initial capital outlays, and because developing nations may lack the resources to undertake the requisite monitoring of their greenhouse gas sources and sinks. Similarly, technology transfer may be climate-related: it may assist developing nations in shifting to non-fossil fuel energy sources, in reducing greenhouse gas emissions from agricultural sources such as rice paddies, and in monitoring greenhouse gas emissions. Conceivably, financial assistance and technology transfers could be linked to an international trading system by giving donor nations credit for a percentage of the reductions in net greenhouse gas emissions achieved as a result, although any such proposal would likely receive a hostile response from many in the international community.

A third issue involves the structure of implementation assurances. Past environmental treaties have employed a variety of options, and possibilities include national reporting; periodic international auditing; routine international monitoring by an international agency; a standing body of representative experts to monitor and report noncompliance; reliance on non-governmental organizations; and national complaints followed by adjudication before an arbitrator, an advisory "conciliation commission," the International Court of Justice, or the U.N. Security Council. A climate treaty might employ one or more of these methods, or create new ones. One suggestion is to require

national or international monitoring of emissions, coupled with publication of the emissions information and the nation's performance target, and review of the result at an annual conference of signatory representatives. The vast array of sources and sinks of greenhouse gases will make monitoring compliance especially difficult, and may necessitate methods of assuring implementation that avoid resort to extended litigation.

A fourth general issue involves the identification of new or previously undiscovered greenhouse gases, new sources of greenhouse gases and sinks, and new routes of greenhouse gas sink destruction. International and national institutions and constant scientific vigilance will be required to prevent natural and technological loopholes from defeating the goals of a global climate agreement.

Fifth, there is the question of relating a climate agreement -- in particular a "comprehensive" approach to greenhouse gases -- to earlier international agreements covering specific gases, sources or sinks. For example, the Montreal Protocol on Substances Depleting the Ozone Layer regulates the production of chlorofluorocarbons (CFCs), which are also powerful greenhouse gases. Other agreements may affect other greenhouse gases, rates of deforestation, and the like. Questions may be raised -- especially by developing nations who have not needed to reduce emissions of substances used primarily in industrialized nations, such as CFCs -- about whether reductions achieved (or foregone) under other agreements may count toward compliance with greenhouse gas emissions targets.

Sixth, the issue of investments in adaptation to climate change has not been considered in our approaches to international agreements. Although the local effects of climate change are likely to vary and therefore to require local adaptation responses, there may be some adaptation techniques applicable to numerous locales or to an industry that spans many nations. In addition, some nations may require financial, technical and informational assistance in predicting climate impacts and developing effective adaptive responses. These kinds of problems and opportunities could be addressed in international contexts, but we do not expect them to play a central part in the international effort to limit climate change by reducing net emissions.¹⁴

¹⁴One possible area of overlap is suggested by the use of adaptation investments as "payment" for emissions credits under an international trading system; but this example is simply a particular instance of the general idea that anything of value, whether climate-related or not, could serve as currency for emissions credits.

Comments on IPCC Response Strategies Working Group
Legal Measures Paper

The U.S. proposal might be reflected in the IPCC Response Strategies Working Group Legal Measures Paper as follows:

1) Add the following ticks to section 1. (Preamble):

- Recognition of interrelationship among all greenhouse gases, their sources and sinks, and the consequent utility of treating them collectively

- Importance of developing response measures that operate in an equitable and economically efficient and effective manner, and that encourage innovation and diversity in the technological and institutional means of addressing global climate change

2) Add the following paragraph to section 3. (General Obligations):

- Development of a protocol, as soon as possible, addressing all adequately scientifically understood greenhouse gases, their sources and sinks, in a comprehensive approach to controlling net emissions of greenhouse gases through national performance targets, leaving to each country the choice of domestic policy responses to achieve its net greenhouse gas emissions target; development of equitable and economically efficient implementation measures, including a system of international emissions trading (see Economic Measures paper, section 5.2); keep under continuing review the set of greenhouse gases, their sources and sinks, and revise the set, according to evolving scientific understanding. (This approach is further elaborated in Appendix __.)

3) The second and third ticks on page 4 refer to "emission limitations/reductions". Either add "net" before "emission" in each of these ticks or repeat both these ticks with the word "net" before "emission".

4) Add the following ticks to section 11. (Annexes and Protocols):

- treat all greenhouse gases, their sources and sinks, comprehensively, in a single protocol

- international emissions trading

DRAFT

U.S. CONCEPT PAPER COMPREHENSIVE GREENHOUSE GAS APPROACH TO A FRAMEWORK CONVENTION ON CLIMATE CHANGE

Proposal:

The RSWG should seriously: 1) consider the merits of combining a framework convention on climate change with one or more protocols that would treat greenhouse gases collectively on the basis of a warming potential index, and 2) evaluate alternative implementation procedures including international tradeable emission reduction credits.

Summary:

Global emissions of greenhouse gases (CO₂, CH₄, N₂O, CFCs, CO, and other trace gases) are currently increasing in every country because of man's activities. Addressing the problem requires a comprehensive and flexible approach that will enable countries to find economically efficient measures to stabilize or reduce emissions while achieving economic growth. The U.S. government believes that a framework convention on climate change should establish a process focusing on the collective warming potential of greenhouse gases rather than on individual greenhouse gases. Countries should be free to select between emission reduction or sink enhancement strategies and among gases as long as these are consistent with a negotiated "collective" greenhouse gas target. Trading emission reduction credits between countries could be an option in implementing this approach. Under this approach, the Convention would set forth a general goal of stabilizing or reducing greenhouse gas emissions at levels and dates to be established in a protocol or protocols to the convention to be developed as soon as possible.

Concepts and Definitions:

Greenhouse gases differ in both their ability to trap heat and their atmospheric lifetimes. For example, methane traps heat approximately 30-40 times more effectively than CO₂, but has a lifetime of 8-12 years, while CO₂ has an effective lifetime of several hundred years. The concept of a Global Warming Potential index has been proposed as a means of accounting for these differences. Recent papers by B. Assarsson and by Lashof and Ahuja propose two similar approaches for defining such an index. For example, the second paper suggests that the Global Warming Potential of methane relative to CO₂ is 3.7. In economic terms this suggests that one could spend up to 3.7 times for reducing methane emissions relative to CO₂ emissions.

The concept of having the government set broad national emission standards, but having flexibility to achieve the goals has been used in the U.S. For example, the trading of emission

reduction credits has been used as a means of achieving real emission reductions of lead in an economically efficient manner. Further, under the proposed Clean Air Act Amendments, a national SO₂ emission target has been identified and each utility company has the choice of achieving SO₂ reductions by either directly reducing emissions at its own facilities or by purchasing allowances from another company, whichever is more economical. The application of such a concept, while never attempted on a cross-pollutant or global scale, would enable each country to achieve emission targets using a least cost approach.

Advantages of the Proposed Approach:

The proposed approach has the following benefits:

- o It would encourage economically efficient approaches within countries and possibly among countries. This is especially important for developing countries that are constrained economically.
- o By addressing greenhouse gases collectively, it would reduce the number of separate protocols, thereby accelerating comprehensive international action.
- o It may serve to facilitate the process of developing a convention even though uncertainties remain over the economic impacts of a protocol. Trading could act as a safety valve, if it turned out that reductions within a country were more expensive than anticipated.
- o It provides flexibility to each country to manage emissions in a manner consistent with its own social and political needs. It allows tradeoffs between sources and sinks, to the extent feasible.
- o It provides incentives to develop and use cost-effective, energy-efficient industrial and consumer products, emission control technologies, reforestation and agricultural practices.
- o It may especially benefit developing countries where low cost emission reductions may be possible and where there is the greatest need for economic support.

Issues to be Addressed:

In developing a convention/protocol(s) along the lines suggested, the following factors would need to be considered:

- o Defining an appropriate Global Warming Potential index. Initial consideration should be given to including at a minimum CO₂, CH₄, and CO. Also, the approach should allow

other gases to be added at a later date as new scientific information is developed. The issue of whether CFCs should be included must be addressed.

- o Establishing global and equitable national targets in terms of the index. This will require estimating each country's emissions by major gas for a baseline year. It will also require careful consideration of when the treaty should enter into force and the need for interim objectives. Each country would be free to allocate current and future emissions in any manner.
- o Evaluating whether and how credits should be given to national governments for actions taken prior to when the convention enters into force, e.g., nuclear power, reforestation, CFC reductions and others.
- o Evaluating alternative administrative, implementation, and enforcement mechanisms, including possibly a system of international emissions trading. International emissions trading could leave the primary burden for arranging trades to the private sector, but national governments will have to provide guidance, monitoring and enforcement. In addition, an international tracking system will be needed to record data and assess trends as a complement to current UN efforts to compile fuel use and other data.
- o Assessing the special needs of developing countries including their specific technological needs, financial requirements and the most appropriate manner for them to participate in such a convention.
- o Evaluating the interrelationship of other complementary global initiatives such as the call to reforest 12 million hectares of forest land per year.
- o Evaluating how to determine credits for sinks, such as reforestation and agricultural practices.

Significant Upcoming Meetings/Deadlines

Jan 1	Comments due on IPCC Response Strategies Working Group Paper on Implementation Mechanisms
Feb 2	IPCC Response Strategies Working Group meeting (officers only)
Feb 5-8	IPCC meeting hosted by U.S. in Washington
March 23-25	Preparatory meeting for July G-7 Economic Summit (tentative)
April 29-May2	U.S. Senate-sponsored Inter-parliamentary Conference on the Global Environment, Washington
[spring]	Meeting hosted by the President on the Environment
May	UN Environment Programme Governing Council Special Session, Nairobi (tentative)
May 8-16	ECE Ministerial Conference on the Environment, Bergen
May 18-20	Preparatory meeting for the July G-7 Economic Summit (tentative)
June 4-8	Meeting of IPCC Response Strategies Working Group to adopt its report, Geneva
June 11-23	World Meteorological Organization (WMO) Executive Committee, Geneva
June 15-17	Preparatory meeting for the July G-7 Economic Summit (tentative)
June 18-20	IPCC Report Drafting Committee meeting, Geneva
August 27-30	IPCC meeting to approve interim report
Oct. 29-Nov. 7	Second World Climate Conference, Geneva
post-November	U.S. has offered to host first negotiating session of framework climate change convention

TAB 5



U.S. Department of Justice
Land and Natural Resources Division

Office of the Assistant Attorney General

Washington, D.C. 20530

December 18, 1989

MEMORANDUM

TO: C. Boyden Gray
Counsel to the President

FROM: Richard B. Stewart *RS*
Assistant Attorney General

SUBJECT: Next Steps on International Approaches to Global
Climate Change

As undertaken at this morning's meeting in your office, this memorandum outlines the steps that should be taken to develop further the proposed United States approach for international agreements dealing with global climate change. This list of steps represents the items considered significant by the representatives of EPA, Justice, State and your office in attendance this morning.

1. Clearance for new U.S. submissions to the RSWG. Clearance must be obtained in the next two weeks for the materials to be submitted to the Intergovernmental Panel on Climate Change ("IPCC") Response Strategies Working Group ("RSWG") for inclusion in the RSWG papers by the January 1, 1990 deadline. The proposed materials for submission to the RSWG -- a set of "Comments" on the RSWG "Legal Measures" paper, and a "Concept Paper" discussing the U.S. proposal -- were attached to the memorandum sent to you yesterday.
2. DPC review. The Domestic Policy Council's Working Group on Global Change, chaired by Dr. Bromley, should take up these matters at its next meeting. If it were held next week, it could be the vehicle for the clearance described in paragraph 1.
3. Pamphlet on comprehensive approach and trading. A pamphlet should be developed, for dissemination in mid-January to RSWG participants, explaining our position on the

benefits of the "comprehensive" and "international trading" approaches to international agreements on greenhouse gases, their sources and sinks, and the drawbacks of other approaches, such as pollutant-by-pollutant and command-and-control methods. The pamphlet should draw on U.S. and international experience with each regulatory method.

4. Response to UNEP initiative on draft convention. This week Dr. Tolba, on behalf of UNEP in Nairobi, requested that all nations suggest language, by January 15, 1990, for a draft framework convention on global climate change. This request appears to compete with the normal IPCC procedures, and to accelerate the schedule for drafting such language. In addition, there may be growing pressure to address this question in the United Nations General Assembly instead of in the IPCC forum. The U.S. should develop a strategy for dealing with this pressure, including consideration of how far to insist on the IPCC's jurisdiction over these matters, and whether to present our substantive proposals to the U.N. if it takes up these matters.

5. Additional needed background work.

Relevant federal agencies should work on the following matters relevant to our proposed approach:

(a) Economic impacts. Assessments should be developed of the economic impacts, on the U.S. and other principal negotiating nations or blocs, of several scenarios for international agreement, including different timetables, baselines, and variances for developing nations within our "comprehensive" approach.

(b) Global Warming Potential Index. A "global warming potential index" should be developed to relate the contribution of each greenhouse gas to total global warming.

(c) List of greenhouse causal factors. The list of greenhouse gases, their sources and sinks, should be developed for inclusion in a "comprehensive" approach to international agreement on climate change.

(d) Monitoring and implementation assurances. Analysis and recommendations should be developed regarding mechanisms for monitoring and implementation assurance provisions in international agreements on climate change. This work should survey and analyze mechanisms used in past international agreements, and recommend the most appropriate mechanisms for both a "comprehensive" approach and an "international trading" approach.

6. Spring 1990 science/economics conference. Work should commence to develop the materials, key speakers, and exhibits that could be assembled at the President's spring science/economics conference on the global environment, in order to educate those attending as to the benefits of our comprehensive and international trading approaches, the drawbacks of traditional command and control regulatory mechanisms, and U.S. and international experience with each system.

Global Change Working Group

December 19, 1989

AGENDA

1. President's 1990 International Environmental Initiative
 - . Most People will have gone over the paper ("close hold" to avoid leaks) in the last 15 minutes here
 - . Stress point that the recommendations in paper have been entirely based upon the discussions and decisions made here by GCWG members
 - . Go through paper with them - over major points
 - . Discussion and get blessing
2. Private Sector Task Force Report
 - . Thank DOI for getting their report submitted on schedule - was alot of work (transmitted to us 12/8)
 - . Call on Frank Bracken (representing Gallegos today) to present findings (and he will introduce Jackie Schaeffer who headed up the work)
 - . Discussion/Suggestions
3. Legal Precedents Task Force Report
 - . It is necessary to address this report at this time because US has a January 1 deadline to submit its materials to the Response Strategies Working Group (RSWG) and there are certain issues regarding international agreement on global climate change which should be considered by this WG.
 - . To assist WG members in this task, we sent out a copy of the materials prepared by the wg members addressing international approaches to global change.
 - . Introduce Boyden Gray to lead off the discussion (and he will introduce Dick Stewart, etc)
4. Schedule for briefings by private sector
5. Other

THE WHITE HOUSE

WASHINGTON

December 18, 1989

*distributed
12/18*

MEMORANDUM FOR THE GLOBAL CHANGE WORKING GROUP

FROM: D. ALLAN BROMLEY
Chairman

SUBJECT: Meeting of the Global Change Working Group

There will be a meeting of the Global Change Working Group on Tuesday, December 19, 1989 from 11:00 to 12:30 PM in the Roosevelt Room for principals only. The issues to be discussed include 1) the President's 1990 International Environmental Initiative, 2) Reports from the private Sector Task Force and the Legal Precedents Task Force, and 3) a schedule for briefings by private sector interests.

Attached is a paper on legal instruments and a draft concept paper on international legal measures. A paper on the President's 1990 International Environmental Initiative will be available for review by Working Group members at 10:45 AM in the Roosevelt Room.

Please be advised that this is a close hold document. Please refrain from making additional copies. Call Dean at 456-6722 if you are able to attend.



U.S. Department of Justice
Land and Natural Resources Division

Office of the Assistant Attorney General

Washington, D.C. 20530

December 18, 1989

MEMORANDUM

TO: Hon. D. Allan Bromley
Assistant to the President
for Science and Technology
Chairman, Domestic Policy Council Working Group
on Global Change

Members of the Domestic Policy Council
Working Group on Global Change

FROM: Richard B. Stewart *RS*
Assistant Attorney General

SUBJECT: International Approaches to Global Climate Change

In an effort to develop a new approach to possible international agreement on global climate change, representatives of the Environmental Protection Agency, the State Department, and the Justice Department have met with each other and with the Counsel to the President. This memorandum transmits to you the materials produced by those meetings, and identifies certain issues to which the DPC Working Group may need to give special attention.

Timetable

In the first week of February 1990, the United States will host a meeting of the Response Strategies Working Group ("RSWG") of the Intergovernmental Panel on Climate Change ("IPCC"), followed by a plenary meeting of the IPCC. At its February meeting, the RSWG will consider additional submissions to its October, 1989 Report. Such submissions must be made by a deadline of January 1, 1990.

Follow-up actions in the coming months include further deliberation by the RSWG and the full IPCC over the spring and summer, the President's spring conference on the science and economics aspects of global environmental change, the IPCC conference in the autumn, possible related activities by the United Nations Environment Programme ("UNEP"), and the international conference on a "framework convention" on climate change to be hosted in Washington, D.C. in the fall of 1990. These meetings and others are listed in the last attachment to the memorandum dated December 14, 1989, described below.

Materials Attached

Attached please find the following materials:

- Memorandum from Richard B. Stewart to C. Boyden Gray, dated December 14, 1989, describing and analyzing the proposed new approaches for international agreement.
(Tab 1)

Related to this memorandum are the following attachments:

- Comments to be proposed for inclusion in the RSWG Report. The deadline for adding such comments is January 1, 1990.
(Tab 2)
- "Concept Paper" briefly summarizing the proposed approaches for international agreement, to be submitted for inclusion in the RSWG Report, also by January 1, 1990.
(Tab 3)
- List of significant meetings and conferences in the coming months.
(Tab 4)
- Memorandum from Richard B. Stewart to C. Boyden Gray, dated December 18, 1989, outlining the next steps that should be taken to develop the proposed approaches.
(Tab 5)

Issues for DPC Working Group Consideration

We respectfully suggest that the DPC Working Group on Global Change consider the proposed approaches contained in the above documents, and the discussion of the strategic questions, advantages and drawbacks related to our approaches contained in those documents. It should be noted that the impacts on the

United States of international adoption of the proposed approaches have not yet been analyzed in detail, and no quantitative predictions of such effects are yet available. Our recommendations are therefore tempered by the need for further research.

In particular, we recommend special attention to the following concerns:

1. Should the United States favor the traditional approach to environmental regulation when addressing potential global climate change, involving a framework convention followed by successive protocols each directing nations to limit their emissions of a separate specific pollutant? That approach has been employed, with some variations, by the Vienna Convention and the Montreal Protocol on Substances Depleting the Ozone Layer, and was proposed by other nations for dealing with global climate change at the Noordwijk Ministerial Conference on Atmospheric Pollution and Climate Change.

Or should the United States actively promote a "comprehensive" approach to collective treatment of all greenhouse gases, their sources and sinks, in which each nation must meet a national performance-based target, but is left to choose its mix of domestic policies to meet that target? This approach is described in the attached materials, and it is the one we recommend.

2. Assuming the United States Government adopts the approach we recommend, should the proposed approach outlined be presented to the RSWG and/or the IPCC as the official United States position, or should it be put forward more tentatively, as an issue for consideration by the RSWG and/or the IPCC?

3. Should the "international trading" approach, as described in the above materials, be proposed as an integral part of the United States submission, firmly linked to the "comprehensive" approach, or should it be treated as an important and useful idea which may nevertheless be deferred for further consideration? This question is discussed more fully in the memorandum dated December 14, 1989, listed above, particularly at pp. 3-4.



U.S. Department of Justice
Land and Natural Resources Division

Office of the Assistant Attorney General

Washington, D.C. 20530

December 14, 1989

MEMORANDUM

TO: C. Boyden Gray, Esq.
Counsel to the President

FROM: Richard B. Stewart *RS*
Assistant Attorney General

SUBJECT: International Approaches to Global Climate Change

As requested at the December 6, 1989 meeting in your office, an informal group of representatives of EPA, Justice and State have developed materials to promote discussion and adoption of a comprehensive, performance-based approach in international agreements dealing with global climate change. This memorandum is submitted to transmit these materials to you, and to highlight some of the issues raised by such an approach.

SUMMARY

Under a comprehensive, performance-based approach, all greenhouses gases, sources and sinks are addressed together. Each international legal instrument produced -- whether convention or protocol -- deals, to the maximum extent possible, with the entire array of gases, their sources and sinks.¹ This approach employs the concept of a "global warming potential index" to compare gases, their sources and sinks along a standardized spectrum, and the concept of "net emissions" to adopt performance targets that would not be limited to any one gas or source or sink, but would permit attainment of the target through policies aimed at all scientifically understood

¹As explained below, limitations in data and scientific understanding may preclude use of a truly comprehensive approach, incorporating all sources and sinks, at the outset.

greenhouse causal factors. Such net emissions performance targets would be set, at least initially, for each nation, and would leave to each nation the choice of internal policies desired to attain the target. Thus, using the "global warming potential index," each nation could devise a set of policies that would reduce "net emissions," through restriction of sources or expansion of sinks or both.

Such an approach would provide maximum flexibility for developing diverse, innovative, cost-effective measures for dealing with global warming. It would encourage, but not require, internal use by participating nations of emissions reduction or contract credits and trading programs, on the model of the Administration's Clean Air Act proposal for acid rain.

In addition, international trades² (on a bilateral, regional or multilateral basis) could be authorized as a method for attaining national net emissions targets in order to achieve further environmental and economic benefits from the use of the trading principle.

This approach is reflected in the following attachments:

- Comments to be submitted for addition to the "Legal Measures" section of the most recent Report of the Intergovernmental Panel on Climate Change ("IPCC") Response Strategies Working Group ("RSWG"), due by January 1, 1990. (Tab A)
- A concept paper to be submitted for attachment as an Appendix to the "Legal Measures" section of the RSWG Report, due by January 1, 1990. (Tab B)
- A revised Draft Framework Convention embodying these approaches. This document is an internal State Department draft, not cleared through interagency review and not for distribution. (Tab C)
- An itinerary of significant upcoming meetings and deadlines. (Tab D)

²The term "international emissions trading" is used throughout this memorandum in its general sense, to refer to trades across national borders without regard to whether the trade is conducted by governmental or private actors.

These materials contemplate the following actions in the international community:

- Proposal by the United States that the comprehensive, performance-based approach and a system of international emissions trading be analyzed and discussed by the RSWG and by the full IPCC.
- Inclusion of obligations in a "framework convention" on climate change requiring the parties to develop the comprehensive approach and the trading approach .
- Implementation, through a protocol to the framework convention, of the comprehensive approach for all scientifically understood greenhouse gases, their sources and sinks.
- Further authorization, either in the initial protocol or in subsequent documents, of international emissions trading.
- Protocol amendments to include additional greenhouse gases, their sources and sinks (or to exclude previously included items) as scientific understanding advances.

There is an important question whether international agreement on responses to global climate change should take the form of one or more than one legal instrument. We recommend flexibility on this question, permitting the use of more than one instrument, so long as each instrument incorporates the comprehensive, performance-based approach outlined here. The use of more than one legal instrument -- a framework convention, followed by one or more protocols -- is not itself inconsistent with our "comprehensive" and "trading" approaches. The pace of scientific research may require some time between the signing of a convention and the adoption of substantive protocols.³ As discussed below, many nations may view our proposals -- particularly the proposal for a system of international trading -- with suspicion, and it may be to our advantage to propose a trading system in a later document after the comprehensive

³The United States could propose that the international community continue to work on developing the scientific basis for the comprehensive, performance-based approach while the convention is being negotiated, with the possibility of signing the first protocol at the time the framework convention is signed, or as soon as possible thereafter.

approach has been adopted. Further, there is value in gaining signatories to the framework convention even if those nations do not all sign the subsequent protocols, because the framework convention includes participation in research and monitoring activities that will prove useful to those seeking the data base from which to make policy in the protocols and in national legislation. How far to attempt to tilt the framework convention toward our preferred approaches remains a difficult tactical question.

DISCUSSION

A. "Comprehensive" Approach.

A comprehensive performance-based approach stands in contrast to a piecemeal pollutant-by-pollutant approach, such as that proposed at the November 1989 conference in Noordwijk, Netherlands, which focused on adopting targets for one greenhouse gas, carbon dioxide (CO₂), alone.⁴ The comprehensive approach would set a target for "net emissions" of greenhouse gases, for achievement by each nation or by multinational groups such as the European Community. This target could, for example, consist of a phased-in cap, possibly followed by subsequent reductions. The contributions of various sources and sinks to the achievement of this target would be measured by a "global warming potential index."⁵

⁴The Noordwijk conference urged pollutant-by-pollutant control rules, starting with CO₂. It did suggest possible development of a method for comparing the effects of other gases to the effects of CO₂, similar to the "global warming potential index" recommended in this memorandum, but did not attempt to employ that concept in a collective approach to all greenhouse gases.

⁵The "global warming potential index" is a system for computing the contribution to total climate change of any alteration in the emissions of any particular greenhouse gas. It assigns a value to each greenhouse gas describing the contribution of each additional molecule of that gas to the total warming of the atmosphere. The value depends on variables such as the molecular composition of the gas, the lifetime of such molecules in the atmosphere, and the existing atmospheric concentration of the gas and related gases at the time the additional molecule reaches the atmosphere. All the greenhouse gases can then be characterized and compared by their "global warming potential index" values. This method is discussed further in the EPA's attached Concept Paper.

The advantages of this approach are several. First, it allows each nation to use that combination of source and sink controls and other measures that is best adapted to its economic and other circumstances, achieving greenhouse environmental protection at significantly lower cost than a pollutant-by-pollutant strategy. This approach maximizes the opportunity for and encourages the adoption of diverse, flexible, innovative, and cost-effective solutions to global warming.⁶ The economic and social costs of dealing with global warming are likely to be great. It is thus particularly important in this case to use institutional strategies that will maximize the incentives and opportunities for development of new technologies and other innovative responses that will reduce these costs. Performance-based standards, a comprehensive approach, and net emissions trading will each contribute to achieving this goal.

Second, this approach reserves to each nation freedom to employ whatever institutional mechanisms it wishes to use to achieve its target objective. This flexibility takes account of the widely varying legal and cultural systems present in different nations, and avoids the obstacles to international agreement among sovereign states that would be raised by dictating to each nation how it must institutionally manage its climate-related policies and industries. A free market economy is not required to employ strict command and control regulations. By the same token, a centrally planned economy is not required to employ market measures.

⁶For example, an approach that mandated specific percentage reductions in each gas -- such as a 20% reduction in CO₂ and a 30% reduction in methane -- would be more costly than an approach that required a reduction in each nation's contribution to total warming (as measured by the "global warming potential index") and permitted each nation to adopt its least-cost mix of choices achieving the target overall. Some nations might be able to reduce CO₂ emissions much more than 20% through substitution of non-fossil fuels, but be unable to reduce methane output (e.g., a nation importing oil and dependent on rice crops, but endowed with untapped solar power opportunities). Those nations would meet their net targets by reducing CO₂ more rapidly than methane; reducing each the same amount would prove much more costly (perhaps in terms of higher taxes, or reduced rice production) and would leave available CO₂ reductions unexploited. Other nations might find themselves in the opposite situation, able to reduce methane but not CO₂. A similar analysis applies to approaches mandating specific changes in sources alone or sinks alone, rather than combining them in a "net emissions" requirement that leaves the domestic policy mix to each nation.

Third, dealing with all greenhouse gases, sources and sinks at once will achieve substantially better environmental protection. Past experience indicates that attempts to control one cause of an environmental problem while leaving others unregulated often results in shifting residuals or other forms of degradation to the unregulated mode. For example, attempts to reduce water pollution have induced industry to convert liquid pollutants into sludge, creating toxic waste disposal problems.⁷ Similarly, attempts to regulate one greenhouse gas at a time might induce shifts to practices that create other greenhouse gases, possibly contributing more to climate change per unit of economic output than the ones they replace. A comprehensive approach is necessary to ensure proper protection of the environment.

Fourth, a comprehensive approach is more equitable, and greatly reduces the potential for nations to manipulate the design of international regulatory measures in order to achieve competitive or other economic advantage. An approach that set targets first for certain sources or sinks and progressed to others later would unfairly burden those nations whose economies are comparatively more burdened by the initial measure.⁸ Moreover, a pollutant-by-pollutant command and control approach makes it more difficult to arrive at international consensus, because each nation will attempt to "game" the standard-setting agenda in its favor. Nations' efforts to "game" the design of international regulatory controls are also likely to distort trade and reduce global welfare as well as impede environmental improvement.

There are, however, possible drawbacks to a comprehensive approach that should be reviewed. First, there may be difficulties in arriving at "global warming potential index"

⁷In the United States we have traditionally followed a medium-by-medium and pollutant-by-pollutant approach, recognizing many of its problems, but the EPA is now attempting to devise a more integrated strategy to address what have come to be "cross-media" defects in our system of environmental control. Although a "comprehensive" approach to greenhouse gases is focused on the single medium of atmospheric temperature change, it is a vast improvement over pollutant-by-pollutant control.

⁸For example, an approach that first mandated 20% reductions in CO₂ emissions would pose much greater burdens for those heavily committed to using fossil fuels, and for those whose economies depend on exports of fossil fuels; alternatively, an approach that first mandated 20% reductions in methane emissions would pose much greater burdens for those heavily dependent on rice crops and ruminant animal husbandry.

values. These difficulties include the scientific problem of determining consensus values,⁹ the practical problem of assigning values sensitive enough to yield efficient environmental policy,¹⁰ and the political implications of the fact that assigning different values to different gases will effectively alter the costs to different nations of achieving their performance targets. The committee conducting this work could be engaged in a highly politicized enterprise. It should therefore be staffed with the best scientists, and must produce a legitimate conclusion in the eyes of the world.

Second, the problem of the environmental "second-best" may persist even in our "comprehensive" approach, the adoption of a comprehensive agreement, which would not deal with the non-greenhouse environmental impacts of restricting greenhouse gases.¹¹ The IPCC or other appropriate body could be directed to monitor these problems and report back to the international community at regular intervals.

Third, the "comprehensive" approach might be branded a stalling tactic, because some nations believe that the best approach is to adopt protocols quickly for substances we can

⁹As mentioned above, the index values depend on a variety of complex and sometimes interrelated variables. As described in the attached EPA Concept Paper, current efforts to define the index have reached different results. There are also likely to be differences of opinion as to the proper list of greenhouse gases. Further work will be necessary before consensus results are produced.

¹⁰The "global warming potential index" measures could be expressed as functions -- instead of constant values -- to incorporate the several variables on which they depend, such as ambient atmospheric concentrations of that gas and related gases, other atmospheric phenomena, expected lifetime of the gas in the atmosphere, and so forth. As sources and sinks are, in turn, assigned performance values for their contributions to total warming, those values must also be adjustable to take account of variables such as diverse combustion techniques, scrubbing methods, and the varying regional characteristics of forests, or else the value set will discourage investment in advances that could reduce net greenhouse gas emissions. The source and sink values must, furthermore, be flexible enough to take account of long-term investments in emissions-affecting policies, such as sink development, which may have inherently long lead times.

¹¹For example, the generation of nuclear waste. An analog is the history of chlorofluorocarbons (CFCs): developed to replace highly toxic chemicals, they ultimately proved to have serious effects on the stratospheric ozone layer.

agree on now, and proceed to thornier issues as we go. Our approach might be seen as proceeding at the pace of the "slowest common denominator." We might respond that our approach will in fact proceed more quickly, because it raises the potential for broad consensus by eliminating the inequitable effects of single-pollutant protocols. In addition, we might answer that our approach will achieve better results (even if it takes slightly longer to achieve than the first single-pollutant protocol would take) because it will prevent cross-pollutant shifts.¹² In order to make our commitment to action credible to the international community, we might consider unilateral domestic initiatives, such as energy conservation, tree-planting programs, and the like to deal with global warming in advance of the adoption of a comprehensive agreement. A later agreement could give "credit" for such efforts through use of appropriate baselines.

Fourth, the comprehensive approach might not actually end up favoring U.S. interests. We might find ourselves party to a treaty restricting all of US industry instead of one allowing us to shift to other unrestricted fuels. We recommend that the relevant federal agencies be requested to prepare an economic analysis showing the likely impacts on the United States and the world¹³ of several scenarios, including no action, adoption of a CO2 protocol alone, adoption of a comprehensive approach as described here, and other relevant possibilities, in order to provide the Administration with effective means for evaluating these options.

¹²We might also attempt to blunt the "stalling" criticism by focusing efforts now on developing scientific consensus on the comprehensive approach, with an eye toward completing the first protocol at the same time as the convention, or soon thereafter. We might further blunt this criticism by considering including in the convention, depending on the status of development of the first protocol, a requirement that within a specified period after the convention enters into force the parties will agree on the scope and timetable for the first protocol. It may, on the other hand, be impractical to ask parties to bind themselves to future agreement; and specifying too early a date might hinder our efforts to gather all greenhouse gases, their sources and sinks into a comprehensive approach.

¹³The analysis might also estimate costs for other major nations and blocs in order to inform our negotiating strategy. This calculation should also include the cost to the United States and others of not regulating other greenhouse gases, i.e., the costs of consequent added global warming. And as discussed above, even under a comprehensive approach, the calculation of the global warming potential index values could have important implications for U.S. performance under the treaty.

Fifth, a multi-pollutant agreement complicates the task of monitoring compliance, because it covers many more gases and sinks which must be watched, lest countries assert reductions without actually achieving them. This concern points to the need to ensure a scientifically credible method of monitoring emissions of various sources, changes in sinks, and their effects on global climate. In this respect, a comprehensive approach reinforces our interest in basing response agreements on sound science and data. The effects of some gases, sources and sinks may not be sufficiently well understood to include them in an initial agreement limiting net emissions. The ideal of total comprehensiveness may thus be limited by gaps in knowledge. As scientific knowledge advances, however, additional gases, sources and sinks could be included in the basic agreement.

B. "International Trading."

The second approach emphasized in our submissions is the development of "international trading" in greenhouse gas emissions. As explained below, the trading concept is not well understood by many nations, who have viewed U.S. proposals for trading with considerable suspicion. It may therefore not be advisable to press for adoption of international trading at the outset, reserving it for a later protocol, after the comprehensive approach has been launched and more nations have used trading domestically. International trading in environmentally related commodities is already a feature of the world economy, with "debt-for-nature" swaps being perhaps the best known example. The Montreal Protocol on Substances Depleting the Ozone Layer contains "industrial rationalization" provisions allowing limited substance trading among the parties. Domestically, we have instituted trading in the new source "bubble" offset program and the lead phasedown program under the Clean Air Act, and the Administration has proposed a more ambitious trading program in the acid deposition reduction title of the Clean Air Act reauthorization. The concept of "trading" has already been placed before the RSWG by the United States, as part of the subgroup discussion of "Economic (Market) Measures."

The proposal discussed here is to expand the use of this approach by promoting a international trading program in net greenhouse gas emissions, for consideration by the "Legal Measures" subgroup of the RSWG.

In sum, one nation might find it less costly to exceed its net emissions target by N units and to purchase a commensurate N unit reduction from another nation -- the latter able to reduce further than its target at less cost than the price the first nation is paying it. The "purchase" might involve debt being forgiven in return for afforestation, or cash

paid for investments in energy efficiency, or for lower-warming potential fuels (such as Europe paying the Soviet Union to pipe in natural gas), or technological trade secrets offered in return for investments in scrubbing technology, or other similar and innovative techniques. There would be no requirement that every nation "take part" in the trading avenues permitted; those who see no economic need to engage in international trades, or who are philosophically opposed, could demur. Such trades could be arranged on a bilateral, regional, or multilateral basis.

The primary advantage of this approach is that it extends to the international arena all of the benefits which a comprehensive, performance-based approach affords domestically. These include maximum incentive and opportunity for diverse, flexible, innovative, least cost solutions to global warming. The economic advantage of trading may serve as an inducement or palliative to nations concerned about the cost of restricting their emissions. As with the Administration's acid rain proposal, the trading system would permit faster reductions in net emissions at lower cost, potentially easing the way to adoption of significant reduction targets.

There are, however, important concerns regarding an international trading system. First, it may be difficult to monitor the trades -- a problem distinct from the difficulty of monitoring compliance with the emissions targets actually set or arrived at through trades. There is a considerable question as to whether an international institution could keep track of who had traded what rights to whom. Possible options include a "World Climate Bank" to keep track of credit accounts, or even to make credit loans itself; or an annual auction of emissions credits. Existing institutions, such as the UNEP or the WMO, might undertake this monitoring function.

Second, international trading may be limited or distorted by various forms of market failures. For example, a large nation or power company might quickly purchase the rights to large quantities of land in a poor nation, with the goal of planting trees on the land to generate net emissions credits; if other bidders are not on the scene, the farmland may be sold at an undervalued price; and even with multiple bidders, there may be other relevant social concerns, such as the provision of food to the residents, that may not be incorporated in the price of the land. Some of these problems might be alleviated by allowing only nations to trade, by requiring nations to approve all trades made by their nationals, or by requiring a period for open bidding after each offer is made and announced. Such measures are, however, likely to reduce the extent of trading.

Third, some nations at the RSWG meetings have attacked trading ideas as evil "licenses to pollute," because nations

could pay others for permits to allow their own emissions to grow. We might respond that a single-pollutant approach is an even larger "license" because it begins by permitting unrestricted emissions of the as-yet-unregulated gases, which might increase even faster as industry shifts to systems producing them. Also, we could dispute the "license to pollute" philosophy. All regulation involves a "license to pollute;" trading is a morally superior form of regulation because it increases human welfare in both environmental and economic terms. The best responses may involve demonstrations that trading is not a "trick": it promises real benefits to all nations, with safeguards against coercive deals or cheating. Past experience indicates that considerable education may be required before some participants are persuaded of the value of a trading system. The conference of climate experts to be held in Washington next spring could provide an opportunity to showcase trading systems and share experience with their operation.

The concerns expressed by other nations over trading imply an important tactical decision for the United States: how closely to link the "comprehensive" approach to the "international trading" approach. If international sentiment is unswervingly opposed to international trading, it may be advisable to propose the two ideas in a way which treats them as conceptually separate (which in fact they are). On the other hand, combining the two approaches in one proposal may help demonstrate their respective attractive features, and might increase the chances of successful adoption of both ideas.

C. Additional Issues.

Of course, there are numerous other issues to be resolved in any international climate agreement, whether or not it is "comprehensive" and permits "trading." These issues are potentially serious and deserve careful consideration.

First, net emissions targets for each country must be arrived at through a process that is perceived as fair and that produces economically efficient and internationally and intergenerationally equitable outcomes. This process raises the questions of how high to set a global net emissions target, how to set national net emissions targets, timetables and baselines, and how to deal with the special concerns of developing nations, for example by permitting them to proceed on a deferred timetable, or giving them targets significantly above present levels.

The issues regarding setting national targets are not fundamentally different under a "comprehensive" as opposed to a piecemeal approach. Indeed, the expanded focus and greater flexibility of the "comprehensive" approach may make it easier to

deal with them. On the other hand, national standards may be complicated by the need to take account of nations' past activities reducing greenhouse gas emissions, such as planting trees, restricting CFC use, and developing nuclear energy generation.

Similarly, promoting the international emissions trading approach could ease adoption of national emissions targets by promising nations the flexibility of attaining their targets through cost-saving trades. On the other hand, such an approach could also complicate the setting of national emission targets by enabling or encouraging some nations to seek added resource transfers through trades by pressing to reduce the targets assigned to other nations.

Second, arrangements for financial assistance and technology transfer to developing economies must be addressed, in order to respond to developing countries' concerns that global warming measures will limit their economic growth, and proper arrangements for financing and technology transfer could alleviate some of those concerns. Financial arrangements and technology transfer are also central to the environmental objective of preventing undue global climate change. For example, financing may be important because some current developing nation debt is repaid through sink-destroying activities such as timber cutting and grazing of forest lands, because investments in new technology or in sustainable agriculture may require initial capital outlays, and because developing nations may lack the resources to undertake the requisite monitoring of their greenhouse gas sources and sinks. Similarly, technology transfer may be climate-related: it may assist developing nations in shifting to non-fossil fuel energy sources, in reducing greenhouse gas emissions from agricultural sources such as rice paddies, and in monitoring greenhouse gas emissions. Conceivably, financial assistance and technology transfers could be linked to an international trading system by giving donor nations credit for a percentage of the reductions in net greenhouse gas emissions achieved as a result, although any such proposal would likely receive a hostile response from many in the international community.

A third issue involves the structure of implementation assurances. Past environmental treaties have employed a variety of options, and possibilities include national reporting; periodic international auditing; routine international monitoring by an international agency; a standing body of representative experts to monitor and report noncompliance; reliance on non-governmental organizations; and national complaints followed by adjudication before an arbitrator, an advisory "conciliation commission," the International Court of Justice, or the U.N. Security Council. A climate treaty might employ one or more of these methods, or create new ones. One suggestion is to require

national or international monitoring of emissions, coupled with publication of the emissions information and the nation's performance target, and review of the result at an annual conference of signatory representatives. The vast array of sources and sinks of greenhouse gases will make monitoring compliance especially difficult, and may necessitate methods of assuring implementation that avoid resort to extended litigation.

A fourth general issue involves the identification of new or previously undiscovered greenhouse gases, new sources of greenhouse gases and sinks, and new routes of greenhouse gas sink destruction. International and national institutions and constant scientific vigilance will be required to prevent natural and technological loopholes from defeating the goals of a global climate agreement.

Fifth, there is the question of relating a climate agreement -- in particular a "comprehensive" approach to greenhouse gases -- to earlier international agreements covering specific gases, sources or sinks. For example, the Montreal Protocol on Substances Depleting the Ozone Layer regulates the production of chlorofluorocarbons (CFCs), which are also powerful greenhouse gases. Other agreements may affect other greenhouse gases, rates of deforestation, and the like. Questions may be raised -- especially by developing nations who have not needed to reduce emissions of substances used primarily in industrialized nations, such as CFCs -- about whether reductions achieved (or foregone) under other agreements may count toward compliance with greenhouse gas emissions targets.

Sixth, the issue of investments in adaptation to climate change has not been considered in our approaches to international agreements. Although the local effects of climate change are likely to vary and therefore to require local adaptation responses, there may be some adaptation techniques applicable to numerous locales or to an industry that spans many nations. In addition, some nations may require financial, technical and informational assistance in predicting climate impacts and developing effective adaptive responses. These kinds of problems and opportunities could be addressed in international contexts, but we do not expect them to play a central part in the international effort to limit climate change by reducing net emissions.¹⁴

¹⁴One possible area of overlap is suggested by the use of adaptation investments as "payment" for emissions credits under an international trading system; but this example is simply a particular instance of the general idea that anything of value, whether climate-related or not, could serve as currency for emissions credits.

TAB 2

Comments on IPCC Response Strategies Working Group
Legal Measures Paper

The U.S. proposal might be reflected in the IPCC Response Strategies Working Group Legal Measures Paper as follows:

1) Add the following ticks to section 1. (Preamble):

- Recognition of interrelationship among all greenhouse gases, their sources and sinks, and the consequent utility of treating them collectively

- Importance of developing response measures that operate in an equitable and economically efficient and effective manner, and that encourage innovation and diversity in the technological and institutional means of addressing global climate change

2) Add the following paragraph to section 3. (General Obligations):

- Development of a protocol, as soon as possible, addressing all adequately scientifically understood greenhouse gases, their sources and sinks, in a comprehensive approach to controlling net emissions of greenhouse gases through national performance targets, leaving to each country the choice of domestic policy responses to achieve its net greenhouse gas emissions target; development of equitable and economically efficient implementation measures, including a system of international emissions trading (see Economic Measures paper, section 5.2); keep under continuing review the set of greenhouse gases, their sources and sinks, and revise the set, according to evolving scientific understanding. (This approach is further elaborated in Appendix __.)

3) The second and third ticks on page 4 refer to "emission limitations/reductions". Either add "net" before "emission" in each of these ticks or repeat both these ticks with the word "net" before "emission".

4) Add the following ticks to section 11. (Annexes and Protocols):

- treat all greenhouse gases, their sources and sinks, comprehensively, in a single protocol

- international emissions trading

U.S. CONCEPT PAPER COMPREHENSIVE GREENHOUSE GAS APPROACH TO A FRAMEWORK CONVENTION ON CLIMATE CHANGE

Proposal:

The RSWG should seriously: 1) consider the merits of combining a framework convention on climate change with one or more protocols that would treat greenhouse gases collectively on the basis of a warming potential index, and 2) evaluate alternative implementation procedures including international tradeable emission reduction credits.

Summary:

Global emissions of greenhouse gases (CO₂, CH₄, N₂O, CFCs, CO, and other trace gases) are currently increasing in every country because of man's activities. Addressing the problem requires a comprehensive and flexible approach that will enable countries to find economically efficient measures to stabilize or reduce emissions while achieving economic growth. The U.S. government believes that a framework convention on climate change should establish a process focusing on the collective warming potential of greenhouse gases rather than on individual greenhouse gases. Countries should be free to select between emission reduction or sink enhancement strategies and among gases as long as these are consistent with a negotiated "collective" greenhouse gas target. Trading emission reduction credits between countries could be an option in implementing this approach. Under this approach, the Convention would set forth a general goal of stabilizing or reducing greenhouse gas emissions at levels and dates to be established in a protocol or protocols to the convention to be developed as soon as possible.

Concepts and Definitions:

Greenhouse gases differ in both their ability to trap heat and their atmospheric lifetimes. For example, methane traps heat approximately 30-40 times more effectively than CO₂, but has a lifetime of 8-12 years, while CO₂ has an effective lifetime of several hundred years. The concept of a Global Warming Potential index has been proposed as a means of accounting for these differences. Recent papers by B. Assarsson and by Lashof and Ahuja propose two similar approaches for defining such an index. For example, the second paper suggests that the Global Warming Potential of methane relative to CO₂ is 3.7. In economic terms this suggests that one could spend up to 3.7 times for reducing methane emissions relative to CO₂ emissions.

The concept of having the government set broad national emission standards, but having flexibility to achieve the goals has been used in the U.S. For example, the trading of emission

reduction credits has been used as a means of achieving real emission reductions of lead in an economically efficient manner. Further, under the proposed Clean Air Act Amendments, a national SO₂ emission target has been identified and each utility company has the choice of achieving SO₂ reductions by either directly reducing emissions at its own facilities or by purchasing allowances from another company, whichever is more economical. The application of such a concept, while never attempted on a cross-pollutant or global scale, would enable each country to achieve emission targets using a least cost approach.

Advantages of the Proposed Approach:

The proposed approach has the following benefits:

- o It would encourage economically efficient approaches within countries and possibly among countries. This is especially important for developing countries that are constrained economically.
- o By addressing greenhouse gases collectively, it would reduce the number of separate protocols, thereby accelerating comprehensive international action.
- o It may serve to facilitate the process of developing a convention even though uncertainties remain over the economic impacts of a protocol. Trading could act as a safety valve, if it turned out that reductions within a country were more expensive than anticipated.
- o It provides flexibility to each country to manage emissions in a manner consistent with its own social and political needs. It allows tradeoffs between sources and sinks, to the extent feasible.
- o It provides incentives to develop and use cost-effective, energy-efficient industrial and consumer products, emission control technologies, reforestation and agricultural practices.
- o It may especially benefit developing countries where low cost emission reductions may be possible and where there is the greatest need for economic support.

Issues to be Addressed:

In developing a convention/protocol(s) along the lines suggested, the following factors would need to be considered:

- o Defining an appropriate Global Warming Potential index. Initial consideration should be given to including at a minimum CO₂, CH₄, and CO. Also, the approach should allow

other gases to be added at a later date as new scientific information is developed. The issue of whether CFCs should be included must be addressed.

- o Establishing global and equitable national targets in terms of the index. This will require estimating each country's emissions by major gas for a baseline year. It will also require careful consideration of when the treaty should enter into force and the need for interim objectives. Each country would be free to allocate current and future emissions in any manner.
- o Evaluating whether and how credits should be given to national governments for actions taken prior to when the convention enters into force, e.g., nuclear power, reforestation, CFC reductions and others.
- o Evaluating alternative administrative, implementation, and enforcement mechanisms, including possibly a system of international emissions trading. International emissions trading could leave the primary burden for arranging trades to the private sector, but national governments will have to provide guidance, monitoring and enforcement. In addition, an international tracking system will be needed to record data and assess trends as a complement to current UN efforts to compile fuel use and other data.
- o Assessing the special needs of developing countries including their specific technological needs, financial requirements and the most appropriate manner for them to participate in such a convention.
- o Evaluating the interrelationship of other complementary global initiatives such as the call to reforest 12 million hectares of forest land per year.
- o Evaluating how to determine credits for sinks, such as reforestation and agricultural practices.

Significant Upcoming Meetings/Deadlines

Jan 1	Comments due on IPCC Response Strategies Working Group Paper on Implementation Mechanisms
Feb 2	IPCC Response Strategies Working Group meeting (officers only)
Feb 5-8	IPCC meeting hosted by U.S. in Washington
March 23-25	Preparatory meeting for July G-7 Economic Summit (tentative)
April 29-May2	U.S. Senate-sponsored Inter-parliamentary Conference on the Global Environment, Washington
[spring]	Meeting hosted by the President on the Environment
May	UN Environment Programme Governing Council Special Session, Nairobi (tentative)
May 8-16	ECE Ministerial Conference on the Environment, Bergen
May 18-20	Preparatory meeting for the July G-7 Economic Summit (tentative)
June 4-8	Meeting of IPCC Response Strategies Working Group to adopt its report, Geneva
June 11-23	World Meteorological Organization (WMO) Executive Committee, Geneva
June 15-17	Preparatory meeting for the July G-7 Economic Summit (tentative)
June 18-20	IPCC Report Drafting Committee meeting, Geneva
August 27-30	IPCC meeting to approve interim report
Oct. 29-Nov. 7	Second World Climate Conference, Geneva
post-November	U.S. has offered to host first negotiating session of framework climate change convention



U.S. Department of Justice
Land and Natural Resources Division

Office of the Assistant Attorney General

Washington, D.C. 20530

December 18, 1989

MEMORANDUM

TO: C. Boyden Gray
Counsel to the President

FROM: Richard B. Stewart *RS*
Assistant Attorney General

SUBJECT: Next Steps on International Approaches to Global
Climate Change

As undertaken at this morning's meeting in your office, this memorandum outlines the steps that should be taken to develop further the proposed United States approach for international agreements dealing with global climate change. This list of steps represents the items considered significant by the representatives of EPA, Justice, State and your office in attendance this morning.

1. Clearance for new U.S. submissions to the RSWG. Clearance must be obtained in the next two weeks for the materials to be submitted to the Intergovernmental Panel on Climate Change ("IPCC") Response Strategies Working Group ("RSWG") for inclusion in the RSWG papers by the January 1, 1990 deadline. The proposed materials for submission to the RSWG -- a set of "Comments" on the RSWG "Legal Measures" paper, and a "Concept Paper" discussing the U.S. proposal -- were attached to the memorandum sent to you yesterday.
2. DPC review. The Domestic Policy Council's Working Group on Global Change, chaired by Dr. Bromley, should take up these matters at its next meeting. If it were held next week, it could be the vehicle for the clearance described in paragraph 1.
3. Pamphlet on comprehensive approach and trading. A pamphlet should be developed, for dissemination in mid-January to RSWG participants, explaining our position on the

benefits of the "comprehensive" and "international trading" approaches to international agreements on greenhouse gases, their sources and sinks, and the drawbacks of other approaches, such as pollutant-by-pollutant and command-and-control methods. The pamphlet should draw on U.S. and international experience with each regulatory method.

4. Response to UNEP initiative on draft convention. This week Dr. Tolba, on behalf of UNEP in Nairobi, requested that all nations suggest language, by January 15, 1990, for a draft framework convention on global climate change. This request appears to compete with the normal IPCC procedures, and to accelerate the schedule for drafting such language. In addition, there may be growing pressure to address this question in the United Nations General Assembly instead of in the IPCC forum. The U.S. should develop a strategy for dealing with this pressure, including consideration of how far to insist on the IPCC's jurisdiction over these matters, and whether to present our substantive proposals to the U.N. if it takes up these matters.

5. Additional needed background work.

Relevant federal agencies should work on the following matters relevant to our proposed approach:

(a) Economic impacts. Assessments should be developed of the economic impacts, on the U.S. and other principal negotiating nations or blocs, of several scenarios for international agreement, including different timetables, baselines, and variances for developing nations within our "comprehensive" approach.

(b) Global Warming Potential Index. A "global warming potential index" should be developed to relate the contribution of each greenhouse gas to total global warming.

(c) List of greenhouse causal factors. The list of greenhouse gases, their sources and sinks, should be developed for inclusion in a "comprehensive" approach to international agreement on climate change.

(d) Monitoring and implementation assurances. Analysis and recommendations should be developed regarding mechanisms for monitoring and implementation assurance provisions in international agreements on climate change. This work should survey and analyze mechanisms used in past international agreements, and recommend the most appropriate mechanisms for both a "comprehensive" approach and an "international trading" approach.

6. Spring 1990 science/economics conference. Work should commence to develop the materials, key speakers, and exhibits that could be assembled at the President's spring science/economics conference on the global environment, in order to educate those attending as to the benefits of our comprehensive and international trading approaches, the drawbacks of traditional command and control regulatory mechanisms, and U.S. and international experience with each system.

1990 ENVIRONMENTAL CALENDAR
Major International and Domestic Events

[Events, dates and locations in brackets are tentative]

January [25]	State of the Union
February 5-8	Plenary Session of Intergovernmental Panel on Climate Change (IPCC) - Washington
[February 6]	[Presidential Address to IPCC]
[April]	White House Science/Economics Conference - [Washington]
April 22	Earth Day 1990 (20th anniversary; events are scheduled throughout country several days before and after April 22)
April 29-May 2	Interparliamentary Conference on the Global Environment - Washington (sponsored by U.S. Senate)
May 8-16	Conference on Action for our Future - Bergen (ministerial-level meeting; follow-up to conference on sustainable development previously held under auspices of Prime Minister Brundtland)
[June 18-30]	Summit Meeting between Bush and Gorbachev
June 20-29	Second Meeting of Parties to Montreal Protocol - London (negotiating session to expand Montreal Protocol under Vienna Convention to ozone-depleting substances other than CFCs)
July 9-11	G-7 Economic Summit - Houston
August	Final IPCC Plenary Session - Stockholm
[September-October]	[President's International Conference on Conservation of Nature]
November 12-13	Second World Climate Conference - Geneva
[December 1990-January 1991]	First Negotiating Session for Framework Convention on Global Change

Global Change Meeting
Roosevelt Room, Tuesday, December 19, 1989, 11:00 AM

OSTP	D. Allan Bromley (Chairman)	395-7116
DOE	Admiral James Watkins	586-6210
NASA	Admiral Richard Truly	453-1010
CEA	Michael Boskin	395-5042
CEQ	Michael Deland	395-5080
USDI	Frank Bracken	343-4863
DOC	John Knauss	377-3436
WHO	C. Boyden Gray	456-2632
WHO	Andrew Card	456-2533
WHO	David Demarest	456-7260
OPD	Roger Porter	456-2705
OCA	Stephen Danzansky	456-6630
WHC	John Schmitz	456-6611
OMB	Robert Grady	395-4484
NSF	Erich Bloch	357-7748
DOS	Fred Bernthal	647-1554
TRS	Sydney Jones	566-2551
DOJ	Richard Stewart	633-2701
EPA	J. Clarence Davies	382-4700
DPC	Kenneth P. Yale	456-6722
OCA	Juanita Duggan	456-7084
OCA	Barry McBee	456-6437
DOJ	Bill Myers	633-2268
OSTP	Nancy Maynard	395-3637
DOS	Chris Dawson	647-6240
NSC	Eric Melby	395-4985

THE WHITE HOUSE

WASHINGTON

December 18, 1989

MEMORANDUM FOR THE GLOBAL CHANGE WORKING GROUP

FROM: D. ALLAN BROMLEY
Chairman

SUBJECT: Meeting of the Global Change Working Group

There will be a meeting of the Global Change Working Group on Tuesday, December 19, 1989 from 11:00 to 12:30 PM in the Roosevelt Room for principals only. The issues to be discussed include 1) the President's 1990 International Environmental Initiative, 2) Reports from the private Sector Task Force and the Legal Precedents Task Force, and 3) a schedule for briefings by private sector interests.

Attached is a paper on legal instruments and a draft concept paper on international legal measures. A paper on the President's 1990 International Environmental Initiative will be available for review by Working Group members at 10:45 AM in the Roosevelt Room.

Please be advised that this is a close hold document. Please refrain from making additional copies. Call Dean at 456-6722 if you are able to attend.



U.S. Department of Justice
Land and Natural Resources Division

Office of the Assistant Attorney General

Washington, D.C. 20530

December 18, 1989

MEMORANDUM

TO: Hon. D. Allan Bromley
Assistant to the President
for Science and Technology
Chairman, Domestic Policy Council Working Group
on Global Change

Members of the Domestic Policy Council
Working Group on Global Change

FROM: Richard B. Stewart *RS*
Assistant Attorney General

SUBJECT: International Approaches to Global Climate Change

In an effort to develop a new approach to possible international agreement on global climate change, representatives of the Environmental Protection Agency, the State Department, and the Justice Department have met with each other and with the Counsel to the President. This memorandum transmits to you the materials produced by those meetings, and identifies certain issues to which the DPC Working Group may need to give special attention.

Timetable

In the first week of February 1990, the United States will host a meeting of the Response Strategies Working Group ("RSWG") of the Intergovernmental Panel on Climate Change ("IPCC"), followed by a plenary meeting of the IPCC. At its February meeting, the RSWG will consider additional submissions to its October, 1989 Report. Such submissions must be made by a deadline of January 1, 1990.

Follow-up actions in the coming months include further deliberation by the RSWG and the full IPCC over the spring and summer, the President's spring conference on the science and economics aspects of global environmental change, the IPCC conference in the autumn, possible related activities by the United Nations Environment Programme ("UNEP"), and the international conference on a "framework convention" on climate change to be hosted in Washington, D.C. in the fall of 1990. These meetings and others are listed in the last attachment to the memorandum dated December 14, 1989, described below.

Materials Attached

Attached please find the following materials:

- Memorandum from Richard B. Stewart to C. Boyden Gray, dated December 14, 1989, describing and analyzing the proposed new approaches for international agreement.
(Tab 1)

Related to this memorandum are the following attachments:

- Comments to be proposed for inclusion in the RSWG Report. The deadline for adding such comments is January 1, 1990.
(Tab 2)
- "Concept Paper" briefly summarizing the proposed approaches for international agreement, to be submitted for inclusion in the RSWG Report, also by January 1, 1990.
(Tab 3)
- List of significant meetings and conferences in the coming months.
(Tab 4)
- Memorandum from Richard B. Stewart to C. Boyden Gray, dated December 18, 1989, outlining the next steps that should be taken to develop the proposed approaches.
(Tab 5)

Issues for DPC Working Group Consideration

We respectfully suggest that the DPC Working Group on Global Change consider the proposed approaches contained in the above documents, and the discussion of the strategic questions, advantages and drawbacks related to our approaches contained in those documents. It should be noted that the impacts on the

United States of international adoption of the proposed approaches have not yet been analyzed in detail, and no quantitative predictions of such effects are yet available. Our recommendations are therefore tempered by the need for further research.

In particular, we recommend special attention to the following concerns:

1. Should the United States favor the traditional approach to environmental regulation when addressing potential global climate change, involving a framework convention followed by successive protocols each directing nations to limit their emissions of a separate specific pollutant? That approach has been employed, with some variations, by the Vienna Convention and the Montreal Protocol on Substances Depleting the Ozone Layer, and was proposed by other nations for dealing with global climate change at the Noordwijk Ministerial Conference on Atmospheric Pollution and Climate Change.

Or should the United States actively promote a "comprehensive" approach to collective treatment of all greenhouse gases, their sources and sinks, in which each nation must meet a national performance-based target, but is left to choose its mix of domestic policies to meet that target? This approach is described in the attached materials, and it is the one we recommend.

2. Assuming the United States Government adopts the approach we recommend, should the proposed approach outlined be presented to the RSWG and/or the IPCC as the official United States position, or should it be put forward more tentatively, as an issue for consideration by the RSWG and/or the IPCC?

3. Should the "international trading" approach, as described in the above materials, be proposed as an integral part of the United States submission, firmly linked to the "comprehensive" approach, or should it be treated as an important and useful idea which may nevertheless be deferred for further consideration? This question is discussed more fully in the memorandum dated December 14, 1989, listed above, particularly at pp. 3-4.

TAB 1



U.S. Department of Justice
Land and Natural Resources Division

Office of the Assistant Attorney General

Washington, D.C. 20530

December 14, 1989

MEMORANDUM

TO: C. Boyden Gray, Esq.
Counsel to the President

FROM: Richard B. Stewart *RS*
Assistant Attorney General

SUBJECT: International Approaches to Global Climate Change

As requested at the December 6, 1989 meeting in your office, an informal group of representatives of EPA, Justice and State have developed materials to promote discussion and adoption of a comprehensive, performance-based approach in international agreements dealing with global climate change. This memorandum is submitted to transmit these materials to you, and to highlight some of the issues raised by such an approach.

SUMMARY

Under a comprehensive, performance-based approach, all greenhouses gases, sources and sinks are addressed together. Each international legal instrument produced -- whether convention or protocol -- deals, to the maximum extent possible, with the entire array of gases, their sources and sinks.¹ This approach employs the concept of a "global warming potential index" to compare gases, their sources and sinks along a standardized spectrum, and the concept of "net emissions" to adopt performance targets that would not be limited to any one gas or source or sink, but would permit attainment of the target through policies aimed at all scientifically understood

¹As explained below, limitations in data and scientific understanding may preclude use of a truly comprehensive approach, incorporating all sources and sinks, at the outset.

greenhouse causal factors. Such net emissions performance targets would be set, at least initially, for each nation, and would leave to each nation the choice of internal policies desired to attain the target. Thus, using the "global warming potential index," each nation could devise a set of policies that would reduce "net emissions," through restriction of sources or expansion of sinks or both.

Such an approach would provide maximum flexibility for developing diverse, innovative, cost-effective measures for dealing with global warming. It would encourage, but not require, internal use by participating nations of emissions reduction or contract credits and trading programs, on the model of the Administration's Clean Air Act proposal for acid rain.

In addition, international trades² (on a bilateral, regional or multilateral basis) could be authorized as a method for attaining national net emissions targets in order to achieve further environmental and economic benefits from the use of the trading principle.

This approach is reflected in the following attachments:

- Comments to be submitted for addition to the "Legal Measures" section of the most recent Report of the Intergovernmental Panel on Climate Change ("IPCC") Response Strategies Working Group ("RSWG"), due by January 1, 1990. (Tab A)
- A concept paper to be submitted for attachment as an Appendix to the "Legal Measures" section of the RSWG Report, due by January 1, 1990. (Tab B)
- A revised Draft Framework Convention embodying these approaches. This document is an internal State Department draft, not cleared through interagency review and not for distribution. (Tab C)
- An itinerary of significant upcoming meetings and deadlines. (Tab D)

²The term "international emissions trading" is used throughout this memorandum in its general sense, to refer to trades across national borders without regard to whether the trade is conducted by governmental or private actors.

These materials contemplate the following actions in the international community:

- Proposal by the United States that the comprehensive, performance-based approach and a system of international emissions trading be analyzed and discussed by the RSWG and by the full IPCC.
- Inclusion of obligations in a "framework convention" on climate change requiring the parties to develop the comprehensive approach and the trading approach .
- Implementation, through a protocol to the framework convention, of the comprehensive approach for all scientifically understood greenhouse gases, their sources and sinks.
- Further authorization, either in the initial protocol or in subsequent documents, of international emissions trading.
- Protocol amendments to include additional greenhouse gases, their sources and sinks (or to exclude previously included items) as scientific understanding advances.

There is an important question whether international agreement on responses to global climate change should take the form of one or more than one legal instrument. We recommend flexibility on this question, permitting the use of more than one instrument, so long as each instrument incorporates the comprehensive, performance-based approach outlined here. The use of more than one legal instrument -- a framework convention, followed by one or more protocols -- is not itself inconsistent with our "comprehensive" and "trading" approaches. The pace of scientific research may require some time between the signing of a convention and the adoption of substantive protocols.³ As discussed below, many nations may view our proposals -- particularly the proposal for a system of international trading -- with suspicion, and it may be to our advantage to propose a trading system in a later document after the comprehensive

³The United States could propose that the international community continue to work on developing the scientific basis for the comprehensive, performance-based approach while the convention is being negotiated, with the possibility of signing the first protocol at the time the framework convention is signed, or as soon as possible thereafter.

approach has been adopted. Further, there is value in gaining signatories to the framework convention even if those nations do not all sign the subsequent protocols, because the framework convention includes participation in research and monitoring activities that will prove useful to those seeking the data base from which to make policy in the protocols and in national legislation. How far to attempt to tilt the framework convention toward our preferred approaches remains a difficult tactical question.

DISCUSSION

A. "Comprehensive" Approach.

A comprehensive performance-based approach stands in contrast to a piecemeal pollutant-by-pollutant approach, such as that proposed at the November 1989 conference in Noordwijk, Netherlands, which focused on adopting targets for one greenhouse gas, carbon dioxide (CO₂), alone.⁴ The comprehensive approach would set a target for "net emissions" of greenhouse gases, for achievement by each nation or by multinational groups such as the European Community. This target could, for example, consist of a phased-in cap, possibly followed by subsequent reductions. The contributions of various sources and sinks to the achievement of this target would be measured by a "global warming potential index."⁵

⁴The Noordwijk conference urged pollutant-by-pollutant control rules, starting with CO₂. It did suggest possible development of a method for comparing the effects of other gases to the effects of CO₂, similar to the "global warming potential index" recommended in this memorandum, but did not attempt to employ that concept in a collective approach to all greenhouse gases.

⁵The "global warming potential index" is a system for computing the contribution to total climate change of any alteration in the emissions of any particular greenhouse gas. It assigns a value to each greenhouse gas describing the contribution of each additional molecule of that gas to the total warming of the atmosphere. The value depends on variables such as the molecular composition of the gas, the lifetime of such molecules in the atmosphere, and the existing atmospheric concentration of the gas and related gases at the time the additional molecule reaches the atmosphere. All the greenhouse gases can then be characterized and compared by their "global warming potential index" values. This method is discussed further in the EPA's attached Concept Paper.

The advantages of this approach are several. First, it allows each nation to use that combination of source and sink controls and other measures that is best adapted to its economic and other circumstances, achieving greenhouse environmental protection at significantly lower cost than a pollutant-by-pollutant strategy. This approach maximizes the opportunity for and encourages the adoption of diverse, flexible, innovative, and cost-effective solutions to global warming.⁶ The economic and social costs of dealing with global warming are likely to be great. It is thus particularly important in this case to use institutional strategies that will maximize the incentives and opportunities for development of new technologies and other innovative responses that will reduce these costs. Performance-based standards, a comprehensive approach, and net emissions trading will each contribute to achieving this goal.

Second, this approach reserves to each nation freedom to employ whatever institutional mechanisms it wishes to use to achieve its target objective. This flexibility takes account of the widely varying legal and cultural systems present in different nations, and avoids the obstacles to international agreement among sovereign states that would be raised by dictating to each nation how it must institutionally manage its climate-related policies and industries. A free market economy is not required to employ strict command and control regulations. By the same token, a centrally planned economy is not required to employ market measures.

⁶For example, an approach that mandated specific percentage reductions in each gas -- such as a 20% reduction in CO₂ and a 30% reduction in methane -- would be more costly than an approach that required a reduction in each nation's contribution to total warming (as measured by the "global warming potential index") and permitted each nation to adopt its least-cost mix of choices achieving the target overall. Some nations might be able to reduce CO₂ emissions much more than 20% through substitution of non-fossil fuels, but be unable to reduce methane output (e.g., a nation importing oil and dependent on rice crops, but endowed with untapped solar power opportunities). Those nations would meet their net targets by reducing CO₂ more rapidly than methane; reducing each the same amount would prove much more costly (perhaps in terms of higher taxes, or reduced rice production) and would leave available CO₂ reductions unexploited. Other nations might find themselves in the opposite situation, able to reduce methane but not CO₂. A similar analysis applies to approaches mandating specific changes in sources alone or sinks alone, rather than combining them in a "net emissions" requirement that leaves the domestic policy mix to each nation.

Third, dealing with all greenhouse gases, sources and sinks at once will achieve substantially better environmental protection. Past experience indicates that attempts to control one cause of an environmental problem while leaving others unregulated often results in shifting residuals or other forms of degradation to the unregulated mode. For example, attempts to reduce water pollution have induced industry to convert liquid pollutants into sludge, creating toxic waste disposal problems.⁷ Similarly, attempts to regulate one greenhouse gas at a time might induce shifts to practices that create other greenhouse gases, possibly contributing more to climate change per unit of economic output than the ones they replace. A comprehensive approach is necessary to ensure proper protection of the environment.

Fourth, a comprehensive approach is more equitable, and greatly reduces the potential for nations to manipulate the design of international regulatory measures in order to achieve competitive or other economic advantage. An approach that set targets first for certain sources or sinks and progressed to others later would unfairly burden those nations whose economies are comparatively more burdened by the initial measure.⁸ Moreover, a pollutant-by-pollutant command and control approach makes it more difficult to arrive at international consensus, because each nation will attempt to "game" the standard-setting agenda in its favor. Nations' efforts to "game" the design of international regulatory controls are also likely to distort trade and reduce global welfare as well as impede environmental improvement.

There are, however, possible drawbacks to a comprehensive approach that should be reviewed. First, there may be difficulties in arriving at "global warming potential index"

⁷In the United States we have traditionally followed a medium-by-medium and pollutant-by-pollutant approach, recognizing many of its problems, but the EPA is now attempting to devise a more integrated strategy to address what have come to be "cross-media" defects in our system of environmental control. Although a "comprehensive" approach to greenhouse gases is focused on the single medium of atmospheric temperature change, it is a vast improvement over pollutant-by-pollutant control.

⁸For example, an approach that first mandated 20% reductions in CO₂ emissions would pose much greater burdens for those heavily committed to using fossil fuels, and for those whose economies depend on exports of fossil fuels; alternatively, an approach that first mandated 20% reductions in methane emissions would pose much greater burdens for those heavily dependent on rice crops and ruminant animal husbandry.

values. These difficulties include the scientific problem of determining consensus values,⁹ the practical problem of assigning values sensitive enough to yield efficient environmental policy,¹⁰ and the political implications of the fact that assigning different values to different gases will effectively alter the costs to different nations of achieving their performance targets. The committee conducting this work could be engaged in a highly politicized enterprise. It should therefore be staffed with the best scientists, and must produce a legitimate conclusion in the eyes of the world.

Second, the problem of the environmental "second-best" may persist even in our "comprehensive" approach, the adoption of a comprehensive agreement, which would not deal with the non-greenhouse environmental impacts of restricting greenhouse gases.¹¹ The IPCC or other appropriate body could be directed to monitor these problems and report back to the international community at regular intervals.

Third, the "comprehensive" approach might be branded a stalling tactic, because some nations believe that the best approach is to adopt protocols quickly for substances we can

⁹As mentioned above, the index values depend on a variety of complex and sometimes interrelated variables. As described in the attached EPA Concept Paper, current efforts to define the index have reached different results. There are also likely to be differences of opinion as to the proper list of greenhouse gases. Further work will be necessary before consensus results are produced.

¹⁰The "global warming potential index" measures could be expressed as functions -- instead of constant values -- to incorporate the several variables on which they depend, such as ambient atmospheric concentrations of that gas and related gases, other atmospheric phenomena, expected lifetime of the gas in the atmosphere, and so forth. As sources and sinks are, in turn, assigned performance values for their contributions to total warming, those values must also be adjustable to take account of variables such as diverse combustion techniques, scrubbing methods, and the varying regional characteristics of forests, or else the value set will discourage investment in advances that could reduce net greenhouse gas emissions. The source and sink values must, furthermore, be flexible enough to take account of long-term investments in emissions-affecting policies, such as sink development, which may have inherently long lead times.

¹¹For example, the generation of nuclear waste. An analog is the history of chlorofluorocarbons (CFCs): developed to replace highly toxic chemicals, they ultimately proved to have serious effects on the stratospheric ozone layer.

agree on now, and proceed to thornier issues as we go. Our approach might be seen as proceeding at the pace of the "slowest common denominator." We might respond that our approach will in fact proceed more quickly, because it raises the potential for broad consensus by eliminating the inequitable effects of single-pollutant protocols. In addition, we might answer that our approach will achieve better results (even if it takes slightly longer to achieve than the first single-pollutant protocol would take) because it will prevent cross-pollutant shifts.¹² In order to make our commitment to action credible to the international community, we might consider unilateral domestic initiatives, such as energy conservation, tree-planting programs, and the like to deal with global warming in advance of the adoption of a comprehensive agreement. A later agreement could give "credit" for such efforts through use of appropriate baselines.

Fourth, the comprehensive approach might not actually end up favoring U.S. interests. We might find ourselves party to a treaty restricting all of US industry instead of one allowing us to shift to other unrestricted fuels. We recommend that the relevant federal agencies be requested to prepare an economic analysis showing the likely impacts on the United States and the world¹³ of several scenarios, including no action, adoption of a CO2 protocol alone, adoption of a comprehensive approach as described here, and other relevant possibilities, in order to provide the Administration with effective means for evaluating these options.

¹²We might also attempt to blunt the "stalling" criticism by focusing efforts now on developing scientific consensus on the comprehensive approach, with an eye toward completing the first protocol at the same time as the convention, or soon thereafter. We might further blunt this criticism by considering including in the convention, depending on the status of development of the first protocol, a requirement that within a specified period after the convention enters into force the parties will agree on the scope and timetable for the first protocol. It may, on the other hand, be impractical to ask parties to bind themselves to future agreement; and specifying too early a date might hinder our efforts to gather all greenhouse gases, their sources and sinks into a comprehensive approach.

¹³The analysis might also estimate costs for other major nations and blocs in order to inform our negotiating strategy. This calculation should also include the cost to the United States and others of not regulating other greenhouse gases, i.e., the costs of consequent added global warming. And as discussed above, even under a comprehensive approach, the calculation of the global warming potential index values could have important implications for U.S. performance under the treaty.

Fifth, a multi-pollutant agreement complicates the task of monitoring compliance, because it covers many more gases and sinks which must be watched, lest countries assert reductions without actually achieving them. This concern points to the need to ensure a scientifically credible method of monitoring emissions of various sources, changes in sinks, and their effects on global climate. In this respect, a comprehensive approach reinforces our interest in basing response agreements on sound science and data. The effects of some gases, sources and sinks may not be sufficiently well understood to include them in an initial agreement limiting net emissions. The ideal of total comprehensiveness may thus be limited by gaps in knowledge. As scientific knowledge advances, however, additional gases, sources and sinks could be included in the basic agreement.

B. "International Trading."

The second approach emphasized in our submissions is the development of "international trading" in greenhouse gas emissions. As explained below, the trading concept is not well understood by many nations, who have viewed U.S. proposals for trading with considerable suspicion. It may therefore not be advisable to press for adoption of international trading at the outset, reserving it for a later protocol, after the comprehensive approach has been launched and more nations have used trading domestically. International trading in environmentally related commodities is already a feature of the world economy, with "debt-for-nature" swaps being perhaps the best known example. The Montreal Protocol on Substances Depleting the Ozone Layer contains "industrial rationalization" provisions allowing limited substance trading among the parties. Domestically, we have instituted trading in the new source "bubble" offset program and the lead phasedown program under the Clean Air Act, and the Administration has proposed a more ambitious trading program in the acid deposition reduction title of the Clean Air Act reauthorization. The concept of "trading" has already been placed before the RSWG by the United States, as part of the subgroup discussion of "Economic (Market) Measures."

The proposal discussed here is to expand the use of this approach by promoting a international trading program in net greenhouse gas emissions, for consideration by the "Legal Measures" subgroup of the RSWG.

In sum, one nation might find it less costly to exceed its net emissions target by N units and to purchase a commensurate N unit reduction from another nation -- the latter able to reduce further than its target at less cost than the price the first nation is paying it. The "purchase" might involve debt being forgiven in return for afforestation, or cash

paid for investments in energy efficiency, or for lower-warming potential fuels (such as Europe paying the Soviet Union to pipe in natural gas), or technological trade secrets offered in return for investments in scrubbing technology, or other similar and innovative techniques. There would be no requirement that every nation "take part" in the trading avenues permitted; those who see no economic need to engage in international trades, or who are philosophically opposed, could demur. Such trades could be arranged on a bilateral, regional, or multilateral basis.

The primary advantage of this approach is that it extends to the international arena all of the benefits which a comprehensive, performance-based approach affords domestically. These include maximum incentive and opportunity for diverse, flexible, innovative, least cost solutions to global warming. The economic advantage of trading may serve as an inducement or palliative to nations concerned about the cost of restricting their emissions. As with the Administration's acid rain proposal, the trading system would permit faster reductions in net emissions at lower cost, potentially easing the way to adoption of significant reduction targets.

There are, however, important concerns regarding an international trading system. First, it may be difficult to monitor the trades -- a problem distinct from the difficulty of monitoring compliance with the emissions targets actually set or arrived at through trades. There is a considerable question as to whether an international institution could keep track of who had traded what rights to whom. Possible options include a "World Climate Bank" to keep track of credit accounts, or even to make credit loans itself; or an annual auction of emissions credits. Existing institutions, such as The UNEP or the WMO, might undertake this monitoring function.

Second, international trading may be limited or distorted by various forms of market failures. For example, a large nation or power company might quickly purchase the rights to large quantities of land in a poor nation, with the goal of planting trees on the land to generate net emissions credits; if other bidders are not on the scene, the farmland may be sold at an undervalued price; and even with multiple bidders, there may be other relevant social concerns, such as the provision of food to the residents, that may not be incorporated in the price of the land. Some of these problems might be alleviated by allowing only nations to trade, by requiring nations to approve all trades made by their nationals, or by requiring a period for open bidding after each offer is made and announced. Such measures are, however, likely to reduce the extent of trading.

Third, some nations at the RSWG meetings have attacked trading ideas as evil "licenses to pollute," because nations

could pay others for permits to allow their own emissions to grow. We might respond that a single-pollutant approach is an even larger "license" because it begins by permitting unrestricted emissions of the as-yet-unregulated gases, which might increase even faster as industry shifts to systems producing them. Also, we could dispute the "license to pollute" philosophy. All regulation involves a "license to pollute;" trading is a morally superior form of regulation because it increases human welfare in both environmental and economic terms. The best responses may involve demonstrations that trading is not a "trick": it promises real benefits to all nations, with safeguards against coercive deals or cheating. Past experience indicates that considerable education may be required before some participants are persuaded of the value of a trading system. The conference of climate experts to be held in Washington next spring could provide an opportunity to showcase trading systems and share experience with their operation.

The concerns expressed by other nations over trading imply an important tactical decision for the United States: how closely to link the "comprehensive" approach to the "international trading" approach. If international sentiment is unswervingly opposed to international trading, it may be advisable to propose the two ideas in a way which treats them as conceptually separate (which in fact they are). On the other hand, combining the two approaches in one proposal may help demonstrate their respective attractive features, and might increase the chances of successful adoption of both ideas.

C. Additional Issues.

Of course, there are numerous other issues to be resolved in any international climate agreement, whether or not it is "comprehensive" and permits "trading." These issues are potentially serious and deserve careful consideration.

First, net emissions targets for each country must be arrived at through a process that is perceived as fair and that produces economically efficient and internationally and intergenerationally equitable outcomes. This process raises the questions of how high to set a global net emissions target, how to set national net emissions targets, timetables and baselines, and how to deal with the special concerns of developing nations, for example by permitting them to proceed on a deferred timetable, or giving them targets significantly above present levels.

The issues regarding setting national targets are not fundamentally different under a "comprehensive" as opposed to a piecemeal approach. Indeed, the expanded focus and greater flexibility of the "comprehensive" approach may make it easier to

deal with them. On the other hand, national standards may be complicated by the need to take account of nations' past activities reducing greenhouse gas emissions, such as planting trees, restricting CFC use, and developing nuclear energy generation.

Similarly, promoting the international emissions trading approach could ease adoption of national emissions targets by promising nations the flexibility of attaining their targets through cost-saving trades. On the other hand, such an approach could also complicate the setting of national emission targets by enabling or encouraging some nations to seek added resource transfers through trades by pressing to reduce the targets assigned to other nations.

Second, arrangements for financial assistance and technology transfer to developing economies must be addressed, in order to respond to developing countries' concerns that global warming measures will limit their economic growth, and proper arrangements for financing and technology transfer could alleviate some of those concerns. Financial arrangements and technology transfer are also central to the environmental objective of preventing undue global climate change. For example, financing may be important because some current developing nation debt is repaid through sink-destroying activities such as timber cutting and grazing of forest lands, because investments in new technology or in sustainable agriculture may require initial capital outlays, and because developing nations may lack the resources to undertake the requisite monitoring of their greenhouse gas sources and sinks. Similarly, technology transfer may be climate-related: it may assist developing nations in shifting to non-fossil fuel energy sources, in reducing greenhouse gas emissions from agricultural sources such as rice paddies, and in monitoring greenhouse gas emissions. Conceivably, financial assistance and technology transfers could be linked to an international trading system by giving donor nations credit for a percentage of the reductions in net greenhouse gas emissions achieved as a result, although any such proposal would likely receive a hostile response from many in the international community.

A third issue involves the structure of implementation assurances. Past environmental treaties have employed a variety of options, and possibilities include national reporting; periodic international auditing; routine international monitoring by an international agency; a standing body of representative experts to monitor and report noncompliance; reliance on non-governmental organizations; and national complaints followed by adjudication before an arbitrator, an advisory "conciliation commission," the International Court of Justice, or the U.N. Security Council. A climate treaty might employ one or more of these methods, or create new ones. One suggestion is to require

national or international monitoring of emissions, coupled with publication of the emissions information and the nation's performance target, and review of the result at an annual conference of signatory representatives. The vast array of sources and sinks of greenhouse gases will make monitoring compliance especially difficult, and may necessitate methods of assuring implementation that avoid resort to extended litigation.

A fourth general issue involves the identification of new or previously undiscovered greenhouse gases, new sources of greenhouse gases and sinks, and new routes of greenhouse gas sink destruction. International and national institutions and constant scientific vigilance will be required to prevent natural and technological loopholes from defeating the goals of a global climate agreement.

Fifth, there is the question of relating a climate agreement -- in particular a "comprehensive" approach to greenhouse gases -- to earlier international agreements covering specific gases, sources or sinks. For example, the Montreal Protocol on Substances Depleting the Ozone Layer regulates the production of chlorofluorocarbons (CFCs), which are also powerful greenhouse gases. Other agreements may affect other greenhouse gases, rates of deforestation, and the like. Questions may be raised -- especially by developing nations who have not needed to reduce emissions of substances used primarily in industrialized nations, such as CFCs -- about whether reductions achieved (or foregone) under other agreements may count toward compliance with greenhouse gas emissions targets.

Sixth, the issue of investments in adaptation to climate change has not been considered in our approaches to international agreements. Although the local effects of climate change are likely to vary and therefore to require local adaptation responses, there may be some adaptation techniques applicable to numerous locales or to an industry that spans many nations. In addition, some nations may require financial, technical and informational assistance in predicting climate impacts and developing effective adaptive responses. These kinds of problems and opportunities could be addressed in international contexts, but we do not expect them to play a central part in the international effort to limit climate change by reducing net emissions.¹⁴

¹⁴One possible area of overlap is suggested by the use of adaptation investments as "payment" for emissions credits under an international trading system; but this example is simply a particular instance of the general idea that anything of value, whether climate-related or not, could serve as currency for emissions credits.

Comments on IPCC Response Strategies Working Group
Legal Measures Paper

The U.S. proposal might be reflected in the IPCC Response Strategies Working Group Legal Measures Paper as follows:

1) Add the following ticks to section 1. (Preamble):

- Recognition of interrelationship among all greenhouse gases, their sources and sinks, and the consequent utility of treating them collectively

- Importance of developing response measures that operate in an equitable and economically efficient and effective manner, and that encourage innovation and diversity in the technological and institutional means of addressing global climate change

2) Add the following paragraph to section 3. (General Obligations):

- Development of a protocol, as soon as possible, addressing all adequately scientifically understood greenhouse gases, their sources and sinks, in a comprehensive approach to controlling net emissions of greenhouse gases through national performance targets, leaving to each country the choice of domestic policy responses to achieve its net greenhouse gas emissions target; development of equitable and economically efficient implementation measures, including a system of international emissions trading (see Economic Measures paper, section 5.2); keep under continuing review the set of greenhouse gases, their sources and sinks, and revise the set, according to evolving scientific understanding. (This approach is further elaborated in Appendix __.)

3) The second and third ticks on page 4 refer to "emission limitations/reductions". Either add "net" before "emission" in each of these ticks or repeat both these ticks with the word "net" before "emission".

4) Add the following ticks to section 11. (Annexes and Protocols):

- treat all greenhouse gases, their sources and sinks, comprehensively, in a single protocol

- international emissions trading

U.S. CONCEPT PAPER COMPREHENSIVE GREENHOUSE GAS APPROACH TO A FRAMEWORK CONVENTION ON CLIMATE CHANGE

Proposal:

The RSWG should seriously: 1) consider the merits of combining a framework convention on climate change with one or more protocols that would treat greenhouse gases collectively on the basis of a warming potential index, and 2) evaluate alternative implementation procedures including international tradeable emission reduction credits.

Summary:

Global emissions of greenhouse gases (CO₂, CH₄, N₂O, CFCs, CO, and other trace gases) are currently increasing in every country because of man's activities. Addressing the problem requires a comprehensive and flexible approach that will enable countries to find economically efficient measures to stabilize or reduce emissions while achieving economic growth. The U.S. government believes that a framework convention on climate change should establish a process focusing on the collective warming potential of greenhouse gases rather than on individual greenhouse gases. Countries should be free to select between emission reduction or sink enhancement strategies and among gases as long as these are consistent with a negotiated "collective" greenhouse gas target. Trading emission reduction credits between countries could be an option in implementing this approach. Under this approach, the Convention would set forth a general goal of stabilizing or reducing greenhouse gas emissions at levels and dates to be established in a protocol or protocols to the convention to be developed as soon as possible.

Concepts and Definitions:

Greenhouse gases differ in both their ability to trap heat and their atmospheric lifetimes. For example, methane traps heat approximately 30-40 times more effectively than CO₂, but has a lifetime of 8-12 years, while CO₂ has an effective lifetime of several hundred years. The concept of a Global Warming Potential index has been proposed as a means of accounting for these differences. Recent papers by B. Assarsson and by Lashof and Ahuja propose two similar approaches for defining such an index. For example, the second paper suggests that the Global Warming Potential of methane relative to CO₂ is 3.7. In economic terms this suggests that one could spend up to 3.7 times for reducing methane emissions relative to CO₂ emissions.

The concept of having the government set broad national emission standards, but having flexibility to achieve the goals has been used in the U.S. For example, the trading of emission

reduction credits has been used as a means of achieving real emission reductions of lead in an economically efficient manner. Further, under the proposed Clean Air Act Amendments, a national SO₂ emission target has been identified and each utility company has the choice of achieving SO₂ reductions by either directly reducing emissions at its own facilities or by purchasing allowances from another company, whichever is more economical. The application of such a concept, while never attempted on a cross-pollutant or global scale, would enable each country to achieve emission targets using a least cost approach.

Advantages of the Proposed Approach:

The proposed approach has the following benefits:

- o It would encourage economically efficient approaches within countries and possibly among countries. This is especially important for developing countries that are constrained economically.
- o By addressing greenhouse gases collectively, it would reduce the number of separate protocols, thereby accelerating comprehensive international action.
- o It may serve to facilitate the process of developing a convention even though uncertainties remain over the economic impacts of a protocol. Trading could act as a safety valve, if it turned out that reductions within a country were more expensive than anticipated.
- o It provides flexibility to each country to manage emissions in a manner consistent with its own social and political needs. It allows tradeoffs between sources and sinks, to the extent feasible.
- o It provides incentives to develop and use cost-effective, energy-efficient industrial and consumer products, emission control technologies, reforestation and agricultural practices.
- o It may especially benefit developing countries where low cost emission reductions may be possible and where there is the greatest need for economic support.

Issues to be Addressed:

In developing a convention/protocol(s) along the lines suggested, the following factors would need to be considered:

- o Defining an appropriate Global Warming Potential index. Initial consideration should be given to including at a minimum CO₂, CH₄, and CO. Also, the approach should allow

other gases to be added at a later date as new scientific information is developed. The issue of whether CFCs should be included must be addressed.

- o Establishing global and equitable national targets in terms of the index. This will require estimating each country's emissions by major gas for a baseline year. It will also require careful consideration of when the treaty should enter into force and the need for interim objectives. Each country would be free to allocate current and future emissions in any manner.
- o Evaluating whether and how credits should be given to national governments for actions taken prior to when the convention enters into force, e.g., nuclear power, reforestation, CFC reductions and others.
- o Evaluating alternative administrative, implementation, and enforcement mechanisms, including possibly a system of international emissions trading. International emissions trading could leave the primary burden for arranging trades to the private sector, but national governments will have to provide guidance, monitoring and enforcement. In addition, an international tracking system will be needed to record data and assess trends as a complement to current UN efforts to compile fuel use and other data.
- o Assessing the special needs of developing countries including their specific technological needs, financial requirements and the most appropriate manner for them to participate in such a convention.
- o Evaluating the interrelationship of other complementary global initiatives such as the call to reforest 12 million hectares of forest land per year.
- o Evaluating how to determine credits for sinks, such as reforestation and agricultural practices.

TAB 4

Significant Upcoming Meetings/Deadlines

Jan 1	Comments due on IPCC Response Strategies Working Group Paper on Implementation Mechanisms
Feb 2	IPCC Response Strategies Working Group meeting (officers only)
Feb 5-8	IPCC meeting hosted by U.S. in Washington
March 23-25	Preparatory meeting for July G-7 Economic Summit (tentative)
April 29-May 2	U.S. Senate-sponsored Inter-parliamentary Conference on the Global Environment, Washington
[spring]	Meeting hosted by the President on the Environment
May	UN Environment Programme Governing Council Special Session, Nairobi (tentative)
May 8-16	ECE Ministerial Conference on the Environment, Bergen
May 18-20	Preparatory meeting for the July G-7 Economic Summit (tentative)
June 4-8	Meeting of IPCC Response Strategies Working Group to adopt its report, Geneva
June 11-23	World Meteorological Organization (WMO) Executive Committee, Geneva
June 15-17	Preparatory meeting for the July G-7 Economic Summit (tentative)
June 18-20	IPCC Report Drafting Committee meeting, Geneva
August 27-30	IPCC meeting to approve interim report
Oct. 29-Nov. 7	Second World Climate Conference, Geneva
post-November	U.S. has offered to host first negotiating session of framework climate change convention



U.S. Department of Justice
Land and Natural Resources Division

Office of the Assistant Attorney General

Washington, D.C. 20530

December 18, 1989

MEMORANDUM

TO: C. Boyden Gray
Counsel to the President

FROM: Richard B. Stewart *RS*
Assistant Attorney General

SUBJECT: Next Steps on International Approaches to Global
Climate Change

As undertaken at this morning's meeting in your office, this memorandum outlines the steps that should be taken to develop further the proposed United States approach for international agreements dealing with global climate change. This list of steps represents the items considered significant by the representatives of EPA, Justice, State and your office in attendance this morning.

1. Clearance for new U.S. submissions to the RSWG. Clearance must be obtained in the next two weeks for the materials to be submitted to the Intergovernmental Panel on Climate Change ("IPCC") Response Strategies Working Group ("RSWG") for inclusion in the RSWG papers by the January 1, 1990 deadline. The proposed materials for submission to the RSWG -- a set of "Comments" on the RSWG "Legal Measures" paper, and a "Concept Paper" discussing the U.S. proposal -- were attached to the memorandum sent to you yesterday.
2. OPC review. The Domestic Policy Council's Working Group on Global Change, chaired by Dr. Bromley, should take up these matters at its next meeting. If it were held next week, it could be the vehicle for the clearance described in paragraph 1.
3. Pamphlet on comprehensive approach and trading. A pamphlet should be developed, for dissemination in mid-January to RSWG participants, explaining our position on the

benefits of the "comprehensive" and "international trading" approaches to international agreements on greenhouse gases, their sources and sinks, and the drawbacks of other approaches, such as pollutant-by-pollutant and command-and-control methods. The pamphlet should draw on U.S. and international experience with each regulatory method.

4. Response to UNEP initiative on draft convention. This week Dr. Tolba, on behalf of UNEP in Nairobi, requested that all nations suggest language, by January 15, 1990, for a draft framework convention on global climate change. This request appears to compete with the normal IPCC procedures, and to accelerate the schedule for drafting such language. In addition, there may be growing pressure to address this question in the United Nations General Assembly instead of in the IPCC forum. The U.S. should develop a strategy for dealing with this pressure, including consideration of how far to insist on the IPCC's jurisdiction over these matters, and whether to present our substantive proposals to the U.N. if it takes up these matters.

5. Additional needed background work.

Relevant federal agencies should work on the following matters relevant to our proposed approach:

(a) Economic impacts. Assessments should be developed of the economic impacts, on the U.S. and other principal negotiating nations or blocs, of several scenarios for international agreement, including different timetables, baselines, and variances for developing nations within our "comprehensive" approach.

(b) Global Warming Potential Index. A "global warming potential index" should be developed to relate the contribution of each greenhouse gas to total global warming.

(c) List of greenhouse causal factors. The list of greenhouse gases, their sources and sinks, should be developed for inclusion in a "comprehensive" approach to international agreement on climate change.

(d) Monitoring and implementation assurances. Analysis and recommendations should be developed regarding mechanisms for monitoring and implementation assurance provisions in international agreements on climate change. This work should survey and analyze mechanisms used in past international agreements, and recommend the most appropriate mechanisms for both a "comprehensive" approach and an "international trading" approach.

6. Spring 1990 science/economics conference. Work should commence to develop the materials, key speakers, and exhibits that could be assembled at the President's spring science/economics conference on the global environment, in order to educate those attending as to the benefits of our comprehensive and international trading approaches, the drawbacks of traditional command and control regulatory mechanisms, and U.S. and international experience with each system.

December 20, 1989

ISSUE

Review and approval of the elements of the President's 1990 International Environmental Initiative is needed.

BACKGROUND

The Cabinet-level DPC Working Group on Global Change was first convened in October to formulate and coordinate United States policy on global change and other selected environmental issues. As part of its charge, the Working Group was assigned the task of developing options to fulfill the President's campaign pledge to host an international conference on the environment and to seize the initiative on the international environmental agenda. The Working Group developed a consensus recommendation for a series of three events to be held during 1990, which was presented to the President prior to his departure for Malta. After his discussions with Chairman Gorbachev, the President chose to announce two of the initiatives identified by the Working Group - an international meeting at the White House next spring of government science, economics and environmental officials and an offer for the U.S. to host the first negotiating session for an international convention on climate change, to be held after the Second World Climate Conference.

In subsequent meetings, the Working Group identified one additional possible event for consideration. Four consensus proposals (including the Science/Economics Conference previously announced by the President, which has been refined by a representative task force convened by Dr. Bromley) are presented below for review and approval.

RECOMMENDATIONS

The President's 1990 International Environmental Initiative (the Initiative) has been developed within the context of the U.S. commitment to the Intergovernmental Panel on Climate Change (IPCC) as the principal international forum to address the issue of global change and the Administration accomplishments to date on global change. The Initiative represents a coherent omnibus process by which the President can address the full range of international environmental issues.

I. Major Environmental Speech in January.

To set the tone for 1990 as a year in which the environment will be a major focus of Administration activity and to introduce some or all of the components of the Initiative, the President should make a major speech on the environment in early to mid-January (prior to the State of the Union).

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In the speech the President should note the accomplishments of the Administration on environmental issues, which have often been overlooked, ~~as a means of establishing the leadership of the Administration in this area in the minds of the media and the public.~~ He could also announce several of the environmental initiatives that will be part of the 1991 budget. To heighten the impact of the speech, an appropriate venue with some strong link to the outdoors and the environment could be found.

II. Address to the February 1990 IPCC Plenary Session in Washington.

The President should address the opening plenary session of the IPCC in February 1990. His speech should explain U.S. policy on global change and promote the enormous investment the U.S. has made both in understanding the scientific elements of global change and in beginning to take mitigating actions. The speech represents a clear opportunity for the U.S. to assert its leadership role on global change and reinforce its commitment to the IPCC as the principal forum for addressing this problem.

III. White House Science/Economics Conference.

The general purpose of the conference, which will be co-chaired by Drs. Bromley and Boskin, will be to advance the quality and understanding of the analytical tools and data necessary to confront international environmental problems, primarily global change. Analytical techniques and research will be shared in an effort to develop a common integrated approach that takes a balanced account of scientific, economic and environmental factors. National delegations attending the conference will be comprised of the senior scientist, the senior economist and the senior environmentalist in the governments of the participants.

A. Timing of Conference

In his announcement of the conference, the President simply specified that the meeting would be held next spring. To avoid conflicts with the various events already on the international and domestic environmental calendar (Appendix A), and to take advantage of the worldwide attention on environmental issues that will accompany the 20th anniversary of Earth Day (April 22), the conference should be held near Earth Day.

B. Participants at Conference

The conference was announced by the President as international in nature, without any elaboration as to

invitees. It bears emphasis from the outset that it will be a scientific and economic conference focusing on problems of the environment. To that end, it will be important to bring together nations and organizations that have internationally recognized expertise and have developed data relevant to the required analysis of the available tools for confronting the scientific and economic aspects of the global change issue. It will also be critical to include nations or representatives of nations that, because of their land masses, large populations or heavy future energy needs, will be compelled to deal with environmental problems having a global magnitude and impact. Finally, in order to avoid duplicating the work of the IPCC, a smaller number of participants is more appropriate.

Based on these criteria, the following nations and organizations will be invited: the G-7 nations, China, Brazil, India, the Soviet Union, Nigeria (or another African nation), Mexico, the European Community and the Organization for Economic Cooperation and Development (OECD).

C. Objectives of Conference

The objectives of the conference are both general and specific.

General Objectives

- o To identify gaps and uncertainties in the science and economics relating to environmental matters, particularly the scientific gaps that impact economic analysis and vice versa, and establish priorities for compiling specific data and information to resolve these uncertainties.
- o To ensure that the conference supports the work of the IPCC and that it does not conflict with the efforts currently underway in the IPCC working groups.
- o To review actual products and deliverables, including real data and models, in both science and economics.
- o To raise the level of attention given by the major scientific, economic and environmental policy makers to the problems posed by global change and to foster a more inclusive dialogue leading up to negotiations of a framework convention.
- o To seek agreement on common assumptions (e.g., CO₂ equivalencies) that can be used when making decisions regarding responses to global change.

- o To provide background and guidance for the Second World Climate Conference, to be held in Geneva in November, and other international meetings.

- o To increase general awareness of the scientific and economic parameters that impact national and international environmental policy-making.

Specific Objectives

Science. The scientists will focus on the largest gaps and uncertainties in the current understanding of global warming and greenhouse phenomena and on such topics as:

- o The range of predicted temperature changes under the current major world climate models, the uncertainties in these predictions and the primary sources of these uncertainties. This will yield greater awareness of these uncertainties among the participant economists and environmentalists.

- o The relative sensitivity of the climate models to their input parameters and the most critical new experimental measurements required to address existing gaps and uncertainties.

- o The expected global impacts from different global warming scenarios in such areas as agricultural and oceanic productivity, sea level change, vegetation patterns and migration, changes in storm patterns and severity and occurrence of droughts.

- o The availability and inter-comparability of national data bases pertinent to environmental research.

- o Improvement of current climate and weather models to begin to address regional changes on a larger time horizon than is currently possible.

- o The possibility of developing an integrated, coherent international plan of research to build upon the expertise, experience and relevant data available in the participant countries. This plan could form a structure within which the contributions of all interested nations could be used with greatest effectiveness and form the basis for coordinated resource allocation and implementation.

- o The development of greater awareness on the part of participating scientists of the economic aspects of global change and the relative economic value of improved understanding and predictive capability in different areas.

Economics. The participation of economists should enhance four useful information flows:

- o Best-practice methods of estimating the costs of action, including adaptation and mitigation costs, and the methods and costs of transferring or aiding in the development of technology. Discussions of this topic should serve to advance the state of the art, to lead to a greater standardization of methods and to enhance awareness of robust results.
- o Greater familiarity on the part of economists with the actual state of scientific knowledge, increasing their ability to render it more faithfully in their modeling.
- o Greater awareness on the part of environmentalists of the benefits to both the economy and the environment of adopting flexible, market-based response strategies.
- o Greater interaction among economists with scientists working in areas where resolution of scientific uncertainties will have the greatest impact on economic modelling and costs.

Environment. With a great deal of work on environmental effects, particularly in the area of global change, already underway, the primary objective with respect to the environmental officials at the conference will be to engage them in a dialogue on scientific and economic issues, thus providing them with greater familiarity with and sensitivity to those factors as they consider environmental policies and response options.

D. Structure

Pre-Conference Actions

- o To give greater visibility to the conference, the invitations to government officials will come directly from the President.
- o To refine the scope of the conference, a questionnaire requesting specific information (e.g., major uncertainties in the areas, major gaps in existing information, new developments, activities in both science and technology relating to the environment in the recipient country, and identification of the proposed national delegation members) will be sent to all participants.
- o Assignments for the preparation of a limited number of short papers will be made, with the authors presenting these papers at the conference.

o To finalize the presentations and preparations for the conference, a pre-meeting of a limited number of scientists and economists will be held.

Conference Activities

o To ensure full discussion of the issues, the conference will extend over three days.

o The conference, which should be open to the media, will begin with an opening plenary session, a key portion of which will be keynote addresses pulling together the current state of the science and economics on global change and highlighting the uncertainties and gaps in current knowledge. The responses to the questionnaires circulated prior to the conference will serve as the basis for these keynote addresses and the initial discussions. The participants will then break into mixed groups of science, economic and environmental officials, ensuring that representatives of each of the disciplines is sufficiently exposed to the others. At the end of each day's proceedings, all participants will reconvene in plenary session for summary discussions.

o Presidential involvement will be a key factor in heightening the visibility of the conference. The President should address the opening plenary session, participate in the concluding session, and host the conference reception and banquet at the State Department.

IV. President's International Conference on the Conservation of Nature

In the fall of 1990 (probably October), the President should host an international conference, in the tradition of Teddy Roosevelt, focused on the twin goals of the conservation of nature and sustainable development. The announcement of this conference should be a major event, made in the environmental address prior to the State of the Union or as one of the highlights of the State of the Union. The announcement should declare that the U.S. is leading the world on the atmosphere and global change through participation in the IPCC and its offer to host the initial framework convention negotiating session; what remains for international consideration is conservation and the preservation of nature, natural resources and biodiversity. The President could at the same time announce that the U.S. will also host negotiations for an international convention on biological diversity, planned to begin in 1991, which the United Nations Environment Programme has offered to the U.S.

The emphasis of the conference would be on energy conservation, biological diversity, reforestation, wetlands and oceans, highlighting as models successful domestic programs, international ventures (e.g., the pending U.S.-Brazil agreement for assistance in the management of Brazilian national forests, banning of ivory imports and debt-for nature swaps), and future initiatives (e.g., the reforestation initiative to be announced in the State of the Union and the America the Beautiful initiative to be included in the 1991 budget). Attendance would include local as well as national officials and representatives from non-governmental environmental groups. It would focus attention on issues the general public traditionally thinks of when discussing the environment and could include a significant "thousand points of light" volunteer component. The conference would also provide developing nations and environmental groups, which have special expertise and have achieved notable successes in these areas, an opportunity for more active participation.

This approach of this conference, coupled with the other proposed events, is consistent with a coherent overall approach to international environmental issues. It supports established forums for issues relating to the atmosphere, such as the IPCC and the ongoing Montreal Protocol negotiations, separating these volatile issues from the event with which the President will be most closely identified.

In preparation for the conference, the White House could host a series of open meetings with "constituents" of the conference -- conservationists, environmentalists, business, economists, scientists and international organizations -- to build support, consensus and media attention. These meetings, or selected parts of the meetings, which would be open, could be attended by the President to show his commitment and desire to lead the public with his agenda.

To ensure that both this conference and the Science/Economics Conference are successful, a full-time White House coordinator will be designated through detail or otherwise; another professional to coordinate the logistics of the conferences is also required, either through detail or contract.

THE CHAIRMAN OF THE
COUNCIL OF ECONOMIC ADVISERS
WASHINGTON

December 13, 1989

MEMORANDUM FOR D. ALLAN BROMLEY

FROM: MICHAEL J. BOSKIN *MJB*

SUBJECT: U.S. Position on Climate Change Convention

I have recently had some disturbing conversations about the ongoing international discussions aimed at the development of a framework climate change convention and subsequent protocols, as well as the position that U.S. representatives have taken in those discussions. I am writing to let you know that it is imperative that a major shift in our position be made.

The U.S. has apparently not challenged the view (which is reflected in Fred Bernthal's memo to you of October 24 and, even more clearly, in the legal and institutional measures portions of the October RSWG Workshop draft report now being circulated for comment by EPA) that the convention should be drafted in anticipation of a large number of gas-specific and policy-specific follow-on protocols. This many-protocol approach ignores important regulatory lessons that have been painfully learned in the U.S.; it would place us and the world as a whole on a path toward unending negotiation and detailed regulation that would be both ineffective and expensive. This approach is philosophically inconsistent with the President's approach to regulation in general and with his stated position on the need to reconcile the environment and economic growth.

A far superior approach, which the U.S. should adopt forthwith, would be to draft the convention in anticipation of negotiating only country-specific limits on total net greenhouse emissions (or, more plausibly, a formula for computing those limits), along with protocols on baselines, funding mechanisms, enforcement, research, monitoring, technology transfer, and related implementation issues. This approach, which explicitly rules out gas-specific protocols and international agreements on specific control measures, would allow each country to find the best way to reduce its impact on global climate, taking into account its own economic, political, national security, and lifestyle conditions and concerns. Most nations, we should hope, would adopt flexible, incentive-based approaches, but those who choose to rely on other methods would be free to do so. All the world as a whole legitimately cares about is the change in the global atmosphere, not the method by which the U.S. or any other nation makes its contribution to that change.

The many-protocol approach would lead us instead to attempt to replicate on a world scale the sort of detailed command and control regulation (epitomized by scrubbers on powerplants) that we have tried and found wanting in the U.S. The inflexibility that would be induced by a large number of specific protocols would dramatically raise the costs of whatever actions were ultimately taken to mitigate global change. (We should also reconsider the need for multilateral protocols on adaptation, which are now envisioned, since, research and technology transfer aside, the adaptation measures that have been widely discussed have at most regional effects.)

The many-protocol approach may be a recipe for inaction. Strong actions to control emissions of any particular greenhouse gas or operation of any particular source category would impose very different costs on different nations. We might be willing to take drastic steps to reduce methane emissions from our rice paddies, for instance, but it is hard to imagine much enthusiasm in East Asia. If those nations don't go along with a strong rice paddies protocol, however, methane emissions from rice cultivation will not be noticeably decreased, even if such decreases would represent the most cost-effective way for East Asia to reduce its net greenhouse emissions. Bundling issues (gasses, sources, and sinks) makes an effective agreement to control net emissions more likely.

At the same time, the many-protocol approach may be a recipe for singling out the U.S. and other advanced nations for disproportionate burdens, since we might well find it hardest politically to resist any proposed protocols. Under this scenario, the first protocol would call for the equivalent of 50 m.p.g. CAFE standards for all new cars, the second would set absurd efficiency standards for home appliances, and so on. We could easily find ourselves nibbled to death by a large number of protocols aimed at rich nations but having, in aggregate, little effect on ambient greenhouse gas concentrations.

I thus consider it vitally important that the U.S. firmly and quickly reject the many-protocol approach in the IPCC process. That approach is inconsistent with the President's stated view, which is solidly grounded in U.S. experience, that flexible and incentive-based regulation best harmonizes environmental concerns with economic growth, and is particularly unlikely to produce sound policy in this multi-national setting.

On the other hand, I do not mean to suggest that a crusade on your part will be necessary to bring this about. Last week Boyden Gray met with representatives of EPA, State, Justice, CEA, and other interested parties, and he made the case for a position shift of the sort I have described. There was no visible resistance, so that this shift may occur without your participation. On the other hand, appearances can be deceptive,

and meditation may produce opposition. I thus urge you, if the occasion arises, to support movement away from the many-protocol approach to drafting a climate change convention and to a simpler and more rational approach based on changes in what matters: net greenhouse emissions.

I would, of course, be most interested in your reactions to all this.

DPCWG - witnesses

Held for immediate need

DB

Document Originally
Attached to
Following Page

NATIONAL ACADEMY OF SCIENCES
NATIONAL ACADEMY OF ENGINEERING

2101 Constitution Avenue, Washington, D.C. 20418

December 6, 1989

The Honorable D. Allan Bromley
Assistant to the President
for Science and Technology
Office of Science and Technology Policy
Old Executive Office Building Room 358
17th and Pennsylvania Avenue, N.W.
Washington, D.C. 20506

Dear Allan:

Following up on the conversations we have had with Allen Hammond in which we have discussed individuals who might be able to brief you and the members of the Domestic Policy Group Task Force on Global Change, we would like to suggest the following individuals who would be able to present a range of views on a number of the policy questions (as distinct from science) that will have to be addressed by governments in the years ahead.

William Clark (Global warming, socio-economic and economic policy)

Senior Research Associate, Kennedy School of Government, Harvard University, formerly headed studies on "Sustainable Development of the Biosphere" at the International Institute for Applied Systems Analysis in Laxenburg, Austria.

John H. Gibbons (Energy efficiencies as an option)

Director, Office of Technology Assessment, U. S. Congress, member board of directors, Resources for the Future, and former director, Office of Energy Conservation, Federal Energy Administration.

Henry R. Linden (Natural gas as an energy policy option)

President, Illinois Institute of Technology and formerly, president and member of the board, Gas Research Institute.
(Member NAE)

Thomas E. Lovejoy (Policy options and ecological consequences)

Assistant Secretary for External Affairs, Smithsonian Institution, member advisory board, Environment Assessment Council, and former executive vice president, World Wildlife Fund, and a member of the International Union for the Conservation of Nature.

The Honorable D. Allan Bromley
December 6, 1989
Page 2

Jessica T. Matthews (General energy policy)

Vice President, World Resources Institute, Washington, D.C., member NAS Policy Implications of Greenhouse Warming Synthesis Panel, and former director of the Office of Global Issues at the National Security Council.

William D. Nordhaus (National economic consequences)

Professor of Economics, Yale University, New Haven, Connecticut, member NAS Policy Implications of Greenhouse Warming Synthesis Panel, former member of the President's Council of Economic Advisors.

Chauncey Starr (Energy policies as they affect electric utilities)

Emeritus President, Electric Power Research Institute, and former dean, School of Engineering and Applied Science, UCLA. Dr. Starr has served as consultant to U.S. Office of Science and Technology, NASA, Atomic Energy Commission, and the U.S. Air Force.

Paul E. Waggoner (Effective policies for agricultural and water resources)

Distinguished Scientist, Connecticut Agricultural Experiment Station, New Haven, Connecticut, member NAS Policy Implications of Greenhouse Warming Synthesis Panel and chair, adaption subpanel, and chair of the American Association for the Advancement of Science Panel on Climatic Variability, Climate Change and the Planning and Management of U.S. Water Resources (Member NAS)

Alvin M. Weinberg (Energy policy and the nuclear options)

Distinguished Fellow, Institute of Energy Analysis, Oak Ridge, former member President's Science Advisory Committee, and former director, Oak Ridge National Laboratory (Member NAS, NAE)

Marina vonNeumann Whitman (Policy implications for the automobile industry)

Group Vice President, Public Affairs, General Motors Corporation, member, economic advisory committee, U.S. Department of Commerce and former member, Council of Economic Advisors.

The Honorable D. Allan Bromley
December 6, 1989
Page 3

We believe that you could contact the above individuals directly with the expectation that they would be willing to participate in one or another of a series of briefing sessions which you could organize in the weeks ahead. They would, of course, bring their individual perspectives to your sessions and represent their own views and not necessarily those of the Academies of Science and Engineering. Should you wish, we could convene these experts prior to their meeting with you so that they could among themselves organize their presentations.

While this group could broadly state the range of policy issues, it would be possible for us to suggest additional individuals who could go into one or another of the policy issues in additional depth.

As you know, the Academies were tasked by the Congress through the Department of Energy and the Environmental Protection Agency Appropriations for Fiscal 1989 to undertake a study on the policy implications of greenhouse warming with emphasis on the implications for government, and the issues associated with alternative energy strategies. We are also to comment on the state of the science and the adequacy of the monitoring system, a task in which we are aided by the work of our ongoing USNC for Global Change and the work of the Committee on Earth Sciences of the Federal Coordinating Council for Science, Engineering and Technology. These efforts will contribute a solid base for the policy study carried on by the Committee on Science, Engineering and Public Policy, chaired by Dan Evans. It is anticipated that our report will be concluded in late 1990. Institutionally, it will represent our next statement of views beyond those contained in the white paper prepared for the then incoming Bush Administration.

Sincerely,



Frank Press
President
National Academy of Sciences



Robert M. White
President
National Academy of Engineering

"CORRESPONDENCE TRACKING"

TYPE: Information

DOCUMENT NUMBER: 8920592

FROM: MICHAEL J. BOSKIN
COUNCIL OF ECONOMIC ADVISERS

TO: BROMLEY

DATE OF
CORRESPONDENCE: 11/22/89

SUBJECT: CEA GLOBAL CHANGE ACTIVITIES

ASSIGNED TO:

Global change file

ACTION REQUIRED: NONE

SENDER'S DUE DATE:

OSTP DUE DATE:

DATE COMPLETED: 12/06/89

COPIES TO: **D. Allan Bromley**
Nancy Maynard

REMARKS:

DATE RECEIVED: 12/06/89

FILE: NEOB

THE CHAIRMAN OF THE
COUNCIL OF ECONOMIC ADVISERS
WASHINGTON

November 22, 1989

MEMORANDUM FOR ALLAN BROMLEY

FROM: MICHAEL J. BOSKIN *MJB*
SUBJECT: CEA Global Change Activities

The CEA does not have direct operational authority in this (or any other) area. Nonetheless, the CEA's expertise is being focused on global change issues in three ways:

- o The CEA is chairing the Task Force on Economic Cost of the Domestic Policy Council's Working Group on Global Change. In this capacity, it is leading the Administration's effort to develop the understanding of the costs and benefits of action and inaction without which rational policy choice is impossible.
- o At the President's personal request, the Economic Report of the President (to appear around February 1) will contain a chapter on the economy and the environment, which in turn will contain an extensive discussion of the economics of global change. As nearly 50,000 copies of the Report are distributed annually, this discussion should make an important contribution to advancing public understanding of this issue.
- o In its role as adviser to the President, the CEA will analyze the implications for the economy of any specific initiatives proposed to mitigate or adapt to global change.

~~SECRET~~

file 231

October 20, 1989

MEMORANDUM FOR THE SECRETARY OF STATE
 THE SECRETARY OF INTERIOR
 THE SECRETARY OF AGRICULTURE
 THE SECRETARY OF COMMERCE
 THE SECRETARY OF ENERGY
 THE DIRECTOR OF THE OFFICE OF MANAGEMENT
 AND BUDGET
 THE ADMINISTRATOR OF THE ENVIRONMENTAL PROTECTION
 AGENCY
 THE CHAIRMAN OF THE COUNCIL OF ECONOMIC ADVISORS
 THE ASSISTANT TO THE PRESIDENT FOR SCIENCE AND
 TECHNOLOGY AND DIRECTOR, OFFICE OF SCIENCE
 AND TECHNOLOGY POLICY
 THE CHAIRMAN OF THE COUNCIL ON ENVIRONMENTAL
 QUALITY
 THE ASSISTANT TO THE PRESIDENT AND SECRETARY TO
 THE CABINET
 THE ASSISTANT TO THE PRESIDENT FOR ECONOMIC AND
 DOMESTIC POLICY

SUBJECT: Working Group on Global Change

A Working Group on Global Change will be formed under the Domestic Policy Council (DPC) to coordinate global change policy for the Administration.

The Administration is committed to developing a better understanding of the processes that influence our global climate, exploring the consequences of significant climatic changes, and developing appropriate policy responses, as necessary.

Efforts are already underway to coordinate research activity, and to develop research strategies. The global change working group will coordinate agency activities and develop policy recommendations on domestic and international global environment issues for the President.

Specifically, the working group will, among other things: (1) review the current state of scientific information on global climate change and take steps to improve it; (2) develop an economic database for response options; (3) develop U.S. positions for participation in international organizations, meetings and agreements related to climate change; (4) evaluate and make recommendations on issues (i.e. legislative, regulatory, and administrative actions), as they emerge, related to climate change; (5) explore the responsibilities of Federal agencies and departments in providing information on and developing responses

to international environmental problems; and (6) establish mechanisms to coordinate effectively agency activities to address global environmental issues.

The Assistant to the President for Science and Technology will chair the Working Group. The Working Group shall include representatives from the Departments of State, Interior, Agriculture, Commerce, Energy, the Office of Management and Budget, the Environmental Protection Agency, the Council of Economic Advisors, and the Council on Environmental Quality. In addition, it will include the Assistant to the President and Deputy to the Chief of Staff, the Assistant to the President for Economic and Domestic Policy, the Counsel to the President, the Chairman of the Council on Environmental Quality, and the Deputy Assistant to the President and Director, Office of Cabinet Affairs.

Working group activities will be coordinated by the Executive Secretary to the Domestic Policy Council and the Director, Office of Science and Technology Policy.

Please forward the name of your agency's representative, at the Assistant Secretary level or above, to Sara Sumner (456-6722) by the close of business on Friday, October 27, 1989.

Thank you very much for your cooperation.

Dick Thornburgh
Chairman Pro Tempore
Domestic Policy Council