Question. Please describe the purpose and the agenda of the upcoming December meeting of the Intergovernmental Negotiating Committee as well as issues the U.S. plans to promote at this meeting.

Answer. The meeting is the first of the "prompt start" sessions called for by the negotiators in a resolution adopted at the conclusion of the INC resumed fifth session. The meeting agenda includes discussion of organizational matters, review of funding issues, and a broad category entitled "preparation for the first session of the conference of the parties as specified in the convention: elaboration of a work plan for the committee."

This session is scheduled for December 7–10, 1992. It is expected that due to the time constraints of this meeting, it will be possible only to have a cursory review of issues needing to be addressed rather than a careful review of all issues.

The U.S. plans to introduce its national plan at this session; we hope other countries will consider the format used in our plan in the preparations of their own national action plans.

entry into force

Question. EPA administrator Reilly stated at UNCED that "the sooner we realize [the convention's] implementation, the better off we shall be."

When does the administration expect the convention to enter into force?

Answer. The convention will enter into force after the deposition of the instrument of ratification by the fiftieth signatory. While estimating the time for this to happen is difficult, we believe it will take between two and three years.

Question. Will the U.S. be taking diplomatic steps to seek its rapid entry into force?

Answer. Yes; the U.S. will continue to promote this convention through diplomatic channels. Prompt ratification by the United States of this convention is likely to encourage other signatories, including OECD countries, to ratify quickly.

Question. What interim actions, if any, will be undertaken by the U.S. to implement the convention prior to its entry into force?

Answer. Many of the provisions of the convention require action by the conference of the parties at its first session. For example, to expedite the work of the conference of parties, international meetings prior to this first session have already been called (e.g., the IPCC meetings, the December INC session).

Among other items that the U.S. is supporting are:

- The development of common methodologies for inventorying net emissions of greenhouse gases.
- The development of a national action plan, containing measures to address the issues of mitigation of and adaptation to climate change.
- The immediate or continuing implementation of a number of measures to reduce greenhouse gas emissions, including measures such as the green lights voluntary program and other energy efficiency measures, many of the measures in the national energy strategy, and the tree planting program in the America the beautiful initiative (described in "America's Climate Change Strategy, February 1991," and the "U.S. Actions For a Better Environment, June 1992).
- The continuing U.S. global change research program (currently this program comprises approximately half of all global research on climate change) the provision of funds ($25 million) to assist developing countries in the preparation of their own country studies, including inventories of greenhouse gas emissions, thus assisting them in meeting their obligations under the convention.
- Participation in the GEF.

Question. What actions, if any, should be undertaken by all the parties?

Answer. All countries should move to ratify the convention. Furthermore, all countries should participate in the process of developing common methodologies to report on GHG emissions, and to develop national action plans. For OECD countries, these plans should be prepared and provided to INC meetings as soon as possible.

OUTSTANDING ISSUES

Question. The convention deferred the resolution of a number of issues to the first session of the conference of the parties. Please describe what those issues are, what the U.S. position is in regard to those issues, and how the U.S. intends to resolve those issues with other countries in advance of the session?

Answer. The convention explicitly provides for several issues to be taken up at the first session of the conference of the parties. These include issues related to: emissions, rules of procedure, the Secretariat, financial issues, subsidiary organizations and the resolution of questions:

- With respect to emissions, the issues include: review of the information provided by developed countries on their policies and measures; agreement on common methodologies for calculating emissions and removals of greenhouse gases; reviewing the adequacy of article 4.2 (a) and (b); establishing criteria for joint implementation.
- With respect to rules of procedure, the conference of the parties is, by consensus, to adopt its rules of procedure, which will include rules regarding decisionmaking.
- Regarding the Secretariat, the conference of the parties is to designate a permanent Secretariat.
- In terms of financial issues, the conference of the parties is to select the permanent international entity to operate the financial mechanism. (the interim mechanism is the GEF.)
- Finally, the conference of the parties is to consider the establishment of a multilateral consultative process for the resolution of questions regarding implementation of the convention.

Because the conference of the parties will not meet until the convention enters into force, which might take a few years, the negotiating parties agreed to have the intergovernmental negotiating committee continue to meet to lay the groundwork for resolving the issues that are to be dealt with at the first session of the conference of the parties (the so-called prompt start meeting). The first such session will be from December 7–10 in Geneva.

The U.S. will be developing positions on these issues and will certainly coordinate, as appropriate, with other countries participating in this process.

METHODOLOGIES

Question. How will the U.S. work to ensure that common methodologies are developed under article 4.1(a) and criteria for joint implementation under article 4.2(d)?

Answer. Numerous international efforts are currently underway to develop common methodologies and formats for reporting inventories of emissions and sinks, and in which the USG is an active participant, including among others the September 14–16 IPCC country studies workshop in Berkeley, California organized by the U.S.; and efforts ongoing in IPCC working group which is responsible for emissions assessments and which is also assisting in the development of common methodologies.

Domestically, the Interagency Committee on Earth and Environmental Sciences (CEES) subcommittee on global change research is also supporting scientific research underlying appropriate methodologies. These results are provided for international consideration.

Question. Which U.S. agency or agencies will be responsible for developing methodologies to be discussed at the conference of the parties?

Answer. In the U.S. interagency process, the State Department will coordinate the effort to prepare documents on methodologies for subsequent discussion at international meetings (e.g., prompt start meetings, and those of the conference of the parties). Positions will be developed through input from appropriate agencies, including the Committee on Earth and Environmental Sciences, the Department of Energy, the Environmental Protection Agency, the Department of Commerce, the Department of the Interior, the Department of Agriculture, the National Science Foundation, and NASA, among others.

Question. Will there be an opportunity for public comment on proposed methodologies?

Answer. The Department of State has held and will continue to hold briefings for the public on the framework convention and other climate change issues. Environmental NGOS and private sector groups have attended previous briefings and have had an opportunity to present their views during these sessions.

INTERIM ARRANGEMENTS

Question. What is the role of the General Assembly in the early implementation of the convention? What is the nature of Secretariat support? Is the U.S. providing funding to support the Secretariat and developing country participation in interim meetings?

Answer. The United Nations General Assembly has agreed to pay the cost of the Secretariat for the intergovernmental negotiating committee through December of 1992. It is expected that the UNGA will continue to provide Secretariat support at least until the convention enters into force. In FY 91–92 the United States has provided $200,000 to support the negotiating process, including developing country participation. In addition, the United States hosted and provided funding for the first

negotiating session, pursuant to the invitation of the President, in February 1991 in Chantilly, Virginia. We have requested a voluntary contribution of $250,000 for the INC Secretariat in FY 93 in International Organizations and Programs (IO&P) account included in appropriations for foreign operations, export financing and related programs.

FOLLOW-ON PROTOCOLS

Question. Within one year of entry into force, the conference of the parties is to meet. Article 4.2(d) calls for a review at this meeting of the adequacy of the specific commitments made in article 4.2 (a) and (b) and states that the conference of the parties "shall take appropriate action, which may include the adoption of amendments to the commitments in subparagraphs (a) and (b) above."

Does the U.S. support initiation of negotiations on a protocol prior to the convention's entry into force? If not, how does the U.S. plan to meet the requirements of article 4.2(d)?

Answer. If the objective of negotiations on a protocol prior to the convention's entry into force was to establish a specific target and timetables for reducing carbon dioxide emissions in developed countries, the United States would not support such an effort. In our view, the signatories have formidable tasks ahead of them in seeking to develop inventories of these sources and sinks of greenhouse gases and in developing specific plans and measures to mitigate and adapt to climate change, as well as in seeking to meet their other obligations under the convention. The near term efforts of the signatories should focus on the specific obligations they have already undertaken.

Article 4.2(d) provides, as noted, for the conference of the parties to review the adequacy of subparagraphs (a) and (b) at its first session. Article 4.2(d) thus does not require, or even suggest the desirability of negotiations on a protocol prior to entry into force of the convention.

IMPLEMENTATION OF THE CONVENTION

Question. In the period prior to entry into force, what is the U.S. view on the structure of the Secretariat and its relationship to the U.N. General Assembly? What is the role of UNEP?

Answer. Prior to entry into force, it is expected that the Secretariat will be funded by the U.N. General Assembly (UNGA). The UNGA is scheduled to take up the convention and financial matters related to its interim operations during the 47th session (probably in late November or early December 1992). It is also expected that the first "prompt start" session will address some of the still unresolved organizational and administrative issues.

UNEP continues to play an active role in the climate issue. Its representatives attended all INC sessions; it seconded personnel to the INC Secretariat during negotiations; it has provided financial and technical assistance to the IPCC in carrying out its work to date, and is expected to continue to do so; and it is assisting developing countries in the preparation of their national inventories of GHG emissions.

Question. Article 4.8 of the convention calls upon parties to give full consideration to insurance. Please describe what actions should be taken with respect to insurance for climate change both nationally and internationally and U.S. views on the subject.

Answer. Insurance is a concept that the Alliance of Small Island States (AOSIS) advocated in the negotiations to protect against vulnerability to potential sea-level rise from climate change. U.S. negotiators noted that the proposal raised a host of complex and difficult questions, not the least of which involved how causality would be established and, assuming finite global resources to address climate change, whether such resources should be devoted to such a scheme or to other response options that may better achieve global benefits.

RELATIONSHIP TO OTHER INTERNATIONAL AGREEMENTS/BODIES

Question. Please describe the relationship of agenda 21, chapter 9 on protection of the atmosphere and chapter 4 on changing consumption patterns to the Climate Convention. What are U.S. plans for implementing those chapters as they relate to climate?

Answer. The Climate Convention, unlike the chapters of agenda 21, represents a binding commitment on the part of those countries which ratify. However, the activities recommended by chapter 9 of agenda 21 are in many ways similar to those that would be undertaken through implementation of the Climate Convention, for example:

- Promoting research on the atmosphere (mirrors a convention research commitment)
- Identifying environmentally sound energy sources (mirrors technical information that would be considered in developing options in the national action plan)
- Development, transfer and use of improved energy efficient technology (mirrors the technology cooperation paragraphs of the convention)

Other similarities can be found with chapter 4 of agenda 21:

- Calls for developing sustainable patterns of consumption (mirrored in the preambular language and the article on principles in the convention)
- Calls for research on consumption (part of the U.S. global change research effort already underway many actions called for in these agenda 21 chapters are already being promoted by the United States, e.g., through the USGCRP, assistance to developing countries in the preparation of national plans and GHG inventories, and through the U.S. national energy strategy actions.

Question. The 1992 Munich Economic Summit Communique commits the G–7 countries to draw up and publish national action plans by the end of 1993. Please describe how the U.S. interprets this responsibility?

Answer. The U.S. will meet—and exceed—this commitment by completing a draft version of its national action plan by January 1993. President Bush has called upon other OECD countries to do the same.

Question. How does the U.S. plan to integrate reforms in World Bank energy lending with implementation of the Climate Convention? What does the U.S. see as the relationship of the World Bank to the convention's implementation? What does the U.S. see as the relationship of the International Monetary Fund (in particular its structural adjustment programs) to the convention's implementation?

Answer. The U.S. is actively promoting reforms in World Bank energy lending to encourage greater emphasis on energy efficiency and conservation measures on the demand side and the use of renewables. Closely related to this initiative is our strong support for integrated least-cost planning both so as to ameliorate climate change concerns and to help meet the anticipated energy requirements of developing countries at least cost in future years, recognizing that capital to meet these requirements may not otherwise be sufficiently available. The World Bank has a vital role to play in successful implementation of the convention because it is so large a financial resource for developing countries. Through its lending programs, the World Bank is uniquely situated to encourage consideration of climate change concerns and to assist developing countries in achieving their sustainable development goals. The IMF similarly has an important role to play in promoting sound policies that will enable countries to balance their development goals with environmental quality.

The U.S. has always believed that the GEF can play a catalytic role in encouraging greater emphasis on energy efficiency and conservation measures on the demand side in mainstream World Bank lending. That is why we do not wish to see the GEF replace the World Bank in this regard and have put so much emphasis on relating GEF activities to World Bank mainstream lending in the energy sector.

Question. What relationship does the U.S. see between implementation of the Climate Convention and the international trade system, e.g., GATT?

Answer. The convention does not address its relationship to other international agreements, such as the GATT. Further, apart from one section of the "principles" article (which does not create a legal obligation), the convention does not contain provisions on trade. Thus, trade issues related to climate will have to be addressed on a case-by-case basis.

Question. How should coordination be effected between the Climate Change Convention and the Vienna Convention/Montreal Protocol on climate related research and on controls of non-ozone depleting substitutes that are greenhouse gases?

Answer. There is significant overlap between the scientific research process under the Vienna Convention/Montreal Protocol and the Climate Convention for several reasons. First, there is a strong correlation between ozone and other greenhouse gas concentrations in the behavior of the atmosphere. Second, the Vienna Convention created a scientific body to review the available information on ozone issues which has provided the results of its work for use in the assessments of the IPCC, an advisory relationship that is expected to continue. Third, the convention specifically excludes gases controlled by the Vienna Convention/Montreal Protocol process from its formal consideration.

Question. What is the relationship between the proposed Global Ocean Observing System and the Climate Convention?

Answer. The Global Ocean Observing System (GOOS) will make a major contribution to the Global Climate Observing System (GCOS). The GCOS is an international

effort sponsored by the World Meteorological Organization, the United Nations Environment Program, the International Council of Scientific Unions and the Intergovernmental Oceanographic Commission to monitor climate change, including concentrations of greenhouse gases in the atmosphere, global sea-levels, and variations in terrestrial ecosystems. The convention, in article 5 on research and systematic observations, calls on the parties to support and further develop existing international programs such as the GCOS. Furthermore, the convention explicitly promotes the full and open exchange of data and information to facilitate research and observations on the climate system and climate change, part of the primary goal of the GCOS—and GOOS—itself.

Question. What is the relationship between the convention and the Intergovernmental Panel on Climate Change (IPCC), in particular between the conference of parties and the subsidiary body for scientific and technological advice?

Answer. The IPCC's principal objective is to provide scientific, economic and technical assessments of the state of knowledge regarding climate change, its impacts and possible response options. Providing a separate science and technology panel in the convention increases the likelihood that the IPCC remains an impartial, nonpoliticized forum for developing objective scientific information for both the conference of the parties and the general public. The convention's science and technology body is to monitor scientific developments and provide policy-relevant interpretations to the conference of the parties. To this end, the convention science and technology body can draw upon the IPCC, as well as other national and international, governmental and non-governmental organizations.

Question. Is it intended that the Subsidiary Body for Scientific and Technological Advice become the primary international body for the evaluation of information on the rate and magnitude of climate change?

Answer. No; we anticipate that task will remain within the purview of the IPCC.

Question. What Agency will represent the United States on this body?

Answer. The State Department will have the lead, with the technical assistance of other Federal agencies, principally through the Interagency Committee on Earth and Environmental Science (CEES).

Question. What will be the relationship between this body and the International Geosphere-Biosphere Program? The U.S. Global Change Research Program? The World Meteorological Organization? The Assessment Panel (panel I) of the IPCC?

Answer. The science and technology advisory body of the convention can draw on all of these other organizations for information. There will be no formal relationship with any of them, although it is expected that the IPCC WGI will continue to perform regular assessments of the state of the science of the climate and climate system upon which the science and technology body can draw for its work.

The United States has provided most of its contributions to the IPCC scientific assessment process through the coordination mechanism of the CEES U.S. Global Change Research Program. It is anticipated that the United States will continue to draw on the reports and expertise generated through this program to provide input to the international process.

Question. What role will the U.S. play in the IPCC and in sharing scientific data at no cost to developing countries and at reproduction costs to other countries and interested parties?

Answer. The administration adopted a policy of full and open exchange of data at the lowest possible cost to global change researchers in 1991. The exchange of data in international organizations, including the IPCC, the WMO and UNEP are all consistent with this policy.

The U.S. provides not only data, but also computer hardware and software, training and analyses to countries around the world through the U.S. Agency for International Development, and other technical agencies (e.g., NASA, NOAA, EPA, DOE, USGS, and USDA).

ASSISTANCE FOR DEVELOPING COUNTRIES

Question. The Climate Convention designates the Global Environment Facility (GEF) as an interim financial mechanism to help developing countries meet their commitments under the convention. The convention further commits the conference of the parties to review the GEF's performance at its first session, make appropriate new arrangements, and review them again after four years. The convention itself states that the financial mechanism shall have "an equitable and balanced representation of the parties within a transparent system of governance." During negotiations, the U.S. announced that it would contribute $50m to a revised GEF and provide an additional $25m bilaterally for country studies.

Is this still the administration's plan? If so, when would these funds be disbursed?

Answer. Yes. The U.S. has begun the process of determining how and when funds will be disbursed for country studies, and what criteria will be established for selection of proposed studies to be supported. The U.S. commitment is to provide $25 million for country studies over a 2-year period beginning in FY 93. GEF participants have made significant strides in their efforts to take the facility beyond its 3-year pilot phase, which began in November 1990. We anticipate that a U.S. contribution to the GEF will be provided in FY 93 appropriations.

Question. What levels of funding does the administration intend to commit on an annual basis to the GEF and to bilateral programs to support the efforts of developing countries to meet their commitments under the convention?

Answer. In addition to the funds described in the previous questions, the administration has committed $150 million in parallel funds through the Agency for International Development to the GEF's 3-year pilot phase, and has announced its further commitment to contribute $50 million to the restructured GEF. Specific commitments beyond those stated will depend on future needs and the availability of resources and will ultimately be determined through negotiations among GEF participants on restructuring and replenishment of the GEF.

Question. What resources, financial and human, are currently being allocated to help developing countries prepare inventories of their greenhouse gases as well as their national plans? Where in the budget will this funding come from? What countries have been targeted for aid under the "climate change country studies" initiatives and why were those particular country chosen as beneficiaries of the U.S.?

Answer. Inventories of developing country net greenhouse gas emissions and national plans are being assisted through a U.S. commitment to provide $25 million for country studies over the next 2 years. Funding of $12.5 million for country studies in FY 1993 is provided from the U.S. Global Change Research Program by all participating agencies.

To date, countries in which assistance has already been provided include Mexico, Brazil and Poland. Additional countries will be chosen on the basis of criteria to be worked out in the near future among U.S. agencies. We anticipate that such criteria would include the interest of developing countries in undertaking such studies, their contributions to global net emissions, and the need to support the efforts of developing countries with varied economic, demographic and geographic circumstances in order to create models for such studies in other countries.

Question. Is the U.S. $50 million pledge to the GEF directed toward the current pilot phase or toward a subsequent, permanent GEF? Where will these funds come from? If funds are to be directed to the pilot phase, when will these funds be obligated?

Answer. The U.S. has committed to provide $50 million to the core fund of the restructured GEF. As noted in response to other questions, discussions among GEF participants on restructuring the pilot program began in December 1991 and are continuing. The third meeting toward this end will take place in December 1992. As also noted in response to other questions, we anticipate appropriations for the GEF to be provided in FY 93.

Question. The U.S. has called for procedural reforms in the pilot phase to ensure public access to information and consultation with affected groups yet GEF has not implemented these reforms. What is the administration's strategy to ensure that implementation of procedural reforms related to the public?

Answer. The administration continues strongly to support broad public participation in the GEF, and has encouraged a variety of initiatives toward this end in discussions among GEF participants on restructuring. We believe the issue of public participation is closely related to the issue of accountability on which we are also placing great emphasis. The administration will continue to press for such changes in the multilateral restructuring discussions, and will continue to work bilaterally with GEF participants to enlist their support.

Question. The GEF pilot phase will expire at the end of 1993; what is the schedule for negotiations toward a permanent GEF? What structural and procedural reforms is the administration pursuing in the design of a permanent GEF? Will the administration press for comprehensive evaluation of the pilot phase before supporting a permanent GEF?

Answer. Discussions on the restructuring of the GEF with a view to establishing a permanent GEF began in December 1991. GEF participants have met twice since then and will meet again this December to continue to discuss the issue of governance of a fully operational facility. The USG believes a restructured GEF must have an equitable and balanced representation of parties within a transparent system of governance. At U.S. and other GEF participants' insistence, the GEF administrator, with the assistance of the World Bank, UNDP and UNEP, are evaluating the pilot

phase on a continuing basis. We believe the pilot phase has provided valuable lessons that we are already taking into account in GEF restructuring discussions.

Question. What is the administration's view of the relationship between the Climate Convention and the GEF? Please describe the managerial and governance arrangements for a GEF/Climate Convention Project from identification through completion?

The U.S. joined all other GEF participants in may 1992 in agreeing to the following general relationship between the climate change convention and the GEF:

- Policy, strategy and program priorities would be determined by the parties to the convention.
- The conference of the parties to the convention would determine criteria for funding eligibility.
- Reciprocal representation arrangements would have to be made between the conference of the parties and the GEF participants' assembly.
- Reciprocal representation arrangements might be called for with respect to STAP and the advisory panels of the convention.
- The participants' assembly would ensure effective coordination of the various work programs.

Once GEF restructuring discussions have been completed, specific arrangements will have to be worked out in more detail; these arrangements might be implemented on an interim basis between the INC and the GEF, pending entry into force of the convention.

Question. What are appropriate roles for the convention's conference of the parties, the proposed GEF participants' assembly, the GEF implementing agencies and their governing bodies, the GEF STAP, the convention's subsidiary body on science, other multilateral development banks and international organizations, bilateral donors, and NGOs?

Answer. See response to preceding question. The U.S. remains strongly committed to achieving the broadest participation in the GEF, and will continue to press for significant participation by NGOs.

Question. What criteria will the administration propose the conference of the parties use in reviewing the performance of the GEF as the convention's interim financial mechanism?

Answer. The conference of the parties under the convention will need to determine whether the interim financial mechanism (the GEF) meets its needs and is responsive, efficient and cost-effective. Clearly, more specific criteria will come to light as we implement the convention.

Question. The convention commits developed country parties to help developing countries "meet the agreed full incremental costs" of their commitments in article 4/1 as well as certain other agreed measures. By what process will the parties establish criteria to determine "full incremental costs" and which U.S. agencies and international organizations will be involved in this process?

Answer. We anticipate that establishing criteria to determine "agreed full incremental costs" will involve a continuing dialogue between developed and developing countries concerning the structure and content of individual national action plans. All appropriate U.S. agencies and international organizations will be involved.

Question. What policy and program reforms are needed at the World Bank and the other multilateral development banks to enable them to assist countries with their efforts below "incremental costs"?

Answer. Yes; U.S. has led an international effort to promote environmentally sensitive lending on the part of the World Bank and other multilateral development banks. We have already achieved a very substantial degree of success in incorporating environmental assessments early in the project development process, as required by the Pelosi amendment. Further work remains to refine and improve this process, particularly with regard to public access to environmental impact assessment information and improving the quality of the assessments and summaries that are prepared. Another example of success has been the World Bank's new forest policy that rules out funding for commercial logging operations in tropical forest areas. Work is also going forward on energy policies and we are encouraging this process. The U.S. specifically considers whether environmental considerations have been taken into account in determining whether to support specific projects. In our view, considerably more attention must be devoted to this and other aspects of environmental considerations in the lending activities of the World Bank and other multilateral development banks.

TRADE

Question. Article 3.5 states that "measures taken to combat climate change * * * should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade." Is this provision intended to preclude any trade measures taken to combat climate change? If not, what would be the criteria by which the administration determines whether a trade measure was "arbitrary or unjustifiable discrimination"?

Answer. This provision is not intended to either preclude or authorize trade measures to combat climate change.

It should also be noted that trade measures are not addressed in the operative provisions of the convention. This sentence appears in the "principles" article, which is simply to "guide" the parties in their implementation of the convention.

"Arbitrary or unjustifiable discrimination" is not a new term of art in the convention; it is based on the Chapeau of GATT article XX.

TREATMENT OF PROTOCOLS AND AMENDMENTS

Question. Will protocols to the convention be submitted to the Senate for its advice and consent? Will amendments to the convention be submitted to the Senate for its advice and consent? Will amendments to the convention's annexes be submitted to the Senate for its advice and consent?

Answer. Amendments to the convention will be submitted to the Senate for its advice and consent. Amendments to the convention's annex (i.e., changes in the lists of countries contained in annex I and annex II) would not be submitted to the Senate for its advice and consent. With respect to protocols, given that a protocol could be adopted on any number of subjects, treatment of any given protocol would depend on its subject matter. However, we would expect that any protocol would be submitted to the Senate for its advice and consent.

PRINCIPLES

Question. Please explain the legal status of the "principles" contained in article 3?

Answer. The concepts in article 3 are not legally binding per se; rather, as stated in the Chapeau, they are to guide the parties in implementing the other provisions of the convention. In this regard, it is noteworthy that article 3 contains an illustrative list of relevant concepts, not an exhaustive one (i.e., "inter alia" in Chapeau).

EMISSIONS "TRADING"

Question. It may be that there would be a greater return on investment, in terms of reduced greenhouse gas emissions, for one country to assist another country in reducing its greenhouse gas emissions rather than its own. For example, $1,000 invested in Russia might limit greenhouse gas emissions more than $1,000 invested in the United States. Under the terms of the convention, could this type of assistance be counted toward the donor party's commitment to reduce greenhouse gas emissions?

How would "credit" for these reductions be distributed between the donor and recipient?

Answer. We agree wholeheartedly that actions taken to limit emissions should be as cost-effective as possible. For this reason, the U.S. strongly endorsed the concept of joint implementation. In this regard, we note that article 3, paragraph 3, endorses cost-effectiveness, and that article 4, paragraph 2(a) specifically provides for joint implementation. After entry into force of the convention, the conference of the parties will be responsible for defining joint implementation and establishing criteria for its application.

However, because the convention sets no caps on emissions, the "credit" for undertaking policies and measures jointly with other countries cannot be a "credit" counted against a quantified commitment, rather, the "credit" from such efforts will be counted in the process of seeking to build global partnerships to address climate change. Article 12, paragraph 3 and paragraph 8 provide for reporting on joint efforts under the convention. Emissions changed due to jointly implemented actions would be reported by parties involved, apportioned as they agreed.

TREATMENT OF PROTOCOLS AND AMENDMENTS

Question. Will protocols to the convention be submitted to the Senate for its advice and consent?

Answer. We would expect that protocols would be submitted to the Senate for its advice and consent; however, given that a protocol could be adopted on any number of subjects, treatment of any given protocol would depend on its subject matter.

Question. Would a protocol containing targets and timetables be submitted to the Senate?

Answer. If such a protocol were negotiated and adopted, and the United States wished to become a party, we would expect such a protocol to be submitted to the Senate.

Question. Will amendments to the convention be submitted to the Senate for its advice and consent?

Answer. We would expect amendments to be submitted to the Senate. However, should there be an amendment which we did not believe would require Senate advice and consent, we would consult with the Senate prior such a determination.

Question. Will amendments to the convention's annexes be submitted to the Senate for its advice and consent?

Answer. No. We note that these amendments would only be to modify the lists of countries contained in the existing annexes. Normally the Senate does not approve changes to the parties in the agreement.

ADDITIONS TO ANNEXES

Question. Article 4.2.f. provides for the conference of parties to review and possibly amend the lists in annexes I and II of the convention. What incentive is there for a country to allow itself to be added to either of these lists?

Answer. Countries which are likely to be added to the annexes are those with economies in transition to free markets, and those which are moving from the ranks of "developing" to "developed." There are certain well understood obligations which come with the new status, obligations which developed countries have historically been willing to assume.

Clearly, there is no automatic requirement under the convention that, once countries reach some level of development status, they be included in either annex.

Nevertheless, we anticipate that it will be very difficult for countries to attain such status without accepting the obligations it entails. The only incentive at present is that the willingness to accept listing implies that the country has achieved the status which entails the obligation.

NATIONAL PLAN

Question. How many interagency meetings have been held to date to follow-up on the U.S. commitment?

Answer. The State Department chairs the interagency process through the Policy Coordinating Committee (PCC) working group on climate change. Regular meetings (weekly or biweekly) of this group address not only development of the U.S. national action plan, but the U.S. country study initiative, U.S. positions with respect to issues in the intergovernmental panel on climate change, U.S. positions with respect to issues in the intergovernmental negotiating committee, etc. The most recent PCC working group meeting was held on September 24, 1992, at the State Department.

The United States issued its first national strategy in February 1991, the result of numerous interagency meetings. Many further interagency meetings led to the April 1992 update of the U.S. National strategy.

NATIONAL ENERGY STRATEGY

Question. The administration has stated that the national energy strategy is part of its program to meet the U.S. commitment under the convention to reduce net greenhouse gas emissions. What will happen to carbon dioxide levels under the national energy strategy beyond the 2000? Say in 2015 or 2030?

Answer. The national energy strategy (NES) stimulates the introduction of cost-effective energy efficiency alternatives, and accelerates the adoption of new supply technologies that are low emitters or non-emitters of greenhouse gases. Market acceptance of these initiatives can lead to significant reductions in the projected growth of CO^2 emissions. According to projections prepared for the 1991 national energy strategy document, measures reflected in the national energy strategy would result in U.S. CO^2 levels increasing by approximately 25 percent over 1990 levels through the year 2015, and then remaining at or below that level through the year 2030. These levels are much lower than levels anticipated without the NES actions.

ROLE OF MULTILATERAL DEVELOPMENT BANKS

Question. The Multilateral Development Banks will continue to be a major source of development financing, including financing for the energy sector, a major source of greenhouse gas emissions. In light of the current evidence on climate change, what sorts of policies should the banks adopt in their lending, and particularly their energy sector lending, to reduce greenhouse gas emissions?

Answer. The U.S. is actively promoting reforms in World Bank energy lending and in the energy lending of Multilateral Development Banks to encourage greater emphasis on energy efficiency and conservation measures on the demand side and the use of renewables. Closely related to this initiative is our strong support for integrated least-cost planning and broad-based market approaches, preferably price reforms.

CONSULTATION WITH POTENTIALLY VULNERABLE AREAS

Question. Did the U.S. Government consult with concerned states and territories, including Puerto Rico, Guam, American Samoa, and Palau regarding the U.S. position in the climate negotiations?

What was the mechanism for this consultation?

Answer. While the administration did not hold specific consultations with either states or territories, the particular concerns of these regions were and are taken into account by individual agencies and departments in internal decision-making processes. In addition, the four territories mentioned are islands, and the climate change concerns of islands (vulnerability to sea-level rise, storm surges, fresh water supplies, including salt-water intrusion, etc.) Both were and continue to be taken into account in the intergovernmental panel on climate change and in the intergovernmental negotiating committee.

CHAPTER 9 OF AGENDA 21

Question. Chapter 9 of agenda 21 is devoted to protection of the atmosphere. How, if at all, will the recommendations in this chapter, particularly those in the subsection on "energy development, efficiency and consumption," be taken into account the national energy strategy?

Answer. Actions called for under the national energy strategy are not immutably fixed. In fact, since release of the strategy in 1991 there has been a progress report which not only detailed actions taken to implement existing proposals, but which also laid out several new measures within the original framework. The administration intends to continue to update the list of measures being taken, using the framework of the national energy strategy to foster increases in energy efficiency and commitments to a safe and healthy environment along with a growing economy. The NES will be updated at least on a biennial basis. In future examinations of policies and measures taken under this framework, appropriate activities listed under the atmosphere chapter of agenda 21 will also be considered.

U.S. SUPPORT FOR INC AND IPCC

Question. What type of contribution, if any, will the United States make to support developing country participation in the IPCC and INC and to support the Secretariats of these two organizations?

Answer. For FY 93, the State Department has proposed to contribute $300,000 to the IPCC and $250,000 to the INC. These funds have been requested in the State Department's international organizations and programs account. In addition, we anticipate that additional contributions will be made to support both organizations and developing country participation therein. Such contributions will come from other Federal agencies involved in the work of the IPCC and INC, including DOE, DOI, EPA, NASA, NOAA, NSF and USDA.

CLIMATE AND THE UNGA

Question. What are the United States' objectives on climate at the UNGA this fall?

Answer. The United States hopes to see a General Assembly resolution commending the work of the INC, urging all nations to sign and ratify the convention, and supporting continued interim preparations for implementing the convention prior to entry into force of the FCCC for its implementation. To support this interim process, we will recommend that the United Nations continue to support the operating expenses of the INC Secretariat until such time as the convention enters into force, and that the General Assembly urge continued regular meetings of the INC.

BUSH COMMITMENT ON POLLUTANT REDUCTION

Question. At Rio de Janeiro, President Bush stated that the United States has the best environmental record in the world. He cited as evidence of this a rule, required under the Clean Air Act, which would remove over 1 billion pounds of hazardous pollutants from the air. EPA is now just 2 months from the statutory deadline for this rule, called HON and it hasn't even begun the notice and comment process. Will EPA meet the statutory requirement?

Answer. Title III of the Clean Air Act amendments of 1990 requires the EPA in §112(e)(1), to promulgate emission standards for 40 source categories and subcategories within two years of enactment. Promulgation of the hazardous organic NESHAP (HON) will help the agency meet that ambitious statutory deadline. The HON is, by every measure, a major rule. When fully implemented, it will reduce annual emissions of hazardous air pollutants by approximately 600,000 pounds at an annual cost of more than $200 million. It also proposes an innovative emissions averaging component that will help reduce the costs to society of achieving these reductions. The agency is working with the office of management and budget to propose this rule as soon as possible.

IMPACT ASSESSMENT

Question. Why is the impacts assessment described in article 4.1.f. limited to mitigation or adaptation efforts? Why does it not include, for instance, assessments of the impact of economic policies on climate change?

Answer. Some countries involved in the negotiating process viewed the issue of impacts assessment with extreme sensitivity. As a result, article 4.1(f) was very closely negotiated. As noted in the question, it specifically mentions "projects and measures," not "policies." As worded, it represents a delicate compromise on the part of those who would have gone further, including the United States, and those who would have preferred to delete article 4.1(f) altogether.

POLICY FORMULATION STRUCTURE

Question. Please describe the U.S. climate change policy formulation structure.

Answer. Policies with respect to climate change actions are made at several different levels. Individual agencies frequently have responsibility for individual programs or activities that influence climate change—for example, the monitoring of current climate systems by the national weather service.

Several interagency processes also exist, and include such interagency groups as the Committee on Earth and Environmental Sciences Subcommittee on Global Change Research, which coordinates the U.S. Global Change Research Program. Policy direction for international negotiations is provided by the State Department, which chairs the policy coordinating committee working group on climate. This group provided the interagency forum for discussing positions taken during the FCCC negotiations.

Key policy issues are addressed through meetings of the White House policy coordinating group. In addition, key policy issues are addressed by the cabinet.

FOREST COMMITMENTS

Question. How should implementation of the climate treaty be integrated with implementation of the UNCED forest principles and the U.S. forests for the future initiative, as well as the biodiversity convention?

Answer. As implied by the question, actions taken to address any one of these issues may have a, bearing on each of the others, a fact that is acknowledged in the "U.S. actions for a better environment brochure" distributed at the United Nations conference on environment and development. The United States is keenly aware of the role of forests as sinks of greenhouse gases—particularly of carbon dioxide. But forests are valued for other reasons as well, including their economic value and their critical role in providing and preserving biodiversity. Identification and evaluation of these inter-relationships will be considered in the national plans that countries undertake pursuant to the Climate Convention, and will also form a key component of the national environmental strategies that countries will prepare in response to UNCED's agenda 21. The deep interest of the United States in improving forest conservation, evidenced in the 1990 call for a global forest agreement, is reflected in the Climate Convention's emphasis on protecting sinks, including its opportunity for joint implementation, and the U.S. proposal for a forest for the future initiative announced in may 1992.

Question. Article 4.1(d) promotes the sustainable management, conservation and enhancement of sinks and reservoirs. What actions will the administration take to implement this commitment domestically and overseas?

How will these actions affect current U.S. policy on the management of U.S. public and private forest lands?

Answer. Sustainable use is a key focus of U.S. forest agencies' management approaches. In managing for sustainable use, the ecological interactions of multiple forest resources must be addressed. Enhanced carbon storage is one expected consequence of this management approach.

The Forest Service and the Bureau of Land Management have instituted policies of ecosystem management on the national forests and grasslands and on public lands commercial timberlands. These policies aim at improving the science of ecosystem management and its use in land management, increasing public participation in management decisions, and increasing conservation partnerships between state and local governments, the private sector, and land management agencies. Initial policy changes due to this approach are decisions by the forest service and the bureau of land management to eliminate clear cutting as a standard commercial timber harvest practice. The Forest Service, and other agencies continue to carry out studies under the U.S. global change research program that are vital to applying scientifically sound approaches to managing public and private lands in view of potential impacts of predicted changes in climate.

Domestically, the administration has set a goal of increasing reforestation by one billion trees per year in this decade under the "America the Beautiful" initiative. The Forest Service is working with state foresters and others to support tree planting in rural and in urban areas.

The President's initiative, "forests for the future" proposes to seek an additional $150 million next year in new funding for international forestry assistance which more than doubles the current level of bilateral aid. It urges others to take similar actions. It seeks to initiate new partnerships for forest conservation with developing nations to hold a forest partnership forum where ideas will be exchanged on ways to conserve forests and to form new partnerships for that purpose.

OLD GROWTH FORESTS

Question. Recognizing the administration's promotion of language to protect "primary/old growth" forests in the forest principles discussion and the recognized role of these forests in global climate stabilization, what protective measures will be proposed for the remaining "primary/old growth" forests in the U.S.?

Answer. In terms of federal forests, protective measures are spelled out in individual national forest land management plans and bureau of land management resource plans. These plans are dynamic and subject to change as policy and public values change. There is a prescribed process for effecting changes in these plans—with significant public involvement. Global climate change has been introduced into the Forest Service's planning process through inclusion in the forest and rangeland renewable resources planning act (RPA) 1990 program plan. The 1995 RPA will substantially enhance coverage of the issues based on research findings since the 1990 program as well as outcomes of UNCED, including the climate change convention. The Forest Service and the Bureau of Land Management's new policy of ecological management will have particular significance for forest conservation and protection and enhancement of carbon sinks.

IMPLEMENTATION OF FOREST OBLIGATION

Question. The Climate Convention, the forest principles, and the agenda 21 chapter on deforestation suggest actions to be taken toward the protection, conservation and sustainable development of forests. How will the commitments in these documents be integrated? Which agency (IES) will lead this effort? What will be the role and avenue for public input into the development and implementation of these polices?

Answer. The administration has set up a policy coordinating group (PCG) to guide the implementation of UNCED actions. The PCG has established a task force, cochaired by the Council on Environmental Quality (CEQ) and the Department of State to receive descriptions of how affected agencies intend to implement their obligations, and to develop an integrated and coordinated policy. Because of the role of forests and related ecosystems in the climate change convention, the forest principles, and agenda 21, the Forest Service, the Environmental Protection Agency (EPA) and the Agency for International Development (AID), in particular, will be relied on for their scientific, technical and management expertise as we implement our obligations associated with forests nationally and internationally.

FORESTS FOR THE FUTURE INITIATIVE

Question. The administration had pledged $150 million in additional funding for bilateral forest assistance. How will this money be distributed? What are the criteria for project and country selection? Which agency will lead this effort? How much of this money will be dedicated to projects to "promote" and "cooperate in the conservation and enhancement" of sinks and reservoirs (article 4.1(d))? Under what authority will these criteria be developed and what will be the monitoring mechanism?

Answer. A senior-level task force has been created to direct this initiative, chaired by EPA Administrator Reilly and counsel to the President Gray. We are now in the process of developing in further detail the program plan and selection criteria for the forests for the future (FFI) initiative. The FFI purposely does not dictate specific forests to be preserved, and instead invites interested countries and organizations to engage in a cooperative approach to proposing and undertaking partnerships for forest conservation efforts. Funds would be distributed through existing governmental mechanisms, such as the international forest assistance efforts of aid and the Forest Service. Activities will be directed toward the multiple values of forest conservation, including biodiversity, conservation, and greenhouse gas sources and sinks recognizing the interrelationships involved.

RESPONSES TO QUESTIONS ASKED BY SENATOR MURKOWSKI

Question. When can we expect a new assessment by the Intergovernmental Panel on Climate Change (IPCC)? What will it mean to this debate?

Answer. The IPCC is scheduled to complete its next assessment report in late 1994 or in 1995. The IPCC is hoping that a number of key uncertainties noted in its first assessment report and its 1992 supplement may be resolved through the research carried out over this period, including questions regarding the rate, regional and local distribution, and magnitude of climate change and the relative contributions of different gases to such potential changes. It is clear that international debate will be strongly influenced by the results of this ongoing work, although it is also likely that significant gaps in our understanding will remain, and will continue to require further study.

Question. What are the best estimates of what this framework convention is going to cost the U.S. domestically and in terms of foreign aid? What is it going to cost the developing nations? What is it going to cost the other developing countries?

Answer. While the U.S. is obligated to provide, along with other developed countries, assistance to developing countries to prepare reports required under the convention, the convention does not assess specific amounts to any party or group of parties. It is therefore not possible to estimate the cost of meeting the convention obligations. However, to date, the U.S. has committed $25 million to assist developing countries in the preparation of country studies; it is not anticipated that additional funds will be required for this purpose. Furthermore, the U.S. is participating in the Global Environmental Facility (GEF), the interim financial mechanism designated to pay for agreed incremental costs under the convention.

Developing country costs are equally difficult to ascertain. While many developing countries will be given assistance in the preparation of their national plans, they will also have to provide their own funds and personnel to conduct these exercises. Ultimately, any programs that they do decide to implement will require contributions not only from international financial mechanisms, but also from their own domestic budgets.

The United States is obligated to prepare a national action plan, which it will do through the authorities in the Clean Air Act and its amendments, the National Energy Strategy, and the Intermodal Surface Transportation Act of 1991. The costs of these programs have already been calculated and attributed to other purposes.

Question. What are the best estimates on what the framework convention would have cost the U.S. and other parties if specific targets and timetables had been included in the convention?

Answer. Even if we knew the level of targeted reductions, this is extremely difficult to answer. We do note that the National Academy of Sciences indicated that costs of mitigation actions vary between a net benefit of several hundred million dollars to a net cost of several trillion dollars, depending on the particular measures taken and the economic assumptions used. Meanwhile, the OECD estimated that a uniform target imposed on all OECD member countries would cost about twice as much (in reduced GNP) as flexible national action plans to reach the same emissions level.

Question. What programs is the administration pursuing to promote the export of U.S. environmental technology?

Answer. The United States climate strategy, as described in "U.S. Actions for a Better Environment," includes technology cooperation with developing countries and countries with economies in transition as a key element. While much of the efforts in technology cooperation are the result of Federal efforts, the bulk of technological exchanges occur as a result of private sector activities. Such as direct foreign investment, joint ventures, licensing, exports and professional training.

Among the U.S. initiatives are such programs as the Technology Cooperation Corps, an initiative to engage the private sector with counterparts abroad to share their know-how and expertise in environmental management and technology; the environmental training institute, providing environmental training to public and private sector executives from abroad; and the adept program, a program of assistance to developing countries and countries with economies in transition in their choice and application of energy practices and technology including projects on adaptation, commercial demonstrations and training. Additional U.S. programs are ongoing in the Department of Energy, the Agency for International Development, the Department of Commerce, the Environmental Protection Agency, the Department of Agriculture and the Department of the Interior.

Question. Dr. Michael Schlesinger from the University of Illinois/Urbana recently published climate modeling results that showed that there is a greater lag time before the global climate is affected by greenhouse gas concentrations. 5 years is the lag time, I believe. Can you comment on his research? Has it been peer reviewed? What will this new information mean to this debate?

Answer. The Schlesinger and Jiang Paper, "Revised Projection of Future Greenhouse Warming," appeared as a letter in Nature on March 21, 1991. It was peer reviewed. Their main conclusion:

> "We also find that a delay of ten years in initiating a 20-year transition from the IPCC Business-as-Usual scenario to any other IPCC scenario has only a small effect on the projected warming in 2100 * * * this indicates that the penalty for a 10 year delay is small."

Other scientists would disagree, if this conclusion is taken to mean there is no need to take early action. For example, three Swiss scientists state (Hans Oeschger, Joos Fortunat, and Ulrich Siegenthaler, EOS, July 28, 1992) that:

> "We believe that CO^2 emission control, as a means to reduce the environmental impact in general, should be based on a compromise between ecological damage and negative consequence for economy and society. To minimize the future impact on both the environment and the economy, emission-control measures should be imposed as early as possible, to allow for a smooth transition in emission rates."

The chair of IPCC, Prof. Bert Bolin (in a statement in EOS from July 28, 1992), also would disagree with an interpretation of Schlesinger and Jiang's conclusions that finds no need for early action:

> "* * * The most important task at present is for natural and socioeconomic scientists to define some future scenarios to clarify possible optimal actions that could stabilize and ultimately decrease the use of fossil fuel (and emissions of greenhouse gases) as quickly as possible, without introducing disorder into the world economy or the national economies."

William R. Cline in his book the "Economics of Global Warming," June 1992, concludes that:

> "However, because the costs [of aggressive abatement] are potentially large and further scientific confirmation is desirable (especially for estimates of very-long-term warming), a two stage approach is advisable for this purpose. In the first stage, milder measures would be implemented and machinery set in place; sharply intensified action would follow in the second phrase after a decade of additional scientific confirmation."

Cline recommended that the first stage include a "best efforts" but not legally binding program of emissions reduction.

RESPONSES TO QUESTIONS ASKED BY SENATOR MCCONNELL

Question. The national plan, as I understand it, must contain measures to mitigate climate change. Explain to me exactly what will be in the U.S. Plan? what is

the timeframe for developing that plan? what person will be in charge of writing the plan and what federal agency will take the lead?

Answer. The specific contents of the national plan are still under discussion. However, it is expected that the United States will include the following elements in its plan:

- Statement of national circumstances (including geography and natural resources, climate, current pressing environmental problems, demographics and population, economic factors, energy issues, institutional systems, relevant policies, laws, administrative measures, and international obligations)
- Vulnerability to climate change and variability greenhouse gas inventory (including a statement of methodologies and assumptions used)
- Adaptation actions (including costs, benefits, effectiveness, economic efficiency, and opportunity costs for each action)
- Mitigation actions (including statement on assumptions used for calculating emissions reductions and on costs, benefits, effectiveness and opportunity costs of actions, and on jointly implemented mitigation actions)
- Emission trends with mitigation
- International cooperation (assistance with mitigation and adaptation)
- Research efforts.

The United States expects to have a draft of this plan completed by January 1993.

The plan is being developed in an interagency process coordinated by the State Department. Agencies with the relevant technical expertise, including the Environmental Protection Agency, and the Department of Energy, will draft specific elements of the plan for interagency review and concurrence.

Question. Mr. Reilly, as you know from our discussions during the Clean Air Bill debate, Kentucky is home to many industries which, I suppose, would be considered emitters of greenhouse gases. Coal production and auto manufacturing are two. These constituents generally support this framework convention, but are concerned that it might at some point be interpreted as committing the U.S. to setting targets and timetables for the stabilization of greenhouse gases. I might also add that nationally, many experts are concerned about how such a commitment would impact economic growth and jobs in this country.

I was somewhat relieved by a May 8 letter from then domestic counselor Clayton Yeutter to John Dingell in which Mr. Yeutter said his interpretation of the document was that it does bind the U.S. to commitments of any kind.

You were intimately involved in drafting of this document. In your view, does the framework convention contain binding targets and timetables? What does it bind the U.S. to do? Is that also the view of the administration?

Answer. The convention does not contain legally binding targets and timetables with respect to greenhouse gas emissions.

With respect to commitments under the convention, the transmittal package from the President to the Senate enumerates these in detail. In summary, the convention calls upon all parties to prepare national inventories of human induced emissions, to implement appropriate national and regional strategies to mitigate and adapt to climate change, to report on these actions, to promote technology cooperation, to promote scientific research and to promote and cooperate in the full and open exchange of information and in education, training and public awareness. Industrialized countries are to provide technical and financial support to developing countries to enable them to meet certain costs of implementing the convention.

This is both my view and the view of the administration.

LETTER TO SENATOR HELMS FROM D. ALLAN BROMLEY

EXECUTIVE OFFICE OF THE PRESIDENT,
WASHINGTON, DC,
September 18, 1992.

SENATOR JESSE HELMS,
Foreign Relations Committee, Washington, DC

DEAR SENATOR HELMS: I would like to take this opportunity to set the record straight on a matter which was originally discussed during the confirmation hearing of Dr. Karl A. Erb to be an Associate Director of the Office of Science and Technology before the Committee on Commerce, Science and Transportation on May 21, 1992.

During this hearing, Senator Al Gore repeatedly asked me if I had ever given the President a scientific briefing on global climate change or if such a briefing had ever been attended by the President. The answer to those two questions is no; however,

Senator Gore's inference that the President has therefore not had the proper information when making policy decisions or that I have not met my responsibilities as the President's Science Advisor is, with all due respect, incorrect.

The policy-making process, and indeed the issue of global climate change, are so complex as to not avail themselves of single, definitive briefings which dictate all policy thereafter. Cabinet members, scientists, and policy officials have all had ample access and opportunity to contribute the latest and best knowledge to the decision-making process.

To give one example that I am intimately acquainted with, President Bush established a special cabinet-level working group under the Domestic Policy Council (DPC) to address global change the first year he was in office, asking me to chair that group. The DPC's Global Change Working Group was a direct reflection of the President's conviction that we needed to coordinate all agency input and ensure that all parts of government and all scientific disciplines would be included.

While the result of the Global Change Working Group's deliberations was not a sit-down briefing, to imply that the Administration arrived at its policy decisions in a vacuum is misleading and unfair. In Cabinet meetings, conferences, and speaking engagements, not to mention less formal settings like strategy sessions for the historic Clean Air Act, President Bush has repeatedly demonstrated his knowledge and concern about the causes and consequences of global climate change.

It bears noting, too, that a substantial portion of the first four-hour meeting between President Bush and his Council of Advisors on Science and Technology (PCAST) held at Camp David in February 1990 as well as parts of several PCAST meetings with the President, subsequently have been devoted to discussions of global climate change. It is also the case that Administrator Reilly of the Environmental Protection Agency has discussed global climate change with the President on several occasions.

Thank you for the opportunity to set the record straight. If I can ever be of help on this or any other issue, please do not hesitate to contact me.

Sincerely,

D. ALLAN BROMLEY,
Director, Office of Science and Technology Policy.

LETTER TO SENATOR PELL FROM MICHAEL R. DELAND

EXECUTIVE OFFICE OF THE PRESIDENT,
WASHINGTON, DC,
September 24, 1992.

The HON. CLAIBORNE PELL,
Chairman, Committee on Foreign Relations,
Washington, DC.

DEAR MR. CHAIRMAN: The President appreciates your committee's leadership in promptly holding hearings and scheduling committee action on ratification of the Framework Convention on Climate Change signed by 154 nations at the Earth Summit in Rio last June.

As the President stated while in Rio de Janeiro, the United States has historically led the world in environmental protection both at home and on the international front. Early ratification by the Senate of the climate change convention would be an important demonstration of our continuing environmental leadership and commitment.

All of the witnesses at your committee hearing—environmental and industry—testified in support of prompt consent to ratification by the Senate this year. Given this unanimous demonstration of support for ratification, and the limited floor time available to the Senate in the closing days of the Congress, the administration supports immediate adoption of a clean resolution consenting to ratification without amendment. We are committed to working with you toward that end during committee action, and further by securing such a unanimous consent agreement with both sides of the Senate leadership before the matter would come before the Senate for consideration.

Again, thank you for your leadership on this important international environmental matter.

With best regards,

Sincerely,

MICHAEL R. DELAND

LETTER TO SENATOR PELL FROM WILLIAM T. ARCHEY

U.S. CHAMBER OF COMMERCE,
WASHINGTON, DC,
August 27, 1992.

The HON. CLAIBORNE PELL,
U.S. Senate, Washington, DC.

DEAR SENATOR PELL: The Senate will soon vote on ratification of the Framework Convention on Global Climate. The U.S. Chamber of Commerce Federation of local and state chambers of commerce, businesses, and associations has identified ratification of the Climate Convention as a 1992 National Business Agenda policy priority.

More than 153 nations—including the U.S.—signed the Framework Convention on Climate Change that was finalized at the United Nations Conference on Environment and Development, or "Earth Summit," in Rio de Janeiro. Much work and painstaking negotiations went into crafting a final product that balances environmental protection and economic development. However, 50 countries must ratify the Climate Convention for implementation to begin.

We can continue U.S. leadership in this area by being one of the first countries to vote for a "clean" ratification of the Convention. Amendments, sense-of-the-Senate resolutions, or other extraneous legislative add-ons could undo the delicate compromises achieved. U.S. ratification of the Framework Convention on Climate Change, and participation through early development of "action plans," can lead the way toward sound environmental and economic development practices by all international trading partners.

The Chamber Federation urges you to support a quick and clean ratification of the Framework Convention on Global Climate Change.

Sincerely,

WILLIAM T. ARCHEY

ENVIRONMENTAL DOCUMENTATION: UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE*

SECTION 1. INTRODUCTION

This document describes the current understanding of the science of climate and climate change. It briefly summarizes the historical work that led to the successful negotiation and conclusion of the Framework Convention on Climate Change (Convention), including a discussion of some of the fundamental issues that were at stake during the negotiations themselves; it provides a description of the obligations parties will undertake on ratifying the Convention and upon its entry into force; it lists U.S. actions that are being taken to meet these obligations; and it concludes with a discussion of the possible effect of U.S. participation in this treaty on the climate change issue. This document is intended to provide background information to understand the implications of the Convention and some of the alternatives considered during its negotiation. It should be noted that, because this is a process-oriented framework convention, it is difficult to provide an evaluation of its precise impacts. Part of the Convention's purpose is in fact to promote better understanding of the potential impacts of climate change.

SECTION 2. THE SCIENCE OF GLOBAL CLIMATE CHANGE

For some time many in the scientific community have warned of the potential for human activities to contribute to global climate change, while recognizing that there is still much we do not know or understand about this issue. Through both governmental and non-governmental activities, the world community has invested heavily in scientific research to better understand the nature of the issue and to provide the cornerstone on which a sound response to the issue of potential climate change should be built. The following represents a consensus view of a broad range of scientists (including most U.S. scientists) who have participated actively in the international effort to understand the issue:

Climate Change

While scientists cannot yet establish that a human-induced warming has already occurred, generally accepted theory indicate that increased concentrations of green-

*This document is from the Bureau of Oceans and International Environmental and Scientific Affairs, Department of State, September 1992.

house gases are likely to increase atmospheric and ocean temperatures and alter their associated circulation and weather patterns. However the magnitude, timing and regional details of these changes cannot be predicted with much certainty. Climate models predict that equilibrium change in the average temperature of the globe's atmosphere as a consequence of a doubling of pre-industrial atmospheric concentrations of carbon dioxide or its equivalent is unlikely to lie outside the range of 1.5 to 4.5 C (2.7 to 8.1 F), with a best estimate, based on model results and taking into account the observed climate record, of 2.5 C (4.5 F). Actual realized temperature change would lag behind the equilibrium value. Sea-level rise associated with such a doubling has been estimated to range between a few centimeters and approximately 1 meter (several inches to approximately 3 feet), with a best estimate of approximately 20 cm by 2030.

In these analyses, no model adjustments have been made for the cooling effects of sulfate aerosols and stratospheric ozone depletion in the doubling sensitivity; recent findings also indicate that the complex stratospheric effects of chlorofluorocarbons (CFCs) may be less significant than originally thought, and that the magnitude of greenhouse forcing in the models may thus be overestimated. A further complicating factor in interpreting the data is that the 0.3–0.6 C observed warming in recent years is of the same magnitude as that predicted by models but also of the same magnitude as natural variability. Thus, the observed increase could be due to natural variability or could be part of a larger anthropogenic warming that is being offset by other factors such as increases in sulfate aerosols due to industrial emissions. In addition, the observed warming is occurring more in the Southern than in the Northern Hemisphere, and is largely characterized by increases in night-time rather than daytime temperatures.

Potential impacts of climate change are likely to vary considerably from region-to-region, with particular risks for drought-prone areas, irrigated agriculture, water resources, coast zones and natural ecosystems. Several of the greenhouse gases may have other effects that could influence agriculture and natural ecosystems (e.g., direct fertilization by carbon dioxide). Satisfactory evaluations of the impacts (and costs) of climate change are not likely to be available for a decade or more.

Greenhouse Gases

The principal "greenhouse gases" in the atmosphere are water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), chlorofluorocarbons (CFCs), and ozone (O_3). Of these, water vapor has the largest greenhouse effect; however, on a global scale, its concentrations in the atmosphere are not directly affected by human activities. With the exception of CFCs, the remainder of these gases occur naturally; human activities have contributed significantly to increases in all of their atmospheric concentrations. CO_2, principally from the burning of fossil fuels and forests, constituted approximately 60% of the total greenhouse effect of these anthropogenically produced gases over the last decade. (This is based on estimates of the relative effects of each of these gases over time, expressed as "global warming potential," or GWP.) The economically-developed world currently accounts for around half of global greenhouse gas emissions; by 2025, the contributions of different countries will shift, and developed countries are expected to account for as little as a quarter of the total as compared with the developing countries and those countries with economies in transition.

Implications

The best scientific information based on generally accepted theory indicates that if greenhouse gas concentrations in the atmosphere continue to increase as a result of human activities, significant changes in the climate system are likely. However, current analyses are unable to predict with confidence either the magnitude, timing or impacts of these changes. Therefore, analyses of the specific costs of potential actions, as well as possible benefits of taking steps to control atmospheric concentrations of greenhouse gases are subject to a high degree of uncertainty.

SECTION 3. HISTORICAL PERSPECTIVE

In reaching agreement on the Convention, its negotiators took into account national and international efforts to assess the state of our scientific knowledge of climate change, the potential impacts of climate change, and potential response options. As a result, the process leading up to and including the negotiating and drafting of this Convention already necessitated a careful consideration of the environmental impacts of various options, including those contained in this Convention.

In the period leading up to the negotiations, numerous meetings were held—some involving scientists (both in their individual capacities, and as government representatives), and others involving ministers and other policy-makers. The reports

and declarations emerging from these meetings set the stage for the negotiations. In many of these meetings, the conferees did not adopt a formal declaration, and the results were only contained in a chairman's summary of the proceedings. This section briefly catalogs some of these meetings, with particular emphasis on the work of the Intergovernmental Panel on Climate Change (IPCC), and the actions taken by the United Nations General Assembly.

A. Early Meetings and Reports

- In 1979, the World Meteorological Organization (WMO) sponsored the First World Climate Conference. Essentially a scientific conference, the meeting established the World Climate Program (WCP) under the auspices of the WMO, the United Nations Environment Programme (UNEP) and the International Council of Scientific Unions (ICSU) to further research aimed at understanding the climate system.
- Later in 1979, a Panel of the U.S. National Academy of Sciences estimated that a doubling of CO_2 concentrations (or equivalent concentrations of other greenhouse gases) could lead to increases in global air temperatures.
- A 1985 conference in Villach, Austria under the joint auspices of WMO, UNEP and ICSU concluded that, while uncertainties were significant, there was sufficient understanding of the global warming phenomenon to justify studies of new policies to meet concerns about potential change and climate change impacts.
- Workshops in Villach and in Bellagio, Italy, in 1987 led to recommendations that greenhouse gas emissions be limited and that adaptation measures be adopted.
- In 1988, scientists and experts from 48 countries took part in their individual capacities in the Toronto Conference on "The Changing Atmosphere: Implications for Global Security," and called for a comprehensive international framework to address interrelated problems of the global atmosphere.
- In 1989, a conference in New Delhi was co-sponsored by UNEP and the U.S.-based World Resources Institute, and dedicated to examining developing countries' concerns related to climate change.
- In addition to the scientific, technical and economic assessments of the Intergovernmental Panel on Climate Change (IPCC; discussed below), a series of Ministerial-level meetings (The Hague (1990), Noordwijk (1990), Bergen (1991)) continued to emphasize that although uncertainty was high, prudent actions, including development of an international agreement to dead with the issue, was now appropriate.
- In November of 1990, the Second World Climate Conference (SWCC) was held in Geneva. The conference's main objectives were to review the World Climate Program of UNEP and WMO and, based on the First Assessment Report of the IPCC, to recommend policy actions.
- In April of 1991, the National Academy of Sciences released a report entitled "Policy Implications of Greenhouse Warming." This report, one of the most comprehensive domestic efforts to examine the issue of climate change, noted that "the United States should be able to adapt to changes in climate expected to accompany greenhouse warming." However, the report continues, "the fact that people can adapt, or even that they are likely to do so, does not mean that the best policy is to wait for greenhouse warming to occur. * * * Waiting and adapting may sacrifice overall economic improvement in the long run." The report concluded that greenhouse warming was a potential threat sufficient to justify action now, and recommended a series of generally low-cost, currently available mitigation and adaptation measures, and a strong scientific program to reduce the many uncertainties in the understanding and prediction of climate change.

B. The IPCC

In 1988, the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP) created the Intergovernmental Panel on Climate Change (IPCC). The IPCC, an international organization largely comprised of government experts, had as its original mandate the review of the scientific evidence for and the likely social and economic impacts of climate change. It was also charged with developing and analyzing potential mitigation and adaptation options and strategies, and with considering legal instruments to respond to climate change.

The IPCC published its First Assessment Report in 1990. This assessment made the following statements and predictions:

- "Based on current model results, we predict an average rate of increase of global mean temperature during the next century of about 0.3 C per decade with an uncertainty range 0.2–0.5 C per decade)* * **

- "The oceans act as a heat sink, and thus delay the full effect of a greenhouse warming. Therefore we would be committed to a further temperature rise which would progressively become apparent in the ensuing decades and centuries."
- "* * *[A]n average rate of global mean sea-level rise of about 6 cm per decade over the next century (with an uncertainty range of 3–10 cm per decade) mainly due to thermal expansion of the oceans and the melting of some land ice. The predicted rise is about 20 cm in global mean sea-level by 2030, and 65 cm by the end of the next century. There will be significant regional variations."

The First Assessment Report also described several key uncertainties:

- "There are many uncertainties in our predictions particularly with regard to the timing, magnitude and regional patterns of climate change, especially changes in precipitation."
- "These uncertainties are due to our incomplete understanding of sources and sinks of greenhouse gases, and the response of clouds, oceans and polar ice-sheets to a change of the radiative forcing caused by increasing greenhouse gas concentrations."

As to policy responses, the IPCC stated:

- "The consideration of climate change response strategies presents formidable difficulties for policymakers. The information available to make sound policy analyses is inadequate because of: (a) uncertainty with respect to how effective specific response options or groups of options would be in actually averting potential climate change; (b) uncertainty with respect to the costs, effects on economic growth, and other economic and social implications of specific options or groups of options."
- "The potentially serious consequences of climate change give sufficient reasons to begin adopting response strategies that can be justified immediately even in the face of significant uncertainties."
- "Governments should undertake now:
  —"accelerated and coordinated research programs to reduce scientific and socio-economic uncertainties with a view toward improving the basis for response strategies and measures;
  —"review of planning in the fields of energy, industry, transportation, urban areas, coastal zones and resource use and management;
  —"encouragement of beneficial behavioral and structural (e.g. transportation and housing infrastructure) changes;
  —"expansion of the global ocean observing and monitoring systems.
  "It should be noted that no detailed assessments have yet been made of the economic costs and benefits, technological feasibility or market potential of the underlying policy assumptions."

The first intergovernmentally-produced document concerning the contents of a convention on climate change was the IPCC's "Legal Measures" paper, which formed a part of the IPCC's First Assessment Report. By its terms, the report had as its primary objective the compilation of elements that might be included in a future framework convention on climate change and a discussion of the issues that were likely to arise in the context of developing those elements. While not an official negotiating document during the preparation of the Convention, it served as a useful preparatory tool for negotiators.

In 1992, the IPCC released a supplemental report which specifically addressed six short term tasks: further assessment of net greenhouse gas emissions; predictions of regional distributions of climate change and associated impact studies, including model validation studies; energy and industry related issues; agriculture and forestry related issues; vulnerability to sea-level rise; and emissions scenarios. Although the 1992 Supplement did not provide updated projections of future warming, it was noted that the new conclusions regarding the effects of sulfate aerosols and stratospheric ozone depletion on the climate system "somewhat modify" the estimated rate of warming in the 1990 report. Regarding the behavior of various greenhouse gases and aerosols (airborne particles or collection of particles), the Supplement concluded that:

> "Depletion of ozone in the lower stratosphere in the middle and high latitudes results in a decrease in radiative forcing, which is believed to be comparable in magnitude to the radiative forcing contribution of chlorofluorocarbons (CFCs), (globally averaged) over the last decade or so."
>
> "The cooling effect of aerosols resulting from sulfur emissions may have offset a significant part of the greenhouse warming in the Northern Hemisphere during the past several decades * * *"

The Supplement noted that steps have been taken toward a more complete analysis of the dependence of future greenhouse gas emissions on socio-economic assumptions and projections, and that a set of updated scenarios have been developed for use in modelling studies. With respect to the possible impacts of climate change, the Supplement did not alter the 1990 conclusions; although the 1992 document did provide some new material on various response strategies, offering several new recommendations on the potential for mitigation and adaptation.

C. The United Nations General Assembly

In December of 1988, the United Nations General Assembly (General Assembly) began to take a significant interest in the issue of climate change. During its 43rd session, the General Assembly adopted a resolution that recognized climate change as a "common concern of mankind." In this resolution, the General Assembly approved the UNEP and WMO initiative in creating the Intergovernmental Panel on Climate Change (IPCC), and encouraged the convening of national and international climate conferences.

In 1989, the General Assembly again took up the issue of climate change, noting the results of the various conferences that had been convened during the year, and urged continued scientific work to develop a global understanding of climate and the potential for climate change. For the first time, the UNGA also recommended that governments, along with intergovernmental organizations, non-governmental organizations and scientific institutions, prepare a framework convention on climate change containing commitments identified on the basis of sound scientific knowledge. During its 45th session, the UN General Assembly adopted Resolution 45/212 of 1990, which called for the formation of the Intergovernmental Negotiating Committee and the negotiation of the framework climate convention:

> "Recalling its resolutions 43/53 of 6 December 1988 and 44/207 of 22 December 1989, in which it recognized that climate change is a common concern of mankind, and urging Governments, and as a appropriate, intergovernmental and non-governmental organizations and scientific institutions, to collaborate in a concerted effort with the aim of preparing as a matter of urgency, a framework convention on climate, and other related instruments, containing appropriate commitments for actions to combat climate change and its adverse effects, taking into account the most up-to-date sound scientific knowledge and any existing uncertainties, as well as the particular needs and development priorities of developing countries".

This resolution established a single negotiating process under the auspices of the General Assembly, and supported by UNEP and WMO, for the preparation of a framework convention on climate change. The first of the negotiating sessions was held in Chantilly, Virginia, in February of 1991 at the invitation of President Bush. After five additional (often contentious) meetings, held in New York, Nairobi and Geneva, the negotiators concluded their work in May 1992, and the Convention was opened for signature during the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in June of 1992. Representatives of 154 states and one regional economic integration organization signed the Convention in Rio. Details of the Convention's objective and parties' obligations are contained in section 5 of this document.

D. U.S. Role in Convention Negotiations

The U.S. played an active role in the climate change negotiations, hosting the first session of the Intergovernmental Negotiating Committee at the invitation of the President, and putting forward many proposals that became essential elements of the Framework Convention. For example:

—A comprehensive approach to the question of climate change, taking into account all sources and sinks of all greenhouse gases in all sectors.
—The need for careful assessment of the economic costs and benefits of potential climate change and of response measures.
—The need for each country to estimate the amounts and composition of current emissions (through the development of national inventories based on comparable methodologies);
—An approach calling on each country to develop and implement a national response strategy that is flexible and takes into account the country's special circumstances.
—The linkages between uncertainties, evolving scientific, technological and economic understanding, and the need for a global response produced through flexible national action plans.

—The requirement that all Parties periodically report upon, and that the Conference of the Parties regularly review, actions that Parties are taking to meet the objectives of the Convention.
—The opportunity to implement actions jointly with other countries.
—The creation of strong institutions within the Convention to assure that the process outlined in the previous points is properly implemented.

SECTION 4. FUNDAMENTAL ISSUES AT STAKE

Even as negotiations began, it was clear that several critical substantive issues, many initially raised by the United States, would need to be addressed in determining the final text of the Convention. One was the basic approach to be taken toward emissions of greenhouse gases, including the scope of greenhouse gases included in the Convention. A second issue was the degree of participation of developing countries, with particular emphasis on the questions of technology cooperation and financial assistance. A third debate centered on the review mechanism of the Convention, including reporting and associated Convention institutions.

A. Emissions Limitations

Essentially three options were proposed during the negotiations. One was to make the Convention a purely "framework" document, akin to the Vienna Convention for the Protection of the Ozone Layer, with no provisions requiring control of emissions. Another was to apply quantitative requirements to emissions of greenhouse gases (or in some formulations, to apply them only to emissions of CO_2 from industrialized countries). A third option was to require countries to fashion and report on "national strategies" or "action plans" that would have the result of limiting emissions, though without specifying legally binding limitations.

In spite of the complexity of the issue and the inadequacy of the science to answer some of the most crucial questions regarding climate change, the preponderance of opinion suggested that some action was justified. However, the benefits of limiting emissions are still uncertain—partly because it is not yet possible to predict accurately the timing and/or magnitude of climate change as greenhouse gas concentrations change; it is also not possible to forecast the potential regional and local effects of climate change. Further, there may be adverse impacts in some locations if climate changes, but benign effects or even benefits in others.

The costs of restraining emissions are also difficult to estimate. Several studies have attempted to perform these calculations, but their conclusions range widely (e.g., National Academy of Sciences, 1991; Manne and Richels, 1991). Some analyses find emissions reduction actions to be inexpensive or profitable, others find these actions to be modest in cost, and still others find potential actions extremely expensive.

The specific quantitative requirements approach aimed at stabilizing carbon dioxide emissions, or emissions of carbon dioxide and other greenhouse gases, by the year 2000 using various base years. Some countries aimed at stabilizing net emissions (i.e., emissions from sources minus the uptake by sinks and reservoirs—such as forests), others focused on emissions alone. Some targets were individual, national goals; others were regional targets applicable to a group of countries although no country within the group was individually required to meet it. Some targets were meant to be legally binding; others were "goals" or "aims", and included numerous caveats.

The United States rejected this approach well before the negotiations began. The United States questioned the scientific basis for such specific quantitative requirements, noting that no global circulation model could predict what climate change would be avoided by achieving any of these emissions levels, nor could the value of preventing climate change be well estimated. In addition, a variety of factors, including population trends, world fuel prices and economic growth would influence projections of a country's net emissions. It was clear that in the face of these uncertainties regarding the future, few countries could confidently state that they could maintain set emissions levels into the future. This meant that the benefit of stabilizing emissions by the year 2000 could quickly evaporate thereafter. Further, there was awareness that the "savings" achieved by the industrialized countries—the only countries to which binding limits would apply—could be eclipsed by increased emissions of developing countries.

A few experts have attempted to estimate the optimal policy approach, taking into account both cost and benefits. The National Academy of Sciences (1991) recommended a series of low-cost, available actions to limit emissions. Nordhaus (1991) estimated modest damages due to warming and steeply rising costs of emissions limitations, and recommended only moderate to small emissions restrictions after phaseout of chlorofluorocarbons. Some authors, fearing higher damages due to

warming have recommended efforts toward worldwide quantitative restrictions. In the most detailed treatment to date, Cline (1992), despite finding much larger damages due to warming than did Nordhaus, nonetheless recommended no specific global quantitative restrictions in this decade, preferring an approach in which countries devise and implement national plans between 1991 and 2000, and progress is reviewed in the year 2000.

As to the question of which greenhouse gases (and sectors) should be included in the Convention text, various options were proposed: including only carbon dioxide, including carbon dioxide as a first step, including greenhouse gas sources but not sinks, or including all sources and sinks of all gases in all sectors. The United States pressed for the latter approach, calling for a "comprehensive approach" to net emissions (sources and sinks) of all greenhouse gases. Such an approach accounts for all of the factors in the greenhouse calculus, and it encourages action to protect sinks and preserve reservoirs as well as limiting emissions. A comprehensive approach also has potential economic advantages, allowing each country to fashion its best mix of policy actions to limit net emissions.

The U.S. and others also pressed for international flexibility to implement actions jointly with other countries. Because emissions of greenhouse gases mix globally in the atmosphere, the location of emissions control efforts is relatively insignificant in terms of the effect on the climate system. But the cost of emissions control can vary considerably across countries. Hence, flexibility to act in concert across national boundaries can significantly reduce the cost of limiting global emissions. Joint implementation also offers a market based vehicle for moving technology to developing countries in return for emissions-abatement measures.

B. Developing Country Participation

At the outset of negotiations, it was widely agreed that the Convention should strive for as broad participation as possible, including from among developing countries. Major issues involved the extent to which developing countries would be assisted, financially and technically, in meeting Convention obligations.

In 1990, U.S. emissions of greenhouse gases into the atmosphere were estimated at approximately 20% of the global total. Emissions from industry, agriculture and transport, as well as from the cumulative impacts of individual actions, are all significant contributors. However, this proportion is falling rapidly as U.S. emissions are increasing only slowly, and developing country emissions are rising rapidly. The OECD estimates that emissions of carbon dioxide from developing countries will rise by 3.7% per year through the year 2005, with developing countries' percentage share of energy-related carbon dioxide emissions rising from 20% in 1987 to more than 50% by 2025. Methane and NO_x emissions in developing countries are expected to rise to over 60 percent of global totals during this same period, largely because of increasing fossil-fuel powered transportation and natural gas use. In a separate analysis, the 1992 IPCC Supplement (Emissions Scenarios Report) indicates that by 2025, tropical deforestation could account for emissions of as much as 3 billion tons of carbon. And by 2025, CO_2 emissions from non-OECD country energy consumption could amount to more than 65% of the world's total.

In reaching a consensus on how to address the need to prevent dangerous anthropogenic interference in the climate system, the Convention negotiators stressed that to achieve a successful outcome, participation must be widespread, and that countries which possessed the capabilities to take more significant actions in the near term, should do so.

As noted above, developing countries will contribute increasingly larger (both absolute and relative) amounts of greenhouse gases to the atmosphere in the future. It is essential, therefore, that developing countries pursue strategies for development that, while economically sound, reflect the global interest in limiting greenhouse gas emissions. While developing countries must take steps on their own to assure this outcome, a fully successful Convention in which all countries, including the least developed of nations, contribute, will depend in part on supplemental assistance from developed countries.

Regarding assistance in the form of technology, the options proposed concerned whether the transfer of environmentally sound technologies would be promoted, as urged by developed countries (recognizing that technologies are largely owned by the private sector), or ensured on preferential and non-commercial terms, as urged by developing countries. In terms of financial assistance, options presented involved which developing country obligations would be assisted (and to what extent), as well as the mechanism that would be utilized for such assistance.

In terms of financial assistance, the Convention provides for developed countries, collectively, to provide financial resources to assist developing country parties in meeting their commitments. They are to meet the full agreed costs of developing

countries in meeting their reporting commitments; in terms of other climate change measures taken by developing countries, developed countries are to meet the agreed incremental costs of measures that are agreed by the international entity designated as the financial mechanism. The Global Environment Facility of the World Bank, UNDP, and UNEP is to function as the financial mechanism on an interim basis.

C. Review Mechanisms

One of the major issues in the negotiations was what could be called the Convention's "review mechanism". First, this issue involved the extent to which Parties would be required to report on various aspects of their policies/activities relevant to climate change (e.g., their emissions inventories, how they were implementing their Convention obligations). Second, it involved the extent to which institutions would be established under the Convention to review such information; subsidiary questions concerned whether such review would be of a technical or policy nature or both, and whether the review would be conducted by government representatives or independent experts. Also at issue was whether there should be a differentiation between developed and developing countries with respect to both reporting and review. Options were propose along the entire spectrum of possibilities. In considering these options, much concern was expressed, particularly by developing countries, over potential "intrusion" on national sovereignty.

The United States supported extensive reporting requirements for all Parties, including with respect both to emissions inventories and implementation of Convention obligations. In the U.S. view, such an approach would ensure the exchange of critical information with respect to climate change, as well as provide for transparency. In terms of review, the U.S. supported a two-tiered review process, with a technical review of national reports being conducted by a subsidiary technical body composed of government representatives, and a policy review conducted by the Conference of the Parties. While the U.S. recognized the need for appropriate differentiation between developed and developing countries, it considered that developing countries had to have sufficient obligations to bring them effectively into the process; otherwise, the Convention's goal of achieving widespread participation would be thwarted.

SECTION 5. FRAMEWORK CONVENTION ON CLIMATE CHANGE

The Framework Convention on Climate Change, signed by President Bush on June 13, 1992 in Rio de Janeiro, is action-oriented and seeks to achieve a wide variety of goals, including:

- providing for all Parties to design and implement national strategies to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of greenhouse gases;
- accommodating a wide variety of national political and economic circumstances and specifically avoiding the imposition of uniform, rigidly specified requirements (in favor of a more flexible approach enabling countries to develop strategies that best meet their individual situations, needs and capabilities).
- encouraging Parties to take account of climate change in their economic, social and environmental policies and to take account of economic, social and other concerns in their climate policies;
- assisting developing countries in collecting data on their net greenhouse gas emissions and in limiting the rate of growth in those emissions;
- defining a financial mechanism to provide funding for agreed incremental costs of projects in developing countries that produce global environmental benefits.
- increasing awareness of the causes and implications of potential climate change and response measures (requiring Parties to promote and cooperate in public education and training programs); and,
- improving countries' capacities to observe, model, and understand the global climate system (including requiring Parties to report detailed information on their greenhouse gas emissions regularly), and promoting the continued development of globally coordinated climate change research.

The Convention takes a comprehensive approach to addressing climate change embracing all sources and sinks of greenhouse gases (other than those controlled by the Montreal Protocol). It allows for economically efficient mitigation and adaptation responses. To oversee the achievement of these goals, the Convention establishes various institutions: a Conference of the Parties, a secretariat, a subsidiary body for science and technology, and a subsidiary body for implementation; and designates a financial mechanism.

National Inventories

The Convention calls on each Party to develop, update and make available detailed information on its sources of greenhouse gas emissions and on its sinks and reservoirs of these gases. Each developed country Party must submit this information within 6 months after entry into force of the Convention for it; developing country Parties have 3 years to submit their inventories after entry into force of the Convention for them (or within 3 years of their receipt of financial assistance for this purpose); and least developed country Parties may make their initial reports at their discretion.

Information on greenhouse gas emissions is transmitted to the Conference of the Parties where it is integrated with data from other countries. The collection and integration of this information is expected to lead to several significant immediate results. The preparation of inventories will play a role in the development of a country's national plans—inventories identify and quantify sources, sinks, and reservoirs of emissions, and this information may in turn be used to assess where the most cost-effective remediation and mitigation measures may be taken which in turn may stimulate flows of technology and financial assistance. Analyses of emissions inventories will also enable scientists to study much more accurately the patterns of greenhouse gas emissions and the effects that these patterns may have on climate change. Insofar as the Conference of the Parties is successful in integrating all countries' actions, the effort may lead to enhanced understanding of the impacts that climate change and response strategies may have on economic and social factors within individual countries and among them collectively.

In order to ensure a strong, comprehensive effort to improve our understanding of climate change, the Convention stipulates that developed country Parties will provide financial and technical assistance to developing countries in collecting and reporting this information.

Mitigating and Adapting to Climate Change

In spite of the intensive focus on the issue of global climate change, many countries have not yet taken some of the most rudimentary steps to deal with the issue. Few states have begun comprehensive country studies (which include inventories but go beyond them) to assess national circumstances that might lead to emissions of greenhouse gases, as well as to develop, analyze and evaluate what local, regional or national actions might be taken to limit these emissions or to limit their vulnerability to the associated impacts of climate change.

Such studies must form the basis for any effective long-term action. Without the planning that results from the preparation of such studies, whatever actions countries might take would almost certainly be fragmented, could well be economically inefficient, could perhaps be counter-productive for national economies, and could even raise net emissions.

Under the Convention, all Parties must formulate and implement national measures and/or programs (including, where appropriate, regional programs) to mitigate and adapt to climate change, taking into account each Party's specific national and regional development priorities, objectives and circumstances. Developed country Parties are to adopt national policies and corresponding measures on the mitigation of climate change by limiting greenhouse gas emissions and enhancing sinks and reservoirs, demonstrating they are taking the lead in meeting the long-term objective of the Convention, taking into account, among other things, differences in economic structures and resource bases, and the need to maintain economic growth. Developed country Parties are to report within the first 6 months after the treaty enters into force, and periodically thereafter, detailed information on national policies and measures taken to limit greenhouse gas emissions and enhance sinks and reservoirs. The Convention text contains a series of factual recognitions, including that the return by the end of the present decade to earlier levels of anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol on Substances that Deplete the Ozone Layer would contribute to a modification of longer-term trends in anthropogenic emissions consistent with the objective of the Convention.

Included in the developed country Party's enhanced reporting requirement is the obligation to provide detailed information on its policies and measures, including the projected effect on its net emissions of such policies, "with the aim of returning individually or jointly to their 1990 levels of these anthropogenic emissions of carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol." These policies and measures will be reviewed periodically by the Conference of the Parties. Parties may implement such policies and measures jointly with other Parties; because the cost-effectiveness of measures varies widely across countries, this option

promotes a global response that will be more cost-effective than if all actions were taken unilaterally.

Technological and Financial Assistance

The Convention recognizes that developing country Parties will need financial and technical assistance to prepare reports and to implement policies to limit greenhouse gas emissions or to adapt to impacts of climate change. In terms of technology, to assist developing country Parties in reducing net greenhouse gas emissions, the Convention commits developed country Parties to take all practicable steps to promote, facilitate, and finance, where appropriate, the transfer of environmentally sound technologies. In this process, developed country Parties are to support the development and enhancement of appropriate technological capacities within developing country Parties.

In many cases, technologies are needed to limit greenhouse gas emissions or to adapt to climate change are available within developing countries. In these situations, what may be lacking is capital to invest in these technologies, or an organizational infrastructure through which to promote the use of existing know-how. In other cases, technology that is proven to limit emissions economically is unavailable within a country but is commercially accessible from a foreign firm. In these and many other situations, clear benefits derive—both locally and globally—from the implementation of superior but unused technologies in developing countries. There is thus a significant advantage for the developed countries to assist in cooperative technology development, either through financial mechanisms, or through technology cooperation and training programs.

The Convention, in seeking to provide assistance to developing countries, calls for a cooperative process, which recognizes that the diffusion of technology depends heavily on mutual interest and on the creativity and dynamism of the private sector, the main force behind technological innovation and dissemination. In this context, governments cannot give away or transfer technology because they do not generally develop or own it, and—perhaps equally important—because it may reduce incentives for developing innovations. However, governments can help facilitate the commercial process and promote a global partnership aimed at sustainable growth.

Prior to the negotiation of the Convention, no mechanism existed to coordinate the global response. With the Convention, a mechanism is established through which all countries can cooperate in identifying and taking appropriate actions. For example, the Convention promotes coordinated responses and allows countries the flexibility to assure that their own actions reflect their unique circumstances. The opportunity for countries to implement their actions jointly may also serve as a vehicle for technology cooperation.

A coordinated approach to technology cooperation will help ensure that all countries are able to fulfill their obligations under the Convention. Coordination of efforts can be made by the developed countries on an *ad hoc* basis, with each developed country working with a few developing countries. At first, these efforts will need to focus on developing emissions inventories and comprehensive plans of action to reduce countries' net emissions. Subsequently, on a voluntary basis, cooperative efforts will be needed to initiate and follow through with programs to minimize net emissions while furthering economic development. Without a coordinated effort, many smaller countries risk being overlooked as industrialized countries compete to support the efforts of developing countries where the opportunities for greatest emissions reductions and/or greatest trade benefits exist. This could lead to a failure of many developing countries to take mitigation and adaptation actions because they do not have the means to do so.

Scientific Activities

While the Convention cannot solve the complex problems confronting the scientific community, it should—and does—foster a regime of international scientific cooperation which can contribute significantly to the effective planning and implementation of scientific programs to address these issues.

As discussed previously, the basis for international concern regarding potential climate change is rooted in developments in the scientific understanding of the processes controlling the global climate: countries became convinced that changes in the climate could result from human activities. However, our scientific understanding is by no means complete. The physical science of climate is poorly understood, and the development of socio-economic analyses that would enable us to make adequately informed decisions in the face of such uncertainty are at a rudimentary stage of development. Particularly troublesome is the fact that the current knowledge base is insufficiently robust to allow specific increases or decreases in emissions to be translated into changes in overall atmospheric concentrations, from there

into actual changes in climate, and most importantly, into environmental, social and economic impacts. We do, however, recognize that, due to atmospheric residence times, there would be significant time-lags that would intervene between the undertaking of response measures and the reaction to these measures by the climate system. It is therefore essential to encourage and promote further research and the development of associated technology while simultaneously beginning initial responses. Successful R&D programs, encouraged by the Convention, will permit the development of more specific policies that are well-founded scientifically and are based on realistic assessments of their costs and benefits.

At the international level, scientific organizations, such as the United Nations Environment Program (UNEP), the World Meteorological Organization (WMO), the Intergovernmental Oceanographic Commission (IOC), the World Climate Research Program (WCRP), the International Council of Scientific Unions (ICSU), and the International Social Sciences Council (ISSC) have made considerable strides in climate research. As noted, WMO and UNEP jointly established the Intergovernmental Panel on Climate Change (IPCC) to assess developments in our understanding of the science, impacts and potential responses to climate change. The IPCC will begin work this Fall on its Second Assessment Report; its publication is expected for late 1994 or 1995. International efforts, also encouraged by the Convention, are beginning to develop comprehensive observing systems—including the Global Climate Observing System (GCOS), and the Global Ocean Observing System (GCOS). Informal initiatives, such as the Committee on Earth Observing Satellites (CEOS) and the International Group of Funding Agencies (IGFA) for Global Change Research, also provide research and monitoring assistance and help coordinate global climate research.

To facilitate the necessary scientific work, the Convention sets forth various means by which the Parties are to support, further develop, and cooperate in scientific research and systematic observation relevant to climate change. Of particular note is the Convention's emphasis on promoting access to, and exchange of, data and analyses, including that obtained from areas beyond national jurisdiction—consistent with U.S. policy on access to remote sensing data.

Public Awareness

The Convention recognizes the importance that public awareness plays in addressing the issue of climate change and includes a commitment for all Parties to promote the development of public education related to climate change and promote the training of scientific, technical and managerial personnel. The Convention also calls for cooperation among Parties in their efforts to promote public understanding related to the causes and effects of potential climate change and in the development of training programs.

Special Considerations

The obligations of the Convention take into account the specific circumstances of individual Parties in a number of ways. For example, the Convention affords some flexibility in the implementation of national plans to mitigate and adapt to climate change to those countries moving toward free market economies. (Countries that qualify are specifically identified in Annex I of the Convention). In addition, Parties are to give full consideration to developing countries that are particularly vulnerable to the adverse effects of climate change (such as countries with low-lying coastal areas and countries with arid areas) in meeting the costs of adaptation. Parties are also to take full account of the specific needs and special situations of the least developed countries in their actions with regard to funding and the transfer of technology. Finally, when evaluating the implementation of commitments under the Convention, Parties are to take into consideration the situation of countries with economies that are vulnerable to the effects of response measures, such as countries whose economies are highly dependent on income generated from the production, processing and export, and/or consumption of fossil fuels.

Institutions Established by the Convention

The guiding body of the Convention is the Conference of the Parties. The Conference of the Parties is required to review regularly the implementation of the Convention and any related legal instrument the Conference of the Parties may adopt. Specifically the Conference of the Parties is charged with periodically examining the obligations of the Parties, and assessing the overall effects of measures taken. To this end, the Conference of the Parties is to promote and facilitate the exchange of information on measures adopted by Parties to address climate change, including information gathered from national inventories, and information on the steps taken by Parties and reported by them that are relevant to the achievement of the objective of the Convention.

The Convention establishes a Secretariat to facilitate the operation of and provide services to the Conference of the Parties, and prepare reports on its activities. The Convention also establishes two subsidiary bodies to assist the Conference of the Parties in its substantive functions. The Subsidiary Body for Scientific and Technological Advice is to provide the Conference of the Parties with timely advice on scientific and technological matters relating to the Convention. The Subsidiary Body for Implementation is to assist in the assessment and review of the implementation of the Convention.

The Convention defines a financial mechanism which is to operate under the guidance of and be accountable to the Conference of the Parties and whose operation is to be entrusted to an existing international entity. The Global Environment Facility (GEF) is designated as the international entity on an interim basis. Beyond the commitment to assist in paying for developing countries to meet their reporting requirements, the financial commitment of the United States together with other developed countries under the Convention is limited to the agreed full incremental costs of those measures that the international entity agrees to fund.

SECTION 6. HOW THE U.S. MEETS ITS CONVENTION OBLIGATIONS

The United States already has policies and measures in place which would meet the Convention's greenhouse gas commitments. The sum of these policies and measures constitutes the U.S. action strategy. These include actions under the Clean Air Act Amendments of 1990, and the Intermodal Surface Transportation Act of 1991, as well as such other legislative and non-legislative administrative programs and initiatives as the National Energy Strategy, "America the Beautiful" (portions of both of which depend on legislation currently pending before Congress), and programs to reduce methane and nitrous oxide emissions.

To date, the United States has produced two iterations of its national action strategy: the first in February of 1991 and the second and most recent in April 1992. Few other countries have taken this concrete step. The extent to which U.S. net emissions are actually limited by these and other measures, as well as the environmental impacts of these measures, will depend on a number of factors. GNP and population growth, the energy intensity of the economy, the resource mix in the energy sector and penetration rates of energy efficiency technologies and reforestation programs and other greenhouse gas emissions limiting programs are all important variables. The above U.S. actions are estimated to reduce projected net emissions of methane, carbon dioxide and nitrous oxides in the United States by the equivalent of approximately 125 to 200 million metric tons of carbon in the year 2000. These represent a reduction in the year 2000 of 7 to 11 percent from emissions otherwise projected, implying a projected net emission in 2000 of only 1.4 to 6 percent above 1990 levels.

Technological improvements, due in part to National Energy Strategy funded R&D programs, are projected to account for a major part of projected reductions in greenhouse gas emissions through the year 2000. Beyond 2000, as the full effects of the National Energy Strategy programs to develop more efficient energy technologies, and programs for afforestation and reforestation are felt, there will be an even larger impact. The U.S. has announced its intention to continue to update and refine its national action strategy and the projected effects of that strategy as new information on science, economics, technology and policy becomes available.

Research

The U.S. also has numerous activities in place to meet its scientific research and information exchange obligations under the Convention. The U.S. Global Change Research Program (U.S. GCRP) has fostered research in the physical, biological and economic sciences, and has strongly promoted the creation and management of global change information and databases. The U.S. GCRP, with a projected FY93 funding of nearly $1.4 billion, accounts for more than the combined total of the rest of the world's research programs. The United States is also pursuing research in the economics of global change. Through these continued efforts, the U.S. research program addresses the significant uncertainties in knowledge concerning the natural and human-induced changes occurring in the climate system that will need to be understood to properly develop any future international policy responses to the climate change issue.

The following text provides additional detail regarding some of the major existing policies and measures in the United States that would satisfy our greenhouse gas obligations under the Framework Convention on Climate Change.

Energy Efficiency

To increase the efficient use of energy in the industrial, commercial and housing sectors, the United States has proposed a host of new initiatives. These include:

- increasing energy efficiency in all activities under direct federal government control, through an executive order to promote energy efficiency in federal buildings, reform in the pricing of federal power, and new energy efficiency standards for public housing;
- strengthening minimum energy efficiency standards for appliances and equipment and extending the standards program to additional categories of equipment;
- expanding energy efficiency labelling programs;
- encouraging providers of home mortgages to share energy efficiency ratings with prospective home buyers;
- developing and encouraging the use of building efficiency standards;
- promoting the use of industrial energy efficiency audits;
- promoting the increased application of efficiently structured integrated resource planning and demand side management programs by state utility regulators; and,
- establishing voluntary public-private "green" partnerships in the areas of lighting, piping, commercial buildings, computer systems, industrial motors, appliances and refrigerator programs, all of which are designed to improve the efficiency of energy use.

Transportation

To reduce greenhouse gas emissions in the transportation sector, present and planned programs are:

- encouraging shifts to more energy efficient modes of transportation through pricing measures;
- increasing Federal purchases of alternative fuel vehicles, which may lead to increased use of biomass-based and other lower greenhouse gas emitting fuels;
- requiring centrally fueled fleets to purchase vehicles capable of using these alternative fuels;
- increasing the use of public transit, vanpooling, and ride-sharing by raising the limits on commuter subsidies and restricting tax-free parking expenditures;
- accelerating the development of a new generation of battery technology for electric vehicles through public-private consortia;
- increasing the production of cost-competitive liquid fuels, such as alcohol from non-food crops and waste materials, through use of pilot programs; and,
- providing tax subsidies for the purchase of alternative fuel vehicles and fueling stations.

Energy Supply

To increase the use of lower emitting supply technologies Federal programs, regulations and guidelines are being implemented and/or modified resulting in:

- streamlining natural gas pipeline construction review, deregulating pipeline sales rates in competitive markets, improving gas pipeline transportation access and eliminating import/export restrictions;
- streamlining the nuclear plant licensing process and developing standardized designs for the next generation of power plants;
- extending the renewable energy tax credit, and increasing the use of recycling and waste-to-energy conversion programs for municipal solid waste;
- amending the Public Utility Holding Company Act (PUHCA) to increase competition by allowing power suppliers to build, own and operate power facilities in more than one area. Increased competition will lead to more energy efficient electric generation capacity, and may lead to increased use of natural gas.
- expanding access to electricity transmission for utility and non-utility wholesale buyers and sellers to improve efficiency in the distribution of electricity; and
- streamlining the hydroelectric licensing processes.

Agriculture and Natural Resources

- landfill regulations that will capture methane;
- increase in the capture of methane from coal mines and agricultural sources;
- replacement of annual crop production systems on highly erodable lands with perennial vegetation, enhancing soil carbon reservoirs;
- tree planting in forest and urban areas; and,
- reducing land conversion by increasing agricultural and forest productivity.

Technology Research and Development

To facilitate the longer-term market penetration of more efficient and lower-emitting technologies, the U.S. is pursuing vigorous technology research and development programs in the following areas:

- aircraft engines and high speed rail;
- intelligent vehicles and highway systems;
- energy efficient building technologies;
- industrial waste reduction and recycling;
- next generation nuclear reactors;
- cleaner, more efficient coal combustion technologies (a private-public sector program with at least 50% industry funding);
- cost-effective liquid fuels from non-food biomass;
- electric and hybrid vehicles;
- solar and wind energy technologies; and
- solid waste derived fuels.
- improving the productivity and efficiency of agriculture and forestry

Industry Programs

U.S. industry has a number of domestic and international programs which will have the effect of controlling or offsetting greenhouse gas emissions, and it is studying other opportunities for action. Examples of existing domestic programs include:

- the National Association of Manufacturers, an association representing 18,000 manufacturing organizations, has an education and action program to incorporate energy efficiency into all aspects of manufacturing;
- the chemical industry's RESPONSIBLE CARE program promotes both the efficient use of energy and measures to protect the environment;
- joint ventures have been established between the utility and automobile industries to promote the development of electric vehicles to promote reduced net greenhouse gas emissions;
- 200 utilities are spending $2 billion on 1,300 conservation programs; and,
- utility investment in greenhouse gas emissions offsets through domestic and international forest management activities and programs.

In addition, through the U.S. Agency for International Development (AID), the Department of Energy (DOE), the Environmental Protection Agency (EPA) and other agencies, the United States pursues numerous programs overseas that can reduce net greenhouse gas emissions jointly with other countries (for an indicative list, see the December 1991 Oak Ridge National Laboratory Publication, "Technology Cooperation Related to Global Climate Change, A Selected Inventory"). U.S. industry too is active overseas. Examples of international cooperation between U.S. industry and their counterparts in other countries include activities in every major industrial sector in all regions of the world. Using joint ventures and cooperative R&D, the U.S. automobile, petrochemical, utility, mining, and other industries are promoting the international dissemination of technologies that will lower global greenhouse gas emissions.

The U.S. program of action also includes measures undertaken by the States, with individual States taking considerable initiative in developing their own guidelines and regulations to reduce greenhouse gas emissions. These measures fall into several broadly defined categories, including: research and development, energy conservation programs, and forest related programs. Research and development programs mostly examine the role a given State might have in contributing to greenhouse gas emissions, or the effect that global climate change might have on State activities (e.g., effects on agriculture or water availability), and the actions it might take to mitigate this effect. State energy conservation programs are multifaceted. They include such programs as State energy resource planning, demand-side management and efficiency measures, and energy load management. They also include energy-related items such as stricter enforcement of building codes and building efficiencies, and transportation efficiency initiatives. Reforestation initiatives are also common. Several States not only preserve large forested tracts, but also act to promote urban reforestation and have established programs to encourage tree planting on erodable cropland. While these programs are still limited in scope, their numbers and significance to the U.S. net greenhouse gas emissions are growing.

The U.S. action strategy will also include actions implemented jointly with other countries building on past U.S. actions for technology cooperation, development assistance and international forest conservation.

SECTION 7. THE CONSEQUENCES OF U.S. RATIFICATION

No single country can act in isolation and hope to limit global net greenhouse gas emissions. It will take concerted, long-term, world-wide efforts to assure an effective, appropriate and economically efficient response. In addition, working cooperatively with other countries will have clear benefits aside from promoting more effective mitigation of or adaptation to potential climate change.

Some actions that countries will undertake with the intent of limiting net greenhouse gas emissions may produce benefits in other areas, both global and local. For example, the preparation of Convention-required national plans provides all countries—including the United States—with useful information regarding which mitigation measures related to net greenhouse gas emissions are most efficient on the basis of costs and benefits. Furthermore, the stimulation of the international market in technologies that limit net greenhouse gas emissions could benefit countries like the United States, where a significant portion of that technology has been and will continue to be developed.

The importance of maintaining U.S. leadership and the ability to influence the future direction of the Convention, particularly the opportunity to work cooperatively with other countries to promote a global response that is determined on the basis of sound science and socio-economic analyses, are compelling reasons for the United States to ratify the Convention. Furthermore, once the United States ratifies the Convention, other countries may be more likely to do so. Thus, U.S. participation could contribute to the successful momentum of the Convention, which in turn may contribute positively to the environmental significance of the instrument.

Only with continued active U.S. participation (which would be limited were we not to become a Party) can the United States act to assure that these elements, included in the Convention after significant and often contentious debate, become positive influences in efforts to prevent potentially dangerous human impacts on the climate system, while at the same time assuring that undue economic burdens are not imposed.

U.S. participation in the Framework Convention will enable the United States to support and influence the process of technical assessment in developing countries as well as their long-range development of appropriate policies related to mitigation and/or adaptation in those countries. The obligation of Parties to "promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes" (paragraph 1(c) of Article 4) entails challenges and opportunities which, if properly managed, should facilitate access to markets in developing countries for U.S. manufacturers and other vendors of goods and services. The opportunity to implement actions jointly with others should also open avenues for the diffusion of U.S. technology. That, in turn, should contribute to economic growth in the United States.

The provisions of the Framework Convention on Climate Change emphasize the responsibility of developed countries to undertake appropriate measures. Given its significant contribution to the world's emissions of greenhouse gases, the participation of the United States is a necessary and essential element of effective worldwide efforts to address potential climate change.

Periodic reassessments of the U.S. national strategy of measures to mitigate and adapt to climate change, as required by Article 4, paragraph 1(b) of the Convention, will enable the United States to carry out a program of actions that are economically efficient in themselves and have positive results in relation to preventing potentially dangerous human-caused impacts on the climate system. The preparation of a U.S. national action strategy may both encourage other countries to prepare their own, and could foster the development of common methodologies to assist other countries in their own preparations.

The United States was the first country to present a detailed program of action, with projections of emissions reductions that would be achieved through its implementation. The first action agenda was presented to the INC in February of 1991. In the Spring of 1992, after new evidence regarding the greenhouse warming potential of ozone depleting gases (CFCs) became available, the United States prepared an updated action agenda, which included a wide range of additional actions to reduce net greenhouse gas emissions. The United States plans to continue periodically to update its action agenda and the projected emissions reductions this agenda can be expected to achieve.

In paragraphs 1(g) and 1(h) of Article 4, Parties to the Convention accept the obligation to "promote and cooperate in scientific, technological, technical, socio-economic and other research" and to "promote and cooperate in the full, open and prompt exchange of relevant scientific, technological, technical, socio-economic and legal information." These aspects of the Convention will tend to associate the re-

search and development efforts of U.S. organizations with parallel activities in other countries, thereby contributing to mutually beneficial results. In the long run, greater scientific understanding of natural processes and diminished uncertainty is extremely important. Here again, the United States has demonstrated a long-term commitment, with regular increases in funds for the U.S. Global Change Research Program, with FY92 allocations of $1.4 billion, an amount greater than the combined contributions of the rest of the world.

Ratification of the Convention by the United States would not have adverse environmental impacts and could be environmentally beneficial in the longer term. It will likely promote ratification of other developed and developing countries, thereby furthering the Convention's goal of attaining as widespread participation as possible to deal with the global issue of climate change.

U.S. Views on Global Climate Change

The Science

For some time the scientific community has warned us of the potential for human activities to contribute to global climate change, while recognizing that there is still much we do not know or understand about this issue. The United States has taken this warning to heart. Through both governmental and non-governmental activities we have invested heavily in scientific research to better understand the nature of the problem. The United States currently contributes roughly half of the world's climate research budget. Science, we believe, provides the cornerstone on which a sound response to the problem of climate change should be built. The following represents a consensus view of a broad range of scientists, including most U.S. scientists, who have participated actively in the international effort to understand the issue:

Climate Change: While scientists cannot yet establish that a human-induced warming has already occurred, best estimates indicate that increased concentrations of greenhouse gases are likely to increase atmospheric and ocean temperatures and alter their associated circulation and weather patterns. However, the magnitude, timing and regional details of these changes cannot be predicted with much certainty. Climate models predict changes in the average temperature of the globe's atmosphere as a consequence of a doubling of atmospheric concentrations of carbon dioxide are unlikely to lie outside the range of 1.5° to 4.5°C (2.7° to 8.1°F), with a best estimate, based on model results and taking into account the observed climate record, of 2.5°C (4.5°F). Associated sea-level rise has been estimated to range between a few tens of centimeters and approximately 1 meter (less than 1 foot to approximately 3 feet). In addition, observed warming in recent years is of the same magnitude as that predicted by the models but also of the same magnitude as natural variability. Thus, the observed increase could be due predominately to natural variability or could be part of a larger warming offset by other human factors. Potential impacts of climate change are likely to vary considerably from region-to-region, with particular risks for drought-prone areas, irrigated agriculture, water resources, coastal zones and natural ecosystems. Precise evaluations of the impacts of climate change are not likely to be available for a decade or more.

Greenhouse Gases: The principal greenhouse gases are water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), chlorofluorocarbons (CFCs), and ozone (O_3). Of these, water vapor has the largest greenhouse effect; however, on a global scale, its concentrations in the atmosphere are not directly affected by human activities. With the exception of CFCs, the remainder of these gases occur naturally; human activities have contributed significantly to increases in all of their atmospheric concentrations. CO_2, principally from the burning of fossil fuels, constitutes approximately 60% of the total greenhouse effect of these anthropogenically produced gases. (This is based on estimates of the relative effects of each of these gases over time, expressed as "global warming potential" or GWP.) The economically developed world currently accounts for around half of global greenhouse gas emissions; by 2025, the contributions of different countries will shift, and developed countries are expected to account for as little as a quarter of the total as compared with the developing countries and those countries with economies in transition.

Mitigation and Adaptation: Some of the consequences of climate change can be reduced through mitigation or adaptation or by some combination of the two. Mitigation can be achieved by limiting greenhouse gas emissions from sources and protecting and enhancing greenhouse gas sinks and reservoirs such as oceans, soils and forests. Emissions from sources can be limited, for example, through increases in energy efficiency and conservation, and changes in agricultural practices. Greenhouse gas sinks can be enhanced through changes in land use patterns and practices, prin-

cipally through new agricultural techniques and through afforestation and reforestation.

Adaptation can reduce vulnerability to projected climate change. A global adaptive response to reduce vulnerability will require such actions as re-examining water management systems and coastal zone protection, developing drought and heat tolerant crops, and developing techniques to protect risk-prone natural ecosystems.

Implications: The best scientific information indicates that if greenhouse gas concentrations in the atmosphere continue to increase as a result of human activities, significant changes in the climate system are likely. However, current analyses are unable to predict with confidence either costs or benefits of taking steps to control atmospheric concentrations so as to prevent dangerous human-caused interference in the climate system.

THE U.S. APPROACH

In light of these uncertainties, the United States favors a flexible, bottom-up approach with a long-term view that seeks to identify and implement actions justified for a variety of reasons, including responding to climate change. Such actions include activities aimed at mitigating or adapting to climate change and continued research on the science, impacts, technology, and economics of both impacts and response options. In light of the need for a global response to concerns about climate change, the United States also favors cooperative action (technical and financial) with developing countries and countries with economies in transition. Examples of some of the actions to which the U.S. is committed are listed below.

MITIGATION

The United States is firmly committed to taking economically-efficient actions to mitigate climate change—actions that reduce net emissions of greenhouse gases by reducing sources and enhancing sinks. We believe these actions and their effects on greenhouse gas emissions in the United States will compare favorably with those of other developed countries.

Since February 1991, the United States has begun implementing a National Energy Strategy which defines a new, more efficient energy path for the United States. We have also passed a new transportation law that will greatly improve the efficiency of moving people and goods by autos, rapid transit, and other means. Also, in 1990, the U.S. adopted the world's most stringent clean air legislation, which will also contribute to emissions reductions. These initiatives, combined with others, commit us to action in areas such as: energy efficiency, transportation, the use of lower carbon emitting supply technologies, agriculture and natural resources, and technology research and development. These are actions we are taking *now*.

We have estimated that these actions will reduce projected net greenhouse gas emissions in the United States by approximately 125 to 200 million metric tons in the year 2000. These reductions represent 7 to 11 percent of projected emissions levels in the year 2000. We will continue to update and refine our national action strategy and the projected effects of that strategy as new information on science, economics, technology and policy becomes available.

Tables 1, 2, and 3 illustrate actions we are taking at the federal level and their impacts on greenhouse gas emissions. State and local governments in the U.S. are also taking actions that will have the effect of reducing greenhouse gas emissions. These actions are being carried out independently and/or cooperatively with the Federal Government. An inventory of State and local programs will be provided later, together with estimates of how these programs will affect greenhouse gas emissions.

ADAPTATION

The United States has embarked on an effort to both define and develop technologies and practices which, if implemented, could facilitate natural and societal adjustment to the environmental, social and economic consequences of climate change. While many of these programs are still in their embryonic stages, several are already underway. Areas of particular focus include sectors of the economy which deal with water resources, natural systems, forests, agriculture (both managed and natural) and human systems.

COASTAL ZONES

- Examination of and planning for impacts of sea-level rise on shore erosion, human-built infrastructure and natural systems; and
- Development and promotion, in the context of the IPCC, of methodologies for assessing vulnerability to sea-level rise and the implementation of integrated coastal zone management plans to address this vulnerability.

- Creation of forest health monitoring plots to assess regional scale environmental threats on an annual basis;
- Enhancement of soil inventories in range, forest and cropland areas;
- Development of forest and grazing land health indicators;
- Research on and development of new crops and tree species that are heat and/or drought tolerant;
- Programs to develop technologies to help manage natural system migration under conditions of climate change;
- Research and development of technologies and practices to increase the productivity of agriculture and forestry; and
- Research into the agricultural effects of increased atmospheric concentrations of CO_2.

Table 1.—Additional U.S. Actions to Curb Carbon Dioxide Emissions

Action/Description	Potential technical improvement (in percent)	Year 2000 market penetration (in percent)	Electric energy savings (BKWH)	Year 2000 carbon reduction (MMTC)
DSM/Green Lights:				
Commercial/Industrial	65	25–62	81–203	17.0–50.1
Residential	75	27	23.4	4.9
DSM/Green Computers	57	65	26.3	5.5
DSM/Green Industrial Motors	30	16	39.5	8.3
DSM/Green Buildings (HVAC)	53	17	41.9	8.8
Golden Carrot Refrigerators	57	3	3.0	0.6
Residential Clothes Washers	96	3	1.3	0.3
Residential Clothes Dryers	65	3	1.2	0.3
Low Flow Showerheads	58	11	10.2	3.4
Solar Thermal Water Heaters	70	[1]2–[2]3.5	4.8	1.4
Advanced Heat Pumps	20	n/a	1.8	2.5
Appliance Standards	n/a	n/a	22.2	4.7
Residential space heating:				
New	20	8		
Old	10	10	2.4	0.5
Residential central air conditioning	29	40	9.6	2.0
Residential room air conditioning	19	40	1.2	0.3
Residential cooking	8	40	1.2	0.3
Commercial Cooking	20	30	1.8	0.4
Industrial Electrolytics	20	13	1.8	0.4
Amorphous Core Transformers	70	25	9.0	1.9
Miscellaneous Residential and Commercial End Uses	13	40	15.0	3.1
Better Refrigerants	5	80	8.2	1.8
Tire Inflation, Auto Inspection and Maintenance, etc.	n/a		n/a	3.0
1991 Transportation Act	n/a	n/a	n/a	4.0
Sub-Totals: Gross Additional Carbon Actions			**306–429**	**75–108**

[1] Homes with gas heaters.
[2] Homes with electric heaters.

Table 2.—Additional Actions to Curb Carbon Dioxide Emissions—Subtotals

	Electric energy savings (BKWH)	Year 2000 carbon reduction (MMTC)[1]
Gross Additional Carbon Actions	306–429	75–108
Less:		
National Energy Strategy Integrated Resource Planning	–116	–24
Consumer Response to lower prices[2]	–38	–8
Additional Carbon Actions (Net of National Energy Strategy (NES) and Consumer Response)	152–275	43–76
Plus:		
Actions in President Bush's NES Proposals	128	45
—Efficiency Improvements and Integrated Resource Planning		
—Natural Gas Regulatory Reform		
—Expanded Use of Biofuels		
—R&D for Renewables, Transportation and Energy Efficiency		
—Provides Framework for Additional Actions (previous pages)		
Total Carbon Reductions	**281–402**	**87–121**
Carbon Sinks		5–9
—"America the Beautiful" and other Forestry Programs		

[1] Reductions are in millions of metric tonnes of carbon equivalent in the year 2000. These projections are sensitive to assumptions regarding energy prices, economic growth, and technology penetration over the next decade. Future projections will change as the actions list is updated, as events reflecting the energy markets and the economy unfold, and as the effects of current actions are seen.

[2] This value (12% to 20% of the electricity savings) is included as an adjustment for increases in demand for energy services that will result as the introduction of these efficient technologies lower consumer costs. The actual "rebound" effect may vary significantly from this value.

Table 3.—Additional U.S. Actions to Curb Other Greenhouse Gases

[Year 2000 Carbon Equivalent Reduction (MMTC)[1]]

Methane	@CH_4, GWP=11	@CH_4, GWP=22
Methane Capture/Landfills	19	39
Methane Capture/Livestock Waste Lagoons	3	7
Methane Capture/Coal Mines	0–3	0–6
Livestock Dietary Program	3	6
Total Methane Reduction	25–28	52–58
Nitrous Oxide		
Green Nylons Program	8–12	8–12
Total Other Gases	33–40	60–70
Total GHG Reductions (Carbon and Other)	**125–170**	**152–200**

[1] Reductions are in millions of metric tonnes of carbon equivalent in the year 2000. These projections are sensitive to assumptions regarding energy prices, economic growth, and technology penetration over the next decade. Future projections will change as the actions list is updated, as events effecting the energy markets and the economy unfold, and as the effects of current actions are seen.

Natural and Human Systems

- Creation of an integrated biosphere monitoring network using biosphere reserves to assess impacts on and responses to global change by natural and human systems;
- Creation of detailed inventories of land use and point source pollution to be used in analysis of changes in meteorology;
- Consideration of new techniques for geoengineering programs and projects (including research aimed at understanding the costs and benefits of such projects as ocean biomass stimulation, solar screening techniques); and
- Promotion of research on human behavior, examining cultural adaptation over time, psychological factors in adaptation to stress, and the development of attitudes and values.

Water Resources

- Development of climatological databases for water resources to assist with the prediction and modelling of local and regional climate changes;
- Analyses of the susceptibility of the Tennessee Valley Authority (TVA) region to extremes in meteorology, looking at consequences for power systems, water availability and flooding; and
- Examination, through Federal and State programs of changes in water availability as a consequence of climatic/hydrological shifts.

CONTINUING RESEARCH

The United States has been extremely active in promoting research essential to the understanding of the science and economics of climate change, including natural and human-induced changes and their implications. Toward this end, we will have spent more than $2.7 billion for global change research for the three Fiscal Years 1990–1992, and the President's FY 1993 Budget requests nearly $1.4 billion for global change research, an increase of $260 million (24%) over the FY 1992 level. The U.S. program represents approximately half of the world's research effort in the area of climate and climate change.

The goal of the research program is to respond to the most critical scientific uncertainties identified by the Science and Impacts Working Groups of the Intergovernmental Panel on Climate Change (IPCC). The U.S. Global Change Research Program (USGCRP) adopted four integrating themes for the conduct of research, including (1) modelling and prediction, (2) the global water and energy cycles, (3) the global carbon cycle, and (4) ecological systems and population dynamics. In addition, the research program supports economics research related to global change.

The USGCRP has been developed through a comprehensive multi-year effort. The effort is intentionally broad, including in its scope not only U.S. government agencies, but also national and international scientific communities, and both formal and informal links to other governmental and non-governmental organizations.

TECHNOLOGY COOPERATION

The U.S. strongly supports technology cooperation with developing and other countries because it is these countries that will be the primary source of greenhouse gas emissions in the next century. Technology cooperation should address both "hard" and "soft" technology needs. It includes, in addition to technology transfer in the traditional sense of the phrase, priority concerns such as technology needs assessment, technology development, technical assistance, training, and institution or capacity building. In calling for a cooperative process, the United States recognizes that the successful transfer of knowledge, know-how, or equipment depends upon a two-way relationship based on mutual interests and benefits. Such a process also recognizes and relies heavily on the creativity and dynamism of the private sector.

The United States has already initiated a considerable range of activities involving technology cooperation related to climate change including the following areas: energy efficiency, energy supply, agriculture, forestry and natural resources, climate science and coastal zones. A sample survey of selected countries and government agencies indicates that in 1991 alone we invested more than $140 million in cooperating with developing countries and countries with economies in transition in these activities. A look at upcoming budgets makes clear that this amount will grow as we gain a clearer understanding of the science of climate change and the measures individual countries believe make sense for them to take in response.

To help countries assess their needs as they relate to developing sound responses to climate change in the context of overall development goals, the U.S. recently committed $25 million over 2 years to support country studies for developing and transi-

tional countries. In addition, we have also committed $50 million to the core fund of the restructured Global Environment Facility (GEF) of the World Bank, UNDP and UNEP.

INTERNATIONAL PROCESS

The United States favors a framework convention that will establish a forum and a process to engage all countries in responding to climate change concerns over the long term.

We think this forum should consist of a Conference of the Parties, a Secretariat, and two subgroups under the Conference of the Parties: a Scientific Advisory Committee and an Implementation Committee. The scientific advisory committee would be the link to the IPCC and other international scientific and technical organizations. It would interpret and integrate the work of these organizations for the Conference of the Parties. The implementation committee would prepare technical assessments of reports submitted under the Convention for review by the Conference of the Parties.

We envision an international process focussed on actions. Industrialized countries would first develop emissions inventories using a common methodology. In addition, they would develop national climate action plans containing measures that would have the effect of mitigating and/or adapting to climate change. In addition, industrialized countries would indicate actions they will take consistent with national circumstances and provide estimates of the impacts of their actions over an agreed time period, relying on agreed methodologies for estimating these impacts. By reporting on actions in an open and transparent process, all parties would be able to share information and experience and learn from each other. Public scrutiny will provide a strong incentive for taking meaningful actions with maximum benefits for climate and other reasons. These reviews should take place at agreed upon intervals as soon as possible.

We think that developing countries and countries moving toward free market economies should also engage in this process by preparing national reports. Their reports would describe relevant national circumstances and assess their current emissions and vulnerability to climate change. Many of these countries may need assistance to prepare such reports, and for that reason we have proposed technology cooperation for this purpose. Specifically, we have committed $25 million over 2 years to help them assess their national situations and needs as a basis for preparing national reports. In those reports, countries would identify specific projects and programs with benefits for climate as well as their economic development. They would also identify technological and financial resource needs related to implementing such projects.

We think this process will begin a global response to what is clearly a global problem. Focusing on sound actions will produce meaningful results. Recognizing and respecting diverse national circumstances will help assure broad participation. Providing technology cooperation and support for countries in need will promote a cooperative approach, strengthening efforts to build the global partnership that is needed as we move toward the next century.

O