



CLIMATE POLICIES AND PROGRAMS DIVISION
Office of Policy, Planning & Evaluation
U.S. Environmental Protection Agency
401 M Street SW, Washington, D.C. 20460

To: Joe Aldy
Organization: CEA
Phone: 395-1455
Fax: 395-6870

From: Bill Hohenstein
Phone: 202 260-7019
Fax: 202 260-6405
Date: June 22, 1998

Pages including cover sheet: 4

Joe:

To follow up from our meeting last thursday, here are two draft proposals for cooperative work with the Republic of Korea. Many thanks to Ken Andrasko, who drafted the piece on sinks. Please follow up with the latest on j. yellen's travel plans. Paul Schwengels, of our office, is likely to go to cover co-benefits and other EPA issues. However, he needs to know when and for how long he will be going. Paul is also the key contact for China from our office.

Thanks.

**Proposal for Technical Cooperation with the Republic of Korea:
Assessment of Land Use Change and Forestry Greenhouse Gas Emissions Mitigation
6/22/98**

Land use and forestry practices clearly have a role in helping countries meet their commitments under the Framework Convention on Climate Change and the Kyoto Protocol. However, given the complex language negotiated in the Kyoto Protocol, Parties' sinks sector data and available analytic tools may be inadequate to support the policy process in ongoing UNFCCC negotiations. At a minimum, countries will need to understand the implications of the definitions and meaning of key sinks-related provisions in the Kyoto Protocol with regard to land use and forests.

The forest sector in the Republic of Korea (ROK) was ravaged during the Korean war and subsequent demand for fuelwood 40 years ago. However, these forests have been regenerating. According to the ROK National Communication to the UNFCCC, Korean forests now offset about 10% of the total greenhouse gas (GHG) emissions of CO₂ for ROK, through removals of carbon from the atmosphere during tree growth.

First-order modeling of GHG inventory and mitigation options in the forest sector has taken place, during the ALGAS (Asian Least-Cost Greenhouse Gas Assessment) project supported by UNDP. ROK analysts used the EPA-funded COMAP model and methods to estimate GHG emissions from the forest sector, and to develop preliminary cost curves of mitigation options. However, data improvements are needed for forest biomass, soils, land use change and other parameters. Virtually no policy analysis of mitigation options has been performed.

Outline for Potential Sinks Mitigation Analyses:

1. Task 1: Develop improved data on forest biomass, soils, land use change, land prices and other opportunity costs, and other relevant parameters
2. Task 2: Develop refined cost curves of mitigation options, utilizing these improved data
3. Task 3: provide analytic support to perform integrated agriculture/forestry modeling capabilities, allowing more realistic assessment of the costs, net costs, land availability, and other parameters critical to feasibility assessment of land use mitigation options. EPA could provide the EPA-financed FASOM (Forest and Agriculture Sector Optimization Model) model for this purpose, if desired by ROK collaborators.
4. Task 4: To undertake this work, invite ROK senior forest analysts performing work for the ROK government on climate issues to join the EPA-funded "F-7" (for major forestry countries) analytic group, to join planned technical discussions and assessments of the implications of the Kyoto Protocol for Korea, perform coordinated analyses of Protocol sinks language definitions and mitigation options.
5. Task 5: Encourage, if possible, ROK researchers to consider the results of work performed under the ALGAS project on vulnerability and adaptation of forests and agricultural systems to climate change, for its relevance to the selection of potential mitigation options. Potential climate change impacts on North Korea might be considered under this task, as well, due to the highly interconnected nature of the two economies and political systems.

Proposal for Technical Cooperation with the Republic of Korea Ancillary Public Health Benefits from Greenhouse Gas Emissions Reductions

Reductions in fossil fuel combustion typically lead to reductions in conventional air pollutants (e.g., SO₂, NO_x, PM, VOC and CO), which can have important implications for environmental quality and public health. A growing body of literature exists linking public health benefits (or co-control benefits) to the mitigation of greenhouse gas emissions (see, e.g., The Lancet, Vol 350, No. 9088, "Short-term improvements in public health from global climate policies on fossil-fuel combustion: an interim report").

The US Environmental Protection Agency can provide technical assistance and access to EPA models and analytic tools to the Republic of Korea (ROK). EPA recently completed a thorough review of the benefits and costs of the 1990 Clean Air Act to respond to the broad scientific question "how do the overall health, ecological, and economic benefits of taking actions to reduce air pollution compare against the costs?". The analytic tools developed for this assessment have could be used to assess air pollution and fossil fuel consumption in the ROK. These models and analytic tools could compliment analysis already performed by the ROK.

A number of energy modeling tools exist for the Republic of Korea's (ROK) economy that could be used as the basis for this analysis. The Long-range Energy Alternative Program (LEAP) was used by the ROK government to establish its "Basic 10-year National Energy Plan," as required under the Rational Energy Utilization Act. This model was developed by the TELLUS Institute, and is described in the ROK National Communication as employing a bottom-up approach. Also available is a Korean version of the MARKAL model, which is used by the Korean Institute of Energy Research (KIER, contact: Heesung Shin). Either of these models could be used to provide energy projections by region, sector, and fuel. Battelle Pacific Northwest National Laboratory's Second Generation Model (SGM) specifically models the ROK as one of 13 regions. The SGM model has computable general equilibrium characteristics and offers some advantages for long-term forecasting over bottom-up models.

Outline of potential tasks for co-benefit assessment:

The following is an outline of potential work to be conducted cooperatively with the Republic of Korea. We recommend an initial meeting or informal workshop to assess areas of potential cooperation and to exchange information on potential needs from the ROK and the specific tools and methodologies available from the US EPA.

1. Development of base case and policy scenarios

Task a. Detailed energy projections (region, sector, fuel). This work could build on existing ROK capabilities, projections of energy consumption are reported in their National Communication - The US could complement ROK capabilities by providing access to additional models and/or review of products. These analyses would be conducted for a base case and for selected greenhouse gas mitigation policy cases (developed by the ROK).

- Task b. Estimation of criteria air pollutant emissions (NO_x, SO₂, VOC, CO, and PM) and baseline control technology assumptions. EPA maintains in-house and contractor expertise to estimate criteria air pollutant emissions. These capabilities could be provided as part of a cooperative project. Inventories of criteria air pollutant emissions are based on energy use by fuel, source, and assumed control technologies place. EPA proposes to work with the ROK to review existing emissions inventory capabilities and databases, and if mutually deemed necessary to provide technical assistance in refining and developing emission estimates for key pollutants.
- Task c. Air dispersion modeling to develop ozone and particulate matter (PM) concentrations. EPA maintains in-house and contractor expertise to conduct air dispersion modeling. These models are able to estimate pollutant concentrations for specific areas based on emissions inventory data. Models account for the transport of air pollutants from one area to another and also are able to estimate their conversion into secondary air pollutants and the eventual decay of primary and secondary air pollutants.. This work is potentially be the most difficult and complicated of all of the tasks outlined in this proposal. The technical complexity of the work performed under this task will be in part dependent on the availability of existing analytic tools and data for the ROK. EPA proposes to work with technical experts from the ROK to provide an understanding of US models. EPA will also provide technical support to assist the ROK in improving its air dispersion modeling capabilities.
- Task d. Assessment of baseline health effects (populations effected, incidence of morbidity and mortality). EPA developed estimates of the health benefits associated with reducing exposure to air pollutants, These estimates have been thoroughly reviewed and approved by EPA's Scientific Advisory Board. This task will provide the ROK with access to the models and methodologies used to estimate human health effects from air pollution exposure, utilizing the EPA's work conducted for the CAAA Section 812 Report relating air pollution and public health.
- Task e. Economic damages associated with health effects (e.g. mortality, health costs, lost productivity, worker compensation, etc.). The last step in this analysis relates the direct health benefits of reducing air pollution to other benefits, including: reductions in hospital admissions; reduced health expenditures; fewer lost work-days; and improved quality of life.



Schwengels.Paul @ epamail.epa.gov
09/28/98 01:10:10 PM

Record Type: Record

To: Joseph E. Aldy/CEA/EOP
cc:
Subject: Trip Report -- Korea

----- Forwarded by Paul Schwengels/DC/USEPA/US on 09/28/98
01:11 PM -----

Paul Schwengels
09/24/98 06:30 PM

Sent by: Paul Schwengels

To: Al McGartland/DC/USEPA/US@EPA, Jane Leggett/DC/USEPA/US@EPA
cc: Maurice LeFranc/DC/USEPA/US@EPA, William Hohenstein/DC/USEPA/US@EPA,
Pat Koshel/DC/USEPA/US@EPA, jseabright@usaid.gov,
elmer.holt@hq.doe.gov, dleibson@padcoinc.com,
richard.bradley@hq.doe.gov@IN, Susan Gordon, Susan Gordon,
wickwire@state.gov
Subject: Trip Report -- Korea

Attached is a Trip Report Ron Benioff and I prepared describing our recent visit to Seoul and technical meetings with Korean experts. We have emailed this back to the Embassy Environment, Science and Technology contact, suggesting that he may want to turn it into a reporting cable.

----- Forwarded by Paul Schwengels/DC/USEPA/US on 09/24/98
02:22 PM -----

From: Paul Schwengels, email: <schwengels.paul@epa.gov>
Ron Benioff, email: <ron_benioff@nrel.gov>

Results of Technical Team Visit, Seoul, Korea September 17-18, 1998

Summary: Paul Schwengels of USEPA and Ron Benioff of the National Renewable Energy Laboratory participated in a series of meetings with representatives of Korean ministries, Government Research Institutes, and Non-Governmental Organizations to explore possible joint technical and analytic projects.

related to Climate Change. The Embassy and U.S. AEP office in Korea provided outstanding support in arranging meetings with key Korean officials and institutions.

There was a very positive response to the ideas presented for joint technical work and improving understanding of the details of climate policy options. The visit confirmed Korean interest in cooperation in three areas -- technology cooperation, environmental co-control benefits assessment, and economic modeling/analysis -- and identified lead Ministries and key technical institutes interested in these areas. It also identified several other areas in which Korea would welcome joint technical work, including technical issues in implementing flexibility mechanisms, assessment of possible climate impacts, forestry strategies and more detailed sector strategy studies.

Meeting with Mr. Chun Yung-Woo, Deputy Director General for Science and Environment Affairs, MOFAT: During the second day of meetings the technical team received an invitation to meet with Mr. Chun, although this had not been originally scheduled. A visit was arranged in his office at 7 PM Friday after all of the scheduled meetings were completed. Mr. Chun was very interested in the visit and its connection to the ongoing high-level meetings on climate policy. He wanted our technical team to understand Korea's broad policy positions and how technical cooperation could help. He noted that there is very little understanding of possible benefits of climate commitments in the business community and general public. Mr. Chun has argued that progress under the Climate Convention, with flexibility mechanisms (especially CDM) can be a source of economic growth instead of a constraint. He believes that CDM can be a major source of financing for many measures, such as nuclear power plants and energy efficiency investments, which Korea needs to undertake for many reasons. He also argues that the environmental benefits of reducing GHG emissions need to be quantified to balance costs in the policy debate. He expects the proposed cooperative technical work with the USG to be extremely helpful in meeting some of these needs for quantitative information to support Korea's policy process.

Mr. Chun also reiterated Korea's position that projections of baseline emissions are so uncertain now that Korea cannot identify a reasonable target to which it could commit during the 2010-2018 time frame. However, because of

the economic benefits of reducing fossil fuel imports, Korea is committed to drastically reducing its energy intensity in the next decade. He believes that Korea will make more significant gains in this area, at greater expense (as a share of total GDP), than many Annex B countries will be required to do to meet their target commitments.

Mr. Chun also endorsed the idea that EPA and other relevant Agencies in the US should send letters to the Korean lead Ministries, with copies to MOFAT, to suggest specific next steps based on the technical team visit. He confirmed that MOCIE would be the logical point of contact for technology cooperation, economic cost modeling and any technical work on flexibility mechanisms, while MOE would be the appropriate lead contact for environmental co-control and possible climate vulnerability assessment work. He also noted that the lead Ministries would report results of this work through the Prime Minister's Inter-Ministerial Coordinating Committee on Climate Change which provides overall policy coordination. However, he indicated that this Committee would not normally be involved in technical work unless there were issues which needed to be resolved between Ministries.

Background: The technical team greatly appreciates the support provided by Embassy staff (FCS, EST) and especially US AEP Director Chi-Sun Lee and Deputy Director Je-Ha Yang who arranged meetings and provided assistance throughout the visit.

The team met with 1) technical managers in the Ministry of Environment (MOE), the Ministry of Commerce, Industry and Energy (MOCIE), and the Ministry of Foreign Affairs and Trade (MOFAT), 2) experts from the Korean Energy Economics Institute (KEEI), Korean Environment Institute (KEI), Korean Institute of Science and Technology (KIST), and the Korean Forestry Institute (KFI); and 3) representatives of private business and other non-governmental organizations, including the Korean Electric Power Company (KEPCO), the POSCO Research Institute, Green Cross Korea, and several members of the American Chamber of Commerce of Korea.

In each meeting, an initial presentation summarized the rationale and areas of

interest for technical cooperation between the US and Korea. The two governments have been engaged for some time in high-level policy discussions aimed at advancing the Climate Convention and the Kyoto Protocol process. Our two countries have important leadership roles to play in this process and must work together if there is to be a successful result. In these discussions it has been clear that there are many areas of uncertainty on technical issues that can prevent our clear identification of areas of common ground and opportunities for cooperative progress. It is in the interest of both countries to share technical information, experience, methods and models and to work together at the technical expert level to improve our common understanding of the implications of various options for mitigating greenhouse gases and the full range of impacts on economies, environments and technology.

Three proposed areas were highlighted 1) quantification of local environmental and health co-control benefits of GHG mitigation, 2) the technology cooperation agreements pilot project and 3) national economic modeling and analysis of costs of alternative strategies and levels of GHG commitments, including flexibility mechanisms.

In addition, the technical team sought to determine the level of Korean interest in other possible areas of joint technical work such as impacts of climate change, technical issues in implementing flexibility mechanisms (e.g., CDM), analysis of forest sinks and strategies, and strategy studies at the sector -- transport, electricity-- level.

Results of the Meetings: In general, there was a very positive response to the concept of joint technical work. There seems to be a great deal of interest in improving Korean analysis of climate change issues and the Korean institutions welcomed the opportunity to work with US experts in this process. There was a general sense the specific projects should be agreed with lead Ministries first and that technical teams of research institutes and other interested Ministries should be organized through those lead contacts. Representatives of MOE and

MOCIE were very positive and interested in joint projects, but expressed the need to review the proposals and consult with other interested parties before making firm commitments. They suggested that the US team send follow-up letter proposals to their Ministries based on the results of our preliminary discussions proposing specific areas of work and next steps. They could then respond writing after consultations.

Preliminary indications are that the appropriate organization of work might be as follows:

Technology Cooperation Agreements Pilot Project - MOCIE appears to be the consensus choice to lead work in this area. MOE, MOFAT, and the Ministry of Science and Technology (MOST) would also have interests in the work. MOCIE representatives suggested that the RACER/R&D Management Center for Energy and Resources might be a lead technical institute with support from KEEL, the Korean Energy Research Institute (KERI) and KIST.

Environmental Co-Control benefits - MOE would be the logical lead Ministry with some involvement of MOCIE, MOST and MOFAT. KEI appears likely to be a lead technical institute with support from the National Institute for Environmental Research (NIER), KIST and KEEL. KIST is already working on a study of fine particle (PM 2.5, PM 1) concentrations and health effects in the Seoul metropolitan area.

Economic modeling and cost analysis tools -- Lead MOCIE. The initial step could be a 2-3 day workshop which would bring a number of US technical experts together with Korean technical experts and interested Ministries together to discuss experiences to date in the two countries, models and other analytic tools used, key policy questions and opportunities for improving the quality of analysis and understanding. The US could propose to work with KEEL under MOCIE guidance to organize such a workshop and defer decisions about further cooperation until after the workshop. Other interested institutions which should participate include MOE, MOFAT and KEI.

Other areas of interest for cooperation -

Impact of climate change and their economic valuation - MOE and MOFAT indicated that there is great interest and already a major effort underway to assess potential impacts in Korea. KEI representatives are working on this with

NIER

and others, and would like to improve quantification of all benefits of GHG mitigation and to ultimately provide integrated assessment of costs and benefits. Support and technical assistance from the US would be welcomed and likely coordinated through MOE.

Sector Studies - MOE, MOCIE and MOFAT discussions all indicated a strong interest in support and cooperation on models, methods and studies for to support development of GHG mitigation/sustainable development strategies for key sectors -- e.g., transportation, electric power, waste management.

Other key issues from discussions: A number of substantive points were made during the discussions which might be useful to keep in mind as we move forward on a programs of cooperative technical work, including:

1. There is a widespread sense of uncertainty about future economic growth, the effects of GHG commitments on the economy in the face of uncertainty, the benefits side of the GHG cost-benefit equation, and the effects of flexibility mechanisms. There is great interest in USG proposals for joint work as helping to address these issues. The Korean Ministries need solid benefit numbers to be able to make the policy arguments effectively.
2. There is a strong commitment of the Korean government to reducing the fossil fuel intensity of its economy -- for many reasons, of which climate change is not the most important. There was great interest in understanding structural change which is already occurring in the Korean economy and its relationship to government policies.
3. There is a lot of confusion about the nature of CDM (and other flexibility mechanisms) and its relationships to other projects -- technology cooperation, economic modeling, co-control, etc. In almost every discussion of other technical work areas, someone asked how this relates to CDM.
4. Our impression was that Inter-Ministerial coordination is uneven and sometimes difficult. Roles and relationships among Ministries are not fully worked out, or are changing. We understand that the Prime Minister's coordinating committee has been established since April, and this coordination may improve over time. It is important that the US continue to encourage broadest possible involvement of relevant Ministries and Institutes in work

we
support to ensure that it is connected to the policy process.

5. Research institutes appear very sensitive about funding arrangements, and asked many questions about how funds would be transferred, whether matching funds would be required from the Korean government, etc. The financial crisis may be affecting research institutes and creating an incentive to compete for outside funds. It may be important to work through lead government Ministries first and ask them to sort out which institutes should receive funding prior to dealing directly with the institutes.

6. There was a sense of suspicion on the part of at least one of the technical researchers -- e.g., Is the US using these efforts as a back door approach to CDM, or to in depth evaluation and critique of Korean analysis/policies? This did not seem to be a concern of most contacts, but the USG should be sensitive to the possibility of such concerns.

Talking Points on Technical Cooperative Work in Korea – EPA Staff Draft 8/26/98

- The US and Korea share many common concerns in developing effective, efficient and politically acceptable strategies for responding to climate change and limiting net GHG emissions.
- A very useful adjunct to our ongoing policy consultations would be a program of joint analytic and technical work based on sharing of experience, analytic tools, and approaches; collaboration on improvements in methods, and comparisons of results.
- A team of technical experts lead by US EPA and USAID is scheduled to visit Seoul in mid-September to make contact with technical experts and technical staff in government ministries to explore possibilities and priorities for such joint work.
- Possible areas of cooperative work include
 - environmental co-control analysis - quantifying the impacts of strategies which reduce GHG and local air pollution simultaneously
 - strategies for encouraging rapid diffusion of selected clean technologies into markets
 - modeling and analysis of the economic impacts of climate change policies
 - forestry and land use strategies for climate change
 - institutional issues and capacity building in implementation of flexibility mechanisms such as emissions trading.
- We would welcome any indications of priority or suggested additions from the Korean senior policy makers which can provide direction to this technical visit.

8/27/97 Staff DRAFT — EPA/OP Proposal to Support Climate Mitigation in Korea

Objective: As part of the U.S. Government strategy, EPA will engage the Government of Korea, and key experts, in a program of joint research on climate change. This will emphasize co-benefits analyses and economic analyses of GHG mitigation, including the potential for future growth targets and participation in international GHG emissions trading. Opportunities for cooperation on clean technology will also be included

Rationale: Korea has acceded to the OECD and knows it is targeted as one of the first non-Annex I countries to “graduate” to legally binding GHG commitments under the Kyoto Protocol. The Republic of Korea maintains a technologically advanced industrial base that is newer and more efficient than many other developed countries, and they expect a rapid economic growth and energy demand over the next few decades.

GOK Key Issues: There is clearly a great deal of economic and energy modeling expertise and experience in Korea, and a number of studies of economic impact of GHG mitigation and flexibility mechanisms are underway, notably at the Korean Energy Economics Institute (KEEI). Despite its current relatively high level of economic development, the Korean economy still produces high levels of environmental impacts, including significant air pollution in cities. There are significant opportunities for alternative energy strategies which produce both lower GHG emissions and local air quality and health benefits.

Proposed Projects by GOK: To be determined during mid-September technical team visit.

OP Proposed Activities:

- Co-Benefits Analyses: EPA can provide technical assistance and access to EPA models and analytical tools (to complement analysis already performed by the Republic of Korea) to study ancillary public health benefits from GHG emissions reductions, by assessing air pollution and fossil fuel consumption in the Republic of Korea. NREL has funding to initiate this project.
- Technology Cooperation Agreements Pilot Project (TCAPP): OP has provided a small amount of funding through NREL to initiate work in this area. It is anticipated that AID, through its Asia Environmental Partnership program will also support the Korea work.

Status:

Funding has been provided through NREL for the initial activities, and possible collaborator in Korea are being identified.

Next Steps/Pre COP-4

9/17-18 - Technical Team to Seoul – Identify collaborators and initiate work on Co-Benefits Project and on TCAPP. Explore possible additional cooperation on economic modeling, forestry.

Next Steps/Post COP-4

Possible Additional Projects for Korea

1. Co-sponsor a Workshop on Economic Modeling.
2. Add Korea to the countries participating in the F-7 Forestry Expert process.

TECHNOLOGY COOPERATION AGREEMENT PILOT PROJECT

Development-Friendly Greenhouse Gas Reduction

The Technology Cooperation Agreement Pilot Project (TCAPP) was launched in August 1997 to foster climate change technology cooperation in Brazil, China, Kazakhstan, Mexico, and the Philippines. The project is supported by the U.S. Agency for International Development (USAID), the U.S. Environmental Protection Agency (USEPA), and the U.S. Department of Energy (USDOE) in cooperation with the U.S. Country Studies Program (USCSP) and the U.S. Initiative on Joint Implementation (USIJ).

TCAPP is a voluntary partnership to advance implementation of clean energy technologies. In-country organizations participate only if they believe technology cooperation can bring results, and countries are not required to make formal commitments. The National Renewable Energy Laboratory, together with other cooperators, assists country teams in developing and implementing technology cooperation frameworks and in engaging private sector organizations and international donor agencies. These technology cooperation frameworks provide a solid foundation for developing technology cooperation agreements that may be useful multilaterally.

Goals

- Foster private investment in energy technologies that reduce greenhouse gas emissions and produce economic benefits for the country.
- Engage in-country and international donor support for actions to build sustainable markets for clean energy technologies.
- Establish technology cooperation agreements as an organizing structure for coupling in-country, donor, and private-sector climate change mitigation actions.

Activities

The Technology Cooperation Agreement Pilot Project includes three major activities:

1. *In-country teams set the direction by preparing technology cooperation frameworks.* These frameworks identify priorities for advancing implementation of energy technologies that will contribute to development objectives and reduce greenhouse gas emissions. These frameworks define barriers to private investment and identify opportunities for coupling actions by domestic agencies, international donors, and private sector investors to achieve sustained investment in the technologies.
2. *Private firms and business/investment organizations assist the country teams and international donor agencies with design and implementation of actions to mobilize investment in the priority technologies.* Two business-oriented organizations, the Business Council for Sustainable Energy and the Environmental Enterprises Assistance Fund, are partners in TCAPP. They engage private firms from developed and developing countries in the effort and help country teams implement a strategy to attract private investment.
3. *International donors assist country teams in implementing actions to remove market barriers.* These actions include policy and institutional reforms, capacity-building, educational and outreach activities, and business development initiatives.

TCAPP Implementation Schedule

November 1997	International workshop on the Technology Cooperation Agreement Pilot Project (Golden, CO)
December 1997	COP-3 side-event to discuss technology cooperation agreements
April 1998	Presentation of TCAPP at OECD-IEA Climate Forum
August, 1998	Countries complete draft frameworks
September 24, 1998	Meeting with private sector businesses to present frameworks and review opportunities for business participation (Washington, DC)
October 9, 1998	Meeting with international donor agencies to present frameworks and review opportunities for donor participation (Washington, DC)
December 1998	Immediate market opportunities identified for each country
June 1999	Country teams and private sector organizations begin implementing actions to attract private investment
September 1999	International donor agency support secured for initial actions to remove barriers in each country

For More Information, Contact:

Mr. Ron Benioff

Energy and Environment Team Leader
National Renewable Energy Laboratory
Phone: 303-384-7504 Fax: 384-7419
E-mail: ron_benioff@nrel.gov

Mr. Jeff Seabright

Director, Energy, Environment and Technology
USAID Center for Environment
Phone: 202-712-4370 Fax: 216-3174
E-mail: jseabright@usaid.gov

Mr. Paul Schwengels

Director, Climate Policy and Prog. Division
USEPA Office of Policy
Phone: 202-260-1192 Fax: 260-6405
E-mail: leggett.jane@epamail.epa.gov

Ms. Lisa Jacobson

Director, International Programs
Business Council for Sustainable Energy
Fund
Phone: 202-785-0507 Fax: 785-0514
E-mail: ljacobson@bcse.org

Mr. Pat Keegan

Climate Change Project Leader
National Renewable Energy Laboratory
Phone: 303-384-7472 Fax: 384-7419
E-mail: pat_keegan@nrel.gov

Mr. Robert K. Dixon, PhD

Director, USCSP and USIJI
USDOE
Phone: 202-586-3003
E-mail: robert.dixon@hq.doe.gov

Mr. Brooks Brown

President
Environmental Enterprises Assistance
Phone: 703-522-5928 Fax: 522-6450
E-mail: brooks@eeaf.org



International Co-Control Analysis Program: Estimating the Environmental Benefits of Greenhouse Gas Reduction

It is widely recognized that developing countries will make the most progress in reducing the growth of their greenhouse gas emissions by implementing measures that are consistent with their development objectives and that provide near term economic and environmental benefits. While many developing countries have conducted extensive analysis of possible greenhouse gas measures, little attention has been given to full characterization of the more immediate environmental and health benefits that would result from these measures. In recognition of this need, the US. Environmental Protection Agency (U.S. EPA) is launching a new initiative to assist developing countries in evaluating the environmental benefits of technologies and policies for reducing greenhouse gas emissions. This initiative is referred to as the International Co-Control Analysis Program or ICAP.

Under ICAP, the U.S. EPA is proposing to provide technical and financial support to 6 developing countries to assist them with analysis of the environmental benefits of measures that will contribute to reductions in greenhouse gas emissions. The U.S. EPA is proposing to initiate this program in collaboration with the countries of Argentina, Brazil, Chile, China, Korea, and Mexico. The work will be lead by teams of experts from these countries and will be tailored to the needs and priorities of each country. It is anticipated that this work will focus primarily on the air pollution benefits of clean energy technologies, but could also address water and soil pollution and non-energy technologies if appropriate.

Goals

- To provide technical and financial support to developing countries in quantifying the public health and environmental benefits of technologies and policies under consideration as greenhouse gas reduction measures
- To test and refine effective methodologies and approaches for evaluating the health and environmental benefits of greenhouse gas measures to guide further collaboration
- To build lasting capacity in developing countries to evaluate health and environmental benefits of greenhouse gas measures on an ongoing basis

Activities

ICAP will include seven basic activities in each country

1. Development of country-specific workplans and establishment of teams of experts in each country to conduct this work
2. Refinement of energy (and possibly non-energy) greenhouse mitigation scenarios to develop the regional and urban scale information necessary to estimate pollutant emissions
3. Development of emission inventories for the selected mitigation scenarios
4. Pollutant dispersion modelling and exposure analysis
5. Analysis of public health and other environmental impacts
6. Estimation of the economic consequences of these health and environmental impacts
7. Presentation and review of results at in-country and international workshops

Cooperators

The U.S. EPA has established two teams of technical experts to assist countries with this analysis. One team is headed by the National Renewable Energy Laboratory and includes Abt Associates. The other team is headed by the World Resources Institute. It is anticipated that the National Renewable Energy Laboratory and Abt Associates will be working with the countries of Argentina, Chile, Korea, and Mexico, while the World Resources Institute team will work with Brazil and China. However both of these teams will be working closely together and will provide assistance to any of the participating countries where appropriate.

Schedule

The anticipated schedule for this work is provided below

August-September, 1998	Initial communication with countries to discuss ICAP and confirm country interest
October-December, 1998	Establishment of country teams to conduct work and preparation of country specific workplans
January, 1999	Workshop in the U.S. for country teams to discuss their workplans and methodologies with each other and technical experts
February, 1999	Funding provided to country teams and work is initiated
September, 1999	Interim reports from country teams with preliminary results
February, 2000	Reports presenting final results and international workshop to discuss results

Contacts for Further Information

William Hohenstein
Analytic Team Leader
Climate Policy and Programs
Division, U.S. Environmental
Protection Agency
Washington, D.C. 20460
Phone: 202-260-7019
FAX: 202-260-6405
Email: hohenstein.william
@epa.gov

Ron Benioff
Energy and Environment Team Leader
National Renewable Energy Laboratory
1617 Cole Boulevard
Golden, CO 80401
Phone: 303-384-7504
Fax: 303-384-7411
Email: ron_benioff@nrel.gov

Dr. Devra Lee Davis
Director
Health, Environment and
Development Program
World Resources Institute
Phone: 202-662-3771
Fax: 202-638-0036
Email: devra@wri.org

Check against delivery

Statement by H.E. Myung Ja Kim, Ph.D.

Minister of Environment
Republic of Korea

at the 5th Conference of Parties
to the UN Framework Convention on Climate Change

2 November 1999
Bonn, Germany

Mr. Chairman, distinguished delegates, ladies and gentlemen,

It is my great pleasure to address the 5th Conference of the Parties on behalf of the Republic of Korea. We are gathered here to implement the Buenos Aires Plan of Action, so the Kyoto Protocol can be put into operation.

The implementation of the Plan of Action will serve as the starting point for the global community to meet the next millenium with new hope and vision.

The Kyoto Mechanisms should be designed in a cost-effective manner that can maximize the reduction of greenhouse gas emissions. The Republic of Korea hopes that the Kyoto Mechanisms will be finalized at the earliest possible date and in the most reasonable way.

The Republic of Korea believes that the Clean Development Mechanism will become a major vehicle for supporting the substantial and actual transfer of technology to and capacity building in developing countries.

Environmental benefits and investment additionality should be applied as the core criteria in order for the Clean Development Mechanism to substantially contribute to greenhouse gas reduction.

The greenhouse gas reduction activities from existing commercial foreign direct investment should not be in the category of the CDM. Only the reduction activities that are seperate from commercial foreign direct investment should be certified and given certified emission reductions(CERs).

We believe that, in order to address climate change effectively, the widest possible participation of parties in limiting greenhouse gas emissions is necessary. New modalities should be explored that will limit the growth rates of greenhouse gas emissions while guaranteeing continuous economic growth.

The Republic of Korea takes note of the new proposals recently suggested for limiting greenhouse gas emissions, especially the proposal that relates emission growth targets with economic growth. More active debate and research on the new modalities are necessary so as to broaden the voluntary and non-binding participation of the parties.

We believe that the new modalities should be voluntary and non-binding. The Republic of Korea will participate, on a voluntary and non-binding basis, in the international efforts to limit greenhouse gases provided that a broad consensus on the modalities is reached, which guarantees the continuous economic growth of developing countries.

Technology transfer is essential if more parties are to reduce greenhouse gas emissions. In particular, each country should take the measures necessary to ensure that the technologies developed with governmental financial assistance can be more easily transferred and accessed.

The Republic of Korea is firmly resolved to participate in the global efforts to mitigate global warming, and our actions have already begun.

The government established an Inter-agency Committee led by the Prime Minister to combat climate change, and in December 1998, formulated and has been implementing a National Action Plan to reduce greenhouse gas emissions. We believe that our measures are practical, effective and are progressing in the right direction. We are also aware that these measures are beneficial to our economy as well.

The government is implementing various measures for each sector such as concluding voluntary agreements with businesses, designating environment-friendly enterprises, supplying alternative fuel vehicles, and developing energy-efficient technologies. We firmly believe that these measures will result in substantial achievements in reducing greenhouse gas emissions.

Finally, I assure you that, henceforth, the Republic of Korea will more actively contribute to the international efforts to reduce greenhouse gas emissions.

Thank you.

December 21, 2000

NOTE TO CEA STAFF

FROM: AUDREY

SUBJECT: One-Pagers

Attached are the one-page summaries of each chapter that we used last year for the Economic Report Roll-Out. Please use these as a model for putting together this year's one-pagers. You'll see from the sample that you should aim to tell the story of the chapter—and especially importantly—to highlight some of the most dramatic numbers. Also aim for “punchy” sentences with numbers rather than longer descriptive ones.

Chapter 1: Sustaining a Record-Breaking Expansion

This chapter analyzes the current record-breaking expansion and the policies that have contributed to it. It compares this expansion with previous long expansions, documenting striking differences that suggest that multiple factors are contributing to this period of faster, sustainable growth.

An expansion that is not just longer, but sounder and stronger.

- Unlike previous expansions where the structural budget deficit grew or remained large, in this expansion the budget has swung from deficit to surplus. This fiscal discipline has contributed to an investment-led expansion as relatively low real interest rates have spurred strong investment in technology and high-tech equipment.
- Productivity growth has strengthened as the expansion has matured rather than slowing as it has in previous expansions. Core inflation has declined to a 35 year low, despite an unemployment rate that has fallen to a 30 year low. In contrast, during previous expansions inflation rose as unemployment fell.

Rethinking inequality. The economic benefits of this expansion have been broadly shared, ending a two-decade-long trend toward greater inequality.

- From 1973 to 1993, incomes rose for the richest and fell for the poorest, widening inequality. Between 1993-1998, income growth has been solid across all income groups. For each quintile of the income distribution, average household incomes grew between 9.9 and 11.7 percent. The median African-American household saw a 15% increase in real income between 1993-1998.
- Popular perception holds that technological change, globalization, and fiscal restraint normally increase inequality. However, in this expansion, those forces have never been stronger, yet instead of aggravating inequality, rapid productivity growth and openness to trade have helped us to operate and sustain a high-employment economy, with opportunities for all. Deficit reduction has been compatible with more careful targeting of spending to increase funding for education, training and the Earned Income Tax Credit.
- A New Economy? Since the previous cyclical peak in 1990, growth in GNP per capita has matched the 2.1 percent annual pace recorded for the century as a whole. Data from the past 5 years suggests, however, that we may have done better than just return to the good old days, and that the future could be even more prosperous. The challenge is to sustain this progress with the policy framework that has worked so well—maintaining fiscal discipline, investing in people and technology, and opening international markets.

Chapter 2: Macroeconomic Policy and Performance

This chapter provides a review of macroeconomic developments in the past year as well as the Administration's economic forecast and the near-term outlook for the economy. It also examines in detail the stock market boom, the changing nature of the business cycle, and the high investment economy.

- A record-breaking year. A number of measures show how strongly the economy performed in 1999. GDP grew 4.2 percent during the year – the fourth year in a row of growth above 4 percent. Unemployment in 1999 was just 4.2 percent. The employment-to-population ratio of 64.3 percent topped last year's record. The proportion of American households owning their own homes climbed to a new high of 66.8 percent in 1999. Sales of new and existing homes also broke new ground last year and 16.8 million cars and light trucks were sold, the most ever.
- The stock market boom. The bull market that began in 1995 is already the strongest since the 1930s and the sixth strongest in the last 200 years. The real return to stocks has averaged nearly 24 percent per year during the last 5 years, with technology stocks performing especially well in the past 2 years. No one has a definitive explanation for this run-up in stock prices, but the chapter analyzes two possibilities: a reduction in the equity premium owing to reduced costs of diversification and greater tolerance toward stock market risk; and improved prospects for future productivity growth related to investments in intangible capital and new technologies.
- The end of the business cycle? Business cycles moderated in the second half of the 20th century, owing in part to fundamental changes in the economy, as well as changes in monetary and fiscal policy. For example, more cyclically sensitive sectors like manufacturing now account for a smaller share of employment and output than earlier this century, and volatile inventory stocks are less important.
- The high-investment economy and productivity. The acceleration in productivity growth, from 1.4 percent per year between 1973 and 1995 to 2.9 percent per year since 1995, has been fueled by increases in real business investment—especially computers—along with increased productivity in the computer-producing sector. This pickup in productivity growth has supported real wage gains and temporarily lowered the unemployment rate consistent with stable inflation (the NAIRU), helping keep inflation in check.
- The Administration forecast. Growth in real GDP is projected to moderate to 2.9 percent and 2.6 percent in 2000 and 2001, respectively. Although the 2000 figure was slightly above the consensus of professional forecasters when the GDP projection was finalized in November, it is now slightly below. Productivity is projected to grow an average of 2.1 percent per year over the next 4 years, similar to the average rate of growth since the last business-cycle peak. The unemployment rate is expected to remain at 4.2 percent for 2000, and then to edge upward slowly, reaching 5.2 percent in 2003—the middle of the range consistent with stable inflation in the long run. Inflation—as measured by the CPI—is projected to remain roughly stable over the 11-year projection horizon.

Chapter 3: Technology and the American Economy

This chapter examines the technological change that has driven growth in this expansion and in this century at the industry level. Technological change has created new industries and altered the competitive landscape of the American economy. Just as Ford changed manufacturing earlier in the century with his invention of the assembly line, today computers and information technology are changing how firms operate in our economy.

- Growth in telecommunications and information technology. Two examples of these trends are evident in the telecommunications and information technology industries. The computer and telecommunications industries contributed between 21 and 31 percent of GDP growth in each of the years from 1995 to 1998. Investment in communications equipment grew by 13 percent annually from 1993 to 1998, spurred on in part by new investments by wireless phone companies that now serve more than 69 million subscribers. Computer usage in the home has also been rising, as has usage of the Internet. A recent survey found that more than 118 million Americans had access to the Internet, and more than 74 million were actively using this new communications medium.
- The effect of information technology on the firm. Information technology has vast potential to enhance the economy's productivity and make firms more efficient. For example, one company found that by moving marketing and support functions online, it saved more than \$300 million per year in operating costs. Use of information technology to support business-to-business e-commerce is also becoming increasingly important, as firms are finding new ways to use information technology to organize markets for selling industrial products like steel or conducting auctions among potential suppliers of customized parts. By one estimate, business-to-business e-commerce is expected to grow from \$43 billion in 1998 to over \$1.3 trillion by 2003.
- Supporting new innovations. As technology becomes increasingly vital to our knowledge-based economy, a crucial task of government is to provide appropriate support for research and development (R&D). New technologies can create benefits with large spillovers to society, but firms may underinvest in R&D because they cannot appropriate the full benefits of that investment. Through the \$43 billion investment in the 21st Century Research Fund proposed for fiscal 2001, the Administration seeks to fund a broad and balanced national R&D portfolio that has the potential to yield significant benefits in years to come.
- Enhancing competition. Government can promote competition by changing the regulatory framework within which industries operate, as it did with the Telecommunications Act of 1996, which reduced barriers to entry in local telephone markets. Local competition is growing rapidly, and new entrants now account for 6 percent of revenues in these markets.

Chapter 4: Work and Learning in the 21st Century

This chapter analyzes how the nature of work has changed dramatically over the past 100 years and the challenges these changes pose for current policy. In 1900 over 40 percent of the work force was in agriculture, and another 28 percent was in manufacturing. Services, broadly defined, accounted for the remaining 31 percent. Today, agriculture accounts for less than 3 percent of employment, while the service-producing sector dominates with over 75 percent. The change in the industrial mix has been associated with a technological revolution—one that has touched the majority of jobs and put a premium on a new set of skills, including those related to the new information technologies.

- The rising importance of skills and education. In 1940, 41 percent of whites and 12 percent of African Americans had completed high school. By 1998 both groups enjoyed about an 88 percent completion rate. Despite these impressive gains, it appears that in recent decades the demand for skilled workers outpaced the supply. The rise in the demand for basic computer skills illustrates this change. In 1984 about a quarter of all workers were using a computer at work, by 1997 that proportion had risen to virtually half. In fact, most jobs in today's labor market that are available to workers without a college degree require the ability to perform basic tasks involving reading, writing, or arithmetic, the use of computers, and the interpersonal skills to serve customers effectively. Only 8 percent of the jobs available to non-college graduates require none of these skills. Further, a sharp increase in the wages of college graduates relative to those without a college degree provides indirect but striking evidence of rising demand for workers with higher level skills. In 1999 male college graduates working full time were earning 68 percent more per week than comparable male high school graduates, and 147 percent more than those who had not completed high school. These figures are up from 29 and 57 percent, respectively, in 1979.
- Growth in opportunities. This chapter also analyzes the increasing opportunities for women, minorities, and individuals with disabilities. For example, through most of the 1960s and 1970s, the median full-time, full-year woman worker earned about 60 cents for every dollar earned by her male counterpart. More recently, this figure has been about 75 cents on the dollar. Women's earnings are even closer to men's when factors such as education and experience are held constant, but evidence of discrimination still exists.
- Policy challenges. The challenge for public policy in the 21st century will be to develop an appropriate set of education and training policies: one that creates a framework of lifetime learning within which workers can acquire and maintain both the basic skills and the more technical skills they need in the new labor market. The last part of the chapter discusses the appropriate role of government in fostering this objective and important Administration initiatives. The latter includes, for example, a discussion of: Head Start, a preschool program that has been shown to improve educational outcomes of disadvantaged children; the E-Rate and the Technology Literacy Challenge, a set of policies designed to help elementary and secondary school students gain access to computer and technology skills; and the Workforce Investment Act, the first major reform of the Nation's job training system in 15 years and one that will provide a host of employment and training services to America's workforce.

Chapter 5: The Changing American Family

This chapter discusses how the opportunities and challenges facing American families have changed over the last hundred years as the increase in the number of dual-earner and single-parent families has eclipsed the traditional one-breadwinner, one-homemaker family. In particular, the chapter looks at the balance between the rewards of work and the needs and rewards of family time.

- Key trends. The chapter identifies three important trends that have shaped the American family over the past century. First, 60 percent of females are now in the labor force, up from 20 percent in 1900. Second, increases in divorce and out-of-wedlock births mean that 28 percent of children now live in one-parent families, up from less than 10 percent in 1900. Finally, life expectancy has increased from less than 50 to well over 70 years, so that planning for their own retirement and care of elderly relatives are increasingly concerns of families today.
- Increasing diversity across families. Traditional one-breadwinner, one-homemaker married couples have been declining as a share of all families (from 67 percent in 1952 to 27 percent in 1999). Dual-earner married couples, by contrast, now account for roughly half of all families, up from a fifth at mid-century. The share of families headed by a single householder is now 23 percent, up from 13 percent 50 years ago. Among these family types, the median income of dual-earner couples has always been higher than that of the others, and the gap has widened over the past half-century. The median income of married couples in which the wife has no earnings is less than three-fifths that of dual-earner married couples; the median income of families headed by single females is a little more than a third that of dual-earner married couples.

Increased educational attainment and greater labor force participation of wives have been particularly important in raising the incomes of dual-earner couples. Three-fifths of married mothers with earnings have at least some college (up from 22 percent in 1969). And 79 percent of married mothers with at least some college worked (up from 53 percent in 1969). Single mothers are also working more, but with lower average educational attainment, their earnings are lower.

- Challenges: The “money crunch” and the “time crunch.” Despite favorable income gains in the current expansion, many families experience a “money crunch” that makes it difficult to meet basic family needs. The money crunch affects poor and possibly also non-poor families, now that a car, a telephone, and perhaps even a computer are near-necessities and families have to set aside funds to educate their children and, increasingly, to take care of their aging parents. A second challenge families face is the “time crunch”: a shortage of time to devote to family needs, because the increased participation of parents, especially mothers, in the labor force reduces time at home. The chapter’s discussion of the money and time crunches includes a discussion of Administration policies to address them—including the Family and Medical Leave Act, expansions of the EITC, and the child care and long-term care initiatives.

Chapter 6: Opportunity and Challenge in the Global Economy

This chapter describes the importance of global economic integration in producing unprecedented prosperity in the United States and much of the rest of the world. It focuses on the role of technology and policy in driving integration, as well as the benefits and challenges globalization brings.

- The fall and rise of the global economy. Trade and, to a much lesser extent, investment links were well established a century ago, but both deteriorated in the period between the two world wars. Over the past 50 years, however, international trade and investment have risen sharply. Economic globalization—the worldwide integration of national economies through trade, capital flows, and shared production arrangements—has never before been as broad or as deep as today. U.S. trade (exports plus imports) has amounted to nearly 25 percent of GNP in recent years, its highest point in at least a century. Global capital flows have soared even more dramatically. Cross-border transactions in bonds and equities have exploded, amounting to about 223 percent of GNP in the United States in 1998, compared with only 9 percent of GNP in 1980.
- The forces behind globalization. Technological improvements—in transportation, communications, information technology, and other areas—have reduced the costs of doing business internationally. In 1930, for example, a 3-minute phone call from New York to London cost \$293 in 1998 dollars. By 1998, one widely subscribed discount plan charged only 36 cents for a clearer, more reliable 3-minute call. Such improvements have also increased the range of possible commercial transactions, particularly in financial markets. Policy has also played an active role in reducing barriers to trade and investment. Since the creation of the GATT in 1948, import tariffs on industrial products in industrial countries have dropped by about 90 percent. Especially since the 1970s, many countries have decided to remove restrictions on capital flows.
- The benefits of a global economy. Globalization raises living standards. It improves efficiency, promotes innovation, encourages technology transfer, and otherwise enhances productivity growth. Through trade, countries can shift resources into their most internationally competitive sectors. Recent studies show substantial wage premiums in U.S. jobs supported by goods exports—on the order of 15 percent. Consumers also enjoy less expensive and more varied products. Global capital flows can help countries invest more effectively. Foreign direct investment, as well as trade, can help spread international best practices in production, including managerial, technical, and marketing know-how.
- The challenges of globalization. International economic integration, like other sources of growth, involves tradeoffs. Even as the nation benefits overall, some industries and their workers may find themselves facing sharp international competition. Moreover, global capital flows help promote growth, but can disrupt economies when they reverse course. Sound policies—such as those that encourage a flexible and skilled work force, provide an adequate social safety net, reward innovation, and ensure that the financial system is sound and that financial markets are deep—can help make sure that the benefits of economic integration are shared as widely as possible.

Chapter 7: Making Markets Work for the Environment

Economic growth brings abundant benefits but it can also unleash a wide array of environmental problems. Fortunately the same economic dynamism that gives rise to these problems also provides the income and the know-how needed to address them. The challenge in addressing environmental problems lies in harnessing the power of markets to deliver continued economic growth and foster sound environmental practices.

- Environmental problems through the 20th century. In 1900, one of the most common environmental problems was the accumulation of horse manure on city streets, which posed public health problems. While the automobile eventually solved this problem, it brought others in its wake. Over time, other environmental problems became apparent, often reflecting a growing and changing economy. Concerns about pesticide use, burning rivers, and smog-filled skies brought more attention to environmental problems culminating in the 1970 Earth Day, which spurred new legislation. While these laws' traditional, usually inflexible, regulatory approaches improved environmental quality since 1970, they also carried significant costs. By 1990, the costs of environmental pollution control had reached \$125 billion annually.
- The U.S. experience with market-based approaches. In light of the higher costs of traditional regulations, innovative efforts to address environmental problems through market-based incentives—such as emissions permit trading and emissions charges—have been pursued to achieve environmental goals at lower cost than traditional approaches. The experiences with tradable permit programs, including efforts to reduce local air pollutants, the lead content of gasoline, and acid rain-causing sulfur dioxide, illustrate the substantial cost-savings from market-based approaches. Compared with a traditional regulatory approach, the sulfur dioxide trading program has achieved annual cost-savings of up to \$1 billion. Phasing down lead in gasoline resulted in an extraordinary reduction in lead emissions: 1997 lead emissions were 50 times lower than 1970 emissions. Charging households for each unit of solid waste set out for collection reduces waste sent to landfills. None of the market-oriented approaches undermined the achievement of environmental goals. More cost-effective attainment of environmental goals depends in large part on the design of markets tailored to the specific characteristics of an environmental problem.
- Applying these lessons to climate change. Perhaps the leading environmental challenge of the 21st century will be to address the risks associated with global climate change. The characteristics of the climate change challenge create great potential for emissions trading and similar flexibility mechanisms to reduce greenhouse gas emissions. Lessons drawn from our domestic experience support the Administration's advocacy of rules that would promote an efficient international trading system. Expanding the number of countries participating in trading would both reduce the costs of U.S. compliance with its Kyoto target and promote technology transfer to and investment in developing countries.

Conclusion: A Century of Change, New Opportunities for the Future

The conclusion draws together the report's findings on how the 20th century was one of dramatic growth, change, and new opportunity. Technological innovation, globalization, and demographic shifts were key drivers of those changes, creating new industries, altering the nature of work, and reshaping the typical family.

- A look back. At the turn of the century, fewer than 10 percent of homes had electricity. Fewer than 2 percent of people had telephones. A car was a luxury for only the wealthy. Health and sanitation problems, such as typhoid fever spread by contaminated water, were common. One in 10 children died in infancy. Average life expectancy was just 47 years. Eighty percent of children lived in a family with a breadwinner-father and homemaker-mother. Fewer than 10 percent lived in single-parent homes. Widowhood was far more common than divorce. Fewer than 14 percent of Americans graduated high school.

More than 40 percent of the work force worked on farms. Average income per capita, in 1999 dollars, was about \$4,200. About 80 percent of women worked at home or on the farm. Only about 30 percent of workers were employed in services, which made up just 2 percent of U.S. exports. International trade equaled about 15 percent of GNP, but there was relatively little integration of national economies through investment and production arrangements.

- The American economy today. Infant mortality has dropped by more than 90 percent over the course of the century. Life expectancy has increased by about 30 years. Typhoid, cholera, smallpox, and polio have been dramatically reduced or even eliminated through improved sanitation and the widespread use of vaccines. Average income per capita is now \$33,740, more than eight times what it was in 1900. Just 3 percent of the labor force now work on farms. More than 40 percent of employment is in industries that use information technology intensively. Services account for half of the 20 million new jobs created over the last 7 years and about 29 percent of exports. More than 80 percent of Americans over 25 have finished high school, and almost a quarter have graduated college.

Women now graduate high school and college at slightly higher rates than men. Over 75 percent of women aged 25-44 are in the work force. Women and minorities work in a broad range of industries that previously were closed to them. The "typical" family has been redefined. Some 28 percent of children now live in single-parent families; another 44 percent live in families where both parents work for pay. Only 24 percent of children live in what used to be the typical model of a breadwinner-father and homemaker-mother.

- Looking ahead. Americans today are more prosperous and have more choices than ever before. But these new opportunities have also brought new challenges for policymakers—such as helping prepare workers for the increasingly global, competitive, technology-driven economy; and helping families cope with the competing demands of work and family.

When we compare the overall cost of this program to the nation to the monetized benefits, we find that the benefits substantially outweigh the costs. When the program is fully implemented in 2030, the annual cost of the program will be around \$4 billion dollars. The annual benefits will be substantially higher, estimated at \$70 billion dollars or more than 17 times the annual costs. It is important to keep in mind the uncertainty surrounding the estimate of benefits. While we have used state of the art techniques to generate our estimate of benefits, there are many factors that could cause actual benefits to be lower or higher than our estimate. The dollar value that we place on reductions in premature mortality is one important factor. We have assumed that age does not affect this value, but older people, who are the most at risk of dying from air pollution, may place a different value on reducing the risk of dying than the rest of the population. Thus, our estimate of the dollar benefits of this rule should not be viewed as a precise estimate, but rather as EPA's best estimate of what benefits are likely to be in 2030.

4. Develop a written report conveying the advice of the SAB pursuant to the three substantive objectives named above.

When your committee reviewed the draft EPA Economic Guidelines last year, you strongly encouraged EPA to conduct periodic reviews of the new Economic Guidelines, including in particular the assessment and assimilation of new literature on valuation of mortality risk reduction. It is my hope that the outcomes achieved by such a workshop might provide a significant part of the foundation needed to pursue the first of this ongoing series of periodic reviews.

As a specific step toward committing this office to pursue this initiative, I have tasked Rob Brenner, Principal Deputy Assistant Administrator, with the responsibility for overseeing the continuity of OAR's efforts on this matter. *To advance the process, we would consider commissioning*

It is my hope that these efforts will allow us to continue to move forward on current analyses using prevailing, peer-reviewed methodologies while we work together to achieve future improvements in those methodologies. I look forward to any response you may wish to provide and would be happy to discuss this proposed initiative at your convenience.

papers by leading authorities

Sincerely,

Robert Perciasepe
Assistant Administrator for Air and Radiation

cc: Rob Brenner
Al McGartland
Maryann Froehlich
Donald G. Barnes

1649172

Jeff Dowd <Jeff.Dowd@hq.doe.gov>
John Houghton <John.Houghton@hq.doe.gov>
Judy Odoulamy <Judy.Odoulamy@hq.doe.gov>
Lisa Hanle <Lisa.Hanle@hq.doe.gov>
Margot Anderson <Margot.Anderson@hq.doe.gov>
Mitchell Baer <Mitchell.Baer@hq.doe.gov>
Raymond Prince <Raymond.Prince@hq.doe.gov>
Tracy Terry <Tracy.Terry@hq.doe.gov>
Andrew G. Keeler/CEA/EOP
"Anne Grambsch, EPA - WG III" <grambsch.anne@epamail.epa.gov>
Robert J. Tuccillo/OMB/EOP
"Christo Artusio, OSTP - WG III" <cartusio@ostp.eop.gov>
"Francisco de la Chesnaye, EPA - WG III" <delachesnaye.francisco@epamail.epa.gov>
"Holly Kaufman, State - WG III" <hollykaufman@yahoo.com>
"Jim Buizer, NOAA" <buizer@ogp.noaa.gov>
"Jim Hrubovcak, USDA - WG III" <jhrubovcak@oce.usda.gov>
"Joe Aldy, CEA - WG III" <joseph_e._aldy@cea.eop.gov>
"Kathy Watson, NOAA" <watson@ogp.noaa.gov>
"Lauren Flejzor, State - WG III" <flejzorle@state.gov>
"Leianne Clements, EPA - WG III" <clements.leianne@epa.gov>
"Mark Mazur, EIA" <mark.mazur@eia.doe.gov>
Michael R. LeBlanc/CEA/EOP
"Mike MacCracken, USGCRP" <mmaccrac@usgcrp.gov>
Paul Moen - USGCRP - WG III <pmoen@usgcrp.gov>
"Richard Moss, USGCRP - WGDR" <rmoss@usgcrp.gov>
"Rick Piltz, USGCRP - WG III" <rpiltz@usgcrp.gov>
"Rodney Weiher, NOAA" <rodney.f.weiher@hdq.noaa.gov>
Samuel F. Baldwin/OSTP/EOP
"Skip Laitner, EPA - WG III" <laitner.skip@epa.gov>
"Tom Spence, NSF - WG III" <tspence@nsf.gov>

51142