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Folder Title:
Global Warming: NOORDWIJK [1 of 2] [1991]

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Global Change:

The Mitchell draft.

Document Originally
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Following Page

102nd CONGRESS

1st Session

S. RES. ___

Expressing the sense of the Senate that the United States should take a leadership position in calling for worldwide carbon dioxide emissions reductions at the first meeting of the Intergovernmental Negotiating Committee on a Framework Convention on Climate Change to be held in Washington, D.C on February 4th - 14th, 1991.

IN THE SENATE OF THE UNITED STATES

January __, 1991

Mr. Mitchell (for himself, and Mr. _____.) submitted the following resolution, which was _____.

RESOLUTION

Whereas, human activities substantially increase the atmospheric concentrations of the greenhouse gases: carbon dioxide, methane, chlorofluorocarbons and nitrous oxide;

Whereas, an increase in the concentration of greenhouse gases enhances the natural greenhouse effect, resulting on average in an additional warming of the Earth's surface and an excess of radioactive energy available to alter the climate system;

Whereas, carbon dioxide has been responsible for over half the enhanced greenhouse effect in the past, and is likely to remain so in the future;

Whereas, the scientific assessment of the Intergovernmental Panel on Climate Change (IPCC) concluded in August 1990 that under a business-as-usual scenario for emissions of carbon dioxide and other greenhouse gases, a global warming of five to ten degrees Fahrenheit above pre-industrialized levels is likely by the end of the next century, bringing the Earth to its warmest level in at least 150,000 years;

Whereas, many scientific studies show that rapid global warming would create grave risks of precipitous climate shifts, with effects including extreme heat waves and droughts in agricultural and urban areas, amplified warming at mid and high altitudes, sea level rise and resultant flooding of coastal areas, an increase in the frequency and severity of hurricanes and other extreme weather events, and the potential destruction of forests over broad expanses;

Whereas, environmental stresses of this magnitude have the potential to cause unprecedented agricultural, economic, and social and political disruptions;

Whereas, the Ministerial Declaration of the Second World Climate Conference in November 1990, adopted by more than one hundred governments, including the United States, calls for the negotiation of a treaty to limit climate change in order to protect society and the environment "without further delay based on the best available knowledge" with the ultimate global objective "to stabilize greenhouse gas concentrations at a level that would prevent dangerous anthropogenic interference with climate.";

Whereas, the Declaration further states that "the potentially serious consequences of climate change give sufficient reasons to begin by adopting response strategies even in the face of significant uncertainties.";

Whereas, the United Nations General Assembly has established an Intergovernmental Negotiating Committee for a Framework Convention on Climate Change responsible for negotiating an international climate protection agreement in time for signature at the United Nations Conference on Environment and Development in June 1992;

Whereas, the first negotiation session will be hosted by the United States from February 4th to 14th, 1991;

Whereas, Germany, Denmark, Austria, Australia, and New Zealand have already proposed to reduce emissions of carbon dioxide and other greenhouse gases; and that seventeen other countries (Belgium, Canada, Finland, France, Great Britain, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, and Switzerland) have proposed, individually or collectively, to stabilize or reduce their carbon dioxide emissions by the year 2000;

Whereas, the United States emits more carbon dioxide than any other nation and has the highest per capita emissions of carbon dioxide;

Whereas, a large fraction of the emissions of carbon dioxide from the United States could be controlled at a savings, no cost, or low cost and that such measures would contribute to the competitiveness of American business and the overall economy;

Whereas, the National Energy Strategy, which has been in preparation for the last eighteen months, presents an opportunity to develop targets for reductions in United States emissions of carbon dioxide and mechanisms for implementing such targets;

Therefore be it resolved, it is the policy of the United States (1) to specify reductions in the national emissions of carbon dioxide and other greenhouse gases by a date certain, and (2) ~~to assume a leadership~~ position in negotiating an international climate protection treaty that contains specific commitments to reduce emissions of carbon dioxide and the following elements:

- An agreement by industrialized nations to reduce their current emissions of carbon dioxide;

- An agreement by developing nations to limit their growth in carbon dioxide emissions from fossil fuel combustion so that total emissions from the industrialized and developing world are significantly reduced;

- An agreement by all countries to stop the release of carbon dioxide due to deforestation, by preservation of existing forests and reforestation;

- An agreement by all countries to take available steps to cut emissions of other greenhouse gases, including methane;

- The establishment of an international fund, to help developing countries achieve these objectives;

- The establishment of a mechanism of continuing international cooperation for development of efficient policies for future emissions reductions necessary to meet the objective of stabilizing greenhouse gas emissions at safe levels.

Be it further resolved, that the United States should support, at the February negotiating session, the establishment of a process that will allow negotiations of substantive provisions to accomplish each of these elements, for inclusion in the convention that is to be concluded in June 1992.

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January 25, 1991

M E M O R A N D U M

TO: Environmental LA's/Global Warming

FROM: Kate Kimball (Sen. Mitchell), x43339

SUBJECT: Global Warming Resolution: ACTION WEDNESDAY (1/30/91)

Senator Mitchell would like to introduce the attached resolution on Wednesday and seek unanimous consent to pass it the same day. The resolution calls on the United States to take a leadership position on global warming. There is a major meeting of the Intergovernmental Panel on Climate Change in Washington that begins February 4, 1991.

If you have questions or if your boss would be interested in cosponsoring this resolution, please contact me at 4-3339. Thank you.

Yikes! 4566220

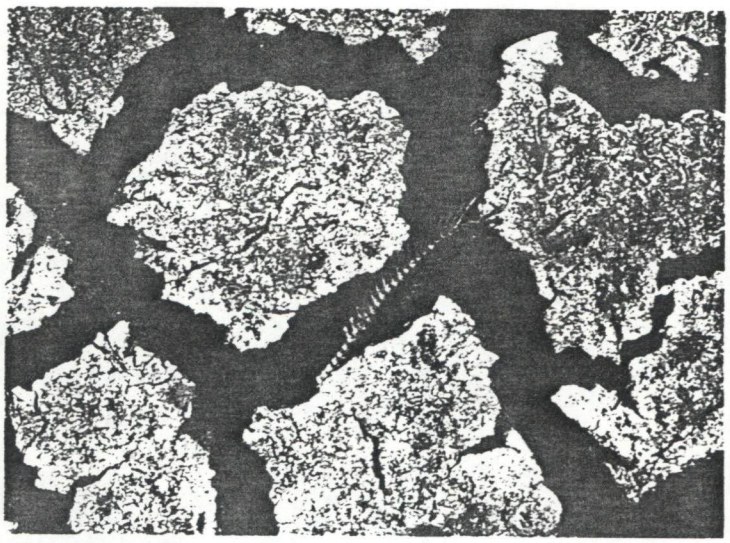
Brent Erickson, in Sen. Simpson's office, can get you more information on this

Ken

Global Warming file

HEATING THE GLOBAL WARMING DEBATE

In 1988 scientist Jim Hansen testified that the world was getting hotter. But how hot? And how fast?



LAST MONTH SCIENTISTS reported that 1990 was the warmest year on the meteorological record: the average global temperature, measured over land and sea, exceeded that of any year in the past century or so. Citing this, a group of 16 senators, including Albert Gore Jr., Democrat of Tennessee, wrote a letter to President Bush calling for immediate policy action to counter global warming. The 1990 information, said the senators, "illustrates clearly that global climate change is real."

Does it?

In the five years since the terms "global warming" and "greenhouse effect" became shibboleths of environmental awareness, the weather as a topic of conversation has gone from casual to confounding. The briefest of heat waves is enough to kindle despair over the future of the planet, while a transient cold spell can send greenhouse consciousness into hibernation. Environmentalists conjure images of disaster; industrialists appeal to scientific uncertainty; the media seize on any hint of controversy with intemperate zeal. And climate experts offer scant relief, insisting as they do that the day-to-day fluctuations ordinary people notice aren't nearly as significant as the long-term trends about which they themselves don't seem to agree.

Anyone who's had traffic with the global-warming issue eventually longs for an oracle or a scapegoat, a figure to trust implicitly or to blame entirely. Both mantles have come to rest on the shoulders of one unlikely individual: a mild-mannered scientist in the National Aeronautics and Space Administration named James E. Hansen. Hansen, the director of NASA's Goddard Institute for Space Studies, located in Manhattan, is the plain-spoken climatologist who testified before the Senate Committee on Energy and Natural Resources in the summer of 1988 that the world was warming, probably because of an increase in the atmospheric levels of carbon dioxide and other so-called greenhouse gases, which trap heat the way the glass plates of a greenhouse do.

For those seemingly modest statements, Hansen has been alternately praised, denounced, lionized and lampooned by peers and public alike. Meanwhile, his views on the greenhouse effect

Karen Wright is a contributing correspondent for Science magazine and a former staff writer for Scientific American.

BY KAREN WRIGHT

have come to form the nexus of the scientific debate on when, where and whether global warming will occur in the next century. Some of his conclusions have already become dogma.

In fact, it's not his science that gets Jim Hansen in trouble — it's his style. Hansen has all the moves of a hustler but none of the guile. Backed by a body of exhaustive and universally respected research, he routinely flouts his profession's tacit restrictions on categorical and unauthorized statements while maintaining the pacific innocence of a curious child. It's a combination that baffles his friends, who can't give him their unqualified support, as well as his critics, who can't even manage to dislike him.

This week, representatives from dozens of countries will meet in Washington to begin negotiating an international agreement on global climate change. The conferees will discuss, among other items, the need to control emissions of greenhouse gases. Although Hansen won't be attending, the event itself is part of his legacy; the first Washington-based meeting, last April, was believed by many to have been a conciliatory effort by the White House to quell criticism surrounding its alteration of Congressional testimony given by Hansen in 1989. Both his supporters and his detractors admit that Hansen has done them a service by putting global warming on the political agenda. But Hansen can also be accused of polarizing opinion on an issue that should not really be all that divisive. "You almost have to start your discussions by saying, 'Do you agree or don't you agree with Jim Hansen?'" says James Van Allen, Hansen's former teacher, a professor emeritus in physics and astronomy at the University of Iowa and a seasoned observer of the debate. The answer, it seems, is more a profession of faith than a rational judgment.

KAREN, JIM HANSEN wrote in pencil on lined notebook paper last September. *I'm skeptical about whether a Times magazine article is a good idea. For one thing, I'm not at all an appropriate personality for a profile — I'm a very quiet and shy scientist. I am very inarticulate.*

Also, scribbled Hansen, *an article focusing on me will just annoy other researchers — of course, they're already pretty mad.*

For such a shy, quiet guy, Jim Hansen has indeed caused a bit of a fuss. A frequent guest during the past decade at Congressional committee hearings on climate change, the "inarticulate" scientist has regularly managed to say something to raise the eyebrows, if not the ire, of his colleagues. His 1988 Congressional testimony drew a barrage of criticism from other climate experts. In 1989 he earned more demerits from his publicity-wary peers when he revealed that his statement of that year had been altered by the Office of Management and Budget. And in 1990 he managed to raise the hackles of a whole new cadre of scientists by proposing a climate-satellite project that other NASA investigators see as a direct challenge to a system they have been planning for years.

"I think you just have to do what you think is right — that's what I learned in 1988. Now I'm really not concerned about the repercussions," says Hansen. Certainly his is not the posture of an anxious man. The 49-year-old Midwesterner is slumped in one of several beat-up leatherback chairs occupying his office at the Goddard Institute. His feet are propped on the only bare spot his desk has to offer. Every surface in the room, including most of the floor, is covered with piles of articles and computer printouts, like the blasted foundation of a paperwork temple.

In his standard office attire — khaki pants, a plaid cotton shirt and a crew-neck sweater — Hansen looks like somebody's dad at a P.T.A. meeting. He speaks with the placid deliberation of an Iowa farmer describing last fall's harvest.

"I think that, after not too long, the better science does rise to the top." Pause. "The scientific process will tell who was right."

Hansen made three claims before Congress in the fateful summer of 1988: First, that he was 99 percent sure the earth was warming. Second, that he could say with a high degree of confidence that the warming was due to an increase in greenhouse gases. And third, that because of global warming, events like droughts would increase noticeably in the 1990's. He hasn't changed his mind about any of those points, except to add floods, storms and fires to the list of events.

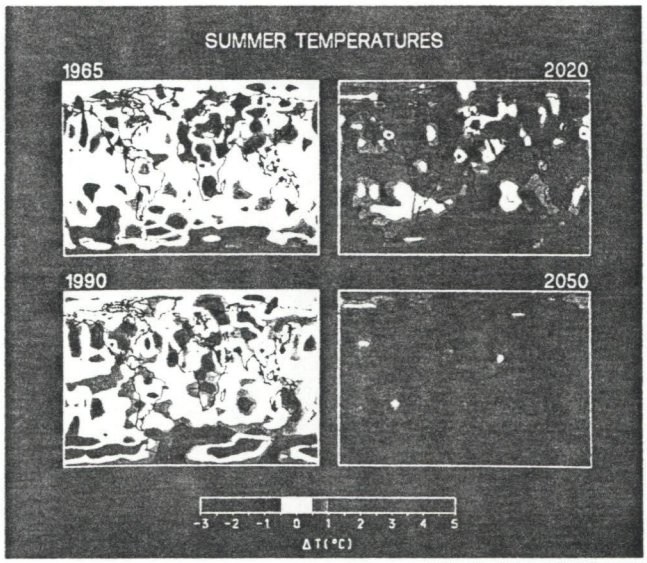
Those who disagree with what Hansen says — one climatologist calls them "greenhouse agnostics" — fall into three sects corresponding, more or less, to Hansen's three statements:

- Those who don't believe the temperature record (begun by national meteorological agencies only 140 years ago) is reliable enough to demonstrate a warming trend.
- Those who agree that there has been a warming but aren't sure blame can be assigned solely to increases in the emissions of greenhouse gases. World climate is, after all, the sum total of largely mysterious interactions among clouds, oceans, trees, volcanoes, ice, snow, dust particles, water vapor, aerosols and the sun, as well as greenhouse gases.
- Those who don't think anyone understands climate well enough to predict the meteorological effects of global warming.

Against this legion of critics, Hansen has a corps of admirers as well, climate experts who praise his courage and laud his science. "I don't have any fundamental disagreements with Jim," says Stephen H. Schneider of the National Center for Atmospheric Research (N.C.A.R.). "He is probably right."

But Schneider, like many others, tiptoes away from endorsing Hansen's statements. Though he is one of the most outspoken advocates of a government policy to address the greenhouse effect, Schneider won't go as far out on the limb as Hansen has in his scientific appraisals.

"It's just that he believes more in the scientific certainty than I do," says Schneider. "I think intuitively he has a higher confidence in the tools."



GODDARD INSTITUTE FOR SPACE STUDIES

Hansen's computer-generated models, above, illustrate changes in global temperature relative to the average 1950 to 1980 temperature. If the rate of change remains the same, the world's weather will be dramatically altered by the middle of the next century. Hansen believes, however, that there is a good possibility of reducing the growth rate of greenhouse gases, which would lead to smaller changes than those illustrated.

THE TOOLS TO WHICH Schneider refers are climate models: computer programs descended from the algorithms used to predict the weather, but much more complicated and much less reliable than those used for weather forecasting on a day-to-day basis. One of the three most advanced models in the United States is at the Goddard Institute; the other two are at N.C.A.R. in Boulder, Colo., and at the National Oceanic and Atmospheric Administration's Geophysical Fluid Dynamics Laboratory in Princeton, N.J.

All the models are based on two verities of atmospheric science: that gases like carbon dioxide, methane, ozone, nitrous oxide and chlorofluorocarbons (known as CFC's) trap heat in the earth's atmosphere through what is commonly known as the greenhouse effect, and that the atmospheric levels of these gases have risen since the beginning of the Industrial Revolution.

That the greenhouse effect keeps the planet about 30 degrees centigrade, or 54 degrees Fahrenheit, hotter than it would be otherwise is not in dispute. Nor is the amount of the increase in greenhouse gases at issue. There is general agreement that carbon dioxide has increased by about 25 percent in the past century, and methane has doubled; long-term measurements don't exist for the other gases.

Essentially, the increases mean that the earth's atmosphere holds on to 1 percent more of the sun's energy than it did in 1800. It would be fairly easy to calculate the change in average global surface temperature from that figure if the buildup of greenhouse gases were the only factor in climate variability. But there are many, many more.

The ocean, for example, absorbs heat from the atmosphere and seems to act as a buffer against climate change. How fast the heat exchange occurs, however, and how long *(Continued on Page 30)*

WARMING

Continued from Page 26

the buffer effect will last are anyone's guess. Clouds have a net cooling effect on the earth, but it is not clear whether cloud cover will increase or decrease if the global temperature rises. And even the warming contribution of carbon dioxide is complicated by the fact that the burning of fossil fuels — the main source of carbon dioxide — also releases gases into the atmosphere that form aerosols, which serve to *cool* the earth.

In science, the traditional approach to such complex phenomena is the empirical method: make a simplifying assumption, generate a prediction and then see if the prediction comes true. If it doesn't, revise the assumption and try again. That's how models for weather forecasting are developed.

"If you find that your forecasting is right eight out of 10 times, you say, 'Look, my simplifying assumption is correct, as demonstrated by the fact that I've succeeded in predicting the weather,'" explains Syukuro Manabe, a veteran climate modeler at the Fluid Dynamics Laboratory. Climate models make predictions on time scales of decades and centuries, however, rendering empiricism impotent.

In the absence of verification, some experts think the models aren't worth the chips they're programmed on.

"I think there's reason to believe that the models are not only bad — that you can't rely on them as forecasting tools — but that when they're used to forecast greenhouse warming, they tend to be systematically too hot," says Andrew R. Solow of the Woods Hole Oceanographic Institution in Massachusetts. Solow says current models underestimate the ocean's capacity to absorb heat and fail to reproduce either the geographic or temporal patterns of temperature changes in the past century.

"We know the greenhouse effect is real," Solow says. "And we know that the levels of the gases are increasing. And so, other things being equal, you would expect there to be some warming. But other things needn't be equal: other climate processes could act either to suppress or reinforce the warming. And the real question is, how much warming do we expect to get from this, and at what rate? That, I think, is uncertain, highly uncertain."

Hansen doesn't deny the uncertainty. In fact, some days he, too, rues the state of climate modeling. But then he may turn around and bet 75 colleagues at a NASA conference that at least one year from 1990 to 1992 will be warmer than any year in the previous century. Hansen did just that last spring. Only one scientist took him up on his bet, and he lost $100 when 1990 set the record.

A CASUAL SPECTATOR MIGHT GET THE impression that the implications of the greenhouse effect are disputed as often as the hazards of cholesterol. But disagreement about what *has* happened to the world's climate over the past century is greater than disagreement over what *will* happen. Since 1979, when the first comprehensive report on global climate change was compiled for the National Academy of Sciences, consensus statements from the scientific community have predicted a warming of between about 1.5 and 4.5 degrees centigrade (between about 3 and 8 degrees Fahrenheit) in the next 100 years. Climate models haven't challenged that estimate.

The consequences of such warming would range from the uncomfortable to the downright catastrophic. Temperature averages during the last Ice Age, which ended roughly 12,000 years ago, were probably 5 degrees centigrade colder than global averages today and brought dramatic changes in sea level, mass extinction of species and a widespread redistribution of flora and fauna.

Greenhouse scientists place themselves at different points along the warming range. Hansen puts himself at the hot end, predicting a warming of 3 or 4 degrees centigrade. Schneider falls somewhere in the middle. Solow says he could "live with" a forecast of 1.5 to 2.5 degrees. Richard Lindzen, a Massachusetts Institute of Technology meteorologist who has been one of the most dogged critics of Hansen's results, bitterly protests the exercise of predicting climate change, then reluctantly offers an estimate of 1.2 degrees. Truth is, it's hard to find a climatologist these days who *doesn't* believe in global warming.

Last year a comprehensive survey of scientific opinion published through the World Meteorological Organization and the United Nations Environment Program drew the broadest consensus yet on the issue. Hundreds of scientists from around the world participated in the survey. (Hansen limited his participation, deciding that involvement would deprive him of time he would rather spend on research.)

The familiar conclusion of the survey was that average global temperatures would increase by about 3 degrees centigrade by the end of the next century if controls on greenhouse-gas emissions were not instituted. If stringent controls were instituted, the report said, the increase could be cut to 1 degree centigrade. At the same time, the report admitted, "The unequivocal detection of the enhanced greenhouse effect from observations is not likely for a decade or more."

The consensus report offers cold comfort for those who choose not to believe in global warming. But they can find their own sacred texts. A report published in 1989 by a Washington-based think tank called the George C. Marshall Institute, for example, suggested that factors such as variations in solar activity could influence the calculus of global warming. Some greenhouse agnostics have used the report's conclusions to argue that solar activity could mitigate the effects of greenhouse-gas accumulation; most scientists have disregarded it.

OCTOBER 1990: JIM HANSEN, RELUCTANT profile subject, sends me several pounds of background material, including scientific articles, newspaper clippings, letters, Congressional statements and transcripts of speaking engagements, in three separate mailings. His secretary prepares a five-hour videotape of his television appearances.

November 1990: Hansen sends two four-page letters clarifying his thoughts about questions I'd raised in interviews. Several more packages of background material arrive. One contains an older sister's memoirs (unpublished) of their childhood. *I'm not a good interview on personal things,* he writes, and actually seems to believe that's true.

Hansen is the son of a waitress and a tenant farmer from Denison, Iowa (pop. 5,000). He earned money for college with a paper route, played pool in beer halls after school and walked miles of railroad tracks with his dog Skeeter. He claims he almost never cracked a book he didn't have to until he got to the University of Iowa, where he met James Van Allen, then chairman of the physics and astronomy department. Van Allen discovered and gave his name to the belts of radiation that circle the earth; he is something of a legend and, according to Hansen, he ran the kind of program that can change the course of a student's life. Van Allen suggested the topic for Hansen's dissertation and then helped him get a postdoctoral fellowship in 1967 at the Goddard Institute, an offshoot of the Goddard Space Flight Center in Greenbelt, Md.

"I was so excited by the opportunity to study at a NASA laboratory that I drove all the way to New York without stopping to sleep," Hansen says. Two years later the institute offered him a staff position, and he got involved in the weather-prediction research that was a major part of Goddard's charter in the 1970's. In 1981, Hansen succeeded Robert Jastrow as the institute's director.

Hansen is lord of a modest manor. Goddard is housed in a gloomy gray edifice on the northeast corner of 112th Street and Broadway near Columbia University. The institute sits atop Tom's Restaurant, a greasy spoon of local renown whose fumes often waft up to the floors above. Inside, the hallway is lit like a catacomb. The carpet on the seventh floor is the color of boiled spinach; there's a plant dying in almost every window.

This neglected corner of the NASA empire suits Jim Hansen just fine. "We're close to being a non-civil-service organization, because only 20 people here have hard money for their salaries," he says, including his own $79,200 annual paycheck. By soliciting additional financing from the Environmental Protection Agency and NASA, Hansen has managed to build the institute's staff to 140.

"We're handicapped, but there are some advantages. The key benefit is independence. We've sometimes expressed strong or unpopular opinions and just ignored the fact that we're civil servants. I recognize the forces that come back and push on us because of those statements. We haven't had a new hire here in four years, and in my gut I know very well that the reason we haven't is that they don't like things I've said." After a moment, he adds, "Though there's no way to prove that," and smiles.

Hansen's initial encounter with the "forces" was in 1981, when he published the first solid evidence that the earth was warming. The Department of Energy reneged on a promise of financial help after Hansen's study made front-page headlines, and he had to lay off five people. "For a while there, I became a 40-hour-a-week scientist."

It didn't last. A year later Hansen managed to wrest some money from the Environmental Protection Agency, and he plunged back into 80-hour workweeks. In testimony before Congress in 1982, 1986 and 1987, he grew ever more confident in his appraisals of the seriousness of greenhouse warming. But few people outside Congress and the scientific community took notice — with the exception of the Office of Management and Budget, which, mindful of the Reagan Administration's penury regarding climate research, tried to tone down the statement he planned to make in 1987. (Hansen was permitted to offer his testimony as a private citizen.)

Then the summer of 1988 struck. Drought stranded barges in the Mississippi and blistering heat tried Congressional tempers in the Capitol. Jim Hansen found himself in front of a Senate committee once again. But this time he had more ammunition: he'd just had a paper accepted by the Journal of Geophysical Research that would document the statements he wanted to make.

Within a few weeks of that memorable testimony, a House subcommittee invited Hansen to repeat his performance. "I was told about calls from the White House to NASA expressing great displeasure about my testimony. There were rumors about what might happen to me, with possible implications for the Goddard Institute." Hansen testified anyway, and kept his job in the bargain.

A year later, when O.M.B. tried to alter his testimony a second time — inserting qualifiers about the uncertainty of model predictions and about man's contribution to the greenhouse-gas accumulation — he took his grievances straight to Senator Gore, who played the situation for all it was worth in the media.

"He may have turned it into a circus," Stephen Schneider says of Gore, "but the circus worked. A day later the White House was on the defensive

JOSE R. LOPEZ/THE NEW YORK TIMES

Hansen, testifying before a Senate subcommittee in 1989, said the Office of Management and Budget had tampered with statements he made about the intensity and effects of global warming. Jerry Mahlman, director of the National Oceanic and Atmospheric Administration's Geophysical Fluid Dynamics Laboratory, also testified.

because Hansen was the opening story on the evening news on every network." Before the week was out, the White House announced it would hold a workshop on global warming to prepare for negotiations on an international treaty, a meeting eventually held in April of last year.

LAST OCTOBER HANSEN WAS HOST OF A barbecue in his backyard in Ridgewood, N.J., about 15 miles west of New York City. The festivities began at 11 A.M. with a game of softball. Hansen's team — a spirited if somewhat bedraggled group of Ph.D.'s with thin necks and thick glasses — took on Goddard's computer-support staff, tanned and brawny youths in dazzling blue and white uniforms. Hansen pitched, and in the space of half an hour gave up four home runs, the ball soaring over maple trees and across Pleasant Avenue.

With each homer Hansen, calculating the flight trajectory with a baleful expression, merely tugged at his baseball cap. No cuss words or histrionics here — this is the man who once asked a writer paraphrasing his thoughts to change "damn" to "darned."

Hansen has described himself as "overcompetitive." "Can you believe we actually beat these guys last year?" he asked as he walked off the field.

I couldn't, so I changed the subject. "Nice day for a picnic."

"Yeah," he agreed, pulling off his hat and wiping the sweat from his forehead. "Could be about 10 degrees cooler, though."

Hansen wasn't thinking about carbon dioxide. But I asked the loaded question anyway: could this unseasonably warm fall be a sign of the greenhouse effect in action? Can the man in the street judge for himself whether global warming has arrived?

"You can't stick your head out the window to look for the greenhouse effect unless you're clever enough to compare the climate to what it was a few decades ago," he said. "The problem that people have is not recognizing the magnitude of natural variability, which is large in comparison to the warming." Actual warming, Hansen believes, has been about half a degree centigrade since 1850, a quarter of a degree between 1850 and 1950 and another quarter of a degree since then.

But Hansen says the next 10 years "will tell us quite a lot." He predicts that by the end of the 1990's the world will have warmed up a few tenths of a degree. "The things that we'll see in the 1990's are not necessarily going to seem very threatening. They'll be noticeable, but probably not dramatic." But, he added significantly, "the same models that project dramatic impacts in 30 or 40 years are predicting noticeable but small effects in the 1990's. I think the public can recognize that statistical change."

Hansen seemed at a loss for an analogy. Then, suitable to the occasion, he came up with the Yankees.

"For example, the public can recognize a significant difference in the chances of Don Mattingly getting a hit as compared to Alvaro Espinoza, even though the percentages represented by their batting averages may not seem so different."

Partly because Hansen is convinced the 1990's will be a pivotal period for climate prediction, he proposed last summer that two small, relatively inexpensive satellites could gather much of the missing data pertaining to global warming by the end of the decade.

Some of Hansen's peers have been less than enthusiastic about his idea — much less. NASA has plans to include some of the same tracking instruments on its mammoth multibillion-dollar Earth Observing System (E.O.S.) project, which is scheduled to be launched in 1998, and some NASA scientists fear that Congress will try to supplant their grand orbiting platform with Hansen's puny satellites. They are also annoyed at the way he went about presenting his ideas. Hansen waited until his proposal was virtually in print (in the National Academy of Sciences magazine) before showing it to his boss at the Goddard Space Flight Center's earth sciences directorate. He says he just forgot, then admits there may have been a method to his amnesia. "If I'd talked to them beforehand, then I'd have gotten some input, which was the last thing I wanted."

His boss was "sorely distressed," Hansen says. "He felt that I was not supporting the institution's objectives" — meaning E.O.S. "But anyway, it doesn't really matter. Eventually these people come around."

GIVEN THE BUSH ADMINISTRATION'S recent history regarding the issue, Washington seems an unlikely place to convoke this month's global warming conference.

Last fall, climate experts meeting in Geneva issued the most sweeping policy recommendations from the scientific community to date, urging all countries to take immediate steps to reduce greenhouse gases. The report said many industrialized nations could cut carbon dioxide emissions at least 20 percent by the year 2005 with existing technologies and without significantly burdening their economies. Even before the report, many industrialized nations had instituted plans for stabilizing greenhouse gas levels. All 12 nations of the European Community have set targets for slowing carbon-dioxide emissions generated by cars, homes and factories. Representatives from Western Europe, Japan, Australia and New Zealand stated at the conference that they could impose such restrictions at no extra cost to their economies.

But the United States, which is responsible for more than 20 percent of the world's carbon-dioxide output, has maintained that more needs to be known about global warming before major policy decisions can be made. The Soviet Union and oil producers like Venezuela and Saudi Arabia have sided with it. But the weight of international opinion is bearing down on Washington. Although United States negotiators succeeded in excluding explicit targets for emissions cutbacks from the conference declaration last fall, at this week's conference, some observers say, the Administration might have to capitulate.

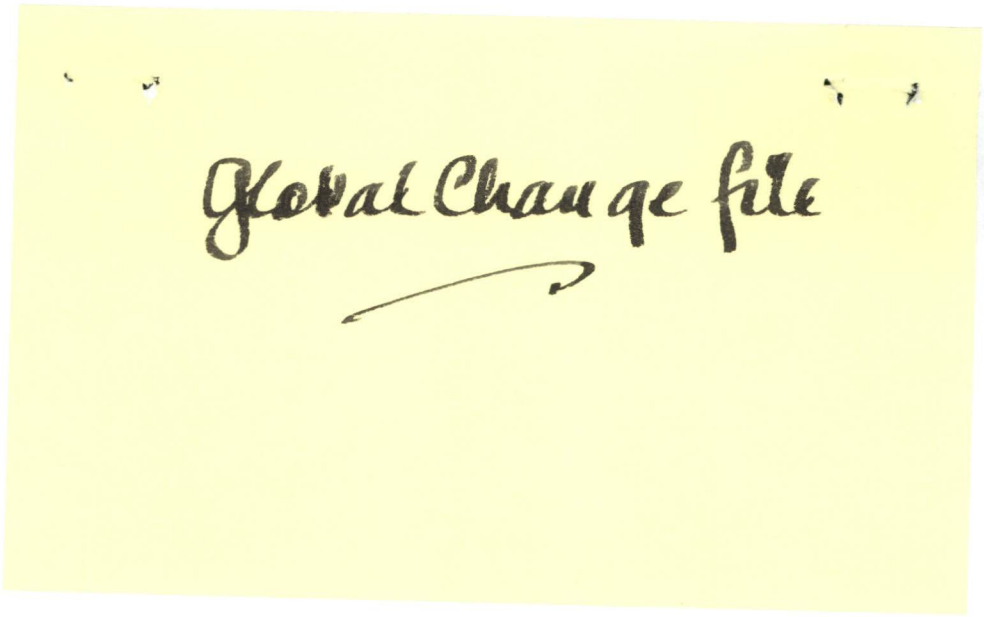
Hansen plans to observe the convention proceedings from the peaceful refuge of his office on the seventh floor at Goddard. "The argument they all make is that if you really care about this, you've gotta help publicize it," he says. "But I think that the best contribution I can make is to the science.

"We're not environmentalists; we're not trying to defend some position that we've taken in the past. We're trying to advance our understanding. We're changing the atmosphere. What's that going to do?

"Now when the time comes," Hansen continues, "if we have a result that's important, we're not going to be bashful about presenting it."

And Hansen does indulge in a little public relations from time to time. He holds out a letter from a high-school sophomore in Connecticut who had asked him for information on global warming for a term paper. (Did he send her five pounds of background material, too, I wonder?)

"Now she wants advice on college. So I have to think about what to say to her." Hansen lapses into silence again, mulling over recommendations to a 15-year-old girl. In a few days he'll write back to Katie Mottes, stressing the importance of "being what you want to be." *If you do that, you will be more likely to do well and be happy. I have just relearned that myself.* ■



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CLIMATE NEGOTIATIONS WASHINGTON — NGO NEWSLETTER

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FEBRUARY OPENING ISSUE

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Eco has been published by Non-Governmental Environmental Groups at major international conferences since the Stockholm Environment Conference in 1972. This issue is produced cooperatively by groups attending the Intergovernmental Negotiating Committee on a Framework Convention on Climate Change, Westfields Center, Chantilly, Virginia

George Bush in his brochure — lips moving faster than policy.

Climate Change Strategy

US Says No With a Smile

by Eco Reporter

The pollution policies of the United States, which hosts world climate negotiations, yesterday attracted renewed criticism from environment groups and governments of countries vulnerable to sea level rise.

Michael Deland, Chairman of the US Council on Environmental Quality addressed the opening session of the Climate Convention Negotiations (Intergovernmental Negotiating Committee for a Framework Convention on Climate Change) at Chantilly near

Continued on back page, column 1

CLIMATE TALKS START IN RECORD WINTER HEAT WAVE

by Eco Staff

Temperatures in Washington DC broke a 108 year old record on the day that negotiations on global warming began. At Washington's National Airport, temperatures hit 70°F (21°C) breaking a record set in 1883, 68°F (20°C) according to the US National Weather Service. Temperatures at Dulles Airport reached 70°F (21°C) topping the previous high for February 4th of 53°F (12°C) by 17°F (10°C).

One day's record 'proves' nothing but the run of hot years has also now created a hot decade. In fact, 1990 set another global temperature record. Three different methods of measuring the surface temperature of the earth concluded that 1990 was the warmest

Continued on page 6, column 2

LAWYERS DRAFT CLIMATE CONVENTION

by Eco Staff

Debate began on a legal draft treaty on climate change yesterday, as delegates from over 200 countries gathered at Chantilly, Virginia to begin negotiations on climate protection. A draft was handed over to them by the IPCC Topic Group

Continued on page 6, column 1

Environmental NGOs —

- OECD nations should reduce energy CO_2 20% by the year 2000.
- Industrialized countries should end deforestation and the destruction of all primary forests by 2000.
- Developing countries should phase out deforestation of primary forests as rapidly as possible, in most cases by 2000.

Full NGO Statement to Climate Conferenence—pages 2-3.

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- This is an eight page Eco.

ISSUE NO 1 VOLUME LXXVI FREE OF CHARGE

STATEMENT BY ENVIRONMENTAL NON-GOVERNMENTAL ORGANIZATIONS PRESENT AT THE INTERGOVERNMENTAL NEGOTIATIONS ON A CLIMATE CHANGE CONVENTION

The following statement reflects the broad consensus of the Climate Action Network, representing more than 25 environmental non-governmental organizations from over 40 countries.

In light of the conclusion of the Intergovernmental Panel on Climate Change (IPCC) that immediate global CO_2 emissions reductions of more than 60% would be required to stabilize atmospheric concentrations of this gas at current levels, this statement identifies the elements that should be contained in a climate change convention.

Industrialized countries bear the main responsibility for the high concentration of greenhouse gases in the atmosphere. To reduce the chances of potentially catastrophic climate change and to enhance the ecological security of the planet, prompt and decisive action must be taken now. To be effective, a climate change convention should include the following specific commitments:

Goals

The Convention should set the objective of stabilizing atmospheric concentrations of greenhouse gases at levels low enough to limit future damage to human communities, agriculture, ecological systems, biological diversity, and coastal communities. Based on the best available scientific information, the peak atmospheric concentration of carbon dioxide, the most important anthropogenic greenhouse gas, should not be allowed to exceed approximately 400 parts per million. The peak level for all greenhouse gases, including carbon dioxide, on a carbon dioxide equivalent basis, should not be allowed to exceed approximately 475 parts per million.

These levels for peak atmospheric concentrations are based on the scientific and technical investigations of the Intergovernmental Panel on Climate Change and the Stockholm Environment Institute. These levels could limit the long term temperature increase to about one to two degrees Celsius from pre-industrial levels and could hold the maximum rate of temperature increase to 0.1 degree Celsius per decade. In addition, potential sea-level rise could be limited to 20-50 centimeters above current levels, and maximum rate of rise of between two to five centimeters per decade. Even if temperature change and sea-level rise can be held to these levels, there may be serious ecological damage.

Substantive Elements

The following elements to be included within a convention are essential to establishing a process that will reach the goals described above.

1) *Industrialized Countries Reduce CO_2 Emissions*

Industrialized countries, with 25% of the world's population, are responsible for 75% of current global emissions of CO_2 from the energy sector. This fact and the dominant role of this source makes reductions in CO_2 emissions from the energy sector in industrialized countries the most important action needed to combat global warming. OECD nations should have a binding obligation to reduce energy-related CO_2 emissions by at least 20% below 1988 levels by the year 2000. Other industrialized nations should achieve this target by the year 2005. Deeper cuts in CO_2 emissions by industrialized countries will be required after these dates.

2) *Developing countries slow emissions growth*

Developing countries, with 75% of the world's population are responsible for 25% of global CO_2 emissions from the energy sector. These emissions are expected to grow to meet legitimate development needs. In order to remain within the global CO_2 target specified under the "Goals" section above, developing countries would have to limit their aggregate CO_2 emissions so that they increase by no more than 50% over 1988 levels by 2005. The incremental costs of achieving this target should be borne by the industrialized countries.

The development path and norms of the industrialized world have been extended to developing countries through a package of international and national initiatives, policies and financial assistance. As a result, many of these countries have fallen into a cycle of debt and dependence from which they are unable to emerge. This plight, and the wide variations among developing countries, compel a new set of initiatives guided by new principles to enable the developing world to control its CO_2 emissions while realizing aspirations for a better quality of life for its people.

3) *Biomass*

Biomass cultivation and use can be both a major source and sink of CO_2. While establishing policies to address biomass, we must not destroy the natural carbon sinks in forests, oceans, and elsewhere.

Industrialized countries should end deforestation and the destruction of all primary forests by 2000. Countries with less than 15% of original primary forest should halt deforestation of primary forests by 1995. In addition, a net increase in forest cover through national reforestation and afforestation goals should be sought by 1995.

Developing countries should phase out deforestation of primary forests as rapidly as possible, in most cases by 2000. Countries forced to make a large shift from timber to non-timber based industries should be eligible for additional financial incentives. Conservation strategies designed to meet this goal must recognize the many forces contributing to deforestation such as agriculture, population pressure, trade barriers and government subsidies which encourage the clearing of forests. These strategies

should promote the transition to non-destructive models of forest use and establish reforestation and afforestation goals to regenerate degraded lands.

Any mechanisms linking forests to their carbon sink potential must include safeguards to protect biodiversity, cultural diversity and other ecosystem services.

4) *Methane*

Methane provisions should require countries to virtually eliminate emissions from natural gas transmission lines, coal seams, and landfills while "best practices" (e.g. conversion of agricultural and animal waste to biogas) should apply in the agricultural sector.

5) *Funding Mechanisms*

A climate change fund, comprised of new and additional resources, must be established by industrialized countries to enable states to meet the aforementioned commitments. Priority for these funds should be given to the most cost-effective options for reducing greenhouse gas emissions. In the longer term, technology-exchange mechanisms and market incentives, possibly including emissions trading, will need to be developed. Mechanisms for provision of technical assistance are also essential.

This funding mechanism must ensure public participation. Government agencies, NGOs, and citizens groups all have an essential role to play in determining how these funds are used. Safeguards should be established to prevent the export of outmoded technologies.

6) *Greenhouse Gas Plans*

Each country should be required to prepare a report on projected greenhouse gas emissions and a plan identifying policy options for their control. Such plans should incorporate least cost planning, urban planning and the elimination of subsidies to greenhouse gas-emitting activities. Countries should begin to prepare such plans before a convention enters into force. Interim funding should be made available to countries which require such assistance for preparation of such plans.

7) *Institutional Structure*

An effective institutional structure, including the establishment of an adequate Secretariat to ensure data collection, enforcement, assessment, monitoring and reporting, together with an equitable decision-making process, is essential. In addition, as with funding mechanisms, the development objectives of all sectors of society must be incorporated into institutional structures by means of complete public participation.

A process must be established to set long term goals and scenarios in order to define future greenhouse gas budgets consistent with the global atmospheric concentration limits discussed above, and to apply such budgets at the national level.

Organizational Issues

1) *Working Groups*

Your working groups should be established: energy, forests, technology transfer/financial assistance and institutional issues. Close coordination between working groups on forest and energy and on financial/technology assistance will be essential. The Energy Working Group should consider not only control measures for CO_2 and methane, but also promotion of renewable energy. A Technology Transfer/Financial Assistance Group should consider requirements for adaptation. The Institutional Working Group should identify both institutional requirements of a convention and desirable links to other relevant international institutions and agreements.

2) *Rules of Procedure*

The Rules of Procedure should provide for broad access to the negotiations by NGOs, including working groups, and the right of NGOs to speak and to present papers.

Chantilly

Chantilly was delighted to have been invited to a reception at the tasteful Westfields International Conference Center on Sunday. Chantilly met a number of quite charming civil servants [blue collar workers] from several continents, apparently at some sort of convention to do with the weather, which, Chantilly is pleased to report, has since been unseasonably warm. Yesterday groundhogs were gambolling, bluebirds were tripping from bough to bough, and chickadees were squeaking in the bushes.

The spring-like mood of nature didn't seem to have infected some of the visitors however. Chantilly met a very downcast white haired Swedish gentleman while taking a ride in the gilded revolving door, and a doctor from Egypt who also seemed to be in two minds about the gathering. All in all though, the crowd at Westfields seems pleasant enough and the food is good, although it's difficult to work out what their convention is all about because it's only described as an Inter-governmental Negotiating Committee: obviously it's some big secret that the Government wants to keep under wraps.

Chantilly has also heard that Westfield's next venture will be something called a 'climate change theme park'. Popular features are expected to include solar bumper cars, a perpetual motion waterfall, and a cold fusion buffet. What a shame that there's no public transportation access.

Chantilly learnt from one of the red-coated Westfields footmen - individually recruited in Orlando - that the environmental 'NGOs' (whatever they may be) attending the same convention, are worried that they may be excluded from full participation in the negotiations. Apparently there is something known as the 'UNCED' which takes place down in Brazil in 1992, and they fear that the civil servant types will try to keep them out. It's all a bit obscure but there must be money in it somewhere and Chantilly is convinced that these conventions are good for the local economy. Apparently the current event cost the US Government over $2m to hold, and Chantilly was interested to meet several engaging representatives of the oil and coal industries, including one lady who seemed to be on something called 'the Australian delegation': perhaps they've discovered coal and oil reserves under Westfields ?

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LEADERSHIP AND INACTION

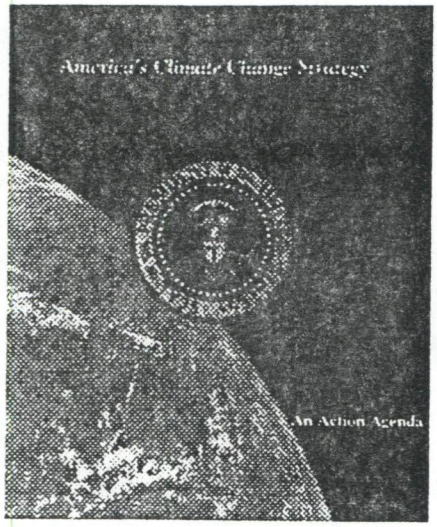
'President Bush has established the comprehensive strategy for action and leadership outlined on the following pages. This strategy flows from his commitment to responsible stewardship of the planet, which includes the promotion of growth and sound environmental policies. It is built upon a series of actions which will have broad ranging benefits - from curbing air pollution, to conserving energy, to restoring forest lands - and which will help curb net greenhouse gas emissions. These are the opening lines of the United States of America's *Climate Change Strategy*, subtitled *An Action Agenda*.

The document stresses that to be successful, a global climate change strategy must be comprehensive (taking in all gases, sources, sinks), long term, flexible and integrated. Few could much disagree with these thoughts, although they are scarcely original. But they do not constitute leadership or action.

Given that rhetoric and attractive design do not in themselves make a case for leadership, the US policy document can be judged only on its commitment to action. Top of the list comes eliminating CFCs: a transparent attempt to claim credit for actions which all major countries are undertaking under the Vienna Convention, although others do not try to have them double-counted. Next come Clean Air Act measures born not from leadership on the greenhouse effect but from environmentalist pressure over acid rain. And so on.

'The United States' it declares under the picture of the President, 'is taking action'. And as host to these negotiations and the world's number one greenhouse polluter, the US should be leading the way into action. But it is not. The US has no firm national target to reduce carbon dioxide. Or methane. It is falling yet farther behind countries such as Germany, the Netherlands, Australia and Austria that have gone farther and faster and whose policies are tighter and clearer.

Although this document may be a welcome sign of a warm up, the US is not up and running on the climate issue. In truth it is not yet even walking. George Bush's 'strategy' is mainly an exercise in *laissez faire* in which windfall policies and serendipity are repackaged as concrete action. It is the sort of exercise the American body politic can take while lying down.



Looking Through 'America's Climate Change Strategy'

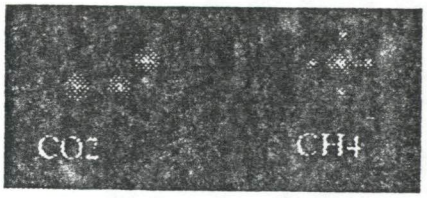
by Richard N. Mott, Treaties Officer, WWF International

America's Climate Change Strategy—An Action Agenda, released today at the opening negotiations on a global warming treaty, signals a significant and positive shift in tone in the Administration's stance on the climate issue. The document is the most elaborate statement of US climate policy to date, and, as incorporated into welcoming remarks of the first session of the Climate Convention negotiations , seems intended to recast the US as a supporter of action on global climate change.

The US strategy, however, sets no basic objective to limit global climate change. Instead it contains a series of diverse measures with climate benefits, but which were taken for reasons unrelated to climate change. Indeed, the 'strategy' relies almost entirely on US commitments to cut ozone-depleting chlorofluorocarbons (CFCs), already agreed to under the Montreal Protocol. Stripped of the CFCs reductions, the strategy actually allows a continued *increase* in US emissions of all other greenhouse gases taken together, up to the end of the century. This is largely due to a 15% increase in US emissions of CO_2, the single most important greenhouse gas.

The US position's central philosophical premise is the so-called 'Comprehensive Approach'—which assigns a warming index to each of the several greenhouse gases. Nations can then be given an integrated greenhouse gas target, which they are free to meet by reducing emissions of those gases that are easiest or least costly to control.

Despite its theoretical appeal, the Comprehensive Approach has received a mixed review by the world environmental community which fears the approach will be used as a political device to 'double-count' CFCs reductions already committed, and to divert attention from the more urgent task of controlling CO_2 emissions. As released today, the US Strategy



unfortunately bears out both concerns.

A better interpretation of comprehensive action would be to mandate reductions in emissions of *all* greenhouse gases, reserving the flexibility inherent in the approach for implementing aggressive reductions obligations: not as a means of avoiding them at the outset. The long lead time needed to make infrastructural changes in the energy and transportation sectors makes CO_2 a priority candidate for early action.

America's Climate Change Strategy is replete with graphs and charts but they fail to mention the following salient facts:

• The US remains the world's greatest emitter of CO_2. Its CO_2 emissions are more than 19 metric tonnes per capita—a figure roughly twice per capita emissions in the United Kingdom, France, the Federal Republic of Germany, the Netherlands, or Japan. (Chart 22 at p. 15 obscures the great divergence in the various countries' emissions baselines.)

• High US emissions in the transportation sector are not a function of low population density. Chart 26 at p. 18 and accompanying text attribute high US transportation emission to low population density compared to Western Europe and Japan. In fact, US emissions in areas of comparably dense population still run 2-3 times higher than Europe—due in part to low fuel pricing here, urban settlement patterns, and lack of effective public transportation.

• Stabilizing global emissions is inadequate to prevent ever-increasing atmospheric concentrations. Real reductions in emissions are needed. Were the US simply to stabilize its overall greenhouse gas emissions, it would still lag far behind those industrialized countries that have pledged to control CO_2 as well as eliminate CFCs.

The US 'strategy' released today is the US's most complete acknowledgement that climate change is a threat significant enough to justify action now. To this extent it is a step forward. Unfortunately, the content of the strategy lacks a core commitment to address climate change, relying instead on actions taken in pursuit of other objectives. While the measures listed in the US program demonstrate the extent to which a climate policy can be harmonized with other environmental and social programs, they are no substitute for a real commitment to protect the global climate. The true measure of US commitment to effective action on climate will be support for a treaty to be signed in 1992, and one that mandates significant and near-term reductions of CO_2 emissions by the industrialized countries.

* *WWF-International is based in Switzerland.*

VIEW FROM TUVALU

Saving Ghana's Forests

By Elizabeth Acheampong, Friends of the Earth - Ghana

Climate change will affect all countries and the potential impact on Ghana could be disastrous. Ghana's socio-economic progress is heavily dependent on agricultural performance: the Sahel desert is already encroaching upon the northern part of the country, and towns in low-lying coastal areas are threatened. There has been a general small, but consistent increase in dryness of the environment.

Ghana's emission of greenhouse gases is low. The country is not industrialized, and hydro electric energy generates our power. Because Ghana depends on rainforest agriculture, preservation of the forest as a sink for carbon dioxide will be the primary way for Ghana to help address global warming.

We have come to this conference expecting to see a negotiated framework whereby the industrialized countries, who have been causing the problem of climate change, would commit themselves to substantial reductions in carbon dioxide emissions.

We can contribute towards reducing climate change by reducing activities which diminish our forest. In addition this could preserve biodiversity, prevent drought, and improve water supplies.

The forestry sector is a key component of Ghana's economy because of its ability to directly or indirectly control most other sectors. It governs regional survival. The government established a Forestry Department in 1909 to create a resource base through the demarcation and mapping of forest reserves and the enactment of laws and regulations which give the timber resources legal protection. At that time, the population was about one million. Since then, the national population has grown to 4.6 million in 1957, 8 million in 1970, and 12.5 million in 1984. This represents a twelve fold increase in population since the demarcation of the forest reserves. People have rampantly encroached upon demarcated forest illegally, sometimes establishing whole new towns within forest reserves.

Our agricultural practices have transformed forest cover into semi-savannah and increased the incidence of bush fires. As the population increases, the slash and burn shifting cultivation practices have taken their toll on the land. Fallow periods on agricultural land continue to shorten.

Ghana has three main export commodities - cocoa, precious minerals, and timber. As the cocoa price continues to fall, there is added pressure to produce more timber to increase export earnings to cater for foreign debts and to meet our balance of payments.

We need the forest for survival. However, immediate pressing problems, such as dealing with external debt and our inability to meet balance of payment needs, make it imperative that we export timber and other forest products.

We cannot leave the forest alone. But with financial and technical assistance, we can reduce, if not halt, deforestation. We can also increase forest cover through forest management and afforestation programs.

VIEW FROM TUVALU

Continued from page 1, column 2

on legal measures. The legal draft framework for a Convention on Climate Change has been submitted to the delegations as a basis for discussion and the framework into which other substantive elements could be placed. The draft is simply a skeleton of an agreement in lawyers language and is still far from the sort of agreement which countries hope to reach in June 1992 at the United Nations Convention on Environment and Development in Brazil.

Environmental observers acknowledge that negotiation of legal language will be a long process and that any initial draft will be substantially changed. But they fear that the current draft starts off weak and may be further watered-down. "This draft clearly lacks sufficient ambition and needs substantial change to implement the conclusions of the IPCC", says Annie Roncerel of Climate Network Europe in Brussels.

The present draft is essentially an adaption of the 1985 Vienna Convention for the protection of the Ozone Layer. It mirrors its structure (both consist of 21 Articles) and echoes, almost to the word, the obligations of the Vienna Convention. Thus, thereby relies on general obligations (Article 2) to 'cooperate' in exchanging information, to develop 'appropriate mechanisms', and proposes that parties 'adopt measures and strategies' to limit climate change. Any concrete obligations for the reduction of greenhouse gas emissions (CO_2 is not mentionned) would, under this scheme, be left to subsequently concluded protocols, much as the Montreal Protocol followed the Vienna Convention.

Roncerel sees Article 17, 'entry into force,' as another example of the lawyers setting their sights too low. Paragraph 1 of this section provides that the Convention is to enter into force on the 90th day after it has received the 40th signatory. Paragraph 2 lays down the same condition for Protocols susbsequently adopted. By contrast, the 1979 Convention on Long-Range Transboundary Air Pollution required the signature of only 24 parties to enter into force. Yet, three years after it was ready for signature, only 12 parties acceded. Its entry into force was slow. The Vienna Convention - regarded by most governments as the most successful environmental treaty - moreover required 20 signatories.

Other time limits contained in the draft differ from those included in the Vienna Convention. Article 6(2), for example, permits an Extraordinary Conference to be convened, provided a request gains the necessary support from other parties, within a period of three months. The corresponding time frame within the Vienna convention is 6 months. Similarly, Article 9, dealing with amendments of the Convention and with Protocols, calls for a two-thirds majority vote, where the Vienna Convention demands three quarters.

Annie Roncerel concludes that in its present form "not only would such a Climate Convention not contain any substantial commitments, but its adoption will be excessively delayed and it will lack the necessary flexibility to respond to new issues".

Countries delegates have to work hard to improve it and start negotiating on a real draft Treaty. Compromise should not come at the begining of the negotiations. That comes, if at all, at the end!

Quotes of the Day

"America's Climate Change Strategy includes actions that will result in U.S. greenhouse gas emissions in the year 2000 being equal to or below 1987 levels."

"As President Bush has written in a letter being delivered to each of you today: 'We are prepared to work openly, diligently, and respectfully toward achieving the goal of completing a climate change convention in time for its signature at the United Nations Conference on Environment and Development in June of 1992.'"

"We are united in the belief that despite large uncertainties, the potential threat of climate change justifies taking action now."

"In the final analysis, it is progress that counts."

Michael R. Deland Chairman, US Council on Environmental Quality

"A record-breaking day for Washington, D.C., in February"

Professor G.O.P. Obasi Secretary-General of the World Meteorological Organization

Record Temperatures — *Continued from page 1, column 2*

year on record. The results were released in January, 1991 by scientists from the British Meteorological Office, the NASA Goddard Institute for Space Studies (GISS) and the Air Resources Laboratory of the US National Oceanic and Atmospheric Administration (NOAA).

The British Meteorological Office data is based on measurements of land and marine temperatures. The GISS measurements are land surface only and the NOAA data set is based on balloon based radiosonde network measuring temperatures at all altitudes through the atmosphere. Both the British and GISS records extend for about a century or more and the NOAA data set is thirty years old.

In releasing the data all the scientists emphasized that it was more important to play attention to multi-year trends than to the results of a single year. The 1980s was the warmest decade in the available records.

The scientists noted that 1990 was warmer than any other year despite the absence of El Nino, a climatic event that occurs every few years in the Pacific Ocean that adds significantly to global temperatures. It is expected that if an El Nino were to occur global temperatures could easily exceed the record of 1990.

Also noted was the fact that a strong warming trend is evident in the record in recent years. The NOAA record, for example, indicates that the 1980s were about .3°C above the 1960s.

Scientific Background to the Negotiations

Dr. Daniel A. Lashof, Senior Scientist of the Natural Resources Defense Council reviews the role of science in bringing the world community to the start of climate negotiations.

The June 1988 Toronto *Conference on the Changing Atmosphere*, warned that 'humanity is conducting an unintended, uncontrolled, globally pervasive experiment whose ultimate consequences could be second only to a global nuclear war,' and called on the world to cut CO_2 emissions from fossil fuel combustion 20% by 2005. In the last two years the declaration of this ad hoc group of scientists, environmentalists, and policy makers has been strongly reinforced by the Intergovernmental Panel on Climate Change (IPCC), the Second World Climate Conference, and the Stockholm Environment Institute.

The IPCC, which was established in the fall of 1988, completed its *First Assessment Report* last summer. The first working group, chaired by Dr. John Houghton, Chief Executive of the British Meteorological Office, has provided the most authoritative scientific assessment of global warming ever conducted. Preparation of the report involved most of the active scientists working in the field: 170 scientists from 25 countries contributed sections and 200 others served as reviewers.

Under a "Business-as-Usual" emissions scenario the IPCC predicts that the Earth will be 3-6°C (5-10°F) warmer than preindustrial times within a century. Conditions would be warmer than any encountered during the last 150,000 years by the middle of the next century. The IPCC also examined a scenario in which warming would be limited to 1-3°C (2-5°F) by reducing CO_2 emissions 50% by the middle of the next century and controlling other greenhouse gases.

Detection

A great deal of public attention has focused on observed temperature changes over the last century. The IPCC concluded that the earth has warmed significantly, by 0.3-0.6°C (0.5-1.0°F), and that 'the size of this warming is broadly consistent with predictions of climate models, but it is also of the same magnitude as natural climate variability. Thus the observed increase could be largely due to this natural variability; alternatively this variability and other human factors could have offset a still larger human-induced greenhouse warming. The unequivocal detection of the enhanced greenhouse effect from observations is not likely for a decade or more.' This carefully worded statement underscores the danger of a wait-and-see policy. It makes no sense to wait for 'unequivocal detection' while we see ourselves being committed to ever greater warming. The scientific consensus that this warming will occur is clear, regardless of uncertainty over what has caused the warming to date.

Fortunately, the consensus of world leaders is that we should not wait. Ministers and other representatives from 137 countries (including the United States) at the Second World Climate Conference last November declared that 'the potentially serious consequences of climate change, including the risk for survival in low-lying and other small island States and in some low-lying coastal and arid and semi-arid areas of the world, give sufficient reasons to begin by adopting response strategies even in the face of significant uncertainties, and called for negotiating an international convention on climate change by June 1992. The Ministers agreed 'the ultimate global objective should be to stabilize greenhouse gas concentrations at a level that would prevent dangerous anthropogenic interference with climate.'

Limits Exceeded

The implications of this objective were spelled out by the Stockholm Environment Institute (SEI) in a recent report on *Targets and Indicators of Climatic Change*. This report concludes that dangerous interference with climate can only be avoided if the rate of warming is kept to less than 0.1°C (0.2°F) per decade, and the absolute warming is kept to less than 1-2°C (2-4°F) compared with pre-industrial times. Warming greater than the lower limit of 1°C (2°F) 'may elicit rapid, unpredictable, and non-linear responses that could lead to extensive ecosystem damage,' 2°C (4°F) while beyond 'the risks of grave damage to ecosystems, and of non-linear responses, are expected to increase rapidly.' The world may already be committed to exceeding the lower limit. Even the upper limit is likely to be avoided only if immediate action is taken to cut emissions so that peak CO_2 concentrations are limited to about 400 parts per million.

The success of the upcoming negotiations must be judged on the progress made toward the critical objective of preventing dangerous climatic change.

ECO NEWSLETTER

This is the first issue of ECO newsletter, produced as a cooperative effort by the environmental NGOs attending the conference. ECO will accept contributions from delegates and others, and suggestions as to stories which should be covered or people who should be interviewed. ECO is produced at the National Wildlife Federation's Educational Facility in Virginia and can be contacted at (703) 790-4010/4012 or 4013. FAX (703) 790-4011.

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Continued from page 1, column 1

Washington yesterday, by introducing *America's Climate Change Strategy: An Action Agenda*. Environment groups welcomed the recognition in the glossy colored brochure that action to combat global warming is now needed. "The document represents a significant change in tone for the White House," said Scott Hajost of the Environmental Defense Fund. Environmental analysts point out that the US still plans for a large increase in CO_2 emissions, while the European Community is already planning a freeze by 2000 and subsequent decreases. The report states the Strategy will result in US greenhouse gas emissions in the year 2000 being equal to or below the 1987 level.'

Environmental organizations attending the Climate Convention Negotiations as observers particularly objected to the US practice of 'double counting' reduction in the greenhouse gas CFCs, which already has to be controlled under the Montreal Protocol. They point out that all CFC producing countries have agreed to phase-out these compounds because of their threat to the stratospheric ozone layer, and none of them, except the US proposes to claim this as a credit on greenhouse emissions. US CO_2 increases are disguised by 'double counting' the CFCs, say groups. One observer noted that if Germany did its accounting the way the US proposes it would be able to claim about a 40% reduction in greenhouse gases by 2005. "The kind of emissions stabilization that the US now plans will lead to increases in greenhouse gas concentrations and a commitment to massive global warming at a rate of 2-5°C over the next 100 years," says Dan Lashof of the Natural Resources Defense Council.

Energy

Previously the US has said that the National Energy Strategy (NES), being prepared by the Department of Energy, would be the forum for addressing CO_2 emissions from fossil fuel use. But the CO_2 reductions identified in the Climate Strategy amount to less than 40 million tonnes of carbon (under 3% of current emissions). This is, says Lashof, too little to significantly offset expected growth in US CO_2 let alone stabilize or reduce current emissions. Environmentalists conclude therefore that the NES will contain neither targets nor significant policy initiatives to cut CO_2. If this turns out to be true, when the NES is announced two weeks from now, the US will find it difficult to continue to criticize European countries for making commitments without specific implementation plans.

See also pages 4 and 5

ECO's Who's Who Guide to Environmental NGOs present at the negotiations

The Eco staff will keep this list up to date when new members join us.

Elizabeth Acheampong - FOE Ghana
Alexandra Allen - Greenpeace US
Paul Allen - NRDC
Gilbert Arum - Kenya Energy and Environment Organizations
Daniel Becker - Sierra Club
Ludmilla Georgievna Bogdan - SocioEcological Union (Russia, USSR)
Stewart Boyle - Greenpeace International
Guillermo Castileia - NWF
Liz Cook - FOE USA
Peter Cooke - Audubon
Eric Corens - FOE USA
Zsolt Csikor - Independent Ecological Center (Hungary)
David Doniger - NRDC
Lori Lee Dooledy - WRI
Navroz Dubash - EDF
Bill Eichenbaum - WWF
Ted Freeman - Sierra Club
T. J. Glauthier - WWF
Peter Gleick - Pacific Institute
Don Goldberg - CIEL
Debbie Good - EDF
K. S. Gopal - Deccan Development Society (India)
Mary Ann Gourley - Alliance to Save Energy
Emmy Hafild - WALHI (Indonesia)
Scott Hajost - EDF
Ralph Hallo - Stichting Natuur en Mileu
Marty Hayden - Sierra Club
Paul Hohnen - Greenpeace International
Robert Hornung - FOE Canada
Leigh Ann Hurt - WWF
Jennifer Jerdon - NRDC
Li Junfeng - China
Daniel Lashof - NRDC
Pene LeFale - Greenpeace International
Roni Lieberman - Sierra Club
Magda Lomabrdo - Forum of Brazilian NGOs to UNCED '92
Alicia Luchowski - Union of Concerned Scientists
Adam Markham - WWF International
Yasuko Matsumoto - Greenpeace Japan
Giovanna Melandri - Lega Per L'Ambiente
Alden Meyer - UCS
Jim Middaugh - EDF
Alan Miller - Center for Global Change
Richard Mott - WWF International
William Nitze - Alliance to Save Energy
Michael Oppenheimer - EDF
Kim Perzel - NRDC
Jirka Plaminek - Czechoslovakia
Rafe Pomerance - WRI
Eileen Quinn _ UCS
A. Atiq Rahman - Bangladesh Centre for Advanced Studies
Kilaparti Ramakrishna - Woods Hole Research Center
Richard Ramsey - Sierra Club
Bill Roberts - EDF
Annie Roncerel - Climate Network Europe
Chris Rose - Media Natura
Karen Schmidt - EESI
Carol Short - Consultant to Media Natura
Daniel Silverman - Sierra Club
Ken Snyder - Audubon
Fran Spivey-Weber - Audubon
Paula Steihle - Alliance to Save Energy
Marie Stetson - Worldwatch
Peg Stevenson - Greenpeace US
Jim Tamburro - Communications Consortium
Sherry Tiggett - NRDC
Emily Tynes - Communication Consortium
Fiona Wier - FOE
Carol Werner - EESI
Pamela Wexler - Center for Global Change
Brooks Yeager - Audubon
Durwood Zaelke - CIEL
Marybeth Zimmerman - ATSE
Sharon Zweig - NRDC

WHERE TO FIND THE ENVIRONMENT NGOs

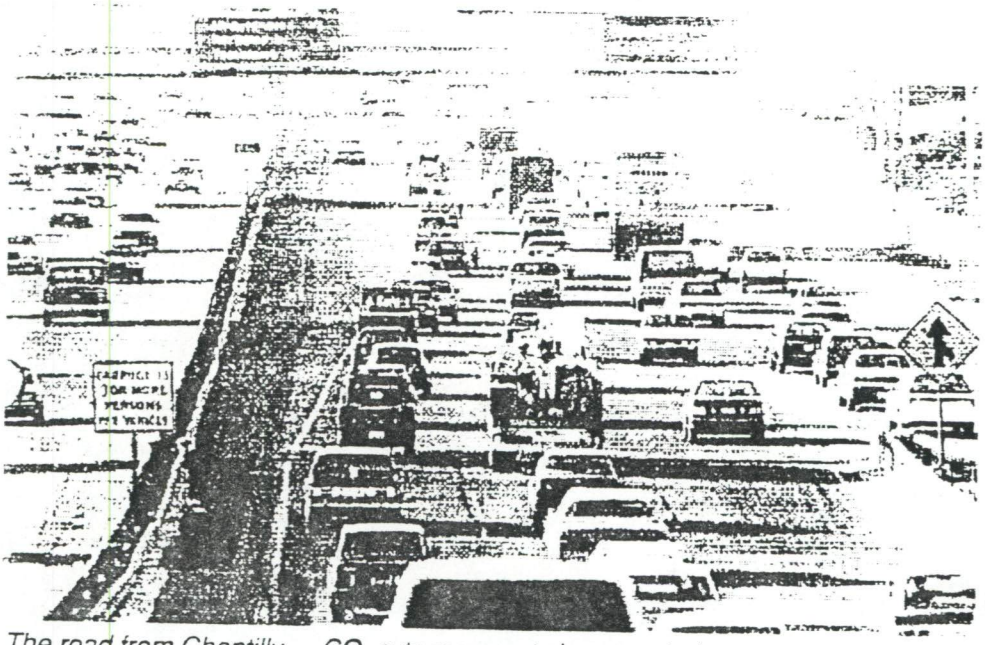
The nearly 80 NGOs (Non Governmental Organizations) who will be working at the Second World Climate Conference welcome the opportunity to speak with any and every Delegation, as well as print and broadcast media. Please call (703) 790-4010/4012 or 4013.

NGO NEWSLETTER

eco

7 FEBRUARY STATEMENTS ISSUE

Eco has been published by Non-Governmental Environmental Groups at major international conferences since the Stockholm Environment Conference in 1972. This issue is produced cooperatively by groups attending the Intergovernmental Negotiating Committee on a Framework Convention on Climate Change, Westfields Center, Chantilly, Virginia



The road from Chantilly — CO_2 cuts mean cuts in car emissions.

US COULD CUT CO_2 29-35%

By Eco Staff

A report by the Congresssional Office of Technology Assessment (OTA) due to be released today is expected to show that the United States could reduce its CO_2 emissions 29-35% within the next twenty five years.

The report is sure to embarrass the Bush Administration, which has claimed that significant CO_2 cuts are technically and economically impossible to achieve.

The OTA study Changing By Degrees: Steps To Reduce Greenhouse Gases, concludes that the 29-35% reduction can be achieved at minimal cost. The study shows that under a strong measures scenario, in which net CO_2 reductions are made almost entirely by emission reduction (with a small increase in the forestry sink), the net saving may be achieved at no net cost an estimated range of $20bn a year (i.e. a saving) to $150bn a year. The OTA was commissioned to produce the study by six Congressional Committees in 1988 and its findings will be certain to influence the content of several energy bills coming up in the next year.

Senate Majority Leader Attacks "Policy of Inaction"

By ECO Staff

On Tuesday February 6, the widely respected and influential US Senate Majority Leader George J. Mitchell launched a sweeping attack on US greenhouse policy calling the newly released government 'action plan', "an inaction plan."

For the Washington climate negotiations to be successful said Mitchell, "the United

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• This is an eight page Eco.

ISSUE NO 2 VOLUME LXXVIII FREE OF CHARGE

CLIMATE NEGOTIATIONS: NATIONAL POSITION STATEMENTS

ECO presents a special review by David Doniger of the highlights of the position statements by countries and organizations at the opening of the INC Climate Convention Negotiations.

Bert Bolin, Chairperson, IPCC:

"It is likely that the mean surface temperature will have risen 1.5-4 degrees C above pre-industrial conditions by the year 2030 if no preventive measures are taken. Further increases would also be unavoidable even if very drastic measures were taken."

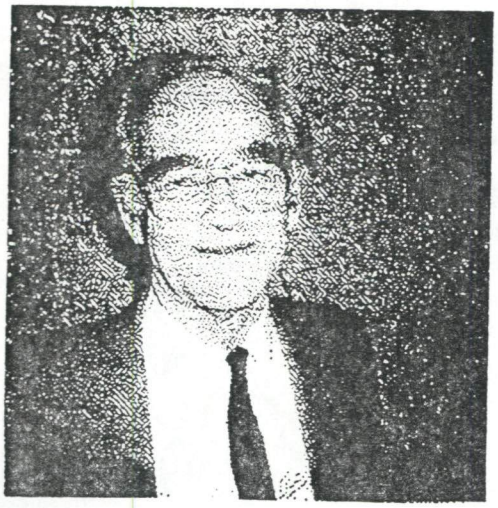
(Bolin noted that the CFC phase-out would reduce these increases by about 15%.)

"When a change of the global mean temperature has occurred, it would be with us for one or several centuries because of the inertia of the climate system."

"In a short term perspective, there may be winners and losers, but this would hardly be true in the long term. Also, developing countries would be more severely hit, particularly because of greater dependence of their own food production."

"The agreement to phase out the CFC gases by the turn of the century, reached within the framework of the ozone convention, should be reinforced by demanding the banning of all halogenated hydrocarbons that enhance the atmospheric greenhouse effect significantly."

"In view of the major role played by the carbon dioxide emissions due to fossil fuel use, it is important to reach agreement soon among industrialized countries to stabilize emissions by the year 2000. It should be emphasized that this is only a first step towards stabilizing atmospheric carbon dioxide concentration."



Professor Bert Bolin of the IPCC

Netherlands, for the European Community

"The incomplete understanding of the complexity of the scientific interconnections involved should not be used as a reason for postponing measures to combat global climate change."

"The Member States of the European community together will take urgent action to stabilize or reduce CO_2 and other greenhouse gas emissions. Stabilization of CO_2 emissions should in general be achieved by the year 2000 at the 1990 level. Accordingly, the Community urges once again other leading countries to undertake commitments along the lines I have mentioned."

"We are in favour of completion of the negotiations on a framework convention and related protocols before the 1992 UN Conference on Environment and Development."

"We recognize...the need for developed countries to assist developing countries to play their full part in an international response to climate change, through the provision of financial resources and the development and appropriate transfer of environmentally sound technologies."

Ghana, for Group of 77

"Seventy-five percent of the total carbon dioxide emissions is attributed to industrialized countries, who must bear a major responsibility in any international cooperation efforts to restore and protect the environment."

"Nor can developing countries stand aside from this endeavor, even if their contribution to climate change is relatively insignificant and largely induced by poverty."

"It is important that [developing countries] have access to environmentally sound technologies on favorable terms so that they can avoid the ruinous industrialization process experienced by the North."

"[A]n unbridled rush into industrialization in the belief that this by itself confers development...will be a clear factor in environmental degradation, just as avaricious and mindless consumerism, the propelling force in the so-called free market economies, has led to vast and at times irreparable degradation of the environment in the 'advanced' countries."

Determining the rights and obligations of countries "will require a delicate balancing act, to ensure that the differentiated capacities and responsibilities of each country or group of countries are properly reflected in the normative regime. The approach adopted in the Montreal Protocol with regard to developing countries' obligations could be an example."

Statements from Industrialized Countries

Germany

"We as developed countries are contributing substantially to the accumulation of these trace gases in the atmosphere and are therefore responsible for the resulting damage."

"It cannot be denied that without the comprehensive participation of the developing countries.... it will be impossible, even if the developed countries make the greatest efforts they can, to reach the objective of protecting the earth's atmosphere."

"We must...declare our willingness as developed countries to give necessary support and thus share the responsibility for conserving natural resources in developing countries, too. Environmentally compatible technologies and products that use energy and raw materials sparingly must be developed and made accessible to these countries, too. Adequate financial support is required. The Federal Republic of Germany is willing to help here."

Based on 'the precautionary principle,' FRG favors a convention and protocols addressing three specific areas by June 1992:

On energy-related CO_2:

"We believe it is necessary to stabilize global energy-related CO_2 emissions by the year 2000 at their 1990 levels, and to achieve initial reductions for 2005 and 2010."

"The economically strong developed countries must, we believe, take immediate and decisive measures to stabilize and reduce CO_2 emissions."

"Developing countries should accept the obligation to strive for more efficient energy use in their economic activity and thus for a limitation of their emissions."

On forests:

"A Convention and protocol should require the maximum possible conservation of forests lowering the annual deforestation rate with the final objective of stopping any forest destruction."

On adaptation:

"The climate convention and a supplementary protocol should also provide for an obligation to develop strategies and measures to reduce climate-relevant damage - for example, in the fields of coastal protection, agriculture, nature conservation, soil protection, water protection, and protection of human settlements."

United States

"The United States strongly believes an issue such as climate change can only be addressed effectively using a comprehensive approach, one which considers all sources and sinks of all greenhouse gases."

"A cornerstone of [the US domestic] strategy is a series of actions to which we are committed; actions that will result in US greenhouse gas emissions in the year 2000 being equal to or below the 1987 level."

The US strategy consists of "actions that are justified in their own right," i.e., only actions deemed justified without considering climate change.

US indicates its preference for a "framework convention" by 1992, with only "subsequent legal instruments."

The US position on new financial assistance is unclear. The US stated only that "the framework convention should include financial assistance to developing countries to study and address climate change. We also believe that existing bilateral and multilateral financial assistance mechanisms and, in particular, the newly established Global Environmental Facility in the World Bank are the appropriate mechanisms for providing such assistance." The US is prepared to support "country studies to define appropriate technologies to reduce greenhouse gases."

Japan

"It is time to embark on the implementation of all feasible measures without delay and to establish a global response strategy.... [N]o one can challenge the very necessity of taking immediate action."

"Japan has achieved high energy efficiency and promoted the development and use of non-fossil fuel energy sources. Last year, moreover, Japan formulated the Action Program to Arrest Global Warming, which set a concrete target to stabilize the emission of carbon dioxide." Japan's target is to stabilize per capita emissions.

"To enhance the response capability of developing countries, the convention should provide for special assistance to developing countries, while requiring them to take necessary measures."

Japan's position on substantive protocols is unclear: "We also suggest any concrete measures which can be agreed upon during the course of negotiations of the convention should be implemented without delay."

Finland

"It is natural that the main responsibility for stabilizing and reducing the greenhouse gas emissions lies with the industrialized countries. However, we should not lose our sight on the long term objective of stabilizing the greenhouse gas emissions at a global level without impeding our possibilities for social and economic development. The maintenance of and the increase of the sinks, in particular of the forests, should be another global obligation, in order to achieve the ecological balance."

"Finland [is] ready to study various financial mechanisms enabling developing countries' participation in the implementation of the Climate Convention."

Switzerland

Switzerland has decided "to stabilize, as a minimum first step, emissions of carbon dioxide at 1990 levels by the year 2000, and to reduce them thereafter. We also announced our intention to introduce a tax on carbon dioxide emissions, and we are currently assessing the feasibility and costs of cutting these emissions 20 percent by 2005 and 50 percent by 2025."

"Switzerland supports the concept of additionality with regard to the financial resources to be provided to promote full participation of developing countries in the international effort to protect the global environment."

"We simply cannot afford to wait until the framework convention is completed and adopted before negotiating on quantitative objectives and specific obligations and schedules.... Protocols on these priority issues, such as CO_2 emissions and sustainable forest management, should therefore be negotiated simultaneously with the convention and completed at the same time."

Denmark

"[W]e would have failed to respond to the calls for urgent action if by June 1992 we were to present merely an outline of possible future strategies." Denmark supports "a general process-oriented framework convention covering all greenhouse gases and all sources and sinks and containing some specific obligations in regard to stabilizing carbon dioxide emissions and protecting crucial carbon dioxide sinks and reservoirs."

"Denmark has nationally already set herself specific targets, such as a stabilization of carbon dioxide emission at present levels before the year 2000 and a 20 percent reduction by the year 2005."

Sweden

"The industrialized countries, therefore, have a special duty to perform in the reduction of climatic impact. As a first step, total carbon-dioxide emissions from industrialized countries should not exceed present levels by the year 2000."

"The developing countries are particularly exposed to climate change...the Swedish

Continued on page 4, column 2

Continued from page 3, column 3

government is therefore ready to contribute to the special voluntary fund."

CADILLAC ROAD

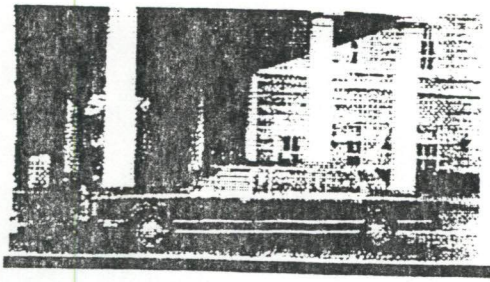
Outside the Westfield Centre sits a stretch Cadillac. It is not stretching a point to say that it is part of the problem. Presumably it sits there because it is good for business. The fact that the Centre has attracted the business of the United States Government goes to show that it works.

There could be no more elegant expression of the gulf between the United States and the victim countries who everyone now expects to bear the brunt of climate change induced by the Cadillac economy. America still faces the prospect of global warming with equanimity. Cadillacs are still the preferred way to get to Westfield Chantilly, and you can't get there by public transport because the United States doesn't consider it important.

We must assume that it is an unintended irony that the US Government has chosen to locate the world's first negotiations on the most serious ecological crisis which the world community has ever faced, in a place which is a 3D example of how the crisis is perpetuated.

Everyone drives to Westfield of course: it is a case of when in Rome, do as the Romans do. It is not, sadly, a case of fiddling while Rome burns, for although States in the Gulf of Mexico are experiencing ten times their normal rainfall while California is running out of water, the US has the wealth to absorb climate impacts. It is Tuvalu that will sink beneath the waves: when Washington warms uncomfortably in February, it simply turns on the air conditioning and Tuvalu sinks that bit faster.

We hope that this is the last Cadillac conference venue for climate negotiations. Right now the US still suffers 'cognitive dissonance' over climate change impacts - it simply cannot conceive that the threat is real and that it too is threatened. So far it could not even be argued that the US suffers from the 'do as I say, not as I do' syndrome, for America is still on the Cadillac road.



Australia

"Our decision last year to adopt an interim planning target of stabilizing emissions of greenhouse gases not controlled by the Montreal Protocol at 1988 levels by 2000 and reducing them by 20 percent by 2005 is clear evidence of our commitment."

"Australia believes that the Convention should establish a target for greenhouse gas emission reductions. In this way, countries participating in the Convention will have something specific to aim for. Australia supports the adoption of the Toronto target as a global target."

Hungary

"In Hungary the yearly carbon dioxide emission per capita in tons of carbon is 2.4, which is about two times higher than the world average. As in some other central and eastern European countries this emission is partly due to the inefficient energy use and production. This comes from an economic system in which energy saving is not an important issue. After political changes in the country, we would like to renew the efficiency of our economy, which hopefully will also reduce the emission of greenhouse gases. Taking into account our present situation and the cost of necessary changes, Hungary is interested in up-to-date technology transfer."

Austria

"Industrialized countries...have...contributed disproportionately to the causes of global warming [so] in Austria the federal government in its Energy Report 1990 has formally decided on the national target of a 20 percent reduction of carbon dioxide emissions — on the basis of 1988 levels."

Austria supports "parallel negotiations on the framework convention and on protocols, the latter defining such commitments in a detailed and binding manner. Both the convention and the relevant protocols are to be finalized and ready for signature at UNCED in June 1992."

"[N]uclear energy cannot be the answer in the quest for an overall or even large-scale substitution of energy from fossil fuels, given the safety hazards and the non-proliferation aspect inherent to this energy source....The potential of new and renewable energy sou is known to be enormous and under impr circumstances they could already now contri to a much greater extent to the world en supply."

Norway

"The predicted effects of climate cha require action without delay both on national and international level. The convent should contain firm commitments to l greenhouse gas emissions. As a first s developed countries] should achieve stabiliza of CO_2 and other climate gas emissions covered by the Montreal Protocol at 1989 le by the year 2000. The convention should develop instruments, and define standard enhance the protection of the atmosphere monitor compliance."

"The convention must contain the princi that countries which have to bear an abnorm or special burden, in view ... of their developm and actual responsibility for the problem, s receive fair and equitable assistance throu new and additional technological and finan transfers."

Canada

Canada's Green Plan "includes measure address global warming based on stabiliz emissions of carbon dioxide and other greenhou gases not controlled by the Montreal Proto at 1990 levels by the year 2000 as a first ste

"We have enthusiastically supported t development of a strong convention containi targets and schedules and the expeditio development of other related instruments."

"Canada does not advocate inaction whi waiting for all the answers. Our philosophy guided by a respect for nature. If we are to e it should be on the side of the environment

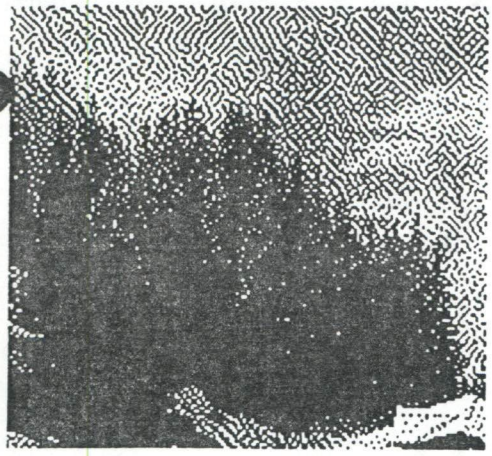
Developing Country Statements

Republic of Nauru

"We feel that a weak climate convention — one that lacks effective commitments an specific timetables — would be worse by fa than no convention at all. The illusion progress will sap the will for genuine progress.

Antigua and Barbuda

"[O]ur terrible fear is that an unprecedente rise in sea-level stemming from global warmin



would destroy our beaches, swamp our agricultural lands, annihilate our fish breeding grounds, cause our air and seaports to become submerged, and threaten our population with isolation and starvation."

"The calamitous results of global warming will have been generated by large, populous and primarily industrialized countries; but the major victims may likely be innocent, non-contributing low-lying coastal states and small island-countries incapable of adjusting after the deluge."

"Small island countries will be the foot soldiers in this battle against time. Mr. Chairman, my country does not choose to be a conscientious objector; we encourage the industrialized countries 'to gird [their] loins and join the battle' also."

St. Lucia

"A 'business as usual' scenario would wreak environmental and economic havoc upon St. Lucia. Rising sea-level would inundate the vast majority of the arable land, which produces 50 percent of our exports and upon which nearly 50 percent of our people are dependent for their livelihood."

"We seek a comprehensive, effective and equitable convention which would commit states to take the measures necessary to prevent climate change while there is still time. We have now an opportunity to begin to take the hard actions necessary to ensure that the possibility of calamity is avoided."

"St. Lucia believes that the convention should address three substantive objectives: setting targets, establishing compensatory mechanisms, and improving information. The first objective is that the convention should be based on a genuine commitment to the precautionary principle, translated into significant reduction in emissions from industrialized countries of all greenhouse gases, and especially carbon dioxide, by the year 2000."

Thailand

For development "to be sustainable, the common people must receive direct benefits from national projects of climate change ... For example, in tropical countries, afforestation with proper land use management should be emphasized both for the enlargement of carbon sinks as well as serving as a means of employment to augment the income of the rural poor."

Indonesia

"[I]t is only fair to expect that those countries who have been the major source of emissions resulting in the accumulation of greenhouse gases in the atmosphere should bear the lion's share of the responsibilities for redressing them. The developing countries should not be penalized for the development excesses of the industrialized countries."

"[E]nvironmental protection must be viewed as an integral part of the developing process and must not be considered in isolation from it. It is therefore of crucial importance that the mobilization of new and additional financial resources as well as ensured access to, and the transfer of environmentally sound technologies on concessional and non-commercial terms without imposing any forms of conditionality must be pursued."

India

"[I]t is now well-recognized that the principal sources of emission of pollution into the environment lie in the developed countries... these countries have the main responsibility for combating such pollution."

"While there can be no legal obligation for developing countries, they do have a certain moral duty to pursue environmentally sound and energy-efficient policies.... Furthermore, developing countries should consider taking additional steps to reduce the rate of increase of their per capita emission levels of greenhouse gases, without prejudice to their national developmental objectives, to the extent that any additional expenditure involved is met by the transfer of adequate, new and additional financial resources, and provision of appropriate, environmentally sound technologies."

"Transfer of developing countries of environmentally benign and energy-efficient technologies on preferential and non-commercial terms is also not only important but urgent. Environmentally benign technologies should not become simply another source of commercial profit."

China

"Although China's level of GHG emission per capita amounts to merely less than 1/10 of the developed countries, we have adopted positively all measures within our means to minimize the growth rate of our GHG emission. These include family planning to control the population growth rate, implementation of nationwide afforestation programmes, development of hydropower, geothermal power, wind power and other clean sources of energy, and control of the production and use of substances that deplete the ozone layer."

"[T]the framework convention should...set forth general principles concerning climate change and general obligations...preparing the ground for...a legal regime for the protection of global climate and furnishing the organizational framework for negotiating related protocols...."

Republic of Vanuatu

"For us, the precautionary principle is much more than a semantic or theoretical exercise. It is an ecological and moral imperative. We trust the world understands our concerns by now. We do not have the luxury of waiting for conclusive proof, as some have suggested in the past. The proof, we fear, will kill us."

"It is difficult to overstate the sense of urgency that small island and indeed, all low-lying and coastal countries, feel about excessive and accelerated climate change. If, as predicted, the sea level rises, our already limited lands will be flooded and become uninhabitable. If, as predicted, the sea rapidly warms, our coral reefs will bleach and die. Valuable and life-sustaining ecosystems will also perish. The world will then undoubtedly be faced with a massive surge of environmental refugees. The problem may first hit the smaller, more vulnerable countries, but it will never be confined within any one country's boundaries."

"Obligations should be set forth in the primary instrument rather than in subsequent protocols...."

Eco says thanks to National Wildlife Federation for office space.

US Reservations Over World Bank Control of Climate Funds

By Eco Staff

Nine US environmental organizations have raised 'serious reservations' about the World Bank's capacity to run the Global Environmental Facility (GEF), a roughly $1.5 billion fund intended to finance projects to deal with global environmental issues, including climate change. The groups are concerned that the GEF may be a poor vehicle for the major "climate fund" expected to be established alongside any climate convention.

The environmentalists' criticisms focus on the poor environmental record of the Bank's existing loan programs, in sectors such as energy, forestry, agriculture and water development. In a letter sent to Patrick Coady, US Executive Director of the World Bank, the groups say they are 'deeply concerned' that the Bank's current development loans 'threaten to undercut possible benefits arising from the GEF.' The letter also criticizes the Banks' failure to work and share information with local communities and environmental groups.

Citing these concerns, the groups praise the US decision to support the GEF through 'parallel' bilateral financing. The groups believe that working with other aid agencies on the GEF may help the Bank reform flaws in its existing loan programs. They urged the US government to consider the pilot GEF as 'a three year test of the Bank's ability to reform its existing programs and manage special environmental funds.' The groups want 25% of Bank energy loans devoted to end-use energy efficiency by 1993.

They propose that any future US contributions to the GEF or 'subsequent environmental facilities at the Bank' should be contingent on the Bank's progress in the following areas:

• Access To Information. The Bank should correct flaws in its existing environmental assessment policy, particularly its failure to require public participation in environmental assessments. The Bank should also ensure that all GEF projects are subject to thorough environmental assessments for potential local impacts.

• Energy. The Bank should expand its expertise in, and lending for, end-use energy efficiency. As a result 25% of Bank energy loans should be devoted to end-use energy efficiency by 1993.

• Forests. The Bank should establish conservation of biological diversity as a central priority for regular lending. The Bank should also not support commercial logging operations in primary tropical forests until ecologically sustainable management systems have been implemented.

The letter was sent on behalf of:
Bank Information Center, Environmental Defense Fund, Friends of the Earth, Greenpeace, National Audubon Society, National Wildlife Federation, Natural Resources Defense Council, Sierra Club, World Wildlife Fund.

Scott Hajost from EDF

VIEW FROM TUVALU

INDONESIA

Report by Emmy Hafild

Indonesia is a large country: an archipelago of 13,000 islands. It contains the second largest tropical forest after Brazil. Its population is the world's fifth largest, at 179 million, 60% of which live in Java. Its per capita income has reached US $550 in 1990 — the result of recent economic development. As with other developing countries, its development is greatly dependent on its natural resources.

Oil and Liquid Natural Gas exports represent the greatest share (about 70%) of Indonesia's foreign income, followed by timber exports, cash crops, textile and manufactured goods. Revenue from oil exports, however, will soon be swallowed up by a 17% growth rate in domestic demand for fossil fuels. Electricity needs in the year 2000 will be 27,000 to 32,000 megawatts, while the capacity to meet this demand is projected to be only 20,000 megawatts.

Timber production has exploded over the years. From 1968 to 1989 timber cuts have increased from 5.4 million cubic meters to 33 million cubic meters, bringing in over US$4 billion and creating an estimated 3.5 million jobs. Areas designated for timber production represent about 55.4 million hectares (123 million acres) of over 570 logging concessions.

Timber production, along with expanding agriculture to feed Indonesia's growing population, accounts for the bulk of the 1.3 million hectares estimated to be deforested each year. (FAO Forestry Study, 1990). Together, rapid industry growth and deforestation make Indonesia the ninth largest contributor of CO_2 according to WRI data.

This makes Indonesia unique in the global warming context: its main income comes from the two predominate sources of CO_2 concentration in the atmosphere, fossil fuel and timber exploitation. Its economic development will result in further substantial contribution to global warming.

While it is by no means the country most vulnerable to changing sea level, rising seas will greatly affect Indonesia's coast

line. Other possible adverse effects include increased rainfall in the wet season, reduced water in dry season, water scarcity in dry areas, and migration of millions of people from coastal communities.

The Indonesian government acknowledges that the magnitude of global warming will require global action, yet it denies that its deforestation contributes to global warming. Instead it reasons that since high concentrations of CO_2 in the

Emmy Hafild

atmosphere result from developed countries' emissions, they should bear the lion's share of the responsibility. The government also maintains that countries such as Indonesia have the right to use their forest for the welfare of their people, and that developed countries must not tell the Indonesians how to use their forest.

What the Indonesian government says is true in part. Indonesia's per capita emissions are one third those of UK or Germany and its contribution to current elevated concentrations still less. Yet, global action to combat warming is needed now. Rightly, the whole global community is pressing the US government to take its responsibility to curb its CO_2 emissions, but developing countries also must commit to containing their projected growth in CO_2 emissions.

If Indonesia has to cut its timber exploitation, it will lose US $4 billion in foreign exchange. Protectionist policies in developed countries limit the economic options of developing countries. This is one of the reasons Indonesia is so dependent on timber. The removal of trade barriers and financial and technical assistance are needed if developing countries are to protect their forests and make the transition away from timber dependent economies. If Indonesia commits to a cut in forest exploitation, who will compensate for the loss of income?

Emmy Hafild is with WAHLI, Indonesia

Germany's CO_2 Reduction Plan

By Eco Reporter

On November 7, 1990, the German Federal Cabinet agreed on a national CO_2 reduction programme for climate protection. The programme allows Germany to cut emissions by some 300 million tonnes (25% of the 1987 emissions) over the next 15 years.

The reductions will be achieved by a complete review of existing law in the energy and transportation sectors.

1. Relevant ministries will draft legal proposals for CO_2 reductions by sector. This might involve instruments such as a climate protection tax, permits and compensation mechanisms (the Federal Minister of Economics has been instructed to prepare a draft law to this end).

2. The Federal Minister of Economics has been instructed to amend the Energy Management Act. This will now give a high priority to ecological aspects now as well as energy policy objectives (including increased use of district heating).

3. Regulations on energy efficiency and emission control will be amended (the Ordinance on insulation, Ordinance on heating installations and Ordinance on small incineration plants).

4. The Ministry of the Environment will propose an Ordinance on heat utilization (maximizing waste heat discharged into the environment).

5. The Ordinance on Large Combustion Plants will be rapidly amended and implemented, in order to achieve more efficient coal use. The latest technical information on gas and steam turbine lignite fired power plants will be provided by the Ministry of Research and Technology, in order to reduce emissions.

6. Technical improvements will be introduced in order to reduce CO_2 emissions from vehicles. It is expected that as a result, the cars registered in 2005 will on average use 30% less energy than comparable vehicles in 1987. The Federal Cabinet is calling for a voluntary agreement in this area and is willing at the same time to propose a directive on limiting CO_2 emissions from vehicles at European Community level.

Increasing rail traffic for passengers and freight is recognized to be of primary importance.

7. 5-10% ethanol and rape seed oil will be added to diesel to reduce emissions.

8. Efforts to exploit the contribution of renewables will be reinforced by easing their access to the market.

9. Legal provisions implementing the Federal Waste Act (waste avoidance and reduction) will be increasingly applied.

10. Education, training and information for small and medium size companies will be improved to promote measures to save energy. The use of financing by third parties will be increased.

11. The considerable possibilities for reduction in CO_2 emissions in what was East Germany will be examined. Economic reconstruction will lead to an increase in energy efficiency.

Speaking to Eco in Chantilly on Tuesday, German Parliamentary State Secretary Herr Schmidbauer stated that he was fully aware that every country is not in a position to take all these measures. However, he also stressed that the "precautionary principle calls for an obligation to take immediate action."

Herr Schmidbauer said that governments are now at a turning point: after producing many official statements, they must now have to show their determination and work on solutions to the problem. Less developed countries he said are also well aware of the problem. They realize the impact that will have, climate change and industrialized countries should certainly not have an arrogant attitude toward them. According to Schmidbauer, the US government has changed its attitude since the Second World Climate Conference in Geneva, and the publication its strategy indicates American willingness to take the climate problem seriously.

The State Secretary is however disappointed with the Nordic countries who surprisingly seem to have changed their mind about serious carbon cuts. His hope is that people from the Nordic countries sent to Chantilly will have to change their attitude when politicians deeply involved in issues ask them to deliver.

According to Schmidbauer, he had yet to hear that the American Government could not accept the German position. The work of the IPCC he noted, was "extremely valuable," and Working Group in particular should remain a valuable tool in the negotiating process. Real negotiating groups have, he said, yet to be created. Stressing the need to avoid isolating any bloc of countries, Herr Schmidbauer noted that the European Community had developed a European "bubble" strategy, such burden sharing could be applied worldwide.

States must take a leadership position. We can and must demonstrate to the world that we are leaders in environmental protection." But he warned, in reality the US stood out in two ways. "First, we are among the most wasteful nations on this planet. We contribute 20% of the world's global warming commitment. We use 15 times the energy per person that a typical developing country uses and twice that of some industrialized nations, such as Japan, France and Italy."

Second, added Mitchell, "the US is alone among industrialized nations in opposing even the concept of setting an emissions target and deadline. Austria, Australia, Canada, Denmark, France, Germany, Italy, Japan, The Netherlands, New Zealand, Norway and Sweden have all proposed limitation targets in greenhouse gas emissions."

"Ignoring this problem," said the Senator "will simply make it worse."

A Device For Delay

Drawing sharp contrasts with action to try and prevent cancer hazards or tackle toxic waste despite remaining scientific uncertainties, Mitchell accused the US of double standards over its "call for certainty" on global warming. "It is not a standard we meet in any other legislative field," he pointed out. "In this instance, it is a device for delay for those unwilling to act."

"It is especially ironic," said Mitchell, "and potentially dangerous, that this argument is being raised in connection with what is the most serious, far-reaching and irreversible environmental danger the world faces."

Pointing to the long lifetime of CFCs, Mitchell also reminded legislators that "It took this Congress 10 years to enact amendments to the Clean Air Act. It will take the Environmental Protection Agency and the states 10 to 20 years to fully implement clean air legislation enacted last year." If action on global warming is postponed, he argued, "we may find we eliminated the choice which, in retrospect, would have been the prudent, cost-effective course of action."

"An Inaction Plan"

Mitchell reserved his sharpest criticism for the administration's glossy new publication America's Climate Change Strategy launched Monday at the negotiations on a climate convention.

"Delay reduces our options and increases the final cost of action," said Mitchell. "The President should have announced a bold initiative to address this global environmental problem. Unfortunately, his Administration's so-called "action plan," announced yesterday, is in reality an "inaction plan." The Administration's statement of policy is positive in that it recognizes that global warming demands a solution. But, the Administration fails to offer any solution. In this policy area, the Administration has chosen to follow, not lead."

• Mitchell's criticism is only the latest in a growing line from domestic and international observers. As long ago as 1987, the US Congress asked through the Environmental Protection Agency for the President to propose a national policy on climate change to the Congress. To date there has been no sign of such a policy and informed observers are generally agreed that America's Climate Change Strategy does not constitute such a policy.

Part of the problem

OIL PRODUCTION SPILL THREAT

The world's largest oil spill, from the war in the Persian Gulf, threatened to force a close down of production from offshore wells, UPI reported last night. The spill now comprises an estimated 7 million barrels or 294 million gallons, and according to the Saudi government wildlife commission, has caused "heavy losses" of marine species.

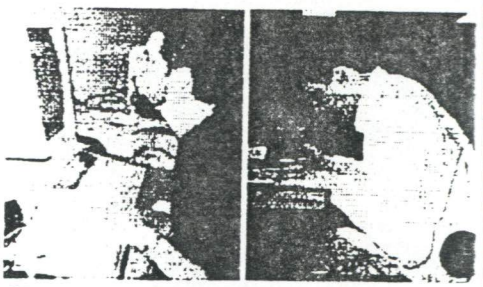
INVITATION

8:00 pm, Thursday, February 7
Lincoln Forum, Westfields

Benchmarks for a Climate Convention and the Role of NGOs

A short video will be presented followed by a panel discussion. We are anxious for an open exchange between country delegates and the diverse group of NGOs participating in the conference. The panel:

Zsolt Csikor - Independent Ecological Center (Hungary)
Emmy Hafild - WALHI (Indonesia)
Daniel Lashof - Natural Resources Defense Council (USA)
Pene LeFale - Greenpéace International
Kilaparti Ramakrishna - Woods Hole Research Center



Some of the Eco staff. Left: Peter Cook. Desktop Publisher. Right: Ken Snyder o: Audubon.

ECO NEWSLETTER

This is the second issue of ECO newsletter, produced as a cooperative effort by the environmental NGOs attending the conference. ECO will accept contributions from delegates and others, and suggestions as to stories which should be covered or people who should be interviewed. ECO is produced at the National Wildlife Federation's Educational Facility in Virginia and can be contacted at (703) 790-4010/ 4012 or 4013, FAX (703) 790-4011.

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CLIMATE NEGOTIATIONS WASHINGTON — NGO NEWSLETTER

eco

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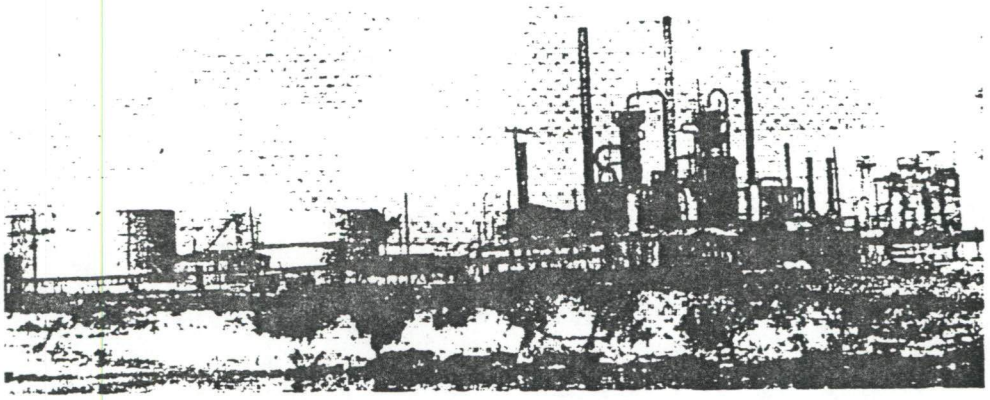
FEBRUARY
ENERGY
ISSUE

Eco has been published by Non-Governmental Environmental Groups at major international conferences since the Stockholm Environment Conference in 1972. This issue is produced cooperatively by groups attending the Intergovernmental Negotiating Committee on a Framework Convention on Climate Change, Westfields Center, Chantilly, Virginia



FORTY SENATORS ATTACK US ADMINISTRATION OVER GLOBAL WARMING

By Eco Staff

Forty US Republican and Democratic Senators launched an assault on the US Government policy on climate change yesterday, in a resolution which criticized America's inaction at the climate convention negotiations taking place near Washington.

US environment groups at the climate negotiations welcomed the resolution. "The Senators declared that the Bush Administration's inaction on global warming is unacceptable. While the White House is stalling, the Congress is moving to fill the vacuum," said Daniel Becker, director for Global Warming at the Sierra Club.

Senate Majority Leader George Mitchell (D-ME) introduced the resolution stressing the dangers of global warming and criticizing the Administration for failing to set targets and timetables to reduce CO_2, the major greenhouse gas.

The same day the Congressional Office of Technology Assessment released a study showing the US could cost effectively reduce CO_2 emissions by up to 35 percent by 2015.

"While the White House is trying to distract attention from its inaction by taking double credit for phasing out CFCs, we welcome Senators' resolve that a climate convention must be more than an empty shell, and contain real commitments to cut CO_2 emissions," said Daniel Lashof, senior scientist at the Natural Resources Defense Council.

Michael Oppenheimer, senior scientist at the Environmental Defense Fund added "We are encouraged by the Senate resolution. President Bush should be leading the world in the fight against global warming instead of continually playing catch-up ball."

Bangladeshi Scientist Speaks on Behalf of World's Environment Movement

By Eco Staff

Dr. A. Atiq Rahman, a chemist and climate issues analyst from the Bangladesh Centre for Advanced Studies yesterday presented a statement on behalf of more than 40 environmental Non-Governmental Organizations in the Climate Action Network, to government delegates gathered in Chantilly near

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• *This is an eight page Eco.*

ISSUE NO 3 VOLUME LXXVIII FREE OF CHARGE

The Task Ahead

Extracts From a Speech by Dr. Mostafa Tolba, Executive Director of UNEP, the United Nations Environmental Programme, at the Launch of the Washington Climate Negotiations.

"The task ahead is formidable. I do not for one moment underestimate it. I am not here to tell you what you should be doing. That is your own responsibility. The world's scientists have now given us a cool appraisal of the threats we are facing.

The Second World Climate Conference has told us that without appropriate and coordinated action, global temperatures are likely to increase between 2 and 5 degrees Celsius over the next century. We also know that this prediction excludes the likely feedbacks as the earth's natural systems react to this unaccustomed warming. Scientists say there is a good chance that the warming could be greater than has so far been predicted.

Mounting Evidence

The mounting body of evidence of global warming and climate change gives urgency to your negotiations. As the international scientific community itself has said, the remaining uncertainties should act as a spur, not a restraint.

There is much action that could be started now. The Scientific session of the Second World Climate Conference reported that there are technically feasible and cost-effective technologies existing now, which could reduce carbon dioxide emissions from the energy sector by at least 20 percent in most industrialized countries by 2005. A 20-30 percent reduction in methane emissions is also feasible. We have already embarked upon the road of phasing out CFCs, because of their role in depleting the ozone layer.

Global Survival

We should be under no illusion about the overall costs of this exercise in global survival. Long-term, the costs will be enormous. Trillions of dollars may be needed to approach anywhere near the goal of stabilizing the atmosphere. Yet I firmly believe the cost of inaction will be much higher. Indeed, inaction could quite literally cost us the earth. Action may not be as painful as some calculations suggest. It will be much less painful if we put real effort into developing better technologies. During consultations. I held recently in London with a number of top-level economists and energy analysts, it was indicated that over the next 10 to 15 years, many actions that reduce greenhouse gas emissions could be undertaken at negligible cost, through use of cost-effective technologies which are already available. A number might be of actual economic benefit. In the longer term, the costs of more extensive abatement measures would rise. At that stage, it could be one-two percent of global GDP. But none of the studies suggest that dealing with the greenhouse effect could conceivably mean a halt to economic growth.

These consultations also confirmed that present calculations of the costs of action do not take into account the costs of inaction - the costs of the damage we continue to inflict on our environment.

Leadership

In spite of the lack of concrete costings, individual nations are courageously taking steps now to reduce emissions. But any solutions to this global problem requires a global approach. It is up to you to come up with realistic targets and schedules, reflecting equitable economic and political agreements. We expect you to clearly state that your negotiations are not a substitute for action and action now. The lead must come from those who contributed most of the greenhouse gases, the industrialized countries. Negotiations, adoption, entry into force and implementation of the Convention will take time. The 1992 Conference on Environment and Development should not only receive the results of your negotiations but also reports on the fast-track actions already taken.

There can be no avoidance in your negotiations of the two core issues — costs, including additional resources needed — and transfer of technology.

Industrialized nations have no choice: without the full and equitable participation of the developing nations, our common atmosphere cannot be saved.

When you consider dealing with the causes of the problem you will find it imperative to bring into focus issues of commodity prices, international terms of trade, and other economic parameters. Sources of funding to meet the additional resources needed by developing countries to leapfrog the use of polluting technologies will bring in issues of carbon charges, users fees, debt relief, tradeable permits and other innovative means. Any actions the developing world is expected to take to protect our common environment should not have punitive effects on their vulnerable economies or act as an impediment to their badly needed development. And the decision making processes under the convention must be based on equity between North and South.

Pious words about the danger and the need to act will not save our planet.

The two key words in the General Assembly Resolution setting into motion your negotiations are 'effective and commitments.' This is what the General Assembly expects the Convention you are starting to negotiate to do.

A convention dealing with climate change could and should be much more aggressive than the Vienna convention.

Goal: A Safe Level

What is needed is a convention which stipulates what must be done, by whom, when, how, and at what cost. The goal of the convention — as the ministers from almost 140 countries said at the climate conference in Geneva last November — should be to hold greenhouse gases in the atmosphere at a safe level. The convention should set achievable targets for energy efficiency and for afforestation. On the latter issue, the relation with other treaties current or planned: Timber Trade, Biodiversity and FAO Forest Conservation and Development should be clarified. The Convention should certainly include concrete commitments on how the industrialized world is planning to ensure full partnership with the developing world. What we are talking about here is partnership — global partnership."

Dr. Mostafa Tolba

Canada: Global Leader on Global Warming?

David McRobert, environmental lawyer with Pollution Probe in Toronto, Ontario, examines Canada's position on the global warming issue.

Canada has worked hard to portray itself as an international leader on environmental issues. A new US government publication, *America's Climate Change Strategy: An Action Agenda*, confirms that this is the case with respect to global warming.

The Canadian maple leaf hangs proudly over several of the multicoloured charts found throughout the publication. Canadians are identified as clear leaders in the Group of Seven in the following categories: emissions of carbon dioxide per unit of GDP, energy consumption per unit of GDP, and growth in carbon dioxide emissions between 1973 and 1988. Canada also is shown to have the Group of Seven's lowest improvement in the industrial energy use/gross product originating (GPO) ratio between 1977 and 1986. Opening statement to the climate change negotiations, presented by the Head of the Canadian delegation, Barry Mawhinney, neglected to mention Canada's leadership role. Instead, the speech confirmed that in the fight against global warming, Canada is clearly middle of the road. Despite the fact that Canadians are the planet's energy gluttons, Canada has only made a commitment to stabilize its emissions of carbon dioxide at 1990 levels by the year 2000. Countries that already use their energy far more efficiently have made significantly stronger commitments, agreeing to cut carbon dioxide emissions by as much as 25%. Canada can clearly do much better.

Studies have shown that improved energy efficiency and energy conservation could take Canada most of the way to a 20% reduction in carbon dioxide emissions by the year 2005. Many of them have demonstrated that such measures would save Canadians billions of dollars every year in energy bills. Even so, the Canadian Environment Minister has stated that Canada will not move beyond its stabilization commitment until the entire international community does so. In his statement, Mawhinney spoke glowingly of Canada's Green Plan and the measures it proposes to fight against global warming. These measures, according to the Plan itself, will not be enough to allow Canada to even meet its stabilization commitment.

NRDC: The Natural Resources Defense Council

NRDC — the Natural Resources Defense Council — is a non-profit public interest organization dedicated to protecting the global environment and preserving the Earth's natural resources. Its headquarters is in New York City. Other offices are in Washington, DC, San Francisco, Los Angeles and Honolulu.

NRDC was formed in 1970. It is staffed by more than forty attorneys, thirty scientists and resource specialists and several experts in publishing and communications. NRDC has 160,000 members. Those members and more than 200 foundations provide NRDC with its annual budget of approximately 15 million dollars.

NRDC is more than a non-profit law firm for the environment. The staff and trustees work directly with the US Congress and federal agencies on drafting laws and regulations. NRDC participates in this same process at the state and local level, as well. NRDC has an extensive publishing program. The quarterly journal Amicus is recognized as a leading forum in environmental journalism.

NRDC forced the US Department of Energy to begin conducting a complete programmatic Environmental Impact Study before it restarts the nation's decrepit and potentially dangerous nuclear weapons-making reactors.

NRDC was instrumental in forcing the US Forest Service to stop massive clear-cutting of trees in the national forests, and now the organization is continuing to force the Forest Service to more carefully consider the environment in its timber policies.

NRDC's energy program has demonstrated how new technology and greater efficiency can save billions of dollars and help cool the greenhouse effect. And it's recently renovated Manhattan headquarters is the most energy efficient renovated office space in North America, but this standard will soon be surpassed by our San Francisco office.

NRDC's Atmosphere Protection Initiative brings together our energy, air pollution, forestry, and coastal protection staff to combat urban smog, ozone depletion, and global warming. Attorney David Doniger played a critical role in developing the Montreal Protocol to protect the ozone layer and is now concentrating on the climate convention negotiations. NRDC scientist Daniel Lashof was the lead editor of the US Environmental Protection Agency's report Policy Options for Stabilizing Global Climate and now promotes climate protection and sustainable energy policies from outside the government.

Dan Lashof of NRDC

INTERNATIONAL COMMITTEE OF LAWYERS FOR TIBET

By Suzanne LaPierre

The International Committee of Lawyers for Tibet was established in 1989. It has a worldwide membership and maintains offices in San Francisco, California and Washington, DC.

The Washington office devotes the majority of its time to environmental issues affecting the Tibetan Plateau and neighboring Himalayan regions.

Tibet's unique and extraordinarily fragile ecosystem has been heavily taxed through the stresses associated with population transfer programs initiated by the Chinese and unsound management practices. Massive deforestation, particularly in the Southeast regions at the edge of the Plateau, has triggered substantial desertification with the concommitant loss of species. Hundreds of millions of trees have been harvested in Wehchuan County, Szechuan, along the Min River valley, and in neighboring areas such as Aba Prefecture. Reforestation activities are concentrated along road corridors and involve the planting of pine and eucalyptus, two fast-growing species which are sown with the expectation of further harvesting.

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ENERGY OUT OF STEP

Far away from Washington there is a small Pacific island which runs entirely on solar power. The fact that the lights, vaccine refrigerators and desalination plant on this French Polynesian island function without of fossil fuels is, as Greenpeace's Pene LeFale pointed out last night, a triumph for both the Polynesians and the French technical aid program. But for the most of the world, energy remains the central climate concern: not just because it is a source of most human-made greenhouse gas emissions but because it is still at the heart of technical and economic development.

Even the acquisition of renewable technologies and the capacity of countries to 'leap frog' OECD-style 'western development' to a low-energy, high-efficiency, high value economy, remains dependent on countries whose wealth has been built on fossil fuels. Weaning the world off fossil fuels is the single most important issue which the climate process has to tackle.

Developing countries eloquently point out that they need money and technology to avoid fossil fuel dependence. As Zsolt Csikor from Hungary has stated at Westfields, if the countries of central and eastern Europe are now to escape from an inefficient, high-energy fossil-fuel economy, they need similar assistance. Only the 'west' can provide it. A growing third bloc — the industrialising countries such as Turkey, the Koreas, much of Latin America and Nigeria — are heard from far too little at the climate negotiations. Yet their energy policies are perhaps most significant of all.

Despite this, national policies in much of the west remain grossly out of step with climate needs and public opinion. As the poll reported in this ECO shows, the people want more renewables and less fossil fuels. Meanwhile OECD governments lavish funds on just the opposite. If the climate convention is to achieve anything, this imbalance has to be reversed by 1992.

Bush National Energy Strategy Imminent, Disappointing

By Alden Meyer

Later this month, President Bush will unveil his long-awaited National Energy Strategy(NES). Launched by the Department of Energy (DOE) in mid-1989, the NES process held some promise of producing a fresh appraisal of the nation's energy problems, and generating a set of solutions that could command broad public support. Unfortunately, the strategy to be announced by the President looks likely to be little more than a rehash of the fossil fuel and nuclear industries' perennial wish lists, with a few energy efficiency and renewable energy initiatives thrown in for "balance."

Unanswered

What happened in the interim? First, the Bush Administration failed to frame a coherent, measurable set of goals for the NES. What level of dependence on imported oil is acceptable? Should we strive to substantially reduce pollution from fossil fuel use, including carbon dioxide and other greenhouse gas emissions? Are we comfortable continuing to spend more than one-tenth of our Gross National Product on energy purchases, when our major trade competitors spend a far lower share of theirs? These questions weren't asked, much less answered.

Second, as the internal Administration interagency working group reviewed DOE's list of nearly 70 "candidate options" for the NES in November and December, a somewhat predictable pattern emerged. There seems to be general agreement within the Administration on the energy production options — such as opening up oil exploration in environmentally sensitive offshore and wilderness areas, further excluding the public from participating in the nuclear powerplant licensing process, and providing tax breaks and other incentives for construction of new "clean coal" powerplants.

The handful of significant energy efficiency and renewable energy options proposed by DOE, on the other hand, have been attacked by White House and agency officials as government intervention in the "free market." Even modest increases in energy consumption taxes were ruled off the table as political non-starters, and just before Christmas, the Department of Transportation announced a six-month "study" of the economic and technic feasibility of increasing the federal automob fuel economy standards, apparently pre-emptu inclusion in the NES package of a mod increase in these standards to 34 or 35 miles-p gallon by 2001 (as opposed to the 40 m standard nearly passed by the Senate last yea

In late December, it started to dawn on t White House that fossil fuel and nuclear ener production initiatives alone will do little reduce America's vulnerability to oil mark disruptions; attempts then were made resuscitate some of the conservation option and to generate some new options on alternati fuels research and commercialization, so as present the President with a package that wou at least appear somewhat credible in the conte of military action in the Gulf. Debate has bee particularly heated within the Administrati over the last several weeks on whether propose financial incentives for renewa electricity, alternative fuels production, a purchase of fuel-efficient vehicles.

At this writing, it is unclear which of thes options will survive final review by the Cabin working group and the President himse Regardless of their fate, however, it appea clear that the bulk of the financial commitmen and regulatory initiatives in the Presiden energy strategy will be aimed at increasin energy production, rather than exploiting th tremendous cost-effective potential for increasin energy efficiency in every sector of the economy

A preliminary indication of th Administration's approach can be gleaned fro the President's fiscal year 1992 budget for th Department of Energy, released on Februar 4th. Proposed funding for DOE's energ conservation activities is cut from $495 millio in 1991 to $326 million in 1992, a reduction o over 30 percent. This is a result of the near elimination of DOE's technical and financia assistance programs to help state and loca governments and the private sector implemen energy efficiency improvements, which more than offsets the proposed 30 percent increase in energy efficiency research and developmen funding.

Renewable energy R&D (including geothermal and hydropower research) gets jus a 5 percent increase, from $158 million in 199 to $164 million in 1992. Meanwhile, nuclear fission R&D receives a hefty increase of over 3 percent, to $398 million; and nuclear fusion

▶

research is increased over 20 percent, to $337 million. Fossil fuel R&D and the "clean coal" technology grants program receive a combined $542 million.

These funding priorities are the mirror image of those preferred by the American people. A national public opinion poll conducted last December by the Union of Concerned Scientists and the Alliance to Save Energy found that 47 percent of the public would give top funding priority to renewable energy R&D; 28 percent would give top priority to energy efficiency, 12 percent to oil and coal, and just 10 percent to nuclear energy.

Letter

In a December 7th letter to President Bush, the Union of Concerned Scientists and 17 other environmental and energy efficiency groups pointed out that "numerous studies and considerable testimony presented to DOE show that greater energy efficiency and renewable energy sources comprise our largest, cleanest, lowest cost, near-term energy resource." The letter called upon the Administration to set a goal of improving US energy efficiency (energy/GNP ratio) by at least 3 percent a year, and of obtaining 20 percent of its energy from renewable sources by the year 2000 (up from the current 8 percent).

The groups also challenged the Administration to apply a consistent set of cost-effectiveness and environmental impact tests to all proposed NES options (both supply-side and demand-side), and to provide such an analysis as part of the final NES document, "showing how its preferred options are more favorable than rejected options."

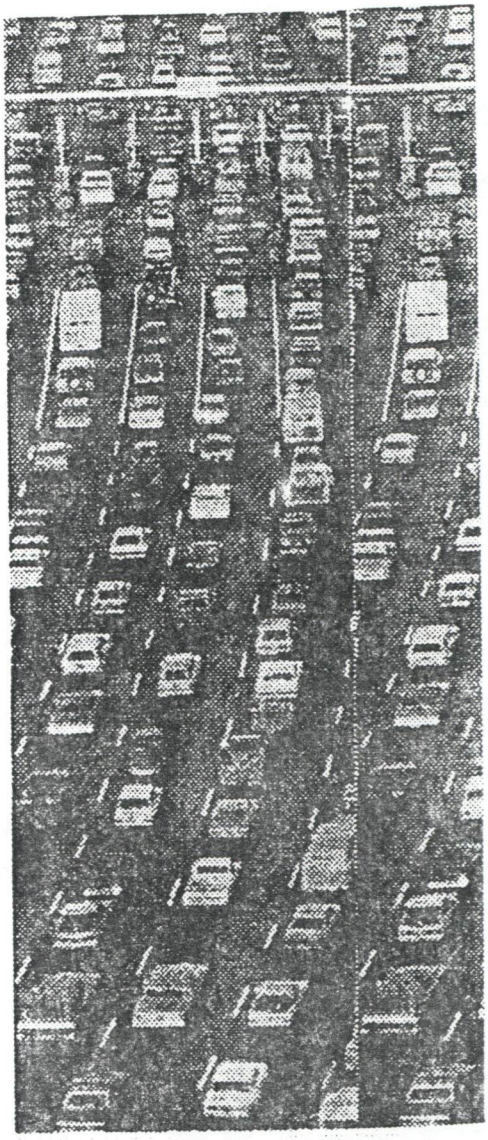
Such a head-to-head comparative analysis, if done with a reasonable degree of objectivity, would show that energy efficiency is by far the "best buy" from both an economic and environmental standpoint, and that policy options aimed at overcoming the substantial market barriers to full exploitation of the nation's energy efficiency potential deserve top priority in any sensible energy strategy. It would also show that many of the Bush Administration's favored options — such as opening up oil production in environmentally sensitive areas and promoting a new wave of coal and nuclear powerplant construction — aren't as good a buy, and should receive much less emphasis, or be omitted entirely.

Missed Opportunity?

If, as now appears likely, the President fails to make energy efficiency and renewable energy development the centerpiece of his strategy, he will miss a tremendous opportunity to put the United States on a path to a sustainable energy future. As a result of this failure, US economic competitiveness will suffer, as other industrial nations widen the "energy efficiency gap" and develop new efficiency and renewable energy technologies; America's national security will continue to be threatened by its ever-worsening addiction to oil; and the United States ability to help shape the broad international agreement needed to head off global warming will shrink, as its carbon dioxide emissions continue to grow.

The energy policy debate will now move to the US Congress, where interest in and support for efficiency and renewable energy is much stronger than it appears to be within the Bush Administration. Already, several legislative packages have been introduced in the new session of Congress. No doubt, some gains will be made in the months ahead; but progress will be much more difficult in the absence of Presidential leadership.

Alden Meyer is Director for the Climate Change and Energy Program, Union of Concerned Scientists.



AMERICANS SUPPORT CARBON CUTS

By Eco Reporter

A poll of 1,200 US adults conducted by Republican and Democrat research firms shows that 7 out of 10 (69%) Americans believe the United States should join other countries in limiting emissions from fossil fuels. Three quarters (73%) say they would be willing to pay more for fossil fuels if the money was earmarked to prevent serious consequences from global warming.

The survey, conducted by Greenberg/Lake and Research/Strategy/Management Inc. in December, 1990, also shows that three quarters of those questioned believe reducing demand for fossil fuels makes more sense than increasing supply. Eighty-four percent of people questioned declared that they were in favor of a federal fuel economy standard of 40 mpg from cars. Sixty-nine percent 'strongly' supported such a move while only 6% were strongly opposed.

As to energy research priorities, 75% ranked promotion of renewable energy sources (like solar and wind) as top or second, and 67% favored energy conservation as the highest priority. Nine out of ten persons favor requiring federal and state regulators to provide incentives for utilities to improve the energy efficiency of buildings.

Source: *America at the Crossroads: A National Energy Strategy Poll*, sponsored by The Alliance To Save Energy and the Union of Concerned Scientists (202-332-0900)

Chantilly

Chantilly is pleased to announce that a solution to deforestation has been found. Chantilly has discovered a new substance at Westfields called "non-paper." This material has a remarkable resemblance to real paper, but is produced entirely from fossil fuels. Veterans of previous international meetings report that non-paper apparently contains no CFCs, as it was not seen in Vienna or Montreal. Some report having seen a non-paper prototype in Sundsvall, even though this meeting was held in the midst of a forest capable of supplying millions of tons of the real thing. The most remarkable property of non-paper is that what is written upon it appears to be vastly more interesting than the contents of most papers, and yet country names written on non-paper automatically disappear.

Hat

Chantilly has learned that Mr. Reifsnyder still has his "Framework Convention" briefcase, but would be happy to trade it for genuine imitation leather Second World Climate Conference issue. In other lost and found news, Chantilly asks the world riveting question: Who took J.R.'s hat? Watch this space for the shocking answer.

Japan

At a press conference attended by Chantilly on Tuesday evening, head of the Japanese delegation Ambassador Nobutoshi Akao and three of his colleagues faced tough questioning from more than twenty NGO representatives. Ambassador Akao, stressing that Japan accepted global warming as a potentially great threat to future generations, and that immediate action is necessary, presented the Japanese Government's "Action Plan 2100". Japan will do all it can to improve energy efficiency, he said, and will keep its target of a freeze in emissions by 2000 "under constant review." Tropical timber would still be imported, but only from forestry sources which were sustainably managed. He defended Japan's existing energy efficiency record (the best in the world), and criticized other countries for advancing targets that were not backed up with plans which demonstrated their feasibility.

Recall

Chantilly noticed that NGOs congratulated the Japanese delegation for once again being the first industrialized country to defend its position to the press and to NGOs (they apparently also did so at the World Climate under vigorous if polite attack on his presentation. Despite its past performance in energy efficiency, there was still a huge potential for improvement in Japan's performance, said several NGOs. A freeze in 10 years time would do nothing to save the cultures whose very existence is at risk in the Pacific islands, argued Greenpeace. How much was Japan spending on renewables research? The budget has increased, but MITI's representative could not recall by how much.

Chantilly was pleased to see that the press conference ended in a round of applause for the Ambassador and his colleagues. The Japanese, though not yet signing up for the job of leading the world to salvation from the greenhouse threat, are setting an example which puts many

Continued from page 3, column 3

Tibet

Because the Plateau penetrates the troposphere, it exerts a major influence on global weather patterns and general atmospheric circulation. The onset and strength of the Indian monsoon, for example, has been linked to the rate at which the Plateau warms in the spring. Deforestation activities increase the depth of the snow cover and delay spring warming. A delayed and weakened monsoon on the Indian sub-continent is the practical result.

Because the Plateau's ecosystem already functions at the margin, the effects of global warming on the region are expected to be severe.

The neglected state of the ecology of the Tibetan Plateau prompted S. Dillon Ripley of the Smithsonian Institution to conclude at a symposium on the Plateau, held in Beijing in 1980, that conservation must be "the most important aspect of biology in Tibet." The International Committee of Lawyers for Tibet is dedicated to realizing Dr. Ripley's goal through educational activities and legal representation in national and international venues.

For more information, contact: International Committee of Lawyers for Tibet, 5802 Chain Bridge Forest Court, Arlington, Virginia 22207

SMOKE ON THE WATER

Eco readers will be only too aware of the events in the Persian Gulf and the oil pollution that has resulted. But how much oil gets burned anyway? Shouldn't the world now turn its attention to a fossil free future? Jeremy Leggett of Greenpeace International believes it should.

23,000 million barrels: The amount of oil burned each year in the world,[1] more than a quarter of it in one country — the USA.[2] These 23 billion barrels contribute some 40%[3] of all the energy-related carbon dioxide which humankind puts into the atmosphere each year, there to contribute — along with the products of coal and gas burning — almost 60% of the human-enhanced greenhouse effect.[4]

Remaining addicted to fossil fuels in this way, within just decades will unleash rates of temperature- and sea-level rise unprecedented in human history. Yet, having located more than a million million barrels of oil under the ground (more than two thirds of them in the Gulf),[5] our oil companies are still looking for more.

Transport

7,500 million barrels: Transport's share of all oil consumption.[6] Transport consumes around one third of all the energy used in the world each year.[7] The 23 leading industrialised countries of the OECD consume more than half the world's oil, and transport consumes more than half of the OECD's oil.[8] Each year, the average car puts more than four times its body weight of carbon dioxide into the atmosphere.[9]

2,500 million barrels: The amount of gasoline burned in one year in one country — the USA.[10] America's share of all oil used in world transport is over one third.[11] Small wonder: of all the 400 million cars on the planet, Americans drive one third.[12] Their fleet fuel-efficiency average is the worst in the OECD: 20 miles per gallon,[13] at a time when the Fords, General Motors, and Chryslers have the capability to mass-produce cars which do more than 100 miles per gallon. Or to make battery- and hydrogen-powered cars charged by solar photovoltaic, producing no direct greenhouse gas emissions.

Continued on next page

US Imports

1,900 million barrels: The amount of oil imported to the US each year from the Gulf. And this is only 24% of all US oil imports.[14] By how much would the fuel efficiency of the US car fleet have to improve to remove the need for these two billion barrels from the Gulf? One third would more than do the trick. The average fuel efficiency of new US cars in fact decreased after 1985, when the Reagan administration slackened fuel efficiency requirements for the auto industry.[15] In the UK fuel efficiency — after improving in the early '80s — has now completely stalled, the government having refused to introduce mandatory standards.

500 million barrels: The approximate amount of oil afloat at any one time in supertankers, each one running the gauntlet of an Amoco Cadiz disaster (more than two million barrels spilt[16]) with every nautical mile, at odds which can be calculated on the basis of the 160 accidents over the last 16 years that have each spilt in excess of 10,000 barrels.[17] These odds are, for the amount of oil produced by every four large oil fields, at least one 10,000 barrel-plus spill each year.[18]

8 to 20 million barrels: The amount of oil spilled each year deliberately from tankers cleaning out tanks, terminal operations, dry docking, bilge and fuel oil spillage. The "low" estimate is by the International Maritime Organisation. For a high estimate, try the US Department of the Interior Minerals Management Service's best guess of around 20.[19]

Gulf Spill

5 million gallons: Estimated to be the scale of the Gulf oil spills. Rising at a maximum of 100,000 per day from the Sea Island spill, this still has some way to go to catch the carrier-fleets of the oil transnationals. But the scope is impressive: 5 million gallons represents less than a tenth of one percent of all the oil into which Kuwait's hundreds of oil wells tap.[20]

1.6 million barrels: The average daily oil production in Kuwait in 1989: less than 3% of the world's total.[21] By how much would the average fuel efficiency of the American car have to increase in order to shed the need of the US share of this and of Iraq's production in a normal year? Just three miles per gallon — from 20 to 23 — according to the US Government's Lawrence Berkeley laboratory.[22]

0.2 million barrels: The 260,000 barrels spilt by the Exxon Valdez.[23] That "clean up" involved 11,000 people and cost more than a billion dollars. Still it "cleared" only 20% of the 1,000 miles-plus of beaches affected.[24] The short-term impacts on wildlife of this one spill are well known. The scientific jury is still out on the long-term effects. It involved a finite source of oil (some 20% of the contents of a supertanker)[25]. And it didn't take place in a war zone.

Tank Travel

1 barrel: The amount of oil needed for an oil-fuelled US aircraft carrier to steam — 238 yards, or an M-1 tank to chug 23 miles (while each puts 400 kg of carbon dioxide into the atmosphere).[26]

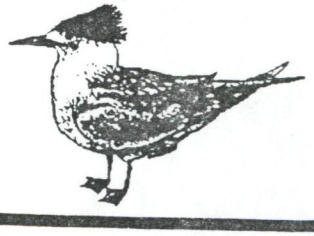
Based on an article contributed by Jeremy Leggett to the London *Guardian*.

Sources of statistics

1. BP Statistical Review of World Energy, June 1990, p. 8 shows the world consumed an average of 64,735,000 barrels per day (bpd) in 1989 (up 1.5% on 1988). 64 .7 million x 365 = 236.1 million.
2. As note 1, 16,585,000 (0.1% less than 1988) = 25.6%.
3. As Note 1. Various tables show that in 1989, total oil consumption was 3.1 billion tonnes (up 1.5% on 1988); total coal production was 2.2 billion tonnes of oil equivalent (up 1.5% on 1988); and total gas production was 1.7 billion tonnes of oil equivalent (up 4% on 1988). Total fossil fuel consumption was therefore 7 billion tonnes of oil equivalent. 3.1 is 44% of 7.

p. 10, lists total OECD oil consumption for 1989 as 1,729 million tonnes per annum. Of that, the proportion consumed as "gasolines" is 577 million tonnes: 33%.

4. "Policy options for stabilizing global climate: a report to Congress", US Environment Protection Agency, February 1989. Note that carbon dioxide from fossil fuel burning is 49%, the rest is methane from coal mining, gas leakage etc.
5. As note 1, p. 2 shows total world reserves (proved) at 1,011,800 million barrels. The Middle East's share is 65,200 million, or 65.2%.
6. OECD, Energy Balances, 1989/90: one third of total oil consumption is generally used for transport.
7. M. Walsh, "Motor vehicles and global warming", in Global Warming: the Greenpeace Report, 1990, p.261.
8. As note 7, and the OECD uses 57% of all oil consumed, according to the International Energy Agency in statistics in a paper presented by the IEA's R. Skinner at the Royal Institute of International Affairs, 3 December 1990.
9. Association for the Conservation of Energy.
10. As note 1, p. 10 lists US gasoline consumptio 1989 as 554.1 million tonnes of oil (up 0.1% 1988). 334 x 7.33 (barrels per tonne) = 2 million barrels.
11. Note 7, p. 261. The USA uses over 55% of world's transport energy.
12. C. Flavin et al. "Sustainable Energy", a Ren America special publication, 1989 p. 8.
13. As note 7.
14. As note 1, p. 16, shows total US imports 8,019,000 barrels per day, 1,896,000 (23.6%) day from the Middle East.
15. As note 7 (Table 12.3, p. 272).
16. International Tankers Owners Pollution Federat statistics. Table in "Black Ice: the oil threat Antarctica", Greenpeace 1990.
17. Prescott, J. "Major oil spills that would fill 11 ve large crude carriers." Lloyds List, 24/3/90. T 500 million barrels estimate is from the W Street Journal, 8 January 1991.
18. McMachan Anderson, C. and LaBelle, R. "Estimated occurrence rates for analysis accidental oil spills in the US outer continen shelf." Oil and Chemical Pollution, 6, 21-35, 199
19. International Maritime organisation. "Preventi Marine Pollution." Focus on IMO 1989. T UNEP "State of the World Environment" f 1987 also reckoned that the total non-accident loss at sea was in excess of 8 million barrels p year. The other study referred to was by th Minerals Management Service of the U Department of the Interior: "Oil spills 1976-8 statistical report."
20. Note 1, p. 2. lists Kuwait's reserves as 94,50 million barrels (9.3% of the world's reserves). million is 0.005% of 94 billion.
21. As note 1, p. 5. shows 2.6% of world productio in 1989, 1,600 barrels per day (up 19% on 1988 x 365 days = 584 million barrels per year.
22. W. Keepin, Lawrence Berkeley National Laborator consultant, at a press conference in Washingto DC, September 1990.
23. As note 16.
24. "Alaska's big spill", National Geographic, January 1990.
25. As note 24.
26. Amory Lovins, Rocky Mountain Institute newsletter, v. VI number 111, Fall 1990. The carrier does 17 feet per gallon. 17 divided by three. x 42 (US gallons per barrel) = 237.9 yards per barrel. The M-1 does 0.56 miles per gallon. 0.56 x 42 = 23.5 miles per barrel.



Global Warming

By Eco Staff

Ariane von Buren, delegate of the World Council of Churches to the Intergovernmental Negotiating Committee on a Framework Convention on Climate Change, has called on industrial governments to reduce carbon dioxide emissions by over 2% a year. This is one of dozens of recommendations in a 28 page report based on an Ecumenical Consultation of Churches from Industrialised Countries, held in Gwatt, Switzerland, January 13 - 18, 1991. The meeting urged the World Council of Churches to "participate actively" in the process of negotiating the terms of a climate convention by the time of the UN Conference on Environment and Development.

The Churches view centres heavily on the responsibilities of the polluting countries of the North to help solve the common problems of the planet that bear most heavily on the South. It calls for industrial development based on a principle of self reliance, pointing to the inimical effects of trade and "conventional" development.

Service Corps

"The people of the Southern countries have the right to say 'no' to that which is inappropriate," says the report. It calls for a World Climate Fund and the establishment of an International Service Corps under the aegis of the UN, to channel volunteer help to work on projects tackling climate issues. As to trade, the churches point out that "with respect to food in particular, a so-called free market results in the dumping of food in the South that is produced in the North with hidden subsidies of energy-intensive production." On the other hand, says the document, "protectionism..... also encourages high-energy food production which contributes directly to global warming."

Business

The report identifies a specific role for the churches in relation to business and industry. It proposes that churches should use their financial power to ensure that investments and business deals do not contribute to global warming. It suggests viewing activities 'through a greenhouse lens' and advises that stakeholders, which it defines as shareholders, investors, tax payers and consumers, should meet with investment managers and industrialists to check on the pollution generated by enterprises.

It notes that the Interfaith Center on Corporate Responsibility in the USA, the Task Force not the Churches and Corporate Responsibility (Canada) and the Ecumenical Study and Action Centre on investments (OSACI in the Netherlands) are "already active" in the field.

In many countries the churches are major land owners and have large investment portfolios. If put into practice on a significant scale, the churches' strategy could add significantly to the impact consumer and environmental lobbies aimed at influencing investment decisions and industrial practices.

(Contact Ariane von Buren at the Interfaith Center on Corporate Responsibility, 475 Riverside Drive, Room 556, New York, 10115)

Continued from page 1

NGO Statement

Washington, DC, for climate convention negotiations.

Dr. Rahman told delegates that he came from Nijhum Dwip, a village on the Bay of Bengal, 50 km from the low-lying coast of Bangladesh, one of the world's areas most vulnerable to sea level rise. The local leader, he pointed out to delegates in the plush surroundings of the Westfields Conference Center, was typical of the likely victims of global climate change — he could not afford to attend such a meeting, and was the only one in the village with a pair of shoes and whose family's food intake exceeded 75% of the minimum World Health Organization intake for calories and protein. "Many communities of the world," noted Rahman, "use 200 times more energy per head" than the people of that village.

"The 16 million coastal Bangladeshis, and others in low-lying and island states, and many millions of Africans," said Rahman, faces "the harsh realities of climate extremes." He called for urgent action in industrialized and developing countries to cut greenhouse gas emissions, "especially CO_2." The IPCC, he noted, said that CO_2 should be reduced more than 60% to stabilize atmospheric concentrations. "The best scientific evidence suggests that the concentration of CO_2 should not be allowed to exceed 475 ppm of CO_2 equivalents" he added. "These levels could limit 1-2 degrees C" said. Even at these levels, sea level rise wou "cause serious damage."

(Full copies of the Climate Action Netwo statement are available from Navros Dubas Environmental Defense Fund, 1616 P Stree N.W., Washington, DC 20036)

New Publication

The Rising Sun:

Global Warming and World Sea Levels

The Rising Tide, written by Lynne T. Edgerton of the Natural Resources Defense Council, is the first analysis of global warming and world sea level rise. This book outlines state, national, and international actions to respond and adapt to the effects of global warming on coastal communities and ecosystems.

To order contact: **Island Press**
1718 Connecticut Avenue, NW
Washington, DC 20009

ECO NEWSLETTER

This is the third issue of ECO newsletter, produced as a cooperative effort by the environmental NGOs attending the conference. ECO will accept contributions from delegates and others, and suggestions as to stories which should be covered or people who should be interviewed. ECO is produced at the National Wildlife Federation's Educational Facility in Virginia and can be contacted at (703) 790-4010/4012 or 4013, FAX (703) 790-4011.

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CLIMATE NEGOTIATIONS WASHINGTON — NGO NEWSLETTER

eco

11
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UNCED
ISSUE

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NEGOTIATIONS FACE FAILURE?

By Eco Reporter

Climate convention negotiations at Chantilly near Washington, DC start their second week with delegates gloomy at the prospect of achieving a meaningful draft treaty by the meeting's scheduled close on Thursday. The US Administration faces the possible embarrassment of seeing the US$2m gathering it has hosted, ending amidst disagreement over procedures as well as policy.

Failure will mean that the process is not living up to the Ministerial Declaration of the Second World Climate Conference held in Geneva in November 1990 and which was cited by the United Nations General Assembly Resolution of December 1990, which established the climate convention International Negotiating Committee on a Framework Convention on Climate Change — the climate convention negotiations. The UN Resolution refers to preparing 'an effective framework convention on climate change, containing appropriate commitments.'

Working Groups Confusion, No Draft

Countries have been so far unable to even agree on which draft text to start discussing, although several are in existence. Moreover, nations have yet to put in place the key Working Groups which will hammer out the practicalities of a climate treaty. Some favour one group to debate sources and sinks of greenhouse gases (such as forests to absorb carbon dioxide) as well as financing mechanisms for this, with another to develop an institution to run the negotiations. The US in particular opposes the specific and binding mandates for Working Groups which the developing countries want to see. Nevertheless, despite frequent side-meetings, the Lesser Developed Countries and others in the Group of 77 have yet to agree on a clear common position.

Europeans Divided

Observers say the Europeans, frequently profiled as the most progressive countries on climate change issues because of a commitment to stabilize net emissions of carbon dioxide from the European Community in 2000, are failing to put much pressure on more recaltricant major polluters such as the US, because of internal political divisions. The United Kingdom opposes the granting of any real authority to the European Commission in order to work out a fiscal instrument (such as an energy tax) in order to equitably achieve the necessary carbon cuts, a position which if unchanged, could render the joint target largely meaningless. Germany, which has detailed domestic policies to cut its own carbon dioxide by much more than countries such as the UK, has so far remained silent in discussions among the EC delegations. France has departed from the common European position by talking of carbon cuts based on per capita calculations, a similar formula to the ambiguous position adopted by Japan. The French delegation includes no representation from the Environment Ministry.

Continued on back page, column 2

Almost $1m Shortfall in Climate Fund

By Eco Reporter

A key fund established to enable developing countries to take part in negotiations for a world climate treaty has barely half the money needed to make it work effectively. Observers and delegates at the first session of the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change have pointed to the inadequate representation of developing countries at meetings as one

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ISSUE NO 4 VOLUME LXXVIII FREE OF CHARGE

Interview With Robert F. Van Lierop and Colleagues

Last week, ECO spoke to the recently elected Chairman of the Alliance of Small Island States (AOSIS), Vanautu's Ambassador to the United Nations, Robert F. Van Lierop. Renagi Lohia Ambassador to the UN from Papua New Guinea and Naresh Singh, delegate of St Lucia, also contributed to the discussion.

On a day to day basis, Robert Van Lierop spends time on Manhattan Island, representing the interests of his diminutive island state on the world stage down at United Nations Plaza. But increasingly often, he and his colleagues in AOSIS are to be found dealing with climatology, ecology and the international economics of energy, taking news of the problems faced by nations in the front-line states of global warming, and their ideas for solutions, to publics and decision-makers the world over. AOSIS countries made quite an impact at the Second World Climate Conference in Geneva, and the eyes of many developing countries are now upon them as they constitute the first readily identifiable bloc of potential 'victim' countries in climate negotiations.

ECO: What does global warming mean to the people of the Alliance of Small Island States?

Ambassador Van Lierop: Really it's a question of survival — it's that simple. A number of the small island states are actually low-lying and sea level rise of a foot or less could have disastrous consequences. At the very least it could destroy the ecosystems — at worse whole countries could disappear underwater. Others are already experiencing increased tropical storms: we take that as an indication of what may be to come. And even countries as large and wealthy as the United States already have serious climate-related problems, for example with soil erosion.

ECO: In Geneva your group likened the drowning of a nation and the extinction of a culture, to the loss of a species like the blue whale. Do you feel you have to resort to comparing yourselves with wildlife to get the attention of people in the 'north'?

Ambassador Van Lierop: It is a sad commentary but a truth that there are some people who care more about endangered animals than endangered humans. Already whole indigenous cultures have disappeared through economic and cultural expansion from other regions — now environmental and ecological destruction caused by economic expansion threatens to wipe out our cultures.

ECO: Are you getting your message across?

Ambassador Van Lierop: The test will be the result of the negotiations: the real proof will lie in what gets included in the convention and what types of action are required to be taken.

ECO: It seems bizarre to many people outside this process that shortage of even the modest finance to support participation by developing countries may be preventing the active participation of many of them in negotiations over the worlds most important environmental issue, in which they are the principal victims. We understand that the UN has only been able to provide money for one air ticket and that some countries didn't receive notice of that until the week before it started. Would you comment on that?

Ambassador Van Lierop: We have been encouraged by the US statement this week, which mentioned a US intention to provide assistance in the form of per diems as well as travel costs. To the developed countries it is not much money but to developing countries the cost of attending such a meeting is enormous. You'll notice there are plenty of empty seats which ought to have been filled by developing country delegates. Ten days here with no extravagances costs about $US1500, which could pay a graduate teacher for two months in our country. It is important to be here: we need to ensure our survival and the future well being of our countries but it is really important to have two people present to cover a negotiation. AOSIS helps with that: it's not just a joint representation of interests but a way to cooperate and help keep each other up to date.

Naresh Singh: Countries need to know what is going on in the negotiations and the presence of the Alliance at these negotiations is a chance to see our views taken into account but it is also a way for nations to start planning their own strategies. In the past we have been presented with conventions and asked to sign them. That naturally makes developing countries suspicious of such processes themselves. As for finance, it is now generally accepted that the ability to obtain justice shouldn't be dependent on wealth. In practice there are many countries who have been unable to afford to attend this meeting.

Ambassador Renagi Lohia: Yes, and to be effective, countries need to know ahead of time what is happening - everyone in small developing countries has more than one job to do.

ECO: AOSIS has spoken of the need for 'compensation': what do you have in mind, how would it work?

Ambassador Van Lierop: We mean economic assistance for adaptation as well as compensation for damage. As to how it would work, that's too early to tell. Generally AOSIS states prefer a multilateral approach as it is more objective and less prone to improprieties.

ECO: Have you personally experienced impacts you attribute to climate change?

Ambassador Van Lierop: Yes, we have experienced intense tropical storms in recent years. One did damage to the capital city of Vanautu amounting to ten times the national budget. The storm came from a different direction to many which had come before. the people were unprepared for its direction, intensity and timing. That was in 1987. Its impact was very similar to that of Hurricane Hugo in the Caribbean. Similarly, equally unusual storms had occurred a few years before in Samoa, the Solomon Islands and Fiji. The Vanautu storm caused flooding and wind damage to buildings, houses and crops. It cost $US28m.

ECO: Is there a problem with insurance?

Ambassador Van Lierop: Yes, there is! And if the government eventually has to become the insurer of private concerns, that will only increase the foreign debt.

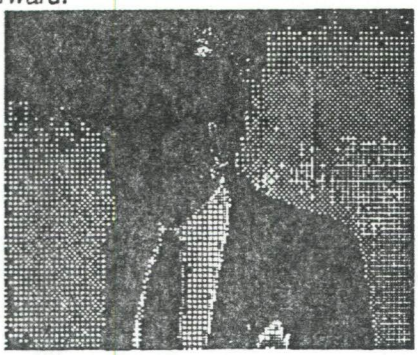
ECO: We have heard a lot about coral bleaching: what is the status of that problem?

Ambassador Renagi Lohia: The bleaching is now more evident than ever before. It's due to a warming of the sea.

Naresh Singh: The most recent information has come from Dr. Hays of Howard University at the Discovery Bay Marine Laboratory in Jamaica. He has reported this to the US Congress. He studies one area in some detail. It's important to realize that when the corals die, it affects the whole marine life cycle, and that is the basis of food not only for fish but for human communities. And fisheries here include industrial fishing significant for government economies and subsistence fishing on which many local communities depend.

ECO: What do you and AOSIS hope to get from this meeting at Westfields?

Ambassador Van Lierop: Realistically, a draft text. But we also need to bring the need for urgent action to the attention of the world community. There are only 16 months between now and the target date of June 1992. We need a very good draft text to take forward.



Robert F. Van Lierop

Millions Could Become Climate Refugees

By Nicola Pain

In 1987, President Gayoom of the Maldives, warned the United Nations that, as a result of sea level rise induced by global warming, his country could literally disappear beneath the waves. Like many small island states in the Indian Ocean, South Pacific, the Caribbean and Mediterranean, the Maldives lie only a few meters above sea level. Thus, the rise of 30 to 110 cm predicted by the IPCC to occur by 2100, would have a devastating effect. Exacerbating the problem is the fact that many of these islands are densely populated, giving rise to the specter of sea level rise creating thousands, perhaps millions of landless "environmental refugees."

To address the acute problems which global warming and its effects pose to these vulnerable countries, the Alliance of Small Isalnd States (AOSIS) was formed during the Second World Climate Conference in Geneva in 1990. In order to prepare for the INC meeting this week, AOSIS held a scientific and political briefing for its members on February 2 and 3 in Washington, DC.

Coral

The serious problems of coral reef bleaching was discussed at length by Dr. Raymond Hays, of Howard University. He described coral bleaching as "one of the earliest signals of climate warming by a biological ecosystem." Bleaching occurs when coral reefs undergo severe stress, which Dr. Hays believes is occuring as a result of changes in water temperature. The AOSIS participants saw dramatic evidence of the link between bleaching and temperature when Dr. Hays displayed a chart showing that bleaching has occurred sim-ultaneously with peaks in water temperature.

Plea For Action

The 20 countries of AOSIS last week called on industrial nations and others at the Climate Convention Negotiations in Washington, to take immediate action to curb greenhouse gases and avert the growing threats of sea-level rise, storm surge, cyclones, tropical storms, and salt-water intrusion. The AOSIS countries called for the Convention to be 'comprehensive, equitable, and meaningful.'

The island states want to see an agreement based on six principles. They are seeking 'immediate and significant cuts in the emissions from industrialized countries of carbon dioxide and other greenhouse gases into the atmosphere.' The island nations also call for 'a preventive approach based on the precautionary principle,' new funding mechanisms including compensation, the 'transfer on an equitable basis of appropriate and environmentally sound technologies,' 'application of the Polluter-Pays Principle to the consequences of climate change' and a 'commitment to binding energy conservation and efficiency requirements and the development of alternative energy sources.'

One Caribbean delegate stated, "there is clear evidence of hurricane increases and coral bleaching as would be expected with global warming." The delegate added, "we need to go much further than fuel efficiency - steps which we will all take anyway."

Alliance of Small Island States

'Member' countries of the Alliance of Small Island States (AOSIS) (underlined) and other states with an interest in the alliance. (The number of states involved is actively increasing).

Caribbean

1. Antigua and Barbuda
2. Barbados
3. Bahamas
4. Dominica
5. Grenada
6. Montserrat and Anguilla
7. Jamaica
8. St. Christopher and Nevis
9. Saint Lucia
10. Saint Vincent and the Grenadines
11. Trinidad and Tobago
12. Guyana
13. Belize
14. British Virgin Islands
15. Turks and Caicos Islands
16. Cayman Islands

Pacific

17. Fiji
18. Kiribati
19. Tuvalu
20. Samoa
21. Marshall Islands
22. Vanuatu
23. Soloman Islands
24. Paria New Guinea
25. Federated States of Micronesia
26. Nauru
27. Cook Islands
28. Tonga
29. Nive

Pacific Non-Self Governing Territories

30. New Caledonia
31. Palau (TTPI)
32. American Samoa
33. Guam
34. Tokelau
35. Tahiti
36. Wallis and Fatuna
37. East Timor

Indian Ocean

38. Mauritius
39. Maldives
40. Comoros

Mediterranean

41. Malta

Atlantic Ocean

42. St. Helena

eco Policy, Science, and People

Policy makers and scientists dominate the negotiating sessions on climate. Their credentials are experience in making international and national laws and understanding why 400-560 ppm of CO_2 will create a rise in temperature 1-2 degrees centigrade. The beneficiaries of their work will be the people of the world, most of whom are unaware of what has begun in Chantilly, Virginia on their behalf. What if they were here?

Imagine adding to the negotiating sessions at Westfields the indigenous peoples of the Amazon, farmers from the US midwest, Norwegian fishermen, Indian villagers, ecologists from the Central America, women from rural Africa, youth from the islands of the Pacific, industrialists from Singapore and Japan, and students from Eastern Europe. Would the pace of the negotiations increase? Would the decisions reached be more equitable?

An experiment along these lines was tried by the Economic Commission of Europe in Bergen last May. The ECE, in part of the regional preparations for the 1992 United Nations Conference on Environment and Development, brought together representatives of governments, youth, industry, labor, science and voluntary organizations to build an agenda for action that could be pursued at least in part by each sector.

What difference did the new players make in the negotiations? The words of the agenda were hammered out in all night negotiating sessions, not unlike ones we can expect in the months to come. Partisanship was evident. Youth argued for expenditures that would benefit future generations; scientists saw the benefits of monitoring and research. Yet it was different. These major constituencies understood much better the tradeoffs needed to reach agreement on energy, economics, technology transfer and public participation. They were better prepared to implement the agenda immediately. Governments began to think in a different time frame, too. When youth insisted on an economic goal of reducing military expenditure, it was hard to argue it was not their business.

The 1992 UN Conference on Environment and Development is seeking to involve even more sectors of society in negotiations and events leading to Brazil. The experiment of Bergen is expanded to include most countries of the world and many more issues than the four addressed by the ECE. As in Bergen, only Ministers can ultimately sign an agreement that will bind countries to actions to slow global warming or save biological diversity. People, however, will be the ones to allow these agreements to be implemented and will set the pace for change. If they are involved from the beginning, the odds improve that efforts here and over the next eighteen months will make a difference.

By Fran Spivy-Weber

June 1992 will see the United Nations Conference on Environment and Development (UNCED) in Brazil. The Climate Convention will be a centerpiece of this event. The UNCED comes twenty years after the 1972 Stockholm Conference on the Environment which led to the creation of the United Nations Environment Programme. The UNCED will be the largest conference ever to address the dual needs of people and the environment, today and in the future.

However, climate is not the only issue of the summit, nor is the climate treaty the only convention winding its way down the road to Brazil.

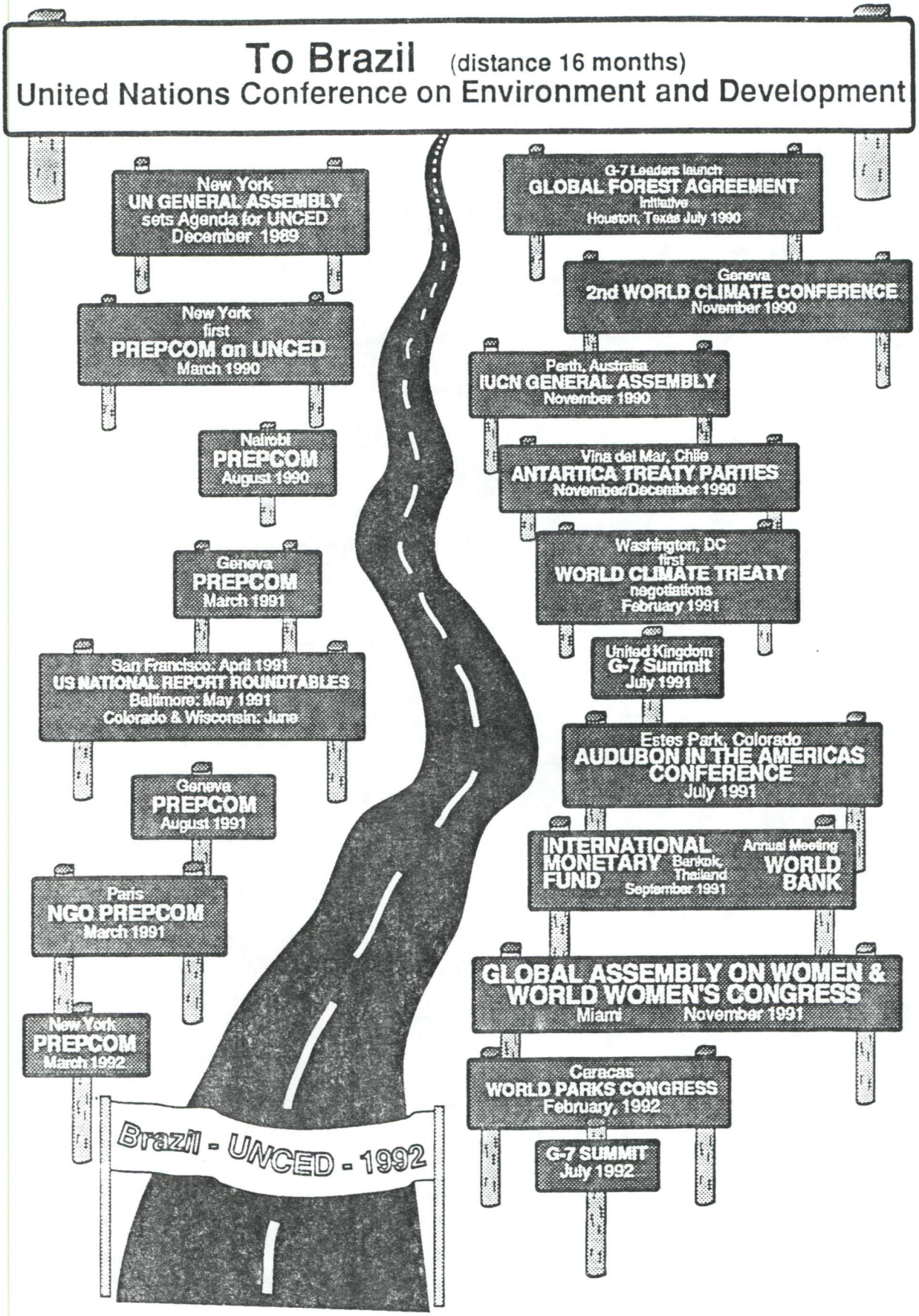
The products of the UN Conference on Environment and Development are expected to include:

a) three or four new conventions (climate and forests, biological diversity, possibly biotechnology and ocean pollution from nonpoint sources),
b) Agenda 21, which will include coordinated and independent actions by all sectors of society, regionally and globally, to achieve the summit goals,
c) a redefinition of roles and responsibilities for several United Nations agencies, and
d) an Earth charter of environmental rights.

The issues that will be discussed at the summit include: climate change, transboundary air pollution, deforestation, desertification, biodiversity, biotechnology, ozone depletion, marine pollution, living marine resources, freshwater, poverty and environmental degradation, toxic waste disposal, urban environment, environment and health, new/renewable energy sources, financial resources, technology transfer, legal instruments, institutions, economic instruments, and education and information.

In addition to the June 1992 meeting of the Parties, a meeting of Ministers is planned. Other meetings are planed for parliamentarians, scientists, industry, Non Governmental Organizations, and indigenous peoples. This is a potential bonanza for people and the environment, but preparation is the key to success.

As chair of the US Citizens Network on UNCED, Fran Spivy-Weber is deeply involved in the preparations for the 1992 conference. She can be contacted at National Audubon Society, 801 Pennsylvania Avenue, S.E., Suite 301, Washington, DC 20003


To Brazil (distance 16 months)
United Nations Conference on Environment and Development
New York
UN GENERAL ASSEMBLY
sets Agenda for UNCED
December 1989
New York
first
PREPCOM on UNCED
March 1990
Nairobi
PREPCOM
August 1990
Geneva
PREPCOM
March 1991
San Francisco: April 1991
US NATIONAL REPORT ROUNDTABLES
Baltimore: May 1991
Colorado & Wisconsin: June
Geneva
PREPCOM
August 1991
Paris
NGO PREPCOM
March 1991
New York
PREPCOM
March 1992
Brazil - UNCED - 1992
G-7 Leaders launch
GLOBAL FOREST AGREEMENT
Initiative
Houston, Texas July 1990
Geneva
2nd WORLD CLIMATE CONFERENCE
November 1990
Perth, Australia
IUCN GENERAL ASSEMBLY
November 1990
Vina del Mar, Chile
ANTARTICA TREATY PARTIES
November/December 1990
Washington, DC
first
WORLD CLIMATE TREATY
negotiations
February 1991
United Kingdom
G-7 Summit
July 1991
Estes Park, Colorado
AUDUBON IN THE AMERICAS
CONFERENCE
July 1991
INTERNATIONAL MONETARY FUND
Bankok, Thailand
September 1991
Annual Meeting
WORLD BANK
GLOBAL ASSEMBLY ON WOMEN &
WORLD WOMEN'S CONGRESS
Miami November 1991
Caracas
WORLD PARKS CONGRESS
February, 1992
G-7 SUMMIT
July 1992

FORUM 1992

Brazilian nongovernmental environment and development organizations have created the National Forum of NGOs in preparation for the United Nations Conference on Environment and Development - Brazil 1992.

The Forum subscribes to the view put forward by many groups that a main task over the next 18 months will be to formulate a grassroots perspective on environmental and development issues, to bring a citizens' commentary to the policy debate, and to confront the official negotiations in Brazil with this perspective. We see the 1992 Conference not so much as an event unto itself, but as a stimulus to dialog and networking. The occasion of the conference provides us a focus for action and a deadline to meet. It must be regarded, however, only as a point on a continuum stretching far beyond June 1992. The process must lead to international networks of citizens groups dedicated to identifying priorities and strategies for preserving life on the planet through new paradigms of equitable and sustainable development.

The Forum is aware that undertaking these activities will require substantial resources. At present, we are contacting foundations and other funding sources in order to support our activities at both national and international levels.

Magda Lombardo

of the NGO Climate Change Network observing the Second World Climate Conference in Geneva at the end of October 1990. Forum members were also represented at the second meeting of the International Facilitating Committee held at Geneva the following month.

The Forum is comprised of members, observers, and 400 NGOs whose shared objective is to promote an alternative model for economic development. It has nominated a representative and alternate to IFC (International Facilitating Committee), CELSI (Environment Liason International Center), and CIMA (Brazilian Governmental Commission of the Conference on Environment and Development).

The Forum has the duty to coordinate, in collaboration with foreign NGOs, the planning and organization of events parallel to the 1992 Rio de Janeiro Conference. It will also act as an intermediary between the Brazilian government and foreign NGOs.

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ECO NEWSLETTER

This is the fourth issue of ECO newsletter, produced as a cooperative effort by the environmental NGOs attending the conference. ECO will accept contributions from delegates and others, and suggestions as to stories which should be covered or people who should be interviewed. ECO is produced at the National Wildlife Federation's Educational Facility in Virginia and can be contacted at (703) 790-4010/4012 or 4013, FAX (703) 790-4011.

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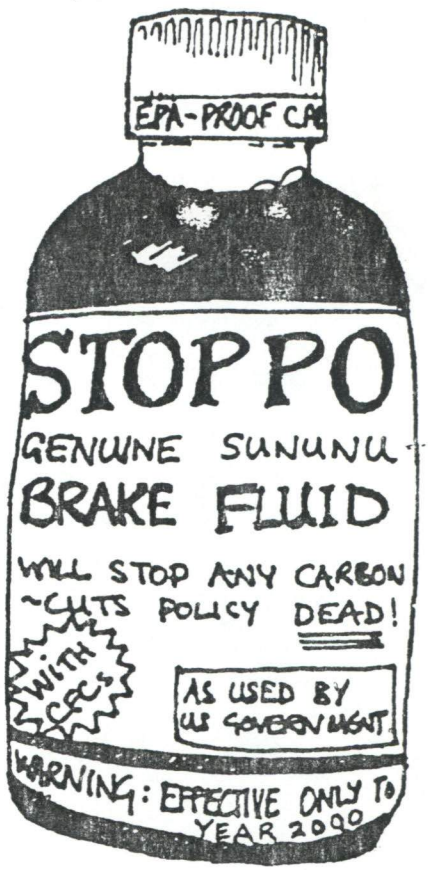

Governments!

Problems with runaway carbon cut policy makers?

Use Sununu brake fluid!

Satisfied Customer Endorsement

(Not an Actor)

"It sure solved my problems."

G. Bush, The White House,
Pennsylvania Ave., Washington D.C.

Environmental Defense Fund

The Environmental Defense Fund (EDF) is a US-based, non-governmental, non-profit organization with a membership of over 200,000, dedicated to creating innovative, economically viable solutions to major environmental problems by linking science, law and economics. EDF's international program has been a pioneer among US groups in connecting development issues to environmental protection by questioning some of the development policies of multilateral development banks on environmental grounds.

It's global atmospheric program comprises the largest assemblage of scientists, economists and lawyers of any national non-governmental organization working on climate change. This collection of expertise has placed EDF on the cutting edge of climate change developments. As examples, EDF's senior scientist chaired the Working Group on Limitation strategies for Greenhouse Gases of the Advisory Group on Greenhouse Gases (AGGG), and the organization's primary international lawyer represents EDF on two advisory bodies on atmosphere and oceans to the Secretary General of the UN Conference on Environment and Development. In addition, EDF attorneys have participated as observers at the meetings of the Intergovernmental Panel on Climate Change at the recently concluded Second World Climate Conference — actively contributing to both the Ministerial Declaration and Scientific and Technical Statement — and at a preparatory meeting for the current session of the Intergovernmental Negotiating Committee.

Climate Action Network

While undertaking independent studies on the scientific and institutional complexities of the climate change issue, the organization works closely within an international coalition of NGOs — the Climate Action Network. While the Climate Action Network has played an effective coordinating role over the last few years, its scope has, until recently, been limited to North America, Western Europe and Australia. Recognizing this limitation, EDF has recently undertaken to expand the network of NGOs working on climate change to include Central and Eastern Europe and the USSR, and Asia, Africa and Latin America. Through a gradual process of identifying and soliciting the interest of individuals and groups in these parts of the world, a wide reaching network is currently being established.

As a result of this initiative, twelve NGOs from various Eastern European and Developing countries — encompassing scientific, legal and rural development expertise — attended the Second World Climate Conference in Geneva, and eleven NGOs from these regions are currently participating actively in the first session of the International Negotiating Committee for a Framework Convention on Climate Change. This initiative will continue and expand as the negotiations on a convention unfold up to June, 1992, and beyond 1992 to negotiation of related instruments and their implementation.

The benefits from participation of NGOs from Asia, Africa, Latin America and Eastern Europe in the Climate Action Network are considerable. First and foremost, strong representation from and involvement of NGOs from these regions is crucial to developing credible and balanced NGO positions on the range of climate change issues that can then be presented to delegates. Developing country NGOs bring detailed knowledge of the realities of development efforts and natural resource use — at community, regional, and national levels — that must be a fundamental part of any climate change limitation or adaptation strategies.

Second, participation in international negotiations and meetings serve to inform NGOs on the issues so that they can disseminate information on the subject to other NGOs and interested parties.

Regional Networks

However, since few NGOs in developing countries have ongoing programs on climate change, mere attendance at and participation in international meetings and negotiations is not sufficient to ensure full involvement of many in the issue. Recognizing this, EDF is currently expanding its international activities on climate change to assist local indigenous NGOs develop regional networks on climate change in Asia, Africa and Latin America. Regional networks will:

- disseminate effectively information on climate change issues to local NGOs and seek to raise public awareness of the issue;
- develop expertise among local NGOs on climate change issues, thereby strengthening their advocacy of long-run sustainable development policies in their own countries and internationally;
- organize research by local NGOs on climate related issues relevant to their region, and subsequently prepare working papers to address specific issues relevant to the climate change negotiation. Such research work will serve to inform and develop Climate Action Network positions so that they emphasize the legitimate aspirations of the people in developing countries.

EDF is committed to halting global warming. This commitment is put into practice by undertaking substantive research work on the scientific, economic and policy aspects of the issue, and by working closely with government agencies, and other NGOs within the Climate Action Network to positively influence climate change negotiation and discussions. Internationally, EDF has taken the lead in ensuring that NGOs from hitherto under-represented regions will have the necessary expertise and opportunities to represent their views on climate change to the world community.

A National Wildlife Publication

ECO thanks the NWF for its generous donation of office space.

reason why it may be difficult or impossible to agree on a climate treaty by the deadline set for the United Nations Conference on Environment and Development (UNCED) in 1992. Almost one million dollars (US $946,000) are missing from the fund to date.

Delegates from virtually all industrialized countries — including M. Jean Ripert of France, the new chairman of the negotiations — have spoken of the need to ensure that work on a climate change convention and related protocols is a truly global effort. A Trust Fund has been set up to cover the travel and daily costs of representatives of developing countries participating in the negotiations. ECO understands however that contributions made to this fund indicate that the commitment of some industrialized countries is so far more rhetorical than actual.

The United Nations Secretariat, set up to organize the convention talks between now and the UNCED meeting in June, 1992, has calculated that $2,140,000 is needed to ensure that two representatives from each of 63 countries (the Least Developed plus the Small Island developing countries), can attend the several 1991 negotiating sessions planned for the expected climate change convention. Total contributions to this point, as outlined below, are barely 50% of this total.

Observers point out that the shortfall is even more significant than it appears, due to four additional factors. First, it will not cover the costs of representatives from developing countries outside the 63. Second, it will not allow any developing country representatives to participate in the IPCC (Intergovernmental Panel on Climate preceded the negotiations and continues to assess new scientific findings to advise the negotiators. Third, it cannot support preparatory work in any developing countries, and fourth, it does not cover the costs of a third delegate from any of the 63 countries. Many such delegations point out that a third delegate might be useful when two sessions of the negotiations are being held concurrently. By contrast, the delegations from countries such as Japan and the US may include a dozen or more officials, enabling such countries to be represented on many committees and working groups.

Continued from page 1, column 2

EFTA Split

Meanwhile EFTA (European Free Trade Association) countries remain severely split over carbon reductions following the breakdown of an attempt to achieve a common position at the Second World Climate Convention. While Switzerland and Austria are committed to firm policies to reduce carbon dioxide emissions from traffic and other sources, the Nordic countries, normally among environmental leaders, are refusing to commit themselves to measures to achieve a freeze on the gas by 2000 in line with the EC position. Finland in particular is believed to be a problem to the Nordic group, although neither Sweden nor Norway have issued a clear policy statement showing that they will achieve cuts.

Thus, observers suggest, with a few exceptions such as Australia and New Zealand, key developed country blocs are presently proving ineffectual in developing political momentum to develop a climate

US Energy Bill Cut

In particular, despite internal chaos over climate policy, the United State Government has felt no particular pressure to adopt stronger or clearer policies. On Saturday, the Washington Post carried a leaked report showing that administration supporters had excised parts of a draft Energy Bill concerned with energy efficiency, which would be key to achieving any significant cuts in US carbon dioxide emissions, the worlds largest. The Administration had hoped to keep the draft Bill from becoming public during the climate negotiations which began with the publication of a widely criticized and vague US 'climate strategy.'

US Department of Energy officials who had drafted the deleted text, have been ordered to keep quiet. Observers believe that the Administration's opposition to specific mandatory measures to require increased energy efficiency is largely ideological. Last week the Congressional Office of Technology Assessment reported on a two year study which showed that the US could, using existing technologies reduce its CO_2 emissions 29-35%. "This is the abdication of any attempt to connect US energy policy to greenhouse negotiations," said Richard Mott, of WWF International. "It's much worse than had been feared — the eleventh hour elimination of energy efficiency provisions by a group of White House insiders has fended off all attempts by others, such as EPA, OTA, Department of Energy, and the State Department to get the Government more in tune with what's going on internationally."

'Magnificent Keystone' Missing?

If delegates fail to reach agreement on a draft treaty text at the Washington meetings, the next opportunity for an all-nation discussion will be at a Nairobi meeting scheduled for summer or winter 1991. The meeting schedule, already crowded, looks increasingly difficult to meet. A statement by UN Secretary General Javier Perez de Cuellar opening the current negotiating sessions said that it would be 'the most magnificent keystone in the building of a new world order' if a treaty was ready for signature at the June 1992 United Nations Conference on Environment and Development due to be held in Rio de Janeiro, Brazil. In the words of one observer 'it now looks as if the UN's 'new world order' may be missing its keystone unless governments get their act together in the next few days.'

Country	Commitment ($US)
Switzerland	$240,000
European Community	$150,000
Netherlands	$150,000
United Kingdom	$108,900
Denmark	$100,000
Germany	$100,000
Sweden	$ 85,000
France (and bilateral aid)	$ 80,000
Norway	$ 50,000
United States	$ 50,000
Spain	$ 50,000
Canada	$ 30,100
TOTAL	**$1,194,000**
TARGET	**$2,140,000**

New Zealand and Australia: Committed to providing bilateral assistance to AOSIS members of the South Pacific throughout the negotiations.

Finland	No amount yet committed
Austria	No amount yet committed
Italy	No amount yet committed
Japan	No amount yet committed
Portugal	No amount yet committed
Belgium	Unknown
Greece	Unknown
Iceland	Unknown
Ireland	Unknown

NGO NEWSLETTER

eco

Eco has been published by Non-Governmental Environmental Groups at major international conferences since the Stockholm Environment Conference in 1972. This issue is produced cooperatively by groups attending the Intergovernmental Negotiating Committee on a Framework Convention on Climate Change, Westfields Center, Chantilly, Virginia

GLOBAL WARMING 'OVERTAKES TALKS'

Agreement To Negotiate On An Agreement But No Commitments, No Draft Treaty After Second Week

By Eco Staff

The ten day Washington climate negotiations were grinding slowly on at Chantilly last night, with no prospect of diplomats having time to even consider a draft negotiating text. Delegations failed to reach a decision on whether the treaty due to be signed at the June 1992 United Nations Conference on Environment and Development (UN CED) would include commitments to reduce greenhouse gas emissions, something which the United States is opposed to.

With only fifteen months to go before the world's first climate protection agreement is due to be concluded, environment groups accused the meeting of wasting time. 'Global warming is now moving faster than these negotiations,' declared David Doniger of the US Natural Resources Defence Council. Substantive discussion will now need to wait for at least two months until the 'climate circus' reconvenes in Geneva.

Working Group Tussle

Instead of providing governments with a working document to begin the real elaboration of a treaty covering issues such as levels of emissions, conservation of forests and energy policy, the gathering spent days discussing the establishment of working groups. The composition and remit of these groups was controversial because of the influence it will have on the eventual outcome of negotiations. Developing countries present at the meeting were mainly represented by diplomats from New York - where they act as the 'Group of 77' (see page 9) — and both environment and industry observers were agreed that the 'UN agenda' brought to the negotiations by these diplomats had linked the climate discussions to wider north-south issues of economic equity and interest.

Continued on page 16, column 2

Cyclist Reaches Chantilly

By Our Greenhouse Gas Reduction Correspondent

Some greenhouse gas emissions were avoided today when one of many NGO observers in the climate talks at Chantilly cycled there from Tyson's Corner, instead of going by car. The cyclist, Mr. Ken Snyder, was greeted with astonishment by friendly North American delegates, many of whom had never seen a bike outside a fitness center. The epic tale of Mr. Snyder's journey, which is understood to be unique and possibly illegal, is told on page 11.

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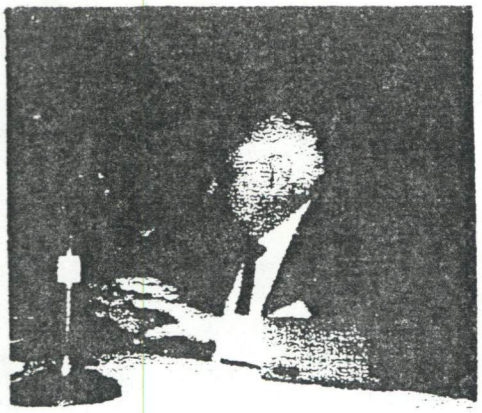


Prof. José Goldemberg, Secretary for Science and Technology of the Presidency of the Republic of Brazil, at Chantilly

by ECO Staff

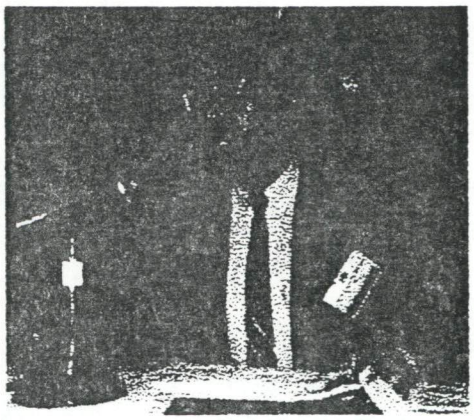
Surprise at how well the European countries had stood their ground despite the lack of enthusiasm for greenhouse gas controls in the US; a belief that the group of 77 may not always have a single view on climate change; and some dismay that the US position discourages developing countries from taking any action at all in spite of their as yet relatively small contribution to the total accumulation of GHG's in the atmosphere were all points raised in a Wednesday briefing to environment groups by Science Minister Jose´ Goldemberg of Brazil.

Responsibility

Goldemberg, who is also a professor and a world-renowned expert on energy strategies, was concerned that if the US and other developed countries did not accept their leading responsibility for reducing the problem they have been causing since the industrial revolution, and the need for active financial support to the developing world, not only would the climate change negotiations make little progress but it would be a retreat from concepts agreed to at the Second World Climate Conference and in the Montreal Protocol.

Goldemburg was sanguine about the prospects of rapid progress, pointing to the obstacles that exist in different country blocs. Brazil is leading attempts to improve data on forest losses and conservation, which he pointed out, were necessary if the tropical forest countries were not simply to claim that conservation was impossible, characterising the argument as one of 'people versus trees.' He highlighted the need for better communication of the potential for energy efficiency measures in countries where a lot of fossil fuelled-electrical generating capacity was being installed but little was heard about improving end use efficiency.

Put these factors together with the reluctance of the US and the slow progress in persuading the World Bank and other multi-lateral development banks to fund 'leap-frogging' technologies, there was plenty of reason for countries to seek delay, rather than agree on a climate change convention at UNCED in 16 months' time.



Luiz Gylvan Meira, Director of Earth Observations of the National Institute for Space Research, at the briefing

Dr Luiz Gylvan Meira, science adviser on the Brazilian Delegation at the INC briefed environment groups on the confused history of attempts to put figures on deforestation in the Legal Amazonia and the Amazon basin.

Infra-Red

Dr Meira noted that variation in the definition of what was and was not meant by 'deforestation' was a serious difficulty in the past. There were several types of savannah vegetation in the area, including the "cerrado," effectively a drier forest in which the tree canopy closure is almost complete. Some studies had included as 'deforestation' a historically deforested area of some 97,000 km², now covered with a secondary forest, others had not. And whereas conventional aerial photography or visual inspection showed much closed moist forest as looking the same, his Institute had now found that LANDSAT infra-red imaging could distinguish old secondary forest from primary forest, previously something that could only be done with detailed species inventories.

Many uncertainties also remained over the carbon held in the standing crop of trees in different parts of the forest (and soil carbon, roots etc). Calculations of observed fluxes had to be separated from net transfers from, for example, biomass to the air.

Slowing Deforestation

Brazilian studies now being conducted with Landsat imaging suggested that the annual rate of deforestation in the legal Amazon is about 20,000 km² a year and has been slowing since the mid to late 1980s.

The 40,000km² used by Greenpeace, the 50,000km² used by Friends of the Earth (Norman Myers) and IPCC, and 60,000-80,000 km² a year used by WRI and others at various times, had been generated using other methods. The most problematic of these had been the counting of forest fires with satellite imaging: although the fires could be counted and produced visually spectacular images, the assumptions made about the forest that was being lost, had turned out to create significant over-estimates. As a result of taking these annual estimates and then supposing that they held true over a decade, decadal values 'for the 1980s' of as much as 800,000 km² had been produced.

The Natural Institute for Space Research is now resurveying areas studied in 1975 and 1978 (surveys conducted for purposes of assessing agriculture and therefore with their own errors and assumptions) conducting a survey with 1985 images, and analyzing 1990 data when put together with the 1988 and 1989 surveys in a computer-based Geographical Information System, it will be possible to display the time and space evolution of deforestation and contribute to the understanding of its causes. Such data from 1975 to 1990 for example from the State of Rondonia where there was just cleared and uncleared closed moist forest (i.e. no confusion from old clearance , savannah etc) indicated a continuing slowing in deforestation, although it was not yet possible to ascribe cause and effect to deforestation and the policies being implemented to stop it (such as the abolition of various tax breaks which had favoured deforestation).

Thus it appears that some 300,000 km² of Amazon forest has been lost to other uses (such as farming, roads, towns) in recent decades, together with 95-97,000km² of much older clearance. It is now Brazilian Government policy to reduce the rate of deforestation by 10% each year.

Forest Priorities

by Ken Snyder

Between now and 1992, meetings on global forest conservation will be held in several different international fora. At the Houston Economic Summit last July, G-7 nations committed to the pursuit of a global agreement on the conservation of forests. The Tropical Forest Action Plan (TFAP) organized by the Food and Agricultural Organization of the U.N. and the International Timber Trade Organization (ITTO) both plan to have meetings to discuss their role in this process. A treaty on climate change is likely to have forest components, if not a forest protocol.

In addition, negotiating sessions of the Biological Diversity Convention have begun. Under the auspices of UNEP, many governments have recognized the UN Conference on Environment and Development to be a key forum launching forest initiatives. Of the countries that have begun drafting text on forest conservation, many have pushed for mechanisms that limit giving FAO a lead role in the development of an agreement. Countries are divided in linking a forest agreement into climate with the US being leading opponent to such linkage.

Below are key concerns which need to be addresses in the area of forests. It may be that not all these issues will be addressed within climate negotiations. Climate negotiations should now lead to agreement on the following.

Primary Forests and Biodiversity

The rapid loss of primary forest habitat is not limited to the tropics. In many temperate regions, the remnants of undisturbed forest which remain are disappearing at equally alarming rates. Nations should commit to ending deforestation and fragmentation of primary forests within their own borders as part of a global effort to protect socially and ecologically important habitat, and as part of an aggressive program to reduce greenhouse gases.

Ecosystem Services and Social Benefits

Forests provide many ecological and social benefits, such as reducing soil erosion, protecting watersheds and coastal ecosystems, and carbon dioxide sequestration. Any mechanism or credit system linking forests to their potential as carbon sinks, must make protection of natural forests a priority over afforestation or reforestation. Conservation strategies must recognize the many forces contributing to deforestation such as agriculture, population pressure, trade barriers and government subsidies which encourage the clearing of forests. These strategies should promote the transition to non-destructive models of forest use and establish reforestation and afforestation goals for regeneration on degraded lands.

Involvement by Indigenous Peoples and Non-Governmental Organizations

An agreement must secure the basic rights and needs of local peoples, including indigenous and forest peoples and other communities that depend on the forests.

As part of the process for preparing national forest conservation plans, review committees on the international and national level should be set up to assure the involvement of nongovernmental, indigenous and local people in every level of planning.

Monitoring, Funding and Accountability

To meet these objectives and to safeguard against problems experienced with past international mechanisms, an agreement should include: cross-sectoral expertise when negotiating agreements and preparing national forest conservation plans; and controls and mechanisms to ensure public accountability of project strategies and private companies involved. Agreements should promote conservation and sustainable resource development rather than a timber industry and should have mechanisms to provide additional assistance to countries required to make a large shift from timber to non-timber based industries.

Carbon And Forests

The global carbon cycle represents a massive circulation of carbon among atmospheric, oceanic and terrestrial systems. Roughly 255 billion tons moves between the atmosphere and other components each year. In pre-industrial times, this cycle remained, in large part, at equilibrium. Human-related activities now have offset this balance, causing a 25% increase in CO_2 concentrations to above 350 ppm in 1989. CO_2 emissions from deforestation and the burning of fossil fuels today total 7-9 billion tons of carbon annually. Reduced by the absorption of CO_2 by the surface layers of the oceans, the net contribution of carbon to the atmosphere is estimated to be about 3 billion tons annually.

A CO_2 strategy should address all three core aspects of the CO_2 cycle: sources, sinks, and reservoirs.

Sources are the source of increased CO_2 concentration in the atmosphere. The amount of carbon released into the atmosphere due to deforestation each year is believed to be 1-3 billion tons. Fossil fuel carbon contributes an additional 6.2 billion tons. Source reduction of CO2 emissions from deforestation and fossil fuels, in particular, is a top priority.

Sinks include oceans and terrestrial and non-terrestrial biotic components. The most effective forest strategy for sequestering atmospheric carbon is to slow down deforestation and agricultural conversion (or urbanization) of mature forest lands, and to replant non-forested lands. Any climate strategy linking forests to their carbon sink potential must make the protection of standing natural forests for their ecological and social importance, a priority over afforestation or reforestation.

Reservoirs: While mature forests are at equilibrium and therefore do not serve as a sink for carbon, they do represent an important reservoir of carbon. Conservation of forests as carbon reserves is the most effective way in reducing net emissions from deforestation.

Growing forests absorb carbon, but in most cases, the conversion of natural forests to agriculture or plantation represents a net contribution of atmospheric carbon. One year after logging, the rate of carbon loss from decomposition of plant litter resulting from logging, and soil greatly exceeds carbon sequestration by seedling trees. In some forest types, such as the ancient forests of the US Pacific Northwest, it could take 200 years or more for the uptake of carbon to compensate for carbon losses by below-ground and non-marketable wood and organic matter left after logging.

Ken Snyder is International Forest Program Coordinator for the Audubon Society in Washington, DC

The Case of Hungary

by Zsolt Csikor

I'm a pessimist. Not because of the lack of capital that should be invested in environmentally benign renewing of our economic system. There is enough money in the world we 'only' have to watch for its sources and target it properly.

The reason of my pessimism is a prevalent attitude in my country that "we are a small country in deep crisis and we have never had and will never have anything to do with global problems." It is not only the politicians who don't care about the global warming issue. Basically no one cares. There is almost no pressure on the government that would argue with the greenhouse issue. Even we, the environmental NGOs do not use it well enough when arguing for energy conservation and pollution prevention.

A Question of Money and Will

The government is doing little or nothing to address this problem. The most the Ministry of the Environment has done so far is a study on our greenhouse gas sources and sinks and the effects of the climate change. The chart clearly shows that without any further technological invention, 20% CO_2 reduction by 2005 is only a question of money and will. Given our GDP/CO_2 efficiency is about one forth of that of Austria, it is not a tough target.

One point of concern is that there is not a single word written, (perhaps not even a word said) about the economics of this. Although this study is not intended to give recommendations, there are suggestions inviting western companies to build power plants and then paying for this in electricity. It is troubling when the only official Hungarian organization in a position to stand up against such things at a government level, not only closes its eyes to them, but actually clears the way for investments it should never let through.

How Did it Happen?

How can this happen with a government that had such ties to the environmental movement not long ago? First, they forgot to change the personnel, they forgot to create a separate environmental ministry (formerly housed within water management, now with construction) and second, the minister himself has no environmental background at all.

So almost all the people who know something about the environment and are eager to do something for it as scientists or by working in the environmental movement, are still kept well away from decision making. Together with the constant pressure of lobbies (such as the energy lobby), and the overall pressure of the economic crisis and social problems it causes, the outlook is not encouraging.

There is a lot to do back home to put things on the right track. Can anyone help us in this? Yes. Environmental self control on the part of Western investors can help in easing the pressure. Money of course can also help, very effectively, but should be earmarked and an eye kept on to avoid its use for other purposes.

Can the situation be changed? It must be changed: there is lot to do, but a lot can be gained in return.

POTENTIAL CO_2 REDUCING CAPACITY OF HUNGARY
(EXTRACT FROM THE STUDY "CLIMATE VARIABILITY AND CHANGE II"
BY THE MINISTRY OF ENVIRONMENT AND REGIONAL PLANNING)

Business as usual

(Significant uncertainty because of the economic situation)

CO_2 emission in:	1988	2005	2030
(Mt C/year)	23	27-28	32-35

Technologically feasible reduction on present technological level

CO_2 reduction by: *(Mt C/year)*	2005	2030
change of structure of industry	3	4.5
technology modernization	1.3	1.5
power generation	1.5	2.6
communal heating	2	2.4
transportation	1.2	2.8
all together	9	13.8
reduced emission*	18-19	18-21
reduction from 1988 level (ratio)*	0.17-0.22	0.087-0.22

* calculated from given data

Zsolt Csikor works with Independent Ecological Center in Hungary

At the Washington Climate Conventions Ambassador I. N. Topkov of Bulgaria commented that Bulgaria insisted on several key principles and postulate for further action, including economic and cost-effective solutions across the borders with fair and equitable allocations and technological transfer. He added that 'creating o...

Czechoslovakia Today:
Working for a Better Future

By Jirka Plaminek

The environmental problems of contemporary Czechoslovakia are enormous. The new political situation in Czechoslovakia offers NGOs substantial opportunities to solve these problems.

Discussions with other NGOs of the Climate Action Network during the current negotiating session of the Intergovern-mental Negotiating Committee has showed that the position of Central Europe is somewhat unique — somewhere between that of the developing and the industrialized countries. As with industrialized countries, consumption levels are high, and consequently large amounts of pollution and waste are produced. However, as with developing countries, the efficiency of our economies is low, resulting in wasteful use of natural resources.

There are three main causes of this situation in Czechoslovakia: serious flaws in the structure and management of our economy; shortcomings in our legislative system; and, last but not least, the problematic values, style of living, and consumption patterns of our citizens. I will discuss these three points in turn.

Economy

Our consumption of natural resources is huge, but this does not translate into a higher quality of life in terms of availability of useful goods and services. Specifically, Czechoslovakia currently produces a large amount of goods for which there is little or no demand, while production of these goods damages our environment. Transport of raw materials and the finished product contributes to heavy traffic and consequent air pollution. The root cause of the high consumption of raw materials and energy is the basic orientation of the economy towards heavy industry.

We need to change the orientation of our economy and to assign market determined prices to raw materials and energy. While Czechoslovakian environmentalists support the move toward a free-market economy, we must also ensure that rules are in a place to restrict and control damage to the environment and abuse of natural resources.

Legislative Measures

We have inherited a system of laws which are not designed to function in a democratic setting. Consequently, all sectors of Czechoslovak society are currently working to formulate a new and environmentally friendly legislative structure. This structure will be based on a new constitution that incorporates environmental concerns, an umbrella environmental protection law which will outline the basic rights and duties of individuals and organizations across all environmental issues, and several detailed laws relating to specific environmental topics.

NGOs are taking an active part in the process of creating this new legislative system. The new constitution, which will be a crucial determinant of the success of environmental legislation in Czechoslovakia, is expected to be adopted in late 1991.

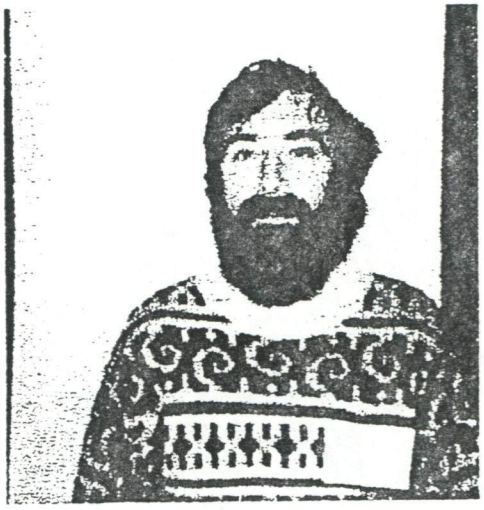
Lifestyle

This point will be decisive for the future of environmental reform in Czechoslovakia. Unfortunately, I am afraid that the primary goal of the majority of our citizens is to make up for lost time in achieving the same material standard of living as Western countries, without thought for the environment.

The greatest goal of Czechoslovak NGOs should be to increase public awareness of the need for an environmentally friendly style of living primarily by means of changing consumption patterns and moving towards a more post-materialistic value orientation.

Fifty years ago, Czechoslovakia was part of the community of most developed countries in the world. Our people want to live well again, and the role of our NGOs is to develop the path to a good standard of living which will not damage the environment and will not restrict the development of other countries or future generations. Czechoslovakian NGOs are keen to cooperate with any other organizations that are dedicated to the same goals of sustainable development and environmental protection.

Jiri Plaminek works with the Ecological Society in Czechoslovakia.



ECO says thanks to the NWF for office space and to WWF International for use of photographs.

financial mechanism to meet costs of the implementation of the convention by the less,' was also essential, noting 'President, I say less, not least-developed countries with further measures to ensure regular sums as an important element of a regime which will enhance their response capability.

Going further than countries such as Hungary, the Ambassador pointed out that in this respect, Bulgaria had to be considered alongside developing countries: 'As a representative of such a less developed country,' the Ambassador stated. 'I wish to express our sincere thanks to all those who contributed to these funds and to underline our hope that nobody is going to forget the fact that global by definition covers both axes: north-south yes, but west-east too.' Zsolt Csikor points out that 'the financial support needed in the 'east' of Europe to curb greenhouse emissions has to come from OECD countries but should be an investment in new and less polluting industries, rather than a diversion of aid monies from the south. It's a cost-effective way for OECD countries to pay for pollution reduction overall.'

WHITHER ANTARCTIC MINERALS?

By Eco Staff

In June 1988, the Antarctic Treaty Consultative Parties adopted the Convention on the Regulation of Antarctic Mineral Resource Activities, the Wellington Convention or CRAMRA for short. The Convention was intended to establish a regulatory framework for governing possible future mineral (eg fossil fuels) exploration and exploitation in Antarctica. It was intended to represent a 'balance' between such possible development and environmental protection.

In May 1989, Australia indicated it would not sign the Convention, and with France, called for designation of Antarctica as a world park where mineral drilling would be permanently banned. The Exxon Valdez oil spill in Alaska and the Bahia Paraiso oil spill in Antarctica contributed to increased concerns among Antarctic Treaty Parties about the possibility of mineral activities in Antarctic.

Ban Proposal

At their last Consultative Meeting in Paris, the Treaty Parties called for development of a comprehensive environmental agreement for Antarctica. Their first meeting on this new regime took place last fall in Chile and they will meet again in Madrid this April. There appears to be general agreement that there should be some type of ban on Antarctic mineral activities. Questions remain over how long the ban should be, whether it could be lifted and if so, how new US legislation enacted last fall provides for an indefinite ban on mineral activities in Antarctica by US citizens and calls upon the Secretary of State to negotiate a new agreement that permanently or indefinitely bans such activities. To date, the US has only expressed a willingness to consider a very time-limited moratorium on Antarctic mineral activities.

Fossil Fuels

One observer who was involved with the negotiations comments: "As the world increasingly recognizes the need to limit use of fossil fuels in order to arrest global warming, it seems incongruous that the possibility of opening Antarctica to fossil fuel exploitation would be maintained as an option, particularly noting the importance of other Antarctic environmental concerns. Hopefully as they negotiate the climate change convention, countries will make the connection between the Antarctic minerals debate and global warming."

ARCTIC AT RISK FROM WARMING

By Tosch Ajotts

Global warming has the potential to wreak havoc on vulnerable Arctic systems. Pack ice covering an ocean surrounded by wide expanses of frozen tundra provides an environment unique on Earth, and one that is susceptible to minor changes in climate. To make matters worse, some global climate models estimate that Arctic continental temperature may rise as much as two to three times the global mean warming, with greatest warming during late autumn and winter.

In fact, data collected from around the world indicates that the Arctic is warming now, during winter and spring: - although no one can say for sure if the enhanced greenhouse effect is playing a role. Temperature records show that during the past twenty years, there has been a warming of about 0.75 degrees C per decade over Alaska, the northwest Canadian coast, the North Atlantic marginal ice zone, and north central Asia.

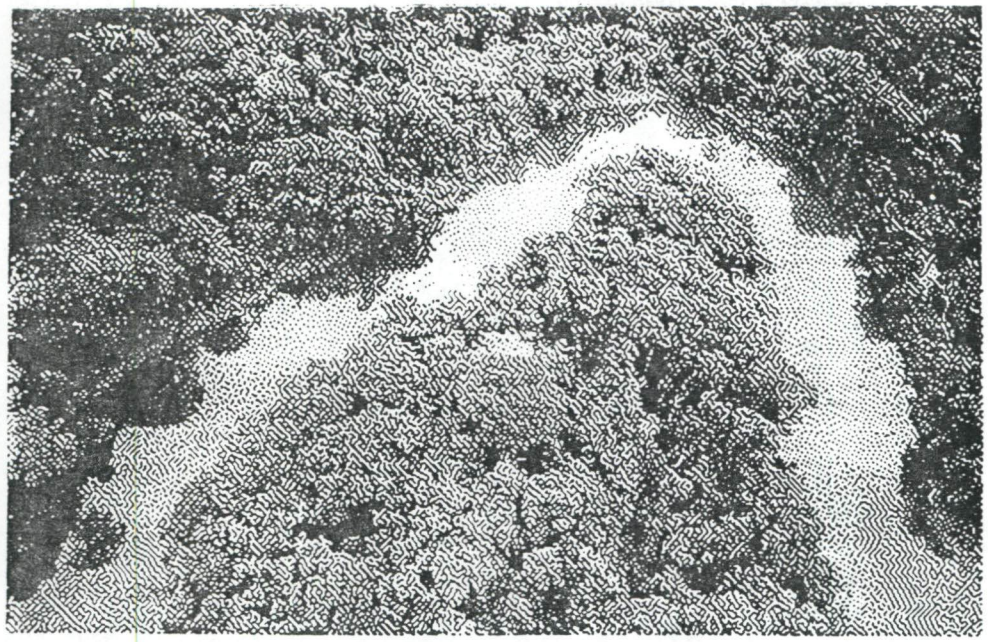
Impacts

Many Arctic systems depend on ice, and are adapted to seasonal shifts from ice to water and back again. Global warming is expected change this balance over large areas, setting off a cascade of impacts and potentially causing dramatic changes in the way entire systems function. Although the consequences will be complicated and interrelated, and not well understood, potential scenarios include:

- reduced thickness and extent of Arctic sea ice — perhaps eventually disappearing in summer if global warming continues
- loss of habitat for arctic cod, seals, walrus, and polar bears that use sea ice for shelter, feeding, or breeding
- decreased snow cover and an increase in thickness of the active layer on the surface of permafrost — resulting in more wetlands on flat-lying areas
- dramatic growth of Siberian and North American rivers as precipitation and melting increase, disgorging large amounts freshwater to the Arctic Ocean
- disruption of ocean circulation, changing the path of ocean currents and the heat supplied to the atmosphere
- diminished oceanic productivity, supplying less food to fish and marine mammals.
- of particular note is the implication these scenarios have for the livelihood and well being of the native peoples of the region.

Arctic Rim

The eight Arctic Rim countries (Canada, Denmark, Finland, Iceland, Norway, Sweden, the USSR and the USA) are presently developing an Arctic Environmental Protection Strategy scheduled for adoption at a Ministerial meeting in Rovaniemi, Finland in June 1991. To date, global warming has not been given serious attention in the draft strategy: in fact it is not even mentioned. Despite the importance of cooperative monitoring and research of Arctic atmospheric, oceanic, sea ice and terrestrial biosphere conditions relevant to global warming, the proposed monitoring elements of the strategy do not specifically address the problem. The Arctic Rim countries are well placed to take up the impacts of global warming in the Arctic and to establish mechanisms for monitoring and assessing them. It is not too late for them to address global warming as part of their Arctic Environmental Protection Strategy.



DO YOU SMELL SOMETHING?

Gilbert Arum suspects that some of the things stirring down in the forest are not all that they seem.

Negotiations are now under way to establish a framework under which the present climate change crisis is to be tackled. Yet, the major challenge still remains: what to do with the excess man-made carbon contributions, (mainly CO_2 emissions from fossil fuel use in the industrialized states), deforestation in tropical and temperate regions, and other factors to which the current climate problem has been attributed.

Everyone knows that forests can play a critical role in alleviating global warming by tying up carbon in existing trees and absorbing additional carbon through plant growth. This has led some scientists, backed by powerful politicians, to propose that the task of getting rid of the excess carbon contributions should be very easy. They suggest, in fact, that expanding forests will be much easier than instituting conservation and efficiency measures. The proposal would require convincing people in the tropical countries, where current emissions remain low, to sacrifice their culture and agricultural lands for forestry with fast growing tree species.

Dire Consequences

Apart from indirectly justifying pollution, this proposal is insensitive to the economic root causes of deforestation. In effect, it accepts the need to pilfer natural resources from developing countries in order to perpetuate a polluting and unjustifiable consumer society. What these proponents forget is that, if all economies contributed as much greenhouse gases as do the majority of tropical countries, global warming would never have become an issue, at least not today, and the world would be saved impending catastrophe. It is as a direct result of the excessive carbon contributions from the industrialized economies that all mankind will suffer dire consequences.

While leaders of industrial nations have stated that their economic and energy policies will not be subject to discussion on a climate agenda, no indication has been given by others as to whether afforestation to sequester carbon has priority over deforestation. It remains to be seen which nations will be willing to reduce deforestation for climate benefits without consideration being accorded to their social and economic needs. There is also no indication as to whether the desire to arrest the rapid loss of forest habitats will extend to, and result in the conservation of forests, in the boreal and temperate regions, where it is known that trees can sequester carbon over longer periods of time. There is also no indication what emphasis will be given to the need to conserve forest habitats important for biological diversity and other ecosystem services.

These concerns aside, how the framework can seek a net increase in forest cover while respecting the need for biological and cultural diversity and at the same time securing basic rights and needs of local peoples who depend on the forests, remains to be seen.

The Real Agenda

It is dubious whether any of the concerns raised above will be catered to in a framework treaty. The first reason is the lack of a cross-sectorial expertise at the negotiating convention at least from the 'non-polluting' nations. One might argue that financial resources are limiting. But more than US $1 billion are being spent every day in the Gulf War (creating yet more pollution). The second reason is the reluctance of some industrialized nations to make economically and scientifically justified commitments notably to require polluting economies to commit to a 20% reduction on CO_2 emissions. In all, it seems that the real agenda for industrialized countries is how they can continue polluting while relying on tropical forest to mop up their carbon.

Do you not smell something? If not, why do you think everybody is testy about population and per capita based discussions? Why should not a growing economy be interested in a population increase? How come nobody wants to broach the trade issue? Is it because unfair trade practices effectively stifle developing countries interests? I do smell something and I do not agree that it will not serve any interests to discuss these issues under a climate convention.

Gilbert Arum works with KENGO in Kenya.

eco HORSE TALKS

The evolution of the horse, it was once said, was a slow and painful process. The committees of diplomats at Chantilly would no doubt argue that they set out to design a horse rather than a camel but to date it is a horse with a woefully inadequate specification.

The world sent them to Washington because it wants action to protect the climate by 1992. So far they have come up little more than an agreement to go on talking. Experienced diplomats on the delegations and in the Secretariat should have been able to do better than this.

Environment groups and victim countries such as the small and low lying island states would like a racehorse. Many developing countries - and the environmentalists - are well aware that they need a workhorse for the work of sustainable development. The United States and, by degrees, the other OECD countries, are reluctant to agree to feed that workhorse.

All this is not solely the fault of the United States but it has covered itself in environmental stable manure by standing out against cuts in its own gargantuan emissions of carbon dioxide. The Europeans, Australasians, the Japanese, the EFTA countries and others are at least willing to lead the horse to water in 1992. If that does happen says the US, then the horse must not drink.

No doubt the attempt by some of the Group of 77 to link the climate talks to the existing UN 'aid and development agenda' has not helped speed the process of designing a treaty. But global climate change is a certainty and dealing with it will raise all those difficult issues: ignoring them now is no guarantee of progress on them later.

Everyone must pray that by the time the negotiators meet again, the Gulf War will be over. Equally, the diplomats must start moving faster if public concern is not to become public anger at the shambling pace of this process.

OPINION

Ghost in the Machine

For the past ten days Chantilly has been just about the only place in Washington where nobody much has spoken about the Gulf War. Nothing substantive has been said about it but the war's ghost has stalked the corridors and it has sat in on the meetings. The spectre has sapped the political will of the United States' war allies in Europe: their enthusiasm for cutting greenhouse gases has been spirited away in a shroud of political expediency.

Nations and the United Nations who are taking action to repulse an aggressive dictator and re-establish the right of a sovereign country to exist, find it impossible to publicly take issue with the country leading that war, especially when the issue would have to be the United States' carbon emissions, and the political significance of the war is principally the defense of the west's oil supplies. The fact remains of course, that the continued use of this oil is a threat to ecological security in itself.

Thus the ghost at Chantilly has not only lived in the machinery of the negotiations; it has pulled levers which have stolen away the framework treaty. Until the ghost is laid to rest, it is unlikely that the international community will turn its attention to the equally sovereign rights of countries like the small island states to exist, or the other people whose lives will be threatened by global climatic change.

Giovanna Melandri, Lega per L'Ambiente, Italy

of American Faces

by Yasuko Matsumoto

By giving us the opportunity to drive between Washington DC and Westfields everyday, emitting a lot of additional CO_2 on the way, the US has provided plenty of evidence that the US could easily cut CO_2 emissions. Establishing a good public transport network and improving the fuel efficiency of all those 'gas guzzler' cars (the size of some houses in Japan!) are two immediate suggestions which spring to mind.

In Japan there is an expression 'watching the color of the face.' Culturally and linguistically translated, this means being cautious about the direction another person will take before adopting any decisive attitude on a particular issue. Looked at positively, one might call this sort of attitude 'flexible.'

Japan in Retreat?

In this conference, I am afraid, Japan seems to have gone back to the position of 'watching the color of the face of the US.' The current Japanese position contrasts sharply with the step forward they took in Geneva only a few months ago by committing to at least 'stabilizing per capita CO_2 emissions by 2000 on 1990 level.'

Here at Chantilly, the Japanese position does not support the setting of a global CO_2 emissions target for the industrialized countries in a convention, even though almost all OECD nations have already made political commitments at the national or regional level.

Japan suggests instead that the framework convention should 'take into account the individual situation, instead of a mechanical and uniform target.' By saying this, Japan is leaving 'flexibilities' that could allow them to join any camp which will get the final consensus in the negotiation process. It has also succeeded — perhaps only temporarily — in avoiding criticism from the outside world.

Questions for Mr. Akao

On a personal note, I have found Japan's new ambassador, Mr. Akao, to be surprisingly open and friendly to NGOs. In his press conference on 4 February, he stated clearly that he supported NGOs'

participation in the working groups of this negotiation process, which was a nice surprise, particularly to me, a Japanese NGO. Taking advantage of the 'flexibility' and openness of our delegation, I would like to pose the following questions.

1. Japan's Action Plan states '... it is essential for Japan, with it's advanced technology and ample experience in environmental conservation, to take the lead in global efforts through international cooperation.' What does this mean for the INC negotiations?

2. According to the 'End Use Approach' study of Haruki Tsuchiya, an energy expert in Japan, it is possible for Japan to reduce CO_2 emissions 6.3% by 2000 on 1988 levels, and 19.5% by 2010. RIIA's (UK) report says that a 7% CO_2 cut by 2000 on 1988 levels is possible. When will Japan make its Action Plan function as a real action plan through which we can actually 'arrest global warming?' In other words, when can we hear the word 'reduction' from your mouth?

3. Mr. Akao stated that the budget for fiscal year 1991 has been submitted to the Diet. This contains expenditures for environmental protection totalling approximately 3.7 billion dollars. However about half of this budget is related to promoting nuclear energy, including R&D. On Saturday, February 9 we had the biggest accident in Mihama nuclear power station in Japan we ever had. Do you still propose building 40 or more of them, which could cause environmental disaster rather than protection?

4. What has happened to your donation for the Trust Fund? I am looking forward to hearing the details of your pledge for the Trust Fund.

5) Would it be possible for you to be a bit more politically and philosophically independent from the US on this issue, which I am sure will benefit both Japan and the rest of the world? That's all for today. Thank you.

Yasuko Matsumoto works with Greenpeace in Japan.

The Group of 77

by Elizabeth Acheampong

The Group of 77 is actually made up of 127 countries. How many of these countries are in Chantilly to negotiate a global Framework Convention on Climate Change? If it true that there are only 66, then these are not global negotiations.

Most G77 countries are represented by diplomats from the UN missions in New York and the embassies in Washington, DC. Is this the calibre of people needed to negotiate this convention? Where are the experts from the Ministries of Environment, Energy, Science and Technology, Law and Finance? As Mr. Robert K. Gathungu from the Kenya Mission in New York and a delegate to this meeting has pointed out, the validity of the whole negotiation is questionable.

On behalf of the chairman of the G77, the honourable Ghanaian delegate from New York has pointed out the need to raise enough funds to enable the effective participation of the developing countries. Sums of money are being pledged toward the participation of the 77. How much has been pledge so far — only US $1.2 million. According to the INC secretariat, a minimum of US $2.1 million is required to bring 2 delegates from 63 developing countries to the INC negotiations in 1991. Are the G77 countries expected to participate effectively in global climate issues or not?

When they can participate fully, developing countries will argue that the main issue of these negotiations is that CO_2 and other greenhouse gases are being released into the atmosphere at an unprecedented rate and something must be done about it to salvage our planet. We all know the figures; 75% of greenhouse gas emissions from energy production and use are being released by 24% of the world's population. Is it not obvious which countries have the onus to reduce greenhouse gas emissions?

The developed countries have already depleted most of their primary forests during the course of their development. Forests are sinks and reservoirs for carbon dioxide. The tropical forests are storehouses for biological diversity that will keep open future options for agricultural and pharmaceutical production. Developing countries believe they should be compensated if they are to agree to commit themselves to primary and secondary forest conservation.

Elizabeth Acheampong

OPINION AND ANALYSIS

POPULATION GROWTH AND THE CLIMATE NEGOTIATIONS

by Karl Gawell

While we consider ways to address global warming, we should recognize that if population growth is not addressed, gains from energy efficiency, forestry, and other initiatives may disappear.

Throughout the 70s, for example, when energy prices in the United States doubled and doubled again, energy efficiency improved by roughly one-third. But, during this same period, population growth and economic growth together consumed any benefits — leaving US energy use essentially flat.

The current world population of 5.2 billion will continue growing to at least 8, possibly 12 and perhaps even 15 billion in the next century. Meeting the needs of these additional people — even at low levels of consumption — could undermine environmental progress and the world's collective efforts to maintain a habitable climate regime.

Two international conventions, the 1974 Conference at Bucharest and the 1984 Conference at Mexico City, include detailed plans to curb world population growth. The resulting agreements have laid an extensive ground work for leading the world towards an 8 billion future, rather than 12 billion, 15 billion, or higher.

However, international financial support and political will have been sorely lacking; particularly from the United States. In 1974 the United States promised it would 'do its

Continued on page 11, column 3

The Danish Energy Plan

By Eco Staff

Denmark has one of the world's most detailed energy policies, with considerable emphasis on renewables and a commitment to cut CO_2 emissions 20%. This ECO review is based on the Danish Energy 2000 plan. The Danish Energy Plan covers both national and international policy initiatives, and aims at ecologically sustainable development.

'The overall aim' says the plan 'is to create the basis for reducing the CO_2 emissions of the Danish energy sector by 20%' while 'achieving a further reduction of SO_2 and NOx emissions from their 1988 levels by 2005.' At the same time it aims to ensure that 'Danish society is furnished with reliable, efficient and economical supply of energy.

The programme concentrates on: savings in energy consumption; converting the supply system and making it more efficient (for instance with the cogeneration of heat and power (CHP)) and increased the use of cleaner sources of energy, as well as Research and Development.

The main points of the plan are as follows: 'Savings in energy consumption: an important method for promoting the necessary savings of energy and increasing the efficiency is a high level of energy prices. The Government will aim at a reform of energy taxes so that they may better support the long-term goals of energy and environmental policies without neglecting other matters of social importance, including the ability of Danish companies to compete internationally.' The government is considering:

- introducing environmental taxes on SO_2 and CO_2, combined with a continued use of general taxes on energy;
- changing the taxation of electricity and CHP;
- introducing environmental taxes on the use of energy in the business sector to create incentives to save energy and convert to environmentally benign energy sources.

The plan also specifies the introduction of energy labelling and efficiency standards; tougher building regulations; reinforced consultancy arrangements; energy management; and a campaign in which 'the public sector leads the way.'

Heading the plan aims to increase numbers of connections to the natural gas and district-heating systems; to increase cogeneration of power and heat; and to use cleaner fuels.

Through these initiatives the plan intends to see:

- coal-fired and oil-fired district-heating plants converted to use biofuels such as straw and wood chips, or to small-scale, natural-gas based CHP production;
- block-heating units (for building) being connected to the natural-gas or district-heating systems;
- additional power generating capacity being established, preferably by converting existing district-heating plants to small-scale CHP; and
- more natural gas being used in the central power system.

Cleaner sources of energy: the plan calls for greatly increased use of natural gas, straw, wood chips and the like in the Danish energy system. As to biofuels, efforts should concentrate on developing technologies so that in the medium-to-long term various sorts of biomass can be used to a much greater extent than at present.

Use of wind power will be expanded, with an aim is to further develop the technology including the establishment of another 100 MW of wind energy capacity by 1 January 1994.

Research and development: the general aims of the plan of action rely especially in the longer term, on developing new technologies, new methods of making supply and consumer systems more efficient; and new methods of using cleaner surfaces of energy.

By the year 2005 the Danish Energy Ministry calculates that energy consumption will decrease by just under 15% and CO_2 emissions will be reduced by at least 20%.

At the same time, emissions of SO_2 will be cut 60% and NOx will be reduced 50% on 1988 levels by 2005 as a result of the plan and existing regulations.

'In economic terms,' says the plan, there will be 'increased investment activity in the energy sector up to 2005.' But, 'the socio-economic costs of fuel, and the costs of operation and maintenance will fall' compared to the situation without such a plan.

The Danish Government concludes that the plan will 'not place additional cost burdens on society.

Source: ENERGY 2005, pub. April 1990. Danish Ministry of Energy, 11 Landmarket, DK. 1119. Copenhagen K. Tel. T45 33 92 6700.

- 25 April - 28 April 199[illegible] the Danish Government's Advisory Committee for Renewable Energy will hold a conference for NGOs and experts, entitled 'Global Collaboration On Sustainable Energy and Development.' For detail contact Ellen Buchhave or Per Schnack Nielsen, The Technical University of Denmark, Physics Lab III, Bldg. 309, DK-2800, Lymgby, Denmark. Tel. t45-42 881611.

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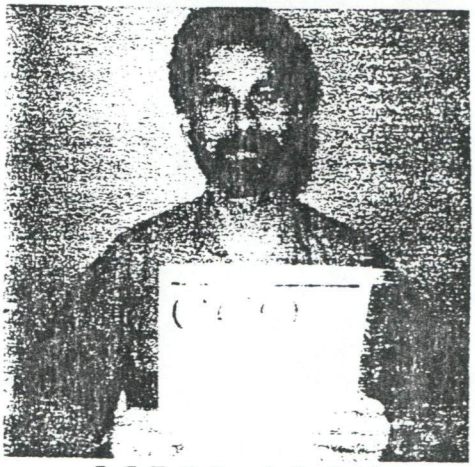


PETER COOK

CAROL SHORT

Biking to Chantilly

By Ken Snyder

When Charles Lindbergh first entertained the idea of flying across the Atlantic, I'm sure many of his friends and family asked him "Why?" and "What are you trying to prove?" the type of questions I was asked when I mentioned my plans to bike to Westfields International Conference Center from the National Wildlife Federation's Laurel Ridge facility. Anybody familiar with the area knows it would not be an easy task and in fact, in some places, could be quite dangerous. I was determined none the less.

Hypocrisy

Before I embarked on "the Expedition," my primary motive was to prove that a carbon-less commute to the negotiations site was feasible. In addition, I must admit, I thought this would somehow relieve me of my feelings of guilt for the hypocrisy of driving to a meeting on of all things global warming. Unexpectedly, I found the Expedition to be a real eye-opener. It forced me to look squarely at the results of an energy-excessive oriented society.

"The Expedition" required vigorous planning. First I carefully studied my maps to figure out various possible routes of travel. Maps can't be trusted, so my next task was to travel the various routes with my friend's car. "As the car zooms" the route to take is clear: either take westbound Route 66, a six to eight lane highway restricted to "high-occupancy-vehicles" (translation: car-pooling) during rush-hour times, or the Dulles Airport Access Road, an eight lane toll road half of which is blocked off solely for airport traffic.

After several days of exploring, I decided on a 16.7-mile route along nine different roads which had 26 stop lights, three stop signs, three stretches of dangerous road construction, three areas of hilly or windy roads with little or no shoulder, and (on the positive side) four miles of official bike trail.

To the car owner, these highways represent quick access to life in suburbia (if one can avoid getting caught up in congestion). To anybody else, they represent an area that is basically inaccessible.

American Dream Gone Sour

Because of the type of urban planning taking place in Northern Virginia and elsewhere in the US, owning a car is not a my view, the American dream gone sour. Come to think of it, maybe holding a conference on global warming here was not such a bad idea after all. After meeting with members of the various NGO's from around the world, many emphasized that the US is not viewed as a development model to strive for. Now if only the US itself would wake up to this.

Excerpts from travel log:

10:45 am - depart (with safety vest and helmet)

10:50 am - many drivers behave as if they've never seen a biker, fearing that I might veer into the center of the road as they try to pass.

10:55 am - cement road construction walls near underpass of Dulles Access road require me to walk bike for few 100 yards.

11:25 am - pass Defense Mapping Agency with "Keep off Grass" sign on lawn.

11:30 am - pass second tanning salon.

11:40 am - development site for McNair Farms Village Shopping Center, future site for 527,000 sq. feet mall surrounded by thousands of parking spaces. (Interested leasers call 1-800-356-CLMI).

I see a green road sign with painting of a cardinal: "Adopt a Highway - Dr. WM Crutchfield, Orthodontist"

11:45 am - sign: "Building a Better Fairfax County: $30 million for New Roads: Centerville Road - 6 lanes, Frying Pan Road - 4 lanes, Coppermine Road - 4 lanes."

11:50 am - have seen dozens of signs for new estates. "1/2 to 3/4 acre estates starting at as low as $300K."

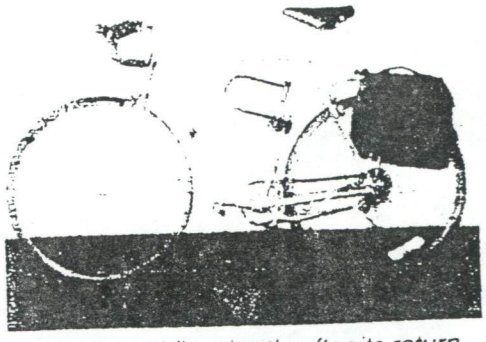
12:00 pm - have seen so much road-side trash, decide to count aluminum cans for 1/4 mile stretch. Total: 138 cans with Pepsi seeming to be the soft drink of choice (at least for litter-bugs). Somewhere I have read that recycling a can, as opposed to making one from raw materials, saves the equivalent of 6 ounces of gasoline. If this is true and assuming that these cans do not find their way back to the recycling center, this represents almost 6.5 gallons literally thrown out the window.

12:01 pm - pick up three cans and put them in my bag

12:05 pm - I see a green road sign with painting of a cardinal: "Adopt a Highway -

12:10 pm - put air in my tires at an Exxon on Route 50.

12:30 pm - arrive at Westfields. Actually have a bike rack (with three identical bikes that must be for hotel guests)



Mr. Snyder's bike shortly after its return from Chantilly. ECO is submitting an application to the GEF to supply 238 M bikes to the population of the United States.

Continued from page 9, column 3

part in providing financial assistance, especially to the lowest income countries.... Yet, for nearly every year since, US financial support for international family planning has declined.

In order to approach an 8 billion future, estimates are that perhaps ten billion dollars (US) would be required annually to meet family planning needs in the year 2000. That would be a cost-effective investment from many perspectives, including climate change. Comparing the estimated family planning costs of the UN high and low growth projections, this investment translates into avoiding carbon emissions for less than $1.00 (US) per ton.

As world population increases, both developed and developing nations will face increased pressures for economic growth from an increasing population. While some may believe that discussing limiting family size is a sensitive political issue, where are the governments which have stayed in power by promising their people less goods and services? With limits on carbon emissions, restrictions on forestry, and other possible outcomes of international negotiations, difficult trade-offs between population growth and economic growth will only be more likely in the future.

Karl Gawell is Director of Government Relations at Zero Population Growth and can be contacted at: (202) 332-2200 FAX(202) 332-2302.

'NO WINNERS FROM GLOBAL WARMING

By Alan S. Miller
Center for Global Change

One of the arguments most commonly made in opposition to reducing the buildup of greenhouse gases is the belief that a few regions in colder climates may benefit from a warmer world. The continued fascination with this seemingly minor aspect of the problem was indicated by a New York Times article on February 5, which stated 'Some politicians and environmentalists have been reluctant to confront the issue for fear it might disrupt efforts to forge an international agreement...' While those expressing this reluctance are unnamed, it may be useful to 'confront the issue' so that it does not prove disruptive at some future time.

The theoretical possibility of beneficiaries from a modest warming cannot be denied. Climate models suggest a likelihood of increased rainfall in northern Europe, which together with an enhanced CO_2 atmosphere and longer growing seasons could mean pockets of increased agricultural productivity. However, the importance attached to this slim bit of good news by leading journals seems grossly disproportionate to its larger ecological, economic, or political significance.

There is no evidence that the 'net winners' concept has influenced the position of any government during international deliberations on climate change. Indeed, the Northern European countries alleged to benefit most have adopted the most aggressive CO_2 mitigation policies.

There are solid reasons to conclude that no country can base its climate policy on the expectation of 'winning' from global warming. First, benefits are most likely if warming is modest and the rate of change is not too rapid. If average global warming exceeds several degrees, warming at higher latitudes could be several times as great. The rate of change could also exceed several tenths of a degree per decade, too fast for many species to adapt and therefore likely to cause enormous disruption to natural systems. However, the current rate of greenhouse gas emissions is already expected to cause at least modest warming; the only way to limit the risk of much larger change is by collective action. Thus the supposed beneficiaries of warming have as great an interest in limiting emissions as anyone.

Second, even 'net winners' may have a lot to worry about. For example, the Soviet Union may find enhanced growing seasons in Siberia come at the cost of catastrophic losses to existing investments in southern republics. The shift in regional productivity implied would be achievable only through the movement of large amounts of capital and labor and would be enormously disruptive in human terms. California was perhaps a beneficiary of the 1930s dust bowl, but it is difficult to imagine that any politician would view the devastation that occurred in Oklahoma as an acceptable trade-off.

For any nation to be truly a winner also would require that it not be overly affected by the damage done to losers elsewhere. Increased agricultural productivity by itself might not be worth much in a world of environmental refugees, severe droughts, increased hurricane severity, coastal flooding, and other adverse effects of global warming.

Another problem with benefit calculations is that they assume a predictive precision beyond that of climate models. Nations would need to know much more than the average global warming associated with a given rate of emissions. For example, effects on agriculture depend on regional temperature and precipitation changes but the best models are not even consistent as to the sign of changes at that scale. There are also important uncertainties about the effects of changing climate on the spread of pests and disease. (Ironically, some of those expressing concern about 'net winners' are skeptical about the basic science, positions that are clearly inconsistent.)

Any policy predicated on allowing continued growth in emissions takes the risk of accelerating climate change due to positive feedbacks, the natural processes which will magnify the impact of greenhouse gas emissions. As the Second World Climate Conference concluded, although such processes are poorly understood, they are mostly positive rather than negative, hence '...it appears likely that, as climate warms, these feedbacks will lead to an overall increase rather than a decrease in the greenhouse gas concentrations.'

In practice very few people are likely to advocate taking the risk that global warming can be fine-tuned; it is more likely that we will not know the full nature of the risks until after the fact, much as the Antarctic ozone hole was not anticipated by the original theory of ozone depletion.

Ironically, the net winners argument is sometimes made by global warming skeptics when it requires an insupportable belief that science has fully delineated the extent of the risks. We are rather more accurately voyagers on a ship traveling at high speed through uncharted waters. The most sensible course is to slow down, not to speed into a narrow passage with no return.

Lest We Forget

Stuart Auchincloss
The Episcopal Diocese of Washington, D.C.

In addition to the more obvious consequences, any failure to achieve a sensible, sustainable climate change treaty will mean that we will also be failing our children. Not only the ones who are not yet born, but the ones who are now in school. If we do not take serious efforts to control the rate of climate change now, their wrath will be well deserved when they get to college and find out what we have done to them. Although for them the climate itself may not be very much different, the rate of change will have become much faster and the backlog of troublesome gases much larger.

There is another ethical question: does nature have any rights simply by virtue of its existence? With the power to administer nature, which is the predicate of the whole global warming debate, comes the responsibility to decide: are we trustees or are we just consumers?

The climate treaty negotiators have talked a lot about the importance of expert opinion. While many delegations have brought climatologists and energy scientists with them, there are other experts in relevant fields who have not yet been heard from: forest dwelling people, subsistence farmers, and, on the subject of living with limits, spiritual teachers who have meditated long about the relation between the fulfilled human life and the consumption of energy and matter. When nations contemplate changes in the lives of people, they would do well to tap these sources of wisdom in addition to being able to talk to governments and technocrats on their own terms, these areas are wide open for leadership by the informal, distinctly non-governmental sector. Ask the grass whose roots are so important yet neglected in the process.

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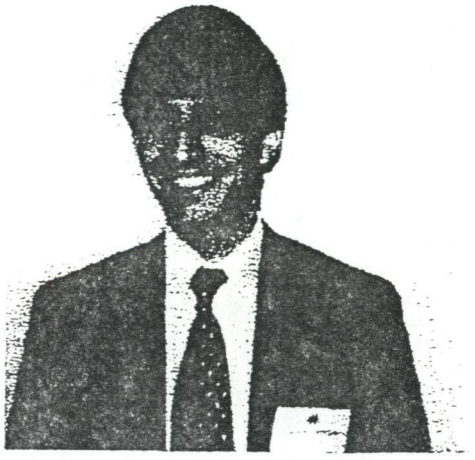


Navroz Dubash from EDF, who organized NGO attendance

ECO presents a review of national and multi-national commitments to controls on greenhouse gases.

Commitments to Reduction of Greenhouse Gases

AUSTRALIA

- on 11 Oct 1990, agreed to stabilization of non-Montreal Protocol controlled gases at 1988 levels by 2000 and a 20% reduction by 2005

AUSTRIA

- agreed to 20% reduction of CO_2 from 1990 levels by 2005

DENMARK

- agreed to 20% reduction of CO_2 from 1990 levels by 2000

GERMANY

- in June 1990, agreed to 30% reduction of CO_2 from 1987 levels by 2005
- in late October 1990, Bundestag released detailed report outlining specific programs in each sector to reduce greenhouse gas emissions

NETHERLANDS

- in May 1990, agreed to 3-5% annual reduction of CO_2 from 1989/90 levels by 2000

NEW ZEALAND

- in October 1990, announced five-year acceleration of previous government's commitment to CO_2 reductions — now agreed to a 20% reduction at 1990 levels by 2000
- a list of specific proposals is due to be sent to the cabinet mid-1991

NORWAY

- Parliament approved carbon tax effective 1 Jan 1991 (oil is taxed at US $.05/litre; gasoline at $.10/litre; natural gas at $.10/cubic meter; coal is exempt)

Commitments to Stabilization of Greenhouse Gases

CANADA

- in December 1990, agreed to stabilization of CO_2 and other greenhouse gases at 1990 levels by 2000

EC

- on 29 Oct 1990, energy and environment ministers agreed to community-wide stabilization of CO_2 at 1990 levels by 2000
- Council of Ministers is currently considering policy options to achieve reductions

EFTA

- on 5 Nov 1990, agreed to adopt same overall CO_2 target as EC

JAPAN

- in June 1990, agreed to stabilize CO_2 on per capita basis at 1990 levels by 2000

- on 23 Oct 1990, agreed to stabilize all greenhouse gases at 1990 levels by 2000

Information from the Center for Global Change/CAN US.

New Publication

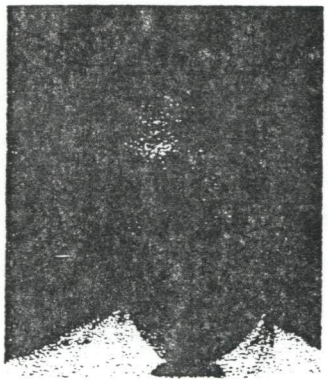
Looking for Oil in All the Wrong Places

"The US, with less than 4% of the world's remaining reserves, consumes 29% of the world's oil. Given the size of that demand, US offshore and Arctic refuges are the wrong places to look to reduce dependence on foreign oil" says energy specialist Rob Watson and author of 'Looking For Oil in All the Wrong Places: The Facts About Oil, Natural Gas and Efficiency Resources,' a report showing why the US should not drill for oil in the Alaskan wildlife areas.

"The war in the Persian Gulf once again underscores America's energy vulnerability," says Watson. "Energy efficiency, by reducing demand, will reduce that vulnerability, helping us to avoid future confrontations," he adds.

'Looking for Oil' sets out to show its readers, step-by-step, how to determine the size of America's 'efficiency resource.' Seven million barrels of oil would be saved per day by being more efficient, approximately equal to the total US imports and 7 times the amount achievable by drilling in Alaska or offshore. "The right place to look for the biggest energy reserve is not the Arctic National Wildlife Refuge (ANWR), the Outer Continental Shelf (OCS) or Saudi Arabia, but in the cars, appliances and insulation we use. It's time to drill in Detroit," said Watson.

"Looking For Oil in All the Wrong Places: The Facts About Oil, Natural Gas and Efficiency Resources" is available from the Natural Resources Defense Council.



"Peter Cook's help on ECO has been indispensable and his professionalism invaluable."

...Chris Rose, Media Natura

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AUDUBON SOCIETY

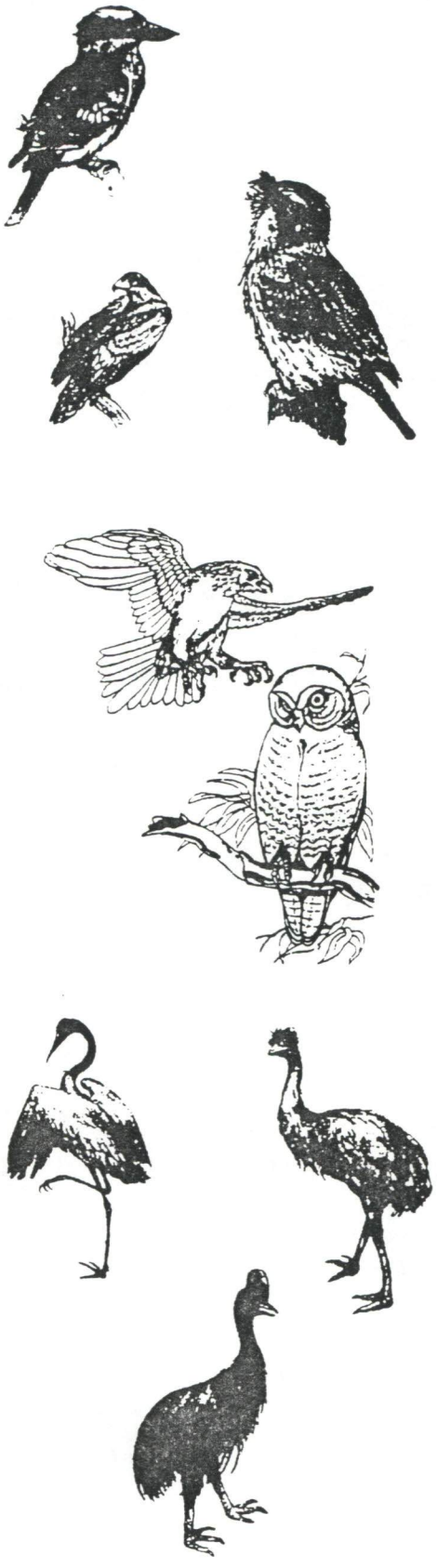
Audubon's mission is to protect the environment for wildlife and people. Together with more than 600,000 members and an extensive chapter network in the United States and Latin America, the professional staff of scientists, lobbyists, policy analysts, land managers and educators work to save threatened ecosystems and to restore the natural balance that is critical to the quality of life on the planet.

Audubon's international program seeks to erase the lines between local, regional, national population and international conservation. Programs on climate, energy, forests and wetlands have domestic and international components and stress citizen action.

When President Bush and the leaders of the richest nations in the world proposed a Global Forest Agreement at the G7 meeting in Houston in July 1990, Audubon began to spearhead an international collaborative effort to influence the treaty's development. The key objectives Audubon wants to be incorporated into a Global Forest Agreement are; first, halt the rapid loss of primary forest habitat in boreal, temperate and tropical regions; second, recognize and conserve forest habitat of importance for biodiversity and other ecosystems services; third, the needs of local peoples; including indigenous forest peoples and other communities that depend on the forest.

Audubon is also working to incorporate similar forest conservation components into a Global Climate Treaty. At the domestic level Audubon is seeking major changes in US forestry practices to stop primary forest destruction, particularly of ancient forests in Washington, Oregon and California.

In addition to forest activities, Audubon's Energy Program focuses on actions of the Climate Action Network to reduce CO_2 emissions globally. Domestically the Program seeks to change US energy policy and to protect natural areas, particularly the Arctic National Wildlife Refuge that would be adversely affected by oil exploration. Audubon produces education materials to be used nationally and internationally. A most recent product was *The CO_2 Diet*. Biomass production for fuel alternatives is also a great concern to Audubon. The biotechnology program will focus on this problem for the next few years. Audubon's Population Program is also an important component in all natural resource conservation programs.



Contact: Fran Spivy-Weber, International Progam, Audubon Society, 801 Pennsylvania Avenue, SE, Suite 301, Washington, DC 20003

SOCIO-ECOLOGICAL UNION, USSR

The Socio-Ecological Union, set up on December 24, 1988, is an association of 150 'ecological initiative committees,' clubs, citizens groups and individuals in more than 200 towns and cities across the Soviet Union. Unlike other NGOs in the Soviet Union, the SEU is completely independent from the state and receives no government funds.

The objective of the SEU is 'to promote protection of human beings, their physical health and the environment.' Many forms of activists strategies are used including protest demonstrations, the collection of signatures on petitions and lobbying of the Supreme Soviet.

Examples of the Union's activities since its inception have included: nationwide campaigns against the construction of hydropower stations, reservoirs, and nuclear power stations; lobbying in the Central Committee and Council of Ministers to block a decision on a program of rapid development for hydroelectric power; lobbying to include an item on the Supreme Soviet Agenda for 'urgent measures on environmental improvement.'

Perestroika, glasnost and democratization have also offered excellent opportunities for Soviet NGOs to work internationally. As a result of an agreement signed by presidents Gorbachev and Bush at their May-June 1990 summit, the two governments are committed to facilitating contacts and cooperation between their respective NGOs.

An initial project resulting from this agreement will occur March 14-21, 1991 when approximately 40 American and 50 Soviet NGO representatives will meet in Moscow. In addition to sessions on the substantive issues of global climate change, the preliminary agenda includes sessions on financial sources, educational programs, and methods for developing public awareness.

For further information regarding the work of the SEU or the upcoming conference, please contact either Ludmilla Bogdan at the SEU's Moscow office (7-095-151-6270) or Eliza Klose at the Institute for Soviet American Relations (202-387-3034).

Chantilly

As Governments begin the process of churning out reams of paper for negotiations on a climate change convention, it would be useful for them to give some consideration to the recycling policies of their host organization, the UN. Chantilly has heard that the UN does not use recycled paper and has at best a low grade recycling effort. Thus, think of the amount of trees saved and potential CO_2 emissions and other pollutants reduced if the UN and indeed these negotiations relied on recycled paper and recycled waste paper. What a fitting issue to be taken up by the Preparatory Committee for the 1992 UN Conference on Environment and Development. Wouldn't it be nice if the body that is increasingly giving its attention to environmental and development issues, the UN would take the lead in reducing its waste of resources? How fitting it would also be if the climate negotiations could also give this message to the UN.

On Friday night Chantilly was pleased to join the United States delegation which hosted a seminar on the "comprehensive" approaches to controlling greenhouse gases. The seminar was scheduled to give delegates a chance to discuss the elements of the comprehensive approach with its authors. Key administration officials including Boyden Gray an adviser to President Bush, led the briefing. It focussed on the science, economics and environmental aspects of the comprehensive approach. The US Government has produced two backup documents for delegates explaining key aspects of US planning. So far so good, but Chantilly was astonished at the reevaluation from the Justice Department that the comprehensive approach would now include taking into account historical emissions in determining allocations of future greenhouse gas emissions. On such a basis, the US will surely be making some enormous cuts in CO_2? The US delegation said it welcomed calculations by other countries on their current plans to reduce total greenhouse gas emissions, so perhaps we can look forward to seeing calculations on the US basis for Germany, Switzerland and others? Chantilly looks forward to enlightenment.

Frustration

Last night delegations from the US, Europe and Japan were expressing frustration at the insistence of the Group of 77, led by India, that specific reference should be made in a set of 'Guidelines For Negotiation' to the need for 'new and additional funding' to help developing countries implement measures to help combat global warming. Developing countries were pressing for such obligations to be 'an integral element of all relevant deliberations and any final agreement'.

Discussions held Wednesday appear to have led to a three cornered compromise on the working groups with Working Group 1 covering sources and sinks (favoured by the US but originally opposed by the EC which feared it would lessen pressure for emission reductions); only two Working Groups in total (with the second covering legal and financial mechanisms — an arrangement favoured by developing countries which had feared difficulty in attending a multi-group negotiating process), and the mention in the remit of Working Group 1 of 'limiting and reducing emissions of emissions of carbon dioxide and other greenhouse gases' (a formula included in the Second World Climate Conference Ministerial Declaration but still apparently opposed by the US White House).

'Five No's From US'

Speaking Wednesday night, Pene Lefale of Greenpeace commented: "An effective climate convention requires five basic components: the US has said no to all of them." Lefale noted that the US had "opposed a commitment to cut CO_2 emissions as a priority, said no to parallel protocols to the framework convention which should cut CO_2 emissions and respond to deforestation, said no to new funds and technical assistance to help developing countries efforts to combat the greenhouse effect, no to adequate funds for developing countries to participate in the negotiations up to June 1992, and no to proposals for new international institutions to improve science and encourage participation in anti-greenhouse policies."

• STOP PRESS: The word 'new' is understood to have been dropped from the term 'new and additional' funding in the guidelines.

ECO says Many Thanks to Michelle Poliacof, UNGA NGO liaison officer.

ECO NEWSLETTER

This is the fifth and final issue of ECO news-letter, produced as a cooperative effort by the environmental NGOs attending the conference. ECO will accept contributions from delegates and others, and suggestions as to stories which should be covered or people who should be interviewed. ECO is produced at the National Wildlife Federation's Educational Facility in Virginia and can be contacted at (703) 790-4010/4012 or 4013. FAX (703) 790-4011.

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Goal change file

Document Originally
Attached to
Following Page

THE WHITE HOUSE

WASHINGTON

January 22, 1991

MEMORANDUM FOR GOVERNOR SUNUNU

FROM: D. ALLAN BROMLEY Allan

SUBJECT: RESPONSE TO YOUR REQUEST FOR SPECIFIC POINTS THAT THE PRESIDENT MIGHT INCLUDE IN A WELCOMING ADDRESS TO THE FIRST NEGOTIATING SESSION FOR THE FRAMEWORK CONVENTION ON CLIMATE CHANGE

o I can well understand that developments in the Gulf may make it impossible for the President to participate in this meeting.

o On three separate public occasions, however, he invited the world's nations to this meeting and his absence may be misunderstood.

o As the following pages indicate, I believe that he can now make a very strong statement about the accomplishments of his Administration. Much has happened since the President spoke to the April White House Conference.

o I include herewith more than you probably want as well as a second copy of the draft of the proposed accomplishments document that I sent you earlier and that was mentioned by Ede at this morning's senior staff meeting.

o I look forward to discussing this material with you tomorrow. I am currently scheduled to see you at 3:15p.m.

BACKGROUND

Over the past year, the U.S. has taken a somewhat cautious approach to the climate change issue - to allow time for gathering enough data and information to insure that the U.S. climate change policy is based upon the strongest scientific and economic knowledge base possible

o Meanwhile other countries have been willing to commit themselves to specific targets and timetable for greenhouse gas emissions reduction - with little regard for their ability to achieve their commitments or any knowledge of the cost of their actions

o While our approach toward any specific plan for stabilization has been factually well-justified, it has been poorly-understood and our motives have been badly misconstrued.

o We now enter the negotiations from a relatively isolated position, because we are now the only developed country which has not committed to some plan to address the greenhouse gas issue

Therefore, to reestablish our the international leadership on this issue for the President and for the Administration, we need to have a clearly-articulated position on this issue - and we need to make it clear that while everyone else has been talking, we have been acting.

Toward this end, the Administration has:

. Put together a constructive and firm approach for participation in the negotiations

. Created an innovative, and more scientifically valid approach to the greenhouse gas issue - The Comprehensive Approach - which focusses on the total picture, including both sinks and sources of ghg.

. Compiled a description of the actions which we have been taken which address the climate change issue but which were taken because they had merit in their own right (e.g., the Clean Air Act, phasing out CFC's, the tree initiative) and the list is startling - taken together, the acitons are unmatched by any other country.

The President now has a comprehensive U.S. STRATEGY for leadership and action he can announce on behalf of the nation which outlines specific steps the U.S. is taking in its approach to the climate change issue

The President can distribute copies of a document - the U.S. "Action Plan" which outlies a startling number of specific, significant actions the U.S. is taking which directly address this issue

- o By the way, to the best of our knowledge, other countries do not have a clue that we may have prepared this document - or are even considering a "plan"

- o While other countries have all been talking - we have been taking action and this "Action Plan" showcases exactly what we have done

The President can now announce that the actions which are currently included in the U.S. Climate Change Strategy will result in U.S. greenhouse gas emissions in the year 2000 being equal to or lower than 1987 levels.

The specific actions which contribute to this result include:

1. Phasing out CFC's and other ozone-depleting compounds which are also strong ghg)

2. Putting a permanent ceiling on sulphur dioxide emissions, at sharply reduced levels

   . Allowing freedom of choice in meeting the ceilings thereby encouraging energy efficiency and reducing ghg emissions

   . Under CA Act Emendments, utilities were given flexibility to make reductions by any means - a powerful incentive for energy saving measures

3. Reducing, under CA Act, air pollutants which are either ghg themselves (NOs) or ghg precursors (VOCs, CO, and NOs)

4. Plant a billion trees a year/ other forest improvements

5. Programs to speed adoption of energy efficient technologies/practices in homes and businesses

6. Promoting use of and accelerating research on non-fossil fuel energy sources (solar, nuclear, alternative fuels)

The U.S. and Global Change - Approach to the Framework Convention Negotiations

o The U.S. is prepared to take to the first negotiating sessions of the Framework Convention on Climate Change an innovative approach to the climate change issue - the "Comprehensive Approach"

. Moves the climate change issue from the narrow focus on one gas (CO_2 - which primarily results from the energy and transportation sectors)

. All gases are treated on an equal footing based on a scientifically determined "greenhouse potential index" which takes into account not only theri intrinsic molecular greenhouse efficiency but also their average residence time in the atmosphere and other considerations.

. Scientifically more valid approach because considers all of the significant human-influenced traces gases that effect climate

. Also considers "sinks" of greenhouse gases which are key part of solution to increases in atmospheric concentrations of greenhouse gases

. Allows countries more flexibility in policy responses to reducing greenhouse gas emissions

. Recognizes that Third World Countries with their methane and other emissions are also signficant contributors to the greenhouse problem

. Will make possible a market approach in greenhouse situation at minimum cost

. Avoids the potential problems associated with developing separate protocos for each greenhouse gas

o Accomplishments which this Administration has achieved through actions pursued because they had merit in their own right (e.g., US Global Change Research Program, the Clean Air Act, phasing out CFC's, the tree intiative, etc) are unmatched by any other country.

o Two recent studies have shown that current policy commitments will result in greenhouse gas emissions in the year 2000 being less than or equal to 1987 emissions.

o The actions (general list) which the U.S. is implementing to achieve a variety of non-climate benefits, which have resulted in stabilization of greenhouse gas emissions at the 1987 level include the following:

o elimination of stratospheric ozone depleting compounds which are also strong greenhouse gases
o increase of forest greenhouse gas sinks
o direct control of various greenhouse gases and their precursors which are also air pollutants
o regulation of utilities and other air pollutant sources so as to strongly encourage energy efficiency
o promotion of energy efficiency by wide range of other actions
o increase the use of renewable sources of energy

o Other actions which should be on the list of accomplishments of the U.S. regarding the greenhouse issue:

o The U.S. is also carrying out the world's largest program of R&D

o To increase our understanding of the science and economics of climate change for sounder knowledge base for making policy decisions

o To develop and to accelerate the adoption of economically sound and environmentally benign technologies which will be essential if massive increases in GHG emissions from world economic growth are to be avoided

o The US has strong energy efficiency incentives to build on past U.S. energy efficiency performance which compare well with that of other industrial countries

o The U.S. has essentially stabilized its emissions of CO2 over the last 15 years despite a growth in economic output of about 50%. Most other countries have increased their CO2 emissions over this period, many substantially

o The U.S. has reduced its emissions of several other greenhouse gases over the last 15-20 years

o Chlorofluorocarbon (CFC) emissions were substantially reduced, grew somewhat as certain uses grew, and are now being reduced toward zero

o Carbon monoxide (CO) and volatile organic compounds (VOCs) were reduced substantially

o Current U.S. actions (taken for other reasons) which will contribute to restricting greenhouse gas emissions in the year 2000 by 1987 levels consist of:

o. phasing out CFC's and other ozone-depleting compounds which are also greenhouse gases

o Encouraging energy efficiency strongly, and thereby reducing greenhouse gas emissions, by putting a permanent ceiling on sulphur dioxide emissions and giving utilities the flexibility to make reductions by energy saving measures under the recently enacted Clean Air Act Amendments

o Reducing, under the Clean Air Act, air pollutants which are either greenhouse gases themselves (carbon monoxide and nitrogen oxides) or greenhouse gas precursors (volatile organic compounds and nitrogen oxides)

o Initiating a program to plant a billion trees a year on 1.5 million acres and to make other forest improvements

o Implementing a number of programs aimed directly at speeding the adoption of energy efficient technologies and practices

o taking actions to increase the use of non-fossil fuel energy sources, such as hydropower, photovoltaics, and biofuels

o Energy Efficiency Initiatives - more efficient lighting in Federal facilities

o More efficient lighting lighting in commercial buildings

o Promote State efforts to institute utility integrated resource planning for end use energy efficiency

o Encourage State and local governments to adopt DOE interim building standards

o Expand the Energy Analysis and Diagnostic Center Program to increase energy audits

o Use of DOE building standards by HUD in public housing assistance program

o Renewable Energy Initiatives

  o Expand hydropower capacity
  o Accelerate the transfer of photovoltaic technology to US commercial production
  o Increase use of biofuels for transportation

- U.S. R & D Efforts
  - US Global Change Research Program
    - In FY 91, US is spending $977 million for global change research 91 to improve knowledge base, especially about climate change
    - In FY 92, US will spend $1,186 million for g c research
  - Non-Fossil Fuel R & D
    - solar and renewable energy program is a major commitment to exploiting the energy supply porential of photovoltaics, biofuels, energy from municipal solid wastes, low and moderate temperature solar thermal, and wind energy technologies
    - other renewables research includes geothermal research and efforts to resolve institutional and regulatory impediments to hydropower development
    - Nuclear fission program research in institutional/regulatory reform and the development of advanced reactor design
    - Magnetic fusion program is attempting to establish the scientific and technological bases required for fusion energy
    - Clean Coal Technology
    - Energy Conservation

THE WHITE HOUSE
WASHINGTON

DATE: 2/6

NOTE FOR: ALLAN BROMLEY

The President has reviewed the attached, and it is forwarded to you for your:

Information ☐

Action ☒

Called Bill Monday Feb 11
He will be in Feb 12-15.

Thank you.

PHILLIP D. BRADY
Assistant to the President
and Staff Secretary
(x2702)

cc: The Chief of Staff -- FYI
General Scowcroft -- FYI
Fred McClure -- FYI

General Planning file

Created a
China - Soviet Strategic
file and started with this
DAB

THE WHITE HOUSE
WASHINGTON

DATE: 2-6 91

FROM THE PRESIDENT

TO: Allan Brownlee
cc: John Sununu
Brent Scowcroft

Perhaps Wells could organize groups & influential people to implement his page 8 proposals

The Democrats like Mitchell, Gephart, Pelosi really need education on this

GHW

Withdrawal/Redaction Sheet
(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01a. Memorandum	To: President Bush From: Phillip Brady Re: Dr. Wells' visit to PRC (1 pp.)	2/5/91	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: Global Climate Change Files
WHORM Cat.:
File Location: Global Warming: NOORDWIJK [1 of 2] [1991]

Date Closed:	4/8/2010	**OA/ID Number:**	62055-004
FOIA/SYS Case #:	2005-0336-F	**Appeal Case #:**	
Re-review Case #:		**Appeal Disposition:**	
P-2/P-5 Review Case #:		**Disposition Date:**	
AR Case #:		**MR Case #:**	
AR Disposition:		**MR Disposition:**	
AR Disposition Date:		**MR Disposition Date:**	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [a)(5) of the PRA]
P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
(b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
(b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
(b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
(b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
(b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
(b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
(b)(9) Release would disclose geological or geophysical information

Withdrawal/Redaction Sheet
(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01b. Memorandum	To: President Bush From: Allan Bromley Re: China Trip Report from Dr. Wells (2 pp.)	2/1/91	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: Global Climate Change Files
WHORM Cat.:
File Location: Global Warming: NOORDWIJK [1 of 2] [1991]

Date Closed:	4/8/2010	**OA/ID Number:**	62055-004
FOIA/SYS Case #:	2005-0336-F	**Appeal Case #:**	
Re-review Case #:		**Appeal Disposition:**	
P-2/P-5 Review Case #:		**Disposition Date:**	
AR Case #:		**MR Case #:**	
AR Disposition:		**MR Disposition:**	
AR Disposition Date:		**MR Disposition Date:**	

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P-3 Release would violate a Federal statute [(a)(3) of the PRA]
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C. Closed in accordance with restrictions contained in donor's deed of gift.

PRM. Removed as a personal record misfile.

Freedom of Information Act - [5 U.S.C. 552(b)]

(b)(1) National security classified information [(b)(1) of the FOIA]
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(b)(9) Release would disclose geological or geophysical information

Withdrawal/Redaction Sheet
(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01c. Memorandum	To: Allan Bromley From: William Wells Re: Observations based on visit to PRC (8 pp.)	12/26/90	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: Global Climate Change Files
WHORM Cat.:
File Location: Global Warming: NOORDWIJK [1 of 2] [1991]

Date Closed:	4/8/2010	**OA/ID Number:**	62055-004
FOIA/SYS Case #:	2005-0336-F	**Appeal Case #:**	
Re-review Case #:		**Appeal Disposition:**	
P-2/P-5 Review Case #:		**Disposition Date:**	
AR Case #:		**MR Case #:**	
AR Disposition:		**MR Disposition:**	
AR Disposition Date:		**MR Disposition Date:**	

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"CORRESPONDENCE TRACKING"

TYPE: INFORMATION DOCUMENT NUMBER: 9120352

****

FROM: BOSKIN, MICHAEL J.

TO: DR. BROMLEY

Global Change file

DATE OF CORRESPONDENCE: 02/06/91

SUBJECT: TALKING POINTS ON GLOBAL CLIMATE CHANGE

****

ASSIGNED TO:

ACTION REQUIRED:

****

SENDER'S DUE DATE: OSTP DUE DATE:

DATE COMPLETED:

****

COPIES TO: Ken Yale
D. Allan Bromley
Nancy Maynard

****

WHITE HOUSE TRACKING #: CONTACT PERSON:

REMARKS:

DATE RECEIVED: 02/11/91 FILE: ENVIRONMENT-CLIAMTE CHANGE

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS

RECEIVED
91 FEB 11 P12:11
OFFICE OF THE DIRECTOR

February 6, 1991

To: Allan Bromley

From: Michael J. Boskin

Here are the talking points on Global Climate Change that Senator Simpson gave out at the policy lunch yesterday.

Michael J. Boskin
Chairman

SENATE RESOLUTION ON GLOBAL CLIMATE CHANGE

FIRST TALKING PTS

- The focus in the resolution CO2 alone doesn't make environmental sense. What matters for the environment is total net emissions of all greenhouse gases. Beyond that, man-made (anthropogenic) emissions account for only 4 % of the global CO2 flux. So one cannot ignore natural sources and sinks of CO2 as well. We should take a comprehensive approach that includes *all* sources and sinks.

- While other countries have made rhetorical commitments to targets and timetables at various international meetings, the U.S. HAS ALREADY TAKEN SEVERAL MAJOR LEGISLATIVE AND ADMINISTRATIVE ACTION STEPS TO REDUCE GREENHOUSE GAS EMISSIONS.

- U.S. Action Steps Include:

  - Legislation to *phase out fully the production of CFC's* and other major ozone-depleting chemicals. In fact, under the Clean Air Act, the U.S. will phase out these chemicals on a faster schedule than required by the amended Montreal Protocol.

  - A *tax on CFC production* (enacted in the Reconciliation bill of 1989) which will result in a faster phase-out than any other country. Already, in the last year, the U.S. has reduced CFC production to 23% below what is required by the Protocol.

  - Major reductions in not only SO2 but also CO2 from electric utilities under the Clean Air Act. By enacting a bill that included a cap on SO2 emissions at sharply reduced levels, and freedom of choice for utilities in how to make the reductions, *the Clean Air bill created a powerful incentive for conservation in the electric utility sector.*

  - The *Clean Air Act* will also sharply reduce emissions of carbon monoxide, nitrogen oxides, volatile organic compounds, and other greenhouse gases or greenhouse gas precursors.

  - The President's program to *plant a billion trees per year* (not fully funded by the Congress in 1991) has the potential to reduce net emissions of greenhouse gases by 50 million tons of carbon equivalent by 2010.

  - DOE has already issued *standards requiring energy efficiency in household appliances* such as refrigerators, freezers, clothes washers and dryers, and dishwashers, the biggest users of energy in the home aside from heating. The National Energy Strategy will include further recommendations for building efficiency and lighting efficiency.

  - The Administration is increasing funding for *R&D into energy technologies* that will reduce greenhouse gases. This includes support for nuclear power, electric battery-powered cars, solar photovoltaics, and alternative fuels.

- In total, because of these policy *actions* by the U.S. government, EPA estimates that U.S. greenhouse gas emissions in 2000 will be below what they were in 1987 (or today). Very few other countries can make a similar claim.

- In addition, the U.S. has the world's largest program of scientific research to support sound policymaking on global climate change. Funded this year at $1 billion, the U.S. effort comprises about 50% of the worldwide total being spent to investigate this problem.

- In fact, since 1973, U.S. CO2 emissions have been essentially stable (they have increased by 2.7% in a decade and a half), at a time when U.S. GNP has grown by almost 30%. During this time of stable U.S. emissions, worldwide CO2 emissions have grown sharply. The problem cannot be solved with CO2 reductions from the industrialized countries alone; *all* countries must be involved.

TALKING POINTS ON MITCHELL GLOBAL WARMING RESOLUTION

1) THE DRAFT RESOLUTION CIRCULATED BY THE ENVIRONMENT COMMITTEE STAFF MAKES SEVERAL STATEMENT WHICH ARE CERTAINLY NOT BASED ON SCIENTIFIC CONSENSUS. FOR INSTANCE, THE RESOLUTION STATES THAT CARBON DIOXIDE HAS BEEN RESPONSIBLE FOR OVER HALF THE ENHANCED GREENHOUSE EFFECT IN THE PAST AND IS LIKELY TO REMAIN SO IN THE FUTURE. THERE IS NO SCIENTIFIC AGREEMENT ON THIS.

THE RESOLUTION STATES THAT MANY SCIENTIFIC STUDIES SHOW THAT RAPID GLOBAL WARMING COULD CREATE PRECIPITOUS CLIMATE CHANGES. VARIOUS COMPUTER MODELS SHOW SCENARIOS FOR TEMPERATURE INCREASES. SOME OF THEM ARE EXTREME AND SOME OF THEM ARE MILD.

THE RESOLUTION STATES THAT THE U.S. EMITS MORE CARBON DIOXIDE THAN ANY OTHER NATION AND HAS THE HIGHEST PER CAPITA EMISSIONS OF CARBON DIOXIDE. THIS DATA DOES NOT TAKE INTO ACCOUNT THAT EAST GERMANY AND WEST GERMANY WERE CONSIDERED SEPARATELY, AND THOSE COUNTRIES ARE NOW COMBINED AND IT DOES NOT MENTION THE SIGNIFICANT CONTRIBUTION MADE BY THE SOVIET UNION.

THE RESOLUTION CALLS FOR A STATEMENT THAT IT IS THE POLICY OF THE UNITED STATES TO SPECIFY REDUCTIONS IN THE NATIONAL EMISSIONS OF CARBON DIOXIDE AND OTHER GREENHOUSE

GASES BY A DATE CERTAIN. THIS WOULD BE A UNILATERAL REDUCTION AND WOULD NOT BE CONDITIONAL ON PROGRESS BY OTHER INDUSTRIALIZED COUNTRIES.

THE RESOLUTION ALSO INGNORES THE FACT THAT PASSAGE OF THE CLEAN AIR ACT WILL ALSO SIGNIFICANTLY REDUCE GREENHOUSE GASES SUCH AS CHLOROFLOUROCARBONS, METHANE AND OTHER VOLATILE CHEMICALS.

THE RESOLUTION DOES NOT SAY HOW WE SHOULD REDUCE CARBON DIOXIDE AND DOES NOT INDICATE THAT WE SHOULD SUPPORT NON-POLLUTING TECHNOLOGIES SUCH AS NUCLEAR ENERGY.

THE PRESIDENT HAS PROPOSED A COMBINED PRIVATE-PUBLIC SECTOR INITIATIVE TO PLANT A BILLION TREES PER YEAR FOR FIVE YEARS WHICH WILL HELP ABSORB CARBON DIOXIDE. THE PRESIDENT HAS PROPOSED THAT A GLOBAL FORESTRY CONVENTION BE NEGOTIATED AS SOON AS POSSIBLE IN ORDER TO CUT DEFORESTATION -- WHICH MAY BE A LARGER PROBLEM THAN INDUSTRIAL EMISSIONS. AND I BELIEVE THAT THE PRESIDENT IS COMMITTED TO DEALING WITH THIS PROBLEM IN A COMMON SENSE MANNER ONCE THE SCIENTIFIC DATA OUTLINES A CLEAR PICTURE FOR THE POLICY MAKERS.

WE HAVE A GLOBAL WARMING CONFERENCE COMING UP FEBRUARY 4TH -- BUT I THINK WE NEED TO BE CAREFUL ABOUT THE WORDING OF THIS RESOLUTION AND WE NEED TO ENSURE THAT WE DO NOT LOCK

OURSELVES INTO ANY SPECIFIC REQUIREMENTS BEFORE WE KNOW ALL THE FACTS.

A COMPREHENSIVE APPROACH TO CLIMATE CHANGE

USING THE MARKET TO PROTECT THE ENVIRONMENT

ENVIRONMENTAL OFFICIALS from around the world are poised to negotiate an agreement that will set the framework for future efforts to address potential climate change. When the talks begin in February 1991, the need for clear thinking on climate policy will be acute.

The likelihood and potential impact of climate change must be considered. The recent First Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) found that increases in the so-called "greenhouse gases," which trap solar energy when it rebounds off the earth's surface, are likely to yield increases in atmospheric temperature, but that major uncertainties frustrate our ability to forecast the magnitude, timing, or regional patterns of any climate change.

At the same time, the costs and benefits of climate change and of options to limit or adapt to it also must be considered. These are even more uncertain questions on which neither the IPCC nor anyone else has made much progress.

Then, if preventive efforts are deemed warranted—a big "if," given the above uncertainties—the design of any policy steps must be considered. Unfortunately, the tenor of current climate discussions indicates that old mistakes in policy design are likely to be repeated. Proposals to address potential climate change have focused narrowly on immediate, uniform controls on emissions of one greenhouse gas: carbon dioxide emitted by the energy sector. Such piecemeal, command-and-control approaches, mandating centrally specified, inflexible responses to subsets of complex environmental problems, will almost surely deliver, as they have in the past in other contexts, environmentally counterproductive and economically unsound results.

Richard B. Stewart is assistant attorney general, Environment and Natural Resources Division, the U.S. Department of Justice. Jonathan B. Wiener is special assistant to the assistant attorney general. The views expressed herein are their own and do not necessarily represent the views of the Department of Justice or the United States.

BY RICHARD B. STEWART AND JONATHAN B. WIENER

A far better approach would be a "comprehensive" one that addresses the net environmental impacts of all greenhouse gases. Such an approach is essential to understanding climate change and to determining the costs and benefits of policy options. It is also essential to fashioning environmentally effective and less-costly policy measures that nations or the world community may choose to adopt. Any such measures should use market-based incentives, rather than command-and-control methods, in order to achieve environmentally superior results at less cost.

Influences on the Climate System

Potential climate change is an issue of enormous complexity. Any change in global average annual temperature would occur over many years through the workings of very complex natural systems and in turn would affect patterns of local temperature, precipitation, soil moisture, and sea level.

The greenhouse gases (GHGs)—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tropospheric ozone (O_3), halocarbons such as chlorofluorocarbons (CFCs), and others—are emitted by many sources. Each gas has a different capacity to trap heat in the atmosphere, called its "radiative-forcing" ability, and each resides in the atmosphere for a different period of time. Together, these factors determine the relative radiative-forcing potentials of the GHGs (see table). Each GHG also has environmental consequences resulting from its direct chemical effects on the atmosphere and on plant and animal life: CO_2 aids plant photosynthesis and water use efficiency, for example, while CFCs deplete the stratospheric ozone layer. One GHG or another is emitted or affected by virtually every ecological, social, and economic activity in every area of the world. The gases are removed from the atmosphere in varying degrees by natural "sinks": CO_2, for example, is removed in the photosynthesis carried on by trees, crops, grasses, and oceanic phytoplankton, and stored in plant material, soils, and the deep ocean.

Environmental policy design must match the ecological system it seeks to address. From the climate perspective, the variable of environmental concern is not emissions of CO_2, or the carbon content of fuels, or energy efficiency. It is the *net emissions (sources minus sinks) of all greenhouse gases, weighted by the relative impacts on the environment.* Any policy response to climate—setting a scientific research agenda, enumerating climate-relevant measures (such as reforestation or eliminating CFCs) justified on other grounds, or adopting GHG limitation measures—must therefore be *comprehensive*, matching the climate system.

Gas	Instantaneous radiative forcing per kg of emissions	Atmospheric residence years (estimated)	Relative radiative forcing potential over lifetime*
CO_2	1	120	1
CH_4	58	10	21
N_2O	206	150	290
CFC-11	3970	60	3500
CFC-12	5750	130	7300

Note: *=Calculated over a 100-year time horizon.
Source: IPCC Scientific Assessment, tables 2.3 and 2.8.

RELATIVE RADIATIVE FORCING OF SELECTED GASES

Carboncentric Thinking

But those proposing immediate GHG reductions typically focus narrowly on limiting CO_2 emissions from fossil-fuel combustion. Many such proposals are made by nations that would enjoy a competitive advantage under such policies: those that can rely on noncarbon or low-carbon energy sources (such as nuclear, hydropower, or natural gas) or those that expect to conserve energy more cheaply than their trading rivals. But such a narrow focus is not warranted by the facts about GHGs or by sound policy.

First, it is clear that the greenhouse effect cannot be attributed to CO_2 alone. It is portrayed as the chief culprit in potential global warming because, by volume, it has accounted for a large share of the total output of GHGs. But because any policies to limit GHGs must necessarily address future increments of net GHG emissions, it is the comparative impact of additional amounts of each gas that must be addressed. CO_2, molecule for molecule, is the *weakest* of the anthropogenic GHGs. As the relative radiative forcing figures in the table show, a unit of CO_2, its typically long residence in the atmosphere notwithstanding, is the least potent contributor to potential warming. Moreover, because there is already so much natural CO_2 in the atmosphere, the band of the electromagnetic spectrum that CO_2 molecules block is becoming almost fully occluded, creating a saturation effect—a kind of atmospheric law of diminishing marginal returns—which means that the relative radiative forcing of future CO_2 molecules will be even less. Further, CO_2 in the atmosphere is not increasing as rapidly as other GHGs; the atmospheric concentration of CO_2 is increasing at about 0.3 percent per year, CH_4 about 1 percent, and CFCs over 4 percent. (Although the goal of the international treaty to protect the stratospheric ozone layer—the

Montreal Protocol—is to phase out CFCs, their more ozone-friendly substitutes are still likely to be significant GHGs.)

Meanwhile, CO_2 provides significant benefits that the other GHGs do not. CO_2 is the grist of photosynthesis. Higher concentrations of CO_2 in the atmosphere are likely to substantially improve plant productivity and increase the efficiency with which plants use water. The other GHGs confer no such benefits, and some pose serious threats unrelated to possible global warming. CFCs, for example, deplete the stratospheric ozone layer. In order to provide a better guide to policy choices, the radiative forcing index of GHGs could be expanded to incorporate other—positive and negative—environmental impacts of each GHG. CO_2 would receive a credit for enriching plant growth, CFCs a debit for ozone depletion.

In sum, unit-for-unit, CO_2 is probably the most environmentally benign of the GHGs. If the biosphere had to accept any given amount of predicted warming, then on purely environmental grounds and abstracting from the costs of control, it would probably prefer to have the warming due to CO_2 and not to other GHGs. CO_2 is thus the last gas, on environmental grounds, whose incremental additions one would want to restrict. Still, any extensive measures to limit net GHG emissions—even under a comprehensive approach—would probably mean some limits on CO_2, the most-prevalent of the anthropogenic GHGs. Moreover, a full analysis requires consideration of the costs of limitation as well as the benefits. It would be economically and environmentally irrational to focus solely on one GHG in any measures to limit climate change, because the greatest benefit may often be had for less cost by addressing other GHGs.

Focus on the energy sector is likewise inappropriate. Certainly the energy sector produces a large share of global CO_2, carbon monoxide (CO), CH_4, volatile organic compounds (VOCs), and nitrogen oxides (NO_x). But the GHGs arise from a variety of sources in every sector: agriculture, where rice paddies and livestock disgorge enormous amounts of CH_4 and fertilized fields release N_2O; forestry, where tree-cutting and soil disruption liberate about 10 to 33 percent of global anthropogenic CO_2; industry, which emits large amounts of CFCs, VOCs, CO, and NO_x; transportation, which yields CO, VOCs, and CFCs in addition to CO_2; and the residential and commercial sector, which produces CO_2, VOCs and CFCs.

IF LIMITS ON GHG EMISSIONS ARE DEEMED WARRANTED, A COMPREHENSIVE APPROACH WOULD HAVE IMPORTANT ECONOMIC AND ENVIRONMENTAL ADVANTAGES. IT WOULD ALLOW EACH NATION THE FLEXIBILITY TO DEVISE ITS OWN COST-EFFECTIVE POLICY MIX.

And in addition to GHG sources, the GHG sinks deserve serious attention. It is *net* emissions that matter for climate system functions. The net flow of GHGs into the atmosphere is the result of emissions from surface sources and removal by surface sinks, including ocean mixing, oceanic phytoplankton, trees, grasses, soil biota, crops, and tropospheric chemical reactions. Plants remove CO_2 from the atmosphere during photosynthesis; preserving and properly managing forests and other vegetation or protecting phytoplankton from anthropogenic injury can help sequester CO_2 released from surface sources.

The Comprehensive Approach

Any climate policy must be comprehensive to match the diverse character of GHGs, their sources, and sinks. Scientific studies, technology development, enumeration of current climate-relevant actions taken for other reasons, or proposals to limit GHGs should be based on net emissions of all GHGs, sources, and sinks and on weighting GHGs according to an index of their comparative environmental impacts. This comprehensive design would ensure that no important GHG or GHG-related activity is ignored, while providing a guide to addressing the most environmentally significant GHGs rather than fixing narrowly on one gas or sector.

If the strategy is technology development or enumeration of otherwise justified actions, a comprehensive approach is necessary to determine which technologies and actions are climate-relevant. If limits on GHG emissions are deemed warranted, a comprehensive approach would have important economic and environmental advantages. It would allow each nation the flexibility to devise its own cost-effective policy mix. Because the marginal costs of limiting emissions will vary across nations by gas, source, sink, and technique, a piecemeal or uniform approach would impose undue costs on those who could achieve the same environmental objective by less costly means. The flexibility afforded under a comprehensive approach would allow choice among all available response options, ensuring that costs are minimized. For example, the

least-cost policy option for limiting net emissions in one nation may be switching from coal to natural gas, while for another nation it may be changing agricultural practices to reduce CH_4 and N_2O emissions, and for another it may be reducing deforestation and ensuring sustainable forest management. Put another way, reducing emissions of CO_2 from fossil-fuel combustion (or stopping deforestation, or any other single tactic) might be the cheapest way to limit overall net GHG emissions in one nation but the most expensive in another. Rigid, uniform requirements would be economically irrational, needlessly driving up social costs.

The "net emissions" aspect of the comprehensive approach would also provide significant benefits by encouraging sink expansion through expansion of forest areas and preservation and protection of phytoplankton habitats from pollution. In addition to limiting net GHG emissions, these activities could provide other benefits in biodiversity, oceanic food webs, reduced soil erosion, and better timber management.

Anticipating "Unanticipated Consequences"

The comprehensive approach would also avoid a notorious drawback of piecemeal approaches: unwanted shifts to unregulated activities that continue to produce environmental degradation. For example, under a CO_2-only approach, utilities would probably switch from coal to natural gas (methane) because, with current combustion techniques, burning coal produces almost twice as much CO_2 per BTU as burning natural gas. But use of natural gas leads to CH_4 emissions because it leaks from natural-gas mining and transportation systems. One recent study estimates that with a 3–6 percent rate of CH_4 leakage from natural-gas transport, such leaks would fully offset all the CO_2-related radiative-forcing savings from switching from coal to natural gas. Such leakage rates are probably higher than the average in the United States, but may be typical elsewhere. And a swift expansion of natural-gas transport capacity to comply with a stiff CO_2 reduction target could well mean the use of hastily designed new facilities or older facilities in disrepair with leakage rates higher than today's. Hence, the result of piecemeal fuel switching could be even greater net GHG emissions than in the absence of the CO_2-reduction rule. Even if the CH_4 leakage rate only offset, say, 50 percent of the CO_2 savings, the CO_2-only policy would be severely undermined. Similarly, a transportation-only policy requiring, say, the use of electric vehicles, could shift production of emissions to the central power stations that recharge the vehicles' batteries. The comprehensive approach, on the other hand, would encompass all relevant emissions and thereby ensure that policies and incentives address the full net GHG emissions inventory.

THE COMPREHENSIVE APPROACH WOULD AVOID A NOTORIOUS DRAWBACK OF PIECEMEAL APPROACHES: UNWANTED SHIFTS TO UNREGULATED ACTIVITIES THAT CONTINUE TO PRODUCE ENVIRONMENTAL DEGRADATION.

A different kind of inadvertent shift would attend restrictions on fossil-fuel consumption applied piecemeal to one group of nations (such as OECD countries). If developing countries' net GHG emissions continue to rise at current rates, even radical OECD-only policies will be unable to arrest growth in global emissions. And the OECD nations would most likely respond by limiting imported fuels first, which would lower prices for those fuels on world markets and increase consumption in other nations. Depending on the sensitivity of consumption to prices and the efficiency of fuel combustion in the various countries, total GHG emissions might even rise. Over the slightly longer term, restrictions in only some nations could induce GHG-emitting industries to move to unregulated locations. These concerns indicate the need for comprehensive scope of coverage and international cooperation on any limitations measures.

Applying the Comprehensive Approach

Any framework convention on climate change should promote a cooperative scientific research and reporting agenda that would facilitate the comprehensive approach by examining all GHGs, sources, and sinks. It should also ensure that any future protocol follow the comprehensive approach. The convention could assure that any actions taken by a nation after a chosen baseline date will be credited to that nation's limitation obligations, if any, under a future protocol, relying on a provisional index of relative GHG impacts established at the convention. Without such advance assurances, nations would be hesitant to take even climate-relevant steps that are justified

on other grounds lest they lose credit for such steps when a climate agreement is signed. This fear would frustrate independently desirable policy steps (such as energy conservation or reforestation) while adding to pressure for hasty adoption of a climate protocol.

The major objection that has been raised to the comprehensive approach is that current science is not adequate for monitoring certain sources and sinks, such as nonpoint (diffuse or mobile) sources of CH_4 and N_2O. The objectors say that we should "do what we can now" and wait until later to design a comprehensive approach. The counterargument is that while monitoring such emissions is not easy it is not beyond our reach if we orient current research efforts to support a comprehensive approach. Moreover, our experience belies the suggestion that piecemeal initiatives can eventually be transformed into a comprehensive strategy. Piecemeal measures tend to create vested interests that fight to ensure the perpetuation of their favorite measures. For example, the overbroad Prevention of Significant Deterioration (PSD) provisions in the Clean Air Act limit industrial development in many regions of the United States, often without environmental justification. But other regions oppose relaxing these limits for fear prosperity will shift to those regions now subject to PSD controls. Similarly, any global climate agreement targeted at energy-sector CO_2 limitations would benefit some nations more than others. The favored nations would resist development of a more comprehensive approach that would treat all nations with an even hand. It is vital, therefore, to start with a comprehensive approach at the outset.

The pertinent question is not what is immediately feasible but whether the costs of proceeding with a flawed policy design are less than the costs of doing the necessary groundwork to develop and implement a comprehensive approach. The answer is that we need not wait for perfection; in the interim, proxy-based estimates of difficult-to-measure emissions can be used. A framework convention (or another agreement) can provide incentives for investments in developing or improving the requisite monitoring capabilities, such as by offering credit for national reductions in difficult-to-monitor GHGs upon demonstration of the relevant monitoring techniques to an expert panel.

THE MAJOR OBJECTION THAT HAS BEEN RAISED TO THE COMPREHENSIVE APPROACH IS THAT CURRENT SCIENCE IS NOT ADEQUATE FOR MONITORING CERTAIN SOURCES AND SINKS.

Market-Based Incentives

The virtues of market-based economic incentives for environmental protection are increasingly recognized. Fees or taxes, tradeable allowances, and deposit-refund programs have been successful in several important environmental applications, and we are learning how to apply them in others. The tradeable credits program used to phase out lead in gasoline achieved its goal at about half the cost of traditional regulation, saving hundreds of millions of dollars. Deposit-refund programs have aided in reducing litter and recycling beverage containers. Both fees and tradeable allowances are now part of the U.S. program to eliminate CFC use under the Montreal Protocol. And tradeable allowances have been proposed for the acid-rain-reduction provisions of the new Clean Air Act, with projected national savings of $1 billion annually when compared to a command-and-control program. Meanwhile, we have learned a great deal about the drawbacks of traditional regulatory approaches—the centrally specified, uniform, and rigid edicts of "command-and-control" methods—in terms of their cost, obstacles to innovation, ecological shortsightedness, and legal and administrative burdens.

Market-based incentives respond to market failures such as excessive pollution by harnessing and redirecting market forces to engender socially and environmentally responsible behavior. At the same time, they allow flexibility among regulated firms, promote diverse and cost-minimizing solutions by allowing those who can fix a problem most cheaply to do so, and stimulate efficient resource use and innovation in technologies and practices.

Market-based techniques are especially well-suited to any limitation measures for GHGs that might be adopted nationally or worldwide. Because GHG emissions arise from so many diverse and pervasive sources, the costs of abatement are bound to vary widely among emitters. Market-based mechanisms use that variation to social advantage by imposing a restraint on total emissions—a limit on the net quantity emitted or a fee for each unit emitted—but then letting the market allocate the burden of abatement to those who can most easily shoulder it.

Two main economic instruments have

been suggested for limiting emissions of GHGs: tradeable emissions allowances and emissions taxes. Tradeable allowances would set a total limit on net emissions, issue that sum of allowances to emitters, and let emitters trade them. Those for whom emissions reductions or sink expansions would be relatively more expensive would buy additional allowances, while those who could achieve limitations goals cheaply would sell their extra allowances. Each emitter would try to develop new means of limiting emissions at less cost than its competitors so that it could sell its allowances at a profit. Emissions control, efficient use of fuels and other inputs, and innovation of new control techniques would become profit centers for the emitter. The market would allocate limitations to those who limited emissions at least cost, reducing the overall cost to society.

Domestically, governments could issue allowances for net GHG emissions. Those who were issued allowances could meet their limitation obligations through such steps as energy conservation, fuel switching, reducing CH_4 leaks, planting trees, or contracting for limitations by other regulated firms. Allowances could be made of limited duration, or leasable, to relieve fears of hoarding or other distortions due to exercise of market power. Government clearinghouses, private brokers, and banks would act to facilitate trading among disparate parties and over time.

Any internationally agreed national obligations to limit GHGs could be advantageously reallocated among nations through bilateral or multilateral trades. One nation could satisfy its obligations by investing in response actions in another. For example, Nation A could provide new energy technology to Nation B in return for all or part of the value of B's reduction in emissions. Or Nation C could plant and manage trees in Nation D's territory in return for their CO_2 sink value while offering assistance to D to compensate for the reduction in arable land area. Nation E might earn the opportunity to record certain emissions reductions achieved in Nation F in return for debt forgiveness promised to F. Given significant international variations in marginal costs of limitation, mutually agreed trades would probably enable the world economy to realize substantial cost savings. These arrangements would demonstrate the power of applying Adam Smith's lessons of comparative advantage to global environmental resources. Such trading in GHG limitations would also serve as a market-based, decentralized vehicle for introducing needed capital and low-GHG-emitting technology into the developing world. Opportunities to obtain valuable emissions allowances by investing in lower-cost net GHG emissions limitations in developing nations (where, for example, energy production facilities do not yet exist) would attract funding from industrialized countries and stimulate innovation of low-GHG technologies useful in developing nations. This framework would obviate creation of a heavily bureaucratized, centralized regulatory authority and technology-assistance fund, with its attendant opportunities for waste and misallocation of benefits.

EXPERIENCE HAS SHOWN THE INADEQUACY OF EMPLOYING PIECEMEAL, COMMAND-AND-CONTROL APPROACHES IN ENVIRONMENTAL POLICY.

Emissions taxes for net GHG emissions are another important option. The tax rate could be geared to the GHG index value of the emissions activity. Like emissions trading, emissions taxes offer a cost-effective solution that promotes innovation and efficient resource use. Such a plan could work well within a nation, especially where the emphasis is on specifying the cost of the GHG-limitation program more precisely than the quantity of emissions avoided, or where revenue raising is a major goal. International application of a tax would raise more difficult questions: Would nations cede their sovereignty to an international tax authority? How would the tax be set? How would the potentially enormous revenues raised be allotted and expended?

Conclusion

Experience has shown the inadequacy of employing piecemeal, command-and-control approaches in environmental policy. Reinventing these square wheels in the climate context would surely be ecologically misguided and economically disruptive. A comprehensive approach is the foundation for sound analysis and treatment of the complex climate system and its interactions with socioeconomic activities, whatever level or type of effort nations or the world community may choose to expend on these issues. Should any policy measures be implemented, both a comprehensive design and the use of market-based incentives would be indispensable.

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