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Agence France Presse

November 04, 1999 17:37 GMT

SECTION: International news**LENGTH:** 670 words**HEADLINE:** Global warming talks postpone the hard work until next year**BYLINE:** Richard Ingham**DATELINE:** BONN, Nov 4**BODY:**

Signatories to the 1997 Kyoto Protocol on Thursday sidestepped controversial decisions on how to turn their landmark agreement from words into acts that will head off global warming.

Wrapping up a three-day meeting, environment ministers agreed a bland text that called for work to "intensify" so that decisions could be made in The Hague a year from now.

It did not spell out what work needed to be done or suggest a timetable for doing it.

German Environment Minister Juergen Trittin, putting a brave face on it, said "a broad majority" of countries declared they wanted the Protocol to be ratified in time for the 10th anniversary of the 1992 Earth Summit.

But Trittin, a member of the Greens, admitted the real work would now have to be tackled in a flurry of meetings over the next 12 months.

"You couldn't expect real issues to be clarified here," he said.

US Under Secretary of State for Global Affairs **Frank Loy** insisted there had been "steady progress."

"Here we began the hard substantive job of actually assembling the very nuts and bolts" of the Protocol machinery, he said.

The 11-day talks in Bonn, due to end on Friday among senior officials, were billed as a key step to decide how the Protocol would actually work.

But they have been dogged by friction between the European Union (EU) and the United States and by blocking tactics from oil-exporting countries, which fear that energy conservation will hit them hard in the pocket.

Kyoto commits industrialised countries to reducing emissions of carbon dioxide and other "greenhouse" gases by five percent in 2008-2012 compared to their output in 1990.

The agreement is unprecedented in its ambitions, not least because it would set up a global market in which polluting countries could "sell" some of their quota to cleaner countries.

But there is still not the slightest consensus on how this market would work and how it would be monitored.

Other thorny issues are how to measure national emissions of greenhouse gases, whether planting forests or even nuclear power could be offset against them, and whether countries should be punished for cheating.

In a veiled attack on the EU, Loy warned against "efforts to impose artificial caps" on the planned emissions bourse, saying "restraining the market will not only drive up the cost, but heighten the risk to our environment."

Greenpeace's political director for climate policy, Bill Hare, hailed the promises to ratify the Protocol swiftly and the growing interest in developing countries in the trading mechanism.

"However there has been far too little progress on how the Protocol will actually be implemented," he said.

"We still have a long way to go before we get a Kyoto Protocol that actually delivers greenhouse gas reductions and doesn't provide loopholes for countries such as the United States to simply buy their way out of taking domestic action."

Global warming is seen by environmentalists as the biggest peril of the next century.

The burning of oil, gas and coal unleashes carbon-based gases that act as an atmospheric blanket, preventing solar heat from radiating back into space.

This is causing a steady warming of the Earth's atmosphere, triggering potentially disastrous rises in the sea level as well as abrupt local changes in the climate, scientists say.

Kyoto has been signed by 84 countries. But it will only become international law when at least 55 countries, including developed countries accounting for at least 55 percent of emissions, based on 1990 levels, have ratified it.

Only 14 countries, all from the developed world, have so far ratified it. Ratification commitments from the European Union, Japan and New Zealand account for 41 percent of emissions.

A big question is whether the United States, by far the biggest single polluter, will follow suit. Delegates here said election-year politics in 2000 meant US negotiators could only accept a relatively conservative text acceptable to Congress.

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Thursday November 4, 8:14 pm Eastern Time

FOCUS-Progress but no deal on global warming

(Updates with high-level talks over, EU statement)

By Adam Tanner

BONN, Germany, Nov 4 (Reuters) - World governments said they had achieved progress if not dramatic results during talks that concluded in Bonn on Thursday designed to cut emissions of "greenhouse" gases blamed for global warming.

As expected, no great breakthrough emerged over two weeks of meetings that close with lower-level consultations on Friday. But officials were optimistic a deal could now be struck at the next major conference on global warming in November 2000.

"As expected, this wasn't the time for breakthroughs, but above all there was a very positive mood in the ministerial meetings," Michael Zammit Cutajar, the United Nations top global warming official, told Reuters. "There is a tremendous amount of work to do next year."

The result was akin to building the foundations of a new house with a blueprint for completing the job later on.

"We definitely have the frame up and have located where the windows and doors go, and we maybe have some walls built but we definitely don't have a roof and it's definitely not liveable yet," top U.S. delegate Frank Loy told Reuters.

DEEP DIVISIONS REMAIN

Under the incomplete 1997 Kyoto agreement, industrial nations must reduce their greenhouse gas emissions by 5.2 percent from 1990 levels by 2008-12. Few nations have actually ratified the agreement however because of its gaps -- which clashing economic interests among nations make difficult to close.

"There is still controversy and not all issues have been decided," said Alexander Bedritsky, Russian delegation head.

Oil-rich Saudi Arabia won few friends at the conference by arguing it deserved financial compensation because it would probably sell less petroleum under a global warming deal, and many delegates said

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the Saudis had slowed proceedings.

"This is absolutely not true," said Saudi Mohammad Al Sabban. "If Saudi Arabia was slowing down the talks there would have been no progress. But we cannot leave our issues aside."

Among difficult outstanding issues are possible penalties if nations do not meet their pollution targets. Another is the extent to which nations will be able to pay others to reduce pollution on their behalf.

The United States is somewhat isolated on some of its approaches, so hammering out a deal may yet prove difficult.

In Bonn, officials from 173 nations agreed to meet again in the Hague in the Netherlands in November 2000, overcoming resistance from the United States which sought a later date.

They also agreed to meet in two smaller sessions in Bonn before then to work through some of the issues dividing Europe, the United States, OPEC, the developing world and other groups.

Officials could not agree however on a declaration of political will from ministers but settled for a similar statement from the conference itself. They also set up negotiating texts for future talks that offer proposals on different issues.

"I did not say this was a great success but European Union ministers are satisfied," said Satu Hassi, Finland's environment minister representing the EU.

Both the EU and Japan said this week for the first time that they were ready to ratify the Kyoto agreement pledging to lower emissions of greenhouse gases by 2002.

The United States and Russia have both declined to set a deadline, and Russia's Bedritsky said there was little sense for either until they held presidential elections over the next year.

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Climate Summit Ends on Mixed Note

By CLARE NULLIS Associated Press Writer

BONN, Germany (AP) - Environmental ministers from around the world pledged Thursday to cut emissions of greenhouse gases to combat global warming, but failed to decide how to achieve the reductions.

Despite U.S. reservations and objections by Saudi Arabia and other oil exporters, most countries said during a U.N. conference on climate changes in Bonn that they wanted a 1997 agreement on reducing emissions to take effect by 2002, German Environment Minister Juergen Trittin said.

For those who would delay the protocol, signed in Kyoto, Japan, Trittin said, "You can stay out of this process if you want, but you can no longer stop it."

Chief U.S. delegate Frank Loy said progress had been made toward involving developing countries, like China, and making sure measures to cut emissions would be cost effective.

"We think we're on the right track, but we have to keep going," Loy said. "We as the world can't just sit there as the planet warms."

Environmental groups were upbeat, but said more needed to be done. The World Wide Fund for Nature warned that despite the ministers' political declarations, lower-level negotiators were working to widen loopholes in the climate accord.

Most scientists agree that greenhouse gases - such as from burning coal and car exhausts - were causing the earth's atmosphere to warm up. They said 1998 was the hottest year on record.

With global warming, they said, sea levels could rise and flood coastal areas, while devastating droughts could occur on dry lands. Everywhere the earth's fragile ecosystems would be disrupted.

Much of the Bonn meeting was devoted to technical details of the Kyoto agreement, and to planning next year's summit in the Netherlands, which should set emission reduction targets for industrialized countries.

The delegates from some 150 nations, however, failed to agree on both anti-cheating measures and emissions trading, which would allow industrialized nations to "buy" credits from others to achieve their reduction targets.

The U.S. Congress has objected to the Kyoto deal, arguing that it imposed no obligations on

developing nations and would be too costly for Americans.

Katherine Silverthorne of the U.S. Climate Action Network claimed that Congress was dominated by oil and coal interests.

"Don't let the U.S. fossil fuel industry and its domination of Congress hold the rest of the world process and delay this process any longer," she said.

The United States, Australia and Canada continued to reject any deadline for ratification, while Japan and New Zealand backed the EU's call to implement the Kyoto deal by 2002.

For the emission reduction targets to become international law, the Kyoto accord must be ratified by countries responsible for 55 percent of the developed world's emissions in 1990.

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Momentum builds in Bonn climate talks

By Vanessa Houlder in London



Negotiators and campaigners yesterday welcomed a renewed sense of political momentum at the latest round of climate change talks in Bonn.

Progress was made on several technical points, while contentious issues that

threatened to derail the international protocol on limiting greenhouse gases agreed at Kyoto in 1997 were largely avoided. The Kyoto protocol committed industrial nations to reduce greenhouse gas emissions by 5.2 per cent from 1990 levels by 2008-12.

"As expected, this wasn't the time for breakthroughs, but above all there was a very positive mood in the ministerial meetings," said Michael Cutajar, executive secretary of the United Nations Framework Convention on Climate Change.

There was a widespread welcome for an announcement by the European Union, Japan and New Zealand of plans to ratify the Kyoto protocol by 2002, 10 years after the Rio Earth summit where the climate convention was initiated.

"These commitments give the Kyoto protocol vital political momentum," said Greenpeace, the environmental campaigning group.

But the protocol, which requires ratification by countries accounting for 55 per cent of the industrialised world's emissions, is unlikely to enter into force without ratification by the US. The US says it will not ratify the protocol before there is "meaningful participation" from developing countries.

The US said the Bonn talks had moved the protocol closer to a treaty that it could ratify, but many difficult issues remained. "What we did at this conference was necessary and immensely useful and very major, but it leaves some tough issues, which we did not touch deliberately," said Frank Loy, under-secretary of state for global affairs, who led the US delegation.

Difficult issues that must be resolved by the next conference include the question of whether there

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should be limits on the use of emissions trading, which allows countries to buy or sell carbon "credits" between themselves. Others include the use of forests, crops and soils as "sinks" to absorb carbon; and the participation of developing countries.

In Bonn, the delegates from 173 countries agreed to meet again in The Hague in the Netherlands in November 2000, overcoming resistance from the US, which sought a later date.

WWF, the international conservation group, said the commitment by environment ministers for faster action to tackle global warming was undermined by the negotiating tactics of many government officials. It accused officials from Australia, Canada, Japan and the US of trying to neuter the Kyoto Protocol, by attempting to widen loopholes in the agreement.

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Thursday, November 4, 1999 Published at 18:10 GMT

Sci/Tech

Deadline for global warming deal



Island nations fear for their future if sea levels rise

Ministers have pledged to reach a deal within a year on how to go about reducing the greenhouse gas emissions which many scientists believe will cause global warming.

The agreement came at the end of the Climate Change Conference in Bonn. But environment groups accused several countries of undermining the talks by looking for loopholes behind the scenes.

By

Margaret Gilmore:
The fossil fuel lobby is putting heavy pressure on America to avoid dramatic cuts

A 1997 deal, reached in the Japanese city of Kyoto, commits the industrialised world to an overall 5% cut in greenhouse gas emissions from 1990 levels by the year 2012.

Germany's environment minister Juergen Trittin said that despite objections from Saudi Arabia and other key oil exporters, the majority of participating countries wanted the agreement to take effect in the next three years.

"For those who want to delay the Kyoto protocol entering into force, we say to you: 'You can stay out of this process if you want, but you can no longer stop it'."

Both Europe and Japan said for the first time they would ratify the Kyoto protocol by 2002. But the US, the world's biggest polluter, said it would not go along with the deadline. The US Congress wants more action from developing countries.

Meanwhile, the Worldwide Fund for Nature, has accused the US and Australia, Japan and Canada of political schizophrenia.

It said that while their ministers were calling for progress in tackling global warming, their civil servants were trying to widen a loophole allowing them to

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measure emissions in a different way, thus appearing to reduce them without actually doing so.

Fish are dying

Most scientists agree that greenhouse gases - from car exhausts or burning coal, for instance - are to blame for the warming of the Earth's surface.

BBC Environment
Correspondent
Margaret Gilmour:
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wants
compensation for
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They warn that this will lead to flooding in coastal areas, devastating drought in dry areas and disruption of fragile ecosystems.

Low-lying and small island countries which stand to suffer most from global warming said they were disappointed by the lack of progress.

The government representative from the Caribbean island of St Lucia said the delegates were fiddling while the world burned.

Cyclones are increasing in frequency and intensity in the Caribbean, according to government representatives.

They say the fishing industry is also suffering as bacteria harmful to fish are starting to thrive in warmer ocean temperatures.

Officials from the 173 nations at the Bonn conference agreed to meet in a year's time in the Hague in the Netherlands.

Difficult issues which remain unresolved include the penalties for nations that do not meet their pollution targets and the extent to which nations can pay others to reduce pollution on their behalf.

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The New York Times, November 4, 1999

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November 4, 1999, Thursday, Late Edition - Final

SECTION: Section A; Page 6; Column 1; Foreign Desk

LENGTH: 1340 words

HEADLINE: WORLD BRIEFING

BYLINE: Compiled by Terence Neilan

BODY:

EUROPE

GERMANY: U.S. IN CLASH ON GLOBAL WARMING

At a 150-nation conference in Bonn, the United States clashed with the European Union and developing countries over how and when to ratify an anti-pollution accord reached two years ago in Kyoto, Japan. Environment ministers were deeply split over the issue of how pollution could be cut without hurting economic growth. The European Union and Japan want a **global warming** accord in place by 2002, but the United States declined to set a deadline. Victor Homola (NYT)

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News

No To Greenhouse Penalties

Nick Hordern

11/05/1999

Australian Financial Review

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Australia is opposing an international trend to impose penalties on countries which fail to meet their greenhouse gas emission targets, say environment groups.

"The mood is that we're more likely to have binding consequences penalties than not, but Australia doesn't want them," Mr Bill Hare, Greenpeace International's director of climate policy, told The Australian Financial Review yesterday.

Mr Hare was speaking from Bonn, where the UN Framework Convention on Climate Change's (UNFCCC) Fifth Conference of the Parties (COP-5) began on October 25. The Kyoto Protocol, the treaty which limits emissions of greenhouse gases ("carbon") by developed ("Annex B") countries, was negotiated in the UNFCCC.

The Minister for the Environment, Senator Robert Hill, is representing Australia in the "High Level" segment of COP-5, which began on Tuesday.

Japan and Canada are standing with Australia in opposing the imposition of penalties but the US is in favour despite the US Senate refusing to ratify the Kyoto Protocol until major developing countries such as China and India agree to limit carbon emissions.

Argentina announced at COP-5 on Tuesday that it would adopt a voluntary greenhouse emission target the first non-Annex B country to do so.

The EU also announced on Tuesday it was "willing and ready" to ratify the Protocol by 2002. US Under Secretary of State for Global Affairs Mr **Frank Loy** told COP-5 that Washington believed the Kyoto Protocol could be ratified by 2002, but only with developing country participation and only if greenhouse reduction mechanisms were "cost effective".

The protocol provides for three "flexibility mechanisms": joint implementation, in which one Annex B country agrees to reduce greenhouse emissions in another; clean development mechanisms, in which an Annex B country earns carbon credits by providing climate friendly infrastructure to developing countries; and carbon trading.

The UNFCCC has yet to focus on what sort of "binding consequences" could be imposed for failure to meet Kyoto targets, but suggestions for penalties at the Bonn meeting include both the compulsory purchase of carbon credits and exclusion from the flexibility mechanisms.

The EU and environment groups previously have opposed free world trade in carbon, fearing that it would allow Annex B countries to simply "buy their way out of trouble".

Some business representatives at Bonn were actually urging the adoption of Kyoto penalties because they believed they would firm up the carbon market by helping to ensure that carbon credits

represented real emission reductions. Business ``wants a hard [carbon credit] currency'', Mr Hare said.

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ROUNDUP: World environment ministers ending global warming meeting on optimistic note

11/04/1999

Deutsche Presse-Agentur

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Bonn (dpa) - World environment ministers are winding up two weeks of gruelling talks aimed at arresting global warming on an optimistic note with claims that the meeting had shown a political will to proceed with tackle greenhouse gas emissions.

Despite facing a year of tough negotiations on key measures, ministers and officials who have been gathered in the west German city of Bonn believe the conference has been successful in pushing forward the talks on **climate change**.

"In our view, we made significant progress," said Frank Loy, the head of the U.S. delegation at the Bonn meeting. "Most significantly," Loy told journalists Thursday, "we have been able to redouble out efforts" at reaching agreement.

"We addressed the problems we had to. We got the political will for intensifying our efforts," said Loy.

But the ministers' failed to reach agreement on a final conference statement, leaving the conference's chairman, Jan Szyszko, Poland's Minister for Environmental Protection, Natural Resources and Forestry, to sum up the results of the Bonn meeting.

"The discussions were frank and open, marked by a positive spirit and a common commitment to move forward," Szyszko told the conference which comprised representatives of more than 170 nations.

The conference has also given Szyszko a mandate to ensure that the negotiations remain on track in the run up to the next meeting on **climate change** set down for next year in The Hague.

Similar upbeat sentiments about the meeting's outcome were expressed by leading European Union officials with Finland's Minister for the Environment, Satu Hassi saying that the results of the conference were positive, adding that she believed "a new spirit" prevailed at the conference.

Finland at present holds in the sixth monthly rotating E.U. presidency and her view of the conference were backed up by one of the European Commission's leading environment officials, James Currie who also saw the meeting as reaffirming the political will on tackling global warming.

The Bonn meeting was a technical gathering aimed at helping to clear away areas of disagreements ahead of the The Hague meeting.

And according to Currie the Bonn conference has been particularly successful in both laying the ground work for the gathering in The Hague and for building confidence in the process.

"The politicians are now taking charge of the process," said Currie, who warned: "Who is going to take responsibility for failure?"

At a meeting two years ago in the Japanese city of Kyoto, governments agreed to cut greenhouse gas emissions blamed for global warming by 5.2 per cent from 1990 levels by the period 2008 and 2012.

The next 12 months of negotiations will now focus on establishing the rules for implementing the so-called Kyoto protocol.

While only a few nations have so ratified the Kyoto protocol, two of the world's leading industrialised economies, Japan and the E.U. have indicated that they intend to sign up for the agreement in 2002.

However, the U.S. has so far failed to indicate when it is prepared to ratify the protocol prompting talk at the conference that the process may have to proceed without America.

But the U.S. officials remain adamant that Washington intends to remain part of the moves to address global warming. "We want to reduce greenhouse gas emissions. Anything that helps that is a plus."

Officials also expressed confidence that progress had been made at the Bonn meeting on the steps needed for ensuring compliance of the measures for cutting greenhouse gases.

That said further negotiations are needed on differences between the E.U. and the U.S. on trading emissions and steps for measuring policies aimed at offsetting greenhouse gases including planting trees.

Moreover, leading petroleum producing nations such as Saudi Arabia remain sceptical about the process and have called for financial assistance to help reduce their economic dependence on fossil fuels.

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ANALYSIS: Talks on global warming face another tough year

11/04/1999

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By Andrew McCathie, dpa

Bonn (dpa) - Seven years after world leaders gathered in Rio de Janeiro to draw up a game plan for tackling global warming, the talks on measures to halt **climate change** are poised to enter yet another difficult 12 months.

Environment ministers and officials from more than 170 nations are concluding another marathon meeting in the western German city of Bonn Friday with a stream of declarations of political will to push forward take steps for dealing with **climate change**.

But the Bonn conference is likely to stop short of issuing a joint statement reaffirming their political will for introducing measures to reduce the greenhouse gases which are blamed for causing global warming.

Instead, ministers at the conference insisted that a new spirit has emerged in Bonn for pressing on with moves aimed at dealing with global change.

"The process is back on track," said the European Commission director general for the environment, James Currie.

The conference's president, Jan Szyszko, expressed satisfaction Thursday with the meeting, saying it had "promoted dialogue and improved mutual understanding".

Nevertheless, several big issues still remain, including a Washington plan that would allow developed countries to trade emission rights with nations with lower pollution levels.

Delegates are also debating the role of measures such as planting forests to help reduce global warming.

The conference in Bonn was essentially a technical meeting aimed at trying to set the stage for another gathering in 12 months' time in The Hague when a final agreement on reducing greenhouse gases is to be signed.

A key part of the deliberations in Bonn concern when the United States and the European Union will agree to ratify a plan set in the Japanese city of Kyoto in 1997 for developed nations to cut their emissions by 5.2 per cent compared to 1990 levels by the years 2008 to 2012.

In opening the Bonn meeting, Chancellor Gerhard Schroeder proposed implementing the global warming deal by the year 2002, but the United States has so far declined to agree to a timetable.

It has already been a long and agonising road to Bonn in what are considered to be the most complex and ambitious international negotiations ever undertaken.

The plan devised at the Earth Summit in Rio to stabilise emissions in the year 2000 at 1990 levels has largely fallen by the wayside because of the failure to agree that commitments should be legally binding.

It took another two lengthy meetings - first in Berlin in 1995 and then in Geneva a year later - for governments to agree that targets should be legally binding.

This followed the decision of the United States to agree to endorse the need for legally binding contracts during the meeting in Geneva.

Throughout the years of negotiations the push to halt global warming has been dogged by deep differences not just between the developed nations and the developing world, but between major world economic powers such as the United States and the European Union.

Despite setting a figure in Kyoto for reducing emissions, the conference failed to lay down a timetable for its implementation.

As a result, part of the talk in the corridors of the Bonn conference has been over the need to ensure that the United States, the world's biggest polluting nation, remains as part of the process.

But speaking to reporters at the conference, U.S. President Bill Clinton's special adviser, Roger Ballantine, insisted that Washington would remain on board.

"The United States is absolutely committed to the Kyoto process," Ballantine said.

Those pressing for action to head off global warming have been also encouraged by signs of shift in attitude among world businesspeople towards the cause of **climate change**.

Sensing the inevitability of an agreement on global warming and after years of resistance, several big international companies are beginning to weigh up the possible benefits of reducing emissions.

These includes both possible tax breaks for changing their business operations and new market opportunities which might open up, such as from the production of a new clean car.

But from the perspective of the small Pacific island states which are already claiming to be seeing the ill-effects of global warming in rising sea levels, the talks have been too slow.

"The whole process should not be held hostage to the selfish economic interests of other nations when our very own survival is at stake," said Faimalaga Luka, minister for natural resources and environment for the tiny island state of Tuvalu.

With a total land area of only 26 square kilometers, the islands making up Tuvalu are on average only two meters above sea level.

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04-11-99 1057EST

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 **cop5**

Article 5 of 21

Green plans under attack

11/05/1999

The Express

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THE "green" tax plans for motorists and business were yesterday branded "a dog's breakfast" by ministers' own advisers on environmental taxation. They warned that if the Chancellor presses on with the six per cent escalating tax on petrol, he must spend all the proceeds on public transport. They say the plan for a **climate change** levy will disproportionately harm small industries.



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Article 7 of 36

WORLDVIEW - CLIMATE CHANGE : E.U. CONTINUES PUSH FOR KYOTO RATIFICATION

11/04/1999

Greenwire

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The European Union said yesterday that it still wants ratification of the Kyoto Protocol by 2002, even without the United States on board.

E.U. officials made the statement at the U.N. **climate change** conference in Bonn, Germany. Margot Wallstrom, E.U. environment commissioner: "We would prefer to do it together with the United States but we know of all the problems with Capitol Hill."

Assistant Secretary of State David B. Sandalow said the United States is not dragging its feet but would not be bound by the 2002 date. Sandalow: "We are working aggressively to reduce emissions at home and build an international system to reduce emissions at the lowest cost" (Clare Nullis, AP/San Francisco Chronicle/Examiner online, Nov. 3).

Despite "deep splits" over how to reduce global warming, Wallstrom said she expected the Bonn conference would announce today a "manifestation of political will" to reach a final deal at next year's **climate change** meeting in the Netherlands (Reuters/CNN online, Nov. 3).

Meanwhile, analysts say Argentina's decision to undertake a voluntary commitment to reduce greenhouse gas emissions will increase the pressure on other developing nations to do the same (Ramesh Jaura, Inter Press Service/TerraViva).

An Internet broadcast of the United Nation's conference can be found at <http://cop5.unfccc.de>. Detailed daily reports on the negotiations are also available at the Earth Negotiations Bulletin Web site.

NUCLEAR ENERGY LOBBIES FOR EMISSIONS CREDIT

The international nuclear industry is undertaking a strong lobbying effort at Bonn in hopes of getting delegates to support emissions credits for the substitution of nuclear power for fossil-fuel generated power.

But the issue presents a "dilemma" for the conference, because while nuclear power generation is not a "significant greenhouse gas emitter," there are still other risks associated with it, said Jose Goldemberg, World Energy Assessment chairman.

Germany plans to phase out the use of nuclear power. But there are a number of pro-nuclear countries in the European Union (Electricity Daily).

ISLAND NATIONS COMPLAIN ABOUT LACK OF DEAL

Although both Japan and the European Union support quick ratification of the Kyoto treaty, many smaller island nations say the opportunity for a deal in Bonn has been squandered.

Many of the island nations have been voicing their anger at a lack of progress toward a final agreement. A representative from the island of St. Lucia "said the delegates were fiddling while the world burned" (Rob Broomby, BBC Online).

Myra Merkof, from the ministry of foreign affairs for the Cook Islands: "We are going to be talking about our survival. We have island groups in the Cook Islands who will most likely be submerged by an increase in sea level" (BBC World Update, Nov. 3).

THOUGHTS ON GLOBAL WARMING

Philip E. Clapp of the DC-based National Environmental Trust, in an International Herald Tribune op-ed : "So while the United States doggedly pursues its narrow-minded policies, the Earth will experience a temperature rise unsurpassed in the last 10,000 years, threatening economic hardships that far outweigh any short-term gains."

In a Financial Times analysis, Vanessa Houlder writes that "even the most ardent advocates of emissions trading acknowledge it can only be a partial answer to the problems of **climate change** . But by opening up markets, encouraging innovation and harnessing competition, it may do something to reduce the world's greenhouse gases."

Washington Times editorial page deputy editor Kenneth Smith, in an op-ed for that paper, writes that "notwithstanding all the apocalyptic talk about how island nations are in danger of going under because of melting ice caps and rising tides, much of the hot air seems to have gone out of the **climate change** movement. For one thing ... projections of Earth's surface temperatures have been sinking faster than the islands" (All cites Nov. 4 unless noted.) -- MB

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Article 17 of 36

German minister says momentum against greenhouse gases unstoppable

By CLARE NULLIS

11/04/1999

Associated Press Newswires

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BONN, Germany (AP) - International momentum to cut greenhouse gases blamed for global warming is unstoppable, Germany's environment minister said Thursday.

Juergen Trittin said that despite reservations by the United States and objections by Saudi Arabia and other key oil exporters, the majority of countries at a U.N. **climate change** conference want a 1997 agreement on reducing gas emissions to take effect in the next three years.

"We have sent a political signal that there is a broad majority that wants a **climate change** protocol to enter into force by 2002," Trittin said after two days of ministerial negotiations.

Environmental groups welcomed the commitment. But the World Wide Fund for Nature warned that, away from the political declarations of ministers, some lower-level negotiators were working to widen loopholes in the climate accord.

The 1997 deal was reached in the Japanese city of Kyoto. It sets specific targets for industrialized countries to reduce greenhouse gas emissions by an average 5 percent below 1990 levels in the 2008-2012 period.

The Kyoto protocol does not impose any obligations on developing nations, but Argentina and Kazakstan told the Bonn meeting they would set voluntary targets to cut output of the polluting gases - an example expected to be followed by other nations.

"For those who want to delay the Kyoto protocol entering into force, we say to you: You can stay out of this process if you want, but you can no longer stop it," Trittin told journalists.

Most scientists agree that greenhouse gases - from car exhaust or burning coal, for instance - are to blame for the warming of the earth's surface and say that 1998 was the warmest year on record. They fear a dangerous rise in sea levels and flooding in coastal areas, coupled with devastating drought in dry areas and disruption of fragile ecosystems.

Most of the Bonn meeting was devoted to technical nitty-gritty as delegates from about 150 nations tried to craft a text for a bigger conference in the Netherlands next November.

Germany and the European Union injected a political note by insisting that the Kyoto deal should enter into force by 2002. To the surprise of environmental activists like Greenpeace, Japan and New Zealand swallowed longstanding reservations and also agreed with this target, subject to certain conditions.

Equally important, many African countries for the first time broke ranks with Saudi Arabia - whose oil-dependent economy stands to lose billions of dollars as nations switch to cleaner energy - and said they too wanted tough and speedy international action, said Trittin.

The United States said it would not go along with a 2002 deadline. Although President Bill Clinton has tried to push through many environmental policies, he has not submitted the Kyoto protocol for ratification. The Republican majority in Congress has made it clear it would reject the accord, saying it would impose costly anti-pollution obligations on the United States while doing nothing to tackle emissions from China and other developing countries.

Trittin said Germany was anxious to have the United States, the world's biggest source of greenhouse gases, on board. But he voiced understanding for U.S. domestic political difficulties.

Democratic U.S. presidential candidates Al Gore and Bill Bradley want tough action against greenhouse gas emissions. But the Republican frontrunner, George W. Bush, is skeptical about the warnings of **climate change** and its impact.

For the Kyoto protocol to become international law, it has to be backed by industrialized countries responsible for 55 percent of the developed world's emissions in 1990. That would be difficult, but just about achievable, without the United States on board.

(cn-ko)



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Yahoo! Singapore - News

World

Thursday, November 4 9:01 PM SGT

Bland leading the bland at UN talks on global warming

BONN, Nov 4 (AFP) -

Smothering their differences, signatories to the 1997 Kyoto Protocol on Thursday sidestepped controversial decisions on how to transform their landmark agreement from words into acts that will head off global warming.

Environment ministers, wrapping up a three-day meeting, agreed a bland text that called on working parties to step up work to enable a breakthrough at a final meeting in November next year in The Hague, delegation sources said.

It did not spell out what work needed to be done, or suggest a timetable for doing it.

Applying a brave gloss, German Environment Minister Juergen Trittin said "a broad majority" of countries wants the Protocol to be activated in 2002, in time for a meeting to assess the world's climate 10 years after the Rio Summit.

But Trittin, a member of the Greens, admitted that the real work would now have to be shouldered by a series of meetings over the next 12 months.

"You couldn't expect real issues to be clarified here," he said.

The 11-day talks in Bonn, due to end on Friday among senior officials, were billed as a key technical step that would decide how the Protocol would actually work.

But they have been dogged by friction between the European Union (EU) and the United States over how far the free market should be used to lower emissions of fossil-fuel gases blamed for global warming.

And oil producers, fearing that energy conservation will hit them in the pocket, persistently fought European efforts to speed up negotiations and craft an end-of-meeting communique demanding urgent action.

In the end, calls for a communique were defeated and the meeting approved a "proposal by the president" that calls on working groups to "intensify the preparatory work required to enable it to take decisions" in The Hague.

Environmentalists were incensed.

"Politically, this is a step back," said a French activist. "This dilutes the impact of what was agreed in Buenos Aires," where countries agreed a so-called plan of action last year.

Kyoto commits industrialised countries to reducing emissions of carbon dioxide and other "greenhouse" gases by five percent in 2008-2012 compared to their output in 1990.

Developing countries do not have binding commitments, but are being encouraged to convert to clean technologies with the help of the industrialised world.

The agreement is unprecedented in its ambitions, not least because it would set up a global market in which polluting countries could "sell" some of their quota to cleaner countries.

But there is still not the slightest consensus on how this market would work and how it would be monitored, and whether countries should adopt laws or controls to curb emissions.

Global warming is seen by environmentalists as the biggest peril facing the planet in the next century.

The burning of oil, gas and coal unleashes carbon-based gases that act as an atmospheric blanket, preventing the heat from the Sun's rays from radiating back into space.

This will translate into a rise in the atmosphere's temperature, triggering potentially disastrous rises in the sea level as well as abrupt local changes in the climate, scientists say.

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Big knowledge gap in global warming problem

BONN, Nov 4 (AFP) -

Global warming is such a complex threat that scientists are powerless to predict when and where climate fluctuations will strike and whether its victims will suffer gradual change or savage storms, drought or even a mini Ice Age.

A decade-long crusade has yielded much knowledge about the cause of the problem: fossil-fuel gases are weaving an invisible blanket around the world, making the atmosphere store up heat from the sun instead of letting it radiate out safely into space.

But how rising atmospheric temperatures will affect climate is still largely in the realm of guesswork.

Reliable data on climate change is only a few decades old, and climate itself is a hugely complicated interaction between the air, landmasses and oceans.

Some ministers at the talks here to develop the 1997 Kyoto Protocol on global warming have suggested that the cyclone that devastated the eastern Indian state of Orissa last week was an example of wild climate change.

But scientists are far more cautious, saying they cannot tell whether the storm was a freak or part of a worrying global trend.

"It's quite difficult to say that extreme events have increased or will increase in the future," said Geoff Jenkins, head of the climate prediction programme at the Hadley Centre for Climate Prediction and Research, a unit of Britain's Meteorological Office.

"There's still a lot we need to know about climate change on a local scale and also about extreme events. We are not very good at predicting local details and we know that we are not very good at predicting whether extreme events, hurricanes, monsoons or whatever, will become more frequent."

There is a consensus among climatologists that the Earth's temperature has already risen more this century than at any time since the last Ice Age 20,000 years ago.

They also agree it will rise significantly over the next 100 years, as more countries industrialise and gases that have already been pumped into the air start to take effect.

Even so, their predictions range widely, from 1 to 3.5 degrees Celsius (1.8 to 6.3 deg. Fahrenheit), which would translate into a rise in the sea level of between 15 and 95 centimetres (six to 38 inches) -- scenarios that, for low-lying countries and small island states, make the difference between a worry and a catastrophe.

One reason for the big variation is political: no-one knows how far countries will rein in gas emissions or plant forests to soak up some of the airborne carbon.

But the other is scientific: there are big gaps in understanding how a rise in atmospheric temperature will effect the planet's vast mass of seawater and its cloud system.

Shape, height and thickness determine whether clouds add to the warming effect or reflect the sun's rays, thus making the atmosphere locally cooler.

Similarly, the oceans will have an enormous impact on local climate, in ways that remain murky.

The sea level will rise from a partial melting of the polar icesheets and glaciers, as well as from an expansion of the upper layers of the oceans. But it could take decades for the oceans' cooler, deeper layers to expand in the same way.

According to one scenario, the melting of part of the Greenland ice sheet would close off part of the Gulf Stream, the eastward flow of water that warms Western Europe.

That in turn, would cause Europe to get very cold. Snow will fall, in turn reflecting more of the Sun's heat back out into space, making it even chillier.

Loss of cloud cover normally generated by the warm ocean current would add to the cold, possibly plunging much of Europe into a sort of short Ice Age.

In contrast, Jenkins rejects this prediction, suggesting that the overall planetary warming would be enough to offset a prolonged European chill.

"The answer to these questions is to build a (computer) model that has a much higher resolution in its representation of the atmosphere and the oceans," he said.

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WORLDVIEW - CLIMATE CHANGE III: AUSTRALIA SURPASSES U.S. IN PER CAPITA EMISSIONS

11/04/1999

Greenwire

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Australia has surpassed the United States as the world's largest emitter of greenhouse gases per capita, according to an analysis of U.N. statistics by the Australia Institute.

The analysis found that Australia emits 25 percent more carbon dioxide per capita than the United States and more than double that of most European countries. The institute attributed its findings to Australia's dependence on coal-fired power plants, a large livestock population and excessive land-clearing.

The conclusions are expected to increase pressure on Australia to control its greenhouse gas emissions. A spokesman for Australian Environment Minister Robert Hill said Australia's position under the Kyoto Protocol has weakened because its clearing of woodlands in Queensland have surpassed rates in the Amazon Basin at the "height of international condemnation" earlier this decade (Claire Miller, Sydney Morning Herald, Nov. 4). -- KD

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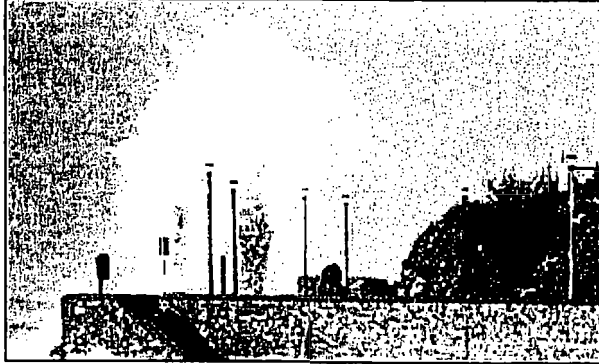
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Thursday, November 4, 1999 Published at 18:10 GMT

Sci/Tech

Europe's climate forecast is hot



More extreme weather may lead to more insurance claims

By our Environment Correspondent Alex Kirby

Here is the European weather forecast for the next century and it has several surprises.

Average temperatures across the continent are expected to rise between 0.1 and 0.4 degrees Centigrade each decade. Very hot summers will become at least twice as frequent as they are now and perhaps 10 times more frequent.

Except in the far north of Europe, they will also be drier than they are now. By 2080, very cold winters will almost have disappeared. Across Europe, winters will become wetter by one to two percent per decade.



Farming in southern Europe may suffer ...

This forecast was given to delegates attending the United Nations climate conference in Bonn, Germany. It was presented by Professor Martin Parry of the Jackson Environment Institute at the University of East Anglia, who carried out the work with Dr Wolfgang Kramer of the Potsdam Institute for Climatology.

The EU initiative is known as Acacia (A Concerted Action towards a Comprehensive Climate Impact and Adaptations Assessment). The project looked at the potential impacts of global warming and the sectors most liable to be affected if climate change occurs as many scientists anticipate.

It concluded that forestry, recreation and agriculture in Northern Europe might show appreciable gains with

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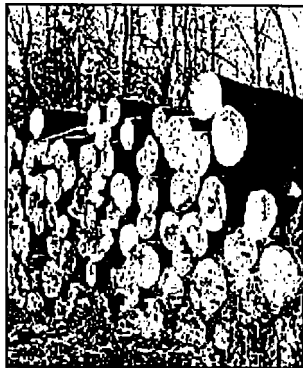
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Northern Europe might enjoy appreciable gains, with smaller benefits for energy and construction sectors.



... but forestry in northern Europe may benefit

Minerals and mining, manufacturing and finance, it says, are likely to remain unaffected. There will be disadvantages for transport, agriculture and health in southern Europe but the greatest losses are likely to be felt by insurance, which will have more claims to deal with.

Professor Parry said climate change over the long term might aggravate existing near-term environmental problems. So the question of how to adapt to it should be factored into future policies of environmental management and economic development.

Trying to mitigate climate change by reducing emissions of greenhouse gases, he said, was not enough. If the provisions of the Kyoto Protocol on climate change were implemented they would reduce the expected rise in temperature by 2050 of one to two degC by only about 0.06 degC.

Already average European temperatures were showing an increase of 0.5 degC over the last 25 years, a rise Professor Parry described as "significant".

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Subject(s): Europe
Author(s): CLARE NULLIS, Associated Press Writer



Global Warming Said Taking Its Toll

Story Filed: Thursday, November 04, 1999 1:30 AM EST

BONN, Germany (AP) -- Drinking water has been contaminated. Once pristine beaches have been devastated by lashing waves and cyclones. Entire villages have been forced from their coastal homes.

Small island states in the Pacific have no need to read studies about the impact of climate change. For them, the nightmarish scenarios are becoming reality.

"We ask that you consider our plight and act responsibly to give us a chance to start the new millennium on a happy note," said Pokotoa Sipeli, the minister of environment for Niue, a small island in the South Pacific with a population of 5,000.

He made his appeal to delegates from industrialized countries at a U.N. climate change conference in Bonn, adding: "I sincerely hope that I won't have to wake up in the middle of the night in the middle of the ocean because you have failed to do your part."

The Bonn meeting is debating technical measures to implement promises by industrialized countries to cut their emissions of greenhouse gases, like carbon dioxide, that are believed responsible for global warming.

The European Union wants rapid action, while the United States says it is committed to tackling climate change but will not be bound by artificial deadlines or limits. Big oil producers like Saudi Arabia, whose export earnings will likely slump if the world switches to cleaner forms of energy, are worried about the effect of even limited action.

The meeting is not expected to reach any concrete decisions. And it will take years before the impact of any measures is felt.

Many scientists agree that the melting of ice caps is likely to lead to a rise in sea levels in the coming years. They also predict that as global warming upsets the delicate balance of nature, there will be an increase in the number and severity of hurricanes and cyclones -- of the type that devastated part of eastern India last week.

In Tonga, a collection of 175 small islands in the South Pacific, the rise in sea levels has already contaminated the drinking water supply of the central and northern islands. That, along with frequent drought, has required the shipment of drinking water to the islands for the past two years, said Tonga representative Taniella Tukia.

Strong winds and salt water spray have cut agricultural production and warming waters have affected fish supplies, he said.

"The erosion of our beaches are perhaps the most physical loss to our natural tourist amenities," he said.

Rising seas have covered low-lying coconut plantations in Vanuatu, while Palau's stunning coral reefs have been devastated, delegates said.

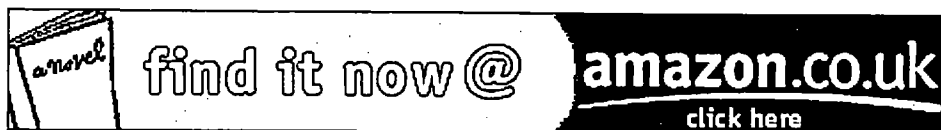
In Niue, breadfruit trees, which supply a staple food, once produced fruit for three months of the year. Now, however, they were developing fruit all year, but the immature fruit was dropping off the trees before it ripened, said Sipeli.

Karibaiti Toaoba of Kiribati said some villages had already been forced to move inland because of worsening coastal erosion.

"Time is running out for us," she said.

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November 4 1999

SOUTH ASIA



A rickshaw driver gets his passengers through the submerged streets of Phnom Penh yesterday as heavy rains flooded the Cambodian capital
Photograph: CHOR SOKUNTHEA / REUTERS

British scientists see big surge in global warming

BY NICK NUTTALL ENVIRONMENT CORRESPONDENT

A HUGE and unforeseen surge in carbon dioxide levels may be triggered in the middle of the next century, increasing droughts, hurricanes, food shortages and rising sea levels, British scientists predicted yesterday.

Researchers at the Meteorological Office have found new evidence that, unless carbon dioxide emissions are cut, temperatures will rise far higher than is now supposed with the land becoming up to 8C (47F) hotter, rather than the predicted 5.5C (41F)

The findings come as ministers and officials met this week in Bonn to try to agree how to curb pollution from cars, factories, offices and homes. The findings have emerged from new and more sensitive computer models. Dr Geoff Jenkins, head of climate prediction at the Meteorological Office, said that the new models had been developed over the past five years and had generated the new forecasts in recent days.

Under existing models, levels of carbon dioxide rise slowly and steadily during the 21st century with vegetation and soils absorbing around half of the emissions by increased photosynthesis. But Dr Peter Cox of the Met Office's Hadley Centre for Climate Prediction said that this simple view no longer held true.

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New evidence shows the absorption system starting to fail around 2050. From then on, vegetation and especially soils where microbes break down leaves and other organic matter, respond to rising temperatures by becoming big emitters of stored carbon. Previous models forecast that concentrations of carbon dioxide in the atmosphere would rise to between 600 and 700 parts per million or more than double the pre-industrial levels. But the new models indicate that the rise may be 1,000ppm.

Dr Cox said: "The oceans will continue to absorb carbon dioxide but land and vegetation will start to turn on us under the business as usual scenario. It looks like we may have overestimated the resilience of the uptake of carbon by vegetation and soils".

As the ministers from 173 countries conferred in Bonn, reports were coming in from Vietnam, where the worst floods in years killed 100 people yesterday. The situation was extremely serious, officials said.

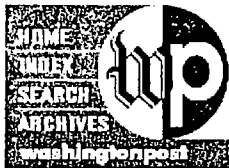
In India, the Government said that it had speeded relief efforts to a "war footing" to help millions hit by cyclone in the eastern state of Orissa, but floods still hampered operations.

[Next page: Russian oil barons rival Texans in the air](#)

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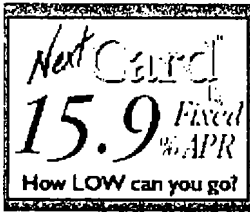


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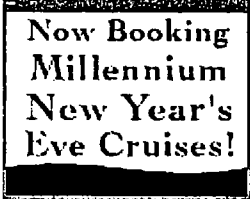
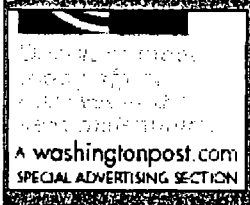
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EPA Sues 7 Utilities for Polluting

Coal-Fired Plants Lack Required Controls, Agency Argues

By Lorraine Adams and David A. Vise

Washington Post Staff Writers

Thursday, November 4, 1999; Page A11

The Environmental Protection Agency and the Justice Department filed lawsuits against seven of the nation's largest utility companies yesterday, alleging that for years they have illegally poured pollutants into the nation's air.

"Today we file the first complaints in one of the largest investigations in the history of EPA, launched two years ago and still ongoing," said EPA Administrator Carol M. Browner at a press conference. Attorney General Janet Reno added, "We are asking federal courts in five cities to force these utilities to install the pollution controls they should have installed years ago."

The government alleges that the companies--American Electric Power Co., Cinergy Corp., FirstEnergy Corp., Illinova Corp., Southern Co., TECO Energy Inc. and Southern Indiana Gas & Electric Co.--have been upgrading their coal-fired plants without adding modern pollution controls as required by the Clean Air Act of 1970. The EPA also filed an administrative order against the Tennessee Valley Authority, a government-owned corporation, charging similar violations.

The companies argue that they have merely been doing routine maintenance at the plants, hence the newer pollution controls are not required. The 32 plants in question are located in West Virginia, Georgia, Illinois, Indiana, Kentucky, Mississippi, Ohio, Tennessee and Alabama.

The companies could face fines of \$25,000 per day for each violation before 1997, and \$27,500 per day thereafter.

But Browner said in an interview that the agency was more interested in getting the plants to install controls than in collecting fines. "These pollutants don't stay in the neighborhood where the smokestack is located. They travel. The air we breathe in Washington is affected by these pollutants hundreds of miles away."

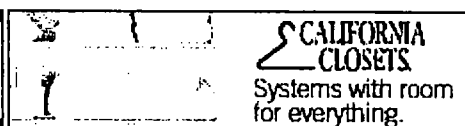
The companies disputed what they called EPA's "new interpretation" of the Clean Air Act. Dale Heydlauff, American Electric Power's vice president for environmental affairs, said the lawsuits "take decades of industry maintenance and repair practices previously deemed acceptable by EPA and retroactively converts them to unlawful

activities."

Mike Casey, vice president for public affairs at the Washington-based Environmental Working Group, said that since 1992, the companies have been spewing out the equivalent of the smog produced by 6.8 million cars.

"These utilities have been cheating on a decades-old agreement with the American public," he said. "They were let off the hook in terms of key air pollution standards on the understanding they would not upgrade their facilities. And that is what they have been doing, but they have been categorizing it as routine maintenance."

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Ozone Scientist Awarded UNEP Sasakawa Prize

NEW YORK, New York, November 3, 1999 (ENS) - The man who pioneered understanding of the link between damage to the ozone layer and human emissions of chlorofluocarbons (CFCs) into the atmosphere has been honored with a prestigious environmental prize.

The 1999 UN Environment Programme (UNEP) Sasakawa Environment Prize has been awarded to Massachusetts Institute of Technology Professor Mario Molina, Ph.D. for his outstanding global contributions in the field of atmospheric chemistry.

Professor Molina's research is directed at understanding the changes in the chemical composition of the Earth's atmosphere. He aims to detail the role of clouds and airborne microscopic dust/smoke particles known as aerosols in the changing chemistry of the global atmosphere.

Dr. Mario Molina has increased understanding of the atmospheric chemistry responsible for a hole in Earth's ozone layer. (Photo courtesy)

In 1995 he shared the Nobel Prize in Chemistry with two co-investigators demonstrating the link between human-made chlorofluocarbons in the atmosphere and the damage to the ozone layer.

Professor Molina and his colleagues discovered a previously unknown reaction in which chlorine is activated on the surface of ice cloud particles in the polar atmosphere. Professor Molina also demonstrated a new reaction sequence involving chlorine peroxide, which accounts for most of the ozone destruction in the Antarctic.

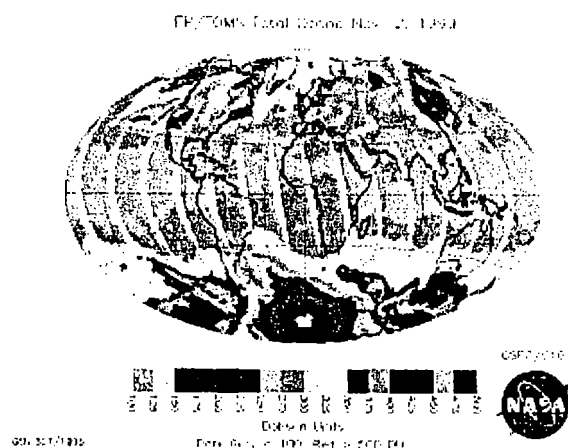
The Sasakawa prize, worth US\$200,000 and considered one of the most prestigious environmental awards in the world, will be presented at United Nations Headquarters in New York on November 17.



"This recognition by UNEP represents for me a culmination of my efforts on the protection of the global environment," said Professor Molina. "I appreciate the support I have received from the world community over the years and I hope to continue my commitment to work for the benefit of humanity and the environment," he said.

"The prize has been awarded to Professor Molina for his pioneering investigations on the chemistry of the ozone layer, which have led to a better scientific understanding of the effect of human activities on the atmosphere" said Lord Stanley Clinton-Davis, chairman of the Selection Committee. "The confidence with which many aspects of the science of ozone destruction is now understood comes directly from Professor Molina's work."

"Professor Molina's leadership greatly contributed to making the UNEP-brokered Montreal Protocol on Substances that Deplete the Ozone Layer a reality. The speed with which countries ratified this precedent-setting international agreement was due in great part to the role he played in communicating to policy-makers, the media and ultimately the general public, the implications of his research," said UNEP's executive director, Klaus Toepfer.



This map created November 2 by scientists from the National Atmospheric and Space Administration (NASA) shows near realtime measurements of ozone in the atmosphere. The purple black and pink colors indicate low ozone levels -

the Antarctic ozone hole. (Map courtesy NASA)

Professor Molina was awarded the 1995 Nobel Prize in Chemistry with Professors F. Sherwood Rowland and Paul Crutzen. Molina, Rowland, and Crutzen showed that the use of common items like spray cans and air conditioners can harm the fragile ozone layer that protects the world from the dangerous ultraviolet radiation of the sun.

Molina donated two-thirds of his prize money to set up fellowships to help scientists from developing countries conduct research in environmental sciences at the Massachusetts Institute of Technology (MIT).

Born in Mexico City, Dr. Molina came to MIT in 1989 after holding teaching and research positions at the Universidad Nacional Autonoma de Mexico, the University of California, Berkeley and Irvine, and the Jet Propulsion Laboratory at the California Institute of Technology.

Today, Professor Molina continues his research on stratospheric chemistry and tropospheric pollution including pollution problems of rapidly growing cities. He is a professor in the department of Earth, Atmospheric and Planetary Sciences and Department of Chemistry at

MIT and a member of the President's Committee of Advisors on Science and Technology.

At the award ceremony in New York, H.E. Andres Pastrana Arango, the current President of Columbia, will launch the Pastrana Borrero Lecture which has been established by UNEP to honour the late chairman of the Sasakawa Environment Prize Selection Committee and former President of Columbia, H.E. Misael Pastrana Borrero.

The UNEP Sasakawa Environment Prize, sponsored by the Nippon Foundation and founded by Ryoichi Sasakawa, has been awarded annually since 1984 to individuals who have made outstanding global contributions to the management and protection of the environment.

Past winners include Chico Mendes, the rubber tapper from Brazil who died leading the fight against cattle ranchers' destruction of the rainforest; Lester Brown, Director of the World Watch Institute, whose writings were instrumental in alerting the world about the threats to the biosphere; Dr. M.S. Swaminathan of India, father of the economic ecology movement, and Ian Kiernan of Australia, founder of the Clean Up the World Campaign.

The 1999 Prize winner was selected by an independent panel of international leaders and environmentalists. The panel included: Lord Stanley Clinton-Davis of the United Kingdom; H.R.H. Princess Chulabhorn of Thailand; Professor Wangari Maathai, founder and director of the Greenbelt Movement of Kenya; Dr. Russell Peterson, President Emeritus of the National Audubon Society of the United States of America; and Dr. Abdulbar Al-Gain, former Secretary-General of Saudi Arabia's Ministerial Committee on Environment and former President of the Meteorology and Environmental Protection Administration.

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National Desk; Section 1

Global Economy Slowly Cuts Use of Fuels Rich in Carbon

By WILLIAM K. STEVENS

10/31/1999

The New York Times

Page 1, Column 3

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Even as the world's expanding population and economy increase atmospheric concentrations of carbon dioxide that scientists say are warming the earth, the global energy system is moving steadily away from the carbon-rich fuels whose combustion produces the gas.

Experts say atmospheric levels of carbon dioxide may be double that of the pre-industrial era by the end of the next century. But they also say the levels would be much higher except for a trend toward lower-carbon fuels that has been going on for more than 100 years, but has been largely unnoticed except by a small band of energy specialists.

The question now, they say, is whether the trend can be accelerated enough to stave off or lessen what many scientists believe is a potentially disruptive global warming.

For nearly a century and a half, fuels with high amounts of carbon have progressively been replaced by those containing less. First wood, which is high in carbon, was eclipsed in the late 19th century by coal, which contains less. Then oil, with a lower carbon content still, dethroned King Coal in the 1960's.

Now analysts say that natural gas, lighter still in carbon, may be entering its heyday, and that the day of hydrogen — providing a fuel with no carbon at all, by definition — may at last be about to dawn.

As a result, the experts estimate, the world's economy today burns less than two-thirds as much carbon per unit of energy produced as it did in 1860. In the United States, they estimate, the trend toward lower-carbon fuels combined with greater energy efficiency has, since 1950, reduced by about half the amount of carbon spewed out for each unit of economic production.

But because economic growth and population growth have been so rapid over the decades, overall atmospheric concentrations of carbon dioxide have steadily risen, to the point that the concentrations may well have doubled by the year 2100.

Mainstream scientists say that this much carbon dioxide could warm the earth, on average, by 3 to 5 degrees Fahrenheit. By comparison, that is about half as much as it has warmed since the depths of the last ice age 18,000 to 20,000 years ago.

A change of this magnitude would likely have widespread consequences for the world's climate, weather and human life.

Now, as representatives of 150 governments meet in Bonn in the latest round of global talks on measures to further reduce carbon-dioxide emissions, analysts both in and out of industry say that the next quarter-century is shaping up as a period of technological and economic ferment offering a chance to accelerate the trend toward a low-carbon economy and, eventually, a no-carbon one.

In Bonn, the delegates are trying to work out the details of an agreement forged two years ago in Kyoto, Japan, that could speed up the trend. Their work is not expected to be finished for at least a year, and the Kyoto agreement still must be ratified by a sufficient number of countries after that.

However that may turn out, "the decarbonization of the energy system is the single most important fact to emerge from the last 20 years of analysis" of the system, said Dr. Jesse H. Ausubel, an expert on energy and climate at Rockefeller University in New York City. Dr. Ausubel predicts that this evolution will produce a carbon-free energy system by the end of the

21st century.

Among some recent signs of the trend are these:

"The Federal Energy Information Administration reported last week that emissions of carbon dioxide by the United States had increased by an average of 1.37 percent a year in the 1990's -- only about half the 2.6-percent rate of growth in economic production. Analysts say the discrepancy is evidence that the economy is being decoupled from carbon.

"The agency reported this month that the same is generally true in China, the biggest consumer and producer of coal in the world, where coal production has been reported to be dropping lately. "China has dispelled a commonly held notion that economic growth and energy consumption are necessarily coupled," the report said.

"In December, Honda will introduce in the United States a high-efficiency, low-emissions automobile powered partly by gasoline and partly by self-generated electricity. It is said to run at 60 miles per gallon of gasoline in town, and 71 on the highway, and to travel 600 to 700 miles on a tank of gas.

Toyota has introduced a similar "hybrid" automobile in Japan, and these cars are "literally kick-the-tires examples of the decarbonized economy," said Hal Harvey, president of the Energy Foundation, a partnership of foundations that promotes energy efficiency and renewable energy.

Other auto makers are also planning hybrids, which are being viewed as a transition, ultimately, to vehicles powered by hydrogen fuel cells that emit no carbon. In its planning, the General Motors Corporation has "embraced fuel cells as the technology of choice," but with hybrids coming first, said John Williams, the leader of the company's internal team on global climate issues.

And while auto companies are looking down that track, some of the world's biggest energy companies are looking to provide the appropriate fuels. Hydrogen, in particular, has attracted fresh interest.

Until recently, "the hydrogen option was seen as rather distant," said Ged R. Davis, an executive of Shell International in London who analyzes such questions for Royal Dutch/Shell, one of the world's largest energy companies. "Now it is looking closer, perhaps over the next decade or two," Mr. Davis added. "Most of the energy and car companies are looking at this rather seriously." Shell itself has established a hydrogen subsidiary.

In the nearer term, hydrogen would be used in fuel cells for cars, trucks and industrial plants, just as it already provides power for orbiting spacecraft. But ultimately, hydrogen could also provide a general carbon-free fuel.

The world energy system will not change overnight, of course, if it changes at all. And new products must ultimately stand the test of the marketplace. But some analysts say that the next two decades or so will be a time of unusual pressure for change, both for environmental and economic reasons, in which companies will be driven to compete for survival and dominance in some sort of emerging new energy system.

Whether companies are seriously pursuing new options or merely preserving them for the future, experts say there seems little doubt that the long-term trend toward decarbonization is real, and that it will most likely continue even in the absence of any shift to hydrogen or renewable energy sources like wind and solar power.

"The future decarbonization rate is likely to be at least as high as the historical one" of about three-tenths of a percent a year, said Dr. Nebojsa Nakicenovic, an expert on energy and the environment with the International Institute for Applied Systems Analysis, a research group in Laxenburg, Austria. The institute was one of the first groups to study the question.

Oil accounts for the biggest share of global energy consumption today, followed by coal and, closely, by natural gas. In most of the world except the United States and China, said Dr. Ausubel of Rockefeller University, coal is either defunct or on the way out, and natural gas will increasingly displace it.

According to several recent analyses, Dr. Nakicenovic said, recoverable natural gas now appears far more abundant than had been previously thought. The burning of gas produces, on average,

only about a third of the carbon dioxide per unit of energy of coal, and about two-thirds that of oil.

Gas not only can fuel fixed facilities like industrial plants and furnaces, it can also be processed to produce hydrogen for use in carbon-free fuel cells to power automobiles and generate electricity. In those cells, there is no combustion; instead, hydrogen reacts chemically with oxygen to produce electricity. But when hydrogen is extracted from gas, the residual carbon must somehow be disposed of, possibly by pumping it back into depleted oil and gas wells.

Dr. Ausubel predicts that natural gas will become the dominant fuel of the next 40 to 50 years. If so, that alone would be enough to continue the long-term decarbonization trend.

China, which some experts think will emerge as the biggest carbon-dioxide emitter of the 21st century, has greatly reduced its energy consumption per unit of economic output, has closed several coal mines, is seeking to modernize industrial and power plants and is moving toward natural gas, many analysts say.

Not least, they say, the Chinese are worried about the health effects of coal's air pollution. Nevertheless, the Energy Information Administration reported last week, China's coal demand is expected to double by 2020.

So while the trend toward a carbon-free economy may continue, Dr. Ausubel says, it might not move rapidly enough to assuage the fears of those who are most concerned about global warming. He says that if the trend continues to evolve more or less naturally, with business as usual, it will take another century or so to decarbonize the energy system fully.

By then, he predicts, atmospheric concentrations of carbon dioxide will be around 500 parts per million, nearly double what they were before the industrial revolution. Mainstream scientists say that would be enough to change the earth's climate substantially, make droughts, heat waves and floods worse and raise the sea level to heights that would threaten many low-lying coastal areas and islands. Some analysts say that 500 parts per million is a best-case estimate, and that business-as-usual could cause a tripling of pre-industrial carbon-dioxide levels.

Other experts think that concentrations could be held substantially below 500 parts per million if the trend toward decarbonization were to accelerate. Mr. Harvey of the Energy Foundation says "prospects are excellent" for an acceleration.

And Mr. Davis, the Shell executive, says his company's analyses suggest that if the proper incentives were in place, new energy technologies could be adopted broadly enough to bring about a peak in oil use and carbon-dioxide emissions by about 2020. After that, there would be a decline.

One sort of incentive might lie in the Kyoto agreement, which calls for a group of 39 industrialized countries to reduce their carbon dioxide emissions by an average of 5 percent below 1990 levels over the period 2008 to 2012. One mechanism for doing this is a system whereby a country that exceeds its reductions target can earn money by selling that extra reduction to another country that is having trouble meeting its target. A similar system, involving company-to-company trading, has been proposed for the United States.

While negotiators struggle over the terms of such arrangements and politicians wrangle over putting the Kyoto accord into effect, many energy analysts seem to agree on one thing: The ultimate goal ought to be a carbon-free economy based largely on hydrogen. Dr. Ausubel, for one, predicts that such an economy will materialize.

Many would agree with Mr. Williams of General Motors: "I think I'm on pretty solid ground in saying the long-term vision is hydrogen. But there's a lot of work between here and there."

Graph: "INDICATORS: Less Reliance on Carbon, but Continuing Worries About the Climate " Changes in industry and technology have brought a shift in energy sources from high-carbon fuel like wood and coal to lower carbon fuels like oil and natural gas. Graph tracks share of global energy consumption (wood, coal, oil, natural gas, hydropower, and nuclear), from 1855 through 1995. This change has meant a decline in the amount of carbon emitted in the production of a unit of energy. Graph tracks carbon emitted per unit of oil-equivalent energy (in tons), from 1855 through 1995. But the total amount of carbon released into the atmosphere has continued to rise. Graph tracks global carbon dioxide emissions (in tons), from 1980 through 1997. (Source: International Institute for Applied Systems Analysis)(pg. 38)

Fiddling while the planet smoulders: Western governments have to cut the rhetoric before anything can be done about carbon dioxide levels

By

11/01/1999

The Guardian

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It's a tall order to expect western politicians to cut the rhetoric, but unless they do something soon to reduce carbon dioxide emissions the ambitious targets they set at the Kyoto climate change conference in 1997 are likely to be missed.

The consequences for future generations are unclear but scientists say they could include a further rise in world temperatures, with a variety of adverse, possibly irreversible effects, including severe storms, a rise in the sea level, the spread of disease and the loss of species.

The mere threat of these horrors being inflicted on future generations ought to be enough to make politicians take the issue of greenhouses gases extremely seriously. Yet, judging by two new studies* by the Organisation for Economic Cooperation and Development, the Paris-based think tank, they are not doing so. Instead, they are fiddling while the planet burns.

To meet the initial target agreed at Kyoto, OECD countries must reduce emissions over the next 12 years to between 20% and 40% below what they would be if present trends went unchecked. But recent figures show a continued rise.

OECD countries as a whole increased emissions 4% from 1990-1996, with a sharp acceleration in 1996 when emissions grew more than in the first five years of the decade combined. World economic growth will probably ensure a further escalation. Within the OECD, there have been some countries which have reduced greenhouse gas emissions but this has been achieved more by accident than design. In Germany, it reflects the economic contraction following unification; in Luxembourg, it is linked to more efficient production of iron and steel. The drop in Britain reflects the shift away from the use of coal to natural gas in power generation.

To be fair, it is not the case that western governments have done nothing towards meeting the targets. There is evidence that carbon taxes are delivering results in nordic countries. In Norway, carbon taxes introduced in 1991 lowered CO2 emissions of some industrial plants by about 21%. Other green taxes are being introduced elsewhere and there is talk of international emissions trading, whereby countries that find it easy to reduce their emissions by more than is required to meet the Kyoto targets sell the surplus to countries whose abatement costs are higher. But the scheme has not got off the ground. Progress in introducing domestic emissions trading has been similarly slow.

The reluctance of governments to take firm measures to tackle global warming through higher energy prices or the purchase of expensive cleaner technologies is understandable because the short-term economic costs of adjustment are likely to be considerable. Put simply, it means sacrificing faster growth today for sustainable development tomorrow. The OECD estimates that, if countries were to respect their individual greenhouse gas emission targets through domestic abatement measures, they might suffer a real, inflation-adjusted income loss of between 0.25% and 1%. This does not include costs associated with any rise in unemployment which may result from people resisting lower incomes.

Faced with this reality, it is little wonder that politicians seeking re-election are treading carefully when it comes to implementing policies designed to reduce greenhouse gas emissions. There are no votes to be won through offering pay cuts and job losses.

However, the longer the problem of greenhouses gases is left to fester, the more drastic will be the corrective action needed and the more difficult politicians will find it to come up with a solution. On interest rates, the chancellor and the Bank of England are fond of stressing the importance of taking small steps early to guard against the danger of a pick-up in inflation as a way of avoiding bigger increases later. The same pre-emptive thinking needs to be applied to environmental policy.

The OECD says there is no international blueprint for cutting greenhouse gas emissions. Each country will need to figure out for itself how to develop the best policies for its particular situation and needs. But it believes that economic instruments, such as emissions trading and carbon taxes, will allow market forces to set prices at the best level for reaching emissions targets at the lowest costs.

Economic instruments will not, however, be enough on their own to complete the job. They will need to be backed up by 'soft' policies, including research and development, education and information, green policies for

government procurement and voluntary restrictions on energy consumption in order to bring about fundamental changes in people's attitudes and behaviour towards the environment.

Safeguarding the environment will also need closer international cooperation, with emphasis on the west persuading the developing world of the importance of cutting greenhouse gas emissions by providing it with the economic and technological means to become energy efficient. At the moment, both the overall and the per capita emissions of developing countries are many times lower than those of industrialised countries. But this will change as developing countries become more integrated with the global economy.

Thinking globally is important, but it is not a substitute for acting locally. In that sense the chancellor's forthcoming pre-budget report represents an opportunity for Britain to demonstrate its green credentials.

Like other western governments, Britain has been strong on green rhetoric in the past 2 years but weak on action. The climate change levy announced in the last budget was an important step in the right direction but there are worrying signs that it will be watered down in the face of strong opposition from industry. There are also persistent rumours that the so-called fuel duty escalator, which increases duty on fuel 6% in real terms each year, will be cut or even abolished. Demonstrations in London by angry lorry drivers have allegedly convinced Mr Brown that a continuation of the policy is politically unfeasible, which would be a pity.

It is true that the fuel duty escalator may have been designed by the last government to bring in extra revenue, with its beneficial effect on the environment no more than a by-product of improving the public finances. But to abolish it at the first whiff of political grapeshot would send the wrong signal about the government's commitment to a cleaner environment, unless of course it were offset by a comprehensive range of new green taxes.

*National Climate Policies and the Kyoto Protocol/Action Against Climate Change - the Kyoto Protocol and Beyond. OECD

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THE ELECTRICITY DAILY November 1, 1999, Monday

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THE ELECTRICITY DAILY

November 1, 1999, Monday

SECTION: Vol. 13, No. 84

LENGTH: 354 words

HEADLINE: Warming Gas Emissions Don't Track Economic Growth

BODY:

Greenhouse gas emissions in the U.S. increased by 0.2 percent in 1998 over 1997, according to the U.S. **Energy Information Administration**. That's the lowest annual growth rate since 1991, the middle of a recession. Total emissions were 1,803 million metric tons, according to EIA, about 10 percent higher than in 1990.

According to EIA's "Emissions of Greenhouse Gases in the United States 1998," CO2 emissions account for 83 percent of U.S. greenhouse gas emissions and 98 percent of those are the result of burning fossil fuels. EIA says CO2 emissions in 1998 increased by 0.3 percent or 5.1 million tons. Warmer winter weather reduced consumption of heating fuels, so that emissions from the residential and commercial sectors were flat. Industrial emissions fell 1.3 percent, even though the U.S. economy grew by nearly 4 percent in 1998. Transportation emissions, said EIA, grew by 2.4 percent and CO2 emissions from regulated electric utilities increased by 3.2 percent, largely as a result of a hotter than normal summer and increased air conditioning load.

Non-CO2 greenhouse gas emissions, which account for 17 percent of the total, declined by 0.6 percent, according to EIA, to 308 million metric tons of carbon equivalent. EIA converts non-CO2 gases into "carbon equivalents" by using 100-year "global warming potentials," or GWPs. These are intended to provide a measure of the relative effect of various greenhouse gases, with carbon dioxide as the base. According to EIA, methane emissions declined by 1.5 percent in 1998. Methane is the second most important greenhouse gas. The most significant element in the methane decline was an increase in methane capture from landfills, driven by new **Environmental Protection Agency** rules. Since 1990, says EIA, methane emissions have declined by about 4.5 percent.

EIA reports that emissions of man-made gases such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride grew by 1.1 million metric tons in 1998, to 38.5 million metric tons. These gases account for about 2 percent of total U.S. greenhouse gas emissions.

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THE ELECTRICITY DAILY November 1, 1999, Monday

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THE ELECTRICITY DAILY

November 1, 1999, Monday

SECTION: Vol. 13, No. 84

LENGTH: 400 words

HEADLINE: Canadians Buying CO2 Credits in Iowa

BODY:

The **Greenhouse Emissions Management Consortium Inc.** (Gemco), a group of Canadian energy companies, recently announced a major agreement to purchase up to 6 million metric tons of carbon emission reduction credits from farms in the United States, even though there are as yet no guarantees that the Canadian government will legitimize the use of these credits in greenhouse gas reduction schemes.

This is the largest deal of its kind to date involving the sequestration of carbon dioxide in soil. **Aldyen Donnelly**, president of Gemco, said that "the tough pioneering work done to get this deal in place sets the stage for many similar agreements in the near future."

"Most of the talk about carbon credits has been pretty much pie-in-the-sky until now," said **Steve Griffin**, vice president for strategic development of Des Moines, Iowa-based **IGF Insurance Co.**, the fourth largest U.S. crop insurer. IGF and **CQuest Ltd.** will solicit the reduction credits from eligible farmers and landowners through a network of crop insurance agents, initially in Iowa and later across the U.S.

"Iowa's deep productive soils and cool climate are highly conducive for large amounts of carbon sequestration," said CQuest President **Greg Lewis**. "Many of the agricultural management practices that sequester carbon or reduce the use of fossil fuels actually improve soil productivity and watershed water quality - It's a real win-win-win proposition."

But critic **Robert Hornung**, climate change program director of the Alberta-based **Pembina Institute**, an environmental think tank, said that the announcement of the Gemco deal is "a potential scam and a clear step backward. There is no International consensus on credible methodologies to measure and monitor the impact of human activity on agricultural soils at the national level." Hornung asked, "How do you guarantee that a farmer doesn't suddenly change his agricultural practices three years from now and simply release all this carbon right back up into the atmosphere again?"

TransAlta Corp. of Calgary, Canada's largest producer of coal fired electricity, leads Gemco, which also includes **Ontario Power Generation Inc.**, **Westcoast Energy Inc.**, **SaskPower**, **Nova Scotia Power Inc.**, **Husky Oil Ltd.**, **Enbridge Inc.**, **B.C. Gas Inc.** and **TransCanada PipeLines Ltd.**

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THE ELECTRICITY DAILY November 1, 1999, Monday

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THE ELECTRICITY DAILY

November 1, 1999, Monday

SECTION: Vol. 13, No. 84

LENGTH: 443 words

HEADLINE: Euros to Subsidize Renewables to 2010

BODY:

To boost electricity generation from renewable resources, the **European Commission** is preparing regulations allowing member-countries to subsidize development of wind, solar, water, and biomass. Such subsidies are blocked under existing European Union regulations. But the E.U. has concluded some "discrimination in favor of renewable energy" is desirable as part of its goal to push the renewable industry to 12 percent of total E.U. power generation by 2010, at which point the subsidies would end. The current market share for renewables in the EU is about 6 percent.

The E.U. energy department -- which is expected to adopt the regulations in November -- insists the subsidies must end by 2010, unless the termination would "prejudice" development of certain technologies or emerging market segments. Once the energy department adopts the regulations they move on to the E.U. energy ministers for debate and approval. The energy department says a key consideration in its effort to boost renewable generation is the impact on the environment. More renewable generation and less traditional generation of electricity will cut emissions of the greenhouse gases linked to **global warming**.

As is the E.U.'s practice, it has written in a healthy dose of wiggle room. EU member-states can apply for exemptions to the subsidy termination date by citing the need for "undefined transitional periods" to make renewable generation competitive with traditional generation, the EU said.

"Member states may apply direct support schemes limited to domestic producers of electricity from renewable sources until the level of electricity from renewable energy sources benefiting from direct price support reaches five percent of total domestic electricity consumption," says the draft. It proposes letting member states apply for an exemption from this limitation if it "would prejudice the operation of small isolated electricity systems or the technological development of newly emergent market segments."

The proposals have not pleased environmental groups, which accuse the commission of trying to protect traditional energy producers from the fledgling renewable technologies. "This seems designed to protect the status quo and the established and heavily subsidized energy sources like coal and nuclear. It would simply penalize those who are serious about giving renewables a real chance," says **Michel Raquet** of **Greenpeace**. **Rob Bradley** of **Climate Network Europe** adds: "In the longer term, some of these technologies won't reach maturity by 2010. You can probably say goodbye to photovoltaic solar power and offshore wind."

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The Daily Yomiuri, November 1, 1999

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The Daily Yomiuri

November 1, 1999, Monday

SECTION: Pg. 10

LENGTH: 1696 words

HEADLINE: INSIGHTS INTO THE WORLD / Finding a new riskiness to risk

BYLINE: Anthony Giddens Special to The Yomiuri Shimbun ; Yomiuri

BODY:

July 1998 was possibly the hottest month in world history, while 1998 as a whole may have been the hottest year. Heat waves wreaked havoc in many areas of the Northern Hemisphere.

In Eilat, Israel, temperatures reached 46 C, while water consumption in the country rose by 40 percent.

Texas, in the United States, experienced temperatures not far short of this.

For the first eight months of the year, average temperatures for each month topped the record for that month. A short while later, however, in some of the areas affected by the heat waves, snow fell for the first time ever.

Are temperature shifts like this the result of human interference with the world's climate?

We cannot be sure, but we have to admit the possibility that they may be. The same is true for the increased numbers of hurricanes, typhoons and storms that have been noted in recent years.

As a consequence of global industrial development, we may have altered the world's climate and damaged a great deal more of our earthly habitat besides.

We do not know what further changes will result, or the dangers they will bring in their wake. Some scientists are talking about the possibility of "hypercanes" 10 times more powerful than Hurricane Floyd, which recently hit the East Coast of the United States.

All these occurrences, plus many others--food scares, fluctuations in the world economy, earthquakes--show how central risk has become in our lives. This apparently simple notion unlocks some of the most basic characteristics of the world in which we now live.

At first sight, the concept of risk might seem to have no specific relevance to our times, as compared to previous ages.

After all, have people not always had to face their fair share of risks? Life for the majority in the European middle ages was nasty, brutish and short--as it is for many in poorer areas of the world in current times.

But here we come across something really interesting. Apart from some marginal contexts, in the middle ages there was no concept of risk. Nor, so far as I have been able to find out, was there in most other traditional cultures.

Inventing the 'risk' concept

The idea of risk appears to have taken hold in the 16th and 17th centuries, and was first coined by Western explorers as they set off on their voyages across the world.

The word "risk" seems to have come into English through Spanish or Portuguese, where it was used to refer to sailing into uncharted waters.

Originally, in other words, it had an orientation to space. Later, it became transferred to time, as used in banking and investment--to mean calculation of the probable consequences of investment decisions for borrowers and lenders. It subsequently came to refer to a wide range of other situations of uncertainty.

Traditional cultures did not have a concept of risk because they did not need one.

Risk is not the same as hazard or danger. Risk refers to hazards that are actively assessed in relation to future possibilities.

It only comes into wide usage in a society that is future-oriented--which sees the future precisely as a territory to be conquered or colonized. Risk presumes a society that actively tries to break away from its past--the prime characteristic indeed of modern industrial civilization.

All previous cultures, including the great early civilizations of the world such as Rome, or ancient China, have lived primarily in the past. They have used the ideas of "fate," "luck" or the "will of the gods" where we now tend to substitute risk. In traditional cultures, if someone meets with an accident, or conversely, prospers--well, it is just one of those things, or it is what the gods and spirits intended.

Some cultures have denied the idea of chance happenings altogether. The Azande, an African tribe, believe that when a misfortune befalls someone it is the result of sorcery. If an individual falls ill, for example, it is because an enemy has been practicing black magic.

Such views, of course, do not disappear completely with modernization. Magical notions, concepts of fate and cosmology still have a hold. But often they continue on as superstitions, in which people only half believe and follow in a somewhat embarrassed way.

They use them to back up decisions of a more calculative nature. Gamblers--and this includes gamblers on the stock exchange--do this as a matter of course.

In all traditional cultures, however, and in industrial society right up to the threshold of the present day, human beings worried about the risks coming from nature--from bad harvests, floods, plagues or famines.

At a certain point, however--very recently in historical terms--we started worrying less about what nature "can do to us," and more about what "we have done to nature".

Who are the "we" here, doing the worrying?

Well, now it is all of us, regardless of whether we are in the richer or poorer areas of the world. At the same time, it is obvious that there is a division that by and large separates the affluent regions from the rest.

Many more "traditional" risks, of the sort just mentioned--such as the risk of famine when the harvest is bad--still exist in poorer countries, overlapping with the new risks.

Today there is a new riskiness to risk.

New meanings to risk

The rise of the idea of risk was closely tied to the possibility of calculation. Most forms of insurance are based directly upon this connection.

Every time someone gets into a car, for instance, one can calculate that person's chances of being involved in an accident. This is actuarial prediction--there is a long time-series to go on.

The new risk situations are not like this. We simply do not know what the level of risk is, and in many cases, we will not know for sure until it is too late.

Consider where we stand with world **climate change**.

Most scientists well versed in the field believe that **global warming** is occurring and that measures should be taken to stop it.

Yet only about 25 years ago, orthodox scientific opinion was that the world was in a phase of global cooling. Much the same evidence that was deployed to support the hypothesis of global cooling is now brought into play to bolster that of **global warming**--heat waves, cold spells, unusual types of weather.

Is **global warming** occurring, and does it have human origins? Probably--but we will not, and cannot, be completely sure until it is too late.

In these circumstances, there is a new moral climate in politics, marked by a push-and-pull between accusations of "scaremongering" on the one hand and cover-ups on the other.

If anyone--government official, scientific expert or researcher--takes a given risk seriously, he or she must proclaim it. It must be widely publicized because people must be persuaded that the risk is real. A fuss must be made about it. Yet if a fuss is created and the risk turns out to be minimal, those involved will be accused of scaremongering.

Suppose, on the other hand, that the authorities decide the risk is not very great, as the British government did initially in the case of bovine spongiform encephalopathy, or mad cow disease.

In this instance, the government first of all said: "We have the backing of scientists here. There is not much risk. We can go on as before."

In such a situation, if events turn out otherwise, the authorities are accused of instituting a cover-up--as indeed they were.

Our relationship to science and technology today is different from that characteristic of earlier times.

In Western society, for some two centuries, science functioned as a sort of tradition. Scientific knowledge was supposed to overcome tradition, but actually, in a way, became one in its own right. It was something that most people respected, but was external to their activities. Lay people "took" opinions from the experts.

The more science and technology intrude into our lives, the less this perspective holds. Most of us--including government authorities and politicians--have, and have to have, a much more active or engaged relationship with science and technology than used to be the case.

We cannot simply accept the findings that scientists produce, if only because scientists so frequently disagree with one another, particularly in situations where there is manufactured risk.

And everyone now recognizes the essentially skeptical character of science. Whenever someone decides what to eat, what to have for breakfast, whether to drink decaffeinated or ordinary coffee, that person is taking a decision in the context of conflicting, changeable scientific and technological information.

Consider, for instance, red wine.

As with other alcoholic drinks, red wine was once considered harmful to health. Research then indicated that drinking red wine in reasonable quantities protected against heart disease.

Subsequently, it was found that any form of alcohol will do, but that it only protects people over the age of 40. Who knows what the next set of findings will show?

Our age is not a more dangerous age than that of earlier generations--but the balance of risks and dangers has shifted. We live in a world where hazards created by ourselves are as threatening, or more threatening, than those that come from the outside.

We do not currently possess institutions that allow us to monitor technological change, nationally or globally.

All societies require public dialogue about technological change and its consequences. More public means of engaging with science and technology will not end the quandary of scaremongering versus cover-ups, but it might allow us to reduce some of the more damaging consequences.

However, there can be no question of merely taking a negative attitude toward risk.

Risk always needs to be disciplined, but active risk-taking is a core element of a dynamic economy and an innovative society. Perhaps Japan, where greater risks need to be taken than in the past, this lesson has still to be learned.

(Giddens is director of the London School of Economics, having previously served as a professor of sociology at the University of Cambridge.)

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October 31, 1999

Global Economy Slowly Cuts Use of High-Carbon Energy

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By WILLIAM K. STEVENS

Even as the world's expanding population and economy increase atmospheric concentrations of carbon dioxide that scientists say are warming the earth, the global energy system is moving steadily away from the carbon-rich fuels whose combustion produces the gas.

Experts say atmospheric levels of carbon dioxide may be double that of the pre-industrial era by the end of the next century. But they also say the levels would be much higher except for a trend toward lower-carbon fuels that has been going on for more than 100 years, but has been largely unnoticed except by a small band of energy specialists.

The question now, they say, is whether the trend can be accelerated enough to stave off or lessen what many scientists believe is a potentially disruptive global warming.

For nearly a century and a half, fuels with high amounts of carbon have progressively been replaced by those containing less. First wood, which is high in carbon, was eclipsed in the late 19th century by coal, which contains less.

Then oil, with a lower carbon content still, dethroned King Coal in the 1960's.

Now analysts say that natural gas, lighter still in carbon, may be entering its heyday, and that the day of hydrogen -- providing a fuel with no carbon at all, by definition -- may at last be about to dawn.

As a result, the experts estimate, the world's economy today burns less than two-thirds as much carbon per unit of energy produced as it did in 1960. In the United States, they estimate, the trend toward

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lower-carbon fuels combined with greater energy efficiency has, since 1950, reduced by about half the amount of carbon spewed out for each unit of economic production.

But because economic growth and population growth have been so rapid over the decades, overall atmospheric concentrations of carbon dioxide have steadily risen, to the point that the concentrations may well have doubled by the year 2100.

Mainstream scientists say that this much carbon dioxide could warm the earth, on average, by 3 to 5 degrees Fahrenheit. By comparison, that is about half as much as it has warmed since the depths of the last ice age 18,000 to 20,000 years ago.

A change of this magnitude would likely have widespread consequences for the world's climate, weather and human life.

Now, as representatives of 150 governments meet in Bonn in the latest round of global talks on measures to further reduce carbon-dioxide emissions, analysts both in and out of industry say that the next quarter-century is shaping up as a period of technological and economic ferment offering a chance to accelerate the trend toward a low-carbon economy and, eventually, a no-carbon one.

In Bonn, the delegates are trying to work out the details of an agreement forged two years ago in Kyoto, Japan, that could speed up the trend. Their work is not expected to be finished for at least a year, and the Kyoto agreement still must be ratified by a sufficient number of countries after that.

However that may turn out, "the decarbonization of the energy system is the single most important fact to emerge from the last 20 years of analysis" of the system, said Dr. Jesse H. Ausubel, an expert on energy and climate at Rockefeller University in New York City. Dr. Ausubel predicts that this evolution will produce a carbon-free energy system by the end of the 21st century.

Among some recent signs of the trend are these:

- The Federal Energy Information Administration reported last week that emissions of carbon dioxide by the United States had increased by an average of 1.37 percent a year in the 1990's -- only about half the 2.6-percent rate of growth in economic production. Analysts say the discrepancy is evidence that the economy is being decoupled from carbon.
- The agency reported this month that the same is generally true in China, the biggest consumer and producer of coal in the world, where coal production has been reported to be dropping lately. "China has dispelled a commonly held notion that economic growth and energy consumption are necessarily coupled," the report said.
- In December, Honda will introduce in the United States a

high-efficiency, low-emissions automobile powered partly by gasoline and partly by self-generated electricity. It is said to run at 60 miles per gallon of gasoline in town, and 71 on the highway, and to travel 600 to 700 miles on a tank of gas.

who is this?

Toyota has introduced a similar "hybrid" automobile in Japan, and these cars are ~~"literally kick the tires"~~ examples of the decarbonized economy," said Hal Harvey, president of the Energy Foundation, a partnership of foundations that promotes energy efficiency and renewable energy.

Other auto makers are also planning hybrids, which are being viewed as a transition, ultimately, to vehicles powered by hydrogen fuel cells that emit no carbon.

BIG TURNER
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AREA.

In its planning, the General Motors Corporation has "embraced fuel cells as the technology of choice," but with hybrids coming first, said John Williams, the leader of the company's internal team on global climate issues.

And while auto companies are looking down that track, some of the world's biggest energy companies are looking to provide the appropriate fuels.

Hydrogen, in particular, has attracted fresh interest.

Until recently, "the hydrogen option was seen as rather distant," said Ged R. Davis, an executive of Shell International in London who analyzes such questions for Royal Dutch/Shell, one of the world's largest energy companies. "Now it is looking closer, perhaps over the next decade or two," Davis added. "Most of the energy and car companies are looking at this rather seriously." Shell itself has established a hydrogen subsidiary.

In the nearer term, hydrogen would be used in fuel cells for cars, trucks and industrial plants, just as it already provides power for orbiting spacecraft. But ultimately, hydrogen could also provide a general carbon-free fuel.

The world energy system will not change overnight, of course, if it changes at all. And new products must ultimately stand the test of the marketplace. But some analysts say that the next two decades or so will be a time of unusual pressure for change, both for environmental and economic reasons, in which companies will be driven to compete for survival and dominance in some sort of emerging new energy system.

Whether companies are seriously pursuing new options or merely preserving them for the future, experts say there seems little doubt that the long-term trend toward decarbonization is real, and that it will most likely continue even in the absence of any shift to hydrogen or renewable energy sources like wind and solar power.

"The future decarbonization rate is likely to be at least as high as the

historical one" of about three-tenths of a percent a year, said Dr. Nebojsa Nakicenovic, an expert on energy and the environment with the International Institute for Applied Systems Analysis, a research group in Laxenburg, Austria. The institute was one of the first groups to study the question.

Oil accounts for the biggest share of global energy consumption today, followed by coal and, closely, by natural gas. In most of the world except the United States and China, said Dr. Ausubel of Rockefeller University, coal is either defunct or on the way out, and natural gas will increasingly displace it.

According to several recent analyses, Dr. Nakicenovic said, recoverable natural gas now appears far more abundant than had been previously thought. The burning of gas produces, on average, only about a third of the carbon dioxide per unit of energy of coal, and about two-thirds that of oil.

Gas not only can fuel fixed facilities like industrial plants and furnaces, it can also be processed to produce hydrogen for use in carbon-free fuel cells to power automobiles and generate electricity. In those cells, there is no combustion; instead, hydrogen reacts chemically with oxygen to produce electricity. But when hydrogen is extracted from gas, the residual carbon must somehow be disposed of, possibly by pumping it back into depleted oil and gas wells.

Dr. Ausubel predicts that natural gas will become the dominant fuel of the next 40 to 50 years. If so, that alone would be enough to continue the long-term decarbonization trend.

China, which some experts think will emerge as the biggest carbon-dioxide emitter of the 21st century, has greatly reduced its energy consumption per unit of economic output, has closed several coal mines, is seeking to modernize industrial and power plants and is moving toward natural gas, many analysts say.

Not least, they say, the Chinese are worried about the health effects of coal's air pollution. Nevertheless, the Energy Information Administration reported last week, China's coal demand is expected to double by 2020.

*Do these guys
ever tell us
what they're
doing?*

So while the trend toward a carbon-free economy may continue, Dr. Ausubel says, it might not move rapidly enough to assuage the fears of those who are most concerned about global warming. He says that if the trend continues to evolve more or less naturally, with business as usual, it will take another century or so to decarbonize the energy system fully.

By then, he predicts, atmospheric concentrations of carbon dioxide will be around 500 parts per million, nearly double what they were before the industrial revolution. Mainstream scientists say that would be enough to change the earth's climate substantially, make droughts, heat waves and floods worse and raise the sea level to

heights that would threaten many low-lying coastal areas and islands.

Some analysts say that 500 parts per million is a best-case estimate, and that business-as-usual could cause a tripling of pre-industrial carbon-dioxide levels.

Other experts think that concentrations could be held substantially below 500 parts per million if the trend toward decarbonization were to accelerate. Harvey of the Energy Foundation says "prospects are excellent" for an acceleration.

And Davis, the Shell executive, says his company's analyses suggest that if the proper incentives were in place, new energy technologies could be adopted broadly enough to bring about a peak in oil use and carbon-dioxide emissions by about 2020.

After that, there would be a decline.

One sort of incentive might lie in the Kyoto agreement, which calls for a group of 39 industrialized countries to reduce their carbon dioxide emissions by an average of 5 percent below 1990 levels over the period 2008 to 2012.

One mechanism for doing this is a system whereby a country that exceeds its reductions target can earn money by selling that extra reduction to another country that is having trouble meeting its target. A similar system, involving company-to-company trading, has been proposed for the United States.

While negotiators struggle over the terms of such arrangements and politicians wrangle over putting the Kyoto accord into effect, many energy analysts seem to agree on one thing: The ultimate goal ought to be a carbon-free economy based largely on hydrogen. Dr. Ausubel, for one, predicts that such an economy will materialize.

Many would agree with Williams of General Motors: "I think I'm on pretty solid ground in saying the long-term vision is hydrogen. But there's a lot of work between here and there."



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The Race to Profit From Global Warming

Big Business Produces Some Unexpected Converts

Dropping the Fight on Science, Companies Are Scrambling To Look a Little Greener

By STEVE LIESMAN

Staff Reporter of THE WALL STREET JOURNAL

IN MAJOR CORNERS of corporate America, it's suddenly becoming cool to fight global warming.

Facing significant shifts in the politics and science of global warming, some of the nation's biggest companies are starting to count greenhouse gases and change business practices to achieve real cuts in emissions. Many of them are finding the exercise is green in more ways than one: Reducing global warming can lead to energy-cost savings.

Not since the days of bell-bottoms, disco and oil embargoes have so many big companies been so concerned with energy. Engineers at **United Technologies Corp.**'s Pratt & Whitney unit now use computers to simulate some tests of jet engines instead of running the turbines. For the first time this year, managers at **BP Amoco PLC** will be evaluated on how well they cut emissions, alongside their financial results. And executives at **American Electric Power Co.**, the nation's second-biggest producer of coal-powered electricity, have decided to spend \$5.5 million on a Bolivian reforestation project—an attempt to offset the carbon dioxide it releases in the U.S.

The changes, though gradual, are coming as more and larger companies are accepting the hotly debated scientific theory that man-made carbon-dioxide emissions are warming the earth. And even when they question the science, companies like **General Motors Corp.** say there is enough cause for concern to warrant actions now.

"More and more companies have realized that they can't sit on their hands and have no strategy to respond to what may be the biggest environmental issue of the next century," says Joseph J. Romm, a former U.S. Energy Department official and author of "Cool Companies," a book about corporate efforts to cut emissions. Mr. Romm estimates half of the nation's 50 largest companies are in some phase of assessing or reducing their greenhouse gases.

One reason for the change: Many U.S. multinationals trying to keep pace with Europe's faster approach simply don't want to be on the extreme end of the political spectrum, especially if they want a seat at the table where regulations are being crafted. Some hope to forestall or dilute legislation by reducing emissions voluntarily.

The weather has something to do with it, too. Last year beat 1997 as the hottest on record, according to the National Climatic Data Center. And the agony of this summer's heat waves and droughts is still a fresh memory in the nation's boardrooms.

The moves aren't always popular. American

Winners and Losers

Big energy businesses are scrambling to respond to the doomsday scenario of global warming: a rise in world temperature of one to 3.5 degrees Celsius over the next century, and a rise in sea level of six to 36 inches.

Electric power plants

As the rate of global warming rises, this time the electric power industry is taking the lead in cutting greenhouse gas emissions. The industry is being held responsible for global warming.

Utilities could

lead to new environmental regulations. Coal-fired plants are among the biggest sources of greenhouse gas emissions.

Oil companies play

on both sides of the global warming debate. Some fight the science, while others are preparing for a future where emissions must be cut and renewable energy sources (such as solar and wind) replace some fossil fuels.

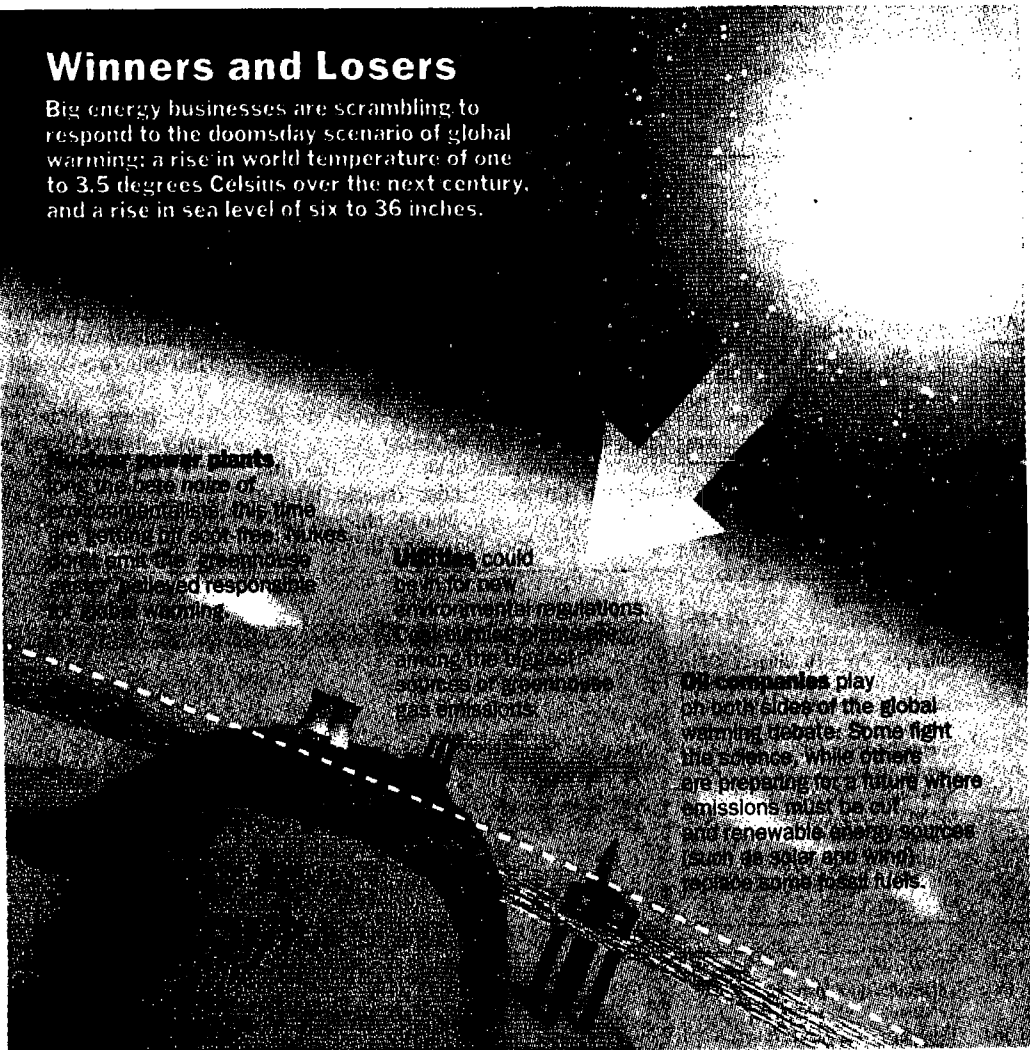
Electric Power heard cries of treason when it broke ranks with other utilities last year to join a business group with a moderate position on global warming. Competitors "viewed it as selling out, capitulation," said Dale Heydlauff, AEP vice president of environmental affairs. The Columbus, Ohio, utility acknowledges that it changed its position in part to have a say in setting future standards. "Once you realize that you can't kill this thing, then it's incumbent upon you to try to be a player in the process of shaping policies," Mr. Heydlauff says.

Some large companies—notably **Exxon Corp.** and others whose businesses depend upon fossil fuels—continue to publicly question the science and insist on a go-slow approach. Findings that the Earth has warmed by more than one degree Fahrenheit over the past century, they contend, are well within normal variations. **Western Fuels Association Inc.**, a Denver cooperative of Western and

Midwestern utilities that mines and sells coal to its members, goes so far as to call for higher levels of atmospheric carbon dioxide: Higher CO2 levels will help assure economic growth and adequate food supplies, according to the Web site of an organization **Western Fuels** launched two years ago (www.greeningearthsociety.org).

But for many other companies, the global-warming debate now centers on how much emissions cutting is enough and how to regulate the process. Dirk Forrester, a former White House official now working for the **Environmental Defense Fund**, sees in the shift "a stunning disconnect" between business executives and politicians. Since the Kyoto Protocol, the global treaty to reduce greenhouse gases negotiated in 1997, "the business community has been coming to the middle and the Congress has been swinging way to the right," he says.

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John MacNeill

Global Warming Theory Wins Unexpected Converts

Continued From Page B1

What really counts when companies try to reduce emissions? There's no consensus. AEP, for example, plans to cut the carbon-belching output from its coal-fired plants by producing more nuclear-powered electricity. The strategy doesn't sit well with environmentalists opposed to nuclear power. But it is acceptable under the U.S. government's voluntary greenhouse-gas emissions program.

The program includes a national database, run by the Department of Energy, where companies can report annual emissions cuts. The number of reporting companies has grown to 188 this year from 108 in 1998. In 1997, the latest year for which data are available, the companies reduced emissions by 165.6 million tons, up from 73.5 million tons in 1994.

AEP emits 120 million tons of greenhouse gases annually, and about half its 9.5 million tons in planned reductions will

come from increased nuclear-power production. Counting emissions cuts is "enormously controversial," says AEP's Mr. Heydlauff.

As part of its reforestation program, AEP in 1998 joined with BP Amoco, of London, and **PacifiCorp**, a Portland, Ore., utility, to purchase logging rights from forest companies for 2.2 million acres of Bolivian rainforest and leave them untouched. The companies, together with the Bolivian government, will divide claims for an estimated 14.5 million metric tons in carbon-dioxide reductions over 30 years. In addition, AEP began planting 15 million trees on company-owned land in the U.S. in 1996.

The utility, whose pollution record and fight against clean-air standards have drawn criticism from environmentalists, recently installed computer-controlled electronic "valves" on a major power line in Kentucky. The valves limit electricity lost over long-distance transmissions, help reduce AEP's power-production requirements by 24 megawatts and save \$22 million in new production-capacity spending.

Still, like many U.S. companies, AEP opposes in its present form the Kyoto Protocol. The treaty calls for the U.S. to reduce greenhouse emissions by 7% from their 1990 level, beginning in 2008. The European Union faces an 8% cut, and Japan must reduce its emissions by 6%. Significantly, critics point out, the treaty doesn't impose reductions on developing nations.

Opponents argue that by limiting fossil-fuel use, the treaty will cut growth and lead to widespread unemployment in the U.S.: After the U.S. signed it, Exxon put out a brochure titled "Kyoto and \$2 Gasoline." Still, the Global Climate Coalition, Washington's major business lobby battling Ky-

oto and related legislation, counts around 60 corporate and trade-group members—down from 65 in 1997. And many current members support voluntary reductions even as they question the global-warming theory and oppose Kyoto.

This year and last, 21 companies with combined revenue of \$550 billion, joined the moderate Business Environmental Leadership Council, part of the Pew Center for Climate Change. The global-warming think tank is sponsored by the Pew Charitable Trusts. Members, including **Royal Dutch/Shell Group**, **DuPont Co.**, **Boeing Co.**, AEP, BP Amoco and United Technologies view Kyoto as a possible first step to a global regulatory system.

Eileen Claussen, the group's executive director, says the business community's center is closer to accepting scientific theories of global warming. "We are almost at the stage where people are starting to figure out what the solutions are," she says.

Solutions can be as simple as new lighting fixtures or as complicated as BP Amoco's internal system of trading emissions among business units. The oil giant is considered to be at the forefront among multinationals in reducing global warming, both in the U.S. and abroad. This year, the company mandated that business unit managers cut their greenhouse gases by 1% and will include the goal in their performance reviews.

At first, one natural-gas pipeline manager grumbled that he shouldn't be responsible for cutting greenhouse gases because he didn't believe his operations produced any, recalls Michael McAdams, associate group policy adviser for BP in Washington. Pressing his lieutenants, however, the manager found that pipeline valves leaked methane gas, a major global-warming contributor. Installing new valves will cost \$2

million, but the investment will reap a 60% return in the form of increased methane available for sale to customers. In addition, the valves will remove 450,000 tons of carbon emissions from the air, far beyond the manager's 1% goal.

In BP's pioneering system, the pipeline manager can now trade his carbon reductions with other units. A unit that can't meet its goal through actual reductions, or that finds the cuts too expensive, can buy credits from overachievers in an open trading system within BP. In a recent trade, a BP chemical facility in the United Kingdom purchased 20,000 metric tons from a BP pipeline system in the North Sea at \$19 a ton.

BP hopes the system is a precursor to a international trading system in which countries and companies could purchase carbon-reduction credits to meet goals. BP and others are pushing Congress to pass legislation that would reward companies cutting emissions voluntarily with early credits. The Global Climate Coalition says it opposes such legislation because it could be read to mandate the adoption of the Kyoto Protocol.

United Technologies found its investments in energy efficiency were paid back in 1.2 years. Its Pratt & Whitney unit last year posted 10,000 decals on computer monitors at a facility in Florida to remind employees to shut them off at night. The \$3,600 investment in decals and an audit to measure results is expected to save \$203,000 in annual electricity costs and \$31,000 in cooling costs. The compliance rate among employees was 97%.



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Journal Interactive Edition at <http://wsj.com>

Ice Police Cry, 'Stop That Bergy!'

Chilling Tales of the Scientists Whose Job Is to Direct Traffic From the Deep, Cold South

By CHRISTINE B. WHELAN
Staff Reporter of THE WALL STREET JOURNAL

SUITLEND, Md. — What's 40 miles long, 11 miles wide and moving 5.5 miles a day?

It's the B-10A iceberg, a giant frozen slab that was once part of the Antarctic ice shelf and is now adrift in the Southern Ocean, between South America and Antarctica. It's the object of intense scrutiny at the National Ice Center, a little-known pocket of the nation's natural-disaster bureaucracy that is keeping close tabs on an unusually high number of Southern Hemisphere icebergs these days.

Working inside a secure federal office building topped with satellite dishes, a dozen or so ice scientists track 27 Antarctic icebergs, pointing and clicking at radar images on their computer screens. The waters surrounding the Antarctic seem like Times Square compared with a decade ago, when the center was keeping tabs on only about 10 or 12 bergs in a given year.

The B-10A is the largest iceberg they've seen in years. In August, the ice center issued a warning about it to mariners, and in the weeks since, it has become even more of a threat to shipping routes: As oceanic currents take B-10A into warmer water, major chunks break off, posing additional hazards.

The B10A's sheer size—from 50 to 100 feet high out of the water at its edges—has experts at the ice center fascinated. The bergs "calving" off of it are two miles long. "This berg is unusual because we haven't seen many this big in the last 10 years," says Andy Ulak, spokesman for the center. "There have been sightings of them over the last century,

A Few Facts About Icebergs ...

- They are made out of **fresh water**.
- **Seven-eighths of their mass** is underwater. Strong sea currents propel them, which is why they may be spotted heading into a wind.
- **They come from glaciers**, the rivers, or 'tongues,' of ice that flow out from the polar ice shelves, much the way water leaks from a cracked bowl. At the end of the glacier, tidal action causes 'calving': A slab of ice breaks off, and an iceberg is born.
- **'Firn' is granular snow** on the icecap. Over decades, it will become dense ice.
- **The International Ice Patrol Global** says the Greenland icecap is getting bigger, growing by 20 to 30 centimeters a year. One possible explanation may be global warming.

Source: International Ice Patrol/U.S. Coast Guard

but not many recently."

Some scientists studying global warming suggest rising temperatures may be what's causing so many large pieces of the Earth's polar ice shelves to break free. But the National Ice Center scientists say it's premature to add marauding icebergs to the list of global warming's insidious symptoms. They refuse to speculate on possible links between higher atmospheric temperatures and the number of bergs on their radar screens.

In fact, says Jeff Andrews, a National Ice Center physical scientist, the unusually high number of

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Ice Scientists Watch Bergies and Growlers From the Antarctic

Continued From Page B1

bergs under observation may not reflect an increase in the number of bergs out there. "We have better sensors so we're seeing more bergs than in the past," Mr. Andrews says. "I have no idea if there are more bergs than before. . . . It's too early to think about trends."

Normally a rather quiet place, the ice center has become far busier in the weeks since the B-10A appeared. Mr. Andrews has been regaling camera crews with chilling tales told in his deadpan, Joe Friday manner. There was the time a Danish dog-sled team got trapped on a piece of floating ice in Greenland, Mr. Andrews recalls. "We were called to give a forecast for where the ice would move so rescue teams could get to them," he says. "They got the two guys off in about 15 hours, but the dogs didn't make it."

The National Ice Center also has coached cruise ships through icy waters in Northern Alaska and aided in the rescue of some Alaskan whales trapped in pack ice, Mr. Andrews boasts. "When I tell people where I work, they say 'Who cares about ice?' But we do a lot of things."

A joint venture of the U.S. Navy, the U.S. Coast Guard and the National Oceanic and Atmospheric Administration, the ice center monitors, analyzes and forecasts ice activity around the world. It has been tracking Southern Hemisphere bergs since 1976. Tracking Arctic icebergs is the job of the International Ice Patrol, based at the Coast Guard Research and Development Center in Groton, Conn. The patrol, made up of 17 countries, was formed back in 1914 in the wake of the sinking of the Titanic.

Icebergs come in all shapes and sizes. There's a "bergie," the size of a small cottage, according to the center's Ice Observation Handbook. The "growler" is the size of a piano. Antarctic icebergs are flat slabs broken off from the glaciers of the Antarctic ice shelf. Arctic icebergs, by contrast, have peaks and are what most people envision when they think of icebergs.

The B-10A iceberg was once a part of the Thwaites Ice Tongue extension of the Thwaites Glacier in the Amundsen Sea. B-10A's parent berg, the even bigger B-10, broke off there more than 10 years ago. The National Ice Center began tracking it in 1992. In 1995, B-10 broke in two, creating the now-famous B-10A berg and another, much smaller one. Depending on currents, Mr. Andrews says, B-10A could last for six months to a year, as it drifts into warmer waters and slowly melts.

Kyoto Protocol's Foes Could Kill Pact

Continued From Page B1

warned her group's 21 major company members, including **DuPont Co.**, **Lockheed Martin Corp.**, **Royal Dutch/Shell Group**, and **BP Amoco PLC**, that the chances of the U.S. meeting the deadline are "very small indeed." She worries that companies in Europe and Japan won't carry out emissions-cutting plans if they see their U.S. counterparts withholding political support and investments in cleaner technologies.

Uncertainty in the U.S. has set off a global game of chicken. Politicians in the Netherlands, for example, are already deeply absorbed in the game. Paul Hofius, counselor for the environment at the Dutch embassy in Washington, says the Dutch parliament is readying a package of measures to sharply reduce CO₂ emissions. But there's a big catch: Unless the U.S., producer of one-quarter of the world's CO₂ emissions, also takes action, the Dutch plan may be trimmed back or shelved.

"The competitive factor is a big issue here," Mr. Hofius says. Dutch companies planning major investments in more expensive energy-efficient equipment don't want to come up against U.S. competitors that aren't hindered in that way, he notes. "We could have a lot of economic damage from this."

But with a third of the Netherlands below sea level, Mr. Hofius notes, politicians also worry about doing nothing. Many scientists say rising sea levels and more violent storms will result from rising temperatures. It isn't hard for politicians to explain to constituents what that might do to the Netherlands, Mr. Hofius says. "For us, ratification is not a problem."

Ms. Claussen, a former assistant secretary of state who oversaw planning that led up to the treaty, says the political logjam

here has the potential to force the signatories to renegotiate. If the pact were rewritten, its target levels could be postponed or diminished. The treaty requires the U.S. to cut carbon-dioxide emissions to 7% below 1990 levels. The European Union faces a reduction to 8%, and Japan to 6%, below previous levels.

The White House could have done more to prevent the impasse, Ms. Claussen says. "I think this is pretty damning of the administration," she says. "My view is that they negotiated it and then walked away from it."

Frank E. Loy, undersecretary of state for global affairs, counters that the administration has been pushing the issue hard. He agrees with Mr. Hofius that European nations are becoming skeptical of the U.S. commitment, but he believes the treaty is still "doable."

"I think it is true," Mr. Loy adds, "that as time goes on costs will go up if ratification should take place later." Ideally, he says, ratification would take place early because it would give U.S. industries more lead time and incentive to invest in emissions-reducing technologies, such as an electric utility required to switch from coal-fired plants to gas.

At the moment, only 13 of the 84 nations that have signed the Kyoto Protocol have ratified it. Most of them are small island nations such as the federal states of Micronesia that fear rising sea levels will swallow up their economies and, eventually, their cultures if prompt action isn't taken. Most industrial nations are unlikely to ratify the pact until 2001, after a scheduled round of talks to establish compliance mechanisms and the rules for emissions measurements.

So far, the Senate hasn't had a count of

votes that would support the treaty. But the White House, sensing weak backing, has decided to delay submission for ratification. Ms. Claussen says she thinks that an attempt at ratification might not happen until 2002 or 2003.

The political climate could change. A new set of emissions data released recently indicates that in 1998, for the first time, carbon-dioxide emissions in the U.S. remained flat while the nation's economy grew by 4%. Previously, many economists argued that emissions and economic growth moved in lockstep.

"The only way you can get these rules through [by 2008] is if this turns out to be a lot easier to do than most people think," Ms. Claussen says. Some experts think the 1998 emissions data are a sign that market forces are already responding to a demand for lower emissions, but others worry that they may turn out to be a fluke.

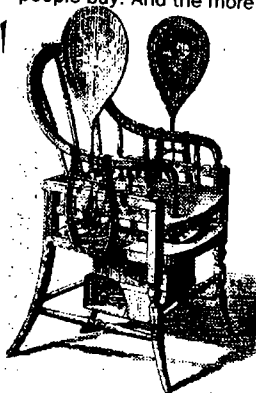
Agricultural interests may be another political factor that could make ratification easier. At the moment, polls indicate that farmers, who have been treated to a heavy grassroots lobbying campaign against the treaty by the coal industry, are suspicious of Kyoto. But many of them are looking closely at a farming technique that might be encouraged under an emissions-trading system. It involves using agricultural land to store more CO₂ as a way to cut greenhouse gases. Scientists believe relatively undisturbed soil has greater capacity to hold CO₂ absorbed from the atmosphere.

"A regulatory scheme isn't going to work," says Republican Sen. Pat Roberts, of Kansas. But an emissions-trading scheme that pays farmers to minimize plowing with "no-till" or "low-till" practices would give farmers a positive role in the fight to cut emissions, he says.

Cool Double Dip

Looking for a pure play on global warming? Try the air-conditioner industry, which gets an unusual double benefit.

The warmer it gets, the more air conditioners people buy. And the more air conditioners they buy, the warmer it gets: Air conditioners, after all, are major consumers of the electricity produced by utility companies that burn fossil fuels and emit greenhouse gases.



CORBIS/Bettmann

Sales of central air conditioners are at record levels. Ship-ments of central-air units and heat pumps were running 7% ahead of last year in the first six months of 1999, according to the Air-Conditioning and Refrigeration Institute, of Arlington, Va. The Association of Home Appliance Manufacturers, of Washington, expects shipments of in-room air conditioners also to come in about 7% ahead of last year.

Car Wars

Perhaps no single business feels as threatened by the attack on greenhouse gases as the auto industry. It acknowledges that vehicles contribute a quarter to a third of man-made CO2 emissions in the U.S.

The auto industry has successfully lobbied Congress to hold off increasing fuel-efficiency standards for another year. Although environmentalists have pushed to raise the



GM's EV1 recharges

standards to fight global warming, major U.S. auto makers say the public doesn't want to drive econo-boxes on wheels. "In this market, fuel economy isn't a driving factor to

our customers," says John Williams, leader of General Motors Corp.'s global-climate issues team. Two of GM's most fuel-efficient models, the Chevy Metro and the EV1 electric car, have sold poorly.

The Partnership for a New Generation of Vehicles, a government-industry group working on new technologies, hopes to design by 2004 a midsize car that gets 80 miles a gallon—about three times the mileage of today's average car.

Meanwhile, the industry continues to oppose measures to reduce CO2 emissions contained in the Kyoto accord. They "would go right to the soul of customer choice and vehicle utility," says Reg Modlin, director of environment and energy planning for DaimlerChrysler AG's U.S. arm. "Customers aren't going to choose to pay more money for an environmentally sensitive product," he says.

Silver (Coat) Lining

Warmer winters could encourage some overdue innovation by outerwear makers and retailers. And they already serve as a nice marketing tool. Weatherproof Garment Co., a unit of David Peyser Sportswear Inc., of Bay Shore, N.Y., has already found hot demand for lightweight outerwear. Its "microfiber windbreaker," introduced in 1995 as a "a nice little spring jacket," now sells year round and contributes 40% of company sales, says President Fredric Stollmack. "We have changed the entire complexion of our company and our product line because of this global warming trend," he says. The company, for example, makes all its heavy jackets with zip-out linings.



Kyoto Treaty's Foes In U.S. Could Kill Pact Around the World

By JOHN J. FIALKA
Staff Reporter of THE WALL STREET JOURNAL

WASHINGTON—Will American lawmakers kill the massive global agreement to cut the emissions that are heating up the planet?

The Kyoto Protocol, one of the most complicated treaties ever negotiated, calls for the U.S. and 37 other industrialized nations to start cutting "greenhouse gases" in 2008. Parliaments in Europe and Japan are wrestling with a number of far-reaching economic proposals to comply, by raising taxes, restructuring electric utilities and promoting emissions-trading systems.

But the U.S. is different. Here, the treaty's opponents, including coal-industry interests, many oil companies and some automakers and other players in heavy industry, have mustered forces to block ratification in the Senate—and given the pact's supporters a case of the jitters.

Without support from the U.S., the world's largest producer of greenhouse gases, the Kyoto pact in its current form would be dead in the water. A two-thirds Senate vote is necessary for ratification. But American lawmakers aren't ready politically to consider the economic sacrifices that could be required under the treaty, and they may not be for several years. And until the treaty is ratified, the Republican-led Senate isn't likely to pass legislation that would implement any of the measures.

Even if it is ratified, it is now clear to many people that the U.S. won't be ready to take up serious greenhouse-gas emissions reductions by the 2008 deadline. Noting that it took Congress 10 years to deliberate the 1972 Clean Air Act, Eileen Claussen of the Pew Center on Global Climate Change recently

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A Green Oil Baron?

Royal Dutch/Shell Group was one of the last companies anyone expected to jump on the global-warming bandwagon. But in the fall of 1998, just four months after being named chairman of the oil giant, Mark Moody-Stuart unveiled far-reaching plans to reduce carbon-dioxide emissions.

The company first parted ways with Big Oil's mainstream when it quickly endorsed the Kyoto Protocol, which calls for world-wide reductions in greenhouse-gas emissions. Mr. Moody-Stuart then went a step further: Shell not only endorsed Kyoto, it committed itself to exceed the treaty's requirements every year through 2010.

Kyoto calls for nations to cut world-wide emissions by 5.2% below 1990 levels by 2012. Shell promised to reduce its greenhouse gases by 10% below the 1990 baseline by 2002.

Mr. Moody-Stuart, a former geologist and the scion of a sugar-growing family in Antigua, is starting to talk like a green boss.

"The demands of economics, of the environment and of contributing to a just society are all important for a global commercial enterprise to flourish," he said in a recent speech.

He has been instrumental in shaping the company's global-warming policies for most of this decade. At the center of Shell's outlook is its "50-50" energy scenario: By 2050, as much as 50% of the world's energy needs could be met by renewable sources, such as solar power, biomass and wind. And so Shell has moved into renewables, at least as much for potential profits as out of environmental concerns.

In 1997, Shell set up Shell Renewables as a core business, with plans to invest \$500 million over five years. Mr. Moody-Stuart has kept to that budget—even during last year's downturn in oil prices, when he slashed expenditures on oil and gas exploration. Earlier this year, Shell established its Shell Hydrogen unit to enter into the promising world of fuel cells. Next month, Shell will open a solar-panel plant in Germany that will eventually produce about 13 million solar cells annually, to make it the world's largest.

Shell is beginning to win recognition for such initiatives—just as it earned brickbats for earlier efforts to dump the Brent Spar oil platform into the North Atlantic and for its operations in Nigeria. In September, an international business and environmental magazine, *Tomorrow*, gave Mr. Moody-Stuart an environmental leadership award and said he had "dared to think the unthinkable." In the oil industry, that is to consider a future beyond fossil fuels.



Mark Moody-Stuart

Glowing Report

The nuclear-power industry, a long time living down "The China Syndrome," finally has something to brag about: Whatever the long-term risks of using radioactive uranium as a fuel source, air pollution definitely isn't one of them.

The industry is eager to be seen as a respector of the environment through what it calls "emission-free electricity." It is spending \$2 million on an ad campaign to get the message out to policy makers that continued operation of the nation's 103 nuclear plants is essential if America is to meet tighter air quality standards.

"Fresh Air to Fresh Food ... Nuclear makes it happen," reads one of three ads from the Nuclear Energy Institute of Washington, D.C. The ads ran in national media as recently as last month. They extol the virtues of nuclear technology when used for power generation, food irradiation, X-ray machines and space exploration.

"We think we've got a compelling message," said Scott Peterson of the Nuclear Energy Institute.

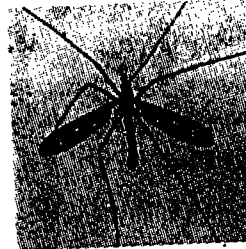


Is Heat Unhealthy?

Experts can't agree whether rising temperatures will make the world wetter or drier. Either way, the potential effects on humans' health are likely to be considerable.

The 1995 Intergovernmental Panel on Climate Changes says possible effects could include a rise in malaria, dengue fever, encephalitis and other diseases that flourish in tropical climates. But with most of the world's top pharmaceutical and biotechnology companies immersed in research for heart disease, cancer, Alzheimer's disease and arthritis, there isn't much interest in these diseases.

On a warmer planet, intense heat waves alone, according to the report, are by 2050 likely to result in increases in death by cardiac and respiratory



ills of several thousand a year—especially in urban areas and among the elderly and very young.

One question that hasn't drawn much research is whether a warmer planet could also bring some benefits to public health. Influenza and other respiratory tract viruses, for example, love cold weather.

And some infectious-disease and ecology scholars think the doomsayers fail to recognize what technology and economic well-being will do for man's ability to control infectious disease. Jesse Ausubel, head of the program for human environment at New York's Rockefeller University, says the spread of electricity, refrigeration and water purification are likely to offset many of global warming's negative consequences.

In turn-of-the-century New York City, he notes, average temperatures were probably cooler than now, yet cholera and diphtheria outbreaks were common.

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U.S. says needs cost-effective
global warming plan

WASHINGTON, Oct 21 (Reuters) - A U.S. official on Thursday said meetings starting next week in Germany on an international global warming accord should focus on ensuring cost-effective means to cut harmful greenhouse gas emissions.

Some 5,000 representatives from 150 countries are meeting in Bonn from Oct. 25 to Nov. 5, for a last major review before negotiations on implementing the U.N. Kyoto climate treaty end at a meeting in The Hague, in November 2000 or early 2001.

The top U.S. negotiator, Frank Loy, Undersecretary of State for Global Affairs at the State Department, told reporters on Thursday that arranging an unlimited emissions trading market was a key priority for Washington.

"In order for us to participate fully, we need a cost-effective agreement. We need to make sure we can do (emissions cuts) in the most cost-effective way possible," Loy said.

Industrialised countries agreed in Kyoto, Japan, in December, 1997 to cut greenhouse gas emissions an average of 5.2 percent below their 1990 levels between 2008 and 2012.

Since then, however, subsequent rounds of talks to work out the details of the treaty have been difficult at best. U.S. and European Union nations differ on a number of key issues, like the U.S. demand for a fully-functioning emissions trading market, which the EU wants only on a limited basis.

"EU has proposed limits on the extent to which any country can use market mechanisms to achieve their

targets. We have taken the position that this is not a good idea," Loy said.

VITAL THAT DEVELOPING NATIONS GET INVOLVED

Loy said it was also vital that developing nations get involved in the Kyoto process, saying it was not correct for countries like China to think cutting emissions means hurting their economic growth prospects.

Clinton administration policies on global warming have come under attack from both the business and environmental communities, although for different reasons.

The Ozone Action interest group said the U.S. had been failing as a global leader in reducing carbon emissions.

"As the latest meeting begins in Bonn next week, a distinct lack of U.S. action on greenhouse gas emissions reduction at home, combined with a history of inflexible negotiating tactics by the U.S. has turned the discussions into a standoff," Ozone Action said.

Officials from the Global Climate Coalition, an organisation of business leaders in opposition to terms of the Kyoto Protocol, said they want Bonn to at least provide a better focus on where future negotiations were headed.

Connie Holmes, GCC chairman, said U.S. negotiators must link compliance issues and rules on emission trading. She noted the task is complicated by opposition from other nations.

"China wants emissions trading put to the side," she said.

GCC noted that to date only 14 countries, all from the developing world, have ratified the Kyoto framework.

Kyoto will only enter into force and become legally binding when at least 55 countries have ratified.

The U.S. signed the treaty last year, but it has not been sent for Senate ratification due to staunch opposition from

Republican leaders and some Democrats.

EXCEPT

WHAT WOULD A GREEN FUTURE

LOOK LIKE?

P. 114

By the year 2025 many of us will no longer tolerate the scourges of 20th century suburban life: the marathon commutes, the maddening traffic jams, the pollution spewing from tailpipes and chimneys. We'll demand neighborhoods where the air is pristine and places to work, shop and play are close at hand

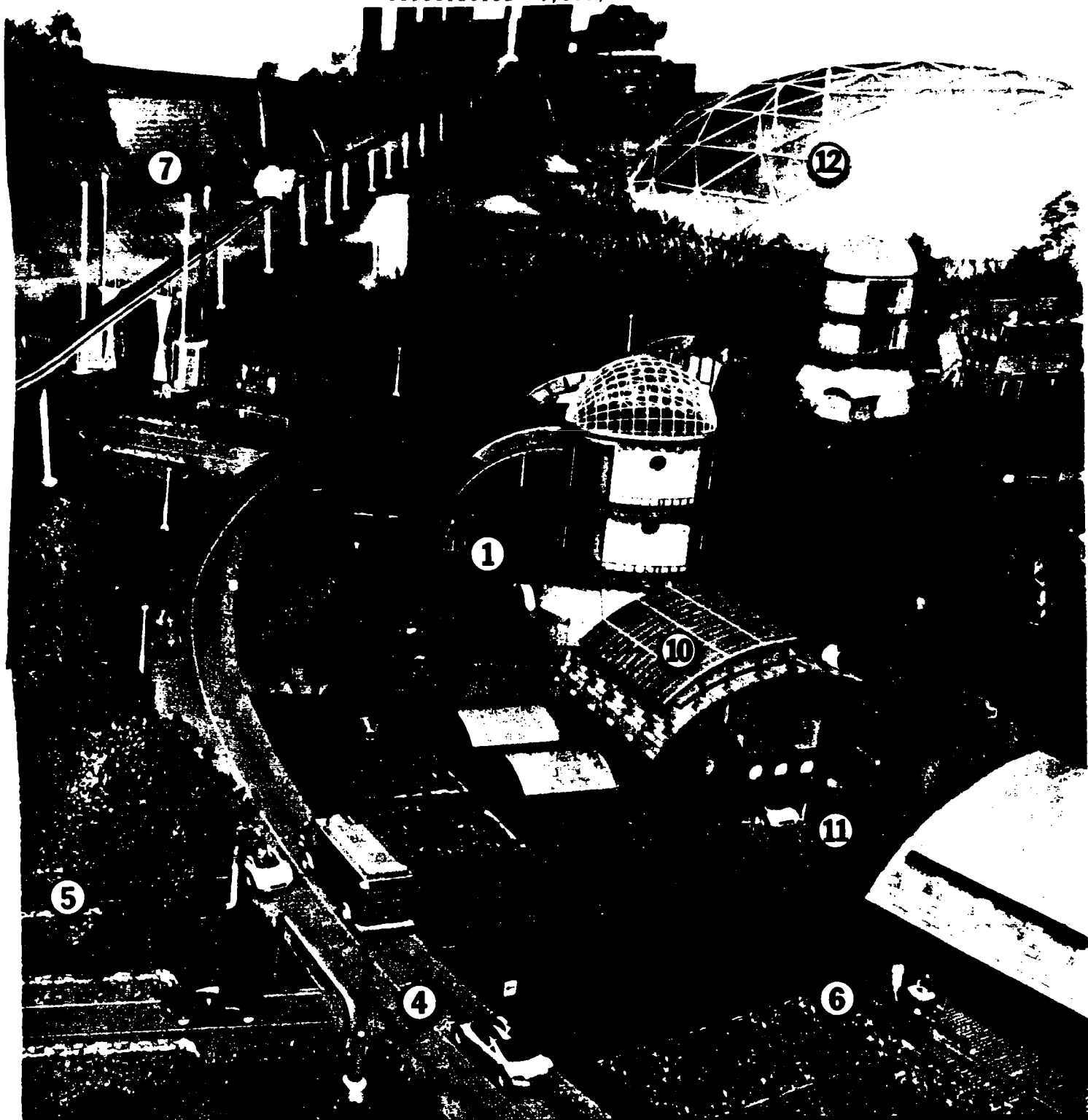
WORK / TRANSPORT

Lots of us will work in our houses or apartments ①, telecommuting with our computers. Others will make a short hop to a nearby office park ②. Those who have to go downtown will prefer swift mass transit ③. Cars and trucks ④ will still be used, but they will run on clean, hydrogen-powered fuel cells. To keep ourselves in shape and save money, we'll spend more time on bicycles ⑤

FOOD

We'll favor fruits, grains and vegetables grown close to home, either in our backyard gardens ⑥ or on nearby organic farms ⑦. It won't take much energy to get the fresh produce to local markets. Since the farms will employ natural forms of pest control rather than potentially toxic chemicals, there will be much less of a buildup of suspected carcinogens in the food supply

CONTINUED



SHOPPING

Even in an era of online marketing, there may still be a mall **①**, but it will be relatively small and easy to get to, with sidewalks and bike racks instead of a mammoth parking lot. An airy place where a flood of natural light will cut down on energy use, the mall will be a two-way operation: when you're through using any product you buy there, the stores will be required to take it back for recycling

ENERGY

Our power will come from sources cleaner than fossil fuels. Some energy will flow from modern-day windmills **⑦**, but much of it will be generated in our own homes. Rooftop solar panels **⑩** will supply electricity to our appliances and to a basement fuel cell **⑪**, which will produce hydrogen. When the sun is not shining, the cell will operate in reverse, using the hydrogen to make electricity

WASTE

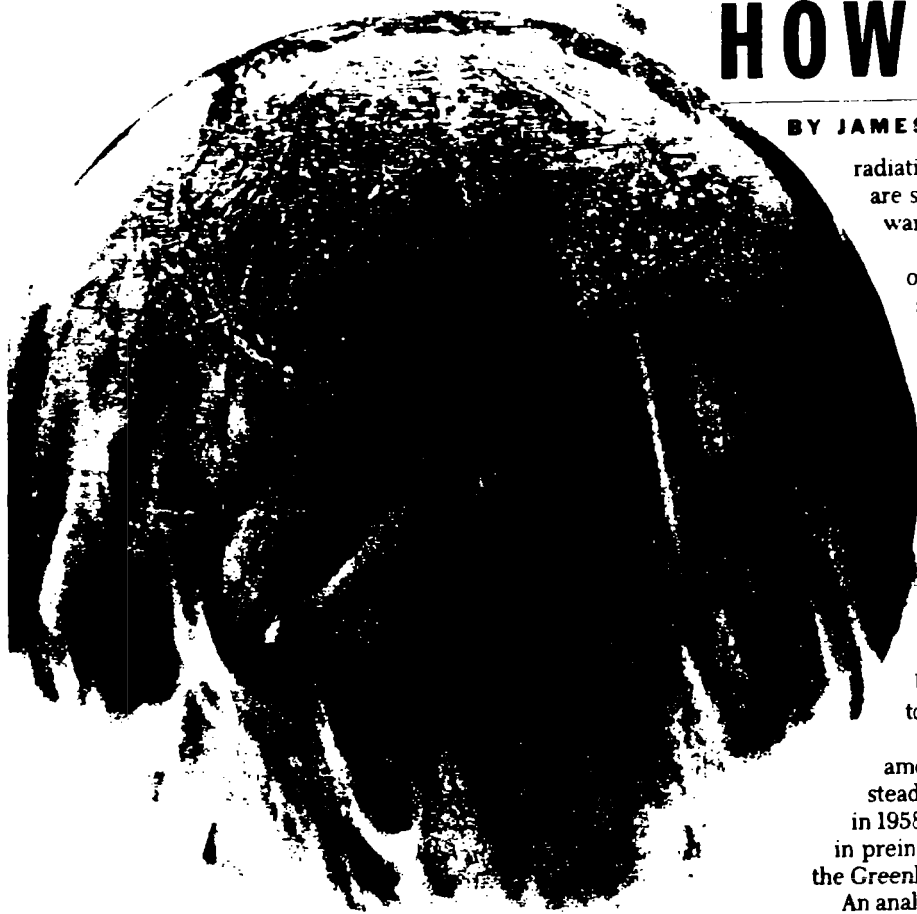
Sewage will be piped into enclosed marshes **⑫**, where selected plants, fish, snails and microbes will purify the wastewater before it enters streams and reservoirs. No longer will inadequate treatment of wastewater promote algal blooms that threaten other aquatic life

BY CHARLES P. ALEXANDER
ILLUSTRATION BY DON FOLEY

HOW HOT

BY JAMES TREFIL

P-112



NOT SO LONG AGO, PEOPLE TALKED ABOUT global warming in apocalyptic terms—imagining the Statue of Liberty up to its chin in water or an onslaught of tropical diseases in Oslo. Recently, however, advances in our understanding of climate have moved global warming from a subject for a summer disaster movie to a serious but manageable scientific and policy issue.

Here's what we know. Since sunlight is always falling on the earth, the laws of physics decree that the planet has to radiate the same amount of energy back into space to keep the books balanced. The earth does this by sending infrared radiation out through the atmosphere, where an array of molecules (the best known is carbon dioxide) form a kind of blanket, holding outgoing

radiation for a while and warming the surface. The molecules are similar to the glass in a greenhouse, which is why the warming process is called the greenhouse effect.

The greenhouse effect is nothing new; it has been operating ever since the earth formed. Without it, the surface of the globe would be a frigid -20°C (-4°F), the oceans would have frozen, and no life would have developed. So the issue we face in the next millennium is not whether there will be a greenhouse effect, but whether humans, by burning fossil fuels, are adding enough carbon dioxide to the atmosphere to change it (and our climate) in significant ways.

You might think that, knowing what causes greenhouse warming, it would be an easy matter to predict how hot the world will be in the next century. Unfortunately, things aren't that simple. The world is a complex place, and reducing it to the climatologist's tool of choice—the computer model—isn't easy. Around almost every statement in the greenhouse debate is a penumbra of uncertainty that results from our current inability to capture the full complexity of the planet in our models.

There is one fact, though, that everyone agrees on: the amount of carbon dioxide in the atmosphere is increasing steadily. It is near 360 parts per million today, vs. 315 p.p.m. in 1958 (when modern measurements started) and 270 p.p.m. in preindustrial times (as measured by air bubbles trapped in the Greenland ice sheet).

An analysis of admittedly spotty temperature records indicates that the world's average temperature has gone up about 0.5°C (1°F) in the past century, with the '90s being the hottest decade in recent history. This fact is quoted widely in the scientific community, although there are nagging doubts even among researchers. Recent satellite records, using different kinds of instrumentation, fail to show a warming trend.

If we accept that there has been moderate warming, we turn to computer models to see if humans are to blame and what will happen to the earth's climate in the future. These models are complex because climate depends on thousands of things, from Antarctic sea ice to sub-Saharan soil conditions. While the electronic simulations are monuments to the ingenuity and perseverance of their creators, they provide us with, at best, a fuzzy view of the future. They have difficulty handling factors like clouds and ocean currents (two major influences on climate), and if you fed the climate of 1900 into any of them, they couldn't predict the climatic history of the 20th century. Like everything else in this frustrating field, the models' limitations force us to make important decisions in the face of imperfect knowledge.

The most authoritative predictions about future warming come from the Intergovernmental Panel on Climate Change, a worldwide

Photo-illustrations for TIME by 2Face

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In the past decade we have experienced SEVEN of the TEN warmest years on record

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No one knows for sure, but the potential perils of climate change make it unwise for us to ignore the greenhouse effect

WILL IT GET ?

consortium of more than 2,000 climate scientists. The current forecast is that by 2100 the earth's temperature will go up 1° to 3.5°C (2° to 7°F), with the best guess being an increase of 2°C (4°F).

At the lower end of this predicted warming range, the temperature rise would take us back to the conditions that existed between A.D. 950 and 1350, when the climate was 1°C (2°F) warmer than it is now. This time period is regarded as one of the most benign weather regimes in history. To find temperature swings at the upper end, you have to go back 10,000 years, to when the earth was exiting the last Ice Age. Temperatures during the Ice Age were 5°C (10°F) cooler than they are now, and there was a series of incidents during which global temperatures changed as much as 10°F in a matter of decades. If that were to happen now, expanding oceans might flood coastlines and generate fiercer storms. And as weather patterns changed, some places could get wetter and some dryer, and the ranges of diseases could expand. Civilization has seen—and endured—such changes in the past, but they may come much more swiftly this time, making it harder to withstand the jolts.

The main reason for the spread in the IPCC predictions is uncertainty about how much carbon dioxide will be added to the atmosphere by human activity, because how we will respond to the threat of climate warming is the greatest imponderable of all. We can probably develop technologies to deal with excess carbon—some scientists talk about removing it from smokestacks and stashing it underground—but the most direct way to control carbon dioxide in the atmosphere is not to put it there in the first place. This is the point of the 1997 Kyoto Protocol—signed by 64 nations but not ratified by the U.S. Senate—which would limit developed countries' carbon emissions from cars, power plants and other major users of fossil fuels.

It makes no sense to overreact to the prospect of global warming, but it makes no sense to ignore it either. A prudent policy that stresses conservation and alternate energy sources seems to me to be wise insurance in an uncertain age. After all, our grandchildren will thank us for developing high-mileage cars, energy-efficient appliances and cheap solar energy, no matter how the future of global warming plays out.

James Trefil is a George Mason University physics professor and author of 101 Things You Don't Know About Science and No One Else Does Either

... AND THEN HOW COLD?

Warming may affect sea currents, triggering an ice age

It seems obvious that trapping more of the sun's heat will make the planet hotter. But what seems obvious isn't always true. According to some respected scientists, there's a chance that global warming could plunge us into, of all things, an ice age.

The argument hinges on the Gulf Stream, the ocean current that brings warm surface water north and east and heats Europe. As it travels, some of the water evaporates; what's left is saltier and thus denser. Eventually the dense surface water sinks to the sea bottom, where it flows back southward. And then, near the equator, warm, fresh water from tropical rivers and rain dilutes the salt once again, allowing the water to rise to the surface, warm up and begin flowing north again.

But with global warming, melting ice from Greenland and the Arctic Ocean could pump fresh water into the North Atlantic; so could the increased rainfall predicted for northern latitudes in a warmer world. Result: the Gulf Stream's water wouldn't get saltier after all and wouldn't sink so easily. Without adequate resupply, the southerly underwater current would stop, and the Gulf Stream would in turn be shut off.

If that happens, Europe will get very cold. Rome is, after all, at the same latitude as Chicago, and Paris is about as far north as North Dakota. More snow will fall, and the bright snow cover will reflect more of the sun's energy back into space, making life even chillier. Beyond that, the Gulf Stream is tied into other

ocean currents, and shutting it down could rearrange things in a way that would cause less overall evaporation. Because atmospheric H₂O is an important greenhouse gas, its loss would mean even more dramatic cooling—a total of perhaps as much as 8°C (17°F).

Worst of all, the experts believe, such changes could come on with astonishing speed—perhaps within a decade or less. And while we might have a great deal of trouble adjusting to a climate that gets 2°C (4°F) warmer over the next century, an ice age by midcentury would be unimaginably devastating. The lingering uncertainty about whether our relentless production of greenhouse gases will keep heating our planet or ultimately cool it suggests that we should make a better effort to leave the earth's thermostat alone.

—By Michael D. Lemonick



In the last ICE AGE, about 18,000 years ago, glaciers came as far south as Pittsburgh

CONTINUED

The delegation is also trying on its visit here to put an end to the perception in Washington that the Serbian opposition is fragmented and that it is incapable of offering a serious alternative to Mr. Milosevic and his loyalists.

"The genuine opposition is not divided," said Vlado Banic, coordinator of the Alliance for Change, an opposition group that has organized many of the recent demonstrations that have drawn tens of thousands of antigovernment protesters to the streets of Belgrade.

Mr. Djindjic, a philosopher who was imprisoned in the 1980's for trying to establish an independent student organization in Serbia, said it no longer mattered whether there were policy or personality disputes among the opposition parties.

"The parties are not important now," he said. "The people on the streets are now the opposition."

By HENRY FOUNTAIN

D-5 Impact of Climate Change

The effect of climate change on ecosystems is well known. In a region experiencing a drought, to take an obvious example, less flora is available for the fauna, which can cause populations of certain animals to decline.

But climate change can also have a more indirect effect on an ecosystem, by altering the behavior of predators within it. The latest illustration of this is from a long-term study of wolves in Isle Royale National Park, an island sanctuary in Lake Superior.

The study, by a team of researchers led by two Norwegian biologists, shows that during harsh winters with more snow, wolves hunt in larger packs. This makes them more efficient hunters and is bad news for their favorite prey, moose. But what is bad for the moose is good for the vegetation: fewer moose means that more balsam fir saplings, the animal's main winter forage, survive.

The researchers studied data collected over 40 years in the park. Their analysis, reported in the journal *Nature*, shows that average pack size ranged from 4.5 wolves during the mildest winters to 12 during the snowiest, as grown pups that would normally leave to seek mates stayed with the family instead. Larger packs killed up to three times more moose than smaller ones.

The data showed there were fewer moose in the year after a snowy winter. And by studying tree rings, the researchers found that in those same years, growth of balsam fir saplings increased.

Energy Industry Thinks Y2K Threat Is Down, Not Out

A-20

By Bill Shan Bahrel

Special Report for THE WALL STREET JOURNAL

GENEVA—Christian Placines has traveled more than 200,000 miles so far this year to ensure that French oil giant **Total-Fina SA's** oil and gas production operations worldwide cross over into the year 2000 without a hitch.

"Nothing major should go wrong," says Mr. Placines, who nonetheless balks when it comes to giving an assurance that nothing will go wrong. "I can't sign up to that," he says.

Why is Mr. Placines, like others in the energy industry, unwilling to guarantee that the lights won't go out somewhere at some time?

'Nobody Can Be 100% Sure'

Because some forgotten microchips somewhere may well become befuddled at the stroke of midnight when their internal clocks move from 99 to 00, and this could cascade into a series of problems along the world's closely linked energy chain. And because it all comes down to a matter of control, something that no one company or entity has over the numerous plants, pipelines and delivery points that make up the world's complex energy-production and supply system. Despite all the preparations, "nobody can be 100% sure," says Astrid Zimmermann, a spokeswoman for **Ruhrigas AG** in Essen, Germany.

A breakdown in energy and power supplies could have a serious ripple effect, causing both economic and personal turmoil, because so much depends on the

availability of power in its various forms. Energy companies know it, and they have spent billions of dollars during the past several years to protect themselves, their bottom lines and their customers against the year-2000 bug.

BP Amoco PLC and Italy's **ENI SpA** have each spent some \$300 million to make their systems Y2K compliant, to promote the same standards at third-party suppliers, and to draw up contingency plans for when things go wrong.

Ruhrigas has been checking not only the systems that drive its more than 6,000 miles of natural-gas pipelines, but also trying to ensure its biggest supplier, Russia's **OAO Gazprom**, is prepared.

The world's publicly traded oil companies account for only some 15% of world oil output. The rest is in the hands of national oil companies. Europe depends on natural gas from Russia and Algeria for its power generation and heating. In Asia, gas from Indonesia powers the Japanese and South Korean economies. Imports from as far away as the Middle East account for well more than half of U.S. oil needs.

Russia and East Europe Fears

"The view is that the majority of the problem has been addressed" in developed nations, says David Trim, an adviser on Y2K problems at **Royal Dutch/Shell Group**. Among his concerns: Russia and Eastern Europe, through which Russian gas passes on its way to the West, started addressing the Y2K problem very late.

The bug might not be easy to shake off, either. "There is the myth of midnight," says Mr. Trim, questioning whether passing through that magic moment unscathed would mean the end of concerns. Oil and gas take weeks, if not months, to travel to their destination. A problem at a faraway source may show up much later on major consumer markets.

Alfredo Moroni, ENI's director for plan-

ning, control and development, says ENI has stored gas that, when added to its domestic output, would allow the company to meet its supply commitments for four to six months without any imports from its main suppliers, Algeria and Russia.

When it comes to gasoline and other transportation fuels, oil companies say they are ready for a rise in demand in the closing days of 1999. Lawrence Goldstein, president of the Petroleum Industry Research Foundation in New York, figures the U.S. will need 10 million to 12 million barrels of extra gasoline and diesel fuel in the closing days of 1999, and Europe will need eight million barrels more.

But panic buying could create crises at the final points of sale. "That's because the distribution narrows dramatically as you get closer to the consumer," says Mr. Goldstein. There is limited storage at gas stations, which have to be supplied by tanker trucks. A rush at certain locations could dry up stocks temporarily.

ENI's Mr. Moroni says there are reports in Italy of people buying up small power generators. The ENI official confesses he just might buy fresh flashlight batteries. Mr. Goldstein, of the petroleum industry group, is even less fazed: "I'll just stay at home in the dark."

Global warring

This week's conference on global warming in Bonn was not expected to resolve the deep differences among the 173 countries that attended. It is likely to break up today with little progress on two big issues.

The first is the refusal of large developing countries, including China and India, to accept the 1997 Kyoto treaty's targets for cutting greenhouse gas emissions.

The second is a continuing argument between the US and the European Union about the scope of trading in permits to pollute. Without some commitment from the developing countries and unrestricted emissions trading, the US Senate is unlikely to ratify the agreement.

The Senate's reluctance is understandable. America's expanding economy is using more energy and hence increasing the output of carbon dioxide. The Kyoto target is for CO₂ emissions to be cut to 5 per cent below their 1990 level by 2012. To meet this by domestic measures, the US would have to cut consumption by some 30 per cent below the level that it would otherwise reach. To avoid a big disruption to the economy – and family incomes – the US wants to meet up to 90 per cent of its target by buying in CO₂ reductions achieved by other countries.

Europeans object that much of this trading would be in "pho-

ney" certificates, notably from Russia and Ukraine where CO₂ emissions have fallen as a result of recession, rather than efficiency measures. Policing would also be difficult.

These objections should be waived for three reasons. First, emissions trading would be much the most efficient way of securing the global CO₂ reductions planned in Kyoto. Even though formidable practical difficulties have to be overcome, it is important to get the new system established as soon as possible.

Second, trading and partnership agreements offer incentives for the less developed world to take part. They could get cash and know-how in exchange for reducing waste. They could also be encouraged towards economic reforms, such as ending energy subsidies, that would be good for them as well as the globe.

Third, the Kyoto plan has no chance of success unless the US signs up, and unrestricted trading is effectively a condition for it to do so.

The costs of implementing Kyoto could be high, perhaps as much as 2 per cent of the developed world's output. But there could also be large gains in efficiency, even in the short term. The way to achieve them is to keep government controls to a minimum and to proceed as much as possible along the slope of the market.

FINANCIAL TIMES FRIDAY NOVEMBER 5 1999

Global warming may move centre stage in US elections

By Nancy Dunne in Washington

Environmentalists and Democrats in the US are expected to push hard to make global warming a big issue in next year's political contests.

Their efforts will be bolstered by decisions this week at international climate change talks in Bonn, at which delegates agreed to conclude by November 2000

final negotiations on a global agreement to reduce emissions. That would mean the global warming talks taking place during the height of the US electoral race, when many observers believe candidates could not afford to ignore the issue.

This could pose a problem for Republican politicians, who have been sceptical on the subject of global warming. Senator John

McCain, a leading Republican presidential candidate, has called for further scientific studies, but maintains "serious concerns about the Kyoto treaty because it fails to include the co-operation of countries such as China".

The Kyoto Protocol agreed two years ago in Japan commits industrialised nations to reducing carbon emissions below 1990 levels. Carbon emissions are believed

by most scientists to have a greenhouse effect that is heating up the earth's atmosphere and contributing to severe weather.

Ironically, the potency of global warming as a US election issue grows out of lost US clout in Bonn. Washington pushed hard for a delay for final negotiations but was outvoted.

Senator John Kerry, a Massachusetts Democrat,

predicted that reaching the new millennium would prompt voters to focus on larger themes.

"There isn't a part of the country where people aren't aware of changes in their lives because of the weather patterns," he said. "It is my judgment you will begin to see a lot of congressional races with the issue on the table."

Phil Clapp, president of

the National Environmental Trust, cited polls concluding that candidates who deny the existence of climate

change are seen as anti-environment. "No politician either party is comfortable with that label," he said

On the web today

- Telecoms merger plan criticised
 - Demand leaves truckmakers in a spin
 - Opposition candidate likely to win Guatemalan poll
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Heavy Weather in Bonn

Some prominent Europeans have complained to us recently about what they see as the "isolationist" attitudes of the Republicans who control the U.S. Senate. We don't buy that characterization for a minute. Major U.S. free trade initiatives of the last six years, for example, have had more backing from Republicans in the Congress than from Democrats and would not have been approved otherwise.

That doesn't address objections that the Republican Senate has been hostile to a recent string of proposed United Nations treaties. But even there, we venture an alternative hypothesis—that the checks and balances enshrined in the U.S. Constitution are currently saving the rest of the world from its own worst impulses.

The U.S. Senate has no official veto, of course, over what other countries want to do. But everybody knows major international initiatives like the Comprehensive Test Ban Treaty, the treaty establishing a permanent international criminal tribunal, and the Kyoto Protocol on global warming, are pretty much dead letters without American participation.

These thoughts are spurred by the seeming irrelevance of the U.N. meeting on climate change currently taking place in Bonn. In terms of the number of countries and delegates participating, and in terms of the scope of the conference's ambition—drastic reductions in global energy use—it's just as big an event as the Rio and Kyoto conferences that preceded it. But it hasn't received even a tenth of the media attention. And we suspect that has something to do with the fact that its recommendations have barely a snowball's chance in a greenhouse hell of ever being implemented.

Not so long ago, of course, global warming was the *crise celebre*. Everybody who knew anything knew that drastic action was needed to curb climate change. U.S. Vice President Al Gore even once wrote grandly when

he was a senator, "We must make the rescue of the environment the central organizing principle for civilization." Wow!

But then serious scientists swung into action and began to examine some of the U.N. claims. The most sensitive measuring systems couldn't detect any warming of the earth's atmosphere in the second half of this century. The computer models used to predict future warming were ridiculously simplistic. And the costs of stabilizing atmospheric carbon dioxide levels, if it could be done at all, were, if you'll forgive us, stratospheric.

Sensible Americans started to realize that the best insurance policy is keeping the world rich enough in economic terms to adapt to any changes they might encounter in the future. Even if Mr. Gore manages to be elected president next year, and the Democrats capture the Senate, America is not likely to support a global economic suicide pact.

There are some who claim carbon dioxide targets can be painlessly achieved by using energy more "efficiently." But that scenario rests on the dubious premise that greedy capitalists who will do everything else to make a buck are carelessly wasting money on energy use.

So here's our prediction for the future of the Kyoto debate. The global climate change industry—activists, ministers and bureaucrats—will go on as usual, jetting around the world to conferences lamenting the fact that politicians are too short-sighted to do anything "for the children." But even European governments, for whom "austerity" means redistributing only 50% of the national wealth, will realize that the costs of "doing something" are prohibitive. Naturally, of course, they'll publicly blame the U.S. for their inaction. But privately, we suspect, there will be a few sighs of relief in European capitals. Saved again from another dumb treaty.

CORRESPONDENT'S REPORT

Altered Itineraries As the World Heats Up

By WILLIAM K. STEVENS

IT probably isn't necessary to cancel or change vacation plans just yet, but global warming — if it develops as forecast — promises in time to revise travelers' lists of preferred destinations.

A warmer, more pleasant England, for instance, might replace an extremely hot Greece as a summer vacation spot of choice. Beachgoers, skiers, scuba divers, autumn leaf-peepers, anglers and just plain sightseers all may have to find new places to go, and some of today's prized destinations may wither as new ones blossom.

Or so says a recent study conducted for the World Wildlife Fund by the Climatic Research Unit of the University of East Anglia in England.

The average annual surface temperature of the globe has already risen by about 1 degree or a little more over the last century; in many parts of the Northern Hemisphere, the warming has been much greater.

Computer models of the atmosphere forecast a further rise of 2 to 6 degrees over the next century, with a best estimate of about 3.5 degrees, if industry and motor vehicles continue to spew heat-trapping carbon dioxide into the air at today's rates. By comparison, the world is 5 to 9 degrees warmer now

Skiers, maple trees and salmon are among those that won't like it hot.

than in the depths of the last ice age 18,000 to 20,000 years ago.

Some regions would warm more, some less, and some may actually cool. But in any region where the average annual temperature rises, climate experts say, high summer temperatures are expected to become even higher. In general, climatic zones would shift northward in the Northern Hemisphere, southward in the Southern, and from lower to higher altitudes globally. And everywhere, the sea level would rise — by about 20 inches globally over the century, according to best estimates — with potentially grave consequences for beach resorts.

Projections of this sort are inherently chancy, but they are all that scientists have to go on. So the climate experts at East Anglia used computer models to look at the possible effect of global warming on 10 of the world's favorite tourist destinations

over the next century. And while the study was geared toward Britons, it has relevance for Americans, as well.

Some of the findings:

- Rising seas and a subsequent increase in beach erosion could eliminate many beaches and even submerge large parts of some popular islands, like the Maldives. Florida could be particularly vulnerable to beach erosion, the study said. Some Caribbean islands could be similarly affected, said David Viner, a co-author of the study.

- Higher temperatures could kill coral ecosystems, eliminating scuba-diving mecca from the Caribbean to the Maldives.

- Ski resorts at lower elevations, like those at Garmisch in Germany and Kitzbühel in Austria, might suffer from less snow, causing skiers to crowd higher-elevation resorts. Similar shifts could take place in North America.

- Rising temperatures could encourage the spread of malaria from North Africa to southern Spain.

- Hotter summers in the eastern Mediterranean, where the number of days with temperatures higher than 100 degrees would increase, may discourage summer visits to Greece and Turkey. But summer weather in England should become warmer and more reliable, encouraging many Britons to stay home and attracting more foreign visitors.

In many tourist areas, the study said, warmer temperatures might stimulate disease outbreaks, more forest fires and more air pollution.

A warming climate, Mr. Viner said, could shift the range of some sport fish; in the United States, anglers pursuing these fish make major contributions to local economies. Trout and salmon, for instance, are cold-water fish, and previous studies have shown that their habitat and range could be substantially reduced as streams warm up. On the other hand, the range of warm-water species like bass could expand.

Studies have also suggested that in New England, trees with relatively dull fall colors, like oaks and hickories, could eventually move up from the Middle Atlantic and replace the brilliant maples that draw crowds of foliage admirers every autumn.

How soon might these consequences be felt? Assuming the forecasts are reasonably accurate, it depends largely on whether climate change proceeds smoothly or in abrupt temperature jumps.

One example of how global warming might be a mixed blessing: In Alaska, where substantial warming has already taken place, the tourist season has been lengthened. But if it gets warm enough, the thawing of Alaska could eliminate many of the subarctic charms that make it so attractive.

Possible U.S. Missile Shield Alarms Europe *Allies Fear Arms Race, Diminished Security Ties*

By WILLIAM BROZDIAK
Washington Post Foreign Service

BERLIN, Nov. 5.—The American campaign to develop a protective shield against ballistic nuclear missiles is provoking serious alarm among the European allies, who fear that it could weaken the political and military links between the United States and Europe and trigger a dangerous arms race with Russia and China.

Faced with growing support in the Republican-controlled Congress and the Clinton administration for a revival of plans to build a national missile defense, European governments have stepped up their warnings that such a system could destroy the concept of shared risk that for decades has been the foundation of NATO security doctrine.

The sharpening debate over missile defenses follows the almost universal condemnation of the Senate's rejection of the comprehensive nuclear test ban treaty. It has fortified a perception among foreign governments that the United States is exploiting its global military and economic clout to lock in strategic superiority that would make it immune to future challenges from the rest of the world.

The symbolism behind U.S. intentions to change the 1972 Anti-Ballistic Missile Treaty so that it may build a missile shield has not been lost on foreign leaders, who have seized on the issue to warn the United States about the dangers of retreating into a fortress mentality.

"There is no doubt that this would lead to

See ALLIANCE, A22, Col. 1

A22 SATURDAY, NOVEMBER 6, 1999

WORLD NEWS

Arms Shield Ideas Worry Europe

ALLIANCE, From A1

split security standards within the NATO alliance," said German Foreign Minister Joschka Fischer during a trip to Washington this week. "I see lots of problems developing in this respect, which we must discuss calmly and reasonably with our American friends."

Fischer said Germany's commitment to be nonnuclear "was always based on our trust that the United States would protect our interests, that the United States, as the leading nuclear power, would guarantee some sort of order." A drive by the United States to build its own missile defense, he said, would erode that confidence by effectively putting European cities at greater risk of nuclear missile attack than those in America.

Even British Prime Minister Tony Blair, who is probably Clinton's closest ally among world leaders, is said to harbor serious reservations about U.S. plans for ballistic missile defense. Britain's support would be critical because of the need for the United States to upgrade its tracking stations there in order to shoot down missiles before they strike North America.

On other international issues as well, Europeans are dismayed by what they see as a U.S. penchant for unilateralism. At a conference in Bonn this week to discuss the global warming crisis, where the United States and Europe differed over how to meet limits on greenhouse gas emissions, U.S. delegation chief Frank Loy said a persistent theme concerned the refusal

by the United States to play by the same rules as other nations.

"You could feel a lot of the resentment among the other delegations," Loy said. "There was no direct connection between the nuclear test ban vote and the global warming issue, but there was plenty of anger about what others see as the arrogance of a superpower that cannot or will not be held to account for its behavior."

In a sharp attack on American foreign policies, French President Jacques Chirac on Thursday lamented "isolationist tendencies" in Congress that prompted the "perplexing decision" to vote down the nuclear test ban treaty. He and other foreign leaders have repeatedly deplored the U.S. refusal to pay nearly \$2 billion in past dues to the United Nations and to assume greater environmental responsibility, as the world's biggest polluter, for the global warming crisis.

There is some sympathy abroad for the fact that the Clinton administration shared the views of allied governments on those issues but found its wishes thwarted by a Republican-led Congress. On the matter of ballistic missile defense, however, the European allies are profoundly troubled by the support it has found among Democrats as well as Republicans.

Walter Slocombe, the undersecretary of defense, said today that President Clinton would decide "next summer at the earliest" whether to order the deployment of a limited national missile defense. By then, Clinton hopes to persuade Moscow to modify the

ABM treaty, but the Russians have firmly rejected that request and insist any unilateral abrogation by the United States will provoke a new arms race.

Slocombe said that while the administration would prefer to preserve the ABM treaty, it will not let Russian objections stand in the way of a missile defense system, if the United States determines it is in its national security interest to build one. "If they persist absolutely in that position, then the United States... will have to face a very difficult question, which is whether to withdraw from the treaty," Slocombe said in remarks at the Center for Strategic and International Studies in Washington.

Besides the risk of further antagonizing the Russians, European governments are worried about the United States and China heading for a new confrontation over ballistic missile defenses in Asia. During a recent state visit to France, Chinese President Jiang Zemin and Chirac discussed their worries about a sea-based American missile defense system that would protect Taiwan and Japan.

The United States has sought to reassure its allies that a missile defense system will not be deployed unless it can meet four criteria: the technology must be proven to work effectively; the costs must be reasonable; the threat must be significant; and the system must demonstrably improve security. But so far, the European allies have not been impressed with those arguments and remain fearful that the United States may not be thinking through the consequences for the

rest of the world.

"This issue could end up driving a stake through the heart of the alliance," said a senior European diplomat at NATO headquarters in Brussels. "First there is the danger that it will cause the Russians and the Chinese to ratchet up the arms race by finding ways to beat missile defenses. But there is also the fear that if the system works, American and European security interests will no longer be bound by exposure to the same threats."

During the days of the Soviet Union, the alliance's strategic doctrine held that the United States would be willing to share the same exposure to nuclear attacks by placing its own cities at risk in the defense of the European allies. But if the United States develops a missile shield on its own, it would no longer be subject to the same constraints. In the view of the allies, such a dramatic change in the U.S. strategic environment would soon lead Washington to abandon its commitments under NATO's nuclear doctrine.

The allies also fear that, once endowed with a missile shield, the United States would be tempted to protect its superior posture by launching preemptive nuclear strikes against any perceived challenge, from "rogue states" such as North Korea or Iran, or from terrorist groups, for example—with or without the consent of the allies.

"We already went through this debate during the 1980s with Ronald Reagan and the idea of a 'Star Wars' anti-missile system," said a senior NATO official. "We learned how dangerous and divisive it can be when you tamper with the ABM treaty, and that is one thing that has not changed since the end of the Cold War."

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One example of how global warming might be a mixed blessing: In Alaska, where substantial warming has already taken place, the tourist season has been lengthened. But if it gets warm enough, the thawing of Alaska could eliminate many of the subarctic charms that make it so attractive.

Skiers, maple trees and salmon are among those that won't like it hot.

than in the depths of the last ice age 18,000 to 20,000 years ago.

Some regions would warm more, some less, and some may actually cool. But in any region where the average annual temperature rises, climate experts say, high summer temperatures are expected to become even higher. In general, climatic zones would shift northward in the Northern Hemisphere, southward in the Southern, and from lower to higher altitudes globally. And everywhere, the sea level would rise — by about 20 inches globally over the century, according to best estimates — with potentially grave consequences for beach resorts.

Projections of this sort are inherently chancy, but they are all that scientists have to go on. So the climate experts at East Anglia used computer models to look at the possible effect of global warming on 10 of the world's favorite tourist destinations

Possible U.S. Missile Shield Alarms Europe *Allies Fear Arms Race, Diminished Security Ties*

By WILLIAM DROZDIAK
Washington Post Foreign Service

BERLIN, Nov. 5.—The American campaign to develop a protective shield against ballistic nuclear missiles is provoking serious alarm among the European allies, who fear that it could weaken the political and military links between the United States and Europe and trigger a dangerous arms race with Russia and China.

Faced with growing support in the Republican-controlled Congress and the Clinton administration for a revival of plans to build a national missile defense, European governments have stepped up their warnings that such a system could destroy the concept of shared risk that for decades has been the foundation of NATO security doctrine.

The sharpening debate over missile defenses follows the almost universal condemnation of the Senate's rejection of the comprehensive nuclear test ban treaty. It has fortified a perception among foreign governments that the United States is exploiting its global military and economic clout to lock in strategic superiority that would make it immune to future challenges from the rest of the world.

The symbolism behind U.S. intentions to change the 1972 Anti-Ballistic Missile Treaty so that it may build a missile shield has not been lost on foreign leaders, who have seized on the issue to warn the United States about the dangers of retreating into a fortress mentality.

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Fischer said Germany's commitment to be nonnuclear "was always based on our trust that the United States would protect our interests, that the United States, as the leading nuclear power, would guarantee some sort of order." A drive by the United States to build its own missile defense, he said, would erode that confidence by effectively putting European cities at greater risk of nuclear missile attack than those in America.

Even British Prime Minister Tony Blair, who is probably Clinton's closest ally among world leaders, is said to harbor serious reservations about U.S. plans for ballistic missile defense. Britain's support would be critical because of the need for the United States to upgrade its tracking stations there in order to shoot down missiles before they strike North America.

On other international issues as well, Europeans are dismayed by what they see as a U.S. penchant for unilateralism. At a conference in Bonn this week to discuss the global warming crisis, where the United States and Europe differed over how to meet limits on greenhouse gas emissions, U.S. delegation chief Frank Loy said a persistent theme concerned the refusal

by the United States to play by the same rules as other nations.

"You could feel a lot of the resentment among the other delegations," Loy said. "There was no direct connection between the nuclear test ban vote and the global warming issue, but there was plenty of anger about what others see as the arrogance of a superpower that cannot or will not be held to account for its behavior."

In a sharp attack on American foreign policies, French President Jacques Chirac on Thursday lamented "isolationist tendencies" in Congress that prompted the "perplexing decision" to vote down the nuclear test ban treaty. He and other foreign leaders have repeatedly deplored the U.S. refusal to pay nearly \$2 billion in past dues to the United Nations and to assume greater environmental responsibility, as the world's biggest polluter, for the global warming crisis.

There is some sympathy abroad for the fact that the Clinton administration shared the views of allied governments on those issues but found its wishes thwarted by a Republican-led Congress. On the matter of ballistic missile defense, however, the European allies are profoundly troubled by the support it has found among Democrats as well as Republicans.

Walter Slocumbe, the undersecretary of defense, said today that President Clinton would decide "next summer at the earliest" whether to order the deployment of a limited national missile defense. By then, Clinton hopes to persuade Moscow to modify the

ABM treaty, but the Russians have firmly rejected that request and insist any unilateral abrogation by the United States will provoke a new arms race.

Slocumbe said that while the administration would prefer to preserve the ABM treaty, it will not let Russian objections stand in the way of a missile defense system, if the United States determines it is in its national security interest to build one. "If they persist absolutely in that position, then the United States... will have to face a very difficult question, which is whether to withdraw from the treaty," Slocumbe said in remarks at the Center for Strategic and International Studies in Washington.

Besides the risk of further antagonizing the Russians, European governments are worried about the United States and China heading for a new confrontation over ballistic missile defenses in Asia. During a recent state visit to France, Chinese President Jiang Zemin and Chirac discussed their worries about a sea-based American missile defense system that would protect Taiwan and Japan.

The United States has sought to reassure its allies that a missile defense system will not be deployed unless it can meet four criteria: the technology must be proven to work effectively; the costs must be reasonable; the threat must be significant; and the system must demonstrably improve security. But so far, the European allies have not been impressed with those arguments and remain fearful that the United States may not be thinking through the consequences for the

rest of the world.

"This issue could end up driving a stake through the heart of the alliance," said a senior European diplomat at NATO headquarters in Brussels. "First there is the danger that it will cause the Russians and the Chinese to ratchet up the arms race by finding ways to beat missile defenses. But there is also the fear that if the system works, American and European security interests will no longer be bound by exposure to the same threats."

During the days of the Soviet Union, the alliance's strategic doctrine held that the United States would be willing to share the same exposure to nuclear attacks by placing its own cities at risk in the defense of the European allies. But if the United States develops a missile shield on its own, it would no longer be subject to the same constraints. In the view of the allies, such a dramatic change in the U.S. strategic environment would soon lead Washington to abandon its commitments under NATO's nuclear doctrine.

The allies also fear that, once endowed with a missile shield, the United States would be tempted to protect its superior posture by launching preemptive nuclear strikes against any perceived challenge, from "rogue states" such as North Korea or Iran, or from terrorist groups, for example—with or without the consent of the allies.

"We already went through this debate during the 1980s with Ronald Reagan and the idea of a 'Star Wars' anti-missile system," said a senior NATO official. "We learned how dangerous and divisive it can be when you tamper with the ABM treaty, and that is one thing that has not changed since the end of the Cold War."

Global warring

This week's conference on global warming in Bonn was not expected to resolve the deep differences among the 173 countries that attended. It is likely to break up today with little progress on two big issues.

The first is the refusal of large developing countries, including China and India, to accept the 1997 Kyoto treaty's targets for cutting greenhouse gas emissions.

The second is a continuing argument between the US and the European Union about the scope of trading in permits to pollute. Without some commitment from the developing countries and unrestricted emissions trading, the US Senate is unlikely to ratify the agreement.

The Senate's reluctance is understandable. America's expanding economy is using more energy and hence increasing the output of carbon dioxide. The Kyoto target is for CO₂ emissions to be cut to 5 per cent below their 1990 level by 2012. To meet this by domestic measures, the US would have to cut consumption by some 30 per cent below the level that it would otherwise reach. To avoid a big disruption to the economy - and family incomes - the US wants to meet up to 90 per cent of its target by buying in CO₂ reductions achieved by other countries.

Europeans object that much of this trading would be in "pho-

ney" certificates, notably from Russia and Ukraine where CO₂ emissions have fallen as a result of recession, rather than efficiency measures. Policing would also be difficult.

These objections should be waived for three reasons. First, emissions trading would be much the most efficient way of securing the global CO₂ reductions planned in Kyoto. Even though formidable practical difficulties have to be overcome, it is important to get the new system established as soon as possible.

Second, trading and partnership agreements offer incentives for the less developed world to take part. They could get cash and know-how in exchange for reducing waste. They could also be encouraged towards economic reforms, such as ending energy subsidies, that would be good for them as well as the globe.

Third, the Kyoto plan has no chance of success unless the US signs up, and unrestricted trading is effectively a condition for it to do so.

The costs of implementing Kyoto could be high, perhaps as much as 2 per cent of the developed world's output. But there could also be large gains in efficiency, even in the short term. The way to achieve them is to keep government controls to a minimum and to proceed as much as possible along the slope of the market.

FINANCIAL TIMES FRIDAY NOVEMBER 5 1999

Global warming may move centre stage in US elections

By Nancy Dunne in Washington

Environmentalists and Democrats in the US are expected to push hard to make global warming a big issue in next year's political contests.

Their efforts will be bolstered by decisions this week at international climate change talks in Bonn, at which delegates agreed to conclude by November 2000

final negotiations on a global agreement to reduce emissions. That would mean the global warming talks taking place during the height of the US electoral race, when many observers believe candidates could not afford to ignore the issue.

This could pose a problem for Republican politicians, who have been sceptical on the subject of global warming. Senator John McCain, a leading Republican presidential candidate, has called for further scientific studies, but maintains "serious concerns about the Kyoto treaty because it fails to include the co-operation of countries such as China".

The Kyoto Protocol agreed two years ago in Japan commits industrialised nations to reducing carbon emissions below 1990 levels. Carbon emissions are believed

by most scientists to have a greenhouse effect that is heating up the earth's atmosphere and contributing to severe weather. Ironically, the potency of global warming as a US election issue grows out of lost US clout in Bonn. Washington pushed hard for a delay for final negotiations but was outvoted.

Senator John Kerry, a Massachusetts Democrat, predicted that reaching the new millennium would prompt voters to focus on larger themes.

"There isn't a part of the country where people aren't aware of changes in their lives because of the weather patterns," he said. "It is my judgment you will begin to see a lot of congressional races with the issue on the table."

Phil Clapp, president of the National Environmental Trust, cited polls concluding that candidates who deny the existence of climate change are seen as anti-environment. "No politician that candidates who deny with that label," he said

On the web today

- Telecoms merger plan criticised
- Demand leaves truckmakers in a spin
- Opposition candidate likely to win Guatemalan poll

<http://www.ft.com/americas>

Heavy Weather in Bonn

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THE WHITE HOUSE
Office of the Press Secretary

For Immediate Release

October 22, 1999

REMARKS BY THE PRESIDENT
AT THE KENNEDY/KING DINNER

Alexandria Hilton Hotel
Alexandria, Virginia

8:30 P.M. EDT

THE PRESIDENT: Thank you very much. I guess I ought to begin by saying that all the things that Congressman Moran said so generously about me we might all say about him -- he has represented you so well. (Applause.) I am delighted to see all of you here -- from the leader of your Senate to the Chairman of the State Democratic Party to all the local officials to all the candidates. It actually might not have been a bad idea to let all 52 of you talk tonight. (Laughter.)

I've been thinking about what I could say tonight that would give you something to carry out of here into these legislative races and into the great election season next year. We come here in honor of the two men whose pictures are behind me. Thirty-one years ago, I was a senior at Georgetown University when Martin Luther King and Robert Kennedy were killed. One of my roommates was working in Senator Kennedy's office.

This week, I had a wonderful experience. Hillary and I hosted a large number of Americans as we celebrated the 5th anniversary of our national service program, AmeriCorps -- in which, in only five years, 150,000 Americans have already served; working in their communities, earning credit for college, making America a better place. (Applause.) And we asked Coretta Scott King to be one of the people who presented awards to the most outstanding of our young AmeriCorps volunteers.

Last night, I went to the home of Senator Edward Kennedy for an event to raise funds for his campaign for reelection next year. And the wife of Robert Kennedy, Ethel Kennedy was there; his daughter, Kathleen Kennedy Townsend, probably the finest Lieutenant Governor anywhere in America -- (applause) -- the only person to successfully get a state to include in its school

-MORE-

curriculum, as a required course for graduation, community service -- in the spirit of her father. (Applause.)

As all of you know, Edward Kennedy's son, Robert Kennedy's nephew Patrick, is now the chairman of Congressman Moran's Democratic Senate Campaign Committee, for all the House members. One of his sons, Joe Kennedy, represented Massachusetts in Congress. Another of his sons, Chris, is being urged to run for Congress in northern Illinois this year. The Kennedys and the Kings continue to serve, continue to inspire.

And Senator Edward Kennedy has been faithful to his brother's legacy -- based on the sheer body of his accomplishments, I think by any measure one of the ten outstanding people ever to serve in the entire history of the United States Senate, in over two hundred years, now. (Applause.)

But I said last night, when I was a sophomore in high school, Ted Kennedy was in the Senate. (Laughter.) And when I leave after two terms as President, he'll still be in the Senate. (Laughter and applause.)

I also want to say a word on behalf of a Senator who wanted to be here tonight, my friend of 20 years, Chuck Robb. (Applause.) You should know -- I hope you won't be offended when I tell you, as the father of a college student, that I am very glad he is not here tonight, because he's at parents' weekend at Jennifer's college. (Applause.) And just as he stood up for all of you for so many years, he's standing up for her this weekend. He gets to escort her onto the field for her last field hockey game. Now that's a big deal to a daddy, and I am glad he's not here. (Applause.)

But he's still standing up for you. He stood up for you in the Senate when he introduced legislation to help the states and school districts build or modernize 6,000 schools. No state in the country needs that more than Virginia. He embraced and introduced a bill with Congressman Moran to fight gridlock in Northern Virginia. And I've been lobbied about it again tonight. (Applause.) He stood up for you and the environment when he offered an amendment last month to protect our beautiful national parks, and supported me in setting aside 40 million acres for roadless areas in our national parks. (Applause.)

And in 1993 -- at enormous political peril to himself -- when, if anybody in the entire Congress could have been justified in taking a dive on a tough vote -- because of all he had been through, and because of the difficulties of any Democrat getting elected state-wide in Virginia -- Chuck Robb never blinked. He

stood up and he gave courage to other senators when he said, we have to support the President's economic plan. It passed by one vote and that's why we've got the longest peacetime economic expansion in the history of the country. (Applause.)

He is a brave and good man. All the polls say he's behind now because he governed and made decisions as a senator in tough and difficult times; and because we Democrats have a hard time in Virginia. But I'll make you a prediction: if you stand up for him the way he stood up for you all these years, he will be elected in November of 2000 for another six-year term. (Applause.)

Now, how are we going to do that, what are we going to say? Let's begin with the people we honor tonight, and be honest about what our problems have been. When Robert Kennedy eulogized Martin Luther King, he said, Martin Luther King dedicated his life to love and to justice for his fellow human beings. King could have said that about Robert Kennedy.

The truth is that a lot of people who could vote either way in an election know that we're for love and justice. But they used to characterize us, our Republican friends did, in ways that were, to say the least, unhelpful at election time. (Laughter.) They created these sort of cookie-cutter stereotypes of us, you know? We never met a tax we didn't like. Couldn't be trusted with the budget and the economy. Soft on welfare; soft on crime. Could never be put at the helm of the country's affairs. You've heard it all.

So Jim Moran, Chuck Robb and a lot of other Democrats set out with me in 1993 to change all that -- to transform our country, to transform our party, but to be absolutely faithful to the guiding principles which have kept us Democrats and made this the oldest political party in history.

And we had some new ideas. Basically, Jim sort of hit the essence of it when he said I never tried to divide people. You have to understand, for a dozen years before I came here, I was governor, as President Bush used to say, of a small Southern state. (Laughter and applause.) I did not -- (applause) -- I was proud of it and loved every day of it. (Laughter.)

But I was not part of this Washington political scene, you know? I didn't wake up every day and read these columns in the Washington Post that turn you inside out. I didn't watch the talk shows on Sunday. I just sort of went about my life. When I came to Washington, I had people's business to do. I wasn't maneuvering on some greasy pole up or down.

But it seemed to me that the country was totally paralyzed by what was going on in Washington. There was this -- everybody had to have a liberal position or a conservative position. And the most important thing is that people should be fighting, fighting always and never be caught getting together.

And what I was looking for was a set of unifying policies to turn this country around. For example, it was hard to get the Democrats to support reducing the budget deficit because the Republicans always wanted to do it by cutting education. So I said, I believe we can balance the budget and increase our investment in education. I believe we can follow policies which protect the legitimate interests of laboring people -- both those in unions and those who aren't in unions -- and still be pro-business. I believe we can grow this economy and make the environment cleaner. I believe we can maintain our military strength, but realize that it is the moral force of our ideas that is the true source of our influence in the world; and that we can go into this post-communist world and be a great force for peace and freedom. I believe we can celebrate our diversity and still find common cause in our shared humanity. Unifying ideas.

And we tried to turn those into specific policy initiatives. Some of them were quite controversial because it is always hard to change. And people took a chance on me in this country -- on me and Al Gore and our whole crowd. Because we were just making an argument, no one could know whether it was true or not. And as we were rocking along in '96, we did a little better in the reelection -- Virginia we nearly carried, even. We did pretty well here. (Laughter and applause.)

But here's what you need to start with saying to people who say they're independents: look, this is not an argument anymore. The evidence is in. And the policies that the Democrats have followed have given us the longest peacetime expansion in history; 19.5 million new jobs; the highest homeownership in history; the lowest unemployment in 29 years; the lowest welfare rolls in 30 years; the lowest poverty rates in 20 years; the lowest crime rate in 30 years; the first back-to-back balanced surpluses, budget surpluses in 42 years -- all accomplished while reducing the size of the federal government to its lowest point in 37 years. (Applause.)

Now, it doesn't take long to say that. But what I want to say -- just try to remember that. Because then our Republican friends have a little hill to climb. (Laughter.) Now, they're pretty good at climbing it; they're never in doubt, I've got to give them that. (Laughter.) I like that, the evidence never deters them. I admire that. (Laughter and applause.) But we don't have to win many -- two seats in the Senate, a few more

seats in the House -- to pad your margin.

There is no answer to that -- because we had no support for our economic plan from the other party, and most of them opposed our crime policy. I had to veto two welfare bills before I got one that required able-bodied people to work, but didn't hurt the kids, and put more money into child care.

These are our policies, and they work. Not because of me. I am just grateful I had the chance to serve at this time, to be the instrument of trying to move our country forward and pull our country together. The ideas are important. It doesn't matter how persuasive a person is -- in fact, it can be dangerous if a person is persuasive and the ideas are wrong.

What we have stood for works for America. And you need to memorize -- every Democrat needs to memorize that litany. If this expansion goes on until February, it'll be the longest economic expansion in history, including all the ones with wars. And you just remember that. Lowest unemployment rate in 29 years. Lowest welfare rolls in 30 years. Lowest poverty rates in 20 years. Lowest minority unemployment rates ever recorded, since we've been keeping statistics. Highest homeownership in history. First back-to-back balanced budgets in 42 years. And the lowest crime rate in 30 years.

Just remember those things, because the things they -- all those little things they used to say about us are demolished by that set of statistics.

Then we get to the main event, which is, okay, now we're in this shape, now what are we going to do? What are we going to do?

You know, what I wanted to do in 1992 was to turn the country around and pull the country together. And I should say that we also did a lot of other things. We passed the Brady bill, and it worked, and it didn't do any of the things they said it would do. (Applause.) We passed the family and medical leave bill. Fifteen million people took advantage of it. We raised the minimum wage, and every year there was a new record set for new small businesses started. It worked. It didn't do the bad things that they said it would do. (Applause.) And compared to seven years ago, the air is cleaner, the water is cleaner, the food is safer, and we set aside more land -- protected more land -- than any administration in the history of America except those of Franklin and Theodore Roosevelt. So you can grow the economy and improve the environment.

So we start with that. Now, what are we going to do?

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You know, the election of 2000 ought to be about change. They do all these polls and they say 75 percent of the people want change, and they act like I should be upset. And I said, if they'd polled me, I'd be in the 75 percent, too. (Laughter.) If somebody ran for President, for example, and said, vote for me, I'll do everything Bill Clinton did -- I'd vote against that person. Why? Because this is a country in a constant state of renewal, and because objectively the world we're living in is changing so fast we have to keep moving and moving.

But what I want to say to you is this -- and it's relevant to the state elections and to the national elections: eight years ago in 1991 and 1992, we had to worry about getting this country together again and moving this country forward again. Now, we're headed in the right direction. Sometimes the most dangerous time in life is when things are really rocking along well. (Laughter.) Right? I used to have a rule in politics: you're always most vulnerable when you think you're invulnerable. And it's a good rule in life.

How many times in our own lives have we squandered some great moment -- by relaxing, by getting diverted, by not thinking about the opportunity being presented to us? Every one of you secretly is nodding your head, at least inside your head. (Laughter.) It is human nature.

So when the Republicans come along with this siren song, let us take all the non-Social Security surplus and give it back to you in this huge tax cut, it sounded pretty good. One of the most hopeful things for the future is the way the American people stood with me and our allies in Congress when I vetoed that tax cut bill. They knew better than to do that. It was very hopeful. It was very hopeful. (Applause.) Thank you.

What I hope the next few days of budget negotiations, the next year of work with Congress and the debate in 2000 will be about is the following thing: okay, we've got this chance. It is the chance of a lifetime. Not in my lifetime have we had a chance like this. The economy was maybe close to this good by the terms of that time back in the '60s, but we had to deal with Vietnam and civil rights. We now have a chance to write the future of America and our children in a new millennium. And we better not blow it. And that's what this election ought to be about -- and what are the big issues? (Applause.)

Very briefly, this is what I think the big issues are. Number one, the aging of America. Not only the baby boomers retiring, but all of us living longer. If we get the results I expect from the human genome project, there are young people in this audience whose children will be born with a life expectancy

of nearly 100 years.

Now, what do we know right now? Right now we know that in 30 years there will be twice as many people over 65. And we know that the baby boom generation is bigger than our children. Therefore, since we have the money and the opportunity, we should now -- move now -- to save Social Security, reform Medicare and add a prescription drug benefit now, not later. (Applause.)

The second thing, what do we know about the children of America? We know that education will be more important to them than ever before. We know that they live in a world in which information technology will determine all kinds of options in life. We know that they are the first generation of children bigger than the baby boom and that they are far more diverse racially, ethnically, linguistically and religiously.

So what do we know about that? Well, we know, at an absolute minimum, we have to do more to give them a world-class education. And for me that means finishing the work of putting 100,000 teachers out there for smaller classes -- (applause) -- giving those thousands of modern and new schools, having high standards, and giving schools help to turn around problems, giving kids more after-school programs and the other mentoring programs that they need. But putting the education of these children first, and recognizing it will be different.

Third issue, that I think is a huge issue. What have we learned about the 21st century economy, with all this long run? Can we keep it going? And to me, very important to be faithful to them, can we be honest enough to say that in the most prosperous period of American history there are still millions of our countrymen and women who have been left behind? Because there are people and places that are untouched by this recovery. So is there more that we can do there?

I would argue for two things. Number one, in terms of poverty, we need to continue to do the work that the Vice President has done so well with these empowerment zones and these enterprise communities. I wish you could talk to the people who have been a part of them. He has mobilized thousands of people across America to take their destiny into their hands, to attract investment, to move forward. It is amazing.

But we'll never have every poor community in an empowerment zone. We don't have enough money. That's why it's important for the Congress to adopt this New Markets proposal I have made. All it does is this: it provides some money to help people start things going economically, but it gives investors the same incentives to invest on an Indian reservation, in the Mississippi

Delta, in Appalachia, in a poor inner-city community -- the same incentive to invest in developing markets in America we give them to invest in developing markets in Latin America, in Asia, in Africa and other parts of the world. (Applause.)

And if we can't bring free enterprise to the poorest parts of America now, when will we ever? It's very interesting, we passed this financial modernization bill last night, or at least we reached an agreement. And I was so moved that all the banks were saying, we agree with the President. We don't want to get rid of the Community Reinvestment Act. We think it's an opportunity to invest in poor communities in America, because most of those people are working. They want to work harder. They're capable of having new businesses. They're capable of doing more.

The Democrats ought to be on the forefront. Now is the time to say we can bring opportunity to poor people, and the government doesn't have to do it all. The private sector can do it, and we will make it good business. That ought to be our cause in this election. We've got to go out there and prove that everybody that wants to work, that wants to have a chance to start a business, ought to have the same chance that those of us who've been blessed to be able to come to this dinner tonight have had. I think it is very important. (Applause.)

Finally -- this is something I know Chuck Robb believes, too -- I hope that we will stay on the path that we're on and say we're not going to spend that Social Security surplus, and we're going to hang on to enough money so that over the next 15 years we can pay off \$3.5 trillion of national debt. And in 15 years this country will be out of debt for the first time since 1835, when Andrew Jackson was President of the United States. (Applause.)

Now, why should the Democrats be the party? We're supposed to be the more liberal party -- you've heard it dripped from their lips, our adversaries -- (laughter) -- as if it were a dirty word. Why should the more progressive party be for paying off the debt? Because it's the progressive thing to do. (Applause.) Because it will keep interest rates down. Because it means more businesses and more jobs and higher incomes. Because it means, though the economy will doubtless go up or down in the future, it'll always be better than it otherwise would have been. Because it means that ordinary people will have lower home mortgages, lower car payment rates, lower credit card rates; and they can send their kids to college with lower college loan rates than would otherwise be the case.

Because it means when our friends overseas get in trouble,

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like the Asian countries did in the last two years -- and our economies hurt because they can't buy our things anymore -- they will be able to get out of trouble at lower cost. Every wealthy country in this world ought to get itself out of debt in a global economy, set a good example and give people everywhere a chance to live up to their dreams. And I want the Democrats to lead America away from the wilderness of the 12 years before I came here into a debt-free future. (Applause.)

There are other things that I could say, I don't want to spend a lot of time on. We've got to stay with this environmental issue. We've got to prove you can grow the economy and improve the environment. (Applause.) There is nothing so dangerous for a country to be in the grip of a big idea that is wrong. And most countries still believe -- most dominant influence centers in most countries still believe that you can't get rich in the 21st century unless you get rich the same way America got rich in the first half of this century, which means that you have to use more energy than oil and coal and things that burn, more greenhouse gases and heat the climate of the world and cause all these problems. We've got malaria going to higher and higher places and showing up in odd places around the world. That's just one little example. The thinning of the ice caps. All kinds of other problems.

I am telling you, I have studied this for 22 years. I don't think anybody believes that I'm not pro-growth, pro-business, pro-economic strength. It is no longer true that you have to grow the economy by burning up the atmosphere. It is now possible, technologically, to reduce our emission of greenhouse gases and create more high-wage jobs and a brighter, high-tech future by doing the environmentally responsible thing. It is affordable, it is sensible and we just don't know it yet. So we need to be out there.

And let me just say one other thing -- before I get to the main point I want to make. (Laughter.) I want you to remember this: the aging, the children, the economy, the environment, America and the world. For all the politics around this Comprehensive Test Ban Treaty vote, you should know that there are a lot of people in the other party that really think it's a bad idea. And why do they think it's a bad idea? They say, people can cheat; we don't trust the rest of the world, so why should we sign a test ban treaty?

Well, my answer is, number one, we're not testing now. We're spending \$3.5 billion of your money to keep our nuclear weapons safe and usable without testing. Even they don't think we ought to start testing. So it's easier to cheat now than it would be if the Test Ban Treaty were passed. Why is that?

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Because if somebody tests an underground bomb a good ways away and it's not too big, you may think it's an earthquake. And if it's small but still usable, you may not detect it at all.

But if this treaty passes, we'll have over 300 sensors out there, all over the world in all the right places, dramatically increasing the chances that people can't cheat.

So the truth is it's a visceral, ideological thing. They really believe that what we need is more bombs, more missile defense, a higher wall a bigger bomb; that we should go into that 21st century by ourselves because you can't trust anybody -- never mind the fact that the Cold War is over; never mind the fact that our allies in the Cold War have all signed the Comprehensive Test Ban Treaty; that Britain and France, two nuclear powers without anything like the capacity we have to maintain their nuclear weapons, aren't worried at all.

But you need to understand there is a different view here. A lot of them feel sort of bad about not paying their U.N. dues, but they're not sick about it. I'm sick about it. It's wrong. (Applause.) A lot of them, it doesn't bother at all. Or passing a foreign affairs budget that has no money to fulfill the obligations we solemnly made to the Middle East peace process when we've got a chance to actually get it done; that has no money to continue to get rid of the Russian nuclear weapons; that has no money for America to do its part to help the poorest countries in the world get rid of their debt, something the Pope has asked us to do and every sensible world leader knows would be good for the economy of America, as well as for those poor countries.

So you've got to decide, what do you think our role is? Most Americans, I think, including most Republicans who live outside the beltway, believe that this is an inter-dependent world in which we ought to work with our friends and neighbors and allies and which we're safer and more secure and more prosperous when we have a sense of partnership. (Applause.)

I'll give you two practical examples. All those people in Kosovo were being slaughtered because they were Albanian Muslims. And we went in and stopped them because we had the military power to do it, with our allies. But we're very much in the minority in Kosovo now because other people are carrying the load. That's what partners do.

We raised a lot of Cain about what was happening to those poor people in East Timor. But it's a long way from our backyard. And because we have partners, we're a tiny, tiny portion of the global effort to bring humanity and freedom and

independence to the people of East Timor -- because we work with other people. It's a good deal, folks. And the Democrats need to stand up for responsible internationalism and not isolationism. That ought to be a part of it. (Applause.)

But if I were on my last day in office, if you asked me what the number one thing I would give to America -- if I could give us one last gift of citizenship -- it wouldn't be solving the aging crisis, or the long-term economy, or the environment, or even the problems of the children or our role in the world, even though I care about them. I would find a way for us to really be one America.

If you look at all the problems that I've had to deal with -- from Northern Ireland to the Middle East to the Balkans to the tribal wars in Africa -- this whole world, on the verge of this modern age of explosion in scientific and technological advances, is beset by the most primitive failure of human society. We're still afraid of people that aren't like us -- whether it's because of their race or their ethnicity, or their sexual orientation. We're afraid.

So even America, which has had so much success, has a young man like Matthew Shepard stretched across a fence, or James Byrd dragged to pieces, or a Filipino postal worker murdered in Los Angeles, or a young Korean Christian shot as he came out of his church by a guy who said he belonged to a church that didn't believe in God, but believed in white supremacy. And we're doing better than most places, and we have this.

In one of Hillary's Millennium Evenings, which we've been having at the White House, dealing with the big subjects of the future, we had a man named Vince Cerf, who was one of the founders of the architecture of the Internet -- sent the first e-mail, 18 years ago, to his wife, because she was so profoundly deaf even hearing aids couldn't help her. So he wanted to find a way to talk to her when he was at work. That's how the e-mail came about.

And he was there with a professor named Lander who is a professor of genomics, the study of the whole gene structure. And what they were talking about was the intersection of computers and learning about the genes, and how we couldn't really break down the human gene if it weren't for computers.

And they said a lot of fascinating things, including the fact that it may be that we'll be able to come up with digital, computer-operated program devices, tiny ones, that we'll be able to insert in all defective parts of the human body -- for example, if someone has a spine severed in an accident -- we've

been working on replacing nerves. They now believe they may be able to put digital equipment in the spine that will replicate the nervous system, and allow people to stand up and walk again.

And Mr. Cerf's wife, who was profoundly deaf for 50 years? They found a small digital device was developed, they stuck it way down in her ears, and she heard after 50 years -- and stood up and talked about the experience of hearing, and what it was like to hear the birds for the first time after 50 years, and what it was like to go to a James Taylor concert now. Those of you who are young, that won't be such a big thing -- (laughter) -- but for me it's a big thing.

But here's the thing I wanted to tell you: Lander said, look, there's 100,000 genes and billions of variations. But the truth is that all human beings genetically are 99.9 percent identical. And even more important -- especially here in Northern Virginia, where you have all this diversity. This is the most astonishing thing. He said, if you took any genetic group -- let me just look around the room. Let's say you took 100 Pakistanis and 100 Chinese and 100 Mediterranean Europeans and 100 people from West Africa.

He said, if you took those groups, there would be more genetic differences within the groups, among individuals, than there would be between one group and another. Amazing, huh? You remember that. It gives scientific support for what our values say.

We're a smart country. We nearly always get it right in the end. (Laughter.) Otherwise we wouldn't be around.

But I'm telling you that it is -- the thing that concerns me most is, we're on the verge of all these scientific breakthroughs -- we're going to find out what's in the black holes in the universe; we'll discover billions of other galaxies; we'll revise our notion of time itself -- unless we are dragged down by the oldest human failing: being afraid of people because they're different from us -- which leads to misunderstanding, which leads to hatred, which leads to dehumanization, which leads to violence.

Now, the Democrats are now in a position to say, let's go back to love and justice and concern, expressed in Martin Luther King's and Robert Kennedy's life. And let us do it because you can trust us. You know we can run the economy. You know we can get the crime rate down. You know we can manage the welfare issue. You know we can manage the budget. You can trust us; let's deal with our core problems.

So when the Virginia legislature says, we're for a patients' bill of rights, or we need smaller classes, and we need to do things to educate our children, it is an expression of our common humanity and our mutual responsibilities.

I just want you to walk out of here armed with the information to say, look, this is not an experiment. Our way works. The most important thing is for us to go forward together. Give us a chance, from the bottom to the top.

Thank you, and God bless you. (Applause.)

END

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Friday November 5 2:11 AM ET

Global Warming Could Boost California's Woes

SAN FRANCISCO (Reuters) - Global warming could add to California's weather woes, with rising temperatures threatening to lead to more flooding, landslides, droughts and wildfires, scientists announced Thursday.

A two-year study by the Ecological Society of America and the Union of Concerned Scientists concluded that wetter winters and hotter summers could have a serious impact on California's environment -- and its economy -- within decades.

"A variety of changes are coming, and many will have profound ecological and economic consequences," the report's lead author, Chris Field of the Carnegie Institution, said in a statement. "We should act now, incorporating science as we plan for California's future."

The California study is based on 1995 climate models by a United Nations panel of experts. The California scenario holds, that by 2030-2050, average winter temperatures in the state are likely to rise by between 5-6 degrees Fahrenheit and summer temperatures by between 1-2 degrees Fahrenheit.

The scientists cautioned that the California study's conclusions were preliminary, and many variables could yet change the outcome. But they added one certainty appears to be that the state's relationship with its lifeblood -- water -- will grow more complex.

Winter Rains, Less In Summer

According to the new climate model, greater winter precipitation is likely to hit California, and more of it will fall as rain than snow -- meaning less water stored in the Sierra snowpack and more running off immediately, adding to winter flooding and landslide problems.

The report predicted that flood controls and levees in coastal areas would be increasingly challenged, while the changing water cycle could lead to water

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increasingly challenged, while the changing water cycle could lead to water shortages in the late spring and summer.

Crops that require heavy irrigation -- including grapes, cotton and alfalfa -- could be among the hardest hit during the resulting droughts, the report said, while wildfires could become harder to control.

"There will be too much water at the wrong time and too little when we need it," John Melack from the University of California at Santa Barbara said. "California could see more drenched winters and parched summers."

The report also raised the possibility of stronger El Niño weather patterns, which have whopped California with major storms in the past.

The scientific panel, which also included researchers from Stanford University and the Lawrence Berkeley National Laboratory, recommended limiting fossil fuel emissions as one way to deal with the threat of global warming.

It also called for limiting development of California's remaining open areas in order to allow them time to adapt to the changing climate.

CCC CONF - includes daily reports, audio, and photos on the global warming conference.

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Science Headlines

Friday November 5 2:12 AM ET

Progress But No Deal On Global Warming

By Adam Tanner

BONN, Germany (Reuters) - World governments said they had achieved progress if not dramatic results during talks that concluded in Bonn Thursday designed to cut emissions of "greenhouse" gases blamed for global warming.

As expected, no great breakthrough emerged over two weeks of meetings that close with lower-level consultations Friday. But officials were optimistic a deal could now be struck at the next major conference on global warming in November 2000.

"As expected, this wasn't the time for breakthroughs, but above all there was a very positive mood in the ministerial meetings," Michael Zammit Cutajar, the top United Nations global warming official, told Reuters. "There is a tremendous amount of work to do next year."

The result was akin to building the foundations of a new house with a blueprint for completing the job later on. "We definitely have the frame up and have located where the windows and doors go, and we maybe have some walls built but we definitely don't have a roof and it's definitely not livable yet," top U.S. delegate Frank Loy told Reuters.

Deep Divisions Remain

Under the incomplete 1997 Kyoto agreement, industrial nations must reduce their greenhouse gas emissions by 5.2 percent from 1990 levels by 2008-12. Few nations have actually ratified the agreement however because of its gaps -- which clashing economic interests among nations make difficult to close.

"There is still controversy and not all issues have been decided," said Alexander Bedritsky, Russian delegation head.

Oil-rich Saudi Arabia won few friends at the conference by arguing it

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Earth Negotiations Bulletin

deserved financial compensation because it would probably sell less petroleum under a global warming deal, and many delegates said the Saudis had slowed proceedings.

"This is absolutely not true," said Saudi Mohammad Al Sabban. "If Saudi Arabia was slowing down the talks there would have been no progress. But we cannot leave our issues aside."

Among difficult outstanding issues are possible penalties if nations do not meet their pollution targets. Another is the extent to which nations will be able to pay others to reduce pollution on their behalf.

In Bonn, officials from 173 nations agreed to meet again in the Hague in the Netherlands in November 2000, overcoming resistance from the United States which sought a later date.

They also agreed to meet in two smaller sessions in Bonn before then to work through some of the issues dividing Europe, the United States, OPEC, the developing world and other groups.

Officials could not agree however on a declaration of political will from ministers but settled for a similar statement from the conference itself. They also set up negotiating texts for future talks that offer proposals on different issues.

"I did not say this was a great success but European Union ministers are satisfied," said Satu Hassi, Finland's environment minister representing the EU.

Both the EU and Japan said this week for the first time that they were ready to ratify the Kyoto agreement pledging to lower emissions of greenhouse gases by 2002.

The United States and Russia have both declined to set a deadline, and Russia's Bedritsky said there was little sense for either until they held presidential elections over the next year.

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Speech
by Herr Gerhard Schröder,
Chancellor of the Federal Republic of Germany,
at the opening of the
5th Session of the Conference of the Parties to the
Framework Convention on Climate Change

Bonn, 25 October 1999

Translation of advance text
Embargoed until delivery

Mr President, Excellencies, Ladies and Gentlemen,

I would like to cordially welcome you to the 5th session of the Conference of the Parties to the United Nations Framework Convention on Climate Change here in Bonn, the home of the Convention Secretariat.

This is Bonn's first major climate conference. During the last few months the Convention Secretariat, with the support of the city and many other helpers, has worked non-stop. I would like to thank everyone who has lent a hand to ensure the smooth organization of this conference.

Bonn is Germany's first UN city. It is currently evolving into a centre for environmental and development policy. In addition to the Secretariats of the Framework Convention on Climate Change and the Convention on the Conservation of Migratory Species of Wild Animals, the Secretariat of the Convention to Combat Desertification has now commenced work in the Federal city on the Rhine.

The establishment of these Secretariats in Bonn has created favourable conditions for enhanced cooperation among the various United Nations environmental conventions. A department of the World Health Organization will follow shortly. And Bonn would like to host further UN secretariats.

With the extension and redesign of the former plenary area of the German Bundestag we intend to firmly establish Bonn as a venue for international conferences. In doing so we will also create better working conditions for the Convention Secretariat and an excellent environment for international conferences. The German Government will therefore continue its campaign to bring more United Nations organizations to Bonn.

Ladies and Gentlemen,

In a few days' time, on 9 November, it will be ten years to the day since the Wall was torn down in Germany. The fall of the "Iron Curtain" also marked the ending of the East-West conflict. This global conflict had shaped international politics for more than four decades following the Second World War.

Many people suffered during this conflict. Its ending has raised expectations of an additional peace dividend. For we have been given a chance to pay much closer attention to one of humanity's core tasks for the future: preserving the sources of life.

At the Rio de Janeiro Conference in 1992 the international community has demonstrated its determination to grasp this opportunity and to work together to find solutions to global environmental problems. You will recall that this conference evoked a vision - the vision of sustainable development. For many people around the world Rio was a beacon of hope.

Today we are forced to admit that this vision has not been realized as fast as many had hoped. On the threshold to the next millennium we must ask ourselves: Where do we stand today? What is the state of the global environment?

A look at trends in the global environment confronts us with a hard reality: the loss of forests, desertification, drinking water shortages and, above all, global warming all continue undiminished. These developments affect humanity's vital nerve.

Against this background the question arises: What tangible progress towards worldwide protection of our sources of life have we achieved together since Rio? The latest United Nations Environment Programme report published last month gives a sobering reply: despite continued efforts and initiatives, despite an increase in environmental awareness throughout the world, we have not yet attained our goals.

To be sure, there have been positive developments, e.g. in the protection of the ozone layer. The climate negotiations held during the last few years did achieve a measure of success. What is more, many states have made considerable progress in air quality control and water protection. However, not least due to meteoric population growth, this progress in individual spheres is quickly cancelled out by increasing burdens in other areas.

Ladies and Gentlemen,

In identifying further causes we must turn our attention to the globalization of the world economy. As a result of global markets the economic basis is changing faster than ever before.

On the one hand, integration into world trade and economic cooperation can open up new windows of opportunity, particularly for developing countries. On the other hand, there is a danger that globalization will be accompanied by overexploitation of natural resources and neglect of environmental protection. The fire clearance of forests and overfishing of the seas do not bode well.

However, environmental protection is not a luxury. Only if we safeguard humanity's sources of life can there be viable and lasting economic development. This applies to individual countries just as much as to the world as a whole. Anything else would be a dangerous miscalculation.

This is nowhere more evident than in the warming of the Earth's atmosphere and the greenhouse effect: no other environmental problem poses such a major threat to all of humanity.

And for this very reason we must ask ourselves at the beginning of the 5th session of the Conference of the Parties: What is the current state of climate protection? The international discussion on this issue has been going on for twenty years now. And it can be said that much that was initially regarded as inconceivable has been achieved.

The Framework Convention on Climate Change negotiated in Rio forms the basis under international law for worldwide climate protection. The necessary institutions have been created. In the 1997 Kyoto Protocol, the industrialized countries made their first ever binding commitment under international law to considerably reduce their greenhouse gas emissions. This is undoubtedly a genuine breakthrough.

However, there have also been setbacks: The commitment by the industrialized countries to reduce carbon dioxide emissions to 1990 levels by next year will not be kept by many major countries.

And this affects the core of our international efforts. It must be clear to us all that people all over the world have been following the consultations of the international community with growing interest, particularly since Rio. And they rightly expect that what has been agreed upon in lengthy and difficult negotiations is now actually put into practice. Anyone wishing to remain credible in the debate on climate policy must therefore show the world that they really are making every effort. They must implement at home what they have pledged on the international stage.

Ladies and Gentlemen,

This call goes, of course, also out to my country. The Federal Republic of Germany declared at the First Conference of States Parties in Berlin in April 1995 that it would reduce its CO₂ emissions by 25% down from its 1990 level by the year 2005. This remains an ambitious target. We have already achieved a reduction of 13.2 %.

This success is partly due to structural changes in the new federal states but also to massive investments in improving energy efficiency. The industrial sector and power stations deserve particular mention in this connection. With the measures agreed upon hitherto we will achieve an overall reduction of roughly 17 % by the year 2005.

So much remains to be done. And we all know that, not only in the field of environmental protection, the last part of a journey is often particularly difficult. However, we stand by this ambitious target. And, naturally, we also stand by our commitment within the context of EU burden-sharing.

Ladies and Gentlemen,

That is why my Government has mapped out a course for further progress in climate protection.

Firstly, since April Germany has had an eco-tax raising the cost of energy consumption. The revenue generated is being used to ease the tax burden on labor lost.

Secondly, we have not only launched an ecological tax reform. Last summer we also decided upon the steps to be taken in the next few years. For I believe it is crucial that we use a long-term, gradual increase in energy taxes to send a clear message: it is worth everyone's while saving energy. It pays to invest in increasing energy efficiency.

Thirdly, we will continue along this path. In the middle of next year the German Government intends to present a comprehensive national reduction strategy for greenhouse gases which will follow on from the existing programme and lay down any necessary further measures.

Ladies and gentlemen,

As a result of the particular risks of nuclear energy the German Government has decided to phase out this technology. Naturally, we are being asked how we intend to match this decision with our ambitious climate protection targets.

Firstly, I would like to state clearly that phasing out nuclear energy is not, in my view, our prime task. Rather, our aim must be to introduce an ecologically and economically viable energy supply policy. That is the challenge facing us.

We need an efficiency revolution. I am firmly convinced that an appreciable increase in energy efficiency will be one of the key features of a modern economy. We need modern power stations which combine the highest possible efficiency with the lowest possible levels of pollution. We must make more use of the potential of renewable forms of energy. In Germany, for example, we intend to double the share of renewable forms of energy by the year 2010.

What further concrete options do we have to effectively counter the greenhouse effect?

Firstly, we must do something in our own homes. Particularly in older buildings, far too much energy is still being lost. With the aid of an Energy Savings Ordinance we intend to greatly reduce CO₂ emissions in buildings.

Secondly, in the field of transport the number of vehicles on the road, and thus CO₂ emissions, will continue to increase in the coming years. It is imperative to do more here to ensure that the reduction achieved in harmful emissions, for instance in the industrial sector, is not cancelled out again. Let there be no mistake: I am not talking about restricting mobility. Rather, we need vehicles which use much less fuel than at present. The three-litre car recently presented is a good step forward in this respect. And in freight traffic we need a greater shift from transport by road to rail.

Thirdly, there are also still considerable possibilities for saving energy in private consumption. I am thinking here of economical fridges and lights, energy-saving computers, as well as televisions and audio systems. Whether it is a spectacular technical innovation or a merely gradual one: these are the markets of the future. They not only offer opportunities for protecting our environment but also for preserving and creating modern jobs. Those with political responsibility should therefore remember that anyone trying to slow down climate protection or merely failing to make progress will in just a few years' time be out of touch with one of the most important markets of the next millennium.

Ladies and Gentlemen,

1998 was the warmest year since regular temperature records began more than a hundred years ago. The five hottest years since the 15th century have all been in the 1990s. From the international insurance industry we know that most of the damage which must be replaced today is caused by bad weather: storms, hailstones and floods.

In 1998 Hurricane Mitch left behind a trail of destruction and suffering in Honduras and Nicaragua. Hurricane Floyd in September was the most violent ever. Floods in China, Bangladesh and also in Germany, disastrous forest fires in Indonesia: we have every reason to take seriously these natural phenomena, which are possibly an indication of climate change.

That also means that no-one should be allowed to talk their way out of taking action by pointing out remaining uncertainty among scientists. Those who want to truly live up to their responsibility must act now.

And that brings me back to the tasks which you intend to tackle during the coming two weeks. I gladly recall that Kyoto was a great breakthrough. But it is not enough, of course, to simply leave the congress hall with a pile of papers. Rather, the Kyoto Protocol must enter into force as quickly as possible, by the year 2002 at the latest - i.e. ten years after the Rio Conference.

Furthermore, we need effective controls in order to ensure that the Kyoto arrangements really are implemented. It is therefore essential that we establish as quickly as possible how compliance with reduction commitments is to be monitored. The so-called flexibility mechanisms for implementing the reduction commitments agreed upon in the Kyoto Protocol must also be swiftly clarified.

Emissions trading or joint projects by industrialized and developing countries can be a meaningful addition to, albeit no replacement for, the industrialized countries' national climate protection measures, meaning that efforts in one's own country must be the key to implementing the industrialized states' reduction commitments.

For only if we as industrialized nations take the lead in climate protection can we expect developing countries to gradually limit and where necessary reduce their greenhouse gas emissions. Nevertheless, there can be no doubt that developing countries must also undertake their own efforts in the medium term. Although their per capita emissions are still substantially lower than that of industrialized nations, they will increase considerably in future if they push ahead with economic development without climate-protection measures. On the other hand, developing countries are also being presented with considerable opportunities. The chance to enter into joint climate protection projects with the industrialized countries is likely to accelerate the development of a modern infrastructure.

Ladies and gentlemen,

Whether our children, whether coming generations will recall the Kyoto Protocol with appreciation or disappointment will depend partly on this conference. Only if we see the climate protection process as a chance to achieve lasting environment-friendly development worldwide, only if we succeed in tackling problems together in a spirit of sincere solidarity, only then can we successfully master the great challenges. That is why I appeal to you all to bring these climate negotiations to a successful conclusion. On the threshold to the 21st century send a message from Bonn:

We have taken concerted and resolute action to ensure that this world remains one worth living in for future generations.



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November 4, 1999

Global Greenhouse Gas Emissions Trading: The Market is Moving!

Around the world, markets are responding to the innovative greenhouse gas emissions trading mechanisms of the 1997 Kyoto Protocol on Climate Change.

- Seven recent **transactions**, totaling some **72 million metric tons (MMT)** of carbon dioxide-equivalent emissions reductions and options on future reductions, demonstrate the variety of this new market opportunity.
- Greenhouse gas emissions reduction and trading pilot programs are underway in two of the world's three largest oil **companies**.
- In addition to reducing greenhouse gas emissions, these transactions are providing local environmental benefits to **communities**.
- Nineteen **countries** are examining opportunities for developing domestic emissions trading systems. Legal frameworks to establish early action trading programs are under development, or already adopted, in Australia, Canada, Denmark, Norway, the United Kingdom, and the United States of America.

Recent emissions trading transactions include:

- sales of emissions reductions by *electric utilities that have switched to cleaner fuels*;
- investments in *forest protection and restoration of degraded lands*;
- *innovative technologies* to capture methane from landfills and use it to generate electricity; and
- *incentives for farmers* to grow crops more sustainably and conserve soil carbon.

/ ...more

Companies

More and more companies are testing the emissions trading mechanism. *Royal Dutch Shell and BP-Amoco*, two of the world's three largest oil companies, have already instituted greenhouse gas cap-and-trade systems on a pilot basis. The *BP-Amoco trading system*, under which a number of trades have already occurred, is slated to *be expanded to the entire company* beginning in 2000. Other companies participating in greenhouse gas emissions trading include some of *Canada's and America's largest electric utilities and energy companies*; IGF Insurance Company, America's *fourth largest crop insurer*; as well as *small innovative companies* such as Zahren Alternative Power (USA). The transactions include mechanisms for tracking and reporting greenhouse gas emissions reductions and credit transfers, and for fostering local sustainable development.

Local Communities

Emissions trading transactions are providing direct benefits to local communities. In Latin America, transactions are helping conservationists in *Belize, Bolivia, and Brazil* to protect *wet Amazonian and Atlantic rain forests* and hot, dry Chaco and Cerrado environments, escarpments, grasslands, and spectacular waterfalls. Emissions trading is helping to protect *rich and biologically diverse fauna*, including the South American tapir, capybara, wild cats, giant otter, black caiman, bush dog, giant armadillo, marsh deer, maned wolf, and hundreds of species of resident and migratory birds, including raptors, passerines, and parrots. Some projects include specific components to assist *local communities in sustainable development activities* ranging from *medical clinics* to *eco-tourism* infrastructure. In North America, greenhouse gas emissions trading transactions are providing resources to *farmers* who seek to grow crops using low-till and no-till techniques, and they have resulted in *local air quality improvements* through the donation and retirement of acid rain pollution allowances "swapped" for greenhouse gas emissions reductions.

Countries

A legal framework for greenhouse gas emissions trading was established in Denmark in early 1999, and programs are currently underway to study the possibilities for emissions trading in the fifteen member states of the European Union. A proposal for emissions trading has been formally presented to the government in the United Kingdom; a formal proposal is slated to be presented in Norway later in 1999. Legislation is now pending in the United States to establish a credit-for-early-action program for greenhouse gas emissions reduction and trading. In Canada, national roundtables on credit for early action and on emissions trading are slated to present their findings to the government formally. And emissions trading legal frameworks are under active discussion in Australia at both national and state levels.

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Recent Greenhouse Gas Emissions Transactions

Transaction & Description	Date	Tons CO ₂ *
Niagara Mohawk (USA) to Arizona Public Service (USA). CO ₂ - SO ₂ swap. ¹ Reductions due to fuel switch (gas).	1997	2.27
American Electric Power (USA) et al, The Nature Conservancy (USA), Fundación Amigos de la Naturaleza (FAN), Bolivia. Noel Kempff Mercado Project. Doubled park's size to 3.8 million acres; community development. ²	1998	53.10
Suncor Energy (CDA), The Nature Conservancy (USA), The Programme for Belize. Rio Bravo Project. Expansion of protected area; community development. ³	1998	0.40
Niagara Mohawk (USA) to Suncor Energy (CDA). Sale of 100,000 tons; option on 10 MMT. ⁴ Reductions due to fuel switch (gas), demand side management, other measures.	1999	10.10
Central & South West (USA), The Nature Conservancy (USA), Sociedade de Pesquisa em Vida Selvagem e Educação Ambiental (SPVS), Brazil. Guaraqueçaba Project. Acquisition, restoration, protection and management of 20,000 acres of Atlantic Forest in Paraná State; promotion of sustainable development in the surrounding community. ⁵	1999	1.00
Ontario Power Generation (CDA) and Zahren Alternative Power (USA). Spot transaction; credits from capturing methane from landfills and using it to generate electricity. ⁶	1999	2.50
IGF Insurance Company (USA), Greenhouse Emissions Management Services, Inc. (CDA), farmers in State of Iowa (USA). Options on credits from increases in soil carbon through switching to low-till and no-till agriculture. ⁷	1999	3.30 2.8
Total		72.67 ¹ 72.67*

* In Million Metric Tons (MMT).

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¹ See Voluntary Reporting of Greenhouse Gases 1997 (U.S. Department of Energy, Energy Information Administration, May 1999, DOE/EIA-0608(97)), at 69. Niagara Mohawk, a U.S. electric utility, transferred to Arizona Public Service Company, a U.S. electric utility, 2.27 million metric tons of carbon dioxide emissions reductions achieved by Niagara Mohawk during 1991-1993, and Arizona Public Service Company transferred 20,000 sulfur dioxide allowances, obtained under the U.S. Clean Air Act sulfur dioxide emissions trading program, to Niagara Mohawk. Niagara Mohawk donated the allowances to NGOs which are retiring them so that the emission of acid rain-causing pollution associated with those allowances does not occur. Information available at <www.niagaramohawk.com>.

² Information available at <www.tnc.org>. CO₂ calculated based on 14.5 MMT Carbon X 44/12.

³ Information available at <www.tnc.org> and <www.suncor.ca>.

⁴ Suncor will purchase 100,000 metric tonnes of greenhouse gas emissions from Niagara Mohawk before the year 2000, with an option to buy up to an additional 10 million tonnes of reductions over a 10-year period, starting in the year 2001. The reductions will occur as Niagara Mohawk switches from coal to natural gas, undertakes renewable energy projects and promotes the efficient use of energy by customers. Niagara Mohawk is contractually obligated to reinvest at least 70 per cent of the proceeds to further greenhouse gas reductions. The option depends on government recognition and credit for the emission reductions being transacted. Information available at <www.suncor.ca>.

⁵ Information available at <www.tnc.org>, <www.csw.com/Headline_News/headline_frame.htm>, and from SPVS via email <info@svps.org.br>.

⁶ Information available at <www.directelectricity.com>, and <<http://ens.lycos.com/ens/oct99/1999L-10-29-01.html>>.

⁷ Information available at <<http://www.igfinsurance.com/>>.

11/4/99

INTERNATIONAL HERALD TRIBUNE, THURSDAY,

OPINION/LETTER

America Must Act on Global Warming

By Philip E. Clapp

BONN — The United Nations world climate conference here this week could move the planet one step closer to a possible solution to the threat of global warming, but only if formidable obstacles can be overcome.

Nations must agree on how to monitor compliance with provisions of the final treaty, concur on a system for trading carbon dioxide reduction "credits," and dispel the notion that developing countries are getting a free ride at the expense of the developed world. On all accounts, the United States has been the skunk at the garden party.

A growing isolationist mood in America, typified by

developing countries, although per-capita emissions in those nations will remain a fraction of those in the United States for decades, if not centuries, to come.

Meanwhile, although the European Union has said that at least half of a country's progress in meeting commitments under the Kyoto Protocol should come from domestic reductions, the United States threatens to walk away if it cannot buy unlimited credits overseas. This, of course, would result in no real pollution cutback in America, although it is clear that meeting at least half of such commitments could be done simply by using a little restraint in energy consumption.

It is odd that energy efficiency is anathema to a country ostensibly wedded to the business ethic. The United States uses twice as much energy per unit of gross domestic product as its main trading competitors, Japan and Germany. Yet energy efficiency measures offer long-term cost savings, as well as decreasing dependency on imported oil.

The reduction in global warming pollution is a bonus. Indeed, such domestic strategies have the potential to move the United States at least half way toward its carbon dioxide reduction goal under the Kyoto accord.

The U.S. Department of Energy, for example, estimates that most power plants could achieve a 5 percent increase in efficiency with regular maintenance, better worker training, systematic monitoring, and investments in upgraded design. If the electric utility industry adopted these measures and took advantage of

additional opportunities to increase efficiency, it would produce a 10 percent reduction in carbon dioxide pollution.

Add in a 10 percent improvement in fuel efficiency for cars, a modest increase in the use of alternative-fuel vehicles, and improved fuel economy for air travel, and you get up to 38 percent of reductions agreed to by the United States at Kyoto.

And for an investment of about \$14 per person for additional renewable energy sources and conversion of 10 percent of energy capacity from coal to natural gas, America would reach about half of the reductions it needs under the Kyoto agreement.

Yet the United States insists on meeting its obligation to cut greenhouse gas pollution with unlimited use of "flexibility mechanisms" that would not result in any carbon reductions at home.

Why? Because the Senate — standing in the way of treaty ratification — claims that developing countries, which lack modern transportation, health care, and basic amenities, are somehow gaining an unfair advantage under the Kyoto Treaty, putting the United States at a competitive disadvantage.

There is a way out of this bind. Energy efficiency presents Americans with solutions that are readily available, easy to implement, and inexpensive. A small investment would pay for itself, in energy savings alone, remarkably soon. And by taking away the argument that cutting global warming pollution places undue economic hardship on the United States, there would no longer be a

need to insist on unlimited use of "flexibility mechanisms" that would not result in any carbon reductions at home.

At the moment, the world is on course for an 18 percent increase in carbon dioxide pollution above 1990 levels by the year 2010. The United States ratified the 1992 Rio Treaty, promising to reduce its emissions to 1990 levels by 2000.

Next year, the United States is expected to be 13 percent above that target, and in violation of its international treaty commitments.

If the United States continues to isolate itself from the rest of the world community by insisting on having its way at every juncture, Americans may actually get their wish. One day, they may discover that its posturing has alienated the United States from its allies, angered its trading partners, and jeopardized its leadership role in the world.

So while the United States doggedly pursues its narrow-minded policies, the Earth will experience a temperature rise unsurpassed in the last 10,000 years, threatening economic hardships that far outweigh any short-term gains.

The writer, president of the National Environmental Trust, a nonprofit environmental advocacy organization in Washington, contributed this comment to the International Herald Tribune.

One day, the United States may discover that its posturing has alienated it from its allies and jeopardized its leadership role.

the U.S. Senate's refusal to ratify the Comprehensive Test Ban Treaty and the Clinton administration's resistance to European concerns about bio-engineered food, have spilled into the global warming debate.

Many in the U.S. Senate ignore the long-term American contribution to the buildup of greenhouse gasses, in which less than 5 percent of the world's population produces nearly a quarter of the global warming pollution.

Instead, they focus on the increasing emissions from

In Bonn, officials from 173 nations agreed to meet again in the Hague in the Netherlands in November 2000, overcoming resistance from the United States which sought a later date.

They also agreed to meet in two smaller sessions in Bonn before then to work through some of the issues dividing Europe, the United States, OPEC, the developing world and other groups.

Still, some delegates were disappointed.

"I don't see any progress myself," said Sudanese delegate Fadlalla Elkhidir Elsayem. "We are still far from being well-prepared (for a final deal)."

Officials are expected to issue a declaration of political will to move forward on a global warming deal, although in essence past agreements such as the Kyoto accord were also declarations of political will.

"We're not done yet but again I think we have at least met and perhaps surpassed the expectations coming into this conference," said President Clinton's climate change adviser, Roger Ballentine. "We're very encouraged...but there's a lot of work to be done."

A lot of the most difficult issues remain unresolved.

One involves the penalties payable if nations do not meet their pollution targets. Another is the extent to which nations will be able to pay others to reduce pollution on their behalf.

The United States, the world's leading polluter, has different approaches to these issues compared to many others, so hammering out a deal may yet prove difficult.

At the conference both the European Union and Japan said for the first time that they were ready to ratify the Kyoto agreement pledging to lower emissions of greenhouse gases by 2002. The United States has declined to set a deadline, however.

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- [Informal Talks To Begin In Global Warming Summit](#) (November 3)
- [Ministers Trade Blame At Global Warming Meet](#) (November 2)

November 3, 1999.

- [Earth Negotiations Bulletin - FCCC COP-5](#) - includes daily reports, audio, and photos on the global warming conference.
- [Surviving the Greenhouse](#) - section on global warming from MSNBC.
- [Are People Really Causing Climate Change?](#) - from Sovereignty International.
- [Global Warming: Understanding the Forecast](#) - award-winning exhibition on the greenhouse effect developed by EDF and the American Museum of Natural History.

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A bull market in hot air

At the launch of the 1997 Kyoto Protocol, Al Gore, the US vice-president, extolled "the magic of markets" as an instrument for tackling climate change. Across the world, this vision is being put to the test.

In the last month, Canadian energy companies have struck two large deals in which they paid others to fulfil their commitment to cut greenhouse gas emissions. In one transaction, they paid Iowa farmers to refrain from tilling their farmland, so retaining carbon dioxide in the soil.

In Australia, the Sydney Futures Exchange has joined forces with State Forests of New South Wales to launch the world's first exchange-traded market for "carbon sequestration" credits. Buyers will be able to offset carbon emissions with credits generated by planting forests to absorb carbon dioxide.

Meanwhile, in the UK, industry leaders last week announced plans to introduce a UK-wide emissions trading scheme by April 2001. Businesses will be able to choose whether to meet emission reduction targets through their own efforts, or by buying surplus permits from elsewhere.

"I think what we are seeing is a convergence of capital and environmental markets," says Richard Sandor, a former senior Chicago Board of Trade official who now runs the specialist Environmental Financial Products company. He describes current schemes as "unlike anything before".

But the future is uncertain. Trading in emissions permits may be doomed unless countries can agree on the rules of the game. Although the Kyoto Protocol sketched out provisions for trading, there is little agreement over how an international trading scheme will work.

This week, differences have

Trading of rights to produce greenhouse gases is being held back by political doubts, writes **Vanessa Houlder**

emerged again at the latest United Nations summit on the Kyoto Protocol in Bonn. Emissions trading puts the US at loggerheads with the EU, and causes tension between developing countries and the industrialised world. Unless these problems can be resolved by the next summit, which takes place in a year, the Kyoto Protocol could fall apart.

One contentious issue is whether there should be limits on trading. This idea is forcefully promoted by the EU, which wants countries to achieve half their Kyoto targets through domestic measures to cut energy consumption and stimulate technological innovation.

The US is implacably opposed to the imposition of constraints on the use of emissions trading. "Limiting this ability would only make reducing greenhouse gases more expensive for everyone, with no gain to the environment," said Mark Hambley, the US special negotiator on climate change last week.

The US cites its successful use of emissions trading to cut sulphur dioxide emissions that cause acid rain. Emissions have been reduced by 30 per cent more than required, and it claims the cost of reductions was under half the level anticipated. The effectiveness of trading is endorsed by a recent study by the OECD. It calculates that without emissions trading the impact of the Kyoto targets on the OECD countries is comparable to doubling or tripling the price of oil from its 1995 level. Trading could cut costs by a third.

There is a snag. Part of the apparent gains from unfettered trading would come from higher overall emissions than would otherwise be the case. This is

because much of the trading would probably involve Russia and the Ukraine. The contraction in the industrial base of the countries is expected to reduce their emissions to well below the level required under the Kyoto Protocol by 2010. This will put them in a position to sell spare credits – known as "hot air" – and allow others to raise emissions.

Russia's potential windfall is expected to be worth \$2bn a year by 2010, and several developing countries would like to fix emissions targets at similarly undemanding levels. This appals some industrialised countries, particularly in Europe, which argue that it could undermine the effect of Kyoto Protocol.

'Australian buyers will be able to offset carbon emissions with credits from planting forests'

The disagreement between diplomats at the UN talks contrasts with the enthusiasm of the private sector in wanting to get schemes going. The private sector is "filling the vacuum", according to Frank Joshua, head of greenhouse gas emissions trading at the United Nations Conference on Trade and Development (Unctad).

The market pioneers have varying motives. Exchanges and brokers are promoting deals because they are keen to take a leading role in the development of what could become a huge new market. According to the Electric

Power Research Institute, the total value of carbon dioxide permits could be worth \$13,000bn by 2050. The opportunities for trading permits and their derivatives could be immense.

For companies, the deals are partly designed to influence governments. By demonstrating the effectiveness of emissions trading, they hope to fend off the prospect of new regulations or taxes. They are also want to hedge future liabilities that could emerge when they are forced to cut emissions. "Not only does a global market for greenhouse gas emissions appear likely, but the potential rewards for smart players in the field are enormous," says Natsource, a New York-based over-the-counter broker of energy derivatives.

Examples include the decision by BP Amoco, which has been experimenting with trading between some of its subsidiaries, to expand the scheme across the group next year. In another initiative, the European Association of Electricity Producers and Distributors and the International Energy Authority organised an internet simulation of greenhouse emissions trading.

National and international bodies are also getting involved. In Japan, the Ministry of International Trade and Industry has set up a company to monitor emissions trading. The European Commission has proposed developing an internal trading system for greenhouse gas emissions that could be launched in 2005.

Meanwhile, Unctad has helped launch the International Emissions Trading Association, which held its first meeting last week. This association's members include the Australian Stock Exchange, the International

Petroleum Exchange, Lloyd's Register, Shell, BP Amoco, Statoil and Tokyo Electric Power. It is exploring ideas on how to create the global emissions market that the Kyoto Protocol implies should start by 2008.

There are many issues to be resolved before the goal can be achieved. In order to ensure a thriving market, the trading system would have to allow company-level emission permits to be traded internationally. Arguments over what counts as an emissions reduction must also be resolved. This means reaching a scientific consensus on the value of locking up carbon in trees, crops and soils.

Crucial issues of compliance and verification also have to be sorted out. On the face of it, the issues that need to be resolved are overwhelming. Most companies and countries will be reluctant to invest time and effort in emissions trading unless there are clearer signals about the shape that the market will take.

Yet there are signs that the fledgling emissions trading schemes being set up by pioneering countries and companies could take on a life of their own. Unctad is exploring the idea of setting up a network of bilateral agreements between interested countries that have emissions trading programmes. "It is developing in parallel with the Kyoto Protocol," says Mr Joshua of Unctad. "We need a multi-national agreement. But this is a step along the way."

Even the most ardent advocates of emissions trading acknowledge it can only be a partial answer to the problems of climate change. But by opening up markets, encouraging innovation and harnessing competition, it may do something to reduce the world's greenhouse gases.

*Additional reporting by
Nikki Tait and Edward Alden*

Several papers report that Poland is outraged at Otto Graf Lambsdorff's statement on Polish forced laborers. Lambsdorff said that Polish forced farm laborers should not receive compensation payments because Polish seasonal workers have always worked in Germany since the beginning of the century. Polish media are now accusing Lambsdorff of ignorance and arrogance.'

The chief legal officer of Deutsche Bank, Klaus Kohler, told the Bundestag Interior Committee that German companies are unwilling to pay more than the promised DM four billion to forced laborers. However, committee members expressed their conviction that industry will increase its offer. They also criticized the fact that the share of industry in the compensation fund is smaller than the contribution of the state since industry can enjoy tax advantages (Tagesspiegel).

In a letter to Foreign Minister Fischer, CSU leader Michael Glos called upon Fischer to prevent the controversial Wehrmacht exhibition from being shown in New York if the flaws in the exhibition are not eliminated. Glos added that the exhibition could otherwise result in creating prejudices and negative images in the United States (Die Welt).

CLIMATE CONFERENCE

Handelsblatt carries the interview that the paper conducted with U.S. Under Secretary for Global Affairs Frank E. Loy, under the headline: U.S. Backs Common Standards Regarding Trade With Emission Rights." In the first paragraph, which introduces the interview, the interviewer writes that, according to Frank Loy, the United States also wants to sign the Kyoto Protocol as soon as possible but in order to achieve this goal, tough efforts are still necessary. Loy stressed that the mechanisms of the Protocol need to be improved.

Joachim Wille writes a lengthy article in Frankfurter Rundschau on the climate conference and focuses in his report on the appearance of former Environment Minister and current UNDP Chief Klaus Toepfer at the conference in Bonn. In his final column, Wille quotes Toepfer, who indirectly criticized the United States when he said that there is a large country that only looks at the costs which climate protection produces, and he added: Maybe, the people in this country will also soon realize what it will cost if it does not pursue a climate protection [policy].'

Berliner Morgenpost carries a dpa report according to which we cannot expect a breakthrough at the climate conference in Bonn. The report stresses that it is mainly the United States that does not want to agree on a firm schedule for the reduction of carbon dioxide emissions. The report also says that the delegates agreed to have two more conferences in Bonn that are to prepare the next conference of signatories in The Hague.

In another factual news report, Frankfurter Rundschau also writes that the delegates in Bonn agreed to stage two other conferences that are to prepare the upcoming conference in The Hague. In the report, the paper also writes that Argentina was the first country outside the club of industrialized countries that announced in Bonn a ten percent reduction of its greenhouse gas emissions between 2008 and 2012.

GERMAN FOCUS

Chancellor Gerhard Schroeder said during his first state visit to China that he

Russia Hopes to Sell Its Spare CO2 Emission Credits

By GUY CHAZAN

Special to THE WALL STREET JOURNAL EUROPE

As delegates from 150 countries gather in Bonn this week to discuss guidelines on how to tackle greenhouse-gas-related global warming, Russia will be lobbying hard for a system that would allow it to earn millions of dollars by effectively selling hot air — surplus paper permits in carbon dioxide emissions.

Officials in Moscow hope that selling its spare CO2 emission credits on the open market could give Russia a unique chance to glean some financial benefit from the economic disaster of the reform years, and turn its industrial slowdown into a marketable asset.

The idea of emissions trading emerged from the Kyoto Protocol of December 1997, a global-warming reduction pact that called for emissions of carbon dioxide and other greenhouse gases to be cut below 1990 levels by 2012.

Some countries, such as the U.S., were obliged to make substantial reductions. Others, like Russia, simply had to maintain their emissions at 1990 levels. But the post-Soviet economic decline means Russia is now producing 40% fewer greenhouse gases than it was in 1990. Kyoto gave it the right to bank, or even sell, its surplus carbon allowance to other countries with higher pollution targets. Russia, which despite its economic turmoil is still the world's third-biggest emitter of greenhouse gases, now looks set to become the largest provider of these permits — and consequently the main beneficiary of the trade in emissions. "We reckon we could trade one to 3.5 billion tons of carbon dioxide in the first treaty compliance period (2008-2012)," says Vladimir Berdin of the Russian State Committee on Environmental Protection. "And we would like to start forward trading in our quotas from the year 2001."

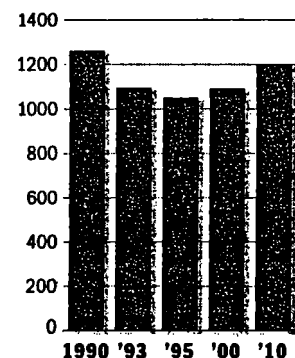
Potential Windfall

Russia could charge as much as \$20 (€18.76) for one ton of CO2, according to the Fuel and Energy Ministry's Institute for Energy Strategy. If the country succeeds in selling, say, two billion tons, that could bring in \$40 billion — twice the amount it has so far received in financial aid from the International Monetary Fund. The trade represents a potential windfall for the Russian economy.

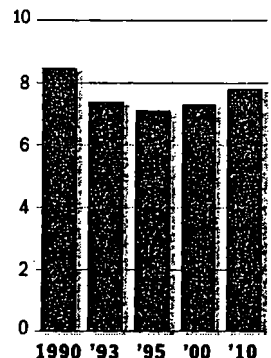
Powerless Power

Russia's low demand, consumption and emissions may mean money

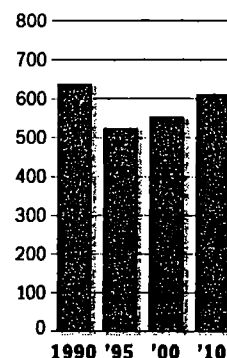
Maximum Energy Demands
Total, million metric tons
of coal equivalent



Maximum Consumption
Per capita, in metric tons
of coal equivalent



Maximum CO2 Emission
Estimates, in millions
of metric tons



Sources: UNFCCC - the United Nations Framework Convention on Climate Change

But European countries have dismissed the idea of emissions trading as "hot air," claiming it could undermine the spirit of the Kyoto Protocol. Russia, they say, will flood the market with its surplus allowances, which could be scooped up at knockdown prices by polluters in the U.S. who would no longer have an incentive to reduce their own emissions. The European Union says the trade should be capped — a move the U.S. says could jeopardize the whole Kyoto accord.

However, Kyoto allows for another, less controversial method of shifting emission-cutting burdens. Under a system known as Joint Implementation or JI, industrialized countries can earn pollution credits by investing in programs aimed at helping other countries — such as Russia — cut their greenhouse-gas emissions. This raises the prospect of a massive influx of foreign money to modernize Russia's antiquated plant — a potential bonanza for a country starved of capital investment in industry. "Russia could save up to 400 million tons of fuel a year by improving energy efficiency," says Oleg Pluzhnikov of Russia's Fuel and Energy Ministry. "But to do this we desperately need to modernize equipment. JI projects would give us the means to do this."

There's certainly room for improvement. In 1990, Russia was the second most energy-intensive economy in the world, using more energy per unit of output than any other country, except neighboring Ukraine. Its energy consumption per GDP is five times higher than Sweden, with a similar climate. That means that basic, relatively inexpensive measures to improve efficiency, using existing technology that has been available in the West for years, could have a major impact.

"We calculate that it costs \$10 to \$20 to reduce emissions of carbon dioxide by one ton in Russia, whereas in the U.S. it costs \$60 to \$70 per ton," says Inna Gritsevich, a researcher at the Russian Centre for Energy Efficiency. "So it makes much more economic sense for western companies to invest in clean-air technology here than at home."

Some collaborative ventures are already under way. A project by the Russian natural-gas monopoly RAO Gazprom and Germany's Ruhrgas AG, which used a software-based solution to reduce the working time of gas pumps, led to significant energy savings. The Japanese trading house Sumitomo Corp. has been working with the Russian electrical utility United Energy

Systems to improve energy efficiency at 16 Russian power stations. It's hoped all the resulting cuts in CO2 emissions will be offset against Japan's obligations under Kyoto. But the problem is that credits from JI projects can only accrue from 2008 onward, when the first Kyoto compliance period begins. Russia says that would reduce any incentive for foreign investors to become active in Russia before 2008; and so it's now pressing for early action to get the system up and running.

Too Much Uncertainty

"We're proposing an experimental pilot project, where Russia would be allowed to sell up to 100 million tons of CO2 emissions in futures trading, starting in 2001," says Mr. Berdin of the State Committee on Environmental Protection. "We need to get on with building this market as soon as possible."

Mr. Berdin says European objections could be met by stipulating that all proceeds from the sale of carbon credits would go toward Russia's own emission-reduction projects.

Critics say carbon trading is so hedged with uncertainty that foreign investors would be foolish to commit themselves at such an early stage.

"There's still no agreement on how to inventory or monitor the greenhouse-gas emissions," says Mr. Pluzhnikov of the Fuel and Energy Ministry. "It's unclear who can insure investors against risk; and then there's the danger that the Kyoto Protocol itself won't be ratified."

Kyoto only becomes legally binding once 55 countries ratify it; so far only 14 have done so. Observers say the U.S. Congress is unlikely to endorse an accord that some say would place an excessive economic burden on domestic industry.

Others have pointed out that if Russia sells its entire surplus of greenhouse gases, it would then risk getting stuck in a state of permanent economic depression, unable to boost industrial production for fear of exceeding its pollution targets. Already, a miniboom in domestic manufacturing occasioned by last year's ruble devaluation has led to a marked rise in energy consumption, throwing into doubt some of the projected emissions.

Wall Street Journal
October 27, 1999

By Nancy Dunne in Washington

Environmentalists and Democrats in the US are expected to push hard to make global warming a big issue in next year's political contests.

Their efforts will be bolstered by decisions this week at international climate change talks in Bonn, at which delegates agreed to conclude by November 2000.

McCain, a leading Republican presidential candidate, has called for further scientific studies, but maintains "serious concerns about the Kyoto treaty because it fails to include the co-operation of countries such as China."

The Kyoto Protocol agreed two years ago in Japan commits industrialised nations to reducing carbon emissions below 1990 levels. Carbon emissions are believed

by most scientists to have a greenhouse effect that is heating up the earth's atmosphere and contributing to severe weather.

Ironically, the potency of global warming as a US election issue grows out of lost US clout in Bonn. Washington pushed hard for a delay on final negotiations but was outvoted.

Senator John Kerry, a Massachusetts Democrat,

predicted that reaching the new millennium would prompt voters to focus on larger themes.

"There isn't a part of the country where people aren't aware of changes in the weather because of the weather patterns," he said. "It is my judgment you will begin to see a lot of congressional races with the issue on the table."

Phil Clapp, president of

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NYT 11/5/99

CORRESPONDENT'S REPORT

Altered Itineraries As the World Heats Up

By WILLIAM K. STEVENS

IT probably isn't necessary to cancel or change vacation plans just yet, but global warming — if it develops as forecast — promises in time to revise travelers' lists of preferred destinations.

A warmer, more pleasant England, for instance, might replace an extremely hot Greece as a summer vacation spot of choice. Beachgoers, skiers, scuba divers, autumn leaf-peepers, anglers and just plain sightseers all may have to find new places to go, and some of today's prized destinations may wither as new ones blossom.

Or so says a recent study conducted for the World Wildlife Fund by the Climatic Research Unit of the University of East Anglia in England.

The average annual surface temperature of the globe has already risen by about 1 degree or a little more over the last century; in many parts of the Northern Hemisphere, the warming has been much greater.

Computer models of the atmosphere forecast a further rise of 2 to 6 degrees over the next century, with a best estimate of about 3.5 degrees, if industry and motor vehicles continue to spew heat-trapping carbon dioxide into the air at today's rates. By comparison, the world is 5 to 9 degrees warmer now

over the next century. And while the study was geared toward Britons, it has relevance for Americans, as well.

Some of the findings:

- Rising seas and a subsequent increase in beach erosion could eliminate many beaches and even submerge large parts of some popular islands, like the Maldives. Florida could be particularly vulnerable to beach erosion, the study said. Some Caribbean islands could be similarly affected, said David Viner, a co-author of the study.

- Higher temperatures could kill coral ecosystems, eliminating scuba-diving meccas from the Caribbean to the Maldives.

- Ski resorts at lower elevations, like those at Garmisch in Germany and Kitzbühel in Austria, might suffer from less snow, causing skiers to crowd higher-elevation resorts. Similar shifts could take place in North America.

- Rising temperatures could encourage the spread of malaria from North Africa to southern Spain.

- Hotter summers in the eastern Mediterranean, where the number of days with temperatures higher than 100 degrees would increase, may discourage summer visits to Greece and Turkey. But summer weather in England should become warmer and more reliable, encouraging many Britons to stay home and attracting more foreign visitors.

In many tourist areas, the study said, warmer temperatures might stimulate disease outbreaks, more forest fires and more air pollution.

A warming climate, Mr. Viner said, could shift the range of some sport fish; in the United States, anglers pursuing these fish make major contributions to local economies. Trout and salmon, for instance, are cold-water fish, and previous studies have shown that their habitat and range could be substantially reduced as streams warm up. On the other hand, the range of warm-water species like bass could expand.

Studies have also suggested that in New England, trees with relatively dull fall colors, like oaks and hickories, could eventually move up from the Middle Atlantic and replace the brilliant maples that draw crowds of foliage admirers every autumn.

How soon might these consequences be felt? Assuming the forecasts are reasonably accurate, it depends largely on whether climate change proceeds smoothly or in abrupt temperature jumps.

One example of how global warming might be a mixed blessing: In Alaska, where substantial warming has already taken place, the tourist season has been lengthened. But if it gets warm enough, the thawing of Alaska could eliminate many of the subarctic charms that make it so attractive.

Skiers, maple trees and salmon are among those that won't like it hot.

than in the depths of the last ice age 18,000 to 20,000 years ago.

Some regions would warm more, some less, and some may actually cool. But in any region where the average annual temperature rises, climate experts say, high summer temperatures are expected to become even higher. In general, climatic zones would shift northward in the Northern Hemisphere, southward in the Southern, and from lower to higher altitudes globally. And everywhere, the sea level would rise — by about 20 inches globally over the century, according to best estimates — with potentially grave consequences for beach resorts.

Projections of this sort are inherently chancy, but they are all that scientists have to go on. So the climate experts at East Anglia used computer models to look at the possible effect of global warming on 10 of the world's favorite tourist destinations

11/5/99 FT

WSJ

11/5-6/99

Heavy Weather in Bonn

Some prominent Europeans have complained to us recently about what they see as the "isolationist" attitudes of the Republicans who control the U.S. Senate. We don't buy that characterization for a minute. Major U.S. free trade initiatives of the last six years, for example, have had more backing from Republicans in the Congress than from Democrats and would not have been approved otherwise.

That doesn't address objections that the Republican Senate has been hostile to a recent string of proposed United Nations treaties. But even there, we venture an alternative hypothesis—that the checks and balances enshrined in the U.S. Constitution are currently saving the rest of the world from its own worst impulses.

The U.S. Senate has no official veto, of course, over what other countries want to do. But everybody knows major international initiatives like the Comprehensive Test Ban Treaty, the treaty establishing a permanent international criminal tribunal, and the Kyoto Protocol on global warming, are pretty much dead letters without American participation.

These thoughts are spurred by the seeming irrelevance of the U.N. meeting on climate change currently taking place in Bonn. In terms of the number of countries and delegates participating, and in terms of the scope of the conference's ambition—drastic reductions in global energy use—it's just as big an event as the Rio and Kyoto conferences that preceded it. But it hasn't received even a tenth of the media attention. And we suspect that has something to do with the fact that its recommendations have barely a snowball's chance in a greenhouse hell of ever being implemented.

Not so long ago, of course, global warming was the *crise celebre*. Everybody who knew anything knew that drastic action was needed to curb climate change. U.S. Vice President Al Gore even once wrote grandly when

he was a senator, "We must make the rescue of the environment the central organizing principle for civilization." Wow!

But then serious scientists swung into action and began to examine some of the U.N. claims. The most sensitive measuring systems couldn't detect any warming of the earth's atmosphere in the second half of this century. The computer models used to predict future warming were ridiculously simplistic. And the costs of stabilizing atmospheric carbon dioxide levels, if it could be done at all, were, if you'll forgive us, stratospheric.

Sensible Americans started to realize that the best insurance policy is keeping the world rich enough in economic terms to adapt to any changes they might encounter in the future. Even if Mr. Gore manages to be elected president next year, and the Democrats capture the Senate, America is not likely to support a global economic suicide pact.

There are some who claim carbon dioxide targets can be painlessly achieved by using energy more "efficiently." But that scenario rests on the dubious premise that greedy capitalists who will do everything else to make a buck are carelessly wasting money on energy use.

So here's our prediction for the future of the Kyoto debate. The global climate change industry—activists, ministers and bureaucrats—will go on as usual, jetting around the world to conferences lamenting the fact that politicians are too short-sighted to do anything "for the children." But even European governments, for whom "austerity" means redistributing only 50% of the national wealth, will realize that the costs of "doing something" are prohibitive. Naturally, of course, they'll publicly blame the U.S. for their inaction. But privately, we suspect, there will be a few sighs of relief in European capitals. Saved again from another dumb treaty.

Possible U.S. Missile Shield Alarms Europe

Allies Fear Arms Race, Diminished Security Ties

By WILLIAM DROZDIK
Washington Post Foreign Service

BERLIN, Nov. 5—The American campaign to develop a protective shield against ballistic nuclear missiles is provoking serious alarm among the European allies, who fear that it could weaken the political and military links between the United States and Europe and trigger a dangerous arms race with Russia and China.

Faced with growing support in the Republican-controlled Congress and the Clinton administration for a revival of plans to build a national missile defense, European governments have stepped up their warnings that such a system could destroy the concept of shared risk that for decades has been the foundation of NATO security doctrine.

The sharpening debate over missile defenses follows the almost universal condemnation of the Senate's rejection of the comprehensive nuclear test ban treaty. It has fortified a perception among foreign governments that the United States is exploiting its global military and economic clout to lock in strategic superiority that would make it immune to future challenges from the rest of the world.

The symbolism behind U.S. intentions to change the 1972 Anti-Ballistic Missile Treaty so that it may build a missile shield has not been lost on foreign leaders, who have seized on the issue to warn the United States about the dangers of retreating into a fortress mentality.

"There is no doubt that this would lead to

See ALLIANCE, A22, Col. 1

A22 SATURDAY, NOVEMBER 6, 1999

WORLD NEWS

Arms Shield Ideas Worry Europe

ALLIANCE, From A1

split security standards within the NATO alliance," said German Foreign Minister Joschka Fischer during a trip to Washington this week. "I see lots of problems developing in this respect, which we must discuss calmly and reasonably with our American friends."

Fischer said Germany's commitment to be nonnuclear "was always based on our trust that the United States would protect our interests, that the United States, as the leading nuclear power, would guarantee some sort of order." A drive by the United States to build its own missile defense, he said, would erode that confidence by effectively putting European cities at greater risk of nuclear missile attack than those in America.

Even British Prime Minister Tony Blair, who is probably Clinton's closest ally among world leaders, is said to harbor serious reservations about U.S. plans for ballistic missile defense. Britain's support would be critical because of the need for the United States to upgrade its tracking stations there in order to shoot down missiles before they strike North America.

On other international issues as well, Europeans are dismayed by what they see as a U.S. penchant for unilateralism. At a conference in Bonn this week to discuss the global warming crisis, where the United States and Europe differed over how to meet limits on greenhouse gas emissions, U.S. delegation chief Frank Loy said a persistent theme concerned the refusal

by the United States to play by the same rules as other nations.

"You could feel a lot of the resentment among the other delegations," Loy said. "There was no direct connection between the nuclear test ban vote and the global warming issue, but there was plenty of anger about what others see as the arrogance of a superpower that cannot or will not be held to account for its behavior."

In a sharp attack on American foreign policies, French President Jacques Chirac on Thursday lamented "isolationist tendencies" in Congress that prompted the "perplexing decision" to vote down the nuclear test ban treaty. He and other foreign leaders have repeatedly deplored the U.S. refusal to pay nearly \$2 billion in past dues to the United Nations and to assume greater environmental responsibility, as the world's biggest polluter, for the global warming crisis.

There is some sympathy abroad for the fact that the Clinton administration shared the views of allied governments on those issues but found its wishes thwarted by a Republican-led Congress. On the matter of ballistic missile defense, however, the European allies are profoundly troubled by the support it has found among Democrats as well as Republicans.

Walter Slocombe, the undersecretary of defense, said today that President Clinton would decide "next summer at the earliest" whether to order the deployment of a limited national missile defense. By then, Clinton hopes to persuade Moscow to modify the

ABM treaty, but the Russians have firmly rejected that request and insist any unilateral abrogation by the United States will provoke a new arms race.

Slocombe said that while the administration would prefer to preserve the ABM treaty, it will not let Russian objections stand in the way of a missile defense system, if the United States determines it is in its national security interest to build one. "If they persist absolutely in that position, then the United States . . . will have to face a very difficult question, which is whether to withdraw from the treaty," Slocombe said in remarks at the Center for Strategic and International Studies in Washington.

Besides the risk of further antagonizing the Russians, European governments are worried about the United States and China heading for a new confrontation over ballistic missile defenses in Asia. During a recent state visit to France, Chinese President Jiang Zemin and Chirac discussed their worries about a sea-based American missile defense system that would protect Taiwan and Japan.

The United States has sought to reassure its allies that a missile defense system will not be deployed unless it can meet four criteria: the technology must be proven to work effectively; the costs must be reasonable; the threat must be significant; and the system must demonstrably improve security. But so far, the European allies have not been impressed with those arguments and remain fearful that the United States may not be thinking through the consequences for the

rest of the world.

"This issue could end up driving a stake through the heart of the alliance," said a senior European diplomat at NATO headquarters in Brussels. "First there is the danger that it will cause the Russians and the Chinese to ratchet up the arms race by finding ways to beat missile defenses. But there is also the fear that if the system works, American and European security interests will no longer be bound by exposure to the same threats."

During the days of the Soviet Union, the alliance's strategic doctrine held that the United States would be willing to share the same exposure to nuclear attacks by placing its own cities at risk in the defense of the European allies. But if the United States develops a missile shield on its own, it would no longer be subject to the same constraints. In the view of the allies, such a dramatic change in the U.S. strategic environment would soon lead Washington to abandon its commitments under NATO's nuclear doctrine.

The allies also fear that, once endowed with a missile shield, the United States would be tempted to protect its superior posture by launching preemptive nuclear strikes against any perceived challenge, from "rogue states" such as North Korea or Iran, or from terrorist groups, for example—with or without the consent of the allies.

"We already went through this debate during the 1980s with Ronald Reagan and the idea of a 'Star Wars' anti-missile system," said a senior NATO official. "We learned how dangerous and divisive it can be when you tamper with the ABM treaty, and that is one thing that has not changed since the end of the Cold War."