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WHITE HOUSE:

"Growing Scientific Consensus"

Washington Post
10/25/99
A 14

By Roger Ballentine and
Frank E. Loy

(Ballentine is Deputy Assistant to the President for Environmental Initiatives and White House Climate Change Coordinator. Loy is Undersecretary of State for Global Affairs and head of the U.S. delegation to this week's climate meetings in Bonn, Germany.)

A few weeks ago, more than 300 mayors and local officials—from Baltimore to St. Louis to Seattle—took a pledge. They committed themselves, and their cities, to the fight against global warming. Two weeks earlier, DuPont pledged to dramatically reduce its greenhouse gas emissions, joining Motorola, Dow, IBM, BP Amoco and other leading corporations taking real action on climate change. From city council chambers to corporate boardrooms, America is mobilizing against global warming—the greatest environmental challenge of the Twenty-first Century.

That is the message U.S. representatives will take to Germany this week when 160 nations gather for this year's round of international climate negotiations. Our objective in Bonn will be to ensure that the international community continues to make strong progress in elaborating a system that fights global warming in an intelligent way and at a cost that is reasonable, with strong efforts by developed and developing countries alike.

No More Business As Usual

The Bonn conference takes place against the backdrop of a broad and growing scientific consensus that human activities have started to affect the global climate. New studies of Northern Hemisphere temperatures show that the Twentieth Century has been the warmest in the past 1,000 years, that the 1990s have been the warmest decade in that period, and that 1998 was the single warmest year ever recorded (breaking the old mark set just a year earlier).

Continuing on a "business as usual" course will lead to further warming in the next century—as much as 6.5 degrees Fahrenheit, according to leading scientists. The recent drought in the eastern United States, and the torrential rains and flooding that followed, offer a too-exciting preview of the kind of extreme weather this warming could bring.

To help protect future generations from these grave risks, the United States is moving aggressively to reduce its greenhouse gas emissions. Last year, President Clinton and Vice President Gore secured over $1 billion towards accelerating the deployment of Twenty-first Century clean energy technologies.

So far this year, President Clinton has signed two new

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WHITE HOUSE:

"Growing Scientific Consensus"

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executive orders to address global warming. One will dramatically reduce the federal government's energy use, saving taxpayers $750 million a year. The second aims to support the growth of the U.S. bioenergy industry, which makes fuels and products from crops and agricultural wastes, creating new income for farmers and cutting greenhouse gas emissions by up to 100 million tons.

Our Agenda in Bonn

In Bonn, we want to work with other nations to shape a solution to the challenge of climate change—one that promotes economic growth and sustainable development around the globe. Two years ago in Kyoto, Japan, nations put in place the architecture of an international strategy to address the challenge of climate change. The United States is fully committed to completing the work begun in Kyoto, where more than 160 countries agreed under the Kyoto Protocol to take action to mitigate climate change. At the Bonn meeting and in the months ahead, we look forward to addressing the critical issues of cost and developing country participation so that the treaty can be ratified. But much remains to be done.

On cost, the United States will continue to insist that nations must be free to make full use of the Kyoto Protocol's flexible, market-based mechanisms, such as emissions trading. Limiting this ability (as some nations have proposed) would only make reducing greenhouse gases more expensive for everyone, with no gain to the environment. Similarly, nations must be allowed to receive credit for appropriate forestry and land-use practices that sequester greenhouse gases. These activities reduce the cost of mitigating climate change, and create valuable opportunities for American farmers.

The United States also will continue to insist that a global challenge like climate change be met with a global solution. We fully support efforts by developing countries to grow their economies. We also firmly believe that countries can pursue this goal without repeating the wasteful and polluting mistakes of the past century. We applaud nations, such as Argentina, that have announced their intent to voluntarily adopt emissions targets. And we are committed to creating sustainable development opportunities through Kyoto's Clean Development Mechanism, which gives industrialized countries an incentive to undertake clean energy projects in developing countries) and through other economic, technical and financial partnerships.

Steady, Solid Progress Needed

Bonn will not be a place for dramatic breakthroughs on these issues. But we do hope to achieve the kind of steady, solid progress that is necessary to keep the Kyoto process on track. If we fail to move forward—both in Bonn and beyond—we risk missing an important opportunity to protect our climate for generations to come.

Whatever the outcome in Bonn, we must continue stepping up our efforts at home as well. Even as local leaders, major corporations and ordinary citizens join the fight against global warming, naysayers in Congress are trying to block the way. Ignoring the mounting evidence of climate change, they want to slash funding for clean energy programs and load up budget bills with special-interest "riders" that aim to strangle common-sense efforts to reduce greenhouse gas pollution.

As the people of America, and the nations of the world, commit themselves to meeting the most profound environmental challenge ever, the U.S. Congress must not doom these efforts. There is too much at stake. ■

Washington Post
10/25/99 | A 14

ENVIRONMENTALISTS:
"The Risk of Doing Nothing"

By Deb Callahan, President
League of Conservation Voters

The 2000 elections offer voters a timely opportunity to bridge the gap between the American public and elected officials regarding global warming.

In the 1980s, the environmental community rallied support to address the first major global climate issue, stratospheric ozone depletion. The campaign caught the public's attention in part, because people could conceptualize a hole in the atmosphere's protective ozone layer and recognize its threat to their health.

Global warming is a tougher issue for people to grasp. Logic would seem to dictate that an incremental warming of the planet would result in incremental damage. Yet, science tells us that the earth was merely a few degrees cooler during the last ice age. Therefore, on a global scale every degree counts.

Lawmakers Out of Touch

With the overwhelming support of the scientific community, an increasing number of Americans are recognizing the threats of living on a hotter planet and are unwilling to take the risk of doing nothing. The public is learning the enormous human and economic costs associated with increased droughts, heat waves, floods and hurricanes. At the same time, however, U.S. legislators are falling for the do-nothing rhetoric of industry-funded lobbyists, and are stonewalling efforts to cut global warming gases.

Recently, governmental efforts to curb greenhouse gas emissions, which trap heat in the earth's atmosphere and slowly warm the planet, have all but drawn to a halt. Much of the delay can be directly linked to controversies surrounding the Kyoto Protocol. The Clinton administration has yet to send the treaty to the Senate for ratification because the Senate has clearly stated that it will not accept the Protocol until developing nations, such as China and India, are required to participate in emission reductions.

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ENVIRONMENTALISTS:
"The Risk of Doing Nothing"

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In the meantime, Congress also has impeded attempts by the Clinton administration to reduce greenhouse gas emissions regardless of the treaty. Appropriations measures this year have abandoned the White House's request for increased funds to combat global warming, and have included controversial language that could be used to hamstring existing programs to reduce greenhouse gas emissions. With Congress holding back ratification, and in the absence of a grand Clinton administration strategy to push climate change measures through Congress, the fate of the Kyoto Protocol is likely to be decided by the next administration.

Deb Callahan
League of Conservation Voters

A delay in international climate negotiations could also place the future of the treaty directly in the hands of the next President. During climate talks in Bonn, Germany, this past June, the Clinton administration proposed delaying the completion of the Kyoto Protocol until 2001—after the U.S. elections. Postponing the talks would force the next administration to deal with various compliance issues that are the main obstacles to U.S. ratification of the treaty.

2000 Elections Will Determine U.S. Policy

With so much at stake, the 2000 elections will be pivotal in determining the course of U.S. climate change policy. The Senate may be more [illegible] than the current one to ratify the Kyoto Protocol. Furthermore, the next President will assume the voice of the United States on climate change issues in the global community.

Our nation is home to less than 5 percent of the world's population, yet we generate more than 25 percent of the world's greenhouse gases. As the only superpower and the wealthiest nation in the world, we have a practical and moral responsibility to lead the world in reductions.

Industry lobbying groups, which already have spent more than $13 million over the last two years to discredit the treaty, are expected to continue making specious arguments about the science behind global warming and fueling fears that implementing the treaty will wreak havoc on the U.S. economy. While there will always be skeptics of global warming, we must not let the tyranny of a vocal minority frame the debate.

Regardless of who wins, the 2000 elections will provide voters with an important opportunity to set the course of U.S. climate change policy and elevate environmental issues in the national and international arena. By letting our voices be heard at the ballot box, we can elect officials who will see past industry's blatant attempts to distort the facts and delay the treaty, and be brave enough to lead on this issue of global importance. ■

Americans Support Strong Action On Warming

by Mark Mellman and Margie Omero

(Mellman and Omero are President and Vice President respectively, of The Mellman Group, a Democratic polling firm based in Washington, D.C.)

Washington Post
10/28/98
A16

Americans believe global warming is a real and serious threat that is happening now. As a result, there is a broad consensus in favor of action to reduce emissions of carbon dioxide that cause global warming, even in the absence of scientific consensus. Voters reject the dire predictions of economic dislocation stemming from reductions in emissions, arguing instead that "solution industries" will grow up in the place of those that are hurt, providing a benefit to the economy.

Nearly six in ten Americans (57 percent) believe global warming is happening now, while another quarter (26 percent) believe it will happen in the future. Only 8 percent are convinced that global warming is not a real phenomenon and will not happen at all

Global warming is not just seen as real, but also as a serious threat. Nearly three-quarters (70 percent) believe it is a serious problem, while fewer than a quarter believe it is not serious. In focus groups, participants point to temperature increases, extreme weather, melting glaciers, skin cancer and wildlife destruction as evidence of the severity of its impact. They also associate global warming with a host of other environmental concerns, ranging from air pollution to rain forest destruction.

While Americans have decided for themselves that global warming is a real and serious problem, they are not sure a scientific consensus exists, although they do not much care. Forty-three percent believe there is scientific agreement on the reality of global warming, whereas 39 percent say scientists disagree about this issue. But awareness of scientific disagreement does little to dissuade Americans from a commitment to action to reduce the emissions that cause global warming. Two-thirds (66 percent) believe we should act now, while only 27 percent believe we should wait until there is scientific agreement. Even those voters who believe there is scientific disagreement do not want to wait for scientists to come together before taking action (58 percent say take action now, 25 percent say wait for scientific agreement)

What's Behind the Desire for Action?

Two lines of reasoning dictate voters' desire for action. First, people reason that we cannot wait for scientists to agree. The problem is serious, the impacts consequential and, in the public view, waiting only makes it worse. Second, voters compare the individuals and organizations that deny global warming to tobacco company scientists who denied the link between smoking and cancer. Those who deny global warming are seen as tools of polluting industries who subvert their objectivity to venal considerations. The public demand for action is strong and cuts across traditional political and demographic lines. Three-quarters (75 percent) of American voters want the U.S. to take action to reduce emissions of carbon dioxide that cause global warming and 88 percent believe that taking such actions is "important."

While late-night comics and industry apologists may attempt to trivialize the problem, the American public has reached agreement on its reality and its seriousness. The desire for action shows up in strong support for the Kyoto Protocol and other measures to reduce emissions. Nearly 8 in 10 American voters (79 percent) support the agreement to reduce emissions; only 14 percent oppose the treaty. This strong support cuts across party lines, with Republicans favoring the Kyoto Protocol by 73 percent to 11 percent, Democrats by 84 percent to 3 percent, and Independents by 79 percent to 7 percent.

Rejecting the Arguments of Treaty Opponents

Opponents of the treaty have focused their rhetoric on two issues: the economic consequences and participation by developing countries. Americans reject both of these arguments against Kyoto. Only 21 percent say implementation of the treaty will hurt the economy, while 38 percent think it will actually improve the economy, and 24 percent see no impact.

A second objection concerns the participation of developing countries. But voters believe in the notion of American leadership and believe we should take action "regardless of what others do." Hence, two-thirds (66 percent) believe the United States should restrict carbon dioxide emissions regardless of what any other country does. Another 14 percent believe we should take action if other industrial nations do. Only 11 percent say our actions should be dependent on participation by developing countries.

There is overwhelming support for proposals designed to reduce emissions. Eighty-six percent of Americans favor requiring higher fuel efficiency and cleaner engines in new cars. Eighty-two percent support requiring utility companies to offer clean energy such as solar and nuclear power. In short, a consensus has emerged about the reality and seriousness of global warming. On this issue the public seems far ahead of the politicians, some of whom continue to scoff. There is a public demand for America to act—unilaterally if necessary. Ignoring that demand will only lower the repute of our political system in the eyes of the public. ■

METHODOLOGY

The data described in this article come from a series of four national polls and over a dozen focus groups on global warming conducted by The Mellman Group, Inc. This research was conducted in 1997 and 1998 for the World Wildlife Fund, the National Environmental Trust and the Environmental Defense Fund

Issue Forum

VIEW FROM CAPITOL HILL: Kyoto Is Not the Answer

By Senator Frank H. Murkowski
from Alaska
Senate Energy and
Natural Resources Committee

There are many scientific uncertainties surrounding the possibility of climate change resulting from human-induced greenhouse gas emissions, but its potential threat is a credible risk we must responsibly address. However the Kyoto climate treaty--often offered as the "cure" for climate change—is actually bitter medicine that would weaken our economy and undermine the sustained, long-term effort that could help stabilize greenhouse gas concentrations and protect the global environment.

Even the treaty's most ardent supporters admit that Kyoto will not stabilize atmospheric greenhouse gas concentrations or result in any measurable difference in the climate. Any emissions reductions achieved by the United States and the 38 other nations subject to Kyoto's limits would be quickly overwhelmed by the explosive growth in emissions from China, India, South Korea, Mexico and the other 130 or so developing nations that are not legally bound by limits in the treaty.

At the same time, the Kyoto treaty would harm the U.S. economy. It would require us to reduce energy use as much as 40 percent below the levels otherwise expected in the year 2010. The Energy Information Administration, an independent arm of the U.S. Department of Energy, predicts that Kyoto could cause gasoline prices to rise by 53 percent and electricity prices by 86 percent over the next decade.

In other words, the Kyoto treaty will impose economic pain without environmental gain. Therefore, it is unlikely to ever be ratified by the Senate.

Administration Actions Spur Congressional Distrust

This should not come as any surprise to the Clinton-Gore Administration. The Senate has always been forthright with respect to its concerns about Kyoto, even passing a unanimous resolution of advice urging the President not to sign such a treaty. The Senate has constitutional responsibilities of advice and consent. President Clinton ignored the Senate's advice—so he cannot realistically expect the Senate's consent.

Meanwhile, the Administration's efforts to push this flawed treaty while exploring ways to implement it without Senate ratification has engendered real distrust in Congress and poisoned the discussion that could lead to real solutions. What might those solutions be? Technology, applied globally, over the long term, is a good place to start. I have been joined by 17 of my colleagues in sponsoring bipartisan legislation that would put long-term technology development—rather than unrealistic international regulatory mandates—at the heart of our efforts to stabilize greenhouse gas concentrations.

The supporters of this measure, the Energy and Climate Policy Act (S. 882), understand that efforts to stabilize greenhouse gas concentrations must be undertaken globally, over the long term. The chemical nature of greenhouse gases, the physical nature of the climate system, the nature of economic growth and other factors make this a marathon effort rather than a sprint.

The time limits in the Kyoto Protocol, on the other hand, are artificial, politically derived, short-term deadlines. They bear no relation to what is best for economic growth or the environment. Moreover, the Kyoto Protocol, in subjecting only some nations to emissions limits, makes distinctions between emissions from different nations. The atmosphere makes no such distinction. This potential problem is global in scope. The solutions we encourage must be global as well.

Realistic Solutions Needed

We must also adopt a new realism about our energy options. Unfortunately, many in the Clinton-Gore Administration and most environmental groups are not advancing realistic solutions. Like all of us, they want to advance low-emission power generation and transportation systems, but they oppose the proven, emissions-free sources of energy that are already making the largest contribution to emissions reductions.

For instance, they oppose emissions-free nuclear energy, which produces 20 percent of our electricity. They oppose emissions-free hydropower, which produces about 11 percent of our electricity. They only seem to support non-hydro renewable energy, which currently produces about 2 percent of our electricity. While there is potential for growth in this area, we would have to completely cover a number of southern states with solar panels, blanket hillsides with windmills, and put a great deal of arable land into the production of biomass if we were to actually do what environmental groups say they want us to do. Ironically, that would not be good for the environment, either.

No single technology or policy prescription can stabilize greenhouse gas concentrations. There is no silver bullet. If we expect to achieve success, we must leverage the power of technology and the marketplace. We will have to expand existing emissions-free technology, including nuclear and hydropower, as well as solar, wind and biomass. We will have to make nuclear and hydro relicensing easier and solve the nuclear waste issue, which is really a political problem rather than a technical one. We will have to promote new technology to trap and store greenhouse gas emissions from the atmosphere. We will have to assist developing nations with clean coal technology and other energy efficiency improvements.

Finally, we will have to remove existing regulatory barriers to voluntary reductions. The Environmental Protection Agency, through its "new source review" regulations, actually acts as a barrier to the use of new technology. If you want to modify a plant to make it more energy efficient, the EPA makes it difficult. This makes no sense.

Unfortunately, the Kyoto treaty, and the belief that the Clinton-Gore administration is taking steps to implement the treaty in the absence of Senate ratification, is hindering what might otherwise constitute bipartisan cooperation in the areas listed above. This has led many observers to conclude that we will not make progress on the climate issue until this treaty is formally declared dead. From that perspective, perhaps we should hasten that day. ■

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

USA: October 22, 1999

WASHINGTON - A U.S. official yesterday 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

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.

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Taking the Cha ne slar ds Back to Nature

Environment: Sheep, whose grazing kills native plants and allows erosion, have been removed. Next, officials plan to eradicate feral pigs on Santa Cruz, but the task is daunting.

By GARY POLAKOVIC
TIMES STAFF WRITER

SANTA CRUZ ISLAND—Naturalist John Muir called sheep "hooved locusts," and standing on the rocky spine of the El Montanon ridge it's easy to see why.

On one side of a rusted wire fence, where sheep herds were allowed to freely roam, the slopes are so denuded by grazing that they look as if they were shaved by a giant razor. Sloughed sandstone spills into gorges that bleed milky silt into the green sea and kelp forests.

On the side of the fence protected from sheep since 1985 flourishes a vibrant mosaic of coastal sage scrub, chaparral and dense clumps of oak woodlands.

This scene of devastation and renewal testifies both to the severity of the damage caused by nonnative plants and animals introduced by humans to the islands, and to the ability of the land to recover after the threat is removed.

After decades of damage, the last of the great sheep herds that roamed Southern California's islands were removed this year. The last animal, an old, toothless ewe hiding in a cave near Mt. High on Santa Cruz, was captured Sept. 8, culminating two years of roundups that netted 9,267 animals and cost $2 million, said officials at Channel Islands National Park.

It marks a major milestone on the path to restoring native flora and fauna to the landscape that greeted Juan Rodriguez Cabrillo when he discovered the Channel Islands in the 16th century.

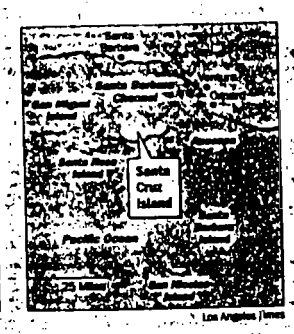
"For the first time in about 150 years, we have cleared all the islands of sheep, and that is the first major step you have to take before you can move forward to restore the islands to a natural condition," said Gary E. Davis, senior scientist at the park.

Moreover, it signals a new future for the islands. Whereas vineyards, livestock ranches and orchards once sustained most of the eight offshore isles, today they are largely given over to campers and kayakers, tour boats and fishermen.

"We used to value the islands for commodity production and now we're in a new era of restoration and environmental protection of natural plants and removal of animals that are out there causing lots of destruction," said Kate Faulkner, chief of natural resources for the park.

But more work remains to be done to restore the islands. With sheep gone, feral pigs will multiply rapidly and wreak more havoc on Santa Cruz, just off the Ventura County coast. The National Park Service, which manages the five northernmost islands, and the Nature Conservancy are contemplating an all-out assault, including use of rifle squads, herbicide-dropping aircraft and fire, to annihilate pigs and their protective thickets of fennel, a nonnative plant that forms dense, eight-foot-tall groves on the island.

"This is the last big roundup," park Supt. Tim Setnicka said.



Fennel from Southern Europe is among island invaders. Below, Kate Faulkner of the National Park Service stands amid a fennel grove.

But even though the end is in sight, controversy dogs restoration plans as animal activists question the benefits and morality of killing one species to preserve another.

To the casual visitor, a trip to the islands some 25 miles offshore and worlds removed from the buzz of big cities is like being transported back a century in time to the California that once was. There are few visitors, fewer roads and just a handful of buildings. Upon closer inspection, it is an environment shattered by human-induced change that began in the early 19th century when ranches flourished.

Overgrazing, particularly by sheep, devastated the islands. At their population peak in 1890, about 100,000 sheep roamed over 96-square-mile Santa Cruz Island. Like woolly lawn mowers, sheep cleared virtually all native shrubbery and exposed soil. In some places, Davis said, six feet of topsoil has been blown out to sea or washed down ravines. With so much vegetation stripped away, Santa Cruz Island receives about half as much precipitation as it once did because there aren't enough plants to capture mist and fog, Davis said.

"You walk around that country and there's not a blade of grass left on that land. They ate everything," said wrangler Ralph Lauston, who rounded up the sheep, as he tilted his cowboy hat toward the cliffs where the last herd was removed.

The same thing happened on a smaller scale on other islands. So many sheep grazed on tiny San Miguel Island that it became a virtual desert by the 1930s.

"Islands have unique plants and animals that are not accustomed to grazing animals. Some plants have lost thorns and chemical defenses, making them more vulnerable to grazing. There are no predators and the islands have rudimentary food chains, which makes them more vulnerable to disruption," said Peter Schuyler, director of ecological restoration for the Santa Catalina Island Conservancy.

Other nonnative species exact a toll. Deer and elk, imported from the mainland for sport hunting on Santa Rosa Island, are thrashing chaparral and are scheduled to be removed by 2012.

Bald eagles once inhabited the islands, but they died out because of DDT and were supplanted by nonnative golden eagles, which were lured from the mainland by an abundant supply of pigs. But the eagles also acquired a taste for island foxes, the largest natural land predator and a protected species on the Channel Islands, and are hunting them to extinction. To restore a natural order, scientists are evicting golden eagles, bringing back bald eagles and trying to salvage the few remaining foxes.

The biological cleansing extends to European hares eradicated from Santa Barbara Island, burros driven from San Miguel Island, horses and goats evicted from Santa Cruz Island and wild pigs eradicated from Santa Rosa Island. Rats, which probably reached Anacapa and San Miguel islands as stowaways aboard boats, are targeted for destruction, Faulkner said. Farther south, goats, pigs and feral cats are being removed from Santa Catalina and San Clemente islands.

Legions of alien species have taken advantage of the ecological turmoil. Sage, coreopsis and tree poppies have declined, while star thistles, European grasses and fennel flourish, Davis said.

Fennel, an invader brought to the United States from Southern Europe, has colonized 6% of Santa Cruz Island, crowding out chaparral and coastal sage scrub that sustain native wildlife and affording impenetrable cover for pigs.

Of all the remaining animals on Santa Cruz Island, none are as troublesome as wild pigs. Between 4,000 and 6,000 roam the island, darting across roads cut like tunnels through thick stands of fennel.

With bulbous snouts tilling the ground to a depth of up to two feet, they churn and trample Chumash Indian artifacts, oak seedlings and bracken ferns. As a result, archeological treasures—some of the oldest human settlements in North America are on the northern Channel Islands—have been lost. Century-old oak groves on the island are slowly disappearing because pigs eat acorns like candy, munch seedlings and ravage roots and soil supporting mature trees, Faulkner said.

The National Park Service is contemplating an all-out assault to eradicate pigs and fennel from the island. A similar effort was successful at Santa Rosa Island.

Dispatching pigs will take at least two years and cost several million dollars. The Park Service, working with the Nature Conservancy, will conduct the campaign. A draft removal plan will be completed by May.

The pigs cannot be relocated to the mainland because they carry a type of rabies that threatens other animals, said Kathy Jenks, director of the Ventura County Department of Animal Control.

But restoration efforts at the Channel Islands are often controversial. Many of the animals targeted for removal have advocates on the mainland.

For example, the Santa Barbara-based Foundation for Horses and Other Animals unsuccessfully sued the National Park Service last year to block removal of 16 horses from Santa Cruz Island. Public outcry in June forced the Navy to stop shooting island foxes to save an imperiled songbird at San Clemente Island.

"We understand their desire to return the island to a pristine state before man arrived, but we don't agree with their methods," said Stephanie Boyles, wildlife biologist with People for the Ethical Treatment of Animals. "What they're going to do [with pigs] is pretty cruel and absolutely unnecessary. These animals have been here hundreds of years . . . man abandoned them and they made their way as best they could and now we're going to kill them in a pretty hideous way because they got so good at surviving."

But the National Park Service insists it is not its job to run game preserves or farms.

"They are attempting to manage the islands in perpetuity as a natural system. People don't always recognize that," said Paul Collins, biologist at the Santa Barbara County Museum of Natural History.

Removing livestock is costly, too. The National Park Service spent about $220 per animal to remove sheep from the eastern portion of Santa Cruz and ship them to their owners on the mainland.

As grazing animals are cleared out, native plants and animals have demonstrated amazing resilience. On San Miguel Island, stripped bare by sheep and burros until the 1940s, knee-high native shrubs cover most of the island. It is a slow and difficult recovery aided by park officials planting seedlings.

"The islands have shown a tremendous capacity for natural recovery," Faulkner said. "[It] is pretty awesome."

Los Angeles Times
10/25/99 A 13

Urban sprawl a sign that American Dream is alive and well

On [illegible], the Sierra Club released a study, "Solving Sprawl," ranking the states on their efforts in fighting urban sprawl. Jack Darin, director of the organization's Illinois chapter, summed up the group's views by warning that "sprawl will continue to devour many of our state's natural areas" until we take action.

Urban sprawl, however, is the best evidence of the American Dream. Single-family homeownership is being achieved by more and more people. Sprawl is both evidence of and an engine of prosperity. Government planners hate it when people are able to plan for themselves.

According to Steven Hayward, senior fellow at the Pacific Research Institute in San Francisco, developed land accounts for less than 5 percent of the total land area in the United States. Since World War II, the amount set aside for wildlife, wilderness conservation and national parks has grown twice as fast as urban areas, with the total amount of land set aside for these purposes now three times as large as urban areas.

Which car pollutes most, the one whizzing along a suburban highway or the one in the bumper-to-bumper urban congestion? According to U.S. Census data, walkable, transit-rich New York City has an average work-to-home commute of 36 minutes, vs. 22 minutes for the average American city. Sprawling, low-density Phoenix and Albuquerque, N.M., have lower-than-average commute times.

As for our vanishing farmland, the amount of farmland is not declining significantly and the rate is actually lower than in the 1960s and 1970s. It is influenced more by commodity prices and agricultural pr[illegible]ivity than development and nobody seems to be starving.

The U.S. Geological Survey reports that the amount of land developed each year is a staggering 0.0006 percent of the continental United States.

Enervated city centers are due primarily to the failure of urban renewal programs led by city planners who would literally bulldoze entire neighborhoods in the mistaken belief that they knew better than Joe Sixpack where and how to live, shop, play and send his kids to school. They didn't and people fled the cities in search of better schools, lower crime and quieter neighborhoods.

Our Founding Fathers had another name for urban sprawl —freedom.

DANIEL JOHN SOBIESKI
Chicago

Washington Times 10/25/99 A22

MWD Tapped Out on Excuses

There may be peace on the Colorado River at last. If so, 16 million Southern Californians can continue to rely on the Metropolitan Water District for adequate supplies for the next 75 years. The agreement approved last week by Metropolitan, the Imperial Irrigation District and Coachella Valley Irrigation District was called historic. It will be, if it sticks.

These agencies have agreed in the past only to have the deals founder when they were put down in legal and technical language. They must not allow that to happen again. The future of California water depends on it. The focus is particularly acute on Metropolitan because of a rare tongue-lashing the agency received from Gov. Gray Davis.

The plan is for California to reduce its use of Colorado River water to its legal allocation of 4.4 million [illegible] have incurred the anger of other Colorado River Basin states and federal [illegible] managers by taking as much as 5.2 million acre-feet in recent years.

The pact is particularly important because it clears the way for San Diego to buy up to 200,000 acre-feet of water a year from Imperial in a pioneering farm-to-city water deal of the sort that will allow the state to meet its future growth needs. Metropolitan, the primary Southern California urban distributor, is a linchpin in the trade since San Diego needs to use the agency's aqueduct to get the water to its taps. For two years, Metropolitan insisted that it supported the Imperial-San Diego [illegible] to block it.

Davis threatened to impose his own solution to the 60-year Colorado allocation dispute if these negotiations failed—a chilling prospect for Metropolitan. As the talks were concluding, Davis told Times columnist George Skelton that the MWD "needs to be put out of its misery. . . . [illegible] the most [illegible] organization on the planet Earth." Metropolitan also has been under attack from critics in the Legislature who contend the agency is out of control.

Coincidentally, the MWD hired four high-powered outside consultants—including two former congressmen and the state Democratic Party chairman—to communicate the district's [illegible] that the MWD is pursuing a go-it-alone strategy that is at odds with other [illegible] federal and state officials.

The MWD said one goal of the new consultants is to "bring old perceptions about the district in line with current reality." The advisors might also benefit the MWD by telling the agency when the current reality is not in the best interests of California's water destiny and its own customers.

A major test will be the ability of Metropolitan to maintain a good faith commitment to both the Colorado River agreement and the Imperial-San Diego trade. That would be a major step forward for all of California.

Los Angeles Times [illegible]

Wall Street Journal 10/25/99

A 53

Anti-Biotech Luddites Sow Fear

Your Oct. 7 article "Food Fright" makes the claim that there is little independent research that supports the idea that gene technology not only does not hurt people, but has the potential to enhance their health. And your Oct. 12 article, "Group Sows Seeds of Revolt," reports on American activists' efforts to start a scare campaign in the U.S. on biotech foods similar to campaigns in Europe.

The fact is, there has been a great deal of independent research over the past decade demonstrating the safety and benefits of biotechnology. Its application to medicine is well accepted. For example, insulin is produced by bacteria engineered to produce this hormone, which used to be extracted from pigs.

Agricultural biotechnology offers similar promise, and the House Subcommittee on Basic Research has heard from leading scientists on exciting developments. For example, new rice strains to combat iron and vitamin-A deficiencies, afflictions that affect 3.7 billion people world-wide, and edible plant vaccines to against enteric diseases, among the leading causes of infant mortality in the developing world, are in development.

Essentially all of our foods have been derived from traditional hybridization involving the crossing of thousands of genes whose functions are largely unknown. Today, scientists are developing the knowledge and techniques to produce plant varieties with a precision unheard of a generation ago. Not only are these techniques more precise, but because much more is known about the genetic traits introduced into the plant, they can be safer. This was one of the conclusions of a 1996 report by 11 scientific societies.

An important fact that has been lost in the debate over agricultural technologies is that traditional cross-breeding is genetic modification. Yet for some reason, plants developed using this method - which we eat every day - are dubbed "Frankenfoods" by anti-technology activists. The reason? As Dr. Norman Borlaug, Nobel Prize-winning agronomist and father of the Green revolution, said in a recent interview, "It's political. It's not scientific."

Rep. Nick Smith (R., Mich.)
Chairman
Subcommittee on Basic Research

* * *

In the Oct. 12 article, your portrayal of activist leaders at their Adirondack mountain retreat was fascinating: Fat-cat executives from 12 countries, lounging on pillows, sipping wine while plotting the destruction of a technology that can help feed and nurture starving peoples around the world. It sounds like a diabolical movie script, and you hit these phonies with the floodlights.

These are no idealists devoted to a cause. These are opportunists who see a ripe new field for their products - public angst and consumer fear. We have seen plenty of them in Europe, where no one now trusts regulators, professional scientists, knowledge-based decision-making processes, expertise or rational risk assessment, and everyday we expect the sky to fall. Thanks to them and their campaign against biotechnology, our farmers will be set back a decade. Worse than that, they have exported their paranoia to Third World countries, denying subsistence farmers the same insect and fungus protection that commercially competitive farmers in the U.S. enjoy, simply by planting a seed. Now the activist brain trust has set its sights on North America. New technology has brought back the good old days for these Luddite propagandists.

Prof. T. Michael A. Wilson
Chief Executive
Horticulture Research International
Wellesbourne, U.K.

* * *

To Mr. Kilman's question as to whether U.S. shoppers will demand biotech-free foods ("Food Fright," Oct. 7), our response is that we are already doing so. American consumers have been writing food companies, including Nestle, the world's largest, asking that they remove genetically engineered ingredients from their U.S. products, as Nestle's European divisions have pledged to do. If the companies keep biotech ingredients, we are asking that they provide labels identifying them. As more companies follow the lead of ADM, which has told its grain suppliers to start segregating genetically engineered from non-engineered crops, processors will be able to source biotech-free ingredients more easily.

Mindy Pennybacker
Editor, The Green Guide
Mothers & Others For a Livable Planet
New York

* * *

American consumers should be appalled at the thought of the consortium of anti-biotech activists declaring [illegible] called "genetically modified organisms." These "activists" assume they know what is best for all of us, and would limit our choices, as well as those of plant breeders and farmers world-wide with no rational, scientific basis for their actions.

As the article notes, "there is little evidence now that genetically modified crops are even hazardous," and that even the activists "concede that any real risks to people are unknown." But lack of evidence is not halting the anti-biotech propaganda. Activists ignore the truth that man has been genetically modifying crops - albeit in relatively crude, hit-or-miss ways - for thousands of years. But the truth seems to have little bearing on their activities.

Ruth Kava, Ph.D.
Director of Nutrition
American Council on Science and Health
New York

* * *

Genetically modified (GM) products are no less safe than traditional counterparts. These have been subjected to hundreds of tests on safety, toxicity, allergenicity, nutritional value and other important traits by companies and by independent academic researchers. The consensus is that they are not substantially different from the products that they were derived from. No company that has invested billions of dollars in the development of these products would accept anything less. A case in point is the decision by Pioneer Hi-Bred International to stop pursuing the development of soybeans with a protein gene from the Brazil nut because of allergenicity concerns.

The furor over GM products in Europe is driven by sensationalism and [illegible] tics, and by trade protectionist motives. It has nothing to do with food safety or risk. The irrational decision of food companies to stop using GM ingredients is also not based on science but a sheepish reaction to protect their market from the consumer perception manipulated by opponents of the technology.

C.S. Prakash
Director
Center for Plant Biotechnology Research
Tuskegee University
Tuskegee, Ala.

Delaware: Wilmington — A small power plant fueled with poultry waste would require subsidies of up to $6 million, according to a report for the Coalition of Northeast Governors. The group commissioned the fuel feasibility study amid rising pressure for controls on use of poultry waste as a fertilizer.

D.C.: Mayor Tony Williams has ordered a probe into security at District of Columbia General Hospital. This comes after District jail inmate James Nero, 41, escaped with an officer's gun after being taken to the hospital complaining of chest pains. Police shot Nero in the leg and shoulder during the chase. Nero has been charged with assault with the intent to kill.

Florida: Fort Pierce — Water tests showed beaches in Martin, St. Lucie and Indian River counties are safe again, several days after a 7 million-gallon raw sewage spill into the Indian River. Friday's tests indicate people can resume their usual activities, said Bob Washam, Martin County's environmental health director.

Georgia: Eatonton — Putnam County officials say they'll file a lawsuit to avoid being included in a plan that imposes tougher air pollution restrictions as Georgia battles to make metro Atlanta's ozone-laden air comply with federal standards. Counties are arguing they're not responsible for creating Atlanta's smog and should not be burdened economically to fix it.

Hawaii: Hanalei — The state Department of Transportation is planning major repairs on the old Hanalei Bridge. The department is proposing a $1 million to $1.5 million repair job to the 87-year-old, 110-foot-long steel framework.

Idaho: Boise — Corporate tax collections ran $6.9 million higher than expected, the largest bulge over a monthly benchmark since April 1997, when revenue exceeded the projection by more than $7 million. The surplus means state officials will have more maneuvering room in dealing with spending demands without having to break their pledge to hold the line on taxes.

Illinois: Cahokia — A state hearing officer will decide next week whether a 7-year-old boy suspended for having nail clippers at school can return to class before his 45-day suspension ends. The boy was suspended from Huffman Elementary School Sept. 16 because school officials consider the clippers a weapon.

Indiana: Clarksville — Clark County Republicans are griping

Michigan: Grandville — Blood donations are dropping sharply at Michigan high schools and colleges because of the growing popularity of tattoos and body piercings among young people, public health officials. Health officials estimate the exclusion for piercings and tattoos accounts for an 18% drop in blood donations from students.

Minnesota: Minneapolis — Charges will not be brought against a St. Paul police officer who shot an unarmed suspect during a chase in June. The Hennepin County attorney's office concluded that "there was not a basis to bring a criminal charge given the evidence" against officer Robert Edwards. Joseph Palermo, 25, was shot in the back yard of a house June 28 after police saw him go out a window when they went to pick him up for questioning about an aggravated assault case..

Mississippi: Jackson — State biologists say that a virus is becoming a serious threat to the largemouth bass population throughout the state. Keith Meals, biologist for the Mississippi Department of Wildlife, Fisheries and Parks, said the infection rate at Sardis Lake is more than 50%. Biologists say iridoviruses do not affect warm-blooded creatures, and humans run no risk from eating LMBV-infected bass.

Missouri: Kansas City — The School District will ask a federal judge to block the state from taking away its accreditation in arguments Tuesday. The district will argue that loss of accreditation will hinder desegregation efforts. The state board voted last week to strip the district of accreditation, effective May 1.

Montana: Polson — The Environmental Protection Agency wants $36,000 in fines from Lake County for allegedly violating EPA rules on disposal of the dangerous chemicals in old refrigerators. County commissioners say they want a formal hearing.

Nebraska: Grand Island — A meeting is scheduled this week to discuss teacher shortages, and legislation to increase teacher salaries could be introduced as early as the next session, state lawmakers said. Teacher supporters say the state must help because local districts don't have the money to improve salaries.

Nevada: Reno — A Brazilian court has barred fugitive Nevada brothel figure Joe Conforte's ex tradition to the U.S. to stand tria

USA Today 10/25/99 12A

THIS STORY HAS BEEN FORMATTED FOR EASY PRINTING

Lawmaker, worried about Massachusetts Military Reservation, urges veto

By Melissa B. Robinson, Associated Press, 10/22/99 18:55

WASHINGTON (AP) Worried that a provision in a defense spending bill would harm clean-up efforts at the Massachusetts Military Reservation, Rep. William Delahunt, D-Mass., has asked President Clinton to veto the measure.

The provision, included in Congress' final version of the 2000 defense appropriations bill, would protect the Pentagon from fines or penalties arising from environmental violations at military installations.

It would also prevent the Defense Department from funding "supplemental environmental projects" in lieu of compliance penalties, said Delahunt, whose Cape Cod district includes the reservation.

"At stake is the capacity of the Environmental Protection Agency and Justice Department to enforce environmental standards with the tools essential to back up their sanctions," Delahunt wrote Thursday to President Clinton. The letter was released Friday.

"If violators can ignore penalties, environmental standards become meaningless," he said. "That this question involves environmental compliance at public facilities only underscores its importance."

Three-quarters of the Massachusetts reservation is now under state environmental control, a move taken by Gov. Paul Cellucci to preserve the underground water supply. Cellucci designated about 15,000 acres a conservation area.

The move was strongly opposed by veterans groups who want the Army National Guard to retain control of the area for training exercises.

But Cellucci made the move, in part, because of pollution stemming from old military activities on the base's southernmost 5,000 acres. The entire base includes Camp Edwards, Otis Air National Guard Base and the Coast Guard air station.

The polluted area was contaminated with TNT, aviation fuel, solvents and other chemicals and declared a Superfund site in 1989.

Environmental officials say 66 billion gallons of drinking water have been contaminated,

forcing the closure of some nearby municipal wells. Estimated cleanup costs are $500 million.

One impact of the pollution is that an already tight local drinking water supply is expected to fall short by 13 million gallons daily by the year 2020.

Delahunt said the Pentagon has made progress in the past two years toward addressing the pollution problem, " ... and one catalyst for this momentum has been ongoing and aggressive EPA oversight."

The EPA in 1997 restricted National Guard training activities at the reservation. Currently pending is a compliance order with potential penalties related to missed Pentagon deadlines for 40 activities involving groundwater cleanup.

Clinton has threatened a veto of the $268 billion defense bill if disputes with congressional Republican leaders over other spending bills are not resolved by Tuesday. If the bill becomes law, Delahunt said he will try to have it repealed.

Monday, October 25, 1999 | Print this stor

Plan to Turn Oil Rigs Into Reefs Fuels Controversy

Environment: Firms say seven platforms off the Orange County coast could become habitats. Activists say companies want to avoid removal.

By SEEMA MEHTA, Times Staff Writer

Seven oil platforms off Orange County's coast nearing retirement could become permanent haven for aquatic life if their owners win a legislative battle to turn them into artificial reefs. But environmentalists say oil companies just want to avoid a costly cleanup.

Underwater invertebrates such as mussels and barnacles attach themselves to the steel towers tha support the platforms. Creatures such as strawberr anemones, ochre starfish, rockfish and sea cucumbers gather around the skeletal structures.

Under state and federal law, these supports are be removed with the rest of the platforms when oi companies decommission the rigs, cap their wells and restore the sea floor to its original condition. But "rig to reef" proponents say these thriving underwater communities should not be disturbed--even when the offshore rigs are no longer in use.

"For most of us, the notion that an oil rig's anything but an oil rig is unheard of," said state Sen. Dede Alpert (D-Coronado). "People forget about what lives under the water."

Alpert has sponsored a bill that would allow oi companies to leave the underwater steel structure place to act as an artificial reef, even after the platform is removed. Oil companies would save millions of dollars in decommissioning costs, but would still have to pay a substantial sum--perhaps 75% of the savings--into a marine research endowment fund, Alpert said. The California Endowment for Marine Preservation bill probably will come before the Senate Natural Resources an Wildlife Committee early next year.

The Legislature's decision could determine the fate of seven platforms off Seal Beach and Huntington Beach. These rigs will be decommissioned in the coming decades, some as soon as 2005.

Statewide, 32 rigs will be decommissioned in t next decade. Factors such as shipping traffic and water depth and quality will determine which cou be turned into reefs.

"This is a situation where we feel true environmentalists' interests and industry's interest could very well be aligned," said George Steinbac Chevron Corp.'s decommissioning manager for California offshore areas.

Chevron and other oil companies funded the start-up of the nonprofit California Artificial Reef Enhancement program, which is lobbying for the conversion of rigs to reefs.

"People don't realize what's out there," said Kristin Valette, a program board member. "We've already got this ecosystem. It would do more harm to rip [the rigs] out. It would kill a lot of the marin environment."

Backers say successful rig-to-reef programs ex in Texas and Louisiana. More than 100 Gulf of Mexico rigs have been turned over to the two state and now attract a variety of marine creatures, whi in turn attract divers and sportfishermen.

Environmentalists remain skeptical of the proposal.

"A reef is a natural, alive animal system. An oi well is an oil well. It's absolutely ludicrous to call an oil well a reef," said Gordon Labedz, a membe of the Sierra Club's Coastal Protection Committee

The Surfrider Foundation of San Clemente onl supports artificial reefs as replacements for natura reefs destroyed by people.

"Our position is that artificial reefs should be looked at when you have an existing reef habitat that's been impacted by human activity," said Eve Kliszewski, Surfrider's environmental director. "We're skeptical of the [rigs to reefs] concept because it's basically leaving trash in the ocean. T push toward legislation is premature because we need to know more."

Susan Jordan, a board member of the League f Coastal Protection, disputes the proposal's basic premise that a rig could ever be a reef.

"Some people try and say this is a habitat. It's not--it's an oil company leaving debris in the ocea We have a tremendous amount of debris left over by them already," she said. "The analogy that I us is a telephone pole versus a tree. Just because it si there, it's a structure and birds can sit on it doesn't mean it's a viable habitat."

Key to the long-term debate over turning rigs into reefs is determining the environmental benefi Researchers and environmentalists hope that question will be answered by the time more rigs a decommissioned.

"There isn't anything that's happening overnight," said Warner Chabot, the Pacific region director for the Washington D.C. based Cente for Marine Conservation.

seattle P-I .com Northwest

Killer whales are full of toxic chemicals, new study says

PCBs make popular orcas prey to menacing diseases

Monday, October 25, 1999

By M.L. LYKE
SEATTLE POST-INTELLIGENCER REPORTER

The tourist photographs and the scientific text tell different stories.

In the photos, magnificent black-and-white orcas leap from green waters off the San Juan Islands, trailing sunlit diamonds. They are wild, rugged, sleek, the very symbol of the unspoiled beauty of the Northwest.

Orcas, popular among whale watchers, cavort in Puget Sound near the San Juan Islands. Scientists have found "disturbingly" high concentrations of PCBs in the marine mammals.
Robin Layton/P-I file

In the text, those same killer whales are contaminated, laden with toxic chemicals, at risk for disease. They may be the very symbol of a world spoiled by human pollutants.

"These killer whales can now be considered among the most contaminated marine mammals in the world," said Dr. Peter Ross, research scientist with the Institute of Ocean Sciences in Sidney, B.C., and lead author of a new study titled "High PCB Concentrations in Free-Ranging Pacific Killer Whales, Orcinus orca."

Whale researchers, puzzled by recent declines in orca populations, describe the findings as troubling and scary.

"We have very toxic chemicals here. This should be a wake-up call," said Rich Osborne, science curator at the Whale Museum on San Juan Island. "It may

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take orcas . . . dying for people to finally get it."

Indian basket found in Olympic National Park is 2,900 years old

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Northwest Briefing

Researchers used a pneumatic dart with a stainless steel tip -- 6.4 mm in diameter -- to sample 47 killer whales that swim the inland and coastal waters around Washington and British Columbia. These include the ocean-cruising transient whales that prey on seals and other marine mammals and the southern and northern families of orcas that dine almost exclusively on fish -- preferably the "king" of the salmon, the chinook.

All 47 orcas were known individuals, exhaustively documented through observation and photo catalogs. Analysis of blubber samples revealed what Ross terms "disturbingly" high concentrations of PCBs in all the groups.

Most contaminated were the high-seas transients and the celebrated southern "J," "K" and "L" pods beloved by Washington whale-watchers.

With jaws dropped and cameras clicking, few of the orca lovers have a clue that these celebrities of the cetacean world may be in danger.

PCBs do not cause outright death. But extensive laboratory animal experiments and captive feeding studies of seals show contaminants can weaken immune systems, hamper reproduction and cause skin disorders and subtle changes in physiology.

Scientists have noted tumors, skeletal abnormalities, disease and reproductive problems in the contaminated beluga whales on Canada's St. Lawrence estuary, which drains the heavily industrialized Great Lakes. And the Northwest killer whales, Ross said, are four to five times more polluted than those belugas.

Animals with weakened immune systems may be especially vulnerable to rampaging diseases. This raises the specter of extinction in a small population like the southern orcas, whose numbers have dropped from 96 to 84 in three years.

"With the population so small, they could be wiped out by a virus," Osborne said.

The B.C. study, which will be published in the Marine Pollution Bulletin, involved researchers from the Institute of Ocean Sciences, the University of British Columbia, the Vancouver Aquarium and the Pacific Biological Station in Nanaimo, B.C. It is one of the most comprehensive toxicology studies on whale populations to date.

The study shows PCB levels in the fat of transient males averaged 251 parts per million. In southern pods, levels were 146 parts per million.

Humans average less than 1 part per million. "That means these animals are about 400 to 500 times more contaminated than humans," Ross said.

The northern pods had only 46 parts per million -- two to three times less than their southern counterparts.

"There's more pollution down here. If you look at the sediment cores, there are higher concentrations of PCBs and DDTs than up north," said Osborne, who is drafting a petition to list orcas as a threatened or endangered species in the United States.

One researcher calls the orca waters south of the border a "toxic soup."

Ross suspects the open ocean may be another source of PCBs. Like humans, animals are what they eat, and orcas eat salmon that grow up in the open seas, where contaminants may collect from distant industrial sources in Asia.

PCBs -- polychlorinated biphenyls -- are a long-lived industrial compound used to insulate electric transformers and capacitors. They were banned in the United States and Canada in the mid-1970s but are still widely used in the Third World. Slow to degrade, PCBs float in the air and water, permeate soil and accumulate in animal fat.

The higher an animal is on the food chain, and the longer-lived, the greater the concentration of toxins. Orcas -- which are technically mammoth dolphins with an age span of 40-90 years -- are considered top predators in the ocean. They consume mass quantities of polluted prey.

Those toxins, however, are only one of the modern-day stresses affecting Northwest orcas, which may have navigated these waters for as long as 10,000 years.

The Canadian government listed orcas as a threatened species in April, citing three major concerns.

One was a diminished salmon supply. Fish are becoming both scarcer and smaller.

Another was heavy boat traffic. This summer the average number of boats following a group of

southern whales at any given time was 21. Some San Juan Islanders complain they can no longer see the orcas for all the boats.

Third was contamination. "If you have a lot of boat traffic, diminished salmon returns and high levels of PCBs in animals, it doesn't take a rocket scientist to figure out this represents a tangible risk to this population," Ross said.

Whether PCB contamination is linked to population decreases in southern pods is a difficult question. Death is a normal part of life, Ross notes.

"It's not unexpected to find a 20 to 45 percent mortality in the first year of life in marine mammals."

And the decrease in the orca population could reverse itself.

"We're still very hopeful that this population is going to make it," Osborne said. "But it will be 10 to 20 years before we know."

Yet, researchers describe the recent declines as the longest and steadiest since the 1970s, when scores of orcas were hunted and captured and sold to marine parks. Females in the 84-member southern pod are producing fewer calves, and some offspring are not surviving.

One mother recently died with a damaged uterus and a placenta half in and half out of her body. The calf she left behind made headlines as it struggled to survive. The calf was not spotted at the last sighting of J, K and L pods, which disappear from local waters in the fall.

There is no question that females pass PCBs on to calves through their high-fat milk.

The B.C. study, which analyzed data by sex, age and dietary preference, found that contaminant levels actually decreased in reproductively active females, then increased again at the approximate age of 50.

The reason: Nursing moms pass PCBs to offspring.

"Those calves are bathed in PCB-laden milk at a time when their organ systems are developing and they are at their most sensitive," Ross said.

Ross also did toxicology studies on some of the 100-plus gray whales that washed up dead along the West Coast this spring. Ironically, those whales,

which feed primarily on small bottom-dwelling ocean animals, showed very low levels of contamination. But their blubber was seriously depleted, leading scientists to conclude they died of starvation.

The death of the grays could be natural attrition. Or it could be linked to increases in the temperature of northern ocean waters, where grays migrate to feed. Increased temperatures there have been linked to diminished food supplies for a number of animals, including seals, sea birds and whales.

Both the grays and the orcas, Ross said, may be telling us something about the state of the ocean. They may be to the ocean what the canary is to the coal mine.

"Marine mammals are wonderful creatures, and very good quality indicators of the health of an ecosystem," Ross said. "What they're telling us is that the ocean may be under significant climate stress, and that it is much more contaminated than previously thought."

Candidates on the Issues

By CALVIN WOODWARD Associated Press Writer

WASHINGTON (AP) - In the gathering tempest of the 2000 presidential campaign, candidates are building their policy positions brick by brick.

Some are further along than others. There is a health care plan missing here, a tax-cut package absent there. But they will keep on swiftly building, as long as they can ride out the storm.

Here, on a variety of issues, are positions of the major candidates: for the Democratic nomination, former New Jersey Sen. Bill Bradley and Vice President Al Gore; for the Republicans, activist Gary Bauer, Texas Gov. George W. Bush, publisher Steve Forbes, Utah Sen. Orrin Hatch, talk-show host Alan Keyes and Arizona Sen. John McCain; for the Reform Party, commentator Pat Buchanan.

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ABORTION:

Snapshot: About 23 percent of U.S. pregnancies end in abortion. The abortion rate is at a two-decade low, largely because of more effective contraception.

On nominating only Supreme Court justices who oppose abortion rights:

Bauer: Yes.

Bradley: No.

Buchanan: Yes.

Bush: No.

Forbes: Yes.

Gore: No.

McCain: Favors tax-free savings accounts for children's education expenses such as tutoring, computers and private-school tuition. Tougher teacher testing.

-

ENVIRONMENT:

Snapshot: U.S. per-capita emissions of carbon dioxide - considered a greenhouse gas - and the nation's energy consumption dwarf rates in all other industrialized countries except Canada. Air quality overall has improved in the United States in the last 10 years, with declines in major pollutants ranging from 14 percent for nitrogen dioxide to 67 percent for lead.

Bauer: Strengthen property rights to limit federal government's ability to subject property owners to environmental regulation.

Bradley: As senator, fought for highway-billboard limits opposed by Gore. Tried to divert space-station money to clean-water programs.

Buchanan: Give hundreds of millions of acres of land managed by Washington to states unconditionally. Prohibit designation of endangered species without vote in Congress. Opposes treaty on reducing emissions of greenhouse gases.

Bush: Supports existing moratorium on California and Florida offshore drilling. Is becoming "more convinced" global warming exists but opposes unratified treaty to cut greenhouse gases. Unspecified increase in spending on conservation. Created largely voluntary program to cut air pollution from 800 Texas factories and signed law forcing electrical utilities to clean up or close. In 1998 favored changing federal law to limit habitats eligible to be designated as endangered.

Forbes: Says claims about global warming are "deeply flawed."

Gore: Move beyond moratorium and ban all new offshore oil drilling in federal waters off Florida and California, including zones where companies have spent billions to secure drilling rights. Spend $2 billion over 10 years to set aside more parkland, paying for it by charging hardrock mining companies to extract minerals from federal lands. Led U.S. efforts for climate-change treaty. Clinton administration record includes tougher clean air standards and protection of Everglades and California desert but allowing clear cutting in some national forests.

Hatch: Backed subsidies, but not mandates, for use of alternative fuels. Would limit president's ability to designate vast tracts of land as national monuments by executive decision.

Keyes: No known position.

McCain: Backed stronger Clean Water Act and emission controls on gasoline and diesel engines.

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FARM POLICY:

Snapshot: Direct government payments to farmers are expected to exceed $22 billion this year, eclipsing the old record of $17 billion in 1987. Tax breaks for ethanol, a corn-based fuel additive, cost some $600 million

Clips for mailing

Don't have most of these on-line.

P.

AN ADVERTISING SUPPLEMENT TO THE WASHINGTON POST

WHITE HOUSE: "Growing Scientific Consensus"

By Roger Ballentine and Frank E. Loy

(Ballentine is Deputy Assistant to the President for Environmental Initiatives and White House Climate Change Coordinator. Loy is Undersecretary of State for Global Affairs and head of the U.S. delegation to this week's climate meetings in Bonn, Germany.)

A few weeks ago, more than 500 mayors and local officials—from Baltimore to St. Louis to Seattle—took a pledge. They committed themselves, and their cities, to the fight against global warming. Two weeks earlier, DuPont pledged to dramatically reduce its greenhouse gas emissions, joining Motorola, Dow, IBM, BP Amoco and other leading corporations taking real action on climate change. From city council chambers to corporate boardrooms, America is mobilizing against global warming—the greatest environmental challenge of the Twenty-first Century.

That is the message U.S. representatives will take to Germany this week when 160 nations gather for this year's round of international climate negotiations. Our objective in Bonn will be to ensure that the international community continues to make strong progress in elaborating a system that fights global warming in an intelligent way and at a cost that is reasonable, with strong efforts by developed and developing countries alike.

No More Business As Usual

The Bonn conference takes place against the backdrop of a broad and growing scientific consensus that human activities have started to affect the global climate. New studies of Northern Hemisphere temperatures show that the Twentieth Century has been the warmest in the past 1,000 years, that the 1990s have been the warmest decade in that period, and that 1998 was the single warmest year ever recorded (breaking the old mark set just a year earlier).

Continuing on a "business as usual" course will lead to further warming in the next century—as much as 6.5 degrees Fahrenheit, according to leading scientists. The recent drought in the eastern United States, and the torrential rains and flooding that followed, offer a too-exciting preview of the kind of extreme weather this warming could bring.

To help protect future generations from these grave risks, the United States is moving aggressively to reduce its greenhouse gas emissions. Last year, President Clinton and Vice President Gore secured over $1 billion towards accelerating the deployment of Twenty-first Century clean energy technologies.

So far this year, President Clinton has signed two new

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WHITE HOUSE:
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executive orders to address global warming. One will dramatically reduce the federal government's energy use, saving taxpayers $750 million a year. The second aims to support the growth of the U.S. bioenergy industry, which makes fuels and products from crops and agricultural wastes, creating new income for farmers and cutting greenhouse gas emissions by up to 100 million tons.

Our Agenda in Bonn

In Bonn, we want to work with other nations to shape a solution to the challenge of climate change—one that promotes economic growth and sustainable development around the globe. Two years ago in Kyoto, Japan, nations put in place the architecture of an international strategy to address the challenge of climate change. The United States is fully committed to completing the work begun in Kyoto, where more than 160 countries agreed under the Kyoto Protocol to take action to mitigate climate change. At the Bonn meeting and in the months ahead, we look forward to addressing the critical issues of cost and developing country participation so that the treaty can be ratified. But much remains to be done.

On cost, the United States will continue to insist that nations must be free to make full use of the Kyoto Protocol's flexible, market-based mechanisms, such as emissions trading. Limiting this ability (as some nations have proposed) would only make reducing greenhouse gases more expensive for everyone, with no gain to the environment. Similarly, nations must be allowed to receive credit for appropriate forestry and land-use practices that sequester greenhouse gases. These activities reduce the cost of mitigating climate change, and create valuable opportunities for American farmers.

The United States also will continue to insist that a global challenge like climate change be met with a global solution. We fully support efforts by developing countries to grow their economies. We also firmly believe that countries can pursue this goal without repeating the wasteful and polluting mistakes of the past century. We applaud nations, such as Argentina, that have announced their intent to voluntarily adopt emissions targets. And we are committed to creating sustainable development opportunities through Kyoto's Clean Development Mechanism (which gives industrialized countries an incentive to undertake clean energy projects in developing countries) and through other economic, technical and financial partnerships.

Steady, Solid Progress Needed

Bonn will not be a place for dramatic breakthroughs on these issues. But we do hope to achieve the kind of steady, solid progress that is necessary to keep the Kyoto process on track. If we fail to move forward—both in Bonn and beyond—we risk missing an important opportunity to protect our climate for generations to come.

Whatever the outcome in Bonn, we must continue stepping up our efforts at home as well. Even as local leaders, major corporations and ordinary citizens join the fight against global warming, naysayers in Congress are trying to block the way. Ignoring the mounting evidence of climate change, they want to slash funding for clean energy programs and load up budget bills with special-interest "riders" that aim to strangle common-sense efforts to reduce greenhouse gas pollution.

As the people of America, and the nations of the world, commit themselves to meeting the most profound environmental challenge ever, the U.S. Congress must not doom these efforts. There is too much at stake. ■

FINANCIAL TIMES
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Friday November 5 1999

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 CO_2 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 CO_2 reductions achieved by other countries.

Europeans object that much of this trading would be in "phoney" certificates, notably from Russia and Ukraine where CO_2 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 CO_2 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.

THE WALL STREET JOURNAL.
MARKETPLACE
TUESDAY, OCTOBER 19, 1999 B1

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 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

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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 Forrister, 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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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

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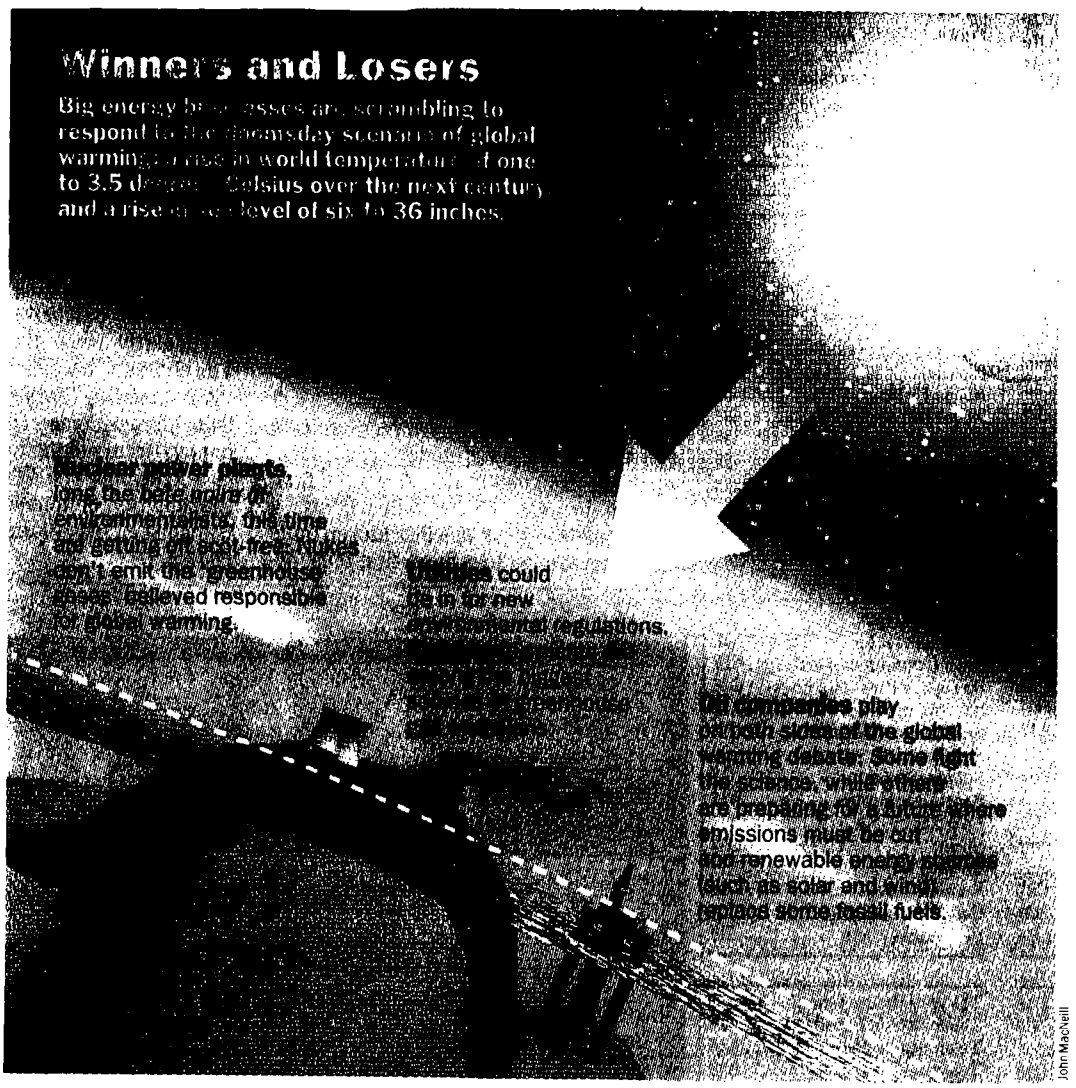

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come from increased nuclear-power production. Counting emissions cuts is "enormously controversial," says AEP's Mr. Heydlauff.

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 Kyoto 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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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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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

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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.

REPUBLICANS: Squeeze on climate package

By Nancy Dunne in Washington

White House officials yesterday struggled to salvage a package of environmental initiatives designed to reduce carbon emissions, in the face of Republican opposition.

The administration has been reduced to fighting off a Republican measure that would limit President Bill Clinton's scope to use executive orders to implement the Kyoto Protocol for climate change.

The protocol, agreed in 1997 by about 150 countries, commits the US to reducing carbon emissions by 7 per cent from 1990 levels no later than 2012.

The Republican measure, attached to the Interior Department appropriations bill, would prohibit the use of federal funds "to propose or issue rules, regulation, degrees or orders for the purpose of implementing. . . the Kyoto Protocol".

Mr Clinton has vowed to veto the bill, which also contains funding for energy efficiency programmes. But he has already been forced to sign legislation that hinders efforts to reduce carbon emissions.

The transportation bill, for example, prevented the administration from requiring higher vehicle fuel efficiency standards.

Moreover, budget constraints forced the administration to limit its request for tax credits to spur private sector development of technologies to address climate change.

This modest Climate Change Technology Initiative came under attack from both ends of the political spectrum. Gary Cool, of Greenpeace, called the administration proposals "very inadequate, given the size of the problem and US emissions".

The rightwing Cato Institute, called the package "a sham" and a "repackaging of falled programmes that do nothing to significantly reduce global temperatures".

But Roger Ballentine, deputy assistant to the president for environmental initiatives, defended the programme and said it was impossible to estimate the savings that could be achieved." The initiative is meant to spur development of technologies which will make a significant contribution to the way we consume energy," he said.

The Energy Department's partnership programme with US carmakers, which aims to triple fuel efficiency by 2004, has also suffered deep cuts. Congress has refused all funding for a $200m programme to help the states implement clean air plans.

The Senate has ordered the administration not to submit the Kyoto Protocol for approval unless developing countries agreed to reduce emissions as well.

Congressional stinginess has forced the administration to address global warming through a series of small measures. In August the president issued an executive order co-ordinating federal efforts to convert crops, trees and other biomass into fuel, power and products. In June the president required each federal agency to reduce greenhouse gas emissions in their buildings by 30 per cent below 1990 levels over the next decade.

While environmentalists have strong doubts about whether the administration's emissions reduction initiatives would be effective, they may not get a chance to find out if the Republican-dominated Congress gets its way.

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THE WALL STREET JOURNAL.

Greenhouse Gases
In U.S. Last Year
Rose Least Since '91
By John J. Fialka

10/27/1999
The Wall Street Journal
Page A8

WASHINGTON -- Production of greenhouse gases, man-made pollutants thought to be artificially warming the Earth's atmosphere, barely increased in the U.S. last year while the economy grew by 3.9%, the Department of Energy said.

Production of carbon dioxide, methane and other gases grew by only 0.02%, the slowest growth since the recession year of 1991. Overall industrial **emissions** fell by 1.3%, and **emissions** caused by the production of primary metals dropped by 1%.

While the slowdown is fairly dramatic in light of last year's economic surge, Arthur Rypinski, an economist for the DOE's Energy Information Administration, says it will take several years of similar data before he is convinced that structural changes in the nation's economy are curbing greenhouse gases.

"For the moment, all we have is an interesting snapshot," he said. Mr. Rypinski believes an unusually warm winter and a slowdown in auto, chemical and steel production may have caused some of the decline. Tougher federal restrictions on methane **emissions** from landfills produced a 1.5% drop, he added.

Many scientists believe greenhouse gases change the climate by trapping more of the heat from the sun. The U.S. has signed the Kyoto Protocol on global warming, committing itself to a 0.7% reduction in greenhouse gases from 1990 levels by the period 2008 to 2012. **Emissions** are currently 10% more than 1990 levels, the DOE said. Political concerns in Congress over the treaty's potential damage to the economy have stymied efforts to implement the pact.

Michael Marvin, president of the Business Council for Sustainable Energy, a group of 50 companies and trade associations supporting the treaty, said the new information "confirms what we've said all along: You can have economic growth and you can reduce carbon **emissions** ."

As the new U.S. data emerged, delegates from more than 100 nations were gathered in Bonn to work on the details of the treaty. German Chancellor Gerhard Schroeder opened the two-week session by explaining that his government will press ahead with a gradual increase in energy taxes.

In what appeared to be a pointed reference to the U.S., he said: "Anyone wishing to remain credible in the debate on climate policy must . . . implement at home what they have pledged on the international stage."

The New York Times

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

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)

AN ADVERTISING SUPPLEMENT TO THE WASHINGTON POST

WHITE HOUSE: "Growing Scientific Consensus"

By Roger Ballentine and Frank E. Loy

(Ballentine is Deputy Assistant to the President for Environmental Initiatives and White House Climate Change Coordinator. Loy is Undersecretary of State for Global Affairs and head of the U.S. delegation to this week's climate meetings in Bonn, Germany.)

A few weeks ago, more than 500 mayors and local officials—from Baltimore to St. Louis to Seattle—took a pledge. They committed themselves, and their cities, to the fight against global warming. Two weeks earlier, DuPont pledged to dramatically reduce its greenhouse gas emissions, joining Motorola, Dow, IBM, BP Amoco and other leading corporations taking real action on climate change. From city council chambers to corporate boardrooms, America is mobilizing against global warming—the greatest environmental challenge of the Twenty-first Century.

That is the message U.S. representatives will take to Germany this week when 160 nations gather for this year's round of international climate negotiations. Our objective in Bonn will be to ensure that the international community continues to make strong progress in elaborating a system that fights global warming in an intelligent way and at a cost that is reasonable, with strong efforts by developed and developing countries alike.

No More Business As Usual

The Bonn conference takes place against the backdrop of a broad and growing scientific consensus that human activities have started to affect the global climate. New studies of Northern Hemisphere temperatures show that the Twentieth Century has been the warmest in the past 1,000 years, that the 1990s have been the warmest decade in that period, and that 1998 was the single warmest year ever recorded (breaking the old mark set just a year earlier).

Continuing on a "business as usual" course will lead to further warming in the next century—as much as 6.5 degrees Fahrenheit, according to leading scientists. The recent drought in the eastern United States, and the torrential rains and flooding that followed, offer a too-exciting preview of the kind of extreme weather this warming could bring.

To help protect future generations from these grave risks, the United States is moving aggressively to reduce its greenhouse gas emissions. Last year, President Clinton and Vice President Gore secured over $1 billion towards accelerating the deployment of Twenty-first Century clean energy technologies.

So far this year, President Clinton has signed two new

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WHITE HOUSE:
"Growing Scientific Consensus"

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executive orders to address global warming. One will dramatically reduce the federal government's energy use, saving taxpayers $750 million a year. The second aims to support the growth of the U.S. bioenergy industry, which makes fuels and products from crops and agricultural wastes, creating new income for farmers and cutting greenhouse gas emissions by up to 100 million tons.

Our Agenda In Bonn

In Bonn, we want to work with other nations to shape a solution to the challenge of climate change—one that promotes economic growth and sustainable development around the globe. Two years ago in Kyoto, Japan, nations put in place the architecture of an international strategy to address the challenge of climate change. The United States is fully committed to completing the work begun in Kyoto, where more than 160 countries agreed under the Kyoto Protocol to take action to mitigate climate change. At the Bonn meeting and in the months ahead, we look forward to addressing the critical issues of cost and developing country participation so that the treaty can be ratified. But much remains to be done.

On cost, the United States will continue to insist that nations must be free to make full use of the Kyoto Protocol's flexible, market-based mechanisms, such as emissions trading. Limiting this ability (as some nations have proposed) would only make reducing greenhouse gases more expensive for everyone, with no gain to the environment. Similarly, nations must be allowed to receive credit for appropriate forestry and land-use practices that sequester greenhouse gases. These activities reduce the cost of mitigating climate change, and create valuable opportunities for American farmers.

The United States also will continue to insist that a global challenge like climate change be met with a global solution. We fully support efforts by developing countries to grow their economies. We also firmly believe that countries can pursue this goal without repeating the wasteful and polluting mistakes of the past century. We applaud nations, such as Argentina, that have announced their intent to voluntarily adopt emissions targets. And we are committed to creating sustainable development opportunities through Kyoto's Clean Development Mechanism (which gives industrialized countries an incentive to undertake clean energy projects in developing countries) and through other economic, technical and financial partnerships.

Steady, Solid Progress Needed

Bonn will not be a place for dramatic breakthroughs on these issues. But we do hope to achieve the kind of steady, solid progress that is necessary to keep the Kyoto process on track. If we fail to move forward—both in Bonn and beyond—we risk missing an important opportunity to protect our climate for generations to come.

Whatever the outcome in Bonn, we must continue stepping up our efforts at home as well. Even as local leaders, major corporations and ordinary citizens join the fight against global warming, naysayers in Congress are trying to block the way. Ignoring the mounting evidence of climate change, they want to slash funding for clean energy programs and load up budget bills with special-interest "riders" that aim to strangle common-sense efforts to reduce greenhouse gas pollution.

As the people of America, and the nations of the world, commit themselves to meeting the most profound environmental challenge ever, the U.S. Congress must not doom these efforts. There is too much at stake. ■

FINANCIAL TIMES
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Friday November 5 1999

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 CO_2 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 CO_2 reductions achieved by other countries.

Europeans object that much of this trading would be in "phoney" certificates, notably from Russia and Ukraine where CO_2 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 CO_2 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.

THE WALL STREET JOURNAL.

MARKETPLACE

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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 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

(cont.)

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 Forrister, 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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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

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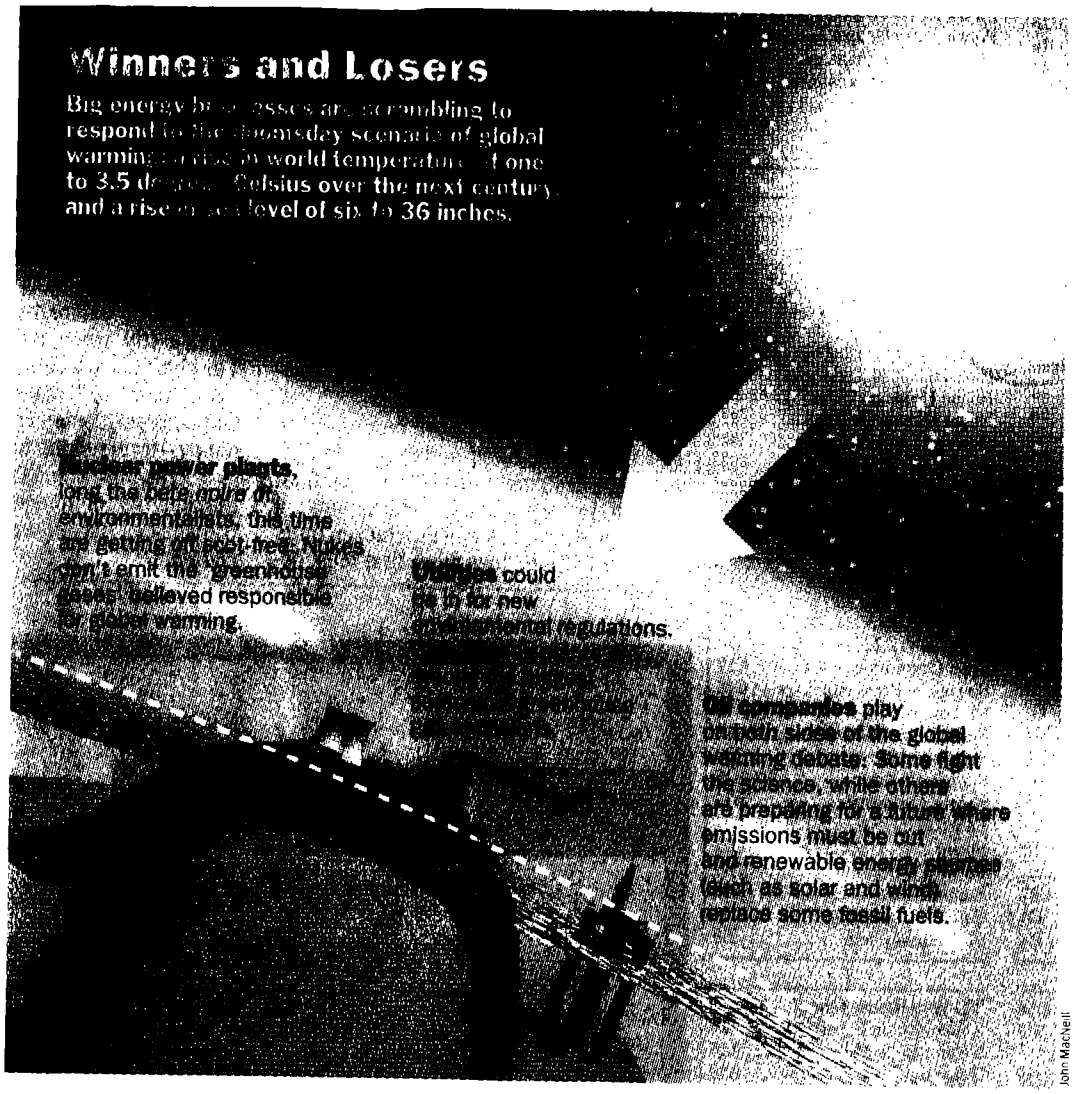

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come from increased nuclear-power production. Counting emissions cuts is "enormously controversial," says AEP's Mr. Heydlauff.

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 Kyoto 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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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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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

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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.

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Japan's dilemmas

REPUBLICANS: Squeeze on climate package

By Nancy Dunne in Washington

White House officials yesterday struggled to salvage a package of environmental initiatives designed to reduce carbon emissions, in the face of Republican opposition.

The administration has been reduced to fighting off a Republican measure that would limit President Bill Clinton's scope to use executive orders to implement the Kyoto Protocol for climate change.

The protocol, agreed in 1997 by about 150 countries, commits the US to reducing carbon emissions by 7 per cent from 1990 levels no later than 2012.

The Republican measure, attached to the Interior Department appropriations bill, would prohibit the use of federal funds "to propose or issue rules, regulation, degrees or orders for the purpose of implementing. . . the Kyoto Protocol".

Mr Clinton has vowed to veto the bill, which also contains funding for energy efficiency programmes. But he has already been forced to sign legislation that hinders efforts to reduce carbon emissions.

The transportation bill, for example, prevented the administration from requiring higher vehicle fuel efficiency standards.

Moreover, budget constraints forced the administration to limit its request for tax credits to spur private sector development of technologies to address climate change.

This modest Climate Change Technology Initiative came under attack from both ends of the political spectrum. Gary Cool, of Greenpeace, called the administration proposals "very inadequate, given the size of the problem and US emissions".

The rightwing Cato Institute, called the package "a sham" and a "repackaging of failed programmes that do nothing to significantly reduce global temperatures".

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Euro Trading Day

But Roger Ballentine, deputy assistant to the president for environmental initiatives, defended the programme and said it was impossible to estimate the savings that could be achieved." The initiative is meant to spur development of technologies which will make a significant contribution to the way we consume energy," he said.

The Energy Department's partnership programme with US carmakers, which aims to triple fuel efficiency by 2004, has also suffered deep cuts. Congress has refused all funding for a $200m programme to help the states implement clean air plans.

The Senate has ordered the administration not to submit the Kyoto Protocol for approval unless developing countries agreed to reduce emissions as well.

Congressional stinginess has forced the administration to address global warming through a series of small measures. In August the president issued an executive order co-ordinating federal efforts to convert crops, trees and other biomass into fuel, power and products. In June the president required each federal agency to reduce greenhouse gas emissions in their buildings by 30 per cent below 1990 levels over the next decade.

While environmentalists have strong doubts about whether the administration's emissions reduction initiatives would be effective, they may not get a chance to find out if the Republican-dominated Congress gets its way.

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THE WALL STREET JOURNAL.

Greenhouse Gases
In U.S. Last Year
Rose Least Since '91
By John J. Fialka

10/27/1999
The Wall Street Journal
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WASHINGTON -- Production of greenhouse gases, man-made pollutants thought to be artificially warming the Earth's atmosphere, barely increased in the U.S. last year while the economy grew by 3.9%, the Department of Energy said.

Production of carbon dioxide, methane and other gases grew by only 0.02%, the slowest growth since the recession year of 1991. Overall industrial **emissions** fell by 1.3%, and **emissions** caused by the production of primary metals dropped by 1%.

While the slowdown is fairly dramatic in light of last year's economic surge, Arthur Rypinski, an economist for the DOE's Energy Information Administration, says it will take several years of similar data before he is convinced that structural changes in the nation's economy are curbing greenhouse gases.

"For the moment, all we have is an interesting snapshot," he said. Mr. Rypinski believes an unusually warm winter and a slowdown in auto, chemical and steel production may have caused some of the decline. Tougher federal restrictions on methane **emissions** from landfills produced a 1.5% drop, he added.

Many scientists believe greenhouse gases change the climate by trapping more of the heat from the sun. The U.S. has signed the Kyoto Protocol on global warming, committing itself to a 0.7% reduction in greenhouse gases from 1990 levels by the period 2008 to 2012. **Emissions** are currently 10% more than 1990 levels, the DOE said. Political concerns in Congress over the treaty's potential damage to the economy have stymied efforts to implement the pact.

Michael Marvin, president of the Business Council for Sustainable Energy, a group of 50 companies and trade associations supporting the treaty, said the new information "confirms what we've said all along: You can have economic growth and you can reduce carbon **emissions** ."

As the new U.S. data emerged, delegates from more than 100 nations were gathered in Bonn to work on the details of the treaty. German Chancellor Gerhard Schroeder opened the two-week session by explaining that his government will press ahead with a gradual increase in energy taxes.

In what appeared to be a pointed reference to the U.S., he said: "Anyone wishing to remain credible in the debate on climate policy must . . . implement at home what they have pledged on the international stage."

The New York Times

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

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)

AN ADVERTISING SUPPLEMENT TO THE WASHINGTON POST

WHITE HOUSE: "Growing Scientific Consensus"

By Roger Ballentine and Frank E. Loy

(Ballentine is Deputy Assistant to the President for Environmental Initiatives and White House Climate Change Coordinator. Loy is Undersecretary of State for Global Affairs and head of the U.S. delegation to this week's climate meetings in Bonn, Germany.)

A few weeks ago, more than 500 mayors and local officials—from Baltimore to St. Louis to Seattle—took a pledge. They committed themselves, and their cities, to the fight against global warming. Two weeks earlier, DuPont pledged to dramatically reduce its greenhouse gas emissions, joining Motorola, Dow, IBM, BP Amoco and other leading corporations taking real action on climate change. From city council chambers to corporate boardrooms, America is mobilizing against global warming—the greatest environmental challenge of the Twenty-first Century.

That is the message U.S. representatives will take to Germany this week when 160 nations gather for this year's round of international climate negotiations. Our objective in Bonn will be to ensure that the international community continues to make strong progress in elaborating a system that fights global warming in an intelligent way and at a cost that is reasonable, with strong efforts by developed and developing countries alike.

No More Business As Usual

The Bonn conference takes place against the backdrop of a broad and growing scientific consensus that human activities have started to affect the global climate. New studies of Northern Hemisphere temperatures show that the Twentieth Century has been the warmest in the past 1,000 years, that the 1990s have been the warmest decade in that period, and that 1998 was the single warmest year ever recorded (breaking the old mark set just a year earlier).

Continuing on a "business as usual" course will lead to further warming in the next century—as much as 6.5 degrees Fahrenheit, according to leading scientists. The recent drought in the eastern United States, and the torrential rains and flooding that followed, offer a too-exciting preview of the kind of extreme weather this warming could bring.

To help protect future generations from these grave risks, the United States is moving aggressively to reduce its greenhouse gas emissions. Last year, President Clinton and Vice President Gore secured over $1 billion towards accelerating the deployment of Twenty-first Century clean energy technologies.

So far this year, President Clinton has signed two new

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WHITE HOUSE:
"Growing Scientific Consensus"

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executive orders to address global warming. One will dramatically reduce the federal government's energy use, saving taxpayers $750 million a year. The second aims to support the growth of the U.S. bioenergy industry, which makes fuels and products from crops and agricultural wastes, creating new income for farmers and cutting greenhouse gas emissions by up to 100 million tons.

Our Agenda in Bonn

In Bonn, we want to work with other nations to shape a solution to the challenge of climate change—one that promotes economic growth and sustainable development around the globe. Two years ago in Kyoto, Japan, nations put in place the architecture of an international strategy to address the challenge of climate change. The United States is fully committed to completing the work begun in Kyoto, where more than 160 countries agreed under the Kyoto Protocol to take action to mitigate climate change. At the Bonn meeting and in the months ahead, we look forward to addressing the critical issues of cost and developing country participation so that the treaty can be ratified. But much remains to be done.

On cost, the United States will continue to insist that nations must be free to make full use of the Kyoto Protocol's flexible, market-based mechanisms, such as emissions trading. Limiting this ability (as some nations have proposed) would only make reducing greenhouse gases more expensive for everyone, with no gain to the environment. Similarly, nations must be allowed to receive credit for appropriate forestry and land-use practices that sequester greenhouse gases. These activities reduce the cost of mitigating climate change, and create valuable opportunities for American farmers.

The United States also will continue to insist that a global challenge like climate change be met with a global solution. We fully support efforts by developing countries to grow their economies. We also firmly believe that countries can pursue this goal without repeating the wasteful and polluting mistakes of the past century. We applaud nations, such as Argentina, that have announced their intent to voluntarily adopt emissions targets. And we are committed to creating sustainable development opportunities through Kyoto's Clean Development Mechanism (which gives industrialized countries an incentive to undertake clean energy projects in developing countries) and through other economic, technical and financial partnerships.

Steady, Solid Progress Needed

Bonn will not be a place for dramatic breakthroughs on these issues. But we do hope to achieve the kind of steady, solid progress that is necessary to keep the Kyoto process on track. If we fail to move forward—both in Bonn and beyond—we risk missing an important opportunity to protect our climate for generations to come.

Whatever the outcome in Bonn, we must continue stepping up our efforts at home as well. Even as local leaders, major corporations and ordinary citizens join the fight against global warming, naysayers in Congress are trying to block the way. Ignoring the mounting evidence of climate change, they want to slash funding for clean energy programs and load up budget bills with special-interest "riders" that aim to strangle common-sense efforts to reduce greenhouse gas pollution.

As the people of America, and the nations of the world, commit themselves to meeting the most profound environmental challenge ever, the U.S. Congress must not doom these efforts. There is too much at stake. ■

FINANCIAL TIMES
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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 CO_2 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 CO_2 reductions achieved by other countries.

Europeans object that much of this trading would be in "phoney" certificates, notably from Russia and Ukraine where CO_2 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 CO_2 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.

THE WALL STREET JOURNAL.

MARKETPLACE

TUESDAY, OCTOBER 19, 1999 **B1**

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 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

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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 Forrister, 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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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

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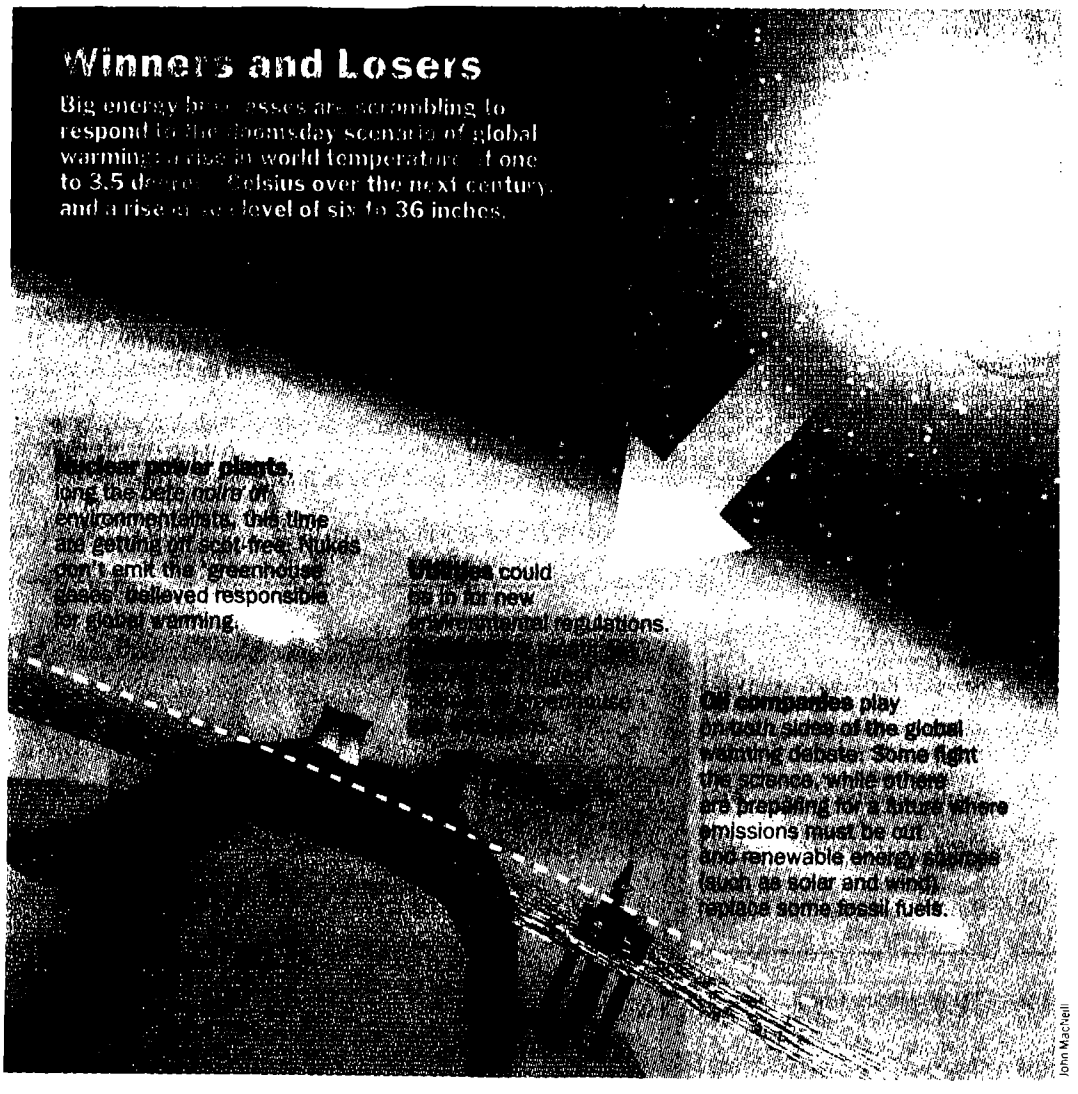

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come from increased nuclear-power production. Counting emissions cuts is "enormously controversial," says AEP's Mr. Heydlauff.

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 Kyoto 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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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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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

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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.

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REPUBLICANS: Squeeze on climate package

By Nancy Dunne in Washington

White House officials yesterday struggled to salvage a package of environmental initiatives designed to reduce carbon emissions, in the face of Republican opposition.

The administration has been reduced to fighting off a Republican measure that would limit President Bill Clinton's scope to use executive orders to implement the Kyoto Protocol for climate change.

The protocol, agreed in 1997 by about 150 countries, commits the US to reducing carbon emissions by 7 per cent from 1990 levels no later than 2012.

The Republican measure, attached to the Interior Department appropriations bill, would prohibit the use of federal funds "to propose or issue rules, regulation, degrees or orders for the purpose of implementing. . . the Kyoto Protocol".

Mr Clinton has vowed to veto the bill, which also contains funding for energy efficiency programmes. But he has already been forced to sign legislation that hinders efforts to reduce carbon emissions.

The transportation bill, for example, prevented the administration from requiring higher vehicle fuel efficiency standards.

Moreover, budget constraints forced the administration to limit its request for tax credits to spur private sector development of technologies to address climate change.

This modest Climate Change Technology Initiative came under attack from both ends of the political spectrum. Gary Cool, of Greenpeace, called the administration proposals "very inadequate, given the size of the problem and US emissions".

The rightwing Cato Institute, called the package "a sham" and a "repackaging of failed programmes that do nothing to significantly reduce global temperatures".

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Euro Spot
EMS Ecu Rates
Euro-zone Bonds
Euro Trading Day

But Roger Ballentine, deputy assistant to the president for environmental initiatives, defended the programme and said it was impossible to estimate the savings that could be achieved." The initiative is meant to spur development of technologies which will make a significant contribution to the way we consume energy," he said.

The Energy Department's partnership programme with US carmakers, which aims to triple fuel efficiency by 2004, has also suffered deep cuts. Congress has refused all funding for a $200m programme to help the states implement clean air plans.

The Senate has ordered the administration not to submit the Kyoto Protocol for approval unless developing countries agreed to reduce emissions as well.

Congressional stinginess has forced the administration to address global warming through a series of small measures. In August the president issued an executive order co-ordinating federal efforts to convert crops, trees and other biomass into fuel, power and products. In June the president required each federal agency to reduce greenhouse gas emissions in their buildings by 30 per cent below 1990 levels over the next decade.

While environmentalists have strong doubts about whether the administration's emissions reduction initiatives would be effective, they may not get a chance to find out if the Republican-dominated Congress gets its way.

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THE WALL STREET JOURNAL.

Greenhouse Gases In U.S. Last Year Rose Least Since '91

By John J. Fialka

10/27/1999
The Wall Street Journal
Page A8

WASHINGTON -- Production of greenhouse gases, man-made pollutants thought to be artificially warming the Earth's atmosphere, barely increased in the U.S. last year while the economy grew by 3.9%, the Department of Energy said.

Production of carbon dioxide, methane and other gases grew by only 0.02%, the slowest growth since the recession year of 1991. Overall industrial **emissions** fell by 1.3%, and **emissions** caused by the production of primary metals dropped by 1%.

While the slowdown is fairly dramatic in light of last year's economic surge, Arthur Rypinski, an economist for the DOE's Energy Information Administration, says it will take several years of similar data before he is convinced that structural changes in the nation's economy are curbing greenhouse gases.

"For the moment, all we have is an interesting snapshot," he said. Mr. Rypinski believes an unusually warm winter and a slowdown in auto, chemical and steel production may have caused some of the decline. Tougher federal restrictions on methane **emissions** from landfills produced a 1.5% drop, he added.

Many scientists believe greenhouse gases change the climate by trapping more of the heat from the sun. The U.S. has signed the Kyoto Protocol on global warming, committing itself to a 0.7% reduction in greenhouse gases from 1990 levels by the period 2008 to 2012. **Emissions** are currently 10% more than 1990 levels, the DOE said. Political concerns in Congress over the treaty's potential damage to the economy have stymied efforts to implement the pact.

Michael Marvin, president of the Business Council for Sustainable Energy, a group of 50 companies and trade associations supporting the treaty, said the new information "confirms what we've said all along: You can have economic growth and you can reduce carbon **emissions** ."

As the new U.S. data emerged, delegates from more than 100 nations were gathered in Bonn to work on the details of the treaty. German Chancellor Gerhard Schroeder opened the two-week session by explaining that his government will press ahead with a gradual increase in energy taxes.

In what appeared to be a pointed reference to the U.S., he said: "Anyone wishing to remain credible in the debate on climate policy must . . . implement at home what they have pledged on the international stage."

The New York Times

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

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)

WEDNESDAY, JANUARY 5, 2000
Headlines

THE MONITOR'S VIEW

Beyond Greenhouse Gases

International wrangling over ways to control the greenhouse gases that drive global warming is the prelude to a larger debate. Scientists now find that the dust, soot, and other microscopic particles we kick into the atmosphere are also potent climate changers. Nations will have to find ways to reduce this dirty, airborne - or aerosol - pollution, as well as curb carbon dioxide emissions, to avoid possibly unpleasant environmental changes.

It won't be easy. Cleaner, more efficient energy use and production can cut back both carbon dioxide emissions, the chief man-made greenhouse gas, and some aerosol pollution. But that would only begin to solve the aerosol problem. A recent expedition studying the man-made haze over the Indian Ocean found this problem to be far larger and more complex than scientists have realized.

Scientists had thought the main climate effect of aerosols would be regional cooling as the particles scattered sunlight back into space. Instead, the Indian Ocean researchers found a thick pall over an area as large as the continental United States. It absorbed sunlight and warmed up. Black soot and other heat-absorbing particles offset the cooling effect. Moreover, they reduced the sunshine reaching the surface enough to cut back growth of the microscopic algae that underlie marine food chains.

The researchers concluded that aerosol palls can effect climate in ways they don't fully understand. Aerosols may offset or enhance global warming. They may affect cloud cover and reduce precipitation significantly. They can affect marine food chains.

What happened over the Indian Ocean raises a global concern. Pollution from China, India, and other parts of southeast Asia had spread over a vast area. Research elsewhere has traced Asian particle plumes across the pacific. North American plumes reach far over the Atlantic. Some of these plumes contain more soot and other dark matter than others. But all are becoming extensive enough to have far-reaching environmental effects.

These aerosol palls arise from a variety of sources which, in the aggregate, will be hard to control. In southeast Asia, coal-burning industry and millions of wood-burning and dung-burning homes contribute dirty particles. Elsewhere, slash-and-burn farming on a massive scale is at fault. In regions like North America, aerosols come from trucks, leaf blowers, and other such dispersed sources, as well as from industry.

Controlling this kind of pollution would mean fundamental changes in long-established lifestyles in many parts of the world. Curbing carbon dioxide emissions seems simple by comparison. As population grows,

aerosol pollution will worsen. Nations cannot continue to ignore it. Building global consensus to deal with greenhouse gases is a tough diplomatic exercise. It's only a warm-up for the coming aerosol challenge.

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The Washington Times NOV 22 1999

Circ: 90 126

WILLIAM LASH III

Kyoto through the back door A16

The president may not have inhaled, but exhaling in the future maybe regulated by the Environmental Protection Agency. As part of an ongoing campaign to implement the Kyoto Protocol on global warming via the back door, the EPA and its allies have been moving toward regulating carbon dioxide (CO2).

This unprecedented power grab would place the EPA in control of not just environmental regulation but energy policy and industrial policy. Regulation and reduction of greenhouse gas emissions are the keystone of the Kyoto Protocol.

CO2, a naturally occurring substance that we exhale every day, is a so-called greenhouse gas that has not been subject to regulation by the EPA.

But if the EPA has its way, that's going to change. In a legal memorandum written to EPA Administrator Carol Browner in April 1998, EPA General Counsel Jonathan Z. Cannon advised that the Clean Air Act granted the EPA power to regulate emissions of carbon dioxide. The legal opinion stated that "CO2 emissions are within the scope of EPA's authority to regulate." Five days later, the EPA announced that pursuant to the settlement of litigation with the Natural Resources Defense Council (NRDC), it would "study" control strategies for regulating CO2 as an air pollutant combined with other pollutants, including sulfur dioxide (SO2), nitrogen oxide and dioxide (Nox), and of utmost concern, mercury.

Rep. James F. Sensenbrenner, Wisconsin Republican, commented on the action in a letter to the EPA administrator, stating that the settlement agreement was in reality "a step toward" implementation of the Kyoto Protocol. Mr. Sensenbrenner noted that "Congress, in enacting section 112 of the Clean Air Act, did not list CO2 as a hazardous air pollutant and I do not believe that EPA has amended that list to include CO2."

Since CO2 is not even regulated as a pollutant under any provision of the Clean Air Act, why does EPA propose to study control strategies for regulating CO2? Under the guise of examining control strategies for regulating mercury, the EPA is attempting to secure jurisdiction for regulating CO2. This new approach is not the way to protect the public from the environmental hazards posed by mercury emissions. It is, however, the way to lay the groundwork for regulation of CO2 and thus implementation of the Kyoto Protocol.

Unsurprisingly, the EPA denies that the planned CO2 analysis is a first step toward implementation of the Kyoto treaty. However, the NRDC, the plaintiff in the modified settlement agreement, makes a conflicting statement. According to Dan Lashoff of the NRDC, "It's intended to look ahead to emissions reductions of carbon dioxide and other pollutants that may be required to achieve national objectives as established by the treaty."

Although the EPA states it has no plans to list CO2 as a hazardous air pollutant under the Clean Air Act, the timing of the agreement a mere five days after release of the EPA general counsel's CO2 memorandum hardly seems coincidental. Rather, it seems that perhaps the agency was attempting to ratify, through a consent agreement, its tortured interpretation of the Clean Air Act. Congress has not delegated to EPA the authority to regulate CO2 as a pollutant. In its zeal to "make good policy," the EPA is engaging in yet another usurpation of legislative power.

EPA efforts to regulate CO2 as a pollutant were joined recently by Greenpeace and other environmental activists. In a petition to the EPA, these groups assert the agency must regulate CO2 emissions from new automobiles under the Clean Air Act. They maintain that, although a natural part of the atmosphere, CO2 in higher concentrations contributes to global warming and threatens public health. Asserting that CO2 is a pollutant, the petitioners seek regulation increasing the Corporate Average Fuel Economy (CAFE) standard for motor vehicles.

CO2 is a naturally occurring gas, a fundamental nutrient in the food chain. It is non-toxic at 20 times current atmospheric levels. Yet, according to the EPA, the fact that CO2 is emitted into the air gives the agency the power to regulate it. Since virtually every sector of the economy from electricity generation to manufacturing, agriculture and transportation results in CO2 emissions, the EPA interpretation of the Clean Air Act would give it control over nearly every aspect of productive activity in the nation. Rep. David McIntosh, Indiana Republican, states that "it is inconceivable that Congress would delegate far-reaching regulatory powers to EPA without ever saying so in the text of the statute."

EPA General Counsel Gary Guzy recently assured members of Congress that the "administration has no intention of implementing the Kyoto Protocol" prior to its ratification by the Senate. The disparity between the EPA s actions and its words leaves us all waiting to exhale.

William H. Lash III is a Distinguished Senior Fellow at the Center for the Study of American Business at Washington University in St. Louis and a professor of law at George Mason University School of Law in Arlington.

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The Washington Times

NOV 22 1999

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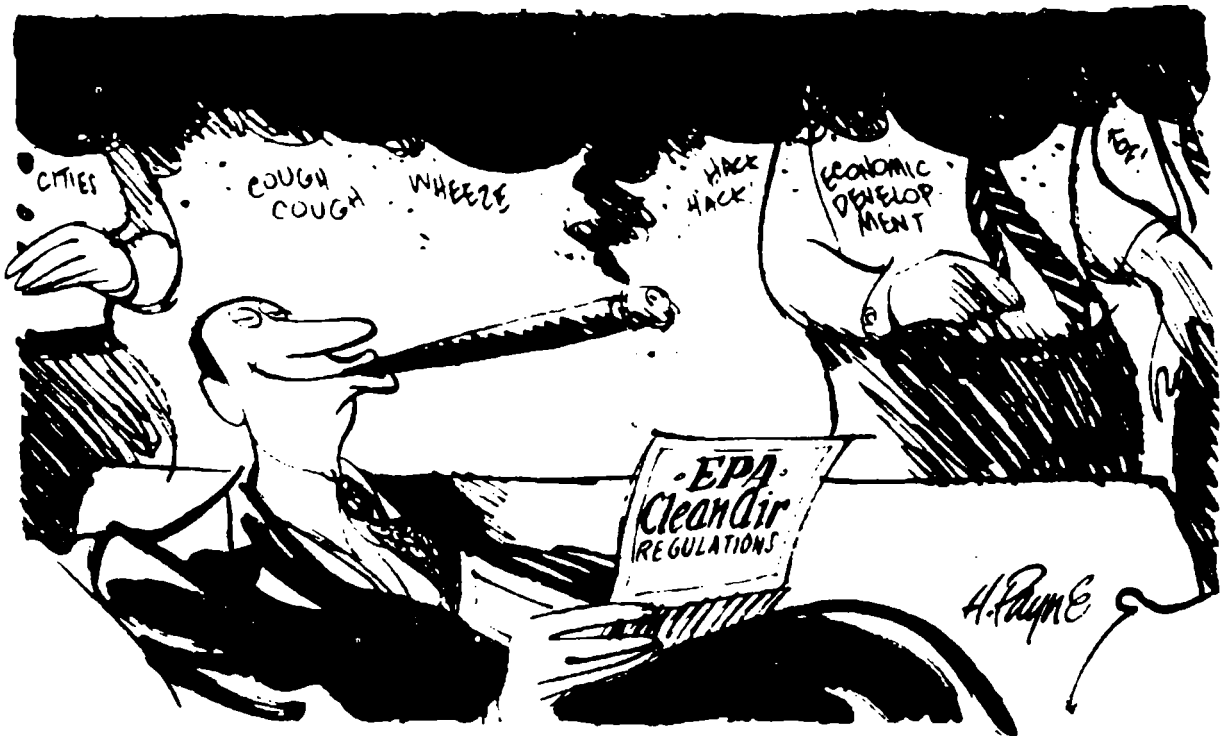

The Washington Post

Circ: 852,262

NOV 23 1999

Don't Mess With the Atmosphere A26

One comment in George Will's Nov. 18 op-ed column about CO_2 and global warming caught my eye: Projected temperature increases will "be only one degree to 3.5 degrees Celsius. Precipitation will increase, as will many plants: The average crop would be 30 percent more productive with projected increases in carbon dioxide." Even a one-degree warming could have serious consequences, and a 30 percent increase in crop productivity is simply ridiculous.

The rest of the column rehashes the environmentalist-bashing rhetoric the right has been dishing out for years and ignores the growing mountain of evidence that we are playing with dynamite by modifying the atmosphere.

WILLIAM WILLIAMS
Ridge, Md.

TIME

Circulation 4,600,000

NOV 29 1999

Driving Cell Cars p-8

IN HIS STORY "WILL WE RUN OUT OF GAS?" [SPECIAL REPORT, Nov. 8], Mark Hertsgaard presented an encouraging future for our prospects of driving more environmentally friendly automobiles. Hybrid gasoline-electric cars with impressive fuel efficiency are already on our doorstep, and his prediction that hydrogen-powered fuel-cell cars will be in showrooms by 2004 is even more exciting. It is true that their only exhaust is water vapor. However, Hertsgaard seems reluctant to spoil the party by telling us where the hydrogen comes from. It is certainly not out there floating around in large amounts free for the asking. Fuel-cell-powered autos would make for much more efficient use of the ubiquitous fossil fuels, but propulsion free of dependence on these fuels is still a long way off.

G. WILLIAM GOWARD
Clinton, Conn

The New York Times NOV 23 1999

Circ: 1,187,900

Lessons From Ancient Heat Surge

03

By WILLIAM K. STEVENS

What happens when great amounts of heat-trapping greenhouse gases are injected into the atmosphere in a relatively short span of earth history, as is happening today as a result of the burning of coal, oil and natural gas?

One way to help answer this urgent climatic question of the day is to examine what has happened in similar situations in the remote past. Now, American and Australian scientists are reporting evidence that the biggest global warming in the last 100 million years may have been touched off by a sudden blowout of greenhouse gases from the ocean floor.

The scientists say that for a relatively brief period around 55 million years ago, after the extinction of the dinosaurs but long before the onset of today's pattern of periodic ice ages, the temperature of the earth's surface in northern latitudes, and of the deep ocean, soared by some 9 to 12 degrees Fahrenheit. This is substantially more than the 5 to 9 degrees the world has warmed since the depths of the last ice age 18,000 to 20,000 years ago.

So great was the effect of the warming, experts say, that it wiped out many species of marine life and created climatic conditions that led to an explosive expansion in the number and variety of mammal species. It was at this time that the primates, from which Homo sapiens eventually evolved, first appeared.

The analogy to today's conditions is far from perfect, and many questions remain to be answered, but those who have investigated the ancient warming spike say it reinforces a belief that has lately been growing among climate scientists: that a gradual warming of the climate can abruptly soar to new heights once a certain threshold is reached. That is what scientists believe happened in the case of the warming 55 million years ago — and perhaps what could happen again, in certain conditions.

The chief greenhouse gas was and is carbon dioxide, and since the start of the Industrial Revolution in the 18th century, its atmospheric concentration has gradually increased by nearly 30 percent. The average global surface temperature has risen by about 1 degree or a little more in the last century. Mainstream scientists believe, based on computerized simulations of the climate's workings, that the temperature will rise by about another 3.5 degrees by the year 2100 if greenhouse gas emissions continue at the present rate.

A gradual warming of unknown cause preceded the sharp upward spike in temperature 55 million years ago, said Miriam E. Katz, a paleooceanographer at Rutgers University, who is the leading author of a report on the ancient phenomenon in the current issue of the journal Science. But at some point, the warming crossed a threshold that abruptly kicked the temperature up to a new level, said another author of the Science paper, Dr. Gerald R. Dickens of James Cook University in Australia. He compared it to the stretching of a rubber band: "You gradually pull at both ends and, at some instant, the rubber band suddenly breaks."

What caused the climate to snap and send the temperature soaring, according to a hypothesis formulated by Dr. Dickens, was a sudden release of methane locked in the ocean floor, touched off by the previous, more gradual warming. Methane is a greenhouse gas in its own right, and when released from ocean sediments it also combines with oxygen to form carbon dioxide that eventually percolates to the atmosphere.

More evidence that global warming could be brutally abrupt.

Dr. Dorothy K. Pak of the University of California at Santa Barbara and Dr. Kenneth G. Miller of Rutgers are the other authors of the report in Science, which describes chemical and geological evidence of the ancient rush of greenhouse gases and the way it happened. The evidence was contained in corings and ultrasound readings of sediments on a subsea promontory called the Blake Nose, northeast of Cape Canaveral, Fla.

The researchers believe that the original, gradual warming, beginning about 60 million years ago, caused a change in ocean circulation currents that pushed warm surface waters down into the deep sea. This deep-sea warming converted icelike solid methane locked in crystalline structures in the sea-floor sediments into gaseous form. This gas then blasted upward through the sediment, starting mudslides that freed the methane and allowed it to escape into the water and eventually to the atmosphere. On the way, it reacted with oxygen to produce globe-warming carbon dioxide.

One effect of the warming spike, Ms. Katz says, was to transform the environment of the deep ocean, as evidenced by the extinction of more than half of all species of microscopic bottom-dwelling animals. The warming is also believed to have enabled that era's relatively small array of mammals to spread out into formerly frozen regions to colonize other continents, where they proliferated in many evolutionary directions. Among these were the ancestors of horses, apes and humans.

Dr. Dickens has calculated that the sudden influx of carbon associated with the sharp spike of global warming 55 million years ago amounted to at least a billion billion metric tons. At present rates of carbon-dioxide emission from global sources, about two-thirds of that amount would be added to the atmosphere by 2100. Some scientists say it is possible that before then, some threshold could again be surpassed, resulting in an abrupt but unknown change in climate.

Many questions remain. The cause of the gradual warming that preceded the spike 55 million years ago is unknown. Nor do scientists know the magnitude of the atmospheric concentrations before the gradual warming trend and the spike, frustrating comparisons with today. Moreover, it is not clear how much of the ancient warming resulted from

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The New York Times

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the influx of greenhouse gas and how much from accompanying changes in ocean circulation; Dr. Dickens believes both were involved.

A further complication, says Dr. Dickens, is that the influx of greenhouse gases was spewed initially into the ocean 55 million years ago, but is going directly into the atmosphere today. That difference could affect the rate of the consequent warming, since the ocean's inertia might slow the migration of carbon dioxide into the air, making the ancient warming spike less abrupt than otherwise.

The evidence drawn from ocean sediments in the new study was not fine-grained enough to determine just how sharp the ancient warming was, Dr. Pak said, though it took place within a few thousand years at most. Other large, abrupt climatic changes of the more recent past — during the transition out of the last ice age, for example — have taken place within a human lifetime or less and sometimes within a decade, according to recent evidence.

All of these complications muddy the possible comparison between what happened in the transformational climatic event 55 million years ago and what is happening today. Nevertheless, says Dr. Dickens, the ancient transformation provides a new and continuing opportunity to explore the possible effects of growing concentrations of greenhouse gases without resorting to computer-assisted simulations of the climate.

And, he says, it teaches that "the earth can, for natural reasons, suddenly change dramatically."

An Ancient Warming Spike

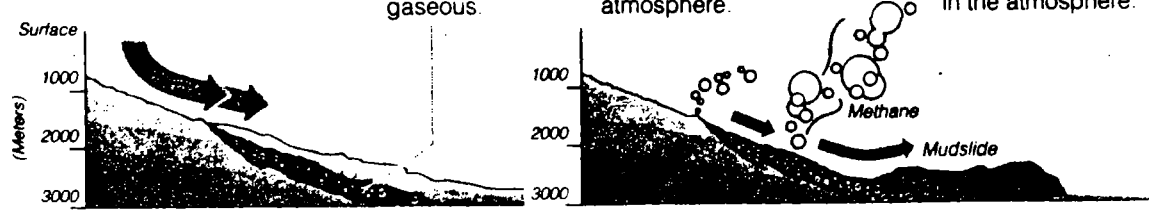
A significant atmospheric warming 55 million years ago may have been caused by a blast of greenhouse gas from the ocean floor. Scientists believe it happened this way:

1 Gradual warming caused a change in currents, and warm waters from the surface plunged.

2 Solid methane trapped in sea sediments became gaseous.

3 Methane burst from the sediment, and mudslides allowed it to escape into the water and atmosphere.

4 Methane reacted with oxygen to create carbon dioxide, which trapped heat in the atmosphere.



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 CO_2 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 CO_2 reductions achieved by other countries.

Europeans object that much of this trading would be in "phoney" certificates, notably from Russia and Ukraine where CO_2 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 CO_2 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.

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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-er ronment. "No politician either party is comforta with that label," he said.

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THE WALL STREET JOURNAL EUROPE FRIDAY - SATURDAY, NOVEMBER 5 - 6, 1999 *

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

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

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 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.

Poss'ble J.S. N issile Shield A arms 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.

"There is no doubt that this would lead to

See ALLIANCE, *A22, Col. 1*

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 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."