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Top Science
Articles

Meeting the Challenge of Global Climate Change April 1999

Global climate change is one of our greatest environmental challenges. The overwhelming weight of scientific authority tells us that the build-up of greenhouse gases in the atmosphere creates dangers -- such as severe storms and droughts, increases in respiratory and infectious diseases, and rising sea levels -- that are too serious to ignore.

The Clinton Administration is working at home and abroad to meet the challenge of climate change. Domestically, we are working on a wide range of initiatives to reduce greenhouse gas emissions by developing and deploying energy efficient technologies and spurring the broader use of renewable energy. Internationally, we are working to secure the meaningful participation of developing countries in addressing global warming and to complete the other unfinished business of the Kyoto Protocol.

The Science of Climate Change

Greenhouse gases trap heat from the sun. These gases warm the Earth's surface by an estimated 60° Fahrenheit (F), sustaining our existence on the planet. However, the burning of fossil fuels and deforestation have increased the concentration of carbon dioxide (the principal greenhouse gas) by more than 30% since preindustrial times.

Scientists predict that, if we continue on our current course, concentrations of greenhouse gases in the atmosphere will reach roughly twice current levels by 2100 -- a level not seen on this planet for the past 50 million years. The Intergovernmental Panel on Climate Change (IPCC), which represents the work of more than 2,000 of the world's leading climate scientists, estimates that this will lead to an increase in global temperature of 2 to 6.5° F. By way of comparison, the last ice age was only 5 to 10° F colder than today.

Over the past year, new data from satellites, tree rings, ice cores, and deep boreholes drilled in the Earth's surface have reinforced the broad scientific consensus that human activities have started to affect the climate and that continuing on a "business as usual" course will lead to substantial warming in the next century. Studies have shown that the 20th century has been the warmest century in the past 1,000 years and that the 1990s have been the warmest decade in that period, while 1998 has been the single warmest year on record.

Potential Impacts of Climate Change

Scientists predict a range of likely effects from global warming:

- **Extreme weather.** As temperatures increase, so does the rate of evaporation. This acceleration of the so-called hydrologic cycle is projected to increase the frequency and intensity of extreme weather events such as floods and droughts. Last year's El Nino -- which produced warmer and wetter conditions akin to those anticipated from global warming -- offered us a window on the type of extreme weather that climate change may bring, from heat waves and drought in Texas, to wildfires in Florida, Mexico and Indonesia, ice storms in the northeastern United States, and devastating floods in China and Bangladesh.

- **Human health.** Warmer temperatures are projected to increase fatalities from heat stress and expand the geographic ranges for diseases like malaria and dengue fever. Additional smog caused by warmer temperatures could increase the incidence of asthma and other respiratory illnesses, particularly among children and the elderly.
- **Sea level rise.** Scientists project that the sea level will rise by an additional 6 to 37 inches by 2100, endangering island states and coastal areas. A 20-inch rise could inundate 7,000 square miles of the U.S. coastline, with Florida and the Gulf Coast at greatest risk.
- **Agricultural impacts.** Changes in growing seasons, water availability, soil moisture, and precipitation are expected to cause significant regional shifts in food productivity, with decreased production in many of the world's poorest regions. Water supplies and water quality may also be affected, posing threats to irrigation, fisheries, and drinking supplies.
- **Damage to ecosystems.** Many species are highly adapted to particular climate conditions and may not survive substantial climate shifts. For example, the United States may lose beech trees and sugar maples, and western conifer forests are likely to shrink, as the tolerable climate zones for these species shift hundreds of miles to the north.

President Clinton's Domestic Plan

Since 1993, President Clinton has put into place dozens of win-win programs to develop and deploy energy efficient technologies and spur the development and broader use of renewable energy. These efforts have accelerated since the Kyoto climate change conference in 1997.

- **Climate Change Technology Initiative.** This vigorous program of *tax incentives* and *investments* focuses on energy efficiency and renewable energy technologies. The FY 1999 appropriations for these programs totaled over \$1 billion and represented a 25% increase over the prior year. The President's FY 2000 budget proposes a still more accelerated effort.
 - The **tax incentive package** contains \$3.6 billion over five years for consumers who purchase energy efficient products and for producers of energy from renewable sources. Highlights include: a tax credit of up to \$2000 for energy efficient new homes; a 10-20% credit for selected energy efficient products for homes and buildings; a credit of up to \$2000 for rooftop solar systems; a credit of up to \$4000 for qualifying electric, fuel cell or hybrid vehicles; extension of the current 1.5 cents/kilowatt hour credit for the production of electricity from wind and biomass; an expansion of the biomass credit to cover additional sources; and a 1.0 cent/kilowatt hour credit for cofiring coal and biomass in power plants.
 - The **investment package** contains nearly \$1.4 billion in FY 2000 to research, develop, and deploy clean energy technologies. This represents a 34% increase over the amount appropriated in FY 1999. Highlights include: increased funding for the *Partnership for a New Generation of Vehicles*, a government-industry effort to develop cars that get up to three times the fuel efficiency of today's cars; the *Partnership for Advancing Technology in Housing*, which aims to improve the energy efficiency of new homes by more than 50% and to retrofit 15 million existing homes to make them 30% more energy efficient within a decade; a stepped-up *Bioenergy Initiative* to develop advanced bioenergy technologies; expanded research and development efforts in other key renewable energy technologies, such as solar, wind, and geothermal energy; and a *Carbon Cycle Initiative*, to deepen our

understanding of carbon “sinks,” such as forests and farmlands.

- **Electricity restructuring.** Another core element of the President’s plan involves restructuring the electricity industry by introducing competition that will save consumers millions on their energy bills while reducing greenhouse gas emissions. The Administration’s restructuring proposal would provide a profit incentive for generators to produce more electricity with less fuel and to improve energy efficiency. It also includes an aggressive, 7.5 percent renewable portfolio standard to increase the use of electricity from renewable sources and a \$3 billion Public Benefits Fund to spur greater investment in energy efficiency and renewables.
- **Industry Partnerships.** The Administration is also engaged in a wide range of consultations with key industry sectors to improve energy use and reduce emissions. For example, the *Industries of the Future* program works cooperatively with the nation’s most energy-intensive industries -- such as aluminum, glass, chemicals, forest products, mining, petroleum refining, and steel -- to develop technologies that increase energy and resource efficiency.
- **Credit for Early Action.** The Administration is committed to working with Congress and industry on legislation to reward companies taking early, voluntary action to reduce their greenhouse gas emissions or increase carbon sequestration.
- **Clean Air Partnership Fund.** The President’s FY 2000 budget proposes \$200 million for the creation of a new Clean Air Partnership Fund to support state and local projects to reduce both greenhouse gas emissions and ground-level air pollutants.
- **Federal energy use and procurement.** The President’s plan seeks to substantially reduce the Federal government’s own greenhouse gas emissions by improving the energy efficiency of Federal facilities and activities and reforming procurement practices. These actions are important in their own right, since the Federal government is the nation’s largest single energy user, but they also set an important example for the private sector.
- **Domestic emissions trading.** The President has proposed a domestic emissions trading system to begin by 2008 so that we can achieve our emissions target at the lowest possible cost. The U.S. has used emissions trading successfully to reduce the pollution that causes acid rain -- exceeding environmental objectives at about 50% the expected cost.
- **Scientific research.** The Administration is continuing its strong support for the U.S. Global Change Research Program, with nearly \$1.8 billion in funding requested for FY 2000. This program provides a sound science foundation for policy decisions by furthering our understanding of human- and naturally-induced changes in the Earth's environment and assessing the likely consequences of global warming.

Diplomatic Agenda

Thanks largely to U.S. leadership, the international climate change agreement reached at Kyoto, Japan in December 1997, combines strong environmental targets with elements of flexibility that will allow nations to meet their targets in a cost-effective manner, including:

- **Flexible market mechanisms.** The Protocol includes critically important market mechanisms that can dramatically cut the cost of reducing emissions. Chief among these are *international emissions trading* and the so-called *Clean Development Mechanism (CDM)*, which will allow U.S. companies to participate in joint clean energy ventures in the developing world and earn

credits from verified reductions in greenhouse gas emissions.

- ***Emissions targets are to be reached over a five-year commitment period. The first commitment period will be 2008-2012.*** Allowing emissions to be averaged over a commitment period helps smooth out short-term fluctuations due to economic performance or weather. Having a decade before the start of the binding period will allow more time for companies to make the transition to greater energy efficiency and/or lower carbon technologies.
- ***Emissions targets include all six major greenhouse gases.*** This will provide both more comprehensive environmental protection and additional flexibility for nations and companies.
- ***Activities that absorb carbon, such as planting trees, can be used to offset emissions.*** Including these so-called carbon sinks will encourage afforestation, reforestation, and better forestry and agricultural conservation practices.

At the November 1998 UN climate change conference in Buenos Aires, the parties agreed on a two-year timetable for filling in the key details of the Kyoto Protocol in areas such as emissions trading, the CDM, compliance, and the scope and use of carbon sinks. Buenos Aires also saw progress on the issue of developing country participation as Argentina and Kazakhstan announced their intention to take on binding emissions targets for the 2008-2012 time period. The President has made clear that he will not submit the Kyoto Protocol to the Senate without meaningful participation from key developing countries in efforts to address global warming.

Economic Cost of Kyoto

The Administration's economic analysis of the Kyoto Protocol concludes that, if we do it right, the cost to the United States of meeting our Kyoto target should be modest. Even without counting the impact of domestic policies or the environmental, health, and economic benefits of limiting climate change, estimates derived from economic modeling suggest an emissions price in the range of \$14 to \$23 per ton of greenhouse gases. In 2010, that would translate into an increase of \$70 to \$110 per year for an average family's energy bill. This increase, however, would be substantially offset by the decline in electricity prices resulting from increased competition in a restructured electricity industry, as the Administration and others have proposed. In addition, noted economists have estimated the ancillary benefits of reducing greenhouse gas emissions -- such as reduced air pollution -- could produce savings equal to one quarter of the costs of meeting our Kyoto target.

Conclusion

For the past 25 years, efforts to protect the environment, whether by cleaning our air, our water, or eliminating acid rain, have been repeatedly assailed as a threat to our economy. Yet today, we have the cleanest environment in a generation and the strongest economy in a generation. President Clinton's balanced approach to the challenge of climate change will allow us to continue to grow the economy and protect the environment at the same time.

Wednesday May 24 7:58 PM ET

Great Lakes Experiencing Early Spring-Scientist

MADISON, Wis. (Reuters) - The seasonal rise and fall of the U.S. Great Lakes, collectively the world's largest body of fresh water, are occurring earlier in the year in a sign that global warming is shifting the seasons, a scientist said on Wednesday.

The effect was most noticeable in the two smallest of the five lakes, Erie and Ontario, which are reaching their highest levels in spring about a month earlier than they have in the past, University of Wisconsin climatologist John Lenters said.

He theorized that global warming -- the much-debated phenomenon tying rising average temperatures to a buildup of carbon dioxide in the atmosphere from the burning of fossil fuels -- has quickened the annual melting of winter snows feeding the lakes and hastened evaporation from warmer lake waters in the fall and winter.

"What I am finding is a shifting of the seasons," Lenters said.

He presented his study, based on lake levels dating back to 1860, to a meeting of the International Association of Great Lakes Research in Cornwall, Ontario, Canada.

The study also found a widening gap between the seasonal peaks and valleys in lake levels since record keeping began. The difference between Lake Ontario's lowest yearly level and its highest has widened 29 percent to 22 inches, which is equivalent to 90 billion cubic feet of water.

Meanwhile, the lakes have fallen to levels not seen in 30 years in a separate phenomenon that runs in longer cycles.

Scientists have said years of mild winters have left the lakes' surface free of ice, increasing evaporation rates. Only a few years ago, the lakes, which contain 20 percent of the world's supply of fresh surface water, had risen to record high levels, swallowing beaches and undermining beachfront homes.

Global warming entices butterflies to arrive early

BY NICK NUTTALL, ENVIRONMENT CORRESPONDENT
GLOBAL warming is accelerating the arrival of many common butterflies in Britain.

Scientists studying 35 of the estimated 60 species of British butterfly claim that some, such as the red admiral, can now be seen a month earlier than was the case in the mid- 1970s. Others, such as the peacock and the orange tip, are appearing between 15 and 25 days sooner than two decades ago. However, the researchers say that any further increases in temperature could damage species such as the ringlet, whose numbers fell drastically during the drought of 1976.

David Roy, one of the researchers, said: "Northerly-living butterflies, which need cooler temperatures, might also suffer, such as the northern brown argus and the mountain ringlet found in Scotland." Others might also decline if global warming affected the timing of certain plants or altered habitats. "There again, a species like glanville fritillary could benefit. It is found on the Isle of Wight and is on the edge of its range, but it could benefit from climate warming," Mr Roy said.

Average temperatures have climbed by one degree in central England over the past 23 years. Previous research has shown that many common species can now be found further north and in larger numbers than was the case 25 years ago.

Some butterfly populations are also lasting longer than in the 1970s. The red admiral is now appearing nearly 32 days earlier. It is also surviving more than eight days longer than before. "The difference seems to be because springtime temperatures have been more affected than late summer and early autumn ones," Mr Roy said.

Overall, a dozen other species are emerging between eight and 26 days earlier than in previous generations. The findings, published in *Global Change Biology*, have come from Mr Roy and Tim Sparks, both of the Centre for Ecology and Hydrology at Monks Wood, Cambridgeshire. Their study is based on an analysis of

data from 1976 to 1998 provided by the Butterfly Monitoring Scheme. Members check more than 100 sites each week from April to September.

Dr Martin Warren, of the charity Butterfly Conservation, said: "This is proof of what we have suspected and is in line with the observations of many of our recorders.

Global warming is definitely leading to the early appearance of many butterflies."

GM story ran in the NYTimes today.

GM, Giner Join On Fuel Cell Cars

By The Associated Press

BOSTON (AP) -- General Motors has joined forces with a technology and electrochemical research company to develop clean and quiet fuel cell vehicles, which emit water instead of fumes, the companies announced Monday.

The joint venture between GM and Giner Inc., pioneer in fuel cell technology, will be called Giner Electrochemical Systems and be based in Waltham, Mass.

Fuel cell vehicles run on electricity generated by an electrochemical process using hydrogen and oxygen.

Larry Burns, GM vice president and head of the company's research division, said that while fuel cell technology is "still immature," improvements to the technology could lead to putting fuel cell vehicles on the market.

General Motors said its engineers already have solved a key problem with a fuel cell stack by keeping the water involved from freezing in subzero temperatures. Frozen water in a fuel cell vehicle would be like a dead battery in a conventional car.

Giner Inc., founded in 1973, has developed technology for NASA, the U.S. Navy and for medical diagnostic systems.

Nissan says may link with others on fuel cells

JAPAN: May 23, 2000

TOKYO - Nissan Motor Co said on Monday it may tie

up with other companies to develop fuel cells, a cleaner form of energy that may challenge the combustion engine in coming decades.

Nissan's chief operating officer Carlos Ghosn said the Japanese automaker was working with partner Renault SA, which owns a controlling stake in Nissan, in a project which could include other firms.

"We may join forces with other companies - other automakers or even suppliers. It is clearly not something that we consider we can develop in-house," Ghosn told reporters. The huge costs involved in developing fuel cells has already spawned several alliances between automakers.

Ford Motor Co and DaimlerChrysler AG have teamed up with Canada's Ballard Power Systems Inc while General Motors and Toyota Motor Corp are working together.

Fuel cells make electricity from hydrogen and their only emissions are water and heat. The issue of what fuels should be used to supply the hydrogen is still being debated by the auto, energy and fuel cell industries.

Ghosn also said that Nissan, in the midst of a drastic restructuring, had no specific target date for the development of its first marketable fuel cell vehicle unlike some automakers.

DaimlerChrysler, GM and Toyota have all said they are aiming to develop an economically viable fuel cell car by around 2004.

But industry officials and analysts say that with little consensus on the fuel to be used and a lack of infrastructure, it will be between 20 and 50 years before fuel cell vehicles make significant inroads into the market.

Story by Edwina Gibbs

REUTERS NEWS SERVICE Metropolitan Launches Water Reliability Initiative as Climate Change Experts Brief Agency's Board

LOS ANGELES--(BUSINESS WIRE)--May 23, 2000--On the heels of an unexpected triple-digit heatwave, a panel of preeminent scientists told the board of directors of the

Metropolitan Water District of Southern California today that the time is now to prepare for the consequences of climate change.

Today's climate change workshop represents the type of interactive dialogue undertaken by Metropolitan's board as it reshapes the agency's future through its strategic planning process, said board Chairman Phillip J. Pace. Public workshops also are part of the open, participatory process that will redefine the way water is acquired, sold and distributed throughout Southern California, he said.

"History has been the agency's teacher," Pace said, noting that the previous 1987-92 drought prompted Metropolitan to develop conservation and recycling programs, regional planning efforts and water transfer opportunities.

"The vulnerability of the state's water resources to climate change is a serious concern for us, especially since we're about to update our water resource management plan," Pace said. "It's our responsibility as the region's major imported water purveyor to reduce this vulnerability and lessen the impact of future droughts on individuals, communities and the environment."

Metropolitan's drought-proofing efforts received national acclaim last week in a National Drought Policy Commission report issued to Congress. The report stated: "Metropolitan's plans ensure reliable water supplies for more than [17 million] people despite weather, regulatory or disaster-based drought pressures."

As part of today's workshop, Pace announced the launching of Metropolitan's water reliability initiative aimed at securing the Southland's future water supply.

That future supply appears headed for some change, according to Dr. William J. Patzert of NASA's Jet Propulsion Laboratory, Ocean Sciences Element.

"The annual rainfall over the Los Angeles Basin is strongly coupled with the Pacific Decadal Oscillation (PDO) oceanic pattern," Patzert explained. "If the PDO is switching from the El Nino friendly 'warm phase' of the past 20 years to a more La Nina friendly 'cool phase' in the coming few decades, L.A. rainfall could be 33 percent less for the next 10 to 20 years."

The PDO theory contends that the Pacific Ocean switches every 20, 30 or 40 years between warm and cool conditions. According to satellite data retrieved in January, the Pacific Ocean may be warming, bringing years of colder, wetter weather to the northern United States and warmer, drier weather to the south.

"Because severe annual droughts and decades-long periods of dry conditions in California appear to be linked to temperatures in the Pacific Ocean, one of the greatest challenges to us now is to understand how future global warming will impact the ocean and its circulation," said Dr. Glen MacDonald of the University of California at Los Angeles' Department of Geography.

Dr. MacDonald, who also is a member of UCLA's Institute of the Environment, conducts research on causes and impacts of long-term climate change by analyzing tree-rings, fossils from lake sediments and geochemical analysis of sediments. The results of his work show that significant droughts have been a natural part of the Los Angeles climate for more than 1,000 years.

"A decades-long period in the late 16th century gives us the most immediate cause for concern about Southern California water management," MacDonald said. "Not only did this drought period impact California, but it extended to the east and caused sharp decreases in the flow of the Colorado River. Such a drought today would seriously impact all of our main surface water supplies."

The Colorado River, coupled with imported water from Northern California, are the cornerstones for water supply in Southern California. Metropolitan imports water from the two sources for its 27 member agencies to provide for the region's 17 million residents.

"Since Southern California has historically received 60 to 65 percent of its water supplies from imported sources, it is affected not only by local drought conditions, but also by conditions in the watersheds of the Sacramento/San Joaquin, Owens and Colorado rivers," according to Jeanine Jones, principal engineer with the California Department of Water Resources. "Defining drought conditions must take into account impacts to water supplies, not just rainfall shortcomings."

To better weather drought, Pace said Southern California has invested more than \$8 billion in water conservation, recycling and groundwater storage programs. To measure success, Pace pointed out that the Southland has maintained imported water consumption at 1975 levels, despite an increase of 5 million residents.

"It is time to stop arguing over whether the climate will change and instead time to begin preparing for the consequences," warned Dr. Peter H. Gleick, co-founder and president of the Pacific Institute for Studies in Development, Environment and Security

The Metropolitan Water District of Southern California is a consortium comprised of 27 cities and water agencies serving nearly 17 million people in six counties. The District imports water from the Colorado River and Northern California to supplement local supplies, and helps its members to develop increased water-recycling, desalination, conservation, storage, and other water-management programs.

New Studies Highlight Opportunities for China, Brazil and Argentina To Reduce Emissions While Maintaining Economic Growth

WASHINGTON, May 23 /PRNewswire/ -- The Pew Center on Global Climate Change released today three new studies that outline realistic opportunities for China, Brazil and Argentina to address the challenge of climate change. The reports are part of a six report series that examines ways to reduce emissions

in developing countries without compromising economic growth.

China, Brazil and Argentina are becoming leaders among developing nations in the international climate change debate and the case studies demonstrate the effectiveness of different policy approaches to emission reductions. In the latest reports, the authors use a linear programming model to conduct an assessment of the technological options available to each country for supplying new electric power generation through 2015.

"These reports are particularly noteworthy because of the geographical and economic importance of each nation examined. They highlight the different challenges and circumstances that developing nations face in addressing environmental problems," said Eileen Claussen, President of the Pew Center on Global Climate Change.

The three previous reports released in the series included an overview piece entitled Developing Countries and Global Climate Change: Electric Power Options for Growth and an examination of the electric power sectors of India and Korea.

Following is a brief overview of each report's findings, recommendations and conclusions:

China

The Developing Countries and Global Climate Change: Electric Power Options in China report was completed by the Beijing Energy Efficiency Center and the Battelle Advanced International Studies Unit. With annual releases of over 918 million metric tons of carbon dioxide into the atmosphere, Chinese decisions affecting energy development and emissions mitigation will significantly impact world climate. The report assesses the current and future state of the power sector to meet projected demand through 2015 under several scenarios.

The Chinese analysis yielded several insights:

* Due to the heavy reliance on coal-fired power generation, baseline

carbon dioxide and sulfur dioxide emissions from thermal plants will

more than double by 2015.

* Increasing demand-side energy efficiency by 10 percent could reduce carbon dioxide and sulfur dioxide emissions by 19 and 13 percent, respectively, in 2015, while lowering costs.

* Expanding the availability of low-cost natural gas through market reforms could reduce emissions of carbon dioxide and sulfur dioxide in the power sector by 14 and 35 percent, respectively, by 2015, and increase costs by only 4 percent compared to the baseline.

* Accelerating the penetration of cleaner coal technologies could help China reduce sulfur dioxide and particulate emissions, but the associated impact on carbon emissions would be minimal and the cost would increase by 6 percent.

Brazil

Developing Countries and Global Climate Change: Electric Power Options in Brazil, was developed by the Federal University of Rio de Janeiro, Energy Planning Program, Center for Technology, and the Battelle Advanced International Studies Unit. The study points out that Brazil produces relatively few greenhouse gas emissions relative to its size and population. This is mainly due to the dominant role of hydropower in electricity generation. Yet its greenhouse gas emissions could be expected to quadruple, as it changes its fuel mix over the next 20 years.

The Brazilian case study also revealed that:

- * Many new investors may favor natural gas-fired combined-cycle plants

that would increase carbon dioxide emissions from 3.4 million tons

in 1995 to 14.5 million tons in 2015.

- * Further tightening of local environmental regulations and adoption

of renewable energy policies could reduce carbon dioxide and sulfur

dioxide emissions by 82 percent and 75 percent, respectively, by

2015.

- * Creating a carbon-free power sector would require an additional \$25

billion in cumulative costs by 2015.

Argentina

The last report in the series is entitled *Developing Countries and Global Climate Change: Electric Power Options in Argentina* and was developed by the Bariloche Foundation also working with Battelle. The report finds that the market reforms the country has been implementing since the early 1990's provided mixed, but on balance, positive environmental results. The country's electric power demand is expected to more than triple over the next 15 years, yet its emissions of greenhouse gases, do not have to increase at the same rate. It finds that investments in natural gas combined-cycle plants and renewable energy sources could provide a prudent path for energy development and environmental protection.

The report also found several key opportunities, including:

- * Adopting policies that favor renewable energy sources and nuclear

power would cost \$32 billion by 2015 and would decrease carbon

dioxide emissions from 14 million tons in the baseline to 11 million

tons in 2015.

* Increasing energy efficiency would reduce total costs by \$6.3

billion and carbon dioxide, sulfur dioxide and nitrogen oxide

emissions would all decline 20 percent compared to the baseline.

A complete copy of each report is available on the Pew Center's web site, <http://www.pewclimate.org>.

The Pew Center was established in May 1998 by the Pew Charitable Trusts, one of the nation's largest philanthropies and an influential voice in efforts to improve the quality of America's environment. The Pew Center supports businesses in developing marketplace solutions to reduce greenhouse gases, produces analytical reports on the science, economics and policies related to climate change, launches public education efforts, and promotes better understanding of market mechanisms globally. Eileen Claussen, former U.S. Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs, is the President of the Pew Center. The Pew Center includes the Business Environmental Leadership Council, which is composed of 21 major, largely Fortune 500 corporations all working with the Pew Center to address issues related to climate change. The companies do not contribute financially to the Pew Center -- it is solely supported by contributions from charitable foundations.

SOURCE Pew Center on Global Climate Change

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