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G	19	2	5	3

Suggested Quotes:

"Though a tree be a thousand feet high, the leaves fall and return to the root." #4434, p. 444, A Treasure Chest of Quotations for all Occasions-no direct attribution

"One generation plants the trees under whose cool shade another generation takes its ease." #4445, p. 445, A Treasure Chest of Quotations for all Occasions-no direct attribution

"From sea it stretches to shining sea, the world's most diverse landscape, a place called America." Alan Landberg, Sweet Land, Sweet Liberty, 1974. Pg. 12, America the Quotable.

"... Large streams from little fountains flow, tall oaks from little acorns grow..." David Everett, Tall Oaks from Little Acorns Grow, p. 179, Golden Treasury of the Familiar.

"A man does not plant a tree for himself; he plants it for posterity." Alexander Smith, Dreamthorp; p. 95, n.10, Familiar Quotations, by John Bartlett.(I like this one the best)

THE WHITE HOUSE

Office of the Press Secretary

FOR IMMEDIATE RELEASE April 16, 1990

The President today named Frank H. Lockyear of Wilsonville, Oregon as the one hundred eighteenth "Daily Point of Light." Mr. Lockyear is a latter-day Johnny Appleseed. More than one million trees have been planted worldwide because of his tireless work.

Over 50 years ago, while working for a large nursery in Portland, Mr. Lockyear saw boxes of cedar seedlings headed for the burn pile. He asked his boss if he could plant the trees scheduled to be discarded. Mr. Lockyear persuaded the Forest Service to donate land and recruited a Boy Scout troop to help him plant the trees. Since then, he has been convincing people around the world to help plant trees.

Mr. Lockyear, now 73 years old and retired, founded ReTree International, a non-profit group with three goals: to plant trees, to educate the public on the importance of planting trees, and to assist in forestry research. The emphasis on education works hand-in-glove with the tree planting activities. He enlists Boy and Girl Scout troops, school and church groups, and 4-H members to plant trees, while he discusses the ecological importance of forests. He has led numerous individuals on planting expeditions throughout the country and in a dozen other countries.

ReTree International also acts as a clearinghouse for the international exchange of seeds, seedlings, and information. It involves young people the world over in education, promotion, and research. In addition, ReTree plants trees in honor of individuals or events, including a memorial in Lockerbie, Scotland which commemorates the victims of Pan Am Flight 103.

The President salutes Frank Lockyear as the one hundred eighteenth "Daily Point of Light." The President's Daily Point of Light recognition is intended to call every individual, group, business, and organization in America to claim society's problems as their own by taking direct and consequential action; to identify, enlarge, and multiply successful initiatives, like the efforts of Mr. Lockyear; and to discover, encourage, and develop new leaders in community service, reflecting the President's conviction that, "From now on in America, any definition of a successful life must include serving others."

# # #

FOR FURTHER INFORMATION CONTACT: Tracey Taylor or Robert Marbut
(202) 456-6266

4/16/91

Carol-

Here are our four tree-planting Daily Points of Light. We have more info on all of them if you need it. There are also many other environmental DPOL's, but these four focus on trees.

Thanks!!

-Jacey

museum, a ball game, or a theatre.

The President salutes the volunteers of Big Brothers/Big Sisters of Sedgwick County as the --- "Daily Point of Light." Daily Point of Light recognition is intended to call every individual, group, and organization in America to claim society's problems as their own by taking direct and consequential action; to identify, enlarge, and multiply successful initiatives, like the efforts of the volunteers of Big Brothers/Big Sisters of Sedgwick County; and to discover, encourage, and develop new leaders in community service, reflecting the President's conviction that, "From now on in America, any definition of a successful life must include serving others."

# # #

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(202) 456-6266

THE WHITE HOUSE

Office of the Press Secretary

For Immediate Release March 15, 1990

The President today named Joseph Ziskovsky of Shoreview, Minnesota as the ninety-first "Daily Point of Light." At 14, he has already made a commitment to community service.

Joseph Ziskovsky was just twelve years old when he became concerned about pollution. He had studied the dangers of pollution and had seen, first-hand, the effects that a drought had on his hometown. He had read that one way to curb the pollution problem was to plant trees. He decided to act. He persuaded nursery owners from as far away as Pennsylvania to donate nearly 3500 trees. He convinced the National Arbor Day Foundation to provide educational brochures on the importance of trees in a healthy environment. He then mobilized area organizations to distribute the trees and educational materials to every child in the three public elementary schools in the city of Shoreview.

Aside from this huge undertaking, Joseph regularly helps organizations involved in service-related programs. He participates in food and clothing drives for local needy families. Joseph Ziskovsky became an Eagle Scout at age thirteen, an honor that only .03% of all Boy Scouts receive at that age.

The President applauds the work of Joseph Ziskovsky for his enthusiastic commitment to community service. He personifies the President's conviction that, "From now on in America, any definition of a successful life must include serving others."

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(202) 456-6266

THE WHITE HOUSE

Office of the Press Secretary

FOR IMMEDIATE RELEASE November 1, 1990

The President today named the crew of the USS Elrod, of Charleston, South Carolina, as the 289th "Daily Point of Light." The crew of the USS Elrod is helping restore forests and woodlands lost to Hurricane Hugo.

After six long months at sea during 1989, the USS Elrod returned to its base just as Hurricane Hugo bore down on the coast of South Carolina. Fallen trees and demolished houses inspired the crew of the Elrod to help the community recover from the hurricane. The crew founded "Trees for Charleston," a program through which more than 72,000 trees have been distributed throughout the community. On the USS Elrod, a large sign displays the increasing number of trees planted by the crew.

When the ship is docked in Charleston, the crew works on the weekends and after hours with other community organizations, planting trees at schools, parks, highways, and neighborhoods. The crew uses this opportunity to talk with community members and school children about the importance of planting trees and the preservation of the environment. In addition, dressed in uniform, the crew visits schools, where they distribute seedlings and talk with children about the importance of planting trees.

The President salutes the crew of the USS Elrod as the 289th "Daily Point of Light." Daily Point of Light recognition is intended to call every individual, group, and organization in America to claim society's problems as their own by taking direct and consequential action; to identify, enlarge, and multiply successful initiatives, like the efforts of the crew of the USS Elrod; and to discover, encourage, and develop new leaders in community service, reflecting the President's conviction that, "From now on in America, any definition of a successful life must include serving others."

# # #

FOR FURTHER INFORMATION CONTACT: Tracey Taylor or Jill Chodorov
(202) 456-6266

★ DRAFT ★

They will be DPOL # 441

THE WHITE HOUSE

Office of the Press Secretary

FOR IMMEDIATE RELEASE April 26?, 1991

The President today named the volunteers of TreePeople, of Beverly Hills, California, as the --- "Daily Point of Light." The volunteers of TreePeople plant trees to fortify the environment, ensuring a green lush landscape for future generations to enjoy.

For over two decades, TreePeople has inspired community members to play a positive role in the future of the environment. Based in Coldwater Canyon Park, TreePeople distributes seedlings to community members who request assistance with planting trees. More than 200 volunteers prepare seedling, watering them, mixing soil, and placing the seeds into containers for distribution. Since its inception, volunteers of TreePeople has planted over 200 million trees.

Through the Citizen Forester Program, community members learn how to properly plant trees so they may coordinate tree planting projects in their neighborhood. The School Education Program teaches environmental awareness to elementary school students, offering them fun ideas for recycling at home and instructions on caring for trees. In addition, the Treepeople distribute seedlings of fruit-producing trees to low-income communties. Many of these communties are enjoying fresh fruit picked from their own trees.

The President salutes the volunteers of TreePeople as the --- "Daily Point of Light." Daily Point of Light recognition is intended to call every individual, group, and organization in America to claim society's problems as their own by taking direct and consequential action; to identify, enlarge, and multiply successful initiatives, like the efforts of the volunteers of TreePeople; and to discover, encourage, and develop new leaders in community service, reflecting the President's conviction that, "From now on in America, any definition of a successful life must include serving others."

# # #

FOR FURTHER INFORMATION CONTACT: Tracey Taylor or Jill Chodorov
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of powers to gradually free Europe of military rivalry and bring the two separated parts closer together. Such a structure needs to be based on a solid foundation. Reconciliation between nations is possible only when they do not fear either for their present or their future. For this reason, an important component of the building must be the recognition of the Polish border along the Oder and Nysa Rivers in the form of a treaty. The direct participation in the talks about that, for Poland, was a very important matter for Poland; and it has already been guaranteed.

To create a new political facet of Europe is going to be a difficult challenge, and one calling for time and an enormous amount of work. A variety of ideas emerging, in this respect, need to become ripe, which in turn requires certain conditions. In our view, a helpful factor would be to form the Council for European Cooperation. Its job would not be to replace any of the existing organizations: it would serve as a platform whereby, within the CSC framework, work might be launched to give the ideas a concrete form. One can hardly imagine such work without a significant role on the part of the United States. After all, your country is linked to Europe by bonds of blood and by experiences of history.

Mr. President, ladies and gentlemen, after General Sikorsky visited the White House in 1943, mine is only the second-ever call by a Polish Prime Minister here. How different the circumstances and how different, I believe, the perspectives of this period in history. I would like the United States to view Poland as one of the important actors of the present-day European politics. A strong Poland engaged in building a democratic order and freed of economic difficulties will be a stable factor of the new European order, an order based on freedom, respect of human rights, and economic and political balance on the Continent. I trust that the United States, with so many of its people linked to Poland by their origin and with the affection for Poland so much alive, will see a friend in the democratic, strong, and economically sound Poland.

Permit me, ladies and gentlemen, to raise in a moment a toast to the good health and the well-being of the President of the United States.

I raise this toast also to the good health of Mrs. Barbara Bush. I wish you strength and perseverance in your difficult role here. It is well-known that the house, even if it's called White, becomes a home only upon the touch of a woman. I know how much Americans like you, and I want to tell you that so do the Poles.

I raise this toast, also, to the well-being of your great country and the millions of its citizens, as well as to our friendship, which at the Polish end has for long been extremely profound.

I raise this toast to you, Mr. President.

Note: The President spoke at 8:15 p.m. in the State Dining Room at the White House. The Prime Minister spoke in Polish, and his remarks were translated by an interpreter. The toasts were released by the Office of the Press Secretary on March 22.

Remarks at a White House Tree Planting Ceremony

March 22, 1990

Thank you, Secretary Yeutter, Bill Reilly, and Chairman Deland, to Senators Lugar and Leahy and Congressman Kika de la Garza, the chairman also in the House Ag Committee, and distinguished Members of Congress here. I want to single out two other special friends, pioneers in this greening effort, tree planting: Trammell Crow and Margaret [Crow] from Dallas, Texas. Distinguished ladies and gentlemen—Irv, I haven't forgotten you. Irv Williams, who was introduced by Clayt, really does so much to just keep the White House grounds beautiful. And we're indebted to him every single day that we have custodianship of this lovely house. Welcome to all of you to an event which celebrates how trees can preserve and protect our great outdoors.

I want to talk just a little about the precious inheritance of trees passed from one generation to another. We see it in the great ebonies of India or the sequoias in California, the lush rainforests of South America and the evergreens of the Alps.

Their very presence demands that we renew and restore the natural beauty of our land. Trees do enhance our atmosphere, providing oxygen and absorbing carbon dioxide. A tree planted today can enrich the lives of generations yet unborn.

Just think, on these grounds stands a tree planted by John Quincy Adams in 1826. Nearby is the spot where Woodrow Wilson's family so loved bay trees that they often ate lunch in a makeshift grove. And not far from here is the little-leaf linden planted in 1937 by Franklin Roosevelt for Britain's King George VI. Next to the Oval Office—there you'll find an oak tree planted by President Eisenhower. There's a swing on it. You can almost see it over past that Suburban over there. Often our grandchild swings on it. And I expect in the future many other grandchildren of Presidents will do the same.

Trees are truly an inheritance that links generations of America. Last summer a terrible windstorm swept through Washington. I remember thinking of these trees around us and the link they provide. Truth is that Barbara and I were a little worried about them—Grover Cleveland's Japanese spider-leaf, for instance, or Herbert Hoover's oak. They're old trees, and maybe I'm beginning to feel an affinity for them with my birthday coming up, but nevertheless, they're special. For instance, the magnolia over there was planted by Andrew Jackson, the one next to the South Portico.

Thankfully, the trees here weren't damaged in that storm. Elsewhere in Washington, it was a different story: a lot of people out the next morning surveying the damage, mourning the loss of a favorite oak or an elm, regarding it with concern and affection, just as you would view a friend.

Trees can be fragile, they can be sturdy, but they are always precious. So, in the budget I submitted to Congress, I asked for $175 million to plant 1 billion trees a year. Today I'm asking Congress to approve another step to protect the environment. We call it the National Tree Trust Act of 1990. It will foster the partnership between public and private sectors to plant trees all across America.

Under our plan, we will designate a private nonprofit foundation to receive a one-time Federal grant to promote community tree planting and cultivation projects; a foundation to solicit contributions from private sources, forging cooperation between individuals, businesses, governments, and community organizations. It will sound a nationwide call for each American to become a volunteer for the environment and, most of all, plant the trees that clean our air, prevent erosion, consume carbon dioxide, and purify our water. This act can preserve the heritage of trees: their beauty that is breathtaking and their bounty that is breathgiving.

As you can imagine, the foundation's funding won't simply come out of the woodwork. In addition to the $35 million in Federal money we're proposing, the foundation will begin to raise millions of dollars more to help reforest America. The Tree Trust Act will work by using State forestry agencies and private tree-planting organizations. Volunteers helping thousands of new volunteers to learn not only how and where to plant trees but how to care for them, why we need them, and how they help the environment. Our foundation will be one of a Thousand Points of Light, creating 10 billion trees of life. By planting trees in all 50 States, we'll knock Johnny Appleseed out of the Guinness Book of Records.

The National Tree Trust Act of 1990 is a key part of our national tree planting and forest improvement initiative to be administered by the Ag Department. This two-part program involves both rural areas as well as local tree-planting programs in the cities. And it, in turn, is crucial to my America the Beautiful program, which I announced in the State of the Union.

I am proud of America the Beautiful. It will help maintain and expand our parks, wildlife refuges, forests, and public lands. I do love the outdoors, and I love exploring it with those who are the trustees of our future.

What we're doing today is planting the seeds of environmental stewardship, and that means not only planting trees but other steps just as vital—clean air, for example. Our clean air proposal promises relief from the smog, acid rain, and toxic pollution that harms trees and people. Once again, I call on the Congress to pass the bill. We're also working hard on energy efficien-

cy and pollution prevention, clean oceans, global cooperation. Just as a tree grows, with roots and branches spreading, our efforts on all these issues will reach into the future.

Nearly a quarter of a century ago, perhaps America's greatest conservationist, Teddy Roosevelt, put it best when he called our lands and wildlife the property of unborn generations and when he said this about America's sequoias and redwoods: they "should be kept just as we keep a great and beautiful cathedral."

Today ours is the chance to keep that cathedral great and beautiful by planting not only sequoias and redwoods but poplars and maples and cypress and sassafras. And I can't think of a better time to begin than this spring, the 20th anniversary of Earth Day. Teddy Roosevelt would have loved that one.

Four weeks from now we'll celebrate it, but I thought we'd get a head start this morning. And so, I'm pleased to be able to join Barbara as she plants this eastern redbud blossoming tree in a few minutes. By comparison to other trees, it seems small today. But so, years ago, did the special tree beside me. My kids were the age of some of you when it, too, was planted by President Eisenhower. And when you're my age, Barbara's tree can be just as strong, embody just as much history, do just as much to ensure the splendor of America.

Trees are an inheritance precious to our cathedral of the outdoors. So, just look around us, and in that context, let me thank again Irv Williams: Thank you, sir, and all the people of the White House grounds staff for the tender loving care they gave to our trees and flowers.

So, let us plant the trees and nurture them so that America will remain America the Beautiful for generations to come.

I am very pleased that all of you came today. And now, with no further ado, let's get on with the tree planting.

Note: The President spoke at 11 a.m. on the South Grounds of the White House. In his opening remarks, he referred to Secretary of Agriculture Clayton K. Yeutter; William K. Reilly, Administrator of the Environmental Protection Agency; Michael R. Deland, Chairman of the Council on Environmental Quality; and Irvin Williams, Superintendent of Grounds at the White House.

Message to the Congress Transmitting the National Tree Trust Act of 1990

March 22, 1990

To the Congress of the United States:

Today I am pleased to transmit a legislative proposal entitled the "National Tree Trust Act of 1990." This proposal is a key part of my "America the Beautiful" initiative, and it would enhance the growing partnership between the public and private sectors to plant trees across America. Also transmitted is a section-by-section analysis.

President Theodore Roosevelt began this century by directing the Nation's attention to the protection of valuable public lands—America's treasure trove of parks, wildlife refuges, forests, and rangelands. As the end of the century approaches, it is appropriate that this final decade be one in which conservation, enhancement, and protection of our irreplaceable national assets rise to the forefront of national concerns. With this as our goal, my FY 1991 Budget proposes a new initiative—"America the Beautiful." Our initiative reflects my support for appropriate expansion and proper maintenance of the Nation's parks, refuges, forests, and public lands. It is also based on my determination to involve all Americans in strengthening the Nation's natural resources heritage. Finally, this initiative expresses my firm commitment to providing responsible stewardship of the country's heritage for the benefit of generations to come.

My "America the Beautiful" initiative includes three components. *First,* we propose to expand Federal recreational land acquisition that involves activities of the Departments of the Interior and Agriculture. *Second,* the Department of the Interior is undertaking an effort—"Legacy '99"—to enhance resource protection and recreation. *Third,* we propose a national tree planting and forest improvement initiative to be administered by the Department of Agriculture. The first two components will be carried out under existing authorities. The enclosed draft legislation will permit

full implementation of the third component.

Trees are one of our most valuable resources. They contribute to the environmental, economic, and social well-being of this country. They enhance biodiversity, wildlife, air and water quality, and recreational opportunities. Trees improve landscape aesthetics and property values, reduce soil erosion, and provide many valuable wood products. They also contribute to energy conservation through the shading and cooling of buildings and by serving as windbreaks.

The proposal I am transmitting to the Congress today authorizes Presidential designation of a private nonprofit Foundation to receive a one-time grant for the purpose of promoting community tree planting and cultivation projects. Second, it authorizes the Secretary of Agriculture to establish a rural tree planting and forest improvement program and a community tree planting and improvement program. Third, it authorizes appropriations to the Secretary of Agriculture for a grant to permit the Foundation to begin its important work.

The Foundation will promote public awareness and a spirit of volunteerism, solicit private sector contributions, and oversee the use of these contributions to encourage tree planting and cultivation projects throughout the United States.

The Foundation will help forge cooperation among individuals, businesses, governments, and community organizations and provide financial assistance to grass-roots volunteers to plant trees. It will help draw national attention to the need for increased planting of trees in our communities where, on average, only one tree is now being planted for every four that die or are removed. It is a program that will reach every State, if not each and every community. All of our citizens will be encouraged to participate in this program.

Enactment of this proposal will permit us to harness the efforts of individuals and organizations to undertake the nationwide planting and cultivation of invaluable trees. The prompt passage of this proposal by the Congress will demonstrate our shared commitment to preserving one of our most valuable natural resources, our precious heritage of trees. Let us ensure that our descendants will be able to share our pride in referring to this land as "America the Beautiful."

George Bush

The White House,
March 22, 1990.

The President's News Conference
March 22, 1990

Assistance for Nicaragua and Panama

The President. I don't want to have a captive audience, but there are a couple of things that I did want to say—make a statement here. I'd like to make just a few comments, after which I'll be glad to take a couple of questions.

Last week I unveiled an economic package for the new democracies of Panama and Nicaragua and urged a bipartisan effort aimed at reconstructing and developing these two countries. We have an opportunity to make this hemisphere the first to be wholly democratic, but we must act expeditiously in order to help establish firm democratic institutions, the rule of law, and human rights. And I asked the Congress last week to act quickly on the aid package, and I repeat that request today. If we are unable to resolve our differences regarding offsets, then I would be happy to have Congress authorize me to select the offsets from the defense budget in order to get economic assistance moving in the region.

We must take the lead in helping our neighbors, and we cannot look to others to make sacrifices if we ourselves cannot work in partnership in our own hemisphere. And I'd also add there are those that argue that Panama and Nicaragua are not as vital as Eastern Europe. They're wrong. This is our hemisphere. And we have a strong aid program for Eastern Europe and will continue to do so, and we can do no less for our own neighbors. The world is changing dramatically, and we must meet the challenges in every region with equal commitment and equal dedication.

In this regard today, I just concluded another meeting with the Polish Prime Minis-

these corridors beautiful, quieter, greener, and cleaner.

On the plains of Texas, where for 12 years Barbara and I raised our children, the story is told of a pioneer tradition that said, "Plant plums for yourself, pecans for your grandchildren." A hundred years ago, some farsighted Texas settlers planted these tiny pecan seedlings, and it took hours of back-breaking work, hauling water in the hot prairie sun. But pecan trees take many years to mature, and the settlers themselves would never live to enjoy shade or food from the trees. It was called, therefore, a grandchildren's grove. Other settlers—well, they wanted quick results, and they planted the fast, quick-growing plum trees. And for a few years, they got good fruit. Soon, the soft bark split, sprouting tangled, barren plum bushes. And instead of enjoying the protection of these tall stately pecan trees, the grandchildren who followed were saddled with the hardship of clearing a thicket.

It is planting time now for your great State, for South Dakota and for America and for all of spaceship Earth. The choices that we make today can either nurture and protect our children or bequeath them only another generation of thickets and foul air. So, let us tap into the greatness of the American spirit. Let us honor the pioneers who gave us this State by giving back to generations yet to come. And 100 years from now, South Dakota will still be a good place to raise children, cottonwood trees, and other precious living things. Enjoy this celebration; enjoy the autumn ahead.

Good luck, God bless you, God bless the State of South Dakota. And thank you for inviting me. Thank you very, very much.

Note: The President spoke at 11:10 a.m. in the Sioux Falls Arena. In his opening remarks, he referred to former Gov. William J. Janklow; Senator Larry Pressler; and Debra R. Anderson, Deputy Assistant to the President and Director of Intergovernmental Affairs.

Remarks at a Centennial Tree Planting Ceremony in Sioux Falls, South Dakota

September 18, 1989

Thank you, Governor Mickelson, and what a glorious place to plant a tree today. Thank you, Mayor White, for welcoming us here. And most of all, thank all of you. Any excuse to get out of school—I know how it works. But here you are, and I couldn't be more pleased. Thank you.

The South Dakota Centennial Commission deserves great recognition here for all the restoration of this park as a centennial project. And I know that many people and organizations were involved in the project, and I'd like to congratulate each and every one of them.

I do love seeing all you kids here today. Let me tell you about this tree that I'm presenting today to commemorate the centennial. It's a Bonfire Silver Maple. It's a hardwood tree which provides a brilliant display of colors every fall. And like the people of South Dakota, this tree is hearty and resilient, and should provide beauty to your children for years to come.

Someone said a tree is a gift of God and a friend of man. Well, I hope this tree will grow and flourish, be a friend of Sioux Falls and to South Dakota. And with this gift I can say, as your centennial bumper stickers so proudly proclaim and as your Governor invited me to, I've got roots in South Dakota. Happy birthday South Dakota! And thank you all very, very much for the welcome.

Note: The President spoke at 12:40 p.m. at Terrance Park in Sioux Falls. Following his remarks, he traveled to Helena, MT.

ENVIRO — INITIATIVES

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL ON ENVIRONMENTAL QUALITY
WASHINGTON, D.C. 20500

Michael R. Deland
Chairman

(202) 395-5080

December 12, 1990

MEMORANDUM TO MARK DAVIS, MARY KATE GRANT, ELIZABETH HINCHCLIFFE, MARK LANGE, DAN McGROARTY, EDWARD McNALLY, AND CURT SMITH

FROM: Michael R. Deland

SUBJECT: Quarterly Review -- The Bush Administration and the Environment

Attached is the latest edition of "The Bush Administration and the Environment: A Quarterly Review of Initiatives and Accomplishments."

This memorandum summarizes Administration actions which promise to have a beneficial result for environmental quality and wise stewardship of natural resources. In my judgment, the President is building a very commendable environmental record, but clearly it needs to be more widely disseminated. I hope the Review will be of assistance to you as you prepare speeches and events, respond to inquiries, or otherwise spread the word of the President's positive environmental accomplishments.

You may note that the format has been revised to make this Review more "user-friendly." A new Section A identifies the President's agenda with key supporting examples. Section B, a more comprehensive list of activities, has been reorganized by putting items in alphabetical order and by providing more sub-headings under broader categories.

We are largely dependent on various Executive Branch offices for the content of the document. The next edition of the Review is planned for March 1991, and we will therefore need any new or updated material from you by February 15. It should be sent to Dale Curtis, who can be reached on 395-5750 should your staff have any issues to discuss with him.

We will continue to fine tune the content and format and I would welcome any suggested improvements you might have. Once again, thank you for your help in compiling and disseminating the record of a President who is well on his way to earning the title "Environmental President."

Trust you will find some fodder here — a solid record!

Recycled Paper

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL ON ENVIRONMENTAL QUALITY
WASHINGTON, D.C. 20500

Michael R. Deland
Chairman

(202) 395-5080

The Bush Administration and the Environment:

A Quarterly Summary of Initiatives and Accomplishments

November 1990

President George Bush, continuing a life-long record of concern for the environment, has demonstrated a commitment to environmental protection, conservation, and wise management of our natural resources. This memorandum, updated on a quarterly basis by the President's Council on Environmental Quality (CEQ), presents the Bush Administration's philosophy, initiatives and accomplishments in these areas.

By its very nature, the environmental issue is difficult to segment into neat categories. Highlights of the Administration's record could be organized in any number of ways. We have chosen to present this information in two sections. Section A identifies themes of the President's agenda with key supporting examples; Section B provides a more thorough and detailed catalog of key activities by subject.

Contents

		Page
A.	"An Entirely New Way of Thinking..."	3
1.	"Harnessing the Power of the Marketplace"	4
2.	"Recovery, Restoration and Renewal"	5
3.	"Promote Creative Local Initiatives"	6
4.	"Cooperative, International Solutions"	7
5.	"Reduce or Prevent Pollution Before It Starts"	8
6.	"Vigorous and Firm Law Enforcement"	9

-- continued --

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Contents

		Page
B.	Summary of initiatives and accomplishments (sub-headings are not all-inclusive)	
1.	Air pollution	10
	-- Clean Air Act Amendments	
	-- Asbestos	
	-- Radon	
2.	Agriculture	11
	-- 1990 Farm Bill	
	-- Pesticides	
3.	Budget	12
	-- Funding increases	
	-- Priorities report	
4.	Defense	13
5.	Education	14
	-- Earth Day	
6.	Energy	14
	-- National Energy Strategy	
	-- Energy efficiency	
	-- Offshore development moratorium	
7.	Enforcement	15
8.	Federal Facilities	17
9.	Hazardous and solid wastes	18
	-- Superfund	
	-- RCRA	
10.	International	19
	-- Bilateral initiatives	
	-- Global climate change	
	-- EPA-Cabinet legislation	
	-- Ozone layer protection	
11.	Pollution prevention and recycling	22
12.	Transportation	23
	-- Alternative fuels	
13.	Water	24
	-- water quality	
	-- water projects	
	-- oceans and coastlines	
	-- oil spills	
	-- wetlands	
15.	Wildlife	27

"AN ENTIRELY NEW WAY OF THINKING..."

"NOW WE KNOW: WE CAN ESTABLISH A NEW KIND OF ENVIRONMENTALISM, ONE IN WHICH A SOUND ECOLOGY AND A STRONG ECONOMY GO HAND-IN-HAND."

-- PRESIDENT GEORGE BUSH,
SIGNING CLEAN AIR
LEGISLATION
NOVEMBER 15, 1990

"TO THOSE WHO SUGGEST WE'RE ONLY TRYING TO BALANCE ECONOMIC GROWTH AND ENVIRONMENTAL PROTECTION, I SAY THEY MISS THE POINT. WE ARE CALLING FOR AN ENTIRELY NEW WAY OF THINKING TO ACHIEVE BOTH WHILE COMPROMISING NEITHER."

-- PRESIDENT GEORGE BUSH
APRIL 18, 1990

A. "A Whole New Way of Thinking"

1. "Harnessing the Power of the Marketplace"

"True global stewardship will be achieved not by seeking limits to growth, which are contrary to human nature, but by achieving environmental protection through more informed, more efficient and cleaner growth. Those who value environmental quality the most should be the most ardent supporters of strategies that tap the power of free wills and free markets; strategies that turn human nature to environmental advantage."

-- President George Bush
April 18, 1990

Examples of this principle in action include:

-- **The Clean Air Act:** a key provision of the President's original clean air proposal which was incorporated in the final legislation creates marketable permits for acid rain emissions. An active market in these permits will tend to encourage larger emission cuts in a more cost-effective manner than traditional "command-and-control" regulations.

-- **Protecting the ozone layer:** the Administration's program for phasing out ozone-depleting substances employs fees and marketable permits to achieve these reductions in a cost-effective manner.

-- **Environmental Investment Fund:** The Overseas Private Investment Corporation (OPIC) facilitated and contributed to the creation of a privately-owned and -managed investment fund for new or expanding enterprises in developing countries which practice sound environmental management.

-- **Climate change:** The Administration supports a comprehensive approach to potential climate change which considers all sources and sinks of greenhouse gases. This approach would ultimately allow more flexible, efficient and market-oriented policy responses.

2. **"Recovery, Restoration and Renewal"**

"Behind all the studies, the figures, and the debates, the environment is a moral issue....For it is unjust to allow the natural splendor bestowed to us to be compromised.... Recovery, restoration and renewal -- that is our moral imperative."

-- President George Bush
June 8, 1989

Examples under this category are quite numerous; here are just a few:

-- **"America the Beautiful" (ATB):** a three-pronged effort by the Departments of the Interior and Agriculture (U.S. Forest Service) to renew American natural resources by acquiring federal lands with high environmental or recreation value (up to $1 billion over four years); restoring run-down natural resource and recreation areas ("Legacy '99"); and...

-- **Forestry:** The ATB initiative establishes a long-term private-public reforestation program to plant and maintain one billion new trees annually for at least ten years. At the Houston summit of "G-7" leaders, the President proposed the negotiation of a global forestry agreement -- a plan to address world deforestation and reforestation; mapping and monitoring; research, training and technical assistance; and related issues.

-- **Wetlands:** In response to the President's oft-stated concern for protecting wetland habitats, the Department of the Interior supported legislation to purchase wetlands to implement the North American Waterfowl Management Plan, and added over 106,000 acres to Everglades National Park. The President directed an interagency task force to hold public meetings and report on ways to implement his goal of "no net loss" of wetlands. The President's FY91 budget sought a 24% boost for existing programs, including acceleration of the national wetlands inventory and the bay/estuary program. This followed a 32% increase in 1990.

-- **Offshore Development Moratoria:** Pending further studies concerning relevant environmental issues, the President postponed for at least ten years offshore oil and gas lease sales in tracts comprising: 99 percent of the California coast; the coasts of Oregon and Washington state; the southwest coast of Florida; and the Georges Bank area off New England.

3. **"Promote Creative Local Initiatives"**

"The tradition of purely federal, 'top-down' directives will never again be enough. So we're working to promote more creative state and local initiatives, drawing the energy of local communities and the private sector into the cause -- pulling them into the cause of conservation."

-- President George Bush
June 8, 1989

Examples of this principle in action include:

-- **Tree Planting Partnerships:** In response to the President's America the Beautiful initiative (ATB), Congress established a quasi-public foundation to leverage non-federal funds and activities to plant up to one billion trees per year. The title also authorizes the Forest Service to work with state and local governments, universities, and the private sector to improve natural resources on private forest lands and in urban communities. The Forest Service has already implemented numerous partnerships with individuals and non-government organizations to protect and improve the National Forests, and has assisted with many inquiries from the public concerning how they can get involved in ATB.

-- **President's Commission on Environmental Quality:** The President directed the CEQ to establish a "blue-ribbon" citizen commission which will stimulate results-oriented voluntary action within the private sector. Specific priority areas include industrial pollution prevention and conservation partnerships.

-- **Partnerships with Conservation Groups:** In response to the initiative of the Trout Unlimited organization, conservation partnership projects are being implemented by the USDA's Forest Service, the Interior Department's Bureau of Land Management and Bureau of Reclamation, and the Department of Defense. This is only one example of a growing trend of active partnership between conservation/environmental groups and federal agencies, exemplifying the President's call for creative leadership at the local level.

4. **"Cooperative, International Solutions"**

"Climate change is one of many challenges in the call to global stewardship. Ozone depletion, water supply, ocean pollution, wetlands, deforestation, biological diversity, population change, hunger, energy demand -- in short, all the interrelated issues of the global environment. Each demands our attention."

"For all of these reasons, I sincerely believe we must do everything in our power to promote global cooperation... for sustainable and environmentally-sensitive development -- around the world."

-- President George Bush
February 5 and April 18, 1990

Examples of this principle in action include:

-- **Enterprise for the Americas:** As part of this package of economic initiatives involving Latin America, the Administration proposed an innovative plan to spur "debt-for-nature swaps," and create trust funds from certain debt payments that would support long-term environmental programs in those nations.

-- **Protecting the ozone layer:** To prevent deterioration of the Earth's stratospheric ozone layer and eliminate one category of greenhouse gases, the U.S. led efforts to strengthen the Montreal Protocol of 1987. The 1990 London amendments to that protocol will phase-out most uses of ozone-depleting substances by 2000, and assist developing countries with the transition.

-- **Global climate change:** The U.S. actively participates in the U.N.-sponsored Intergovernmental Panel on Climate Change (IPCC), the leading global forum for climate change policy analysis. U.S. policy substantially reflects the findings of the IPCC First Assessment Report (September 1990). In February 1991, the United States will host the opening session of negotiations toward a multilateral framework treaty in early 1991.

-- **Hazardous waste shipments:** The Administration helped develop and then signed a multilateral convention which governs transboundary shipments of hazardous wastes in an environmentally sound manner.

-- **G-7 Summits:** President Bush promoted numerous environmental initiatives during the "G-7 summits" of leaders in Paris (1989) and Houston (1990).

-- **Bilateral projects:** The Administration has extended technical and financial assistance for bilateral efforts including: an East European environmental center in Budapest, Hungary (the Bush Center); air quality programs in Krakow, Poland and Mexico City; U.S.-Soviet efforts to create a park in the Bering Sea wilderness and joint efforts on nuclear waste cleanup; and agreements with Japan, Taiwan and South Korea to monitor the adverse effects of driftnet fishing.

5. **"Reduce or Prevent Pollution Before It Starts"**

"For too long, we've focused on clean-up and penalties after the damage is done. It's time to reorient ourselves using technologies and processes that reduce or prevent pollution -- to stop it before it starts."

-- President George Bush
June 8, 1989

Examples of this principle in action include:

-- **Integrated approach:** in contrast to the piecemeal approach of the past which shifts pollution around instead of reducing it, the Administration has undertaken multimedia (land, air, water) policy and enforcement initiatives to protect, for example, the entire Chesapeake Bay watershed.

-- **Clean Air Act:** An idea proposed by the Administration and enacted by Congress allows companies which voluntarily reduce hazardous air pollutants in advance of the legislated deadline to enjoy a deadline extension for the requirement that new technology be installed. Nine major companies have already agreed to prevent toxic air emissions at 40 sites in 14 states.

-- **Oil spill prevention:** At home, the Administration helped break a deadlock over oil pollution legislation which includes important prevention measures. In Paris, the President proposed, and "G-7" leaders agreed, to develop cooperatively a plan for enhanced oil spill prevention and cleanup.

-- **Municipal wastewater:** EPA has launched a national "early warning system" to prevent municipal wastewater treatment plants from violating clean water standards.

-- **Outreach:** EPA Administrator Reilly and CEQ Chairman Deland are conducting vigorous outreach and technical assistance programs to numerous corporations, trade associations, major publications, and the public.

6. **"Vigorous and Firm Law Enforcement"**

"The final principle is that existing environmental laws will be vigorously and firmly enforced.... Our message about environmental law is simple: polluters will pay."

-- President George Bush
June 8, 1989

Examples of this principle in action include:

-- **Enforcement resources:** Over 300 new enforcement staff have been added at EPA and the President signed legislation to hire at least 200 new investigators by 1995; the Justice Department's environmental enforcement budget is up 65% from FY89.

-- **Real results:** The Bush administration has levied record-high numbers of civil and administrative penalties for violations of key statutes. Environmental indictments and convictions in FY90 were 33 percent higher than in FY89; FY89 figures were 70 percent higher than in FY88. Enhanced enforcement is proving to be an effective deterrent, especially as real jail time is being served by violators under the sentencing guidelines.

-- **Superfund:** The Administration reoriented the "Superfund" hazardous waste site cleanup program to an "enforcement first" program to get more responsible parties to undertake cleanups.

-- **Clean water:** The Administration brought civil and administrative actions against 61 cities (including Detroit, El Paso, Phoenix and San Antonio) for violations of the Clean Water Act.

-- **Coordinated action:** The Administration took the first broad ecosystem approach to enforcement by charging 26 facilities in the Chesapeake Bay watershed for violations of the Clean Water Act.

B. **Summary of initiatives and accomplishments**

1) **Air pollution:**

Clean Air Act: President Bush's Clean Air Act proposal of July 1989 provided the impetus to break a decade-long legislative deadlock on clean air amendments. In particular, the President's innovative market-based proposals proved to be the key to overcoming regional disagreement and enacting a bill that balances environmental protection and economic growth. Thanks in large measure to the President's personal interest, this much-needed reform package passed the House and Senate and was signed into law on November 15, 1990.

The President's proposal and the resulting legislation included provisions to: reduce the pollutants from automobiles and other sources that contribute to urban smog; require increased use of cleaner motor vehicle fuels; reduce by 75-90 percent the emissions of hazardous air pollutants; and achieve a permanent reduction in acid rain precursors of roughly 50 percent. The dynamic, market-based acid rain program creates incentives to achieve larger pollution cuts through far less expensive means than traditional "command-and-control" approach.

The Clean Air Act of 1990 also authorizes measures to implement an international agreement to phase-out uses of ozone-depleting substances (see #10 for greater detail).

Administrative actions: Among other measures, EPA issued rules that lower gasoline volatility (which creates smog precursors) in summer months; rules to phase out 80 percent of the sulfur in diesel fuel by 1993; and rules to reduce industrial emissions of the hazardous pollutant benzene by 90 percent. EPA proposed standards for municipal waste combustors, including emission controls, source reduction and recycling of solid waste, which will reduce overall air emissions from such sources by 90 percent.

Asbestos: Asbestos is a carcinogen linked to lung and chest cancer. EPA announced a ban on almost all new uses of asbestos in the United States by 1997. The agency also released a guidebook on asbestos that suggests removal is not always the best way to reduce potential exposure and health risks.

Radon: EPA released data showing high levels of cancer-causing radon in housing throughout the country, and undertook public education campaigns to urge Americans to test and safeguard their homes, schools and businesses.

Other actions: The President decided air quality controls for oil and gas development offshore California should be substantially the same as those applied onshore.

Actions affecting global air pollution, automobile fuel efficiency, energy efficiency and renewables, and clean coal technology are listed elsewhere in Section B.

2) **Agriculture**

1990 Farm Bill: Legislation signed by the President in November 1990 includes important environmental provisions sought by the Administration. Upon the President's initiative, Congress for the first time ever included a forestry title in farm legislation, creating a quasi-public foundation to leverage non-federal funds and activities to plant up to one billion trees per year. The title also authorizes the Department of Agriculture's Forest Service to work with state and local governments, land grant universities, and the private sector to improve the management of natural resources on private forest lands and in urban communities.

Other key provisions of the Farm Bill sought by the Administration and passed by Congress will: strengthen the "swampbuster" program which protects the nation's wetlands by denying federal benefits to producers who grow crops on wetlands converted after 1985; extend the Conservation Reserve Program (CRP) which takes highly erodible cropland out of production for at least 10 years; create a Wetland Reserve with easements of at least 30 years within the CRP; and authorize "debt-for-nature" exchange programs for Latin America.

Low-input agriculture: A coordinated research initiative will provide the scientific basis for techniques to comprehensively reduce dependence on agricultural chemicals and enhance use of natural biological processes.

Resources Planning: The 1990 Resources Planning Act (RPA) program for the Forest Service seeks to achieve a balance among multiple uses of resources while delivering greater environmental sensitivity. Priorities include: enhancement of recreation, wildlife, and fisheries resources; better commodity production practices; and responses to global resource issues.

Pesticides: The Administration proposed legislation to improve food safety by streamlining regulations to allow faster removal of dangerous substances from the market and to speed approval of new, environmentally-safe pest control methods.

The Administration also commenced an interagency effort, bringing together EPA, USDA and the Food and Drug Administration (FDA), to improve the amount and quality of data available on pesticide use and levels of pesticide residues in fresh fruits and vegetables. At present, most risk assessments are based on very limited data and questionable assumptions.

EPA blocked all sales, distribution and use of "Alar" products labeled for use on food products, and stepped up its efforts against a wide range of other suspect pesticides. EPA blocked the sale of roughly 100 million apples that had been illegally treated with the fungicide "Botran."

3) **Budget:**

Funding increases: The Administration's FY91 budget request continued the trend of President Bush's first budget: substantial increases for most environmental programs, and greater sensitivity to the impact of federal actions on the environment. Notable areas include:

-- Increases for EPA's operating budget, especially for enforcement (more than 335 new staff) and cleanup at Superfund and federal sites

-- A 65 percent increase in the Justice Department's environmental enforcement budget over the FY89 level

-- "America the Beautiful" (ATB): a three-pronged effort by the Department of the Interior and the U.S. Forest Service (USDA) to enhance federal resources by acquiring lands with high environmental or recreation value (up to $1 billion over four years); restoring run-down natural resource and recreation areas ("Legacy '99"); and...

-- As part of "America the Beautiful," establishing a long-term private-public reforestation program to plant and maintain one billion new trees annually for at least ten years, in both urban and non-urban settings. Trees provide numerous benefits, including air

cleansing, aesthetics, materials, food, recreation and an energy conservation effect by cooling buildings.

-- Concerning global climate change, sharply higher funding for: the "Mission to Planet Earth" space-based Earth observation system; solar and renewable energy, energy conservation; and basic research (up 43 percent in 1990, up 57 percent to over $1 billion in 1991

-- Termination or mitigation of water projects impinging on valued natural areas; research, protection and enhancement of the nation's wetlands

-- proposed demonstration projects to terminate wasteful "below-cost" timber sales at nine national forests and provide improved recreational facilities in those areas

-- an increase of almost $800 million, or 21 percent above 1990 levels, for Federal facility cleanups

-- full funding for the Clean Coal Technology program

-- a significant boost in the staff and activities of the President's Council on Environmental Quality (CEQ)

Priorities report: In September 1990, EPA's Science Advisory Board released a major report which suggests ways to improve environmental policy-making. Entitled Reducing Risk: Setting Priorities and Strategies for Environmental Protection, the report compares disparate environmental problems according to the degree of risk they pose, and suggests principles to underlie a broader, more integrated, and more carefully targeted environmental policy.

4) **Defense**

"Defense & the Environment Initiative": In October 1989, Secretary Cheney challenged the services to make DOD the Federal leader in environmental compliance and protection. DOD's five-point initiative is forging long-term, problem-solving partnerships in defense-environmental matters. A September 1990 conference of public and private leaders discussed: a long-term strategy and near-term DOD environmental action plan; an enhanced DOD environmental decision-making structure; and how global strategic policy might encompass environmental challenges.

R&D: Defense legislation signed by the President in 1990 created a $150 million Strategic Environmental Research and Development Program (SERDP), aimed at enhanced environmental data gathering and analysis, promotion of

compliance activities, and development of advanced energy and cleanup technologies.

Chesapeake Bay Agreement: In April 1990, DOD and EPA signed an agreement to combine efforts toward restoration of the Chesapeake Bay. The Department manages 65 major installations which comprise roughly 350,000 acres within the Bay watershed. A major feature of the agreement provides that DOD will achieve significant compliance with existing Clean Water Act discharge permits, or seek compliance agreements with EPA.

5) **Education**

New programs: Legislation signed by the President will lay the groundwork for greater environmental literacy across the nation. The bill stimulates creativity at the local level through grants, awards and training programs; and provides for leadership at the national level through the creation of an Office of Environmental Education at EPA and a broad-based advisory committee. While the bill enhances learning opportunities for all ages, it focuses especially on young students and their teachers by including the President's proposal for presidential awards to teachers for excellence in environmental education.

Earth Day: The CEQ coordinated actions by all federal departments and agencies to celebrate the 20th anniversary of Earth Day, including an exhibition on the Mall in Washington and various activities by major Federal agencies throughout the country. Some agencies used the opportunity to kick off awareness-raising special programs, including awards and recycling programs, that continue today.

6) **Energy**

National Energy Strategy: The Department of Energy is preparing a National Energy Strategy which emphasizes environmental and safety concerns, including responses to potential climate change, such as: energy conservation and efficiency; alternative and renewable energy sources; and nuclear power safety.

Persian Gulf crisis: In response to Iraq's invasion of Kuwait, the Administration developed a set of responses for both the short- and long-term. These actions involve equal emphasis on both supply measures and demand restraint, such as electricity and oil conservation, increased Federal energy efficiency, and accelerated conversion of the Federal vehicle fleet to alternative fuels. The benefits of demand-

side measures accrue both to our national energy security and the environment.

Energy efficiency: In January 1990, DOE announced 11 initiatives in energy efficiency and renewables. Implementation of these initiatives has included the award of contracts to retrofit federal buildings with more efficient lighting; the upcoming issuance of final national energy standards for washing machines, dryers and dishwashers; regulatory and legislative proposals to stimulate efficiency improvements in the utility, commercial and construction sectors; and use of the government-industry technology transfer process to speed more efficient technologies into widespread use.

Offshore development moratorium: In June 1990, the President postponed for at least ten years offshore oil and gas lease sales in tracts comprising: 99 percent of the California coast; the coasts of Oregon and Washington state; the southwest coast of Florida; and the Georges Bank area off New England. Lease sales near Santa Barbara, CA may proceed after January 1, 1996, but only after further studies as recommended by the National Academy of Sciences.

NEPA: In a reversal of previous policy, DOE is developing rules to centralize and strengthen significantly compliance with the Environmental Impact Statement process under the National Environmental Policy Act (NEPA).

Clean coal technology: The Administration has requested and secured all of the necessary funds to complete the $2.5 billion Clean Coal Technology program.

7) **Enforcement**

Effective environmental enforcement is a cornerstone of the Bush administration's policy.

Resources: Over 300 new enforcement staff have been added at EPA and the President signed legislation to hire at least 200 new investigators by 1995; the Justice Department's (DOJ) environmental enforcement budget is up 65% from FY89.

Results: Aggressive enforcement activities have led to more environmental indictments and convictions: a 70% increase from FY89 to FY88. Felony indictments in FY90 alone climbed 33% over the previous year. In fact, since the criminal program began eight years ago, the Department has indicted 703 corporations and individuals, one-third of those obtained in the last two years. In FY90, the

Administration achieved a 95 percent conviction rate, and jail terms averaged a record 1.8 years. The longest jail term imposed was 12 years.

DOJ levied record-high numbers of civil and administrative penalties for violations of EPA-administered statutes, with fines totaling $35 million in FY89. FY90 marks the second straight billion dollar recovery year for civil enforcement.

Largest settlement: Obtained the largest single settlement amount ever of a suit by the U.S. against one entity for violation of a federal environmental statute. Texas Eastern Transmission Corp. paid a $15 million penalty and agreed to perform cleanup work estimated to cost $400 million at 89 sites located in 14 states.

Clean Water Act: Achieved a record high civil penalty for violations of the Clean Water Act, by negotiating a settlement with Shell Oil Co. for $19.7 million in fines and damages for a 400,000 gallon oil spill near San Francisco.

Brought civil and administrative actions against 61 cities (including Detroit, El Paso, Phoenix and San Antonio) for violations of the Clean Water Act.

Brought criminal enforcement actions against those who illegally destroy wetlands. A New York CEO pled guilty to negligently filling wetlands and was given $2 million in fines and restitution. In Pennsylvania, a wetlands owner was given a 3-year prison sentence and a $200,000 fine for systematically filling his wetlands in disregard of repeated warnings by federal officials and orders by the court.

Took the first broad ecosystem approach to enforcement by charging 26 facilities in the Chesapeake Bay watershed for violations of the Clean Water Act. Likewise, the Administration filed three civil enforcement cases focusing on pollution in the Grand Calumet River, Indiana, which flows into Lake Michigan.

Brought action against the South Florida Water Management District and the Florida Department of Environmental Regulations, seeking a judgment that the District and DER have failed to protect Everglades National Park and Loxahatchee National Wildlife Refuge from water pollution caused by the Everglades Agricultural Area.

Negotiated other major settlements for natural resource damages, including a $66 million settlement for cleanup of PCB contamination and restoration in New Bedford Harbor.

Exxon Valdez: Obtained an indictment against the Exxon Corporation and Exxon Shipping on a total of 10 felony and misdemeanor counts arising from the largest oil spill in U.S. history in Prince William Sound, Alaska.

Hazardous substances: Successfully prosecuted intentional violators of hazardous waste laws. In one case, a waste hauler was convicted of unlawful disposal and sentenced to 3 1/2 years in jail. In another, a company owner was sentenced to three years jail time for unpermitted treatment, storage and disposal of hazardous wastes.

Brought civil lawsuits against 34 companies and individuals to halt violations concerning safe demolition and renovation of asbestos in buildings.

Proposed fines of $1.65 million on 42 companies that failed to report toxic chemical discharges as required by law.

Ordered Syntex Corporation and others to cleanup dioxin contamination in Times Beach, Missouri.

Ozone-layer protection: Initiated cases to block illegal importation of CFCs and, in general, initiated new efforts to enforce compliance with international agreements phasing-out the production and use of ozone-depleting substances.

8) **Federal facilities**

For over forty years, the Federal government has failed to manage adequately and dispose properly the wastes it generates at various sites around the country. The Administration demonstrated its commitment to address these problems by requesting a 21% increase in Federal facility cleanup funds for FY91. FY91 appropriations bills signed by the President provide $440 million for non-defense cleanups and $2.7 billion for defense-related cleanups.

DOE released a five-year, site-by-site cleanup plan, and has dedicated 10% of cleanup funding for a five-year research and development plan to reduce outyear costs.

9) **Hazardous and solid wastes:**

Superfund: The Administration fought Congressional attempts to cut the Superfund budget and in 1989, exceeded Congressionally-mandated targets for cleanup starts and site studies.

After an intensive management review, the Administration reoriented the "Superfund" hazardous waste site cleanup to an "enforcement first" program to get more responsible parties to undertake cleanups. EPA added 335 new enforcement staff to this program. In fiscal years 1989 and 1990, the enforcement program collected twice as much money in injunctive relief and cost recovery than in the entire previous history of the program ($1 billion in 1989 alone); and filed more cleanup suits than in the first six years of the program.

RCRA: The Administration undertook a similar management review of the hazardous waste program under the Resource Conservation and Recovery Act (RCRA) and issued a report setting priorities and directions to improve implementation of this complicated process.

International shipments of waste: The Bush administration helped to negotiate and then signed the Basel Convention controlling international hazardous waste shipments and is preparing enabling legislation.

10) **International**

African Elephants: In June 1989, the U.S. led the way by banning imports of African elephant ivory, an action which sparked other major nations to follow suit, and led to international action under the CITES regime to list the species as endangered. The President requested funds from Congress to assist African nations in the conservation of this species.

Antarctica: Legislation signed by the President in 1990 places an indefinite prohibition on any U.S. mineral resource exploration and development in Antarctica in a manner consistent with the Administration's position in advocating a stronger environmental protection agreement to supplement the Antarctic Treaty.

Biodiversity: The U.S. is participating in the international effort to assess existing programs to preserve global biological diversity, and to recommend further actions.

Driftnet fishing: The Administration persuaded Japan, Taiwan and Korea to enter into agreements to monitor driftnet fishing. This will allow the U.S. to monitor the incidental take of birds, seals, whales, dolphins and other marine mammals.

Eastern Europe: During his 1989 trip to Eastern Europe, the President offered financial and technical aid, help in drafting environmental laws and regulations, and access to pollution control technology. Specifically, the Administration is helping to develop programs to improve air and water quality in Krakow, Poland; and establish the East European Environmental Center in Budapest, Hungary, which opened in September 1990.

EPA-Cabinet legislation: Legislation supported by the President to elevate EPA to Cabinet status would give the U.S. Environment Secretary commensurate status with his counterparts from other nations. The plan would also enhance the new Department's authority to offer technical assistance to foreign environmental programs. In early 1989, EPA's International Activities Office was elevated to the assistant administrator level.

Extraterritorial impacts of U.S. activities: A task force chaired by CEQ is examining Executive Order 12114, related to assessment of extraterritorial impacts of U.S. government activities.

Global climate change: The Bush Administration has demonstrated its willingness to confront the complex and important question of global climate change. The Secretary of State's first major address in January 1989 expressed the President's intention to take action in this area.

In February 1990, the President became the first head of state to address the U.N.-sponsored Intergovernmental Panel on Climate Change (IPCC), the leading global forum for climate change policy analysis. The U.S. participates actively in the IPCC, has hosted two IPCC plenary sessions and two workshops, and chairs the IPCC Response Strategies Working Group. Indeed, U.S. policy largely reflects the findings of the IPCC First Assessment Report, released in September 1990.

At Malta, the President proposed two major global conferences on the issue in 1990. The White House Conference on Global Change, held April 17-18, 1990, addressed scientific and economic uncertainties and ways to reduce them. The second conference, scheduled for February 1991, will open negotiations toward a multilateral framework treaty based on the IPCC First Assessment Report of the

scientific evidence, potential impacts, and policy options. At the Houston summit, the U.S. urged completion of framework negotiations by 1992.

Several Administration initiatives are underway which will have the effect of limiting greenhouse gas emissions. The Administration's clean air bill, National Energy Strategy, increased CAFE standard, reforestation campaign, and CFC phase-out (see below) will have the effect of reducing projected greenhouse gas emissions by 15-25 percent by the year 2000. The U.S. supports a comprehensive approach to the issue which considers all sources and sinks of greenhouse gases, and which allows for the use of market-based, innovative, dynamic and cost-effective responses.

Global environmental research: The President's FY91 budget sought more than $1 billion for the U.S. Global Change Research Program (USGCRP), up 57 percent from 1990 levels, which were themselves 43 percent over 1989. The Congress appropriated $952 million. That research includes work on the "Mission to Planet Earth" orbiting observation system, Earth systems basic research, renewable and solar energy sources, and energy efficiency/conservation. Legislation signed by the President generally endorses the U.S. research program by codifying the Administration's interagency Committee on Earth and Environmental Sciences (CEES), which oversees the USGCRP.

Investment: President Bush supported and signed legislation to prohibit U.S. support for multilateral development bank projects unless environmental impacts are considered.

The Administration helped to negotiate, and then signed an international agreement to create the European Bank for Reconstruction and Development. Among the Bank's missions is the promotion of environmentally-sustainable development in Eastern Europe.

The Overseas Private Investment Corporation (OPIC) facilitated the creation of a $100 million Environmental Investment Fund to support the new or expanding business enterprises in developing countries which practice sound environmental management. OPIC will contribute up to $40 million to the privately-managed Fund, and the remaining $60 million will be raised through the sale of limited partnership interests.

Latin America: As part of a major package of trade and investment initiatives to Latin American nations, the Administration proposed to spur "debt-for-nature swaps," and to direct interest payments on certain restructured loans

into trust funds that would support long-term environmental programs in those nations. Some of these proposals were enacted by Congress through the 1990 Farm Bill.

Mexico: The U.S. and Mexico are proceeding to design, under the auspices of a 1989 agreement, a three-year study of Mexico City air quality and measures for its improvement. The two nations focused on the environment in the 1989 U.S.-Mexico Bi-National Commission meeting.

Ozone layer protection: To prevent ozone layer depletion and eliminate one category of greenhouse gases, the Bush administration proposed to phase-out most uses of ozone-depleting substances by 2000, and led international efforts culminating in the 1990 London amendments to the Montreal protocol, which largely adopts the U.S. position. Financial and technical assistance to assist developing countries to make the transition to non-CFC technologies will be initiated this year, with appropriate guidelines to target administration of the funds. The Clean Air Act of 1990 provides domestic authority to implement the London agreement. Suits have already been filed by the Administration against illegal importation of CFCs.

Peace Corps: In 1990, for the first time, Peace Corps volunteers are being trained by EPA in water pollution prevention, waste disposal, reforestation and pesticide management.

Pesticides: The Administration supports adoption of international guidelines under which banned or severely restricted pesticides should not be exported without the prior informed consent of the importing country; and it acted to implement this approach for U.S. exports.

Summitry: President Bush supported efforts to make the environment a major focus of the "G-7" summits of industrial nations. In Houston, the President called for the negotiation, by 1992, of a global forestry agreement to address myriad issues of de- and re-forestation. In Tokyo, the President held meetings with leaders of Japan and Brazil to discuss the rapid depletion of rain forests. Presidents Bush and Gorbachev signed important new agreements (below).

United Nations 1992 Conference: The Administration is actively involved in planning the 1992 United Nations Conference on Environment and Development (UNCED), and has urged that global climate and forestry agreements be completed for signing, if possible, at that conference.

U.S.S.R. Senior U.S. and Soviet officials have met to expand cooperation in environmental matters, including:

plans for an international park in the Bering Sea wilderness; marine mammal and fisheries conservation; marine pollution; environmental law; wetlands; nuclear waste cleanup; and radiation monitoring.

Waste shipments: The Administration helped develop and then signed the Basel Convention, which governs transboundary shipments of hazardous wastes in an environmentally sound manner.

Whales: A U.S. representative to the International Whaling Commission blocked a proposal by Iceland to allow a catch of 200 minke whales in the Atlantic. Considered more broadly, the U.S. action averted a threat to the five-year-old moratorium on commercial whaling.

11) **Pollution prevention and recycling:**

The Administration seeks reforms to move beyond costly, piecemeal, end-of-the-process cleanups and make pollution prevention a priority, integrated in all elements of environmental policy. As opposed to pollution control, prevention is the only permanent ecological solution.

In contrast to the piecemeal approach (land, air, water) which often shifts pollution around instead of reducing it, the Administration has undertaken multimedia policy and enforcement initiatives to protect, for example, the entire Chesapeake Bay watershed from a wide array of pollution sources.

Clean air act: An Administration proposal, enacted by Congress, allows companies which voluntarily reduce hazardous air pollutants in advance of the legislated deadline to enjoy a deadline extension for the requirement that new technology be installed. Nine major companies have already agreed to prevent toxic air emissions from 40 facilities in 14 states, which is roughly 83% of overall emissions from these sites.

Outreach: At EPA and CEQ, aggressive outreach efforts have been established to work with industry and private groups to promote pollution prevention. Among the fora cosponsored by EPA was a June 1990 international conference which promoted technical approaches to reducing the volume of solid and hazardous waste.

Grants: Two percent of every EPA program's budget for FY91 has been set aside to fund pollution prevention demonstration projects. Also, in 1990, 25 grants worth a total of $7 million have been awarded to 23 states to boost

development of pollution prevention projects. Fourteen grants were awarded in 1989, worth $4 million.

Clean Water: EPA has launched a nationwide "early warning system" to prevent municipal sewage treatment plants from violating Clean Water Act standards.

Recycling: The Administration adopted a goal of reducing municipal solid waste nationally by 25 percent through a combination of source reduction and recycling measures. The Administration is also implementing federal procurement guidelines requiring government agencies and contractors to buy products made of recycled materials. The Recycling Advisory Council, a joint project of the National Recycling Coalition and EPA, is focusing on the development of markets for secondary materials.

12) **Transportation**

A National Transportation Policy was issued by the Department of Transportation (DOT) in March, 1990, which included protection of the environment and quality of life as one of six key themes.

Highway programs: Pursuant to a new environmental policy statement, the Federal Highway Administration (FHwA) held an environmental conference in November, 1990 for national and regional officials of FHwA, EPA, and the Army Corps of Engineers. The conference improved working relationships, reviewed wetlands law, and discussed better integration of transportation programs with the Environmental Impact Statement process.

Auto fuel efficiency: The Department of Transportation (DOT) raised the corporate average fuel economy (CAFE) standard for autos to 27.5 mpg.

Aviation noise: The Administration supported legislation, ultimately enacted and signed into law, which directs DOT to prepare a national aviation noise policy, including provisions to phase-out the noisiest aircraft currently in operation by the end of 1999.

Alternative fuels: For over a decade, George Bush has promoted alternative transportation fuels as a way to reduce dependence on unstable sources of oil, reduce gasoline emissions, and create new American jobs.

An innovative item in the President's clean air proposal proposed the production and marketing of significant numbers of alternative-fuel vehicles in the

1990s. The resulting bill creates a pilot program in California and requires the use of cleaner, reformulated gasoline in nine cities with the worst ozone pollution.

The National Highway Traffic Safety Administration (NHTSA) announced that beginning in model year 1993, automakers will be able to earn extra credits under the Corporate Average Fuel Economy (CAFE) program for those vehicles that are "dual-fuel"; in other words, vehicles which run on both petroleum fuels and alternatives.

13) **Water:**

Water quality: EPA issued proposals to regulate 17 pesticides and 21 other contaminants in drinking water, almost doubling the number of pollutants subject to federally enforceable standards. The proposals also call for monitoring 110 currently unregulated contaminants.

USDA initiated a national groundwater quality improvement program. Its central thrust is to deliver educational, technical and cost-share assistance to promote cost-effective crop production management systems that significantly reduce the risk of chemicals reaching and contaminating groundwater. Across the U.S. initial operations were begun in 1990 on over 85 watersheds with significant water quality problems.

The EPA, USDA, DOD and DOI are working with the Water Pollution Control Federation, a private group, on cooperative projects to improve the nation's water quality. EPA reinvigorated a task force charged with developing a national ground-water protection strategy, and initiated a dialogue with a full range of interested parties.

The Administration brought action against 61 cities (including San Antonio, Detroit, El Paso and Phoenix) for failure to control industrial discharges of toxic and hazardous wastewater into their sewage treatment systems.

As part of a coordinated, ecosystem strategy, the Administration charged 26 facilities in the Chesapeake Bay watershed for violations of the Clean Water Act; likewise, brought three civil enforcement cases against major polluters of the Grand Calumet River in northwest Indiana.

Water projects: President Bush seeks termination of uneconomic and destructive projects such as the Garrison Diversion Unit in North Dakota. In line with this policy, EPA launched a review of the permit action for construction of the Two Forks Dam in Colorado, and ultimately vetoed the

permit. EPA also rejected the proposed Big River reservoir project in Rhode Island, based on unacceptable potential effects on wetlands, wildlife and recreation.

The Bureau of Reclamation has been given new direction and proposed doubled funding to pursue mitigation of adverse impacts of certain large water projects already constructed. An Environmental Impact Statement is being prepared for operations at Glen Canyon Dam in Arizona.

Secretary Lujan announced a plan affecting the balance between water usage and environmental protection in the Central Valley of California, including preparation of an Environmental Impact Statement (EIS). Long-term water contracts are being renewed with the understanding that adjustments may be required when the EIS is completed.

Beach medical wastes: EPA implemented the first step of the President's commitment to prevent medical wastes from washing up on beaches: a pilot medical waste tracking system to serve as a model for further action. The program involves the states of Connecticut, Louisiana, New Jersey, New York and Rhode Island, as well as the District of Columbia and Puerto Rico.

Ocean dumping: The Administration secured consent agreements with local jurisdictions to phaseout ocean dumping of sewage sludge between March 1991 and June 1992. The President proposed legislation to require criminal felony penalties for illegal ocean dumping, and the Attorney General created a "SWAT Team on Ocean Pollution" to coordinate enforcement and share information with state and local officials.

Marine Sanctuaries: Legislation signed by the President in November 1990 designates 2,600 square nautical miles of coastal waters off the Florida Keys as the nation's ninth national marine sanctuary. In June, the President created a National Marine Sanctuary in California's wildlife-rich Monterey Bay.

Coastal barrier protection: Legislation signed by the President will almost triple the size of the Coastal Barrier Resource System, to over 1.25 million acres encompassing 1,211 miles of shoreline along the Atlantic, Gulf of Mexico and Great Lakes coasts. The bill limits federal spending and assistance for development within designated coastal barrier areas.

Wetlands: Wetlands protection has been a priority area of activity during the Bush administration, which supported legislation to purchase wetlands to implement the North

American Waterfowl Management Plan, and added over 106,000 acres to Everglades National Park. Secretary Lujan proposed a plan to repair environmental damage at Kesterson Reservoir in California, for a net tripling of wetlands acreage there.

Concerned by the rapid loss of American wetland habitats, the President directed an interagency task force to hold public meetings and report on ways to implement his goal of "no net loss" of wetlands.

EPA and Army Corps of Engineers signed an agreement to clarify wetlands protection policy. The Bureau of Reclamation and the U.S. Fish and Wildlife Service signed an agreement to cooperate in expanding the wetlands breeding habitat for numerous species.

The President's FY91 budget seeks a 24 percent boost (to $460 million) for research, protection and enhancement of wetlands, including acceleration of the national wetlands inventory and enhancement of the bay/estuary program. This follows a 32 percent increase in 1990.

Enhanced criminal enforcement against those who illegally fill wetlands is proving to be an effective deterrent, especially as real jail time is being served by violators under the sentencing guidelines.

Oil spills: In a course of action similar to that which produced clean air legislation, the President's proposal of May 1989 to strengthen oil spill liability and compensation laws helped to break a Congressional deadlock that had continued for over a decade. In August 1990, the President signed the resulting legislation which adopted many of his proposals. The bill: creates a $1 billion cleanup trust fund; improves establishes measures to improve prevention, response, containment and recovery; and increases Federal coordination, enforcement authority and penalties.

In a June 1990 package of decisions related to offshore oil and gas development, the President directed immediate steps be taken to: reduce the possibility of offshore oil spills by redirecting tanker traffic away from sensitive areas such as the Florida Keys and Everglades; and improve the ability of industry and government to respond to oil spills. The President proposed, and Paris Summit leaders accepted, a call for increased international cooperation on oil spill prevention and cleanup.

The Interior Department began a $6 million, 3-year joint project with the American Petroleum Institute to research and develop new cleanup technology. The

Department's Minerals Management Service joined with the U.S. Navy to reactivate an oil spill research facility in Leonardo, New Jersey.

Exxon Valdez oil spill: The President sent Vice President Quayle and Cabinet-level teams on a number of missions to assess the Exxon Valdez spill, the largest oil spill in U.S. history. The Department of Transportation supervised cleanup by Exxon, while EPA is coordinating an interagency task force on long-range restoration of Prince William Sound. In addition, the natural resource trustees (representatives of DOI, NOAA, USDA and the State of Alaska) are conducting an assessment of natural resource damages in preparation for civil litigation against Exxon to recover those damages.

The Justice Department obtained an indictment against the Exxon Corporation and Exxon Shipping on a total of 10 felony and misdemeanor counts arising from the Valdez spill. A federal court has denied both defendants' motions to dismiss the indictment, and the case is set for trial in April 1991.

15) **Wildlife:**

Spotted owl: After an extensive public comment period, the U.S. Fish and Wildlife Service listed the northern spotted owl as a "threatened" species throughout its range in Washington, Oregon, California and British Columbia. In response, Secretaries Lujan and Yeutter announced a package of measures to set aside a significant amount of old-growth forest as protected owl habitat, and revise federal agency practices to balance the owls' protection and other forest management goals.

African elephants: In June 1989, the U.S. set a world precedent by banning imports of African elephant ivory, an action which sparked other major countries to follow suit, and which led to international action under the CITES regime to list the species as endangered. The President requested funds from Congress to assist African nations in the conservation of this species. The combined effect of these actions is already positive: falling ivory prices and stabilized elephant populations.

Other actions: The Department of Interior issued an emergency listing of the Desert Tortoise as an endangered species in Southern California, Utah and Nevada. DOI acquired additional habitat for endangered panthers in Florida. The Administration's enhanced wetlands programs benefit countless wildlife species around the nation.

Fisheries: The Administration blocked a Congressional proposal to cap the outlay of funds under the Wallop-Breaux Trust Fund used for fisheries protection and development.

U.S.-Soviet talks: Senior U.S. and Soviet officials have met to discuss, among other things: plans for an international park in the Bering Sea wilderness; marine mammal and fisheries conservation; and wetlands.

Enforcement: In line with the Administration's tough environmental enforcement policy, the Justice Department convicted almost 250 violators for illegal activity under the wildlife laws.

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL ON ENVIRONMENTAL QUALITY
WASHINGTON, D.C. 20503

*** * * ADDENDUM * * ***

On pages 8 and 26, please note the following change:

Oil spills: At the June 1989 summit in Paris of "G-7" leaders, the President proposed to negotiate an international agreement to enhance cooperative oil spill prevention, preparedness, response, and research. The leaders agreed, the U.S. followed through with a detailed proposal, and in November 1990 after months of talks an International Convention on Oil Pollution Preparedness was agreed to by 80 countries.

On page 6, please note the following change:

President's Commission on Environmental Quality (PCEQ): The President established by Executive Order a commission comprised of outstanding leaders from business, academia, and the environmental community who are on the cutting edge of innovative solutions to the nation's environmental challenges. The PCEQ will take a results-oriented approach to opportunities in the areas of industrial pollution prevention, conservation partnerships and international cooperation.

Recycled Paper

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL ON ENVIRONMENTAL QUALITY
WASHINGTON, D.C. 20500

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The Bush Administration and the Environment:

Summary of Initiatives and Accomplishments

May 1990

President George Bush, continuing a life-long record of concern for the environment, has demonstrated a commitment to environmental protection, conservation, and wise management of our natural resources. What follows is a summary of the Administration's initiatives and accomplishments.

1. General leadership
2. Air pollution
3. Environmentally-sensitive budget policy
4. Pollution prevention and recycling
5. Asbestos ban
6. Water pollution, water projects and wetlands
7. Energy
8. Global climate change
9. International environmental initiatives
10. Alaskan oil spill
11. Future oil spill prevention
12. Food safety
13. Hazardous wastes and Superfund
14. Clean oceans and coastlines
15. Radon
16. Defense & the Environment Initiative
17. Endangered species
18. Earth Day
19. Environmental education
20. Enforcement
21. Deterring conflicts of interest

Recycled Paper

1) **General leadership:**

President Bush appointed William K. Reilly to be Administrator of the Environmental Protection Agency (EPA), the first professional conservationist to hold the post.

The President named Michael R. Deland, former Administrator of EPA's Boston regional office, to be chairman of the President's Council on Environmental Quality (CEQ). The President is committed to revitalizing CEQ's advisory role and requested funding to increase the staff of CEQ from 10 to 34 positions over two years.

The President supports elevating EPA from sub-Cabinet to full Cabinet status, and approved the elevation of EPA's International Activities Office to the assistant administrator level.

President Bush has directed all Cabinet officers to incorporate consideration of environmental impacts into all agency decisions. More departments are embarked on substantive environmental policy intitiatives than ever before (see below). The President has devoted dozens of speeches, news conferences, and events to environmental themes, and the White House Domestic Policy staff has devoted thousands of hours to ambitious environmental quality initiatives.

2) **Air pollution:**

After a decade of policy gridlock, President Bush's Administration crafted amendments to the U.S. Clean Air Act to reduce the emissions that cause acid rain, urban smog and toxic air pollution. Thanks in large measure to the President's personal commitment, a bill recently passed the Senate and it appears likely this complex reform package will be enacted in 1990.

Among several other administrative actions on clean air, EPA issued rules that lower gasoline volatility (which contributes to smog) in summer months; and rules to reduce industrial emissions of the hazardous pollutant benzene by 90 percent. EPA proposed standards to require source separation by municipal waste handlers to effectively reduce overall air emissions from municipal waste incinerators by 90 percent.

The Administration has taken important strides forward on global air pollution issues (see #8 and #9).

Related actions on automobile fuel efficiency, energy efficiency and renewables, and clean coal technology are listed below.

3) **Environmentally-sensitive budget policy:**

The Administration's budget request for 1991 continued a trend begun with the President's first budget in 1990: substantial funding increases for most environmental programs, and greater sensitivity to the impact of federal actions on the environment. Notable areas include:

-- Increases for EPA's operating budget, especially for enforcement (more than 500 new staff) and cleanup at Superfund and federal sites (see #10)

-- **"America the Beautiful":** a three-pronged effort to acquire lands with high environmental or recreation value (up to $1 billion over four years); restore threatened natural resource and recreation areas ("Legacy '99"); and a new program to expand and accelerate national reforestation to a rate of one billion trees annually

-- concerning global climate change, sharply higher funding for the "Mission to Planet Earth" space-based Earth observation system, solar and renewable energy, energy conservation (see #7), and basic research

-- research, protection and enhancement of the nation's wetlands; termination or mitigation of certain water projects (see #5)

-- proposed demonstration projects to terminate wasteful "below-cost" timber sales at nine national forests and provide improved recreational facilities in those areas

-- an increase of almost $800 million, or 21 percent above 1990 levels, for Federal facility cleanups

-- full funding for the Clean Coal Technology program

4) **Pollution prevention and recycling:**

The Administration seeks reforms to move beyond costly end-of-the-process cleanups, toward an emphasis on pollution prevention.

Within EPA, two percent of every program's budget has been set aside to fund specific pollution prevention demonstration projects.

EPA has launched a nationwide "early warning system" to prevent municipal sewage treatment plants from violating Clean Water Act standards.

Legislation and administrative actions are under development to spur federal and private pollution prevention efforts. The legislation would set numerical goals and timetables, enhance data collection, improve municipal solid waste minimization and management, and create helpful new market incentives.

5) **Asbestos ban:**

EPA announced a ban on almost all uses of asbestos in the United States by 1997. Asbestos is a carcinogen linked to lung and chest cancer.

6) **Water pollution, water projects, and wetlands:**

EPA Administrator Reilly blocked issuance of a permit that would allow construction to begin on the Two Forks Dam in Colorado. President Bush seeks termination of uneconomic and destructive projects such as the Garrison Diversion Unit in North Dakota. EPA rejected the proposed Big River reservoir project in Rhode Island, based on unacceptable adverse effects on wetlands, wildlife and recreation.

EPA issued proposals to regulate 17 pesticides and 21 other contaminants in drinking water, almost doubling the number of pollutants subject to federally enforceable standards. The proposals also call for monitoring 110 currently unregulated contaminants.

The Bureau of Reclamation has been given new direction and proposed doubled funding to pursue mitigation of adverse impacts of certain large water projects already constructed.

Concerned by the rapid loss of American wetland habitats, the President directed an interagency task force to report by late 1990 on ways to implement a policy of "no net loss" of wetlands. EPA and Army Corps of Engineers signed an agreement to clarify wetlands protection policy; the Bureau of Reclamation and the U.S. Fish and Wildlife Service signed an agreement to cooperate in expanding the wetlands breeding habitat for numerous species.

The President's FY91 budget seeks a 24 percent boost (to $460 million) for research, protection and enhancement of wetlands, including acceleration of the national wetlands inventory. This follows a 32 percent increase in 1990.

For related actions on ocean pollution, see #14.

7) **Energy:**

The Department of Energy is preparing a National Energy Plan which emphasizes, among other things: energy conservation and efficiency; alternative and renewable energy sources; and nuclear power safety.

DOE announced eleven initiatives in energy efficiency and renewables, including: more efficient lighting for federal buildings; regulatory and legislative changes to stimulate efficiency improvements in the utility, commercial and construction sectors; and using the government-industry technology transfer process to speed promising energy technologies into widespread use.

In a reversal of previous policy, DOE proposed rules to centralize and significantly strengthen compliance with the environmental assessment process under the National Environmental Policy Act.

The Department of Transportation raised the corporate average fuel economy (CAFE) standard for autos to 27.5 mpg.

The President postponed lease sales and oil and gas development in sensitive areas off the shores of California and Florida, and will make a final decision on these leases in 1990.

The President has requested all of the necessary funds to complete the $2.5 billion Clean Coal Technology program.

To address waste cleanup at DOE facilities, funding was increased by $500 million in FY90; an increase of $600 million is sought for FY91. DOE released a five-year, site-by-site cleanup plan, and a five-year research and development plan to reduce outyear costs.

8) **Global climate change:**

The Bush Administration has demonstrated a willingness to confront the complex and important question of global climate change.

The Secretary of State's first major address in January 1989 expressed the President's intention to take comprehensive action in this area. In February 1990, the President became the first and only head of state to address the U.N.-sponsored Intergovernmental Panel on Climate Change (IPCC), the leading global forum for climate change policy.

The U.S. agreed in November 1989 to stabilize U.S. carbon dioxide emissions and study further reductions; the President proposed two major international conferences on the issue in 1990. The first conference, held April 17-18, addressed scientific and economic questions. The second conference would open negotiations toward a multilateral framework treaty once the IPCC has completed initial assessments of the scientific evidence, potential impacts, and policy options.

The President supports efforts to build upon the Montreal Protocol and phase-out all uses of chloro-fluorocarbons (CFC's) and halons by the turn of the century. The Administration supports financial and technical assistance to developing countries to make the transition to non-CFC technologies.

The FY91 budget request seeks $1 billion for research into global climate change, up 57 percent from 1990. That research includes work on the "Mission to Planet Earth" orbiting observation system, renewable and solar energy sources, and energy efficiency/conservation.

The Administration's clean air bill, National Energy Strategy and increased CAFE standard also will have the effect of stabilizing/reducing "greenhouse gas" emissions.

9) **Other international environmental initiatives:**

The President banned imports of African elephant ivory (see #18).

During his 1989 trips abroad, the President pledged financial and technical aid to Poland and Hungary to control air and water pollution, draft environmental statutes, and establish an East European environmental center.

President Bush led efforts to make the environment a major focus of the "G-7" Summit in Paris. In Tokyo, the President held meetings with leaders of Japan and Brazil to discuss the problem of rapid rainforest depletion.

The Administration helped develop and then signed the Basel Convention, which governs transboundary shipments of hazardous wastes in an environmentally sound manner.

President Bush supported and signed a bill to prohibit U.S. support for foreign development loans unless environmental impacts are studied first.

The Administration persuaded Japan, Taiwan and Korea to enter into agreements to monitor driftnet fishing. This will allow the U.S. to monitor the incidental take of birds, seals, whales, dolphins and other marine mammals.

In 1990, for the first time, Peace Corps volunteers will be trained by EPA in water pollution prevention, waste disposal, reforestation and pesticide management.

The President's plan to elevate EPA to full Cabinet status will give the U.S. Environment Secretary commensurate status with his counterparts from other nations. The plan would also enhance "USDE" authority to offer technical assistance to foreign environmental programs. In early 1989, EPA's International Activities Office was elevated to the assistant administrator level.

10) **Alaskan oil spill:**

The President sent Vice President Quayle and a Cabinet-level team to assess the situation; the Department of Transportation is overseeing cleanup by Exxon, while EPA is coordinating an interagency task force on long-range restoration of Prince William Sound.

After negotiations broke down, the Justice Department issued a five-count criminal indictment against Exxon with potential penalties of up to $600 million.

11) **Future oil spill prevention:**

The President proposed, and Paris Summit leaders accepted, a call for increased international efforts on oil spill prevention and cleanup. In May 1989, President Bush sent Congress comprehensive oil pollution liability and compensation legislation. The Interior Department began a $6 million, 3-year joint project with the American Petroleum Institute to research and develop new cleanup technology.

12) **Food safety:**

The Administration proposed legislation to improve food safety by streamlining regulations to allow faster removal of dangerous substances from the market. EPA prohibited all sales, distribution and use of "Alar" products labeled for use on food products, and stepped up its efforts against other suspect pesticides. EPA blocked the sale of roughly 100 million apples that had been illegally treated with the fungicide "Botran."

13) **Hazardous wastes and Superfund:**

After an intensive management review, the Administration reoriented the "Superfund" hazardous waste dump cleanup to an "enforcement first" program to get more responsible parties to undertake cleanups. EPA added 500 new enforcement staff to this program.

The Administration fought Congressional attempts to cut the Superfund budget and in 1989, exceeded Congressionally-mandated targets for cleanup starts and site studies.

The Administration commenced a similar review of the Resource Conservation and Recovery Act (RCRA), expected to yield proposals for upcoming legislative reauthorization.

14) **Clean oceans and coastlines:**

EPA implemented the first step of the President's commitment to prevent medical wastes from washing up on beaches: a pilot medical waste tracking system to serve as a model for further action. The program involves the states of Connecticut, Louisiana, New Jersey, New York and Rhode Island, as well as the District of Columbia and Puerto Rico.

EPA negotiated agreements with local jurisdictions to stop ocean dumping of sewage sludge by late 1991, an initiative that also resulted in penalty actions against 61 cities in 1989. The President proposed legislation to require criminal felony penalties for illegal ocean dumping.

15) **Radon:**

EPA released data showing high levels of cancer-causing radon to be widespread in housing throughout the country, and undertook public education efforts to urge Americans to test and safeguard their homes, schools and businesses.

16) **Defense & the Environment Initiative**

The Department of Defense established a five-point initiative intended to forge long-term partnerships in defense-environmental matters well beyond mere compliance. An autumn 1990 conference will attempt to: finalize a near-term DOD environmental action plan; activate an enhanced DOD environmental decision-making structure; and discuss how global strategic policy might encompass environmental challenges.

17) **Endangered species:**

The President has rejected the suggestion of amendments to the federal Endangered Species Act.

The President banned imports of African elephant ivory products in an effort to save that endangered species; and he requested funding from Congress to assist African countries with management and protection of this species.

The Department of Interior issued an emergency listing of the Desert Tortoise as an endangered species in Southern California, Utah and Nevada. DOI acquired additional habitat for endangered panthers in Florida.

The Two Forks Dam and Big River decisions (see #6) protected thousands of acres of wildlife habitat. And the President reversed a proposal to cap the outlay of funds under the Wallop-Breaux Trust Fund used for fisheries protection and development.

18) **Earth Day**

The Council on Environmental Quality coordinated actions by all federal agencies to celebrate the 20th anniversary of Earth Day, including an exhibition on the Mall in Washington, and various activities by more than a dozen Federal agencies.

19) **Environmental education**

The President proposed a program of cash awards of up to $5,000 to elementary and secondary school teachers in the 50 states, the District of Columbia and the territories who develop innovative, effective environmental education curricula.

20) **Enforcement**

EPA's aggressive enforcement program levied civil and administrative penalties totaling just under $35 million in fiscal year 1989, including $13.6 million from over 4,000 administrative actions, two record highs.

EPA referred 364 civil judicial cases of alleged environmental law violation to the Department of Justice for prosecution in FY89, just short of the 1988 record of 372. EPA referred 60 criminal cases to Justice in FY89.

Notable enforcement actions include:

--Proposed fines of $1.65 million on 42 companies that failed to report toxic chemical discharges as required by law.

--Civil lawsuits against 34 companies and individuals to halt violations of rules protecting the public from unlawful asbestos demolition and renovation practices.

--Civil lawsuits against 61 cities (including Detroit, El Paso, Phoenix and San Antonio) for violations of the Clean Water Act.

--A civil penalty of $15 million against the Texas Eastern company for toxic substance violations at up to 89 sites along a 1,000 mile-long natural gas pipeline. The fine was the largest ever for violation of any environmental statute.

--A coordinated campaign to protect the Chesapeake Bay included charges against 26 facilities in the watershed for violations of the Clean Water Act.

After negotiations broke down, the Justice Department issued a five-count criminal indictment against Exxon with potential penalties of up to $600 million.

21) **Deterring conflicts of interest:**

EPA has set a strict new policy on the agency's use of contractors, barring them from involvement 17 specific activities and warning of improper conflicts of interest in 15 additional areas.

WELCOMING REMARKS OF

THE HONORABLE MICHAEL R. DELAND
CHAIRMAN, PRESIDENT'S COUNCIL ON ENVIRONMENTAL QUALITY

TO THE FIRST SESSION OF
THE U.N. INTERGOVERNMENTAL NEGOTIATING COMMITTEE
ON CLIMATE CHANGE

CHANTILLY, VIRGINIA, USA
FEBRUARY 4, 1991

DIRECTOR GENERAL BLANCA, DR. TOLBA, DR. OBASI, OFFICIALS OF THE UNITED NATIONS, DISTINGUISHED DELEGATES, REPRESENTATIVES OF THE NONGOVERNMENTAL COMMUNITY, LADIES AND GENTLEMEN:

ON BEHALF OF PRESIDENT BUSH, IT IS AN HONOR FOR ME TO WELCOME SUCH A DISTINGUISHED ASSEMBLY OF PUBLIC OFFICIALS FROM SO MANY NATIONS. THE PRESIDENT AND ALL AMERICANS ARE DELIGHTED TO PROVIDE A FORUM FOR THE UNITED NATIONS TO BEGIN NEGOTIATIONS ON A LANDMARK INTERNATIONAL CONVENTION ON CLIMATE CHANGE.

PRESIDENT BUSH SENDS HIS PERSONAL GREETINGS TO EACH OF YOU, AND REGRETS THAT HE CANNOT BE HERE IN PERSON THIS MORNING. HE BELIEVES DEEPLY IN THE UNITED NATIONS, AND KNOWS FIRSTHAND WHAT REMARKABLE THINGS CAN BE ACCOMPLISHED WHEN DIVERSE NATIONS WORK TOGETHER TOWARD COMMON OBJECTIVES.

AS WE ENTER THESE NEGOTIATIONS, LET ME SHARE WITH YOU THE UNITED STATES' OUTLOOK:

- **FIRST**, WE BELIEVE THAT A COMPREHENSIVE STRATEGY FOR ACTION MUST FLOW FROM A COMMITMENT TO ECONOMIC GROWTH AND RESPONSIBLE STEWARDSHIP OF OUR PLANET. A COMPREHENSIVE STRATEGY WILL BE BUILT UPON A SERIES OF ACTIONS WHICH WILL HAVE A BROAD RANGE OF BENEFITS: FROM CURBING AIR POLLUTION, TO CONSERVING ENERGY, TO RESTORING FOREST LAND -- ALL OF WHICH WILL HELP CURB GREENHOUSE GAS EMISSIONS. AMERICA'S CLIMATE CHANGE STRATEGY INCLUDES ACTIONS THAT WILL RESULT IN U.S. GREENHOUSE GAS EMISSIONS IN THE YEAR 2000 BEING EQUAL TO OR BELOW 1987 LEVELS.

- **SECOND**, THE UNITED STATES BELIEVES THAT RESEARCH AND ACTION MUST PROCEED IN TANDEM. THAT IS WHY WE HAVE ACCELERATED OUR GLOBAL CLIMATE RESEARCH ROUGHLY FIVEFOLD SINCE 1989, AND WILL SEEK $1.2 BILLION FOR THE COMING FISCAL YEAR. AND THAT IS WHY, HAD THE PRESIDENT BEEN ABLE TO JOIN US THIS MORNING, HE WOULD HAVE BEEN PLEASED TO ANNOUNCE AMERICA'S CLIMATE CHANGE STRATEGY, WHICH INCLUDES BOTH RESEARCH AND ACTION. A SUMMARY OF THIS STRATEGY WILL BE DISTRIBUTED TO YOU TODAY. AS OUR SCIENTIFIC AND ECONOMIC KNOWLEDGE ADVANCES, THE UNITED STATES WILL CONTINUE TO RESPOND.

- **THIRD** AND FINALLY, OUR PURPOSE IN THESE NEGOTIATIONS IS CLEAR. AS PRESIDENT BUSH HAS WRITTEN IN A LETTER BEING DELIVERED TO EACH OF YOU TODAY: "WE ARE PREPARED TO WORK OPENLY, DILIGENTLY, AND RESPECTFULLY TOWARD ACHIEVING THE

GOAL OF COMPLETING A CLIMATE CHANGE CONVENTION IN TIME FOR ITS SIGNATURE AT THE UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT IN JUNE OF 1992."

NO ONE BELIEVES THAT RESPONSES TO CLIMATE CHANGE WILL BE SIMPLE OR COST-FREE. THE ISSUES INVOLVED ARE COMPLEX AND HAVE MANY IMPLICATIONS FOR OUR CITIZENS AND FUTURE GENERATIONS. YET WE ARE HERE BECAUSE WE RECOGNIZE THE NEED TO PROMOTE GLOBAL ENVIRONMENTAL STEWARDSHIP FOR ALL THE WORLD'S PEOPLES, IN A FORUM THAT IS DEMOCRATIC AND COOPERATIVE.

IT IS THE HEIGHT OF IRONY THAT AS WE BEGIN A CONSTRUCTIVE DIALOGUE ON OUR SHARED ENVIRONMENTAL FUTURE, SADDAM HUSSEIN'S PREMEDITATED AND WANTON RELEASE OF CRUDE OIL INTO THE PERSIAN GULF INFLICTS ENORMOUS ENVIRONMENTAL DAMAGE.

SADDAM'S UNCONSCIONABLE ACT WILL NOT DIVERT US FROM THE TASK AT HAND. INDEED IT ONLY HEIGHTENS OUR RESOLVE. FOR NO NATION OR BLOC OF NATIONS HAS THE UPPER HAND WHEN IT COMES TO THE ENVIRONMENT. EITHER WE ALL WIN OR WE ALL LOSE. LET US WORK COOPERATIVELY AND BE CATALYSTS FOR AN ESSENTIAL KIND OF PEACE-- A PEACE BETWEEN HUMANITY AND OUR PLANET.

TURNING TO THE AGENDA OF THESE NEGOTIATIONS, THE U.S. BELIEVES IN SEVERAL GUIDING PRINCIPLES.

FIRST, OUR EFFORTS MUST BE COMPREHENSIVE IN SCOPE. TWENTY YEARS AGO, WHEN WE IN THE UNITED STATES ENACTED OUR FIRST ENVIRONMENTAL STATUTES, WE FOCUSED ON NARROW ASPECTS OF A COMPLEX PROBLEM. THE CLEAN AIR ACT OF 1970... THE CLEAN WATER ACT OF 1972... THE TOXIC SUBSTANCES CONTROL ACT... THE RESOURCE CONSERVATION AND RECOVERY ACT... ALL ADDRESSED JUST A PIECE OF AN INTRICATE PUZZLE. TOO OFTEN, THESE STATUTES RESULTED IN MOVING POLLUTION AROUND FROM AIR TO LAND TO WATER. WHILE THEY LED TO SUBSTANTIAL SUCCESS IN CLEANING UP OUR ENVIRONMENT, THERE IS A BETTER APPROACH. THE ENVIRONMENT IS HOLISTIC-- A DYNAMIC SYSTEM OF INTERACTIONS BETWEEN LIVING THINGS, THE WATERS, LAND, AND SKIES. AS WE SEEK TO PROTECT OUR ENVIRONMENT, WE MUST DO SO FROM THAT BROAD, COMPREHENSIVE PERSPECTIVE.

SECOND, OUR AGREEMENTS SHOULD BE LONG-TERM AND ADAPTABLE. WE ARE UNITED IN THE BELIEF THAT DESPITE LARGE UNCERTAINTIES, THE POTENTIAL THREAT OF CLIMATE CHANGE JUSTIFIES TAKING ACTION NOW. YET EACH OF US OPERATES IN UNIQUE CIRCUMSTANCES: POLITICAL, ECONOMIC, SOCIAL, ECOLOGICAL. DIFFERENT POLICIES WILL HAVE DIFFERENT COSTS AND BENEFITS FOR DIFFERENT NATIONS. WE NEED AN INTERNATIONAL CLIMATE CONVENTION THAT COMMITS ALL NATIONS TO MEANINGFUL ACTION, YET DOES NOT LIMIT US TO SOME FIXED FORMULA.

LET US REMEMBER THAT THE ACTIONS TO WHICH WE COMMIT OURSELVES WILL NOT OCCUR AUTOMATICALLY OR INSTANTLY. OUR DECISIONS WILL AFFECT HUMANITY FOR DECADES TO COME. HENCE OUR

ACTIONS MUST BE CONTINUOUSLY REVIEWED AND REFINED AS KNOWLEDGE AND CONDITIONS CHANGE. AS PRESIDENT BUSH STATED, "GLOBAL STEWARDSHIP IS A CONTINUOUS PROCESS OF SOCIAL DECISIONMAKING THAT MEETS THE NEEDS OF THE PRESENT GENERATION WHILE EXPANDING THE OPPORTUNITIES OF FUTURE GENERATIONS."

A THIRD ELEMENT OF SUCCESS IN OUR VIEW WILL BE AN INCLUSIVE APPROACH. BECAUSE THE ISSUES WE ADDRESS ARE GLOBAL IN NATURE, OUR ACTIONS MUST BE GLOBAL. WE MUST MAKE EVERY EFFORT TO ENSURE THE FULL PARTICIPATION OF ALL NATIONS IN THESE NEGOTIATIONS. FURTHER, A CLIMATE CONVENTION SHOULD CONSIDER THE FINANCIAL AND TECHNOLOGICAL REALITIES OF ALL NATIONS. AS PRESIDENT BUSH STATED LAST APRIL, "THOSE WHO HAVE ASCENDED THE ECONOMIC HILL MUST BREAK DOWN THE BARRIERS TO PROGRESS AND ASSIST OTHERS NOW MAKING THE CLIMB."

IN THE FINAL ANALYSIS, IT IS PROGRESS THAT COUNTS. PROGRESS THAT WILL RESULT FROM THE PARTNERSHIPS WE BUILD IN THE MONTHS LEADING UP TO THE UNCED CONFERENCE IN RIO DE JANEIRO, JUST EIGHTEEN MONTHS FROM NOW.

ON BEHALF OF PRESIDENT BUSH, WELCOME TO THE UNITED STATES. JUST AS WE HOPE THIS GATHERING WILL PROVE TO BE A PRODUCTIVE START IN OUR COOPERATIVE EFFORTS, SO, TOO, DO WE HOPE YOU WILL HAVE A MOST ENJOYABLE STAY. GOOD LUCK AND GODSPEED.

THANK YOU.

THE WHITE HOUSE

WASHINGTON

February 1, 1991

Dear Delegates:

It is with great pleasure that I welcome you to the United States as we gather to begin negotiations on a landmark international convention on climate change. This agreement will serve as a framework for future cooperative efforts to address the problem of climate change.

We look forward to working with you in the task of addressing this vitally important set of problems. I assure you that we are prepared to work openly, diligently, and respectfully toward achieving the goal of completing a climate change convention in time for its signature at the United Nations Conference on Environment and Development to be convened in June 1992.

The UN's Intergovernmental Panel on Climate Change (IPCC) has defined our common agenda: accelerating scientific and economic research to help reduce remaining uncertainties; taking action now that responds to our present state of knowledge; and negotiating a multilateral framework for comprehensive response strategies.

Through our U.S. Global Change Research Program, we are working aggressively with other nations to improve our understanding of the global ecosystem and the relationship of our economic activities to the natural environment. We look forward to continuing this partnership.

In addition, a number of nations are implementing policies to reduce greenhouse gas emissions. I am pleased to provide a copy of the U.S. action plan for climate change -- America's Climate Change Strategy. This comprehensive strategy for action is built upon a series of actions which will have broad-ranging benefits -- from curbing air pollution, to conserving energy, to restoring forest lands -- and which will help curb net greenhouse gas emissions.

In total, the actions which are currently included in America's Climate Change Strategy are projected to result in U.S. greenhouse gas emissions in the year 2000 being equal to or below the 1987 level. I hope that the results of our efforts here will be structured in such a way as to encourage such national strategies -- and to avoid any incentives to delay taking those actions which clearly have merit.

The United States takes the challenge of global stewardship very seriously and believes that these negotiations offer the opportunity to structure an important vehicle for cooperation toward that end. The outcome of our talks will be profoundly important -- and working together, I am sure that we will succeed.

Sincerely,

George Bush

ENVIRONMENT CONFERENCE 1989

TIME

TIME MAGAZINE'S

ENVIRONMENT CONFERENCE 1989

Monday, October 30, 1989

DENIS HAYES,
CHAIRMAN AND CHIEF EXECUTIVE OFFICER,
EARTH DAY 1990

American Horticultural Society

Colonnade Room,

7931 East Boulevard Drive

Alexandria, Virginia

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DENIS HAYES,
CHAIRMAN AND CHIEF EXECUTIVE OFFICER,
EARTH DAY 1990,

MR. HAYES: Those of you who noticed me scribbling frantically as soon as he said "we'll start with Denis Hayes" will know that you are going to get the benefit of my latest thinking.

[General laughter]

MR. HAYES: I might reframe this just a little bit.

In 1970, when we had the first Earth Day and somewhere between 20 million and 25 million took to the streets, we had a wonderful window of opportunity through which we drove a lot of vehicles: the Clean Air Act of 1970, the Clean Water Act, the Environmental Education Act, the establishment of the EPA. There was just a huge array of things that passed in the 18 or 24 months that followed that first birthday, and in the years that followed that, still additional legislation was passed.

When I look back upon these last 20 years, it is hard to think of a really important environmental battle that was fought that the environmental forces did not win. We are all gathered here today because the world is in far worse shape that it was in 1970, by virtually any index that you want to apply to it.

From the big global threats, we are in vastly worse shape. The interesting question is how can you fight battle after battle after battle, win them all, even in the darkest days of the Reagan Administration, which I have come increasingly to characterize as the worst environmental administration since Ivan the Terrible, how can we find ourselves in this kind of situation?

I will toss out a few thoughts.

First, there were a lot of things at that point that we just flat-out did not know. In 1970, nobody guessed -- I think even Sherry didn't guess in 1970 -- that CFCs were going to be destroying the ozone layer.

In fact, if you'd asked the average industrial chemist to give us a true success story, I think CFCs would have been on most people's short list -- nontoxic, noncarcinogenic, nonmutagenic, noncorrosive, nonexplosive, nonflammable. It did a lot of wonderful things.

Some part of it was simple ignorance. But I think that is a very small part of it.

A somewhat more important thing is that we have repeatedly fought each battle on its own without a strategic overview. In case after case, we have solved the problem by making some other problem worse or by

creating some brand new problem.

One that is right now probably the most ranging grassroots issue in the United States has to do with incinerators. The problem was solid waste and the solution to this problem was incinerators, which have just spawned probably 3,000 or 4,000 very strong willed, not-in-my-backyard activist groups across the country fighting these things. This is in part because we have chosen the wrong kinds of incinerators and in part because we placed them in some wrong places.

But it is important because that should not have been the answer to the solid waste problem, certainly not the focal answer. The answer is waste reduction, not trying to figure out some way to compact it and to incinerate it.

We, I think -- and this will be somewhat controversial, maybe enormously controversial -- are on the verge of doing the same sort of thing right now with regard to global warming.

The nuclear industry here and around the world -- I was just in France two weeks ago, and there it is probably in its most spectacular form -- is just trotting out nuclear power as the answer to global warming, in a whole lot of ways -- both economically, because nuclear power will only be used to produce electricity, which constitutes a very small fraction, a trivial fraction, really, of the generation of carbon dioxide, and also because of the problems inherent even in the new "safe generation" of reactors, should they come to pass, the problems of proliferation. You cannot split any atom to give yourself power that you can't also split to give yourself a bomb.

I think we are running some serious risks if we allow that to proceed forward as the answer to global warming, of having made that same mistake again in a very big way. To the extent that over some period of time, if we are looking at it in a timeframe of not this year or next year or ten years, but of 25, 30, or 50 years, if you believe this inextricable link between the proliferation of reactors and of weapons, we could well be talking about a world in which 100 or 120 countries have the bomb. Or you can build a mathematical model that says that that gives us a more stable world. But a lot of us do not find that particular model very convincing.

Third, we failed to set priorities -- in part because of the intellectual problems of a lack of congruence between things that are perceived as urgent, things that are perceived as fundamentally important, and things that

are seen as solvable.

We obviously have to address the urgent things. We need to get some victories behind us, so we have to address the things that we can really solve. But somehow we have managed to get ourselves increasingly focused upon those two things to the exclusion of the things that are truly important.

I think that is a big part of winning these battles and losing the war.

I had a sort of amusing lunch with a person that probably everybody at this table knows. It is a very important actor, and I won't tell you who it is because of what I am about to say.

We discussed precisely this problem last week. In the course of the conversation, she was making exactly the same set of points emphatically, and concluded with, you know, the things that really bothers me is every time I go to a restaurant, they always serve me water without asking; and, you know, with this vast outpouring of public sentiment, we really have to get that taken care of.

Okay, we have global warming, we have the ozone layer, and we have waiters serving us water without our asking for it. It is rather bizarre.

[General laughter]

MR. HAYES: In any case, it is a big problem and one that I think we need to focus on and make sure that the priorities include not just the things that give us momentum, that give us victories, that solve the things that are solvable this year, but also that we don't shy away from the ones that we can't solve in less than 20 years, or 30 years, or 40 years, that are going to be painful, that are going to be expensive. But they will be more painful and more expensive if we don't get going immediately.

A reasonable criterion to use to try to make that assessment is where are there really thresholds that once we cross, we cannot come back.
I will elaborate on that when we have the full group discussion.

Fourth, each nation over the last 20 years has focused most of its attention upon problems within its own borders.

In the early years, this was, in part, because we were spectacularly unsuccessful in raising these issues in the Eastern Bloc countries and in Third World countries. The communist states genuinely viewed environmental degradation as a natural byproduct of capitalistic

exploitation. Developing countries thought that producing environmental catastrophes were a necessary part of rapid industrialization, and neither of them was willing to say that they needed to do something within their boundaries.

That, in my travels, at least is all a matter of the past.

There is huge resentment in the developing world toward industrial countries coming in and telling them this is what you must do. But there is an incredible understanding that the development paths that the developed world has followed are not sustainable and that they should not be investing their money in those kinds of strategies in the future, and they're trying to come up with their own unique approaches.

I think they are willing to follow us to the extent that we do not preach at them, but begin to really exercise some global leadership.

This is an area where I think we have a lesson to learn from Gorbachev. Arms control for a very long time has been we'll do 3 percent if you do 3.5 percent; we'll adjust this a little bit if you adjust that a little bit. But suddenly, with a flare of showmanship, he said we're going to raise you 50 percent. Are you going to match us? Are you going to stay in the game or not?

It's enormously risky in the political climate in the Soviet Union, and was an act that I believe contained a huge amount of courage.

It does not require that kind of courage on the environmental front to make some bold, new initiatives, and to challenge the world to do it. I'd really love to see that happen first in acid rain, where we have continued to maintain sort of this 1950s arms negotiation mindset in our dealings with the Canadians. I think we ought to be just way out in front with the problems that resulted.

Fifth, we have ignored, as an environmental movement, some very important tools.

There was a huge contest back in the early 1970s between the people who viewed themselves as "lifestyle environmentalists" and those who were "political environmentalists."

In the passion of the times, they loathed one another. The political folks dismissed the lifestyle folks as naive idealists, who wanted to retreat to a commune in Vermont and lead lives of irrelevance.

The lifestyle people thought of the political folks as ones who wanted to go into smoke-filled rooms and

engage in a process, the ultimate goal of which was to reach a satisfactory compromise, and to compromise issues in which compromise was simply unacceptable.

What happened was that the political folks won. If you give money to an environmental group today, 99 cents on the dollar goes to try to influence government. It goes for lobbying, it goes for elections, it goes for litigation, it goes to try to affect rule-making processes.

In the course of that, we have not done much to try to encourage environmental consumerism, the so-called "green consumer" that has become so enormously important in Europe, a vitally important tool.

We have not done much with green investment. We should have pioneered, perhaps, the path that the South African campaigns have followed of trying to influence people at board meetings, through the voting of stock.

Recently, a group of us that I co-chair with one of the leaders of a socially responsible investment firm produced what we're calling the Valdez Principles. They are ten criteria for environmentally responsible corporate behavior.

We went out and lined up the support of the State Public Pension Fund in California, the New York City Pension Fund. We have six religions now and a whole pile, maybe 15 or 20, mutual funds that have adopted it. When we released the Valdez Principles, we had $160 billion of investment willing to subscribe to them.

The next stage in that is to go out to all of the campuses across the country and get students to go to their boards of trustees and say as you are investing our endowments, we want you to be doing that in companies that are making the world a better place, not in companies that are making the world a worse place.

Finally, probably what students ought to do if they really want to exercise the strongest muscle they have today is to recognize that the baby boom is over, and, as a consequence, there is an increasing competition for declining enrollments, to try to get students to go to work for each individual company when it's over. If they really want to exert real power on campus, they should start boycotting the occasional job interviews of companies that behave with a particular level of irresponsibility.

I can go on and on with these tools. The point is that the environmental movement has not really used any of them, except the political tools, and if we are really in

the kind of crisis that I think most of us here believe we are in, we cannot afford to ignore any of them.

Finally, the last point that I will make with this time limitation is perhaps the most important one.

The battles that we have won over the last 20 years have often been brutal. They have been bloody. They have been hard. But, in retrospect, they have been the easy battles. There are the Clean Air Act, the Clean Water Act, the Super Fund. These are things that have price tags on them, to be sure. You probably have never done the addition, but I would be shocked if it has not been half a trillion dollars that we've spent in the last 20 years as a result of this mantle of legislation.

But they were things where a fraction of the population, enjoying at least shallow, but very broad-based public support, were able to be successful in affecting the legislative process, going for a targeted goal and getting it done.

The battles that we are facing ahead cannot be won by an environmental movement that has 10 million or 12 million members and vague public support if what we view as the answer to global warming contains within it a transition over a small number of decades from fossil fuels to something else. That will be as difficult a transition as any nation has ever made in a short timeframe.

It is going to be painful; it is going to be expensive; and it is going to require enormously broad-based public support.

So, instead of having conferences where environmentalists talk to other environmentalists and try to have the Sierra Club and the Audubon Society negotiate difficult sorts of compromises that they need to get on to the same wavelength, we need to reach out aggressively and successfully to alter the other sectors of society and go to bat for them on the goals that they have, and show them why our goals should be important to them.

I guess that is the final point to make about Earth Day. When we put it together, we got the leader of every major environmental group in the country on our board. But what is exciting about the board is that we have leading political figures, including probably half of the people who are at this conference. We have leading scientists. We have civil rights leaders. We have leaders of women's organizations. We have labor union leaders. We have chairmen of major corporations.

We are going out to every sector of society and I

hope in the process of doing that are putting together an event which will convert America into a nation of environmentalists, almost to the point where the label becomes meaningless. If you are a human being, you care enough about these things that you are going to pay the price to get them solved.

TIME MAGAZINE'S

ENVIRONMENT CONFERENCE 1989

Monday, October 30, 1989

MOSTAFA TOLBA
EXECUTIVE DIRECTOR,
UNITED NATIONS ENVIRONMENT PROGRAMME

American Horticultural Society

Colonnade Room,

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Alexandria, Virginia

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MOSTAFA TOLBA
EXECUTIVE DIRECTOR,
UNITED NATIONS ENVIRONMENT PROGRAMME

DR. TOLBA: Thank you very much, Mr. Muller.

My dear friends, it is a great privilege and honor for me to start this discussion, this informal discussion, before a group of such very distinguished individuals. I am sure that by 5:00 o'clock, this will yield significant results, which not only you -- I'm not going to cheat on that; I'm not going to publish anything of what's coming out of this -- will benefit, but I will benefit definitely as well from the discussions. I am sure that every one of us is going to benefit from this exchange of views.

Since 1945, international relations have been dominated by the certain knowledge that a nuclear war would destroy the world. But, as tensions ease between East and West, the world is turning its attention to a new threat to the peace and security of our one world. That threat is environmental destruction.

Catastrophes such as the 1984 Ethiopian Famine, Chernobyl and Bhopal, have served to make the environment a front-ranked global concern. Meanwhile, air and water pollution, degradation of the land through deforestation and desertification and toxic contamination have become too obvious for us to ignore anymore.

Images of tropical forests put to the torch of oil pollution, erasing life in our seas, of elephants and rhinos hunted to the brink of extinction, have profoundly alarmed us all.

Most remarkable has been the groundswell of concern for ozone layer depletion and climate change caused by global warming.

You cannot see the ozone layer. You cannot see carbon dioxide. And yet, from nowhere, over a remarkably short space of time, the threats to our atmosphere and to climate stability have become a dominant environmental concern.

It is not difficult to see why.

The problem cannot be solved by the industrial countries acting alone. If the developing nations home to eight out of ten people repeat the pattern of development of the North, if they reach the North's levels of consumer goods and fuel consumption, and if they continue to clear the forests, then our mutual destruction is assured.

Addressing the global environmental crisis requires nothing less than a radical change in the conduct of the world policy and the world economy. It cannot entail

cosmetic changes.

Already, the environmental crisis is beginning to reshape international relations and to redefine national security priorities. No nation, no matter how well armed, no matter how powerful, can quarantine itself against climate change, ozone layer destruction, destruction of biological diversity, or the fallout from catastrophes such as Chernobyl.

In UNEP, we are indebted to "Time" for its "Planet of the Year" cover story. In addressing the principal threats to the health of our human environment, it showed that we are all in this together. It hit most of the right nails right on the head.

"Time's" distinguished co-founder, Henry Luce, used to say that his aim was to get ideas off paper into people's minds. Your picture of an embattled planet had that sort of impact.

The challenge now is to translate what is in all our minds into meaningful action.

In my remarks this morning I will not give opinions on national priorities. Our mandate in UNEP is to take the global view, and all the most urgent environmental problems have global significance. Naturally, they have as well local significance.

These global problems falls into two broad categories: global pollution and global resource wastage.

Transboundary pollution, for example, has been a potent force in influencing international relations. Take acid rain. All of you here and "Time Magazine" know well its negative impacts on human health, forests, lakes, and architectural inheritance.

Acid rain has also polluted relations between the United States and Canada, the United Kingdom and the Scandinavian countries, and neighboring countries now in Central Europe.

Other problems -- global warming, ozone layer depletion, erosion of biodiversity, proliferations of hazardous wastes, shortage of shared fresh water resources and environmental disasters -- have similar influence on international relations.

All of these problems require specific action over the long-term. But these actions must start now if we will ever meet the challenges.

With a view to priority predicated on practical action, let me begin with the last first, and work my way back.

First is the environmental disasters. I will not

repeat the catalogue of recent environmental catastrophes that made the front pages of "Time" and the media throughout the world.

What we know for certain in that in our increasingly crowded and economically active world, further disasters are in store. More and more, they lie beyond the ability of any one nation, particularly developing nations, to cope with technically and scientifically. And, invariably, their effects are experienced well beyond national frontiers.

My first recommendation for action is, therefore, that nations should start in 1990 considering the setting up of an environmental disaster response mechanism, able to mobilize required technical and scientific resources to help affected nations cope with such disasters.

Second is water.

More than 97 percent of the water on earth is sea water. Less than 1 percent of the remainder, a supply of fresh water, is available for human use. The rest of the fresh water is locked away in ice glaciers and the polar ice caps.

Demand for fresh water is growing exponentially. In a majority of developing countries, river basins are the lifeblood of predominantly agricultural economies, and nations must act quickly to forestall the inevitability of water wars.

This was one factor that led UNEP to help seven Southern African countries to develop a management plan for the Zambesi River. The plan was modeled after ten similar agreements, regional seas agreements, now involving over 120 states worldwide.

We need to begin where -- starting in 1990 -- on devising similar agreements for other shared fresh water systems, shared fresh water systems, rivers, lakes, and underground aquifers, to avoid confrontation later.

Third is hazardous wastes.

One of the priorities for 1990 must be the implementation of the Basel Convention, agreed earlier this year, to control the movement and disposal of hazardous wastes, a problem which has fouled international relations in the past few years.

The convention aims to limit international movements of hazardous wastes and, thus, ultimately to reduce their generation.

This controls our incentive to produce fewer wastes, which is technically perfectly feasible, and to design better disposal facilities, again, a task well within our

technical capacity.

Over the next 12 months, nations should ratify the convention. It cannot enter into force and later be strengthened until this happens.

Four is biodiversity and tropical forests.

The preservation of life's genetic resources is one of the most urgent and least publicly understood necessities. More, like "Time's" brilliant story on the ivory trade two weeks ago, is urgently needed.

On this issue, UNEP has a mandate from governments to negotiate a global biodiversity conservation convention treaty. The work is underway. The document would be ready for review in 1991.

The treasure houses of species are largely in the tropics. Thus, devising and putting to work such a convention would aid the conservation of tropical forests.

On this issue, I suggest that the basic cost of conservation should not come primarily from national treasuries and taxpayers. The private sector, the pharmaceutical, medical, food, and timber industries should play the major roles.

It is in their interest to help provide incentives to governments and local people to conserve nature's laboratory.

In developing the convention sometime in 1990, nations must therefore search for innovative financial mechanisms to allow the private sector to play its critical role.

Five is ozone depletion.

The Montreal Protocol to Protect the Ozone Layer is our inspiration that nations are prepared to take action in time.

Next June, in London, governments will meet to make the protocol more stringent. They plan to amend the current regulations so as to completely phase out their use of chlorofluorocarbons and other ozone depleting substances by the end of the decade.

Some countries are already acting unilaterally to eliminate them earlier. So far, so good. But ozone depletion's global threat to health, agriculture and fisheries has not yet attracted universal response.

The main users of CFCs, the United States, European Community countries, the U.S.S.R. and Japan, account for above 80 percent of CFC consumption. They have begun the phase-out and are accelerating their research and development on safe substitutes.

But unless all -- and I mean all -- the developing

nations, particularly the industrial giants of tomorrow -- China, India and Brazil -- which have a population of 2 billion, are persuaded to comply with the protocol, we may be back to square one on ozone depletion at the end of the decade.

Many developing country governments share the concern of their neighbors to the north about the effects of increased ultraviolet light on their people's health and on crops. But they cannot afford to enter into a legally binding treaty lacking the concrete means to manufacture or use safe substitutes.

Talk of aid on a country-by-country basis to help them take the sacrifices is simply not what the times demand.

We must come up with a solution that takes account of environmental reality.

Current first estimates are that it will cost between $2 billion and $5 billion in subsidies and technology transfer to enable them to halt production and consumption of substitutes.

Those funds will need to be controlled by the contracting parties themselves. The best and probably the only measure capable of insuring that every state accedes to the protocol.

So, the London conference next June must not only make the protocol much tougher, but make a major and hitherto unprecedented commitment to providing incentives for developing countries to give up their actual or potential use of CFCs and other controlled substances.

Everybody must chip in his share. There is no place for accusations. There is real room for global partnership. Otherwise, we are all, literally all, in trouble.

Six is climate change.

Global warming is sending us a global warning: stop loading the atmosphere with greenhouse gasses or face the consequences of climate change, rising sea levels, increased storms and hurricanes and vast destruction of agriculture.

UNEP's top priority in 1990, in cooperation with our sister U.N. agency, the World Ecological Organization, is to lay the first plans of a global convention to limit the greenhouse effect and stabilize climate.

Next October, a second World Climate Conference provides the opportunity to launch formal negotiations toward that agreement.

Developing countries again would require massive

transfer of resources and technology to enable them to make basic changes in their energy, forestry, and agricultural policy and practices. The industrial nations must make major economic reforms to prevent the world overheating.

Change is somewhat easier and more affordable for them. But their reforms in industry, energy, and transport will ironically be in vain unless the developing countries are helped to match them. To achieve this cooperation, our target must be to start in 1990 for conclusion in 1992 a meaningful action-oriented and properly financed global treaty on dealing with climate change.

Dear friends, in all the issues I raised, we shall meet transfer of technology at every corner. We need real, innovative thinking over how to tackle the issue of intellectual property, of the patent rights of the private sector, in particular, for new, environmentally sound, technological innovations and how to facilitate the access of others to these technologies.

Part of the problem is patents. The other part is resources.

Resources needed cannot come by adjusting existing national budgets or by increasing bilateral aid. Reaching for a new era in international cooperation must be accompanied by an urgent and serious examination of innovative ways to raise new finance and to insure technology transfer.

I'm talking about an investment in the future. I am talking about a complete change in foreign policies, about the need for a new order of things, one based on global partnership and sharing, in this particular field of combatting environmental deterioration, an order based on everybody paying their share in a common pool of resources.

Means like user's fees seem to be acceptable to the public. They could be applied to using the atmosphere, using the air in emitting carbon dioxide or chlorofluorocarbons.

Great care should be taken that this is not misused as a permit to pollute. Credits can be given to those who protect forests or plant trees to absorb carbon dioxide.

International agreements on the environment have helped to build confidence and trust amongst nations. These positive results of environmental partnership are, in my view, too seldom considered.

I would hope that your efforts in the international

"Time Magazine" and that this distinguished gathering would help redress the balance and make a case for an era of positive and genuinely cooperative action, cooperative action that is based on an acknowledgement that we may live in different countries, but we still live on one earth, whose security is threatened not by invading armies or
bandits, but by our willful quest for unsustainable development.

I hope your efforts would clearly show that we, the human beings, are the source of the problem and we, the human beings, have the responsibility and the ability to solve them.

I am glad to join you in trying to set an agenda for action in 1990 and beyond. Let us be specific and let us offer ideas on what can be realistically achieved. It may not be easy to cover all areas. Then let us concentrate on what we think are the major environmental problems on our earth.

I look forward to joining you and hearing your views.

TIME MAGAZINE'S

ENVIRONMENT CONFERENCE 1989

Monday, October 30, 1989

HON. ALBERT GORE, JR.
U.S. SENATOR FROM TENNESSEE

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HON. ALBERT GORE, JR.,
U.S. SENATOR FROM TENNESSEE

SENATOR GORE: John and I worked in a bipartisan way on this and I will not present a partisan point of view.

I took the liberty of printing up some material on the two proposals that I want to put forward here. Let me give a brief introductory comment and then pass these out.

First of all, I think that in defining the problem and in defining the causes of the problem, it is important to highlight those parts of it that most need to be addressed.

I think that there are three causes of the global ecological crisis. First is the population explosion. Second is the scientific and technological revolution and the Industrial Revolution before it, which magnified the impact of each of the additional billions. Third is the poor political choices we make in our relationship to the environment.

Taking each one of the three briefly, first of all, we have to change the way the United States approaches population policy in the world. Without belaboring the statistics, it took more than 10,000 lifetimes to reach a population of 2 billion people, and now, in one lifetime, we are going from 2 billion to 10 billion, and we are halfway there.

Secondly -- and this fits closely with what Mostafa told us this morning, the technologies that are now in common use in the industrial world and without a change in the current pattern will soon be in more common use in the developing world present us with a Hobson's Choice. Either we have economic growth, according to our current definition, with resulting degradation of the environment, or we have environmental protection and enormous human misery because of a halt in the progress of economic growth.

We have to change the terms of that tradeoff with new, better, and environmentally benign technologies.

Third, we have to change the choices we make by looking carefully at each of the institutions in our civilization which shape the way we make choices.

Now, the two proposals that I have put forward are, first of all, a proposal for a change in the U.S. approach to international affairs, aimed at a massive technology transfer program in which the United States would take the leadership role to develop and disseminate technologies allowing the Third World to leapfrog the mistakes that we have made in the industrialized world.

I will elaborate on it briefly in just a moment.

The second proposal is a domestic proposal for an Environmental Security Trust Fund, to charge fees on activities that degrade the environment and give rebates for the purchase of new technologies that are superior in the relationship to the environment.

The two proposals work together and reinforce each other.

Let me hand these papers out.

There are really four memos here. The first is just a very brief cover memo. The second one is the first proposal.

I call it the Strategic Environment Initiative, and the analogy to the Strategic Defense Initiative is intended.

I believe that something approaching the scale and intensity of the Strategic Defense Initiative is what is called for. It could be done by the Congress, but, really, presidential leadership is one of the keys, particularly if we want to see it done as quickly as it needs to be done.

The Strategic Environment Initiative could be announced by Earth Day 1990. It should contain three elements.

First is an international effort led by the United States to identify and disseminate technologies for sustainable economic growth in developing countries, along with an all-out national effort to put the United States back in the forefront of energy efficiency and environmental protection.

Second is a one-year plan to achieve visible progress in energy research and sustainable economic growth, particularly in the largest developing countries.

Third is a Global Climate Convention, to put nations on record as to the urgency of responding to global warming.

It is broken down into its component parts: an energy SEI, focused on an effort to develop environmentally safe technologies to meet the growing demand for energy; an agricultural SEI, to improve our ability to feed growing numbers of people while minimizing energy consumption, agricultural pollution and soil erosion; a manufacturing SEI, focusing on not only new technololgies, but also new materials and new industrial processes to minimize manufacturing's impact on the environment; and a transportation SEI, because, as has been mentioned before, our cars and trucks alone emit more

carbon dioxide into the atmosphere than all of the activities in any other nation put together.

I will be glad to elaborate on each part of this. But let me just say that the Strategic Defense Initiative is not a proposal that I supported. But one does not have to admire or support the Strategic Defense Initiative in order to recognize that it did pull together in a way previously thought impossible the resources and the motivation throughout the Federal Government to focus on a discreet set of policy objectives involving research, and it really changed the terms of the debate.

I think that we ought to have that kind of focus, that kind of intensity, that kind of imagination and boldness of where the problem of technology transfer is concerned.

The United States, as John Chafee said, ought to move unilaterally in addressing the problems we have. But it must simultaneously move, as John also said, to lead the world, using the moral credibility gained by addressing our own problems. The one way the United States can help the Third World to address this problem is through a much more efficient and effective program of technology transfer.

Now, because of the time constraints, let me just very briefly move to the second proposal, which is for an Environmental Security Trust Fund.

Some people have already said that it's important to use market incentives. Of course it is.

This is designed as a revenue neutral proposal. Just as the Social Security Trust Fund involves a way in which people can pay in and receive credits which they later pull out for their Social Security, this proposal is designed as a family of programs that require payments in, measured by the amount of environmental damage being done, and then credits that can be pulled out to subsidize the purchase of environmentally superior technologies.

Obviously this proposal is a large one and could not, in its entirety, be enacted in one year. But a flagship proposal, using the design of this program, could be enacted, having to do with cars and trucks.

We currently rely on the so-called CAFE standards. I think that ought to be changed.

Now, it is up for debate this year. It is totally inadequate as it is currently working.

We ought to measure not just miles per gallon. We ought to measure the pollutants coming out the tailpipe of the car, the CO2 and the other pollutants that contribute

to local air pollution problems and contribute to global warming as well.

There should be a fee or a deposit, if you will, on the purchase of automobiles based upon the pollution they cause. Then there should be rebates coming out of the same fund to those who purchase environmentally superior automobiles and trucks.

Now, this basic idea could then be extended to other products, refrigerators that use ozone-depleting chemicals, other appliances that are inefficient in their use of energy, and then the rebates for the more efficient products could also be a part of it.

This uses the market both to pull and to push, to push away from the environmentally harmful products and processes and to pull us toward the more efficient products and processes. Now, the two proposals fit together in that the technologies encouraged in the Environmental Security Trust Fund would be the technologies that are disseminated and transferred in the Strategic Environmental Initiative.

Let me say one other word on this. This is designed to affect the choices people make. I agreed with Denis Hayes when he said earlier that we have focused almost exclusively on government and political programs. I think the focus is appropriate. I'm a politician. I work in government, and that's where a lot of key choices are made.

But the sea change we need to save the earth's environment is so vast that government alone simply cannot do what is necessary. We need to have the marketplace working for us instead of against us. We need to change the way we measure progress. We need A Mission to Planet Earth program, and we need to jumpstart that program. We don't need to delay it for so long.

But we need to measure where we are and how we're doing, but we also need to measure the impact of our choices. We ought to change the system of national accounts. I am sure others will discuss this later. And we ought to have price signals that measure exactly how harmful individual purchase decisions are.

Now, I put an addendum here, Michael, on a subject not likely to be discussed in the conference, that I invite participants to read at their leisure, about Antarctica. I squeezed it in there because you have limited us to two proposals, and I consciously tried to choose proposals that are at the outer boundary of what is politically feasible in a given year.

I think it is feasible. One variable is the degree to which the President of the United States will become involved, but I think both of these are eminently feasible. And because of the time constraints, I will cut short the presentation there.

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July 22, 1991

SECTION: Pg. 4

LENGTH: 1254 words

HEADLINE: CBT smog futures clearing new path;
World's top commodities: air and water

BYLINE: By PAUL MERRION

BODY:

The Chicago Board of Trade is by no means blowing smoke with last week's innovative proposal to create a market in air pollution rights.

The proposal not only promises a practical solution to vexing environmental problems, it's the first sign of the next evolution in futures trading, which started in the last century with farm crops and in recent years exploded with precious metals and financial instruments.

Someday, the world of frozen pork bellies, stock indexes and soybean meal may be stretched to include futures trading in water rights, airport landing slots or pollutants that contribute to urban smog and global warming.

The new growth era is likely to be in the realm of what economists call "property rights" -- the value of the right to use a scarce resource, vs. the right to own something.

"Property rights will be another quantum leap forward for trading futures contracts," says Richard Sandor, executive managing director of Kidder Peabody & Co., who developed the hugely successful Treasury bond contract as well as the Chicago Board of Trade's (CBT's) pollution allowance contract proposal.

"This does represent a possible new avenue for futures markets," agrees futures industry guru Leo Melamed, former chairman of the Chicago Mercantile Exchange's executive committee. "It will lead other people to start thinking about those kinds of markets."

Dubbed "smog futures" in headlines, the concept is a complex and confusing marriage of environmental law and arcane futures practices, with a dollop of mind-numbing utility regulation thrown in -- enough to make most eyes glaze over when considering what is truly a revolutionary proposal.

According to one trader last week, the concept has appeal, but his pro-environment wife and kids would never let him get involved in trading something "if they felt it was allowing people to pollute."

On the contrary, last week's proposal by the CBT is being hailed by utilities and environmentalists alike as a crucial element in the plan to control acid rain by creating a cost-efficient mechanism to sharply reduce sulfur dioxide (SO2) emissions by power plants.

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"We were hoping the private market would set up something like that," says Linda Reidt Critchfield, a specialist in the acid rain division of the U.S. Environmental Protection Agency (EPA). "If this market is going to work, this is exactly what's going to have to happen."

Originated by the Environmental Defense Fund, the idea of letting the free market decide how to reach a specified pollution reduction goal was embraced by President Bush in his original Clean Air Act, and it was one of the few major provisions to survive intact.

"Many of us who worked on the bill felt the day we would feel we succeeded would be the day we'd see SO2 futures listed at the Chicago Board of Trade, right there along with hogs and corn," says Richard Ayres, who headed the coalition of environmentalists that pushed through last year's overhaul of the Clean Air Act.

"I never thought it would happen this fast."

The Clean Air Act sets up a system of pollution allowances, in units of one ton of SO2 emissions per year. In 1995, the EPA will issue a certain number of pollution allowances to the 110 power plants that produce the most sulfur dioxide, based on the law's new emission standards.

By 2000, a 10-million ton reduction in SO2 emissions will be achieved by limiting the number of pollution allowances to about 9 million nationwide.

Additional pollution

From now until then, utilities and other sulfur dioxide emitters can generate additional pollution allowances by cutting their emissions beyond what the law requires. These allowances can then be saved for future use or sold to the highest bidder.

That's where the CBT comes in. Utilities have been somewhat wary about the creation of this new market, so critical to their prosperity. Whether trading was run by the government or kept strictly among themselves, many utilities doubted that much trading would take place.

"To make the Clean Air Act amendments work, you have to have a free and open market for allowances," says Chuck McDonough, system environmental engineer for Commonwealth Edison Co.

An experienced middleman such as the CBT will create the systems and ground rules for fair and efficient trading.

There are many major uncertainties, such as how many allowances will be traded and at what price. Estimates range from $ 3000 per ton of sulfur dioxide to $ 2000, which is the penalty for failing to comply. The price could go even higher, considering that criminal penalties kick in for knowingly violating the act.

But price volatility is what attracts local traders, whose speculation provides liquidity to the market. The market for allowances will fluctuate with the seasons, as power plants gear up heavy cooling or heating cycles, or with changes in scrubber technology or even the cost of lime, which is widely used

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in scrubbers, says Kidder Peabody's Mr. Sandor.

By itself, the contract has the potential to create a small but respectable amount of new business, roughly on par with the wheat futures contract, or nearly 2% of last year's volume at the CBT.

High end of trading

But that's at the high end of trading guesstimates, which range from 160,000 to 1.6 million contracts per year.

"It's fair to say no one around here expects it to be as big as T-bonds," says Frank Rose, manager of the research group in the CBT's Economic Analysis and Planning office. (At 75.5 million contracts last year, futures on U.S. Treasury bonds were the most active contract in the world.)

But no one can predict how large the market futures on sulfur dioxide emission allowances and other property rights will be.

"In 1975," says Mr. Sandor, when the CBT started delving into interest rate futures, "everybody questioned whether the market would be big enough. But the biggest commodity in the world was money."

Now, he adds, "air and water are the biggest commodities in the world. Given that they're now scarce, they will have to be valued, and if they're valued, they will be traded."

Moreover, the pollution allowances contract will stimulate the development of a new kind of electronic trading system separate from the Globex system under joint development with the Chicago Mercantile Exchange, says Mr. Sandor.

What the CBT is proposing is to create not only a futures market for pollution allowances but an exchange for cash transactions and an annual auction of a small number of reserved allowances required by law.

The thinking is that all this would be combined in a new electronic trading system, says Mr. Sandor, which could be used for other new futures products that may not immediately have the high volume needed for trading by open outcry on the CBT floor.

HOW 'POLLUTION FUTURES' WORK

* The federal government awards electric utilities pollution credits and allowances, gradually reducing the total number of allowances granted.

* A utility that reduces pollution more than the law requires earns excess credits. These can be sold to utilities that exceed emission limits. Allowances also will be sold by the government and industrial plants that voluntarily reduce sulfur dioxide emissions that cause acid rain.

* Trading of pollution allowances should be complex and volatile, especially at the beginning. A Chicago Board of Trade futures market could offer an efficient, uniform way to set prices.

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The Associated Press

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July 16, 1991, Tuesday, AM cycle

SECTION: Business News

LENGTH: 372 words

HEADLINE: Chicago BOT Approves Market For Sulfur Dioxide Emission Rights

DATELINE: CHICAGO

KEYWORD: Smog Futures

BODY:

The Chicago Board of Trade Tuesday voted to create a new futures contract that allows investors and utilities to trade rights to emit sulfur dioxide, a spokesman said.

Under the newly amended Clean Air Act, a utility that cuts pollution below federal threshold levels can sell that unused portion, or pollution credit, to another utility that doesn't meet the law.

The idea is to give utilities a financial incentive to cut their pollution by installing expensive pollution control equipment or buying cleaner fuel. Those that get their emissions below the federal limit, have a new asset that can be sold for cash.

With a futures market for the pollution credits, utilities can more easily sell or buy pollution credits. A futures market would also make the contracts available to speculators who are willing to gamble on the price movement of the pollution credits.

Futures contracts are basically deals signed now to take place in the future. They are widely used to eliminate the risk of wide price swings in the future for commodities such as wheat or oil. During the Persian Gulf War, oil futures prices rose on the expectation of supply cuts from the Middle East.

The Chicago Board of Trade plans to send its pollution futures proposal to the federal Commodities Futures Trading Commission Wednesday, said spokesman Mark Prout.

Cash forward contracts - agreements to deliver rights after they are issued in 1995 - would start trading in 1993, under the Board of Trade plan, Prout said. The Board of Trade also will ask the CFTC for permission to start a market for anyone wanting to buy or sell emmissions rights up to three years in advance.

Environmentalists have applauded plans for so-called smog futures, saying for the first time a utility's ability to control pollution would have a direct impact on profits.

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There has been some debate in the futures industry over how the price of credits would be determined. The price would hinge on stringent and consistent enforcement of environmental laws.

If federal regulators fail to properly enforce the Clean Air Act - a persistent criticism by many environmental groups - then utilities could find it cheaper to break the law rather than buy clean-air futures.

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August 24, 1991, Saturday, NORTH SPORTS FINAL EDITION

SECTION: EDITORIAL; Pg. 18; ZONE: C

LENGTH: 518 words

HEADLINE: Using futures markets to clean the air

BODY:

In a few years, the Chicago Board of Trade could be trading sulfur dioxide futures and carbon dioxide futures along with soybeans and pork bellies.

The buying and selling likely will be done electronically, rather than in pits jammed with frenetic, arm-waving traders. But if the concept catches on, the world's largest commodity exchange could play a vital role in using free-market principles to tackle some of the earth's toughest environmental problems.

It took a first step recently by proposing to create a private market where utilities and speculators will be able to buy and sell the right to pollute the air with sulfur dioxide, a byproduct of coal-fired electrical generation and a prime contributor to acid rain.

The opportunity for such a market arose when Congress amended the Clean Air Act last year. Instead of mandating how utilities must cut pollution, the lawmakers set an emission-reduction target and asked federal regulators to issue pollution allowances to each power plant.

The allowances gradually will be reduced until the target is reached. Meantime, utilities will be able to buy and sell the allowances, or rights to pollute.

If a utility keeps its emissions below the federal limits, it may want to profit by selling its excess allowances to other utilities that have trouble meeting the standards. Or it could elect to keep them in reserve for future expansion. Under this system, a utility will have the flexibility and the incentive to find the least costly, most efficient way of reducing emissions.

The scheme won't work, however, unless there is a fair, efficient way to value and trade the allowances. That's where the Board of Trade comes in. Beginning in 1993, the exchange wants to trade agreements to deliver allowances after they are issued by Washington in 1995. Then the exchange would expand the market by allowing investors to speculate on the allowances' price movement, just as they do now with futures contracts on everything from hogs to Treasury bills.

Some utilities may swap allowances directly rather than use the Board of Trade, but some power companies believe a national futures market will be the best way to trade and discover the price of allowances. It also will give utilities a method to manage the risk of planning construction of future generating plants.

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The key to free-market environmentalism, economists say, is establishing a well-defined and transferable property right. In the case of acid rain, the government is defining the right, and the Board of Trade will insure it is transferable at a fair price.

The volume on this type of futures contract isn't expected to be great. But if it works, it could be the model for other property rights and air pollution credits, including greenhouse gases like carbon dioxide and smog components such as nitrogen oxide.

That, of course, would mean more business for the Board of Trade in the 1990s, a plus for Chicago and its financial infrastructure. But it also would mean cleaner air for Americans at less cost than if government were to dictate technologies and solutions.

TERMS: ISSUE; ENVIRONMENT; POLLUTION; COST; ALTERNATIVE

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Business Week

July 29, 1991

SECTION: IN BUSINESS THIS WEEK; Number 3224; Pg. 40

LENGTH: 101 words

HEADLINE: POLLUTION CREDITS WILL HIT THE PITS

BYLINE: EDITED BY HARRIS COLLINGWOOD

BODY:

The Chicago Board of Trade on July 16 approved a plan to trade the allowances granted by the Environmental Protection Agency to emit sulfur dioxide. Under the 1990 Clean Air Act, companies with emissions below the legal limit would be able to sell EPA credits to companies whose emissions exceed the clean air standards.

The board hopes to open a spot market in the allowances by 1992. Says Richard Sandor, a Kidder Peabody executive managing director who helped develop the concept: ''We're taking something Americans are best at, financial engineering, and using it to address social problems.''

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

THE ADMINISTRATOR

Remarks by

WILLIAM K. REILLY

Administrator
U.S. Environmental Protection Agency

OPENING CEREMONIES

REGIONAL ENVIRONMENTAL CENTER

Budapest, Hungary
September 6, 1990

Printed on Recycled Paper

Thank you, Peter (Hardi), for that kind introduction.

This could not be a more joyous, exciting, or promising occasion -- for me personally, for the U.S. Environmental Protection Agency, or for my colleagues in the U.S. government, especially the U.S. Peace Corps, the Agency for International Development, the U.S. Information Agency, and the Department of State.

We are, with this event, celebrating both the joy and excitement of freedom and the vibrant promise of a cleaner, healthier, better way of life for the people of Eastern and Central Europe.

When President Bush announced in July of last year that he would be asking the U.S. Congress to support the establishment of this Center, he noted that "our shared heritage is the earth, and the fate of the earth transcends borders." Securing that heritage for future generations will require creative, cooperative efforts among nations to promote harmony, stability and sustainable, environmentally sound economic development.

This Regional Environmental Center is one such effort. We at the Environmental Protection Agency are extremely pleased and proud to have had a role in the President's outreach to Eastern Europe; and I am delighted to see so many prominent and environmentally concerned people from throughout the world here today to help inaugurate this Center.

Clearly the environmental restoration of Eastern and Central Europe is a monumental, and monumentally important, challenge. The environmental problems of this part of the world are enormous. In some places, they are catastrophic.

All around us are cities blackened by thick dust; rivers heavily contaminated by chemicals. Nearly two-thirds of the length of the Vistula, Poland's principal river, is unfit for even industrial use. The Oder River, which forms much of Poland's border with East Germany, is useless over 80 percent of its length.

Rain in the mountains of southwestern Poland has been found with a pH of as low as 3.0 -- approximately the same as vinegar. Less than half of the population of Hungary is served by adequate sewage systems; the water in nearly 800 towns and villages is believed to be unfit for human consumption.

The splendor of this city, Budapest, is nearly obscured at times by the exhaust from cars and buses. In Czechoslovakia, an average of 25 tons a year of sulfur dioxide is deposited on every square kilometer; over half of the forests are dying or damaged. Some 75 percent of the hazardous waste generated in Czechoslovakia is inadequately and unsafely stored.

Eastern and Central Europe are plagued by premature deaths, high infant mortality rates, chronic lung disorders and other disabling illness, and worker absenteeism. Infant mortality in Poland is 20 per 1,000; across the Baltic, in Sweden, it is just six per 1,000. Average life expectancy in Poland is some ten years less than in Sweden.

And the economic drain from these environmental burdens, in terms of lost productivity, disability benefits and health care, are enormous. Czechoslovak officials, for example, estimate that economic losses from environmental degradation now equal seven percent of the country's Gross National Product.

Let those who believe that pollution control is too expensive come to Eastern Europe to see what policies based on that premise have wrought.

Let those who say that some nations cannot afford environmental protection look at the economic drag of ravaged environments and wrecked lives.

Let those who believe that productivity and pollution control are in conflict come and see places where river waters are too corrosive even to

cool machinery; where economic growth is hobbled by sick workers and dying forests; where contaminated environments have relieved huge areas of their productivity and their usefulness.

In places where some of the basic resources of life are not protected -- the soils and the trees, the rivers, lakes and the air -- economies founder and growth cannot occur.

As I see it, our success in meeting the enormous environmental challenges ahead will rest on three key developments.

The first will be the consolidation of freedom and the creation of sound, stable democratic institutions in Eastern and Central Europe.

The opening of this Center today is only the latest in a remarkable series of events that history will record as the "Revolution of 1989." This largely peaceful revolution has profoundly changed the lives and destinies of millions of people.

I recall serving in the 1960s as an Army officer in Germany, with responsibilities for providing intelligence and security along the border between East and West Germany. In just four weeks, on October 3, that border will no longer exist!

Lenin once called liberty a "bourgeois dream." The brave and determined people of Eastern and Central Europe have dared to dream the dream of liberty -- and to turn that dream into reality.

But achieving freedom, thrilling and uplifting as it is, is only the beginning. The hard work now begins of building the stable social and political institutions that will both secure the blessings of liberty and insure that the will of the people is heard and heeded.

I recall asking one minister from an Eastern European country early last year: Why the sudden new priority to the environment on the part of

governments long insensitive to the issue? He replied, "We've never really had to pay any attention to the people before. Now that we do we find they are deeply angry about pollution."

(That minister, incidentally, as well as his government, is now gone.)

Genuine democracy will be the best guarantor of a sound environment. Where people have a voice they raise it on behalf of clear skies and clean water. And market economies will prove a far more effective and efficient means to protect environmental values and to generate the wealth to pay for cleanup than centrally planned systems, whose failures here are so shocking.

This Regional Center can help. It can help by assembling the knowledge and experience -- both good and bad -- of other nations, while serving as a catalyst in the development of creative new approaches to environmental management.

The economic, social and political changes now under way offer a unique opportunity to weave environmental protection and stewardship into the very fabric of the region's new social, political and economic institutions. Working with other nations and international organizations, the Center can provide information, expertise and technical assistance both to correct the environmental abuses of the past, and to insure that new industries are able to take advantage of the cleanest, most efficient technologies available.

The Center will focus its attention on three major issues: energy conservation -- an area of heightened urgency because of the current Mideast crisis -- the protection of the public health, and the prevention of pollution before it is created in the first place.

So that is the first requirement: freedom and an openness to new ideas about both the economy and the environment.

The second key element in the environmental restoration of Eastern and Central Europe will be the successful transition from socialism to healthy, growing market economies.

The lifting of the Iron Curtain has revealed to the world that authoritarian, centrally planned societies are much greater threats to the environment than capitalist democracies. The same policies which ravaged the environment -- the pursuit of all-out, no-holds-barred economic development, without regard for either human or natural resources -- also wrecked the economy.

There is a good reason that no economic benefits have been identified from all the pollution control costs the nations of Eastern Europe have avoided: healthy natural systems are the foundation for all human activity, including economic activity.

To overcome the bitter legacy of decades of environmental neglect, the new democracies of Eastern and Central Europe must encourage environmental investment in their new free economies. Here as elsewhere, economic growth must be the engine of environmental improvement; it must pay for the technologies of protection and cleanup.

But it must be environmentally sound, sustainable economic growth; growth consistent with the needs and constraints of nature.

And the third essential factor in the region's environmental renewal will be individual action.

Environmental protection is as much an individual duty as it is a responsibility of government and industry. People everywhere, in developed and developing nations alike, must embrace a new ethic of conservation and stewardship of nature. And they must apply this vision in their daily lives -- in home and workplace, during leisure time, as family members, as community residents, as producers, as consumers.

I look to the private conservation and environmental groups to play a leading role in fostering this ethic of environmental stewardship throughout society. Many courageous members of these organizations are here today, from Hungary and other countries; you have been in the vanguard not only of environmental action but of basic political reform.

I have been struck by the critical role environmental groups played in promoting democracy in the face of authoritarian oppression. Environmental protests by groups like the Danube Circle here in Hungary, Ecoglasnost in Bulgaria, and the Polish Ecology Club helped to galvanize public demands for the transformation of the old order.

And now, many of the leaders of environmental organizations hold elected or appointed positions in government. These private organizations are part of the new democratic structures now being erected; they will continue to train the leaders of the future. And they will nurture the environmental concerns that already have taken root, and foster sustainable democracies as well as sustainable economic growth.

The Regional Environmental Center can help to bring these groups together to work on issues of common concern, and it can provide information and assistance whenever they are needed.

To those who fear that nongovernmental organizations may be excessively idealistic or insensitive to economic realities, I suggest you engage them genuinely in the collaborative job of solving problems.

Groups invited to participate within the councils of decision tend to share the disciplines of governance and to be a source of creative proposals. Kept out, such groups can become hostile and extremist. That is a lesson hard learned in some countries, and Eastern and Central Europe can enjoy the advantage of their experience.

I must also stress the importance of regional cooperation to address the many shared environmental problems and common environmental concerns of Eastern and Central Europe.

Every country in the region shares at least one major environmental problem with its neighbors: transboundary air and water pollution affect many countries simultaneously. For several countries of Europe, more than half of all air pollution comes from beyond their own borders; what a powerful incentive to work together!

The Regional Environmental Center will be well positioned to provide information and assistance in dealing with all of these issues. It will also be available to serve as a neutral forum for discussion of difficult transboundary problems. And it will provide a contact point for working with such international organizations as the International Labor Organization, the World Health Organization, the International Energy Agency, and the Organization for Economic Cooperation and Development.

I want to conclude by expressing my deep appreciation to all of the individuals and organizations whose commitment and efforts have made today's opening possible. And to our partners in this endeavor, let me say how privileged we feel to join you in this historic enterprise.

I also want to express my confidence in Peter Hardi, Steve Wassersug, and the Center's trustees; under their able leadership, this Center should prosper.

I once ran an environmental organization; each year it fell to me and our staff to design a program and projects and then to try to raise money to support them. I never had the luxury of being given funds and then being entrusted to design a program to spend them. So I envy you in the Center who have a blank tablet, a universe of important problems, and an invitation to write a critical chapter in the history of this region,

to play a leading role in the long-awaited and desperately important reconciliation of people and nature.

Henry David Thoreau, the spiritual and intellectual prophet of the American environmental movement, once defined independence this way: "To breathe after your own fashion; to live after your own nature."

That is the promise of this Regional Environmental Center, and of the democratic revolution that made it possible: the promise of living in freedom, and breathing freely. We in the United States look forward to working with all of you to make this promise a reality.

Thank you.

THE CLEAN AIR ACT AMENDMENTS OF 1990
TALKING POINTS

- THIS LANDMARK CLEAN AIR ACT COULD NOT HAVE BEEN PASSED WITHOUT THE LEADERSHIP OF PRESIDENT BUSH.

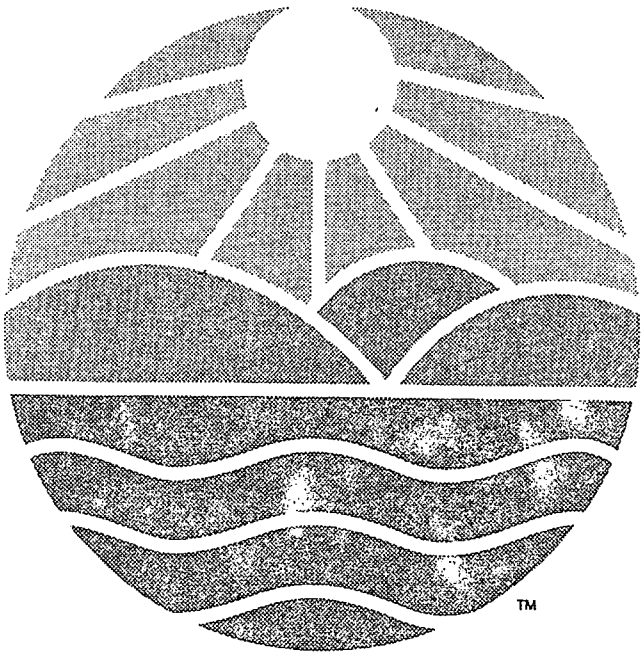
  * It was the President's proposal of July 1989 that broke the logjam and provided the basis for the bill that was eventually enacted.
  * Congress had not acted on Clean Air for 13 years. In each of the last several sessions, Congress has tried and failed to pass a bill.
  * The President's bill cut through intense regional disagreement and provided the coalition needed for passage.

- THE CLEAN AIR ACT OF 1990 IS THE MOST SIGNIFICANT AIR POLLUTION LEGISLATION IN AMERICAN HISTORY.

  * The Clean Air bill will reduce sulfur dioxide emissions by 10 million tons, nitrogen oxide emissions by 2 million tons, air toxic emissions by 75 to 90%, and smog-causing volatile organic compound emissions by 40%.
  * In total, the Clean Air Act will remove 56 billion pounds of pollution per year from the nation's air -- **that's 224 pounds for every man, woman and child in America.**
  * The benefits of this bill will affect virtually every American.
  * The Clean Air Act marks a new era in environmental legislation; the bill is both more realistic and more effective than previous environmental laws.
  * The effect of this bill will be: cleaner cars, cleaner power plants, cleaner factories and cleaner fuels for generations to come.

- THE CLEAN AIR ACT IS A MAJOR DOMESTIC POLICY ACHIEVEMENT FOR PRESIDENT BUSH.

  * Ever since he was elected to Congress in 1966 President Bush has shown his commitment to protecting the environment.
  * In his campaign for the Presidency, and in his first address to a Joint Session of Congress, the President promised to propose a strong clean air bill -- **and he delivered.**
  * It was the President who outlined a new, innovative approach; who submitted detailed legislation to the Congress; who negotiated an agreement with the Senate leadership to win passage in the Senate; and who kept the heat on the House-Senate conferees to ensure that a final bill was passed before Congress adjourned.
  * The final bill follows the model which the President proposed: it includes the nation's first-ever program to curb acid rain, a market-based emissions trading system, a plan to cut air toxins by at least 75%, and plans for cleaner cars and cleaner fuels.



Moving in the right direction

Self-help is a grand thing. But, sometimes, even do-it-yourselfers need a hand—particularly when it comes to changing their own motor oil and disposing of the used oil.

Many motorists who change their own oil may—inadvertently—be harming the environment, particularly if they pour the used oil down a drain, dump it on the ground, or empty it into a container which is then tossed in the garbage.

Used motor oil disposed of in these ways can contaminate water supplies and destroy vital organisms in the soil. Unfortunately, according to some government studies, an estimated 175 million gallons of used motor oil are poured into drains, dumped on the soil, or sent to landfills by do-it-yourselfers.

It doesn't have to be that way. Many communities have their own used-oil collection sites for handling such materials—and we're adding more of our own.

Last year, we began a national effort to help create a higher level of consumer awareness of this problem. Under that program, over 200 Mobil stations in Florida and the Baltimore/Washington area began accepting used oil and arranging for it to be transported to oil recyclers. Several hundred more dealers agreed to participate in our consumer education program.

Today, the program has been expanded to selected markets in three more states—Arizona, California and Texas. Some 550 Mobil stations now accept used oil, and more than 1,800 others have joined in the education effort. By the end of the year, we expect to roll out this program to northern New England, the Middle Atlantic region, the Midwest, New York State and the Metropolitan New York City area.

Used motor oil can be recycled for many uses. It can serve, for example, as a fuel. It also can be refined again, and made into different petroleum products.

All you need do is pour your used oil into a clean container, such as a used plastic jug. Then bring it to a participating Mobil service station or other local oil-collection site. Call your state or county solid-waste department to find the location nearest you.

Mobil is committed to being environmentally responsible in all that we do. You should be, too. Won't you join us—and take care of the environment as you take care of your engine? Together, we can put used oil where it belongs.

Mobil®

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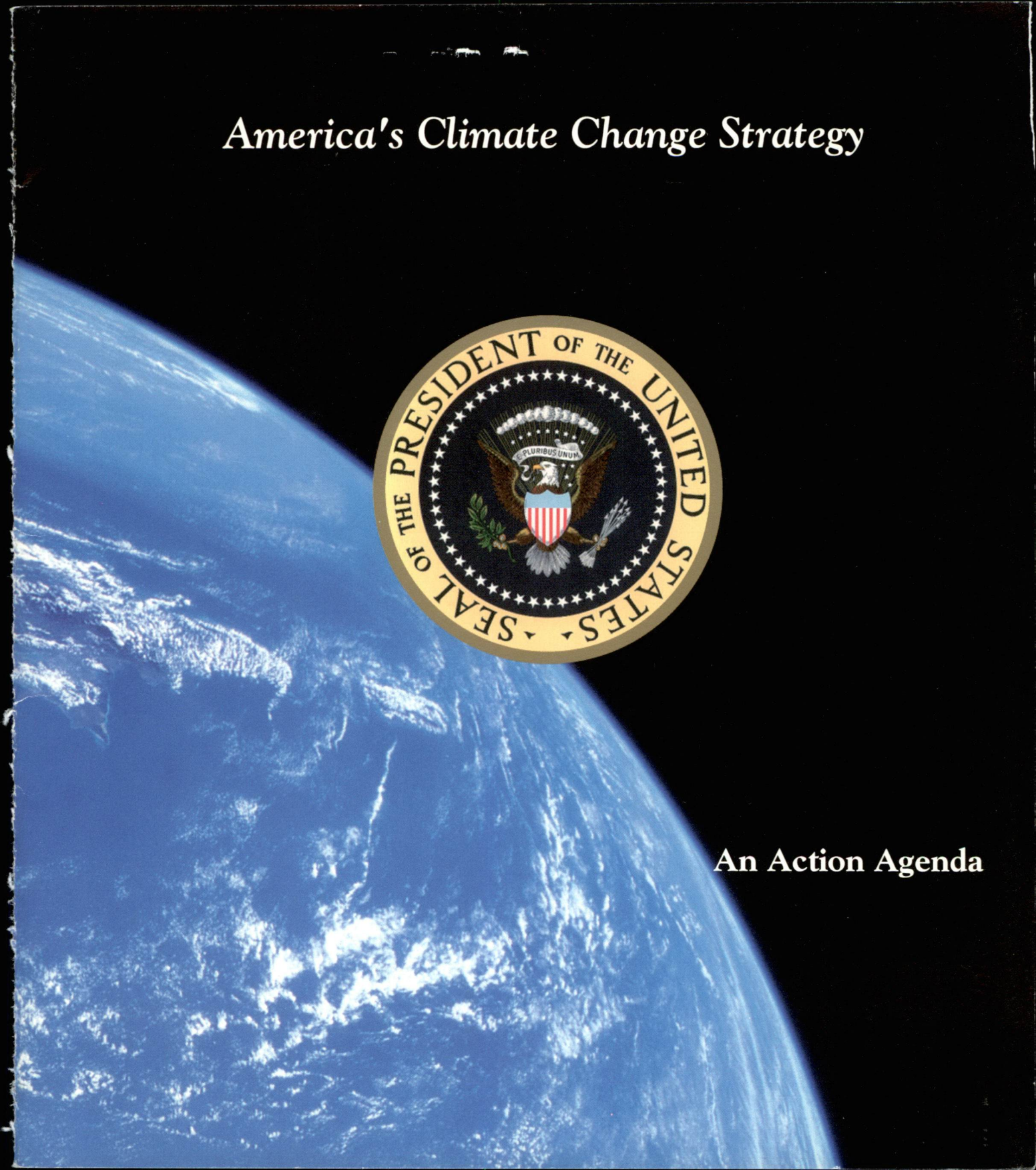
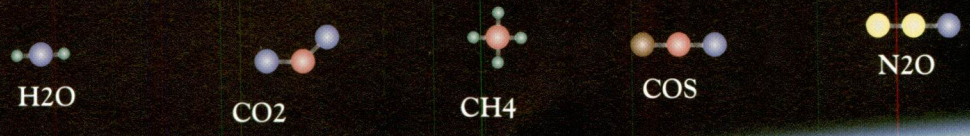
America's Climate Change Strategy



An Action Agenda

CLIMATE CHANGE: Comprehensive Approach

Gases



Sinks

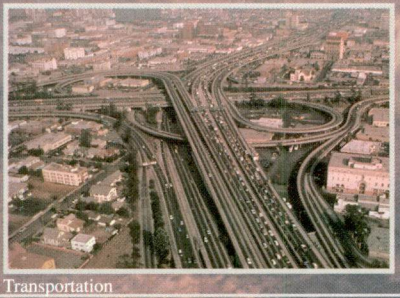
Rainforest

New Growth Forest

Old Growth Forest

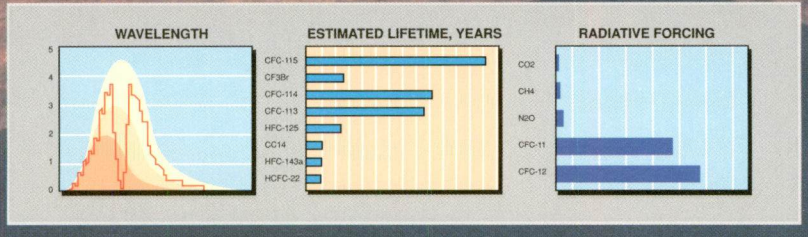
Sources

Electrical & Industrial Production

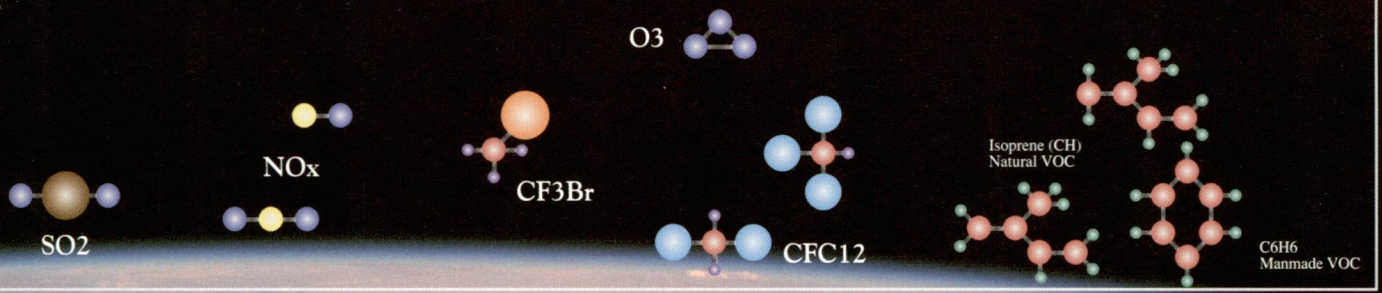

Transportation

Rice Paddies

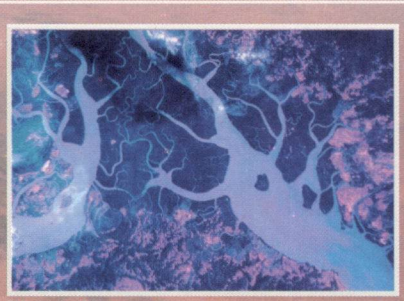
Global Warming Potential Index

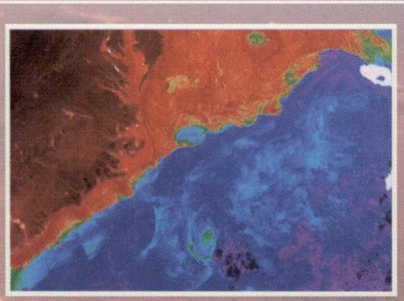


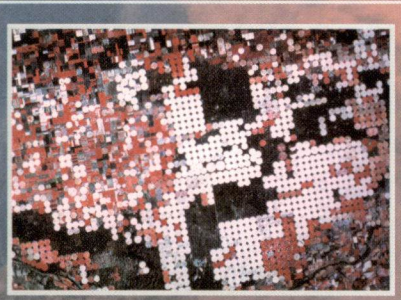
"What is important in addressing future climate change is the total and cumulative effect of all gases—all sources and all sinks."



Coastal Marsh


Watershed Ecosystems


Ocean Phytoplankton Concentrations


Irrigated Land

Burning Rainforest

Tundra

GAS	Instantaneous Radiative Forcing per KG (rel. to CO2)	Atmospheric Residence Years (estimated)	Relative Radiative Forcing Potential over Years		
			20	100	500
CO2	1	120	1	1	1
CH4	58	10	63	21	9
N2O	206	150	270	290	190
CFC-11	3970	60	4500	3500	1500
CFC-12	5750	130	7100	7300	4500

Source: IPCC Scientific Assessment, 1990, Tables 2.3, 2.8

Photos: Cover: Caribbean as seen by IMAX camera from the Space Shuttle, © MCMXC Smithsonian Institution/Lockheed Corporation. Inside Flap Background: Straits of Gibralter by IMAX, © Smithsonian Institution/Lockheed Corporation. Highland Rainforest, © Robert & Linda Mitchell; New Growth & Old Growth Forests, © Charles A. Mauzy; Coastal Marsh, © Tom Blagden, Jr.; Electricity Production, © Erich Hartmann; Transportation, © Japan Broadcast Corporation; Rice Paddies, © Mike Yamashita; Burning Rainforest, IMAX Image, ©Smithsonian Institution/Lockhead Corporation; Tundra, © Dr. Jerry Brown, Global Change Research Background Image is the Atmosphere as seen by an IMAX Camera from the Space Shuttle.

THE COMPREHENSIVE APPROACH TO CLIMATE CHANGE

The science and economics of human interactions with the global climate involve multiple trace gases affected by activities in every sector of human society. Each of these greenhouse gases is emitted from a variety of sources and is trapped or affected by "sinks" in different ways. Each gas has a different residence time in the atmosphere, a different ability to trap heat, and different potential impacts on the environment. What is important in addressing future climate change is the total and cumulative effect of all gases—all sources and all sinks.

In November 1990, the government ministers at the Second World Climate Conference (SWCC) declared: "We recommend that in the elaboration of response strategies, over time, all greenhouse gases, sources, and sinks be considered in the most comprehensive manner possible ..."

The "Comprehensive Approach"* has several advantages:

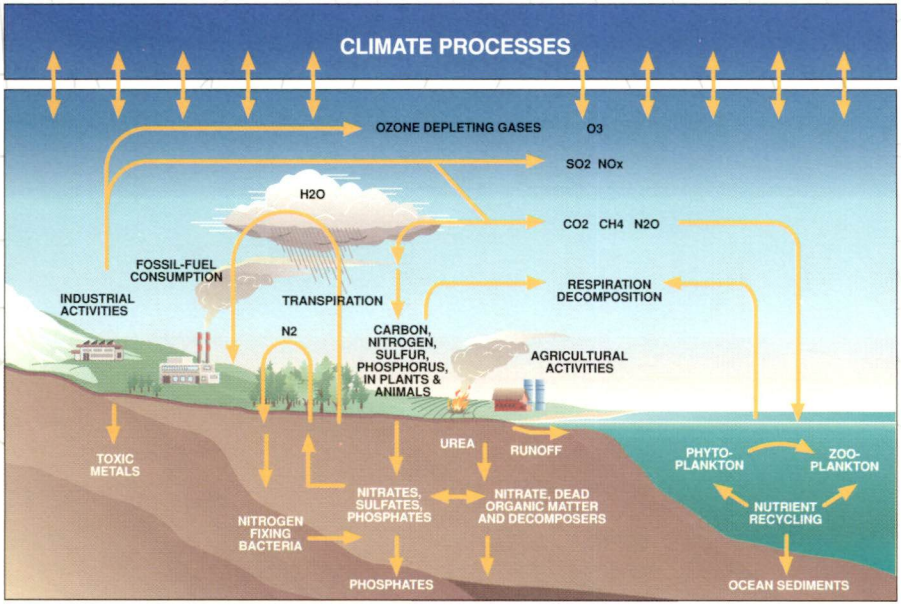
- It provides flexibility for each nation to develop a diverse, innovative, cost-effective mix of measures to meet its global responsibilities in a manner tailored to its own domestic circumstances;
- It is designed to employ the results of integrated scientific and economics research on a comprehensive basis, leaving no important variable omitted;
- It maximizes the benefits to the environment and to humanity from each investment; and
- It accounts for all greenhouse gases, insuring that choices do not reduce one gas but inadvertently increase another.

The relative benefit from a unit reduction in the net emissions of each greenhouse gas can be approximated by a measure of "global warming potential" (GWP) based on the radiative behavior of the gas in the atmosphere. The Intergovernmental Panel on Climate Change (IPCC) has calculated such a relative measure, giving carbon dioxide a value of one (1) and expressing all other gases in terms of carbon dioxide equivalents. This "index" enables a comparison of the contributions of different gases, incorporating both sources and sinks.

The comprehensive approach should inform the development of scientific and economics research, monitoring, technology development, and each country's action plan for dealing with global change. The costs of achieving a given reduction in the added greenhouse effect will vary from gas to gas and will vary depending on which sources or which sinks of any given gas are affected. Using the Comprehensive Approach, for example, maximum reduction in net climate impact—and therefore maximum benefit to the environment—can be achieved for any given level of investment.

If response strategies were designed to apply piecemeal to one greenhouse gas or economic sector, economic actors could simply adjust to such narrowly focused regulation by shifting to unregulated activities that could continue to contribute to potential climate change.

A comprehensive approach, on the other hand, matches the scientific, economic, and environmental nature of the whole climate system.



* A larger report on "A Comprehensive Approach to Addressing Potental Climate Change", prepared by a U.S. Interagency Task Force is available on request.

THE BOTTOM LINE

Implementation of the President's Comprehensive Climate Change Strategy will result in United States greenhouse gas emissions in the year 2000 being equal to or below 1987 levels.

The specific actions which will contribute to this result include:

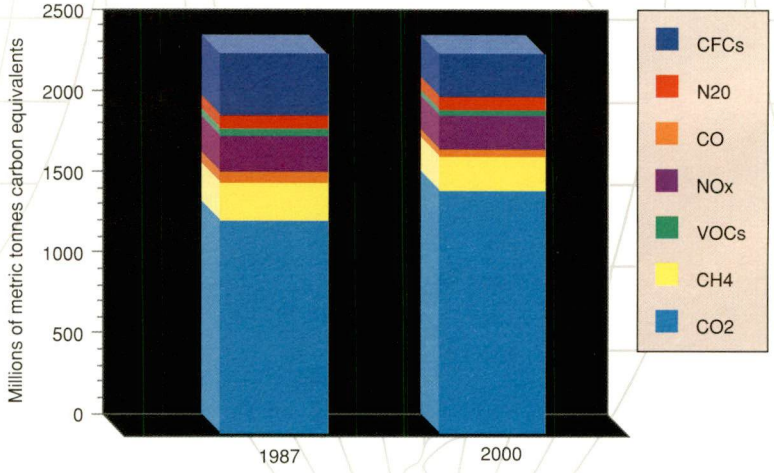
- Phasing out CFCs and many other ozone-depleting compounds which are also greenhouse gases;
- Putting a permanent ceiling on sulphur dioxide emissions at sharply reduced levels and allowing freedom of choice in meeting the ceilings, thereby encouraging energy efficiency and reducing greenhouse gas emissions. Under the recently enacted Clean Air Act Amendments, utilities were given the flexibility to make reductions by any means—a powerful incentive for energy saving measures;
- Reducing, under the Clean Air Act, air pollutants which are either greenhouse gases themselves or greenhouse gas precursors (volatile organic compounds, carbon monoxide and nitrogen oxides);
- Initiating a program to plant a billion trees a year and to make other forest improvements, thereby enhancing sinks;
- Implementing a number of programs aimed directly at speeding the adoption of energy efficient technologies and practices in homes and businesses; and,
- Promoting the use of, and accelerating research into, non-fossil fuel energy sources such as solar, nuclear, and alternative fuels.

The results of these currently planned U.S. actions are illustrated by Chart 1, which shows projected U. S. greenhouse gas emissions for the year 2000. The estimate is based on calculations made by the U.S. Environmental Protection Agency.

Chart 2 shows an alternative estimate based upon a different economic model prepared by researchers at Harvard University.

Projected U.S. Greenhouse Gas Emissions

(With Current Policy Commitments)
Based on IPCC CO2 Baseline Estimate



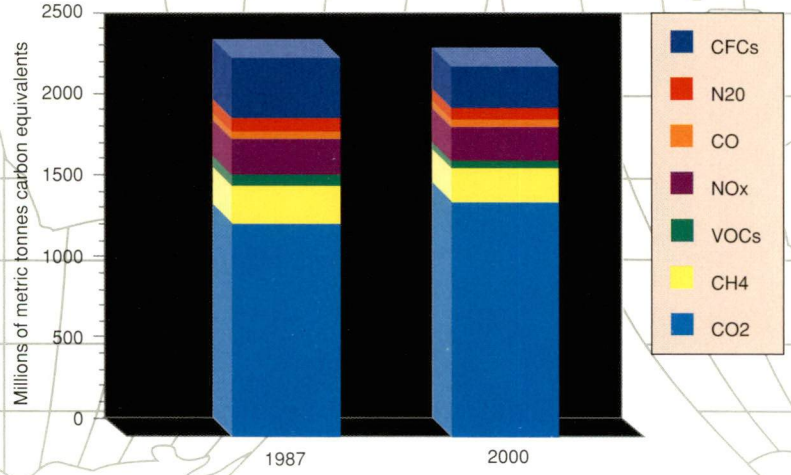
From EPA, "The Cost of Reducing Greenhouse Gas Emissions in the United States", Presentation by Alex Cristofaro, Director, Air and Energy Policy Division, December 4. 1990

CHART 1

The actions which are currently included in the U.S. Climate Change Strategy will result in U.S. greenhouse gas emissions in the year 2000 being equal to or below the 1987 levels.

Alternative Model For Projected U.S. Greenhouse Gas Emissions

(With Current Policy Commitments)
Based on Jorgenson/Wilcoxen (1990) Model



From EPA, "The Cost of Reducing Greenhouse Gas Emissions in the United States", Presentation by Alex Cristofaro, Director, Air and Energy Policy Division, December 4. 1990

CHART 2

PHASING OUT CFC's

The United States has long taken a leadership role in addressing the problem of stratospheric ozone depletion. In 1978, the U. S. banned the use of CFCs as propellants in spray can products. Such use was considered a low value use which could be forgone given the potential damage which it was believed CFCs might be causing. Most other countries continued to use CFCs as propellants.

At the London Meeting of Parties to the Montreal Protocol, the U. S. supported a complete world-wide phase-out of CFCs, halons, and certain other ozone-depleting substances such as carbon tetrachloride and methyl chloroform. The Protocol was amended to achieve that objective.

BEYOND THE MONTREAL PROTOCOL

The U. S. has enacted legislative provisions in the recent Clean Air Act amendments which will phase-out U. S. production and consumption of these ozone-depleting compounds more quickly than the amended Montreal Protocol provisions. (See charts opposite)

For each and every one of these compound groups and gases, the Clean Air Act reduces the allowed U. S. production and consumption between now and the final phase-out date substantially below what the Protocol permits. (For example, see Chart 3 regarding CFC production)

Between now and the phase-out deadlines, the U. S., under the mandates of the Clean Air Act, must reduce U.S. production below what is permitted by the Montreal Protocol by at least the following amounts:

"Cumulative Near-term Reductions in Clean Air Act Below the Montreal Protocol"

Major CFCs	19%
Halons	32%
Other CFCs	22%
Carbon Tetrachloride	13%
Methyl Chloroform	20%

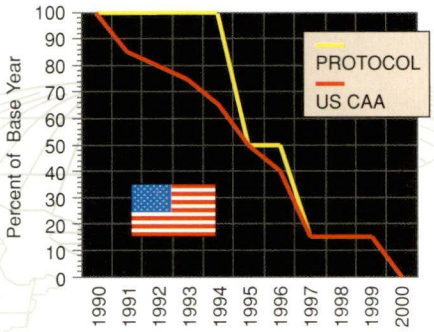
THE U.S. IS AHEAD OF SCHEDULE

In addition to the more restrictive phase-out schedules required by the Clean Air Act, the 1989 Budget Reconciliation Act enacted a tax on ozone-depleting chemicals during the period of phase-out. The tax rates for each compound are its ozone-depleting potential (ODP) multiplied by $1.37 per pound in 1990 and 1991, $1.67 in 1992, $2.65 in 1993 and 1994, and an increase of an additional $0.45 in each year after 1994.

This tax has already helped to reduce U. S. CFC production in the 12-month period ending June 30, 1990 to 23% below the levels permitted by the Montreal Protocol and other U.S. law.

While these actions by the United States are justified by their benefits relating to stratospheric ozone depletion, they are also very highly significant for climate change. CFCs, halons, and carbon-tetrachloride are extremely powerful greenhouse gases, thousands of times more powerful than carbon dioxide.

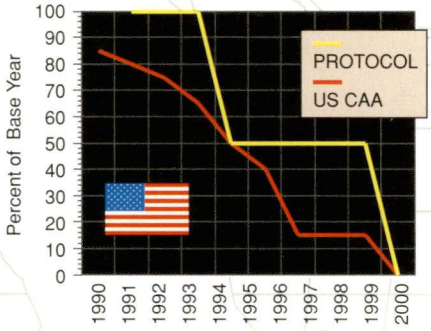
Phase-Out of Major CFCs



From Article 2A - 2E, Montreal Protocol text and Title 6 of the Clean Air Act Amendments of 1990
CAA did not apply in 1990

CHART 3

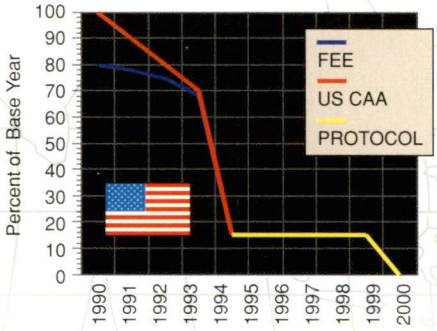
Phase-Out of Halons



From Article 2A - 2E, Montreal Protocol text and Title 6 of the Clean Air Act Amendments of 1990

CHART 4

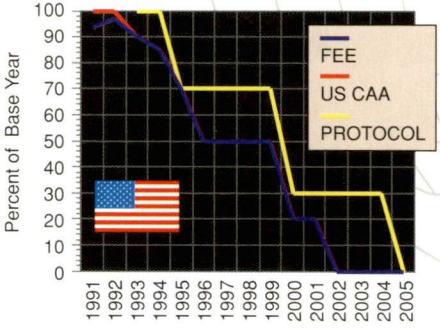
Phase-Out of Carbon Tetrachloride



From Article 2A - 2E, Montreal Protocol text and Title 6 of the Clean Air Act Amendments of 1990
Production estimates under the User Fee are based on Treasury Department estimates

CHART 5

Phase-Out of Methyl Chloroform

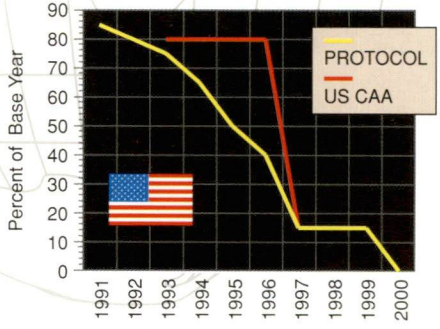


From Article 2A - 2E, Montreal Protocol text and Title 6 of the Clean Air Act Amendments of 1990
Production estimates under the User Fee are based on Treasury Department estimates

CHART 6

CHART 7

Phase-Out of Other CFCs



From Article 2A - 2E, Montreal Protocol text and Title 6 of the Clean Air Act Amendments of 1990

THE 1990 CLEAN AIR ACT AMENDMENTS

The 1990 Clean Air Act Amendments, signed by the President in November 1990, will achieve substantial reductions of greenhouse gases and their chemical precursors. The Act will reduce U.S. emissions of volatile organic compounds, carbon monoxide, and nitrogen oxides, which will curb tropospheric ozone levels, in addition to reducing emissions of the more familiar pollutants such as sulfur dioxide. When converted into equivalent units of carbon emissions, taken together, these reductions will amount to a 16% decrease in greenhouse gases from these affected sources between the years 1987 and 2000. Moreover, the Act will result in direct carbon dioxide reductions due to more efficient electricity generation.

Electric Utilities

The most dramatic reductions will come from electric utilities. Under the Act, utilities, which must reduce sulfur dioxide (SO_2) emissions by 10 million tons below 1980 levels, are given the flexibility to choose how to achieve these reductions. Utilities are thus free to choose cost-effective conservation measures to achieve compliance. This powerful conservation stimulus should sharply reduce carbon dioxide (CO_2) emissions from this sector.

Further, the Act requires utilities to reduce their nitrogen oxide emissions by two million tons from projected levels under the acid rain provisions. These provisions also contain strong incentives for both electric utilities and industrial sources to adopt advanced, energy efficient technologies that will lower overall emissions, including carbon dioxide. The Act is also expected to induce oil-burning utilities to switch to natural gas, which produces less greenhouse gas emissions than does oil.

Smog Reductions

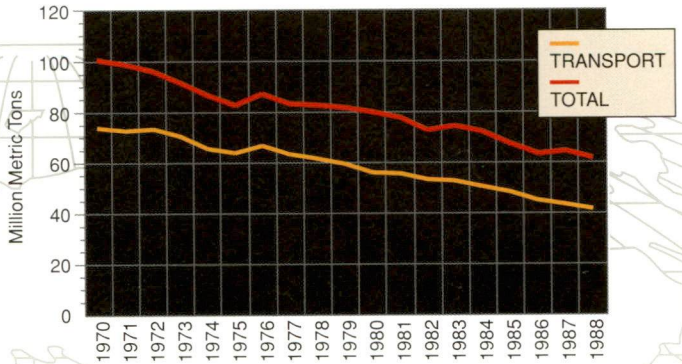
Substantial reductions in either greenhouse gases or their chemical precursors also will result from new controls on stationary and mobile sources mandated by the new Act in order to bring cities into attainment of national air quality standards. A wide variety of stationary sources of volatile organic compounds will be required to reduce emissions by adding controls or by changing production processes. Newly tightened automobile emission standards will further reduce emissions of hydrocarbons, carbon monoxide, and nitrogen oxides, and new controls on gasoline evaporation will greatly cut volatile organic emissions. In addition, gasoline itself will be reformulated to reduce its volatility, thus reducing volatile organic emissions at the source. In total, these various requirements of the Act will result in a sharp and steady drop in U.S. tropospheric ozone, which is a key greenhouse gas.

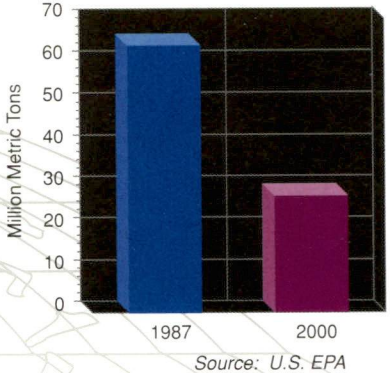
Cleaner Fuels & Cleaner Cars

The Act will dramatically expand the introduction of clean-burning alternative fuels into the U.S. transportation sector. Several large states and the fleets of America's major cities are expected to introduce fuels and vehicle technology which will emit fewer greenhouse gases. Beginning in model year 1994, new tailpipe emissions standards for hydrocarbons, carbon monoxide, and nitrogen oxides will be phased-in. Auto manufacturers will also have to reduce refueling emissions. Gasoline volatility will be reduced and cleaner fuels will be required in the nine cities with the worst ozone problems and in 41 areas during the winter months when carbon monoxide standards are exceeded. A clean fuel car pilot program in California will use combinations of vehicle technology and cleaner fuels to meet tight standards. Twenty-six areas will have to limit emissions from centrally-fueled fleets of 10 or more vehicles.

Regulations also are being proposed under the new source performance standards of the Clean Air Act to require capture of pollutant gases which are given off by landfills. The purpose of the regulations is to capture air toxics and volatile organic compounds which are the chemical precursors of the greenhouse gas ozone. Methane also will be captured and, if it is not economic to be processed, it will be flared. Greenhouse gas emissions in the year 2000 will be reduced by approximately 40 million tons of carbon equivalent.

Trends in Emissions of Carbon monoxide, 1970-1987,





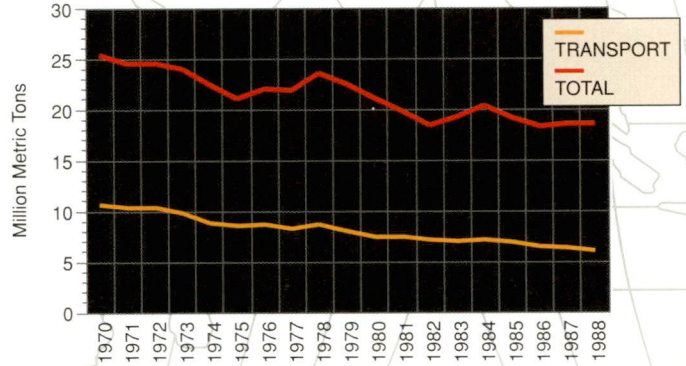
Source: U.S. EPA

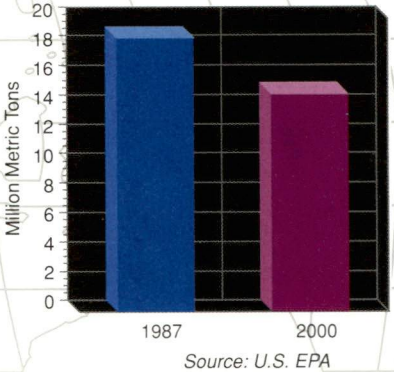
CHART 9

From EPA, "National Air Pollution and Emission Estimates, 1940-1982" Feb. 1984
EPA, "National Air Quality and Emissions Trend Report, 1988" March 1990.
EPA, "National Air Quality and Emissions Trend Report, 1987" March 1989.

CHART 8

Trends in Emissions of Reactive Volatile Organic Compounds 1970-1987





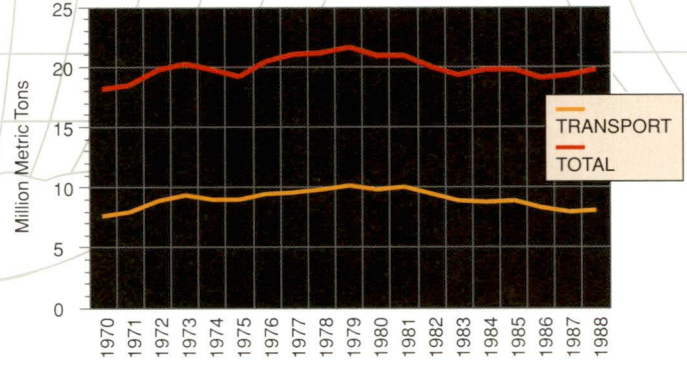
Source: U.S. EPA

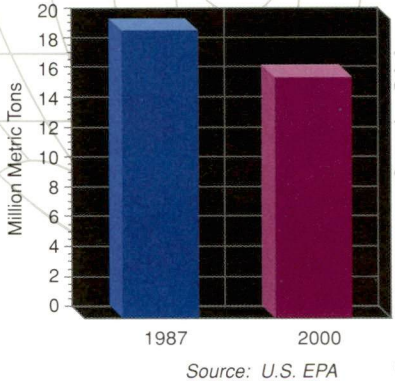
CHART 11

From same sources as Chart 8

CHART 10

Trends in Emissions of NOx





Source: U.S. EPA

CHART 13

From same sources as Chart 8

CHART 12

ENHANCING NATURAL SINKS

The term "sinks" of greenhouse gases is meant to include human and natural activities, processes, and phenomena that remove greenhouse gases from the atmosphere or reduce their atmospheric lifetimes. Examples include forests, soils and oceans. The IPCC recognized the importance of sinks in a report of its Response Strategies Work Group (RSWG): "The RSWG reviewed potential measures for mitigating climate change...These measures include those which limit emissions from greenhouse gas sources (such as energy production and use), those which increase the use of natural sinks (such as immature forests and other biomass) for sequestering greenhouse gases, as well as those measures aimed at protecting reservoirs such as existing forests."

Reforestation

The President has included in both his FY 1991 and FY 1992 Budgets a major, multiyear reforestation proposal to plant one billion trees per year on 1.5 million acres and to improve forest management practices. This initiative will encompass cities and towns across America, as well as rural, private, non-industrial forest lands. It comes in addition to reforestation which Federal agencies and private companies normally perform on lands under their jurisdiction.

One purpose of this initiative is to improve the condition of private, non-industrial forest lands which now are often in poor condition due to low levels of management and investment. Improving these lands will increase benefits from soil protection, wildlife, wood products, and recreation.

This initiative also will have climate change benefits through the carbon which growing trees (sinks) remove from the air and store both as plant tissue and in the soil. The estimates of carbon removed from the atmosphere by the trees to be planted under the initiative are 9 million metric tons of carbon annually by the year 2000, growing to 50 million tons per year by 2010. (See Chart 15)

Global Forest Convention

The President proposed at the Summit of Industrialized Nations in July 1990 at Houston to begin negotiations as expeditiously as possible on a global convention on forests, aiming for completion and signing by 1992.

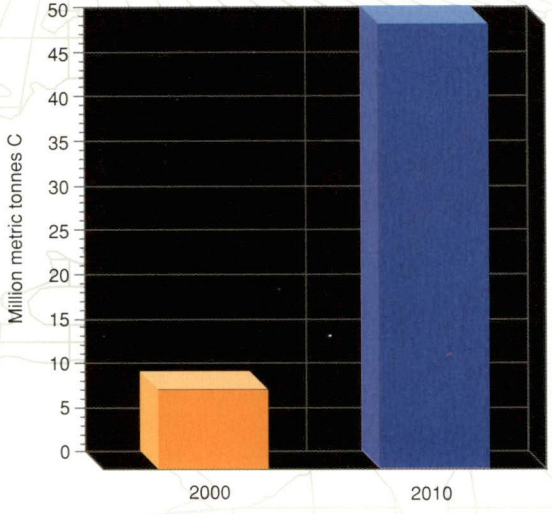
The world's forests absorb carbon dioxide as well as provide many benefits in the form of timber and fiber, soil and water protection, biodiversity, wildlife habitat, recreation and other valuable outputs. They provide the habitat for some 80% of the planet's remaining unknown and unspecified gene pool—a completely irreplaceable and potentially enormously valuable heritage for all humankind. Temperate zone forests are being damaged by air pollution stresses and tropical forests are being rapidly lost.

The U.S. believes that the forest convention should emphasize market-based mechanisms and flexibility to achieve sound, sustainable forest use, to improve the health and vigor of forests, to encourage reforestation, and to increase the value of forests as sources of income and jobs. In addition, increasing the productivity of activities using the land base can minimize deforestation.

Areas suggested for international cooperation and joint action include: reforestation and rehabilitation; research and monitoring; education, training, and technical assistance; reform of the Tropical Forestry Action Plan; reduction of air pollution; bilateral and multilateral assistance; debt-for-nature swaps; and removal of harmful subsidies.

Reductions in Carbon Dioxide Emissions

From Tree Planting Initiative

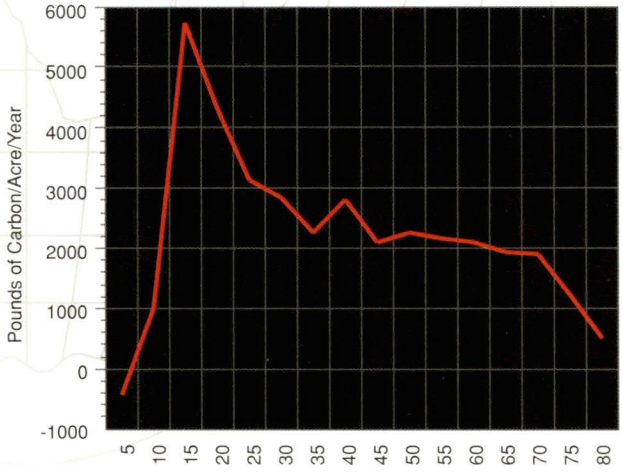


From EPA, "The Cost of Reducing Greenhouse Gas Emissions in the United States", Presentation by Alex Cristofaro, Director, Air and Energy Policy Division, December 4, 1990

CHART 15

Tree Planting Initiative

Example Carbon Sequestration by Age of Stand (Cutover)



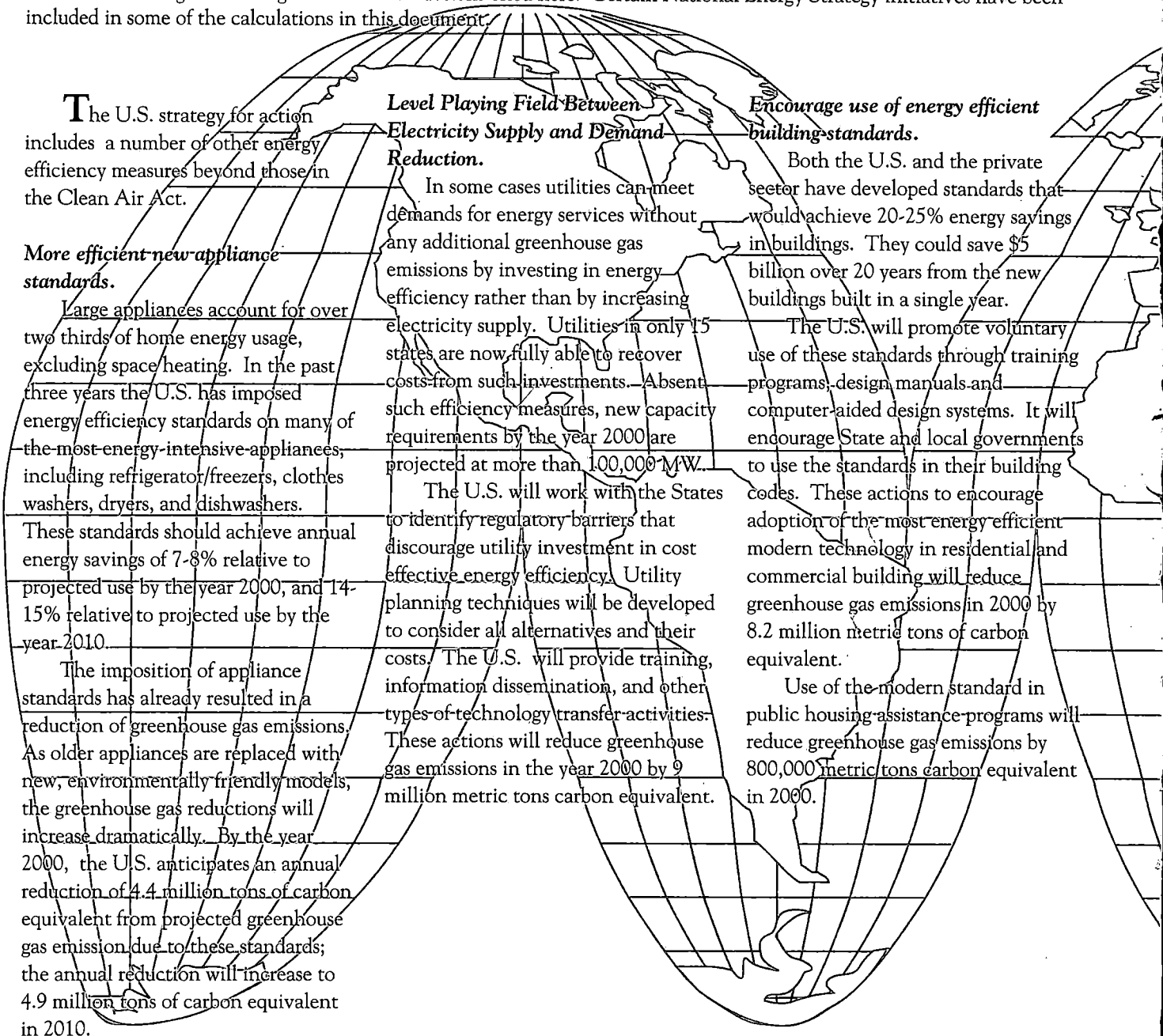
Source: U. S. Forest Service

To put the power of trees as "sinks" into perspective, consider the example of an acre of improved stock of southern pine planted on a high quality site in the southeastern U. S. In the 15th year after planting these trees would take up between 5700 and 6200 pounds of carbon per acre. While the amount taken up declines thereafter as the trees mature, additional carbon continues to be taken up.
(See Chart 16)

CHART 16

ENERGY INITIATIVES: *Efficiency*

The Administration is currently developing and will announce shortly a National Energy Strategy that will further contribute to the greenhouse gas emissions reductions cited here. Certain National Energy Strategy initiatives have been included in some of the calculations in this document.



The U.S. strategy for action includes a number of other energy efficiency measures beyond those in the Clean Air Act.

More efficient new appliance standards.

Large appliances account for over two thirds of home energy usage, excluding space heating. In the past three years the U.S. has imposed energy efficiency standards on many of the most energy-intensive appliances, including refrigerator/freezers, clothes washers, dryers, and dishwashers. These standards should achieve annual energy savings of 7-8% relative to projected use by the year 2000, and 14-15% relative to projected use by the year 2010.

The imposition of appliance standards has already resulted in a reduction of greenhouse gas emissions. As older appliances are replaced with new, environmentally friendly models, the greenhouse gas reductions will increase dramatically. By the year 2000, the U.S. anticipates an annual reduction of 4.4 million tons of carbon equivalent from projected greenhouse gas emission due to these standards; the annual reduction will increase to 4.9 million tons of carbon equivalent in 2010.

Level Playing Field Between Electricity Supply and Demand Reduction.

In some cases utilities can meet demands for energy services without any additional greenhouse gas emissions by investing in energy efficiency rather than by increasing electricity supply. Utilities in only 15 states are now fully able to recover costs from such investments. Absent such efficiency measures, new capacity requirements by the year 2000 are projected at more than 100,000 MW.

The U.S. will work with the States to identify regulatory barriers that discourage utility investment in cost effective energy efficiency. Utility planning techniques will be developed to consider all alternatives and their costs. The U.S. will provide training, information dissemination, and other types of technology transfer activities. These actions will reduce greenhouse gas emissions in the year 2000 by 9 million metric tons carbon equivalent.

Encourage use of energy efficient building standards.

Both the U.S. and the private sector have developed standards that would achieve 20-25% energy savings in buildings. They could save $5 billion over 20 years from the new buildings built in a single year.

The U.S. will promote voluntary use of these standards through training programs, design manuals and computer-aided design systems. It will encourage State and local governments to use the standards in their building codes. These actions to encourage adoption of the most energy efficient modern technology in residential and commercial building will reduce greenhouse gas emissions in 2000 by 8.2 million metric tons of carbon equivalent.

Use of the modern standard in public housing assistance programs will reduce greenhouse gas emissions by 800,000 metric tons carbon equivalent in 2000.

Expand national energy audit capabilities and use.

Industry, with some 350,000 separate establishments, uses 24.7 quads of energy annually. Many options exist for low-cost quick payoff energy saving investments, but smaller firms often lack the information, expertise, and specialized resources to do energy audits of their plants.

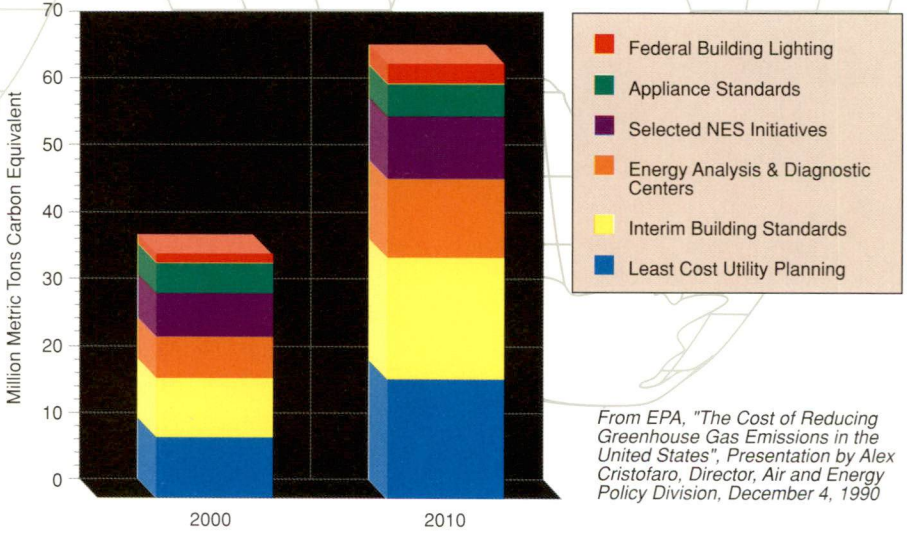
The U.S. will increase its program to train engineers in energy audit and diagnostic methods from the current 13 engineering schools to 40 nationwide in the year 2000. This will reduce greenhouse gas emissions in the year 2000 by 6 million metric tons carbon equivalent.

More efficient lighting in federal facilities.

Twenty-five percent of federal agency energy use is for lighting of facilities. However, lack of adequate flexibility for facility managers and restrictive procurement practices have slowed adoption of efficient new technologies.

The U.S. will identify energy savings options in Federal facilities. Project plans, procurement methods, and financing options will be developed to overcome the barriers to improve lighting efficiency. This will reduce greenhouse gases in the year 2000 by 1.4 million metric tons carbon equivalent.

U.S. Savings in Emissions From Initiatives in Energy Efficiency and Renewables.



From EPA, "The Cost of Reducing Greenhouse Gas Emissions in the United States", Presentation by Alex Cristofaro, Director, Air and Energy Policy Division, December 4, 1990

CHART 17

ENERGY INITIATIVES: *Renewables and Non-fossil Fuels*

Accelerate the transfer of photovoltaic technology to U.S. commercial production:

Recent laboratory research has achieved photovoltaic efficiencies of over 30%. With such efficiencies and improved manufacturing, today's $4-5 prices per peak watt could be cut in half.

The U.S. will start an intensive effort with industry to understand potential improvements in photovoltaic processes. Industry joint ventures to provide practical solutions and maximize transfer of results will be encouraged. The U.S. will also provide cost-shared technical assistance to adapt manufacturing improvement techniques to specific processes. By the year 2000, greenhouse gas emission reductions will begin to phase in at 500,000 metric tons of carbon equivalent.

Expand nuclear energy capacity:

As the Nation enters the 1990s, nuclear power is the second largest source of U.S. electricity, providing almost 20 percent of America's electricity needs, and nuclear power causes no greenhouse gases.

Because of the availability of nuclear power the nation is able to avoid the use of large amounts of fossil fuels. In terms of the displacement of fossil fuels, nuclear power can be thought of as reducing utility emissions of carbon dioxide—a major greenhouse gas—by 20 percent, or approximately 128 million tons, annually in the U.S. In effect, then, nuclear energy plants reduce overall U.S. emissions of carbon dioxide by nine percent. Worldwide, nuclear energy reduces these emissions by more than seven percent.

A comprehensive strategy for nuclear energy is being developed as a part of the National Energy Strategy and is supported in the President's Fiscal Year 1992 budget. This strategy includes:

- Developing advanced light water reactors that will incorporate passive safety features in a standardized (modular) design. This will reduce the time needed to license new plants, while assuring that safety issues are adequately addressed. The U.S. is currently supporting first-of-a-kind engineering work that will assist companies in their efforts to have the Nuclear Regulatory Commission certify the safety of standardized designs;
- Conducting research and development on advanced reactor concepts with safety features that go beyond even the standardized designs ("to be intrinsically safe") currently before the Nuclear Regulatory Commission. High temperature gas cooled reactors use specially coated fuel elements that will not fail even under the high temperatures that could occur in an accident. Liquid metal reactors use liquid sodium as the heat exchange medium. Researchers have demonstrated that these new reactor types can shut themselves down safely under conditions that would be extremely serious for present-day reactors;
- Reforming the nuclear licensing process through consolidation of the redundant aspects of the construction and operating licensing processes, without compromising nuclear safety concerns; and,
- Developing a long-term solution to the nuclear waste problem by developing a permanent repository, and possibly an interim retrievable storage facility.

DOE is funding programs that are supporting growth in nuclear energy capacity and the life extension of many currently operating plants. According to analysis done for the National Energy Strategy, support from DOE is expected to result in adding new nuclear capacity by 2000, which would result in further reductions in greenhouse gas emissions.

Increase transportation use of alternative fuels:

Use of oxygenated fuels, such as ethanol, can reduce urban smog levels and emissions of CO_2 and carbon monoxide.

U.S. research has demonstrated the technical feasibility of the processes to produce ethanol from non-food domestic resources such as wood or herbaceous crops.

The U.S. will expand current research programs in alternative fuels to include cost-shared joint ventures aimed at reducing the cost of ethanol from non-food resources. This effort will be coordinated with industry vehicle and engine development programs.

Conservation and Renewable R&D

The U.S. is funding a large research and development program for conservation and renewable energy. In Fiscal Year 1992, this effort is increased by 18 percent to a level of $495 million, which represents an increase of over 50% since 1989.

In the long run, an adequate response to climate change will involve the use of new technologies that conserve energy or that provide energy without causing greenhouse gas emissions. These technologies will be needed in all of the economy's sectors.

The Administration is proposing to initiate, in the fiscal year 1992 budget, a new joint auto industry-government consortium to develop a battery for electric vehicles. Improved batteries could extend vehicle range to 120 to 200 miles. Fuel-cell-powered electric vehicles offer the potential to achieve up to 50 percent efficiencies.

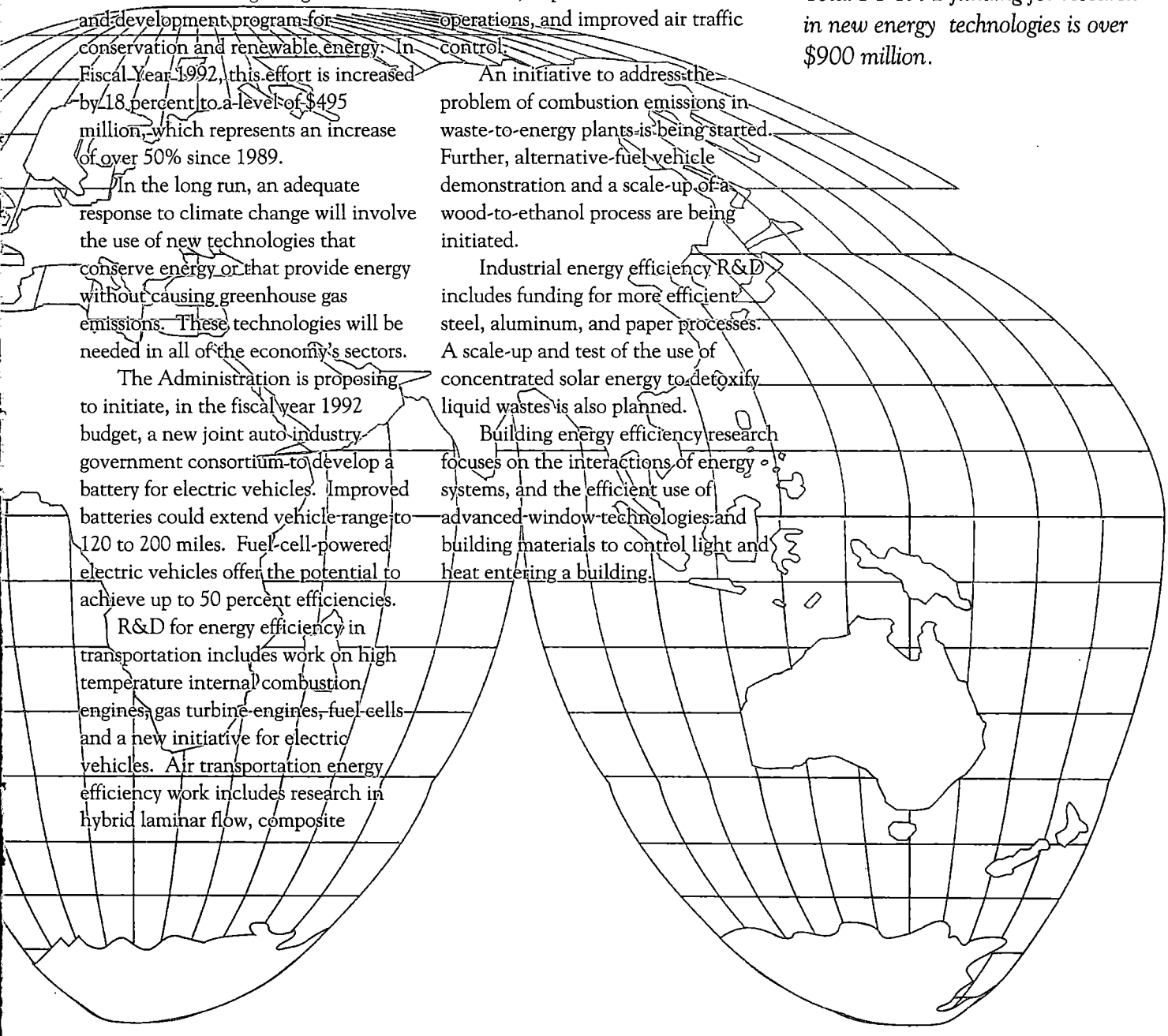
R&D for energy efficiency in transportation includes work on high temperature internal combustion engines, gas turbine engines, fuel cells and a new initiative for electric vehicles. Air transportation energy efficiency work includes research in hybrid laminar flow, composite materials, improved terminal operations, and improved air traffic control.

An initiative to address the problem of combustion emissions in waste-to-energy plants is being started. Further, alternative-fuel vehicle demonstration and a scale-up of a wood-to-ethanol process are being initiated.

Industrial energy efficiency R&D includes funding for more efficient steel, aluminum, and paper processes. A scale-up and test of the use of concentrated solar energy to detoxify liquid wastes is also planned.

Building energy efficiency research focuses on the interactions of energy systems, and the efficient use of advanced window technologies and building materials to control light and heat entering a building.

Total FY 1992 funding for research in new energy technologies is over $900 million.



TRENDS: *CO2 Emissions*

United States emissions in 1988 were only 2.7% above the 1973 level, despite the fact that real U. S. Gross Domestic Product (GDP), in 1985 dollars, grew by 48 percent over that period.

A key unanswered question about responding to the climate change issue is how to achieve economic growth in developing countries and economic reform in formerly centrally-planned countries without massive increases in greenhouse gas emissions.

It is important to remember that anthropogenic emissions of CO2 contribute about 4% of the total global CO2 flux.

Charts 21 and 22 compare the recent U. S. emissions trend with countries which contain most of the world's population. Those in Chart 21 have trends of rapidly growing CO2 emissions, and are likely to have substantial emissions growth in the coming decades.

Growth in CO2 Emissions and U.S. GDP

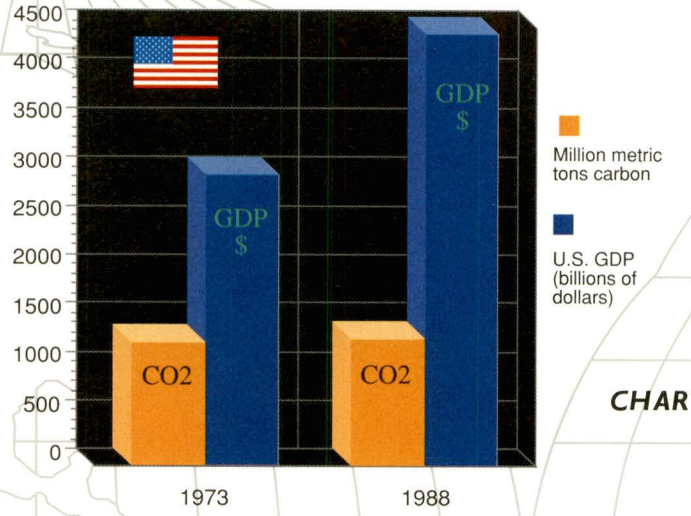


CHART 19

Source DOE Trends '90; OECD National Accounts, 1960-1988, (Paris 1990)
GDP deflators 1982=100 Source 1990 Economic Report

Emissions of CO2 Per Unit of GDP, 1988

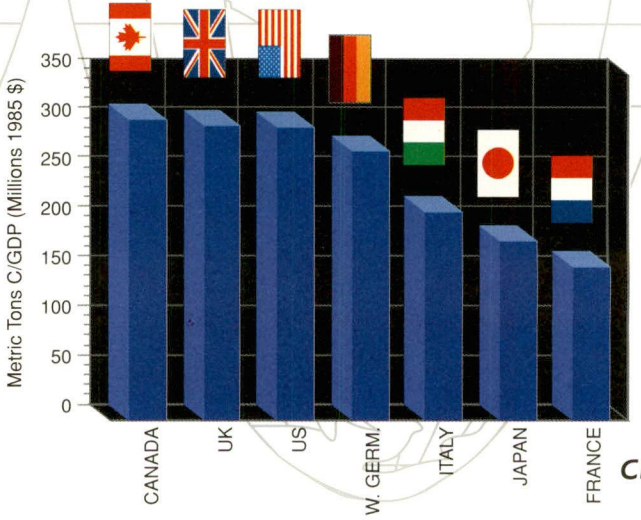


CHART 20

Emissions from DOE, "Trends '90, A Compendium of Data on Global Change", August 1990.
GDP from OECD, "National Accounts 1960-1988", (Paris 1990)

Trends in Carbon Dioxide Emissions

U. S. and High Emissions Growth Countries

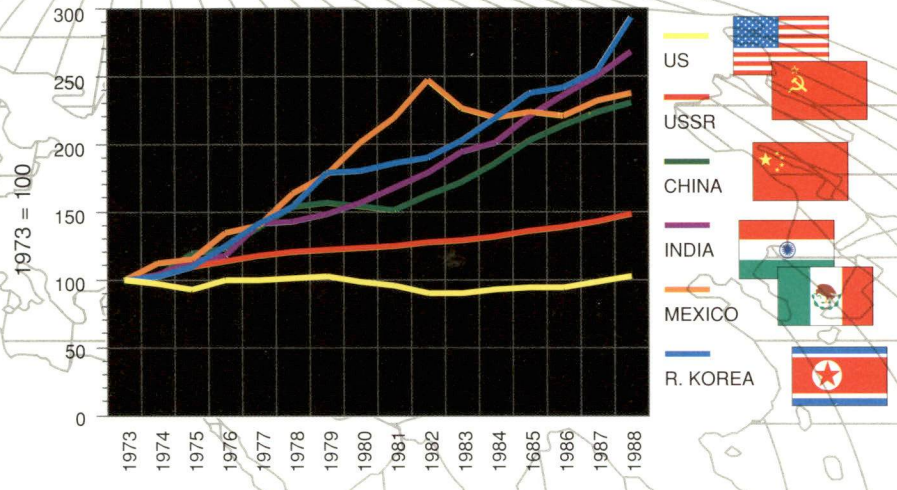


CHART 21

Calculated from data in DOE, "Trends '90, A Compendium of Data on Global Change", August 1990

Chart 21 compares the U. S. trend to countries which have experienced substantial growth in emissions.

Trends in Carbon Dioxide Emissions

U. S. and G-7 Countries

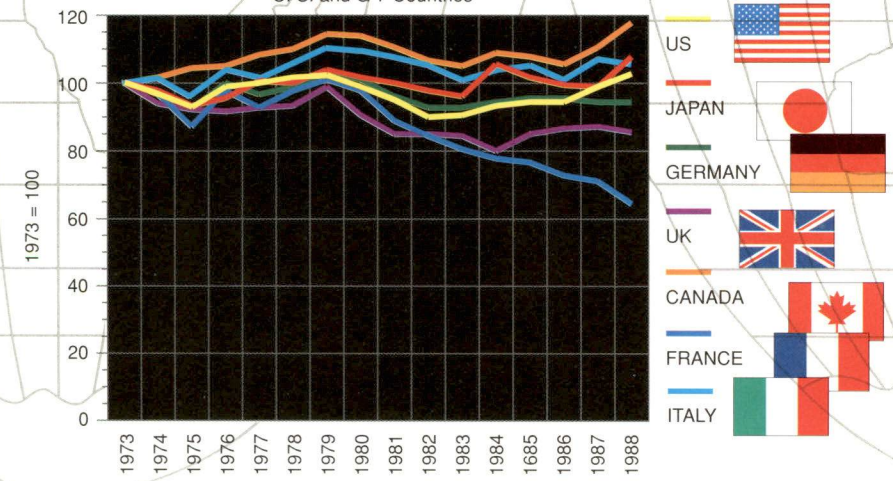


CHART 22

Calculated from data in DOE, "Trends '90, A Compendium of Data on Global Change", August 1990

Chart 22 compares the U. S. trend to industrial countries which have experienced moderate growth or decline in emissions.

TRENDS: *Energy Intensity*

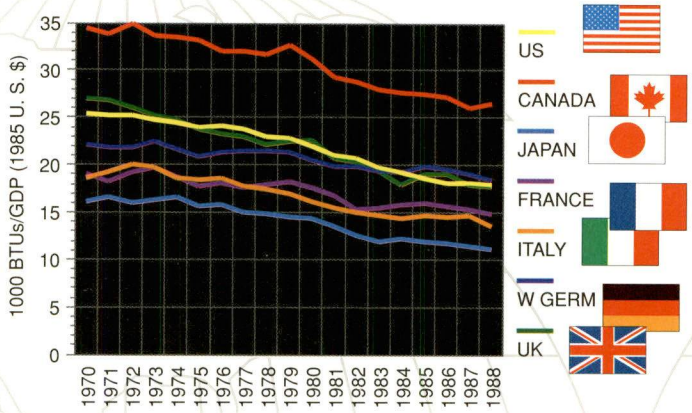
Chart 23 compares United States energy consumption per unit of gross domestic product (GDP) with Canada, Japan, France, Italy, West Germany and the United Kingdom—the other G-7 countries.

As shown in Chart 23, the United States has improved its energy use/GDP ratio since 1970, averaging an annual improvement of 2 percent per year. In 1988 the U. S. used only 70.9 % as much energy per unit of GDP as it used in 1970.

The United States' rate of improvement in the industrial energy use/gross product orginating (GPO) ratio has been greater than most other G-7 countries, averaging close to 3 percent per year since 1977 (Chart 24).

Since the early 1970s, the United States has improved its heating efficiency on an energy used per square foot per degree day basis. The U.S. used in 1987 only 68.4% of the energy used per square foot in 1972. Today, U.S. energy use in dwellings per square foot per degree day is much lower than most other G-7 countries.

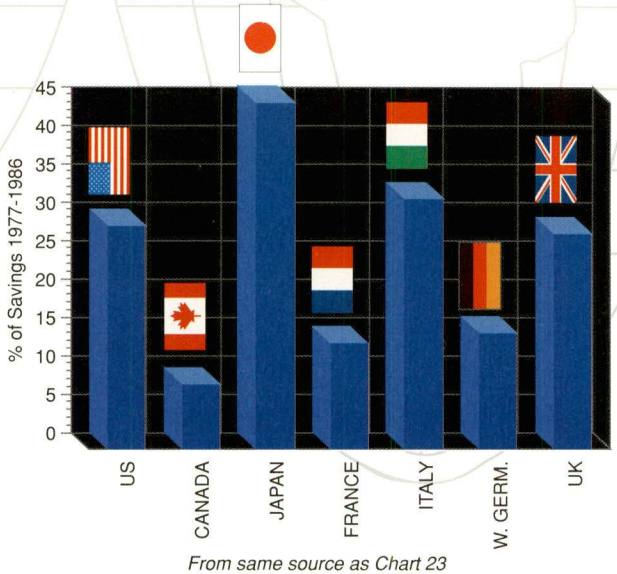
Energy Consumption per Unit of GDP



Total Consumption in Quads from International and Contingency Information Division, Statistics Branch, Energy Information Administration
GDP in 1985 $ from "National Accounts 1960-1988", OECD (Paris 1990)

CHART 23

Savings in Energy per GPO ('77-'86)



From same source as Chart 23

CHART 24

Energy consumption per unit GDP in the U.S. is comparable to other G-7 countries.

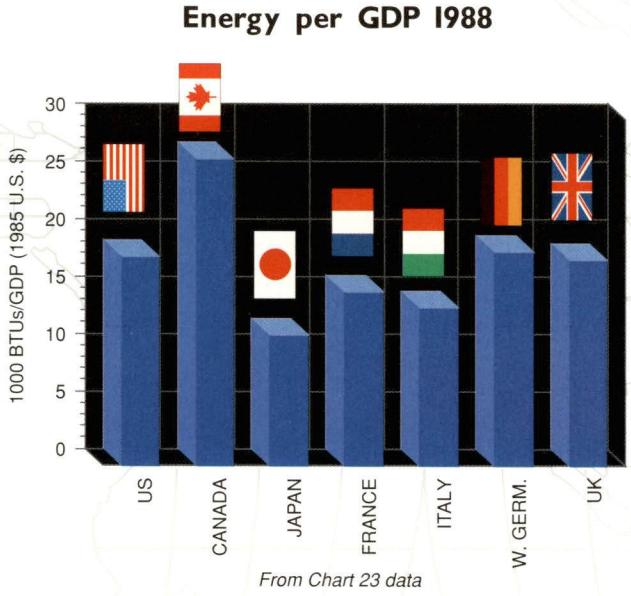


CHART 25

TRENDS: *Transportation*

Population density in the United States is 5 to 10 times less than in many of the other G-7 countries (Chart 26). With such a low density, the U. S. spatial spread between work and home naturally increases transportation use per capita. Distribution of economic activities across a wide continent requires substantial energy consumption for moving people and freight long distances. Transportation energy consumption per capita is highest in the United States and Canada and substantially lower in the G-7 countries with high population densities.

New car fuel efficiencies in the United States are now roughly even with those of most of the other G-7 countries (Chart 27), despite much more demanding U. S. emissions and auto safety standards. The U. S. 1987 miles per gallon ratio was 28.3, within a relatively narrow range from Japan at 27.7 to the United Kingdom at 31.8. The U. S. from 1973 to 1987 increased its new car fuel economy by almost 100 percent (Chart 29).

Population Density per Square Mile, 1988

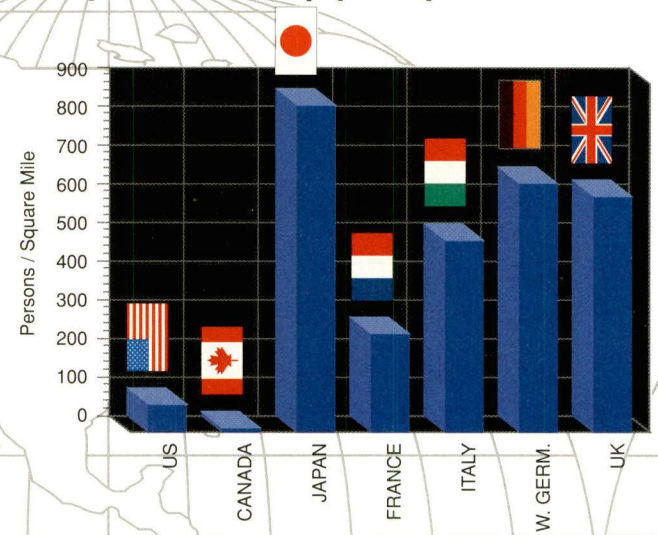


CHART 26

Population from OECD, "National Accounts 1960-1988" Vol 1 (Paris, 1990)
Area from Pharos Books "The World Almanac and Book of Facts 1990", (New York, 1989)

New Car Fuel Efficiency

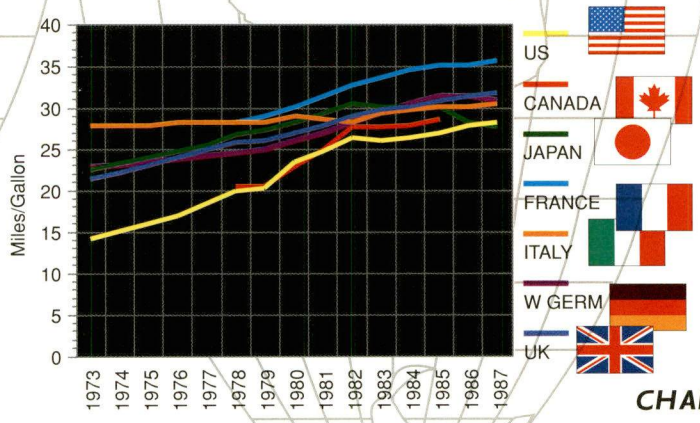
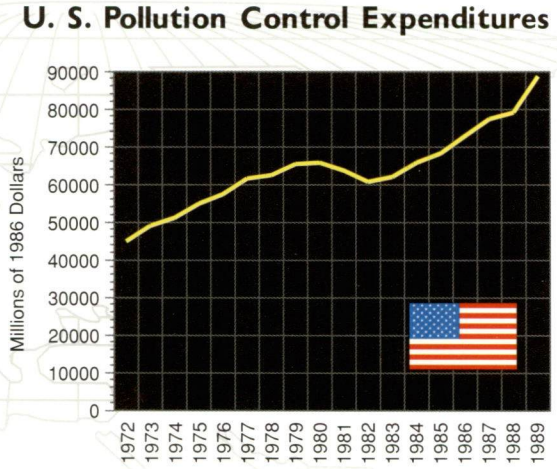


CHART 27

From OECD, "Energy Conservation in IEA Countries" (Paris 1987); IEA country submissions; and Lawrence Berkeley Laboratory (French amounts)
Conversion factors: 3.785 liters per gallon, 1.609 kilometers per mile.

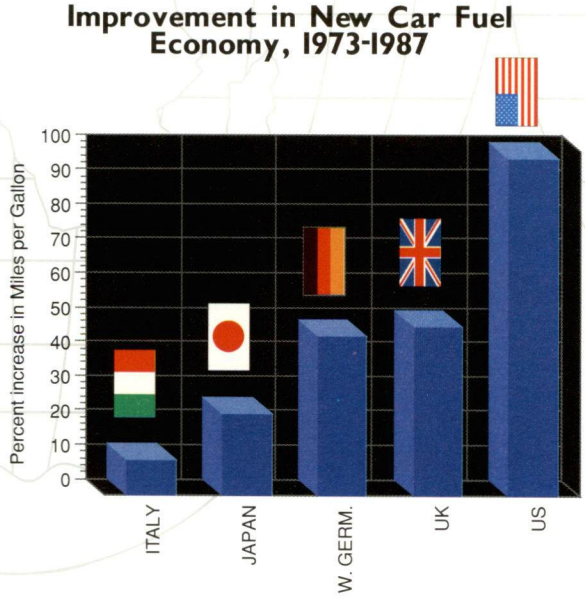


From EPA, "Environmental Investments: the Cost of a Clean Environment", July 6, 1990 draft.

CHART 28

United States' declines in emissions of volatile organic compounds, carbon monoxide, CFCs, and, to some degree, the stabilization of carbon dioxide emissions over the period from the early 1970's to the present can be attributed, in part, to U. S. investment to protect and to clean up the environment. U. S. spending for all pollution control purposes over the period is shown in Chart 29. It has grown by 100 percent from 1972 to 1989. It is expected to continue growing. Enactment of the Clean Air Act Amendments of 1990 alone is estimated to increase U.S. pollution control expenditures by an additional $25 billion a year when fully implemented.

U. S. pollution control spending has historically been larger compared to the country's Gross Domestic Product than spending by other countries for which data is available.



Source: same as chart 27.

CHART 29

GLOBAL CHANGE RESEARCH

The Intergovernmental Panel on Climate Change (IPCC) stated that; "To reduce the current scientific uncertainties in each of the areas listed below will require internationally coordinated research, the goal of which is to improve our capability to observe, model, and understand the global climate system. Such a program of research will reduce scientific uncertainties and assist in the formulation of sound national and international response strategies."

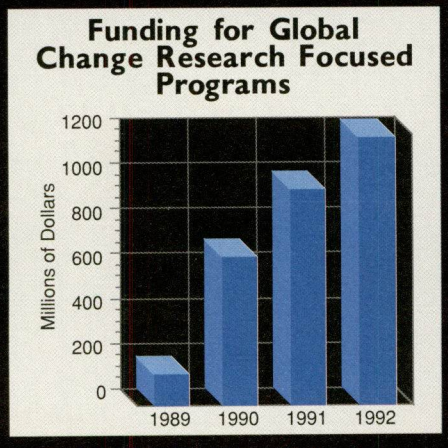
The U.S. Global Change Research Program (US/GCRP) has been developed as a central component of the United State's approach to global change, and more specifically to address the uncertainties identified by the IPCC.

In FY 1992, the U.S plans to invest almost $1.2 billion in this Program, which virtually doubles the U.S. commitment to the research program of the US/GCRP since it was initiated in FY 1990 (see chart below).

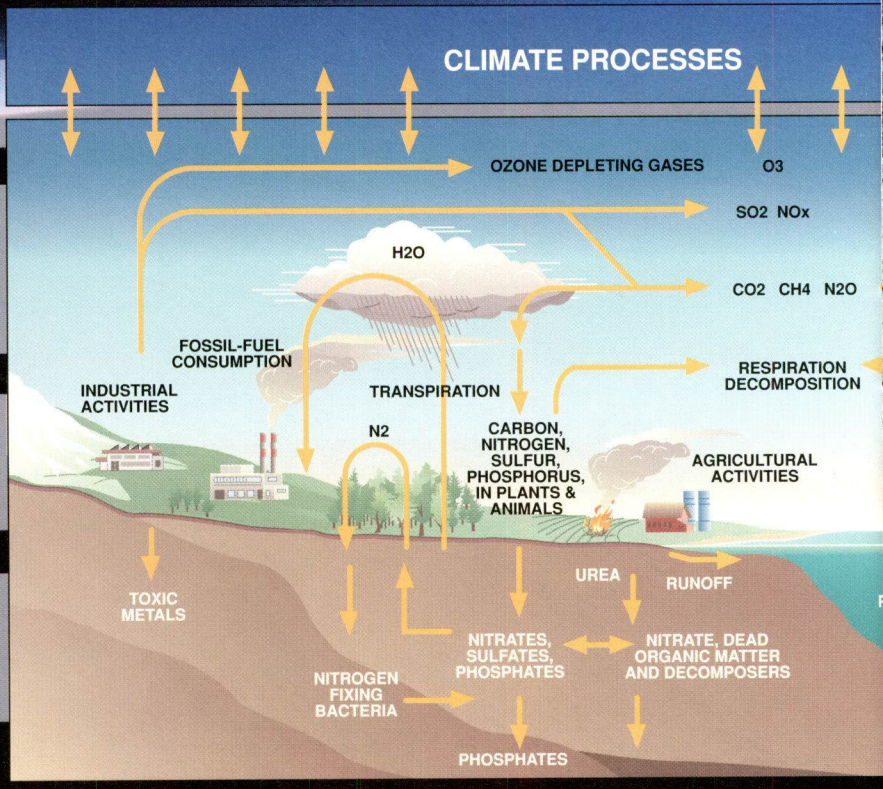
U.S. scientists have led the development of an international global change research program. Other countries have joined the U.S. in a coordinated research effort to address critical scientific uncertainties, through such international programs as the World Climate Research Programme (WCRP) and the International Geosphere–Biosphere Programme (IGBP). The total international research program, for which the U.S. provides about 50% of the financial support, is coordinated through United Nations scientific bodies (i.e., WMO, IOC, and UNEP), and through the International Council of Scientific Unions (ICSU).

Central to the US/GCRP is balance between ground and space based research activities. In-situ and theoretical studies of physical, chemical, biological, and geological processes will be complemented by a space based program to provide global observations of key environmental parameters. The U.S plans a comprehensive series of satellite launches through the coming decade to provide these global long-term observations, with a full scale Earth Observing System (EOS) in full operation by 1998.

The central task of the US/GCRP is to develop predictive understanding of the Earth's systems processes,



Source: U.S. Office of Management & Budget



GOAL: *To establish the scientific basis for National and International policy making relating to natural and human—induced changes in the global Earth system.*

particularly the climate aspects. This is to be complemented by a program of economics research to better understand the economic factors and consequences of global change and various mitigation and adaptation strategies. It is the intent of the US/GCRP to provide leaders of government with the best possible scientific and economic information as inputs to environmental policy decisions.

The highest priorities for the US/GCRP in FY 1992 are to:

1. Enhance scientific research efforts that seek to *reduce the scientific uncertainties* identified during the IPCC scientific and impact assessments. Specifically, the USGCRP research will focus on understanding the processes affecting:

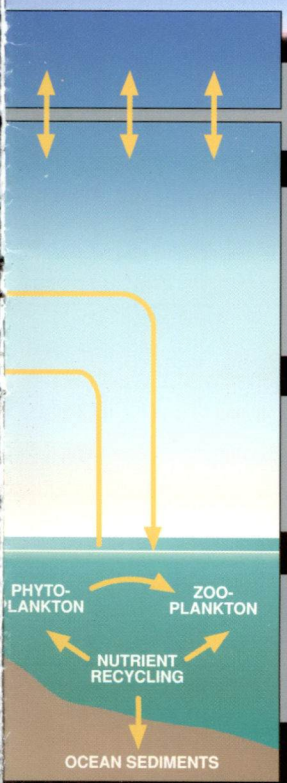
- *changing concentrations of greenhouse gases* which are implicated in future global warming predictions;
- *clouds and radiative balance* which strongly influence the magnitude of climate change at global and regional scales;
- *oceans* which influence the timing and patterns of climate change;
- *land–surface hydrology* which affects regional climate change and water availability;
- *polar ice sheets* which affect predictions of global sea level changes; and
- *ecological dynamics* which are impacted by and respond to climate change.

2. Enhance scientific and economic *research to support* the development and implementation of a *comprehensive approach* to greenhouse gas emissions reductions, specifically a focus on:

- *sources and sinks of greenhouse gases*;
- *development of a quantitative index* of radiative forcing; and
- development and use of economic models to *generate predictions of future scenarios* that cover multiple greenhouse gases and multiple economic sectors.

The ultimate goals of the US/GCRP are to (1) Obtain a predictive understanding of the interactive physical, chemical, biological, geological, and social processes that regulate natural and human–induced changes in the total Earth system and, (2) Provide a strong scientific and economic basis for national and international policy–making related to changes in the global environment and their regional impacts.

INTEGRATING THEMES FOR RESEARCH



Climate

Global H2O & Energy Cycles

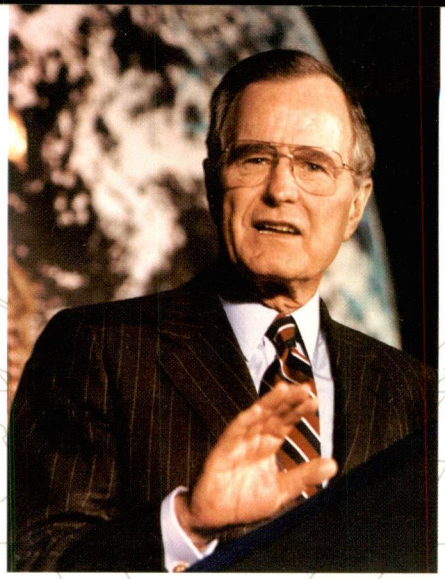
Global Carbon Cycles

Ecological System & Dynamics

OBJECTIVES

- Establish an integrated, comprehensive long-term program of documenting the Earth system on a global scale.
- Conduct a program of focused studies to improve our understanding of the physical, geological, chemical, biological, and social processes that influence Earth system processes and trends on global and regional scales.
- Develop integrated conceptual and predictive Earth system models.

LEADERSHIP AND ACTION



President Bush has established the comprehensive strategy for action and leadership outlined on the following pages. This strategy flows from his commitment to responsible stewardship of our planet, which includes the promotion of economic growth and sound environmental policies. It is built upon a series of actions which will have broad ranging benefits—from curbing air pollution, to conserving energy, to restoring forest lands—and which will help curb net greenhouse gas emissions.

The U.S. believes that any successful global climate change strategy must be:

- ***comprehensive***, incorporating all relevant greenhouse gases, their sources and sinks;
- ***long term***, taking into account the full range of social, economic, and environmental consequences of proposed actions for this and future generations;
- ***flexible***, built on many diverse actions (including market incentives) and readily adjustable as knowledge is improved through a robust research and development program; and,
- ***integrated***, designed to involve all nations and dynamically reflect and incorporate each nation's unique circumstances into the development of a truly global response strategy.

The actions which are currently included in the U.S. Climate Change Strategy will result in U.S. greenhouse gas emissions in the year 2000 being equal to or below the 1987 level. In addition, the U. S. has essentially stabilized its emissions of carbon dioxide (CO2) over the last 15 years despite a growth in economic output of about 50 percent. During this same period, global carbon dioxide emissions have increased substantially.

This U.S. Strategy for Climate Change includes many specific actions:

- eliminating stratospheric ozone-depleting compounds which are also strong greenhouse gases;
- directly controlling various greenhouse gases and their precursors which are also air pollutants;
- reducing utility and other industrial emissions in a way that strongly encourages energy efficiency;
- increasing forest greenhouse gas sinks;
- encouraging energy efficiency in such areas as buildings, appliances, and lighting; and
- increasing the use of renewable and non-fossil sources of energy.

Integral to the U.S. Climate Change Strategy is the world's largest program of research and development:

- to increase our scientific and economic understanding of climate change and to provide a sound knowledge base for making major policy decisions; and,
- to develop and to accelerate the adoption of economically sound, environmentally beneficial, and energy efficient technologies.

In total, the U.S. proposes to invest over 2 billion dollars in these R&D efforts next year alone.

In August 1990, the Intergovermental Panel on Climate Change (IPCC) declared in its Overview: "A comprehensive strategy addressing all aspects of the problem and reflecting environmental, economic, and social costs and benefits is necessary."

The President of the United States has established such a comprehensive strategy. The United States, today, is working to curb emissions, promote economic growth, and exercise leadership in meeting our shared responsibilities as stewards of the planet.

The United States is taking action.

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HEADLINE: Global Environmental and Natural Resource Problems -- Their Economic, Political, and Security Implications

BYLINE: A. J. Fairclough

HIGHLIGHT:
The international political salience of environmental concerns has risen sharply in the last few years. Today, the view that national security for too long has been defined in terms too narrowly military resonates greatly in the public debate. Yet there has been little understanding of the foreign policy implications of the environmental agenda. The essays that follow assess these implications. They follow a research survey on the environment and national security published in the autumn 1990 issue.

BODY:

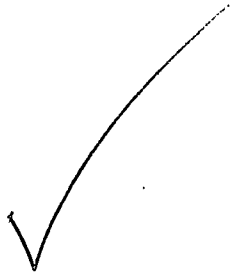
GLOBAL ISSUES CONCERNING environmental and natural resource protection have become so important that it no longer makes sense to discuss international economic, political, and security relations without giving them a central place.

Indeed it can be argued that, in the 1990s, the challenges posed by these issues will be the key determinant of how international relations develop in terms of economics, politics, and security.

These may seem surprising assertions, but the following new factors, which have emerged in the past few years, point strongly in this direction:

* the growing interdependence of economic and environmental developments;
* the sheer scale of human impacts on the environment and natural resources;
* the fact that, although demand is growing, the environmental resources available to meet it are declining with the consequence that, increasingly, the world is living off its environmental "capital," rather than off the "interest," and we are incurring risks of irreversible change;
* the fact that the most daunting of the environmental and natural resource challenges now facing us are global in scope and call for global solutions and consequently for a quite unprecedented degree of cooperation between all countries in tackling them;
* the resultant interdependence between rich and poor nations;
* the interconnectedness of many of the global issues -- among them the greenhouse effect, acid rain, poverty, third world development, excessive population growth, forest loss, energy production and use -- which complicates still further the search for solutions; and
* the emerging role of environmental refugees as a factor in world affairs.

This article discusses each of these factors and also the business-as-usual approach normally adopted to environmental problems, pointing to the need for



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radical changes. First, however, the paper reviews briefly some background factors that are important in addressing the world's environmental problems, including the pointers given by the report of the World Commission on Environment and Development (the Brundtland report). n1 The paper concludes with some suggestions as to how the world community ought to react to the environmental challenges facing it.

Background

The scale, scope, and nature of the environmental and natural resource problems that we now face are due in part to our unprecedented success this century (and especially in the years since World War II) in promoting economic development. Since 1900, the world's population has increased 3-fold, economic activity 20-fold, fossil fuel use 30-fold, and industrial production 50-fold. Most of this growth has occurred in the last 40 years, and most of it in the industrialized North which, with only a quarter of the world's population, consumes over three-quarters of the world's production.

Moreover, per capita energy consumption in North America is 20 times higher than in India and 80 times higher than in sub-Saharan Africa. Present levels of population already consume about half of the "green production" of the planet (our sustainable "income"). Problems arising from the production and trade patterns of developing countries, prices, and financial charges and indebtedness have led to an annual net transfer from the poor to the rich of some $ 50 billion -- and this global inequity is growing worse.

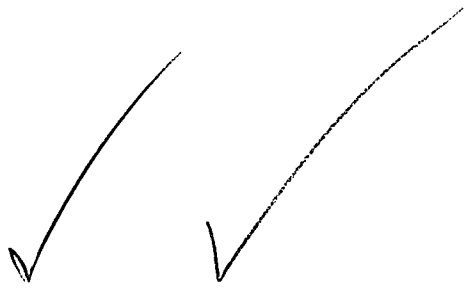
Looking ahead is even more daunting. Population levels will double again over the next 50 years, and the United Nations Fund for Population Activities (UNFPA) anticipates the possibility of a 3-fold increase before levels stabilize if drastic action is not taken soon. Even with only a doubling of world population, a very modest improvement in living standards would imply a 5- to 10-fold growth in economic activity touching every sector including energy, construction, transport, industry, and agriculture.

In short, we have allowed a situation to develop that one could reasonably describe as totally crazy. To take Africa as an example, despite all the development efforts that have been made, the deserts are advancing rapidly; forests are disappearing; three cover and firewood have gone around the towns; water is polluted; agricultural productivity is declining; and in some countries indebtedness is high. Starting from this totally unsatisfactory situation, African countries and their partners in the developed world are challenged to find sustainable means of accommodating the predicted levels of growth in population and economic activity.

One can only doubt -- and not only with regard to Africa -- whether this accommodation is possible. What is certain is that, if it is to be achieved, we

can no longer continue to treat the environments as a "free good," and that radical changes will be essential in all countries in attitudes, life-styles, and consumption patterns.

More generally, environmental limits to growth are real, and we have no option but to respect them. Given that these limits are already being breached in many ways (despite progress to date in improving environmental protection), accelerating environmental degradation is already a reality in many parts of the world. The question inevitably arises whether, in these conditions, growth on



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the scale foreseen is conceivable, let alone achievable.

Political and Security Implications. The report of a recent American Assembly meeting starts with the following paragraph:

Three indivisibly linked global environmental trends together constitute an increasingly grave challenge to the habitability of the earth. They are human population growth; tropical deforestation and the rapid loss of biological diversity; and global atmospheric change, including stratospheric ozone loss and greenhouse warming. These trends threaten nations' economic potential, therefore their internal political security, their citizens' health (because of increased ultraviolet radiation), and, in the case of global warming, possibly their very existence. No more basic threat to national security exists. Thus, together with economic interdependence, global environmental threats are shifting traditional national security concerns to a focus on collective global security. n2

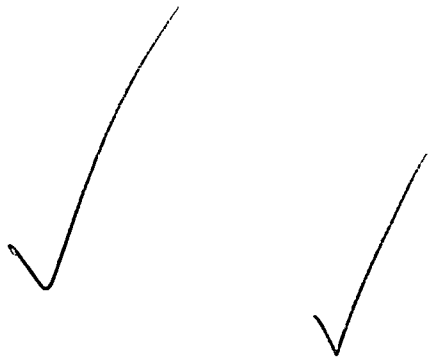
This is an excellent statement as to why environmental issues now have major political and security implications. The sheer magnitude and the unprecedented nature of some of the changes in natural systems to which we are already committed by actions that we have already taken or are still taking are the key characteristics of these issues. The Toronto Conference on climate change took the view that the consequences of global warming "could be second only to a global nuclear war." n3

We are no longer dealing merely with local or regional disturbances caused by industrial or other economic activities that, with political will and sufficient financial resources, can be corrected. Rather, we are faced with major global disturbances to planetary systems. It is far from clear whether, even with political commitment and massive financial resources, we have sufficient time or means to halt or significantly slow these phenomena or adapt to them.

In the past nations often have been in conflict -- and even gone to war -- over resource issues: minerals, shared water resources, energy resources, and land. Then, they usually were disputing the sharing of what were, globally, relatively plentiful resources. Now, the situation is totally different: we face growing global deficits in some of the basic environmental resources that we need to sustain our life-styles -- and even life itself. In such a situation the potential for conflict, especially between the "haves" and the "have nots," is self-evident and likely to grow.

Moreover, since the problems we face pose global challenges, to which no one single nation or group of nations alone can find solutions, they can only be tackled at the global level. This in turn means that we need to secure an unprecedentedly high degree of international cooperation and mutual understanding between nations if the world community is to have a real chance of finding solutions that are sustainable not only environmentally, but economically, politically, and in security terms as well.

These threats to environmental security must be seen as threats to the well-being and quality of life of our populations that are every bit as serious as military threats. We need to react accordingly and, in particular, we must be ready to mobilize large resources and deploy them in those places and ways best calculated to address the problem -- just as we do when facing serious military threats.



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Environmental Standards. One of the main challenges at all levels from local to global is the reconciliation of continued economic growth with the improvements in environmental quality that are already needed and will become even more necessary as pressures increase. The only way of achieving this goal and of ensuring that the twin pressures of numbers and growing economic activities do not automatically lead to accelerating environmental degradation is to adopt and implement very much stricter environmental protection standards so that the impact per unit of human activity is substantially reduced. In many areas -- although not in all -- it is clear that this is possible; in none is it easy. But such standards have now become a necessity for both environmental and economic reasons. This simple arithmetical fact must be generally recognized as providing the starting point for future environmental policy-making and accepted as inevitable by all economic actors. It is logical and unavoidable.

The Netherlands, in its national environmental policy plan, proposed emission reductions of 80 to 90 percent by 2010 for many pollutants. The Intergovernmental Panel on Climate Change (IPCC) has reported that reductions in man-made emissions of carbon dioxide (CO[2]) of the order of 60 to 80 percent would be needed to stabilize the atmospheric concentration at present levels and thus contribute (modestly) to slowing the onset of the greenhouse effect. n4 Figure 1 shows the IPCC's estimate for a number of the more potent greenhouse gases.

Figure 1
Stabilization of Atmospheric Concentrations

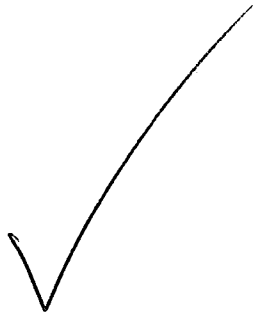
Reductions in the man-made emissions of greenhouse gases required to stabilize concentrations at present-day levels:

Carbon Dioxide	60-80%
Methane	15-20%
Nitrous Oxide	70-80%
CFC11	70-75%
CFC12	75-85%
HCFC22	40-50%

Natural sources and sinks are assumed to remain unchanged. Note that the stabilization of each of these gases would have different effects on climate. Source: IPCC, Policymakers Summary of Scientific Assessment of Climate Change, p. 13.

Standards can be, and usually are, imposed by legislation. They can also be encouraged by an intelligent use of the marketplace, for example, by proper pricing for scarce environmental resources, or by using taxes, charges, and incentives to steer economic behavior into environmentally desirable directions.

The Brundtland Report. Strict standards alone, however, are not enough. Much of the Brundtland report is devoted to spelling out in considerable detail the changes in attitudes and behavior that are needed, in all areas and in all aspects of ours societies, to promote and achieve "sustainable development," which is the report's central recipe for addressing the problem of the interaction between environment and development. The Brundtland report is of key importance because, written after three years' intensive work throughout the world by a distinguished commission under the chairmanship of Gro Harlem Brundtland, the former prime minister of Norway, it gives us the best and most thorough analysis that we shall ever have of the implications and management



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of that interaction so as to "build a future that is more prosperous, more just and more secure." n5

As development seeks to satisfy human needs and aspirations, it must respect numerous constraints if it is to be truly sustainable. For example, it must have regard to the long term. It must treat "free" environmental goods -- like air and water -- as the important resources they are and as having a value. It must favor the renewable. It must encourage the conservation of resources and of nature. As a minimum it must not endanger the natural systems that support life on earth.

But none of this excludes change. Clearly economic development involves changes in ecosystems. Sustainable development does not, therefore, imply the maintenance of a fixed state but rather, as the Brundtland report put it, "a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs" (p. 9).

It is not yet clear, however, that the necessary reconciliation between economic growth and environmental protection is possible in all areas. Three problem areas stand out: the need for changes in attitudes and in institutions; energy; and population.

It is necessary, therefore, first to be clear as to the implications of sustainable development and then to go on to look at these three particular issues, on all of which the Brundtland report provides very clear signals.

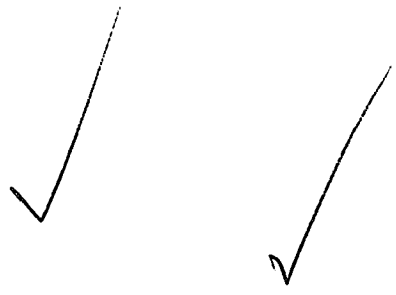
Sustainable Development

As defined in the Brundtland report, sustainable development is economic development that seeks to meet the needs and aspirations of the present without

compromising the ability to meet those of the future. It embraces various important concepts -- in particular equity (as between rich and poor and as between generations) and the protection of the environmental resource base so that it can support growth over the long term. On this basis sustainable development envisages "a new era of growth in which developing countries play a large role and reap large benefits" (p. 40) as a means of solving the problem of poverty and underdevelopment.

It is evident that in many cases -- locally, regionally, and globally -- our present systems, policies, and economic development processes and priorities are not sustainable. Radical changes are, therefore, needed. Nonetheless the Brundtland report was, in general, optimistic -- although it brought out very clearly that it is by no means certain that we shall succeed in achieving sustainable development. There is nothing automatic about it. Many very difficult decisions, many changes in life-style, and many changes in attitude will be required.

Institutional Challenge. The biggest challenge presented by the Brundtland report is the institutional challenge. The report concludes that improved environmental protection and management is so crucially important a factor that it can no longer safely be left solely to weak, underfunded environmental agencies or ministries.



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The report emphasizes that, to date, environmental agencies have tended to focus almost exclusively on the effects of economic activities, not on the sources of environmental problems; they have dealt with "after-the-fact repair of damage." The central agencies of government and the major sectoral ministries play the key roles in national decision making, and they, together with their client industries, "have the greatest influence on the form, character, and distribution of the impacts of economic activity on the environmental resource base" (p. 311) and determine whether that base is enhanced or degraded. Their goals are essentially economic, and "most have no mandate to concern themselves with sustaining the environmental resource capital on which these goals depend. . . . Electricity boards produce power, while the acid pollution they also produce is left to other bodies to clean up" (p. 312).

The report is quite clear that this situation must change. All entities, whether public or private, whose activities have a potential effect on the environment must share the task. They must be made both responsible and accountable for ensuring that all their activities contribute to sustainable development -- and this must clearly include their policies, programs, plans, financial arrangements, and so forth, as well as their development projects.

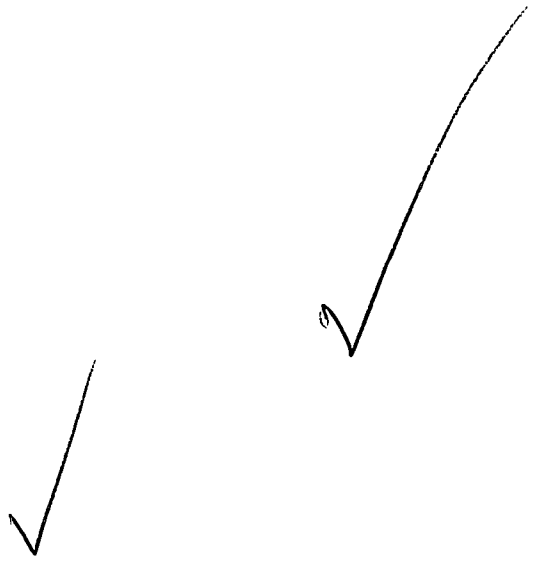
Since the release of the Brundtland report in 1987, there has been little sign of the implementation of these institutional recommendations. Companies are still free (subject, of course, to environmental regulations that are clearly not adequate) to pursue the bottom line without much real concern for sustainable development. The "polluter pays principle" is still not strictly applied in the sense of insisting that polluters should be responsible for all the economic consequences of their discharges to the environment and for all costs arising from their activities, including the costs of damage to the environment. Sectoral ministers still pursue their sectoral policies without much regard for their environmental consequences.

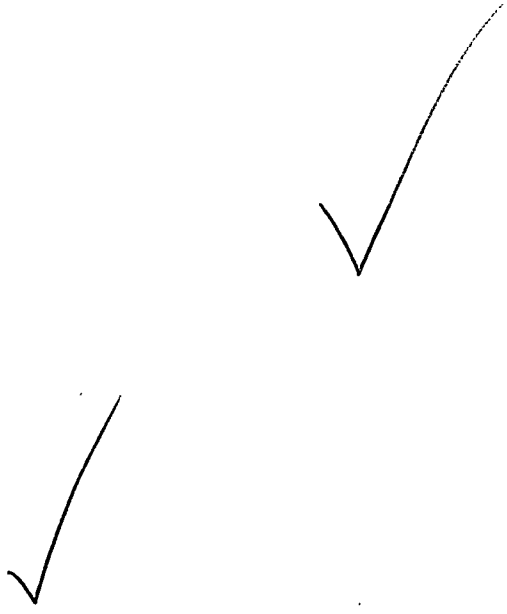
The transport sector illustrates the problem well. Forecasts of continuing rapid growth in the number of motor vehicles are still being made; plans for roads to accommodate them are produced and implemented; interest in new fuels or other low-polluting technologies exists but is not high; public transport remains firmly on the back burner in most countries; no one (except for a few environmentalists) asks whether, if the planned transport developments come about, life will continue to be supportable in terms of pollution, noise, congestion, and loss of quality of life generally; and all of us (including many environmentalists) look for excuses as to why the price of gas should not be increased to the level necessary to reflect its true share of the costs of combating the greenhouse effect to which it substantially contributes.

Moreover, taxes, charges, and subsidies continue to be used in ways that might have been designed almost deliberately to bring about environmentally negative results. Certainly it is only extremely rarely that they are used positively to serve environmental ends. Most ministers of finance refuse to allow taxes to be used for any purpose other than revenue raising.

But why should that be so? In a recent article discussing a carbon tax, the

Financial Times said "fiscal neutrality -- the principle that taxes should not be used to influence individual and corporate behavior -- became a totem in the 1980's": totem is the right word, and in the 1990s, totems should go. At least in Europe, unleaded gas now costs less than leaded; why is it still dearer in the United States?





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Being responsible and accountable means that issues of this kind must be

fully considered before economic, financial, and fiscal decisions are taken and must be fully integrated with them so that what is done is both economically rational and environmentally desirable. "Integration" in this sense has been one of the key words of environmental policy for many years. Yet we still do not really do it. We must find means of giving reality to this very simple concept -- by getting away from the present situation, in which the left hand does not seem to know what the right hand is doing and few of the prices that we pay for the goods and services on which we depend for our life-styles reflect the real environmental and natural resource costs of supplying them.

To achieve integration requires deliberate action -- which in the end can only be taken by governments -- to give effect to the Brundtland institutional recommendations and to place upon all economic actors responsibility (including financial responsibility) and accountability for all the environmental consequences of their activities.

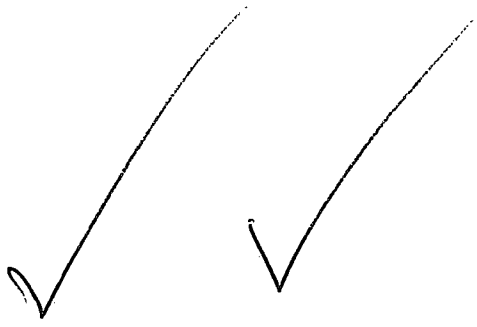
Energy Challenges. The second major challenge emphasized in the Brundtland report is energy. Development without energy is impossible. Much can be done to decrease waste and to improve efficiency of energy production and use, but, however much is done, there is no escaping the energy challenge, which is, perhaps, the most difficult challenge of all. As the Brundtland report said: "A safe and sustainable energy pathway is crucial to sustainable development; we have not yet found it" (p. 14).

The report is quite clear that present patterns of energy production and use are unsustainable. The chapter in which it deals with energy makes somber reading. Continued heavy reliance on fossil fuels (including wood fuel in developing countries) can only pose growing problems for all the well-known reasons -- acid rain, global warming, climate change, loss of tree cover, deforestation, and health impacts. The report is hesitant about reliance on nuclear power, which "is only justifiable if there are solid solutions to the presently unsolved problems to which it gives rise" (p. 14). It looks to economic growth that is less energy intensive, improved efficiency in the production and use of energy, and the development of "sustainable forms of renewable energy" as the main hopes for the future.

The possible role of renewable forms of energy (in particular for electricity generation) has been persistently neglected. Yet they have the potential to supply the entire world electricity demand with very much lower levels of pollution and other environmental damage than current methods. Very little of their potential has so far been realized -- as Figure 2 shows -- essentially because they cannot at present compete with traditional energy sources and because of lack of interest in them. Yet both the economics and the level of interest could easily be radically changed by appropriate government economic intervention, which should be undertaken.

Figure 2
World Renewable Resources
(trillion watt hours per year)

Source	Potential	Realized
Wind	200,000	4
Tidal	200	<1
Wave	4,000	0
Geothermal	>300	35



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Hydro	>13,000	2,000
Solar	very large	<1

Current world electricity consumption is 10,000 TWh/year.
Source: Dr. Peter Chester, National Power, U.K.

Population Challenges. The Brundtland report is equally blunt on the third challenge: population. It says flatly that "present rates of population growth cannot continue" (p. 95). But it also recognizes the complex interactions between population growth rates, on the one hand, and cultural patterns, social background, education (especially of women), poverty, health, aspirations, development opportunities, and many other factors, on the other.

All these aspects certainly affect and complicate what is inevitably, in any case, a complex and delicate (and highly personal) issue. Personal because, at bottom, the overall outcome in terms of population growth will be determined by the actions of hundreds of millions of individual families -- how many children they have; how many they can rear successfully and bring to their full potential; and what opportunities they have to make personal decisions that will

influence the answers to these questions.

Yet looking at the matter at a global level, we have to recognize that the task that the world is facing is to find ways of creating decent and fulfilling living conditions for at least -- as the Brundtland report put it -- "another human world." The United Nations Environment Programme (UNEP) has long stressed the intimate interrelationship between environment, development, population, and resources. The Brundtland report is more explicit when it says:

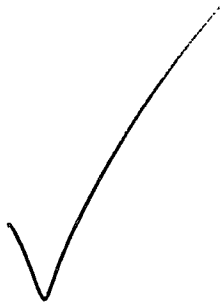
In many parts of the world, the population is growing at rates that cannot be sustained by available environmental resources, at rates that are outstripping any reasonable expectations of improvements in housing, health care, food security, or energy supplies. (p. 11)

Sustainable development can only be pursued if population size and growth are in harmony with the changing productive potential of the ecosystem. (p. 9)

These points -- concerning as they do the need for compatibility between growing demands from growing populations and the capacity of available resources of all kinds to meet those demands -- is of particular importance in planning third world development projects, many of which are concerned with rural development and with promoting agricultural production. In planning such projects, the crucial importance of taking account of (and reducing) population pressures; of planning the different uses to be made of the land available (taking account also of other development objectives), especially in situations of land shortage; and of addressing the question of "carrying capacity" scarcely needs emphasizing. Yet, too many projects have not succeeded because of failure to do so adequately.

Environment and Politics in the 1990s

This analysis of the current environmental and natural resource challenges and their economic, political, and security implications presents a picture that is totally new. In the past, environmental protection was seen as a local or national matter, and it focused on tackling problems after they had arisen -- that is, on cleanup. But, as the scale of environmental problems grew, together with the recognition that pollution does not respect boundaries, a more



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broadly based and preventive approach was seen to make better sense -- and to be cheaper. Hence the commitment to integrate environmental and natural resource considerations into decision-making in all other policy areas and also to prior environmental assessment. Hence, too, the numerous regional environmental conventions that have been adopted and the implementation by many countries (and the European Community [EC]) of broad-ranging environmental action programs.

Throughout this phase environmental protection was still seen by most economic operators as a mass of regulations leading to imposed additional costs; there was little awareness that to be more responsible environmentally might also be good for business. This perception came with the next phase, as a growing awareness developed of the economic significance of environmental and natural resource factors -- both negatively in preventing or restricting development possibilities (on the grounds that they were not acceptable environmentally) and positively in opening up new economic opportunities.

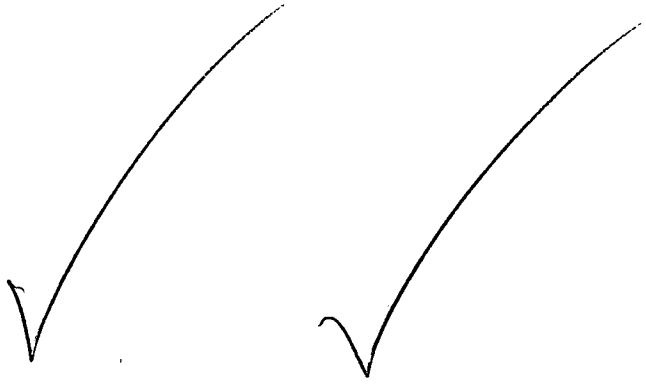
Now we have moved on still further to a quite new situation. The world's economies and the environmental resource base on which they rely are becoming intimately intertwined with the result that environmental imperatives are moving up the political agenda as factors that -- alongside economic trends -- will more than ever before determine political developments and the nature of international relationships.

The current situation can be defined in the following terms.

The Interdependence of the Environment and Economics. The interdependence is real and growing. It is the basic reason underlying many concepts and approaches that have long been on the environmental agenda and that are there because they make sense economically, including the polluter pays principle, energy efficiency, and removing barriers to labor-intensive industries in developing countries. They are on the agenda but, as a recent World Resources Institute report underlined, they have not been implemented because they all face political resistance of one kind or another from groups that would be disadvantaged if they were. n6

Moreover, we need to remember always that the overriding economic orientation of our societies -- whether in the developed or the developing countries -- is short term rather than long term. The result is that the long term tends not to count, and the short term is -- almost by definition -- shortsighted. Thus, economic appraisals and economic assessment frameworks tend to obscure the fact of long-term interdependence.

Furthermore, as already noted, central economic agencies or sectoral ministries are still not sufficiently aware of the fact of interdependence. The same problem also arises at the level of the world's financial institutions, which talk authoritatively of the need for structural adjustment (to get the economies of developing countries on an even keel, with stable exchange rates, inflation under control, etc., as a precondition for renewed economic growth) but with no recognition of the undoubted environmental dimension of structural adjustment packages. Yet, for example, the reduction of subsidies on agrochemicals or on irrigation water can be environmentally, as well as economically, beneficial, while other measures can be environmentally, as well as socially, harmful.



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The matter was put succinctly by one of the delegates at an EC-sponsored ministerial conference on future environmental management in the Mediterranean Basin, who said that, when environmentalists talk to ministers of finance or ministers of economic affairs, they simply do not understand what they are talking about.

Indeed, the evidence is that, despite what we know of global and other environmental and natural resource problems, most of our major economic decisions are still taken on a business-as-usual basis; on the basis of the world as we thought it used to be. This had to change, both at the governmental level through the institutional changes that Brundtland urged and in the private sector through the effective use of the marketplace and of economic instruments.

The Scale of Human Impact on the Environment. The facts quoted earlier clearly bring out the scale of the human impact on the environmental resource base. Yet our whole approach has for long been predicated upon the assumption that natural systems are robust and resilient and that, whatever we may do to them, they will cope and recover, essentially unchanged.

This assumption is quite plainly no longer true (if it ever was true) -- witness, for example, the ozone hole. The negative impacts of human activities on natural systems are now dramatic. Some of them may well be irreversible. All of those that are of concern at the global level are on a very large scale. Indeed, they are now of the same order of magnitude as activities within natural systems themselves. They are thus bound to have major consequences for those systems.

To take just one example: the IPCC report predicts dire consequences if urgent and radical action is not taken to reduce greenhouse gas emissions. On a business-as-usual basis, it forecasts a world warmer by 1 deg. C by 2025 and by 3 deg. C by 2100; steady sea-level rises reaching as much as a meter by 2100 (which would affect 360,000 km of coastline, render some island countries uninhabitable, displace tens of millions of people, threaten low-lying urban areas, flood productive land, contaminate much fresh water, and destroy many coastal wetlands); major changes in food production (including a decline in production in many vulnerable regions); a substantial reduction in biodiversity; the devastation of wildlife; and the spread of tropical diseases to currently temperate areas, thus putting large numbers of people at risk. Moreover, as already noted, the IPCC concludes that a 60 to 80 percent reduction in CO[2] emissions attributable to human activity is necessary to stabilize atmospheric concentrations at present levels.

Economic Demand and Environmental Supply: "Capital" and "Interest." Another way of presenting the implications of the vital but complex concept of sustainable development is to say that it implies development processes that do not run down environmental capital (Figure 3 illustrates the point). We must learn to live off the "interest" on the world's capital stock of renewable resources.

But economic development inevitably increases the demand on natural resources; so, too, does population growth. The danger is that their supply will drop below the expanding demand, thus leading to rapid environmental degradation. The only way of countering this danger is to promote measures designed to conserve supplies and to limit demands. But in many cases the downward spiral is already a reality. For example, the Food and Agriculture

Organization of the United Nations (FAO) has concluded that population

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pressure combined with environmental degradation in some countries has already reached the point at which they can no longer feed their present (let alone their future) populations.

Changes in our national accounting systems could help by showing up what is

happening. At present natural resources are not taken into account as an element of capita; they are "free goods." The result is that, as Peter Thacher of the World Resources Institute puts it:

Under current GNP [Gross National Product] or GDP [Gross Domestic Product] accounting, a country can exhaust its mineral resources, mine its aquifers, cut down its forests, erode its soils, pollute its waters and drive its wildlife and fisheries to extinction -- and its measured income rises steadily as these asserts disappear. Ultimately, of course, a price is paid for resource degradation but . . . the cost is sometimes never recognized . . . other costs from soil erosion, downstream flooding, interruption of nutrient cycling, extinction of species, greater air pollution, and numerous other "ecosystem services" will go uncounted -- though not unnoticed.

Irreversibility. That many of the global changes now under way may be irreversible is obvious. The loss of a species is irreversible. What is now at risk -- for example with present rates of loss of tropical forests (some 20 million hectares each year, an area approaching that of the United Kingdom) -- is the disappearance of whole ecosystems and with them millions of species whose potential value to main will never be known because they will be gone before anyone can discover and study them.

Global Challenges: Interdependence and Cooperation. The most daunting of the environmental and natural resource issues facing us, as we have seen, are global in scope and call for global solutions. This inevitably means that efforts to find solutions will be highly political; that the scale and diversity of the interests involved are such that the potential for conflict exists; and that any failures (or serious delays) in finding generally equitable solutions could pose security problems. In addressing such issues, however, we are all -- developed and developing countries -- in the same boat. We are faced with problems that we all help to create, from which we all suffer, and that call for solutions in which all -- rich and poor -- must play their part in commonly agreed actions.

It is also necessary to accept that large additional resources are going to have to be found. Those resources must be raised and used on an equitable basis (i.e., they must be raised, in the main, from those bearing the greatest responsibility for the problems and having the greatest wealth); their raising must reflect a proper pricing for natural resource use; and they should be used wherever they can most effectively address the global issues of concern.

We are not, of course, talking about a purely North-South issue. If one takes action to counter global warming and climate change as an example, it is clear that some of the resources raised to tackle it would have to be used in the United States; some in Europe, both East and West; much -- clearly -- in the developing world.

Although all countries must participate, all must contribute, and all will benefit, it is also necessary to recognize that we will be looking for actions and expenditures by third world countries on matters that do not feature among their own development priorities. Their cooperation is essential; yet it is

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not reasonable to expect them to distort their development priorities to help tackle problems that result in large measure (either directly or indirectly) from the actions and life-styles of developed countries. It surely follows that a large part of the costs of those remedial and adaptive measures that are necessary and are located in developing countries would need to be met from additional financial flows targeted specifically on those measures.

Environmental Refugees. In growing numbers, environmental refugees are a new feature of the world today that is disquieting and obviously raises political and security questions. A recent BBC television drama entitled "The March" presented the issue starkly: a new messiah had arisen in Ethiopia with the simple message: "We are starving, dying; no one cares; in Europe they are rich; we will go there and let them watch us die." The film told the story of what happened in Europe while several million people were on the way there and when they arrived.

Farfetched? Yet mass movements of people have occurred and have had profound political and security consequences. When hungry people have eaten the seed corn, no longer have adequate water or soil, have killed the last animals and cut down the last trees, when they are desperate and without hope, the evidence is that they walk. In such extreme circumstances nothing will stop them -- not laws, nor armies, nor promises -- some will get through.

When refugees reach other countries -- often themselves poor -- their needs for food and shelter immediately place an economic burden on their hosts and on the world community. If they are in large numbers they are almost bound to exert political influence and can pose security problems. In these ways environmental degradation in the Third World is a direct threat to security and to the comfortable life-styles of developed countries -- as well as confronting us all with profound moral challenges.

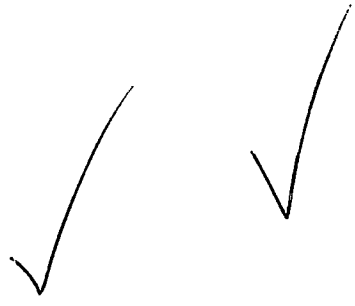
The only way to discourage such movements is to promote sustainable development, which takes care of soil and water resources, plants trees, and protects the environment, as well as creating economic possibilities for a decent life for people in their own countries.

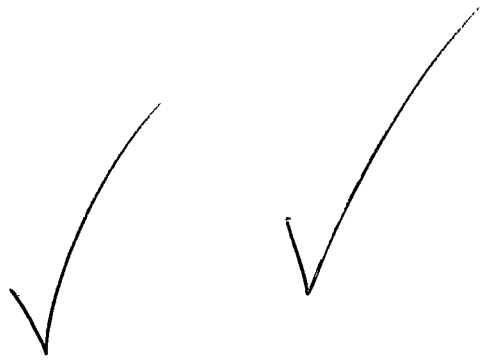
Interconnections of Global Issues. A final new factor in the situation that we face -- one that complicates everything else -- is the fact that most of the key global issues are connected with one another. Global warming and climate change are linked to energy policy and will seriously affect agriculture. So too will desertification, which can result from forest loss. Appropriate forestry policies in the tropics and elsewhere could provide part of the answer to global warming. Excessive population growth drives everything else.

The challenge is thus how to deal with all these interlocking issues (and others) at the same time. Human activities and their effects can no longer be dealt with in separate compartments. What we face, according to the Brundtland report, "are not separate crises: an environment crisis, a development crisis, an energy crisis. They are all one. . . . Ecology and economy are becoming ever more interwoven . . . into a seamless net of causes and effects" (pp. 4, 5).

What Can Be Done -- In the Long Term

In addressing these crises, the world community needs to undertake a very wide





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range of actions, on a very large scale and of great complexity, that will affect every nation on earth. They are actions that will pose challenges to life-styles; living standards; cultural mores; international and intergenerational equity; and moral values. They are actions that will involve both the mobilization and effective use of large financial resources and financial and technological transfers between nations.

For such actions to become feasible and to be effective we must seek a consensus embracing the whole of humanity as to what should be done, how, when, and where. No such consensus is possible without a common recognition of the seriousness of the situation; an acceptance that large extra financial resources are necessary if the world is to be switched from its present unsustainable path to the path of sustainable development; and a commitment to action.

At root, this is what the 1992 World Conference on Environmental and Development needs to be about. Other issues that it must also address if early practical progress is to be made include:

* overall planning of (and the priorities as between) the different actions needed;
* the use of targets;
* the use of economic instruments and market forces;
* mobilization of resources;
* means and mechanisms for their effective use;
* international conventions;

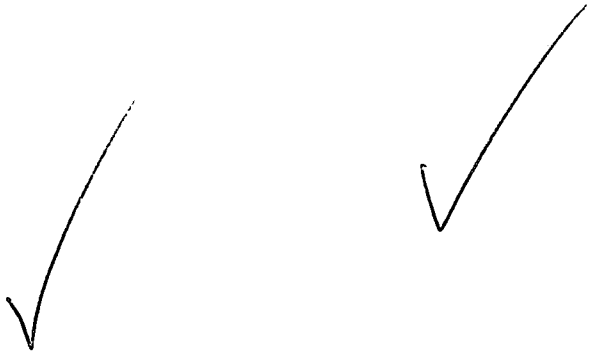
Further matters of importance that should be considered are:

* how to create new economic opportunities for developing countries; and
* leadership.

Planning and Priorities. With such a complex and interconnected agenda some overall guidance on the priorities for action will clearly be needed: What should be tackled first and where should most resources initially go? The issues of global warming and climate change and of biodiversity are high on the agenda. In addition, however, within any particular problem area, a wide range of actions is possible. The study of alternative options to determine priorities and to judge comparative costs and effectiveness is also essential; the European Community has commissioned a major study of this kind on the greenhouse effect.

Targets. In the past, we have tended to approach issues of environmental protection incrementally, seeking improvements, but without any very clear ideas as to our eventual goals. To adopt a preventive approach on a rational basis, however, demands a definition of what one is trying to prevent. That, in turn, implies setting targets in terms of the environmental quality that one is trying to achieve in the long term.

In fact the use of long-term environmental targets is more and more common. The Netherlands' overall environmental protection policy last year adopted this approach. So, too, earlier this year, did the Nicosia Charter on environmental management in the Mediterranean Basin, which defined the goal as a Mediterranean capable of supporting sustainable development (that is, free from major environmental problems) by 2025 and set up machinery to work out and finance the steps needed to get there. The chlorofluorocarbon (CFC) protocol to the Ozone Convention is heading in the same direction, with dates being set for the



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phaseout of CFCs, and it seems clear that important transfers of both technology and resources to developing countries will be involved. A similar mix -- long-term objectives for the reduction of CO[2] emissions, coupled with arrangements on technologies and resources -- seems likely to be necessary to moderate (it is too late to talk of avoiding) global warming and climate change.

Once targets have been set, the necessary intermediate steps can be worked out; so, too, can the most efficient and cost-effective means of achieving them.

Economic Instruments. As we have seen, many of the fiscal and pricing policies pursued by many countries (including most developed countries) are perverse so far as their environmental effects are concerned. The playing field is titled against the environment. To change this we should begin to use charges and taxes constructively to achieve our objectives regarding the environment and natural resources. In some cases such action may also serve economic ends.

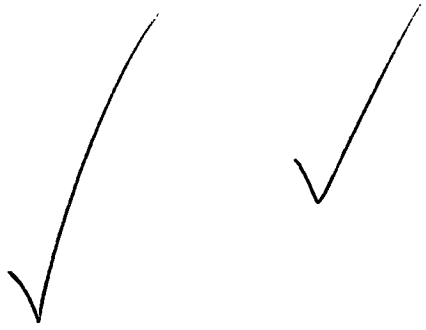
Tropical forest exploitation is one example. A World Resources Institute report has demonstrated clearly that, in many countries, destruction is much worse than it need be because the economic conditions are wrong. n7 There are unnecessary subsidies and tax holidays; the royalties and stumpage fees are inadequate; the length of the concessions is too short; and no conditions are imposed for replanting.

If these faults were corrected, there would be economic benefits (which could provide, in part at least, the resources needed to promote the sustainable management and exploitation of tropical forests) through a combination of rational economic conditions (adequate rent and laws, long-term agreements, and withdrawal of subsidies and tax concessions); the promotion of nondestructive forest-based industries; protection (and involvement) of the forest peoples; strict reserves; buffer zones; restoration, reforestation, and planting for fuelwood; the development of agroforestry; and plantations to meet much of the demand for tropical timber.

Another example relates to energy. The lessons learned from the oil price shocks in the 1970s have been forgotten. At that time there was a real commitment to improve efficiency and reduce dependence on imported oil, and between 1973 and 1985, the energy productivity of members of the Organization for Economic Cooperation and Development (OECD) increased by 1.3 percent a year, on average, with some doing appreciably better. Japan, in particular, substantially increased its GNP while reducing its oil imports: Japan is now more than twice as efficient as the United States in terms of production per unit of energy consumed.

This experience proves that high-cost fossil fuels can effectively promote energy conservation and efficiency. This surely must be one approach that should be adopted, particularly because it is clear that an energy future based on fossil fuel is unsustainable, and such a situation would make alternative energies more competitive.

Moreover it is arguable that it is necessary to go even further than this, and that the 1992 conference should make a serious commitment to a nonfossil, nonnuclear energy future as the only sane long-term strategy and to the means of getting there quickly. Nothing less than this seriously addresses the challenge of the Brundtland report to find a "safe and sustainable energy future."



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The above are simply some examples. In every sector of human activity comparable challenges arise as to how the appropriate use of economic instruments and market mechanisms could encourage (and/or generate resources to finance) management practices designed to maximize environmental as well as economic benefits that would be based on sustainable development; the true integration of environmental considerations into economic decision making; and the abandonment of narrowly conceived sectoral approaches. It should be one of the roles of international action -- and specifically of the 1992 conference --

to launch action, sector by sector, on these lines.

At the same time the conference should also address the question of the mobilization and management of the large financial resources needed. All countries can and should finance many of these actions from within their normally available resources. But large new programs will call for large new financial resources, especially to help the developing countries play their full part in global efforts.

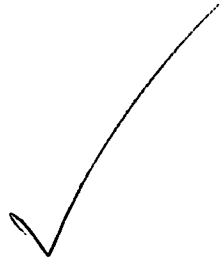
Priorities as to the use of these resources will obviously need to be settled at the international level. Appropriate institutions -- whether existing or new -- will be needed to manage them and also mechanisms to control their use. These, too, are matters on which one must look to the 1992 conference for decisions.

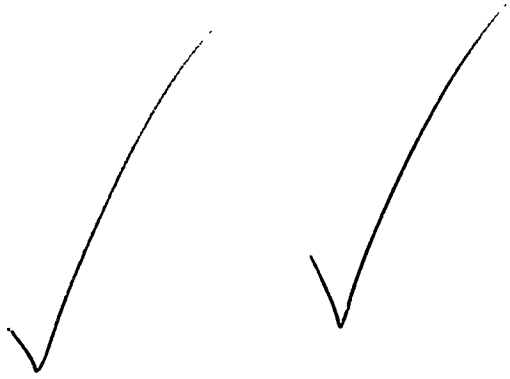
Figures of $ 50 billion annually (as the proceeds of a carbon tax) and of some few tens of billions (as the total cost of implementing the Tropical Forestry Action Plan) have been mentioned. These may seem large, but size is relative. They should perhaps be compared with the current annual subsidies of $ 60 billion to the polluting fossil fuel industries in the United States and Canada alone and to agricultural support expenditure in OECD countries -- $ 245 billion in 1989. The problem of launching and financing actions to promote sustainable development is a problem of political will, not of scarcity of resources.

International Conventions. In order to provide the framework for subsequent action, a number of new international conventions will be needed. Most discussed are conventions on climate change and on biodiversity, and the hope must be that the 1992 conference will be able to reach agreement on them.

But more is needed. A reinforcement of existing international mechanisms for dealing, in particular, with family planning and tropical forests is surely desirable too. Moreover, in the crucial energy sector, the world will not easily escape from its present predilection for business as usual and lurching from crisis to crisis (always relying on fossil fuels) unless a much more concerned international effort is mounted to develop energy futures that are sustainable in the long term. These too are, therefore, issues the 1992 conference should address.

New Opportunities for Developing Countries. If "a new era of growth in which developing countries play a large role and reap large benefits" is to be stimulated, special attention will need to be given to the questions of what new opportunities for developing countries can be generated, and how to ensure that they, rather than those countries that are already economically powerful, derive the main benefits.





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Opportunities for new economic activities that could create new markets and/or replace imports seem to exist in the following areas: biomass-based industries; the exploitation of biodiversity and genetic resources (e.g., in biotechnology); and renewable energy, especially solar and biomass.

If important developments in these areas could be stimulated, it should help to generate benefits for developing countries, launch at least some of them on the path of sustained and sustainable growth, and begin the process of liberating them from the constraints of debt and aid. But for these goals to be achieved, it will be very important that the relevant international conventions or arrangements are carefully drafted and strictly controlled with these ends in view.

Leadership. Although all countries are involved, the developed countries obviously bear special responsibilities for ensuring that appropriate action is taken to enable the world to launch itself on the path of sustainable development. In this context the World Economic Summit (the G-7) has perhaps a particular leadership role.

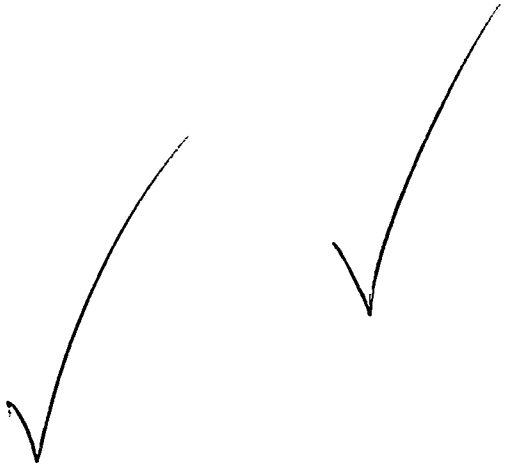
The summit has addressed environmental issues regularly over recent years. In 1985 they considered a report they had commissioned that stated:

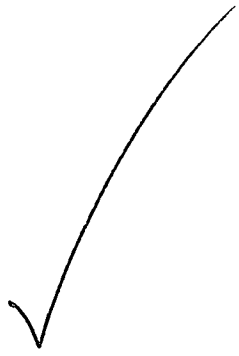
One reason why the environment is abused is that it is a commodity for which people have not had to pay and do not have to pay, either at all or very much, because there is no market for it. Thus environmental policy has to set high levels of environmental quality which will then give rise to high barriers -- particularly economic barriers -- for an abuse of environment. n8

In 1989, at the meeting known as the Sommet de l'Arche, the G-7 said that "decisive action is urgently needed to understand and protect the earth's ecological balance" and that "the persisting uncertainty on some of these issues should not unduly delay our action." n9 If the G-7 remain true to these perceptions, they could play an important leadership role before, during, and after the 1992 conference.

Given its economic strength, the European Community, too, could take a lead, and many hope that it will. As amended by the Single European Act, the Treaty of Rome already lays down certain environmental obligations, including the integration of environmental protection requirements into all the community's other policies and a requirement for strict standards in many cases. Intergovernmental conferences (which meet in late 1990 to consider both Economic and Monetary Union and Political Union) are also likely to discuss a strengthening of the treaty's provisions on environmental protection. If this were agreed, it could well make it possible for the EC to take more determined initiatives on global environmental issues.

Another source of potential leadership is the world's religious communities. As regards population, in addition to all the obvious actions to encourage a reduction in growth rates, religious leaders should be convinced that the protection of the environment raises profound moral issues that bring it within the realm of their religious responsibilities. In that context, if for no other reason, they should commit themselves to efforts to reduce the rate of population growth. This could be of especial importance in relation to the poor worldwide because, although many of them do not read and do not trust government, they do listen to their religious leaders.





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What Can Be Done -- At Once

What actions should be taken before the 1992 conference? We should not simply wait for agreements on global conventions before acting. Many actions could and should be launched now -- on a no-regrets basis -- actions that could be effective quickly; that could be economically as well as environmentally beneficial; and that could, in some cases, contribute to later, more radical actions on global problems.

The crucial determinants of the world's environmental problems are population and energy. If countries could find the political will to act much more strongly -- now -- in these two areas, they would in no way prejudice or prejudge their positions on longer-term actions to deal with global warming and climate change or any of the other global problems.

On the energy front everyone agrees that the promotion of energy conservation and efficiency makes sense. It makes sense anyhow -- whether or not there is global warming. It makes no sense that the United States uses more than twice as much energy per unit of production as Japan; if the United States could change that, the United States would gain. No country needs to ask any other country's agreement to launch efforts to promote energy efficiency. It could be done in many ways, among them taxes and taxbreaks, labeling, and the use of low-energy equipment. No question of transfers between nations need arise. Although everything would not happen tomorrow, this account could be launched at once.

Similarly with population growth. The world needs major new efforts on family planning. The government of any developing country could launch such an effort if it could find the will to do so, and donors would certainly be ready to help.

In general, therefore, the guideline for action in the run-up to the 1992 conference should be to go ahead as rapidly as possible with environmental protection actions that make sense in any circumstances. Among these (and in addition to those mentioned above on energy and population), the following are fields in which countries can and should begin to act:

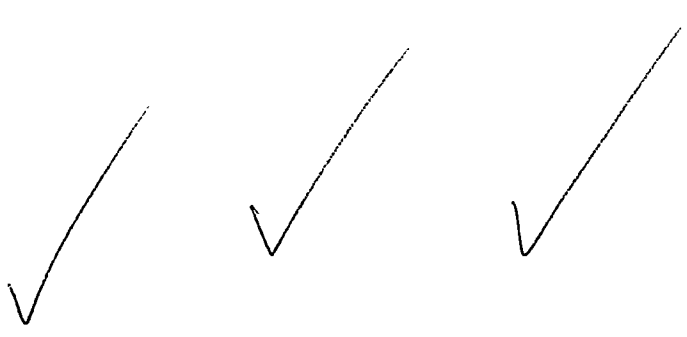
* institutional changes, as recommended by Brundtland;
* the proper pricing of environmental resources and the use of economic instruments to achieve this and to steer the marketplace in environmentally desirable directions;
* changes in the economic conditions for tropical forest exploitation and for the trade in tropical timber; and

* tree planting.

All these actions would be useful in their own right and also at first steps toward tackling global problems. and they would begin to prepare people for the much more radical changes that it may be hoped will follow the 1992 conference.

Conclusion

The scale, interaction, urgency, complexity, and vital nature of the environmental and natural resource problems faced by the world are such that they pose major economic, political, and security, as well as environmental



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challenges. Some of them have no obvious solutions. Attempts to resolve them must be at the international (or even global) level. They are among the most important issues that must be tackled by the world community in the 1990s.

Current policies and approaches are unsustainable. Business as usual is no longer a viable option. Major changes throughout all our societies are needed to set the world on the path to a sustainable future.

There is no time to lose. Much turns on the success of the 1992 World Conference on Environment and Development in reaching agreement on specific steps and approaches. But not everything can be settled at the conference, and full implementation of whatever is agreed will take time. Numerous actions that will contribute to long-term goals could -- and should -- be taken by individual nations or groups of nations without further delay.

Notes

n1. World Commission on Environment and Development, Our Common Future (New York: Oxford University Press, 1987).

2. Final Report of the Seventy-Seventh American Assembly (Columbia University), Preserving the Global Environment: The Challenge of Shared Leadership, Arden House, Harriman, N.Y., April 19-22, 1990, p. 1.

3. Statement following a World Climate Conference on "The Changing Atmosphere: Implications for Global Security," Toronto, Canada, June 27-30, 1988, p. 1.

4. Intergovernmental Panel on Climate Change (IPCC), Policymakers Summary of the Scientific Assessment of Climate Change, Report to IPCC from Working Group 1, Bracknell, U.K., June 1990, p. 13.

5. Our Common Future, p. 1.

6. Robert Repetto, Promoting Environmentally Sound Economic Progress: What the North Can Do (Washington, D.C.: World Resources Institute, April 1990), p. 21.

7. Robert Repetto and Malcolm Gillis, eds., Public Policies and the Misuse of Forest Resources (Cambridge: Cambridge University Press, 1988).

8. Report to the World Economic Summit of the Transport, Growth, and Employment Working Group, Cmnd. 9500 (London: HMSO, 1985).

9. James M. Markham, "Paris Group Urges 'Decisive Action' for Environment," New York Times, July 17, 1989.

GRAPHIC: Picture, no caption, Teresa Fasolino; Figure 3, Supply and Demand, In many developing economies, the increasing demand for natural resources eventually outstrips a decreasing supply, and the ensuing scramble for resources sets in motion a downward spiral of resource degradation. Achieving sustainable development means creating an "incentive framework" for individual users of resources that conserves supplies of resources and controls the demand, so that demand can continue to be satisfied in the future. Source: Environmental Resources Ltd., London, U.K.