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OA/ID Number: 2897
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Folder Title:
Carbon Dioxide Reduction Targets

Stack:	Row:	Section:	Shelf:	Position:
S	61	6	3	1

file - CO₂ reduction

4-7-91

EEST Climate & Energy - Industrial Countries.

Netherlands

adaptation & defence
CR's - complete by '95 or '96

Bert Metz

EC commitment to do by '97.

don't wait on C₉₅ - see if others less certain
- get back to 1989/90 levels (45% below) in

the yr. 2000 (at these levels by '95)

how achieve → 3/4 energy & fuel sector

15% transport - eff

10% waste mgmt. & energy

by yr. 2000 → 25-30% below what would have been

multisectoral approach. & bldg codes - require insulation
& industrial & large sec - eff. vtd.

subsidize home insul. off borders. some
compact fluorescent bulbs (by
2000 have 4 in ea home).

Supply & cogeneration
natural gas
use energy
district heating.

* rely on Taxes & on gasoline
have a modest C-tax - debate now
to substantially raise → raise energy
prices

ea. sector has been given a target - & ag. → expect 30%
eff improve by 2000.

industry expect 15%
trans " 20%

Costs of these measures

< 100/ton C prevented can achieve.

(same order of mag. of NAB study).

microecon studies - 10-20 yrs - some effect → some
work slightly ⊕; some slightly ⊖ -- but is MARGINAL

GERMANY
Helmut Lueders

~~State~~ commitment - June '90 / Nov '98 -
Cabinet comm - $\downarrow$ CO₂ by 25% by 2005
from 1987 levels.
→ only country from Fed Rep.

^{13.7?}
30.7 tons current per capita
11.7 tons for West.
22.4 tons for East

300 million tons -- need to $\downarrow$
long-distance hwy needs to be expanded

Energy Mgmt Act. - en't will be key

- renewable energy.
- use waste heat
- transport → $\downarrow$ fuel consumption → voluntary agreement auto makers.

Carb in 2000 are to consume 30% less energy
introd an EC res. on cars.

tax system will be sed → not yet decided
only taxed res. whose vol.
→ according to CO₂ emissions

? = what done here?

- $\uparrow$ rail

- fossil fuels -- incorp externalities
- CO₂ tax being discussed.

* - strong internal resistance to new W.C. plants
 $\uparrow$ want to just maintain today level
 $\uparrow$ safety

$\downarrow$ fossil fuel } 40% by 2005
 20% $\uparrow$ n.g. 9, 6 in 01

Switzerland
Martin Biedli

oil bunkers - more eff - get rebate from gov't

moratorium on N.Yes.

transportation - forests are dying -- need to reduce (narrow valleys - hwy problem)

CO₂ tax being debated -- U. G. Kelly will pass this fall.

only allow 25 ton trucks -- roads $\downarrow$ difficult to build → Suisse

wants to join EC (along w/ other EFTA) but EC require 40 ton trucks but Swiss oppose.

Rail Zoo -- make a 2nd tunnel thro Alps.
subsidize trans - big zone in mountain areas

public trans. = big issue in many cities.

* Don't currently have an auto industry - Thanks of electric
- V. Small →

think only for cities - otherwise RAIL (make rail
able to hold the small cars, too)

* investment in E. Europe. health care unit. (180 mill) now are 350 mill.

Australide

Noel Campbell

Oct '90 - target $\rightarrow$ stab. all ghg (+ Mont) by 2000 at 1988 levels
 $\rightarrow$ $\downarrow$ all emissions by 20% by Yr 2005.

are planning out but
in 97 are not
are not
credit

- taking care → econ/trade → require similar action from other countries
- also is a plan → already adjusted
- includes All gbg

Australia is the largest coal exporter
30% of world's lowest URANIUM reserves
Among world's largest M.G.
20% of all receipts

20% of energy reqs. is fossil ??
transport is largest chance then
industry

percentage - one of highest +
breast - only produce 1% of global
tanning?

What measures taking?

- Natl. Gr. Response Strategy. = info to consumers.
energy audits
demos of eff tech in govt bldgs
even ~~not~~ across centers

32 what kind of incentives??

total fleet eff. cars; otherwise just info on eff cars.

Australia pos'n re: tdt in INC - [YES]

- must be comprehensive

- Developing countries must be included.

- flex deal w/ 5th 5's.

USSR
China
Germany

5th largest emitter.

but on per cap. basis -- one of lowest.

Action Program -- Oct 23, 1990.

from 1990-2010 - 20 y/r plan

targets for $\frac{5 \text{ CO}_2}{2 \text{ gases}}$

CO₂ → stab. on pc on zero^{base} at 1989.

~~5th~~ stab. total on zero & beyond at 1990

[Ghg's]

N₂O - levels shld not ↑
& other ghg

[Arests]

- ↑. (intl, too).

Long term 24. energy plan decided Oct 30, 1990.

target / 3% by 2000 } geothermal - 0.3% by 2000 / 0.9% by 2010.
5.3% by 2010 } hydrogen
steam
wind "new energy"

8.9% current (1989)

13.3% by 2000

16.9% by 2010

} Nuclear

1, 2 how many plants?

⇒ 14.8% by 2000
26.2% by 2010
26.8% by 2010

[1989]

position for INC

feasible measure timely measures.

long-term

flexible

global consensus.

HR 2082

6.7.91

Jana Vickers → Defenders of Wildlife → biodiversity

national voluntary

regulate map (from habitat) overlay other info → find v. rich areas

1 mill in T & W Corp. Research Unit

whether
be in 31
states

1 need 3 mill more → ④ to really get going.

get km data in for fish
Fish & Wildlife Service

→ At the Nature Conservancy

Truvelucci - LBL ~~is~~ agrees at O.R. understanding
that SBORDP ~~it~~ goes to

CE Complex 21 → exactly here in plant → this
is what will use it for.

Global, Cleanup, Energy eff. (Defense transfer
its technology)

but SBORDP is a lot to offer
[this.

→ this will be in SBORDP; ORNB will have
a piece.

Volley Gault - 3 defense labs to join proposals.
→ 33% to each one.

→ proposals had all 3 components
Are they decided.

Mdy. reps of 3 defense labs & DSB Conventions,
DOD - concern in there we are paying off
til we are long
OK PNL Sandia } conservat.
will have
piece
(a - budget)?

Global net's

~ developed 1st by Lawrence Livermore

Ari Patrino - develop from HQ -- this
will be.

didn't want to do anything w/ global conventions

see mortgage -- 1 yr then think
gone? ^{at 100%} they need to take more security.
~~ARM~~

Ari -- ARM & CHAMP -- already

don't cl & don't 1 yr. to help these
institutions

errors on satellite development ^{100% done by}
even if funding didn't continue after 1
yr -- still benefit. ^{little chance of other}

Ari's 3rd
suggestion

biospheric modelling.

L.L. = subject of BIOS & labs in climate
model

O.R. = " " " " " "

biosphere.

Ari has shared 10% → biosphere model will be
moved higher in the proposal he
submits.

ARM - data Repository

need a minisupercomputer.

*? : ask SCROP for the computer.

Ari -- this is a good idea.

ORNL recently selected as a data mgmt center

hydrogen → O.R. is the
temperature → atmospheric
Oxygen??

→ ask for getting \$

5.5 terabyte of storage for ARM
for EOS need big storage but also needs to be
fast.

ORNL as one of the (3) project → part of
CHAMP.

→ old upgrade the ARM computer to get
requested speed, too.

advance computing speed CPU / RAM - upgrade code
& parallelizing

NCAR, Argonne, Argonne & O.R. working w/ them on
CHAMP but Livermore is not

* But O.R. is a major player - contribute
hydrogen has a massively parallel (Intel)

PNL is ARM leader

but O.R. looking to get the ~~piece~~ for data mgmt
piece.

if get this - - much better located for
EOS-DIS

* O.R. wld share for hydrologic data from

EOS

font use patterns, deflection, etc.

EOS - 4.5 yrs. ago RFP → OR NOT allowed to

Shelby Telford / Dixon Butler → made this decision
for NASA ~ old pattern of RFP type.
to universities - easier than NOO's of
agencies

but no problem w/ them asking ORNL!!



ENVIRONMENTAL AND ENERGY STUDY INSTITUTE

NOTICE

KEN MURPHY, EXECUTIVE DIRECTOR ■ 122 G STREET, N.W., SUITE 700, WASHINGTON, D.C. 20001 ■ (202) 628-1400

INDUSTRIAL COUNTRIES' RESPONSES

TO GLOBAL CLIMATE CHANGE

June 7, 1991
10:00 a.m., 138 Dirksen

You are invited to a briefing on actions by members of the Organization for Economic Cooperation and Development (OECD) on carbon dioxide (CO₂) emissions and other climate-related issues.

Panelists will be Gilbert Dubois of the Delegation of the Commission of the European Communities and four embassy attachés: Yasuhiro Shimizu of Japan, Bert Metz of the Netherlands, Martin Buechli of Switzerland and Noel Campbell of Australia. A representative from the Embassy of the Federal Republic of Germany also has been invited. Their presentations will focus on their governments' commitments on greenhouse gas emissions and other climate-related issues, the rationale behind those commitments and the implementation strategies planned or underway.

Twenty-one of the twenty-three members of the OECD have agreed to commitments on CO₂ emissions. Germany has made the strongest commitment to date: a 25-30 percent reduction in CO₂ emissions from 1987 levels by the year 2005, including a 25 percent reduction in former West Germany. Other countries have made commitments ranging from a 20 percent reduction in CO₂ emissions by 2005, to a stabilization of total or per capita CO₂ emissions at current levels by the turn of the century. As yet the United States and Turkey have made no commitments either to stabilize or to reduce CO₂ emissions.

Under the auspices of the United Nations General Assembly, negotiations on an international climate change convention began this February in Chantilly, Va. The second negotiating session will take place June 19-28 in Geneva, Switzerland. Delegates will be working over the next year to complete the convention in time for signing by heads of state at the June 1992 United Nations

(over)

Conference on Environment and Development (UNCED) in Brazil. Developed and developing countries alike are closely monitoring unilateral actions on CO₂ emissions as an indicator of the positions governments will be taking in the debate on a multilateral treaty.

This briefing is sponsored by the Environmental and Energy Study Institute. For more information, contact Karen Schmidt at (202) 628-1400.

KAREN SCHMIDT
Program Assistant for Climate Change
Environmental and Energy Study Institute

122 C Street, N.W.
Suite 700
Washington, D.C. 20001

(202) 628-1400
Fax (202) 628-1825



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June 7, 1991

INDUSTRIAL COUNTRIES' RESPONSES TO GLOBAL CLIMATE CHANGE

I. Introduction

Under the auspices of the United Nations General Assembly, negotiations on an international climate change convention began this February in Chantilly, Virginia. The second negotiating session will take place June 19-28 in Geneva, Switzerland. Delegates will be working over the next year to complete a framework convention in time for signing by heads of state at the June 1992 United Nations Conference on Environment and Development (UNCED) in Brazil. Developed and developing countries alike are closely monitoring unilateral actions on climate policy as indicators of the positions governments will be taking in the debate on a multilateral treaty.

This paper summarizes actions as of May 1991 by the members of the Organization for Economic Cooperation and Development (OECD) and by the European Community (EC) to address the issue of global climate change. The main focus is on national commitments and policy measures related to anthropogenic emissions of carbon dioxide (CO₂), one of the most important "greenhouse gases" that trap heat in the earth's atmosphere.

Other greenhouse gases include chlorofluorocarbons (CFCs), methane and nitrous oxide. All members of the OECD except Turkey are parties to the Montreal Protocol on Substances That Deplete the Ozone Layer, as amended in June 1990 in London, requiring the complete phase-out of CFC production and use by the year 2000. Where countries have adopted targets for CFC phase-out earlier than the year 2000, that fact is noted. Some information on commitments to stabilize or reduce emissions of other greenhouse gases or to increase carbon sinks (e.g., forests) is also included.

The information presented here was obtained from a variety of primary and secondary sources. Insofar as possible, efforts have been made to ensure that the information is accurate and up-to-date by consulting both official government documents and appropriate country representatives. Some countries have quite detailed implementation strategies underway which are only briefly summarized in this paper. For more specific information on climate policy actions planned or undertaken by governments, please contact Carol Werner or Karen Schmidt at the Environmental and Energy Study Institute, (202) 628-1400.

II. Country Commitments

Australia

In October 1990, the Australian government adopted an "interim planning goal" of stabilizing emissions of non-CFC greenhouse gases at 1988 levels by the year 2000, and reducing those emissions 20 percent by the year 2005. All Australian states and territories, which have authority over many energy-related areas, have approved the federal government's targets. Existing policy requires Australia to phase out CFCs by 1997.

Australia will not proceed with the adoption of response measures which have "net adverse economic impacts nationally or on Australia's trade competitiveness" in the absence of similar action by other major greenhouse gas producing countries. The interim planning target will be kept under review by the federal cabinet, with the first review by October 1991.

Two weeks after the planning target was announced, the Minister for Primary Industries and Energy and the Minister for Resources jointly announced a new package of initiatives to improve energy efficiency and reduce greenhouse gas emissions. These are expected to achieve more than 1 billion Australian dollars (approximately US\$730 million) in annual energy savings by the year 2005 and to reduce annual CO₂ emissions by about 14 million metric tons. Specific measures in the package include:

- An information kit on energy efficiency to be delivered to every household in the country.
- A new energy auditing program and technology demonstrations for businesses and industries.
- Demonstrations of energy efficient technologies in commercial buildings, using government buildings as models.
- Development of energy efficiency codes for new residential and commercial buildings.
- Extending advisory services on motor vehicle fuel efficiency to the commercial fleet market.
- Improving energy management within the government.

A government working group on an Ecologically Sustainable Development Strategy is to report on the most cost-effective combination of measures to stabilize and reduce greenhouse gas emissions, and a joint ministerial report will recommend implementation measures based on the working group's report. The Industry Commission of Australia is preparing a report on the costs and benefits for Australian industry of an international agreement to reduce greenhouse gas emissions 20 percent by the year 2005, and measures to prepare the country to respond to those costs and benefits.

Australia has massive deposits of coal and uranium. It is a net exporter of energy and the world's largest coal exporter. It is also more than 70 percent self-sufficient in liquid fuels and its natural gas reserves are among the largest in the world. Fossil fuels account for about 96 percent of Australia's internal energy requirements. Energy accounts for about 20 percent of Australia's export income, and is a significant source of federal, state and territorial revenues.

Austria

In June 1990 the Austrian Council of Ministers adopted an energy report including a target of reducing CO₂ emissions 20 percent from the 1988 level by the year 2000. The report has been forwarded to the parliament, which has not yet approved it. Austria plans to phase out CFCs completely by 1995.

The energy report bases Austria's energy policy on energy conservation and a shift from fossil fuels to renewable energy sources. A 15-20 percent energy saving potential has been identified and is being evaluated. The energy conservation program in the 1990 energy report emphasizes market-oriented approaches and information. Measures being planned to promote energy efficiency and reduce CO₂ emissions include:

- An energy tax.
- Optimization of the electricity supply sector including new, cost-oriented tariff structures.
- Promotion of new energy efficiency and renewable energy technologies through an exchange of research results among utilities.
- Reorganization of the Energy Conservation Agency to act as a research and information clearinghouse.
- A change in the tax system for motor vehicles, including a vehicle registration tax linked to fuel efficiency, and reduction in greenhouse gas emissions from motor vehicles.

Austria derives about 70 percent of its electricity output from indigenous hydropower. Oil and gas are mainly imported and provide 43 and 20 percent respectively of Austria's energy supply. A referendum in 1978 effectively halted the country's nuclear program.

Belgium

In its recently adopted national energy plan (MINA), the Belgian government approved a target of reducing CO₂ emissions 5 percent from the 1990 level by the year 2000.

The strategy to achieve this goal will include an energy pricing policy that takes into account environmental concerns, improved energy efficiency, expansion of combined heat and power production (cogeneration) and district heating systems, continued nuclear power production, continued research and development, and a major tree-planting effort.

Belgium relies on nuclear energy for approximately 60 percent of its electricity generation. The development of nuclear energy has greatly contributed to the reduction of Belgium's CO₂ emissions. The Belgian association of electricity and gas producers feels that CO₂ emissions are likely to increase and counteract some gains from efficiency because no new nuclear energy plants will begin operating for at least several years.

In 1989 responsibility for implementing environmental regulations was transferred from the central government to regional governments, complicating Belgium's environmental and energy policymaking. Efforts are underway to improve coordination among the central and regional governments and among the various authorities responsible for environmental and energy policies.

Canada

Canada's Green Plan, released in December 1990, reiterates the goal set by the federal cabinet in June 1990 to stabilize national emissions of all non-CFC greenhouse gases at 1990 levels by the year 2000. The immediate emphasis of the "National Action Strategy on Global Warming" will be on energy efficiency. Longer-term strategies will include promotion of alternative energy, tree planting, assessment of policy changes that might be needed to deal with the impacts of climate change, research and education.

Specific measures being planned include:

- Energy labelling, new or updated energy efficiency standards for appliances and buildings and development and commercialization of technologies for energy efficient buildings.
- Increased fuel efficiency targets for new vehicles, assistance to provinces and municipalities in developing strategies for reducing CO₂ and other emissions from the transport sector and educational packages for fleet managers and drivers.
- Cooperation with industry to establish energy efficiency targets for each of Canada's industrial sectors, to train and certify energy efficiency managers and to develop energy efficient technologies specific to each industry sector.

- Federal support for accelerated research, development, demonstration and commercialization of alternative transportation fuels (including biofuels and hydrogen), renewable energy supplies (including solar energy, landfill gas recovery and fuel cells), and advanced energy systems (e.g., combined cycle generation, cogeneration, district heating).
- An annual report to parliament on progress in meeting energy efficiency objectives, annual reports on the state of the Canadian climate, adoption by 1994 of guidelines to ensure that the potential impacts of climate change are considered in major federal projects, and a major public information campaign.
- A community tree-planting program.

The Canadian government has allocated 575 million Canadian dollars (approximately US\$500 million) to the Green Plan's global environmental security program, which includes measures to address ozone-layer depletion and acid precipitation in addition to global warming. The government estimates that additional measures and financial resources at the provincial and territorial level will be needed to enable Canada to reach its greenhouse gas stabilization target.

Canada is a net exporter of all major energy commodities, selling about 38 percent of its energy production abroad. It is the world's leading producer and exporter of uranium. Energy supplies and demand vary greatly from province to province, and provincial governments have extensive ownership rights and legislative authority in the area of energy resources and environmental policy. The development and implementation of national and regional action plans to deal with potential climate change will require cooperation at all levels of government.

Canada currently has the most energy-intensive economy (highest ratio of energy use per unit of gross domestic product) among the major energy users in the world, as a result of climatic conditions, geographic size, standard of living and a plentiful and competitively priced energy supply.

Denmark

The Danish government agreed in May 1990 to two action plans, one on energy and the other on transport, aimed at reducing emissions of CO₂ and other pollutants. The government's target of reducing CO₂ emissions 20 percent from the 1988 level by the year 2005 was formally agreed to by the Danish parliament in May 1990.

The government estimates that measures in the energy action plan can achieve the following reductions by the year 2005, as

compared with 1988 levels: almost 15 percent of gross energy consumption, 30 percent of energy sector CO₂ emissions, around 60 percent of SO₂ emissions and 50 percent of NO_x emissions.

The transport action plan aims to stabilize energy consumption and CO₂ emissions in the transport sector before the year 2005 and reduce both by 25 percent before 2030. The plan also aims to reduce nitrous oxide and hydrocarbon emissions at least 40 percent before the year 2000, with further reductions thereafter. The government estimates, however, that transport sector energy consumption and CO₂ emissions both will be reduced by more than 5 percent by the year 2005, compared with 1988 levels.

The energy action plan is a comprehensive program with specific measures to be implemented in four main areas: energy efficiency and conservation, changes and improvements in efficiency in energy supply, increased utilization of more environmentally benign energy sources, and research and development.

Specific measures being planned include:

- Changes in energy taxation to reflect long-term energy and environmental goals.
- Revised and/or new standards for appliances, buildings and energy installations, energy labelling, energy management in buildings, energy efficiency financing arrangements and energy consultancy arrangements.
- Promotion of combined heat and power production (cogeneration) in conjunction with district heating, expansion of industrial cogeneration, connection of block heating centrals to the natural gas and district heat supply systems, use of natural gas in central power plants and demonstration projects for coal gasification and fuel cells.
- Increased development and use of natural gas and renewable energy sources, particularly wind energy, solar energy and biomass energy from straw and wood chips. (Denmark leads the field in development of wind turbine technology, and aims to establish an additional 100 megawatts of wind energy capacity by January 1, 1994.)
- Collaboration with the business sector to promote trade and export of energy efficiency and renewable energy technologies.

Although the industry association and some unions have expressed concerns about the risks for competitiveness and employment, the Danish government estimates that the energy action plan will not place additional cost burdens on the society. Additional investments in the energy sector of 29.5

billion kroner. (about US\$4.2 billion) up to the year 2005 are expected to be compensated by a decrease in fuel costs of approximately 22 billion kroner (about US\$3.1 billion) along with lower operation and maintenance costs.

Measures considered in the transport action plan include:

- Introduction of international standards on pollutant emissions.
- Use of economic means to promote the development and use of energy efficient and environmentally friendly transportation alternatives, including a high level of fees in the transport sector harmonized with those in other EC countries.
- Campaigns directed at the trucking industry to maximize its efficiency.
- Campaigns to improve driving practices of individuals and incorporation of such practices into driver licensing procedures.
- Investment and research assistance to promote cleaner and more efficient buses and bus operating systems.
- Promotion of the use of railways for freight transport and strengthening of international railway cooperation.
- Introduction of more stringent international standards for airplane pollution and fuel consumption.

In order to reduce the country's high reliance on imported oil, Denmark has pursued an active energy policy since the 1970s, emphasizing energy efficiency and conservation, the use of coal for electricity generation, and the development of indigenous natural gas, oil, and renewable energy sources. The Danish government supports a substantial and comprehensive non-nuclear energy research and development program.

European Community

The European Community (EC) agreed in October 1990 to a target of stabilization of total CO₂ emissions at the 1990 level by the year 2000 in the Community as a whole. The EC Council of Ministers is considering policy options to implement this target. A strategy of emissions reductions in some countries and stabilization in others may enable the European Community to achieve its stabilization target even if the less industrialized EC members (Spain, Portugal, Greece and Ireland) experience limited growth in CO₂ emissions.

In addition to energy efficiency standards, cost-effective public transport systems, and promotion of efficient, non-CO₂ emitting technologies and energy supplies, the European Community is considering an EC-wide carbon tax equivalent to about a US\$10 per barrel increase in the price of crude oil. A CO₂ tax might

be coupled with another type of energy tax. An EC CO₂ strategy is expected to be adopted before the end of this year, pending agreement on the issues of burden sharing and taxes.

The European Community also has made a commitment to phase out CFCs by 1997. Some member states plan to phase out CFCs even sooner.

Finland

As a member of the Nordic Council (along with Denmark, Iceland, Norway and Sweden), Finland has agreed to a formal target "to freeze CO₂ emissions and start reductions before the year 2000." However, since no base year has been established, the practical value of this agreement is limited. Finland is also a member of the European Free Trade Association (EFTA), the members of which (Austria, Finland, Iceland, Norway, Sweden and Switzerland) have agreed in principle to the EC target of stabilizing CO₂ emissions. The Finnish government has not set or proposed its own official emissions targets, but is considering them.

In addition to taxes on transportation fuels, Finland has a tax on the carbon content of non-transport fuels of about US\$6.00 per tonne (metric ton), which was increased this year by 5 percent to about US\$6.25. In October 1990 a government commission on CO₂ reduction policies was established consisting of representatives of the environmental and industry departments. The commission will develop CO₂ reduction measures and a timetable for introducing such measures. The report of the commission is expected by July 1991.

Almost 60 percent of the total energy consumed in Finland is derived from coal and oil, and about 15 percent comes from nuclear energy. The present government has decided not to build additional nuclear plants, at least in the near future. Finland expects to experience large effects from climate change, including significant temperature increases in the winter, which will be felt most strongly in the forestry and winter tourism sectors.

France

In September 1990 the French cabinet set a target of stabilization of CO₂ emissions at 2.0 tonnes per capita by the year 2000. The per capita stabilization target will allow France to increase its emissions up to 25 percent from the 1988 level by the year 2000.

The current level of CO₂ emissions in France is 1.8 tonnes per capita. France is encouraging the European Community as a whole to stabilize CO₂ emissions at 2.3 tonnes per capita by the year 2000 and to reduce them to 1.8 tonnes per capita by the year 2005.

France plans to achieve stabilization of emissions through improved energy efficiency and continued reliance on nuclear energy for electricity generation. Following a bilateral meeting between France and Germany on May 30, 1991, the French and German ministers of environment jointly announced that they favor taxing CO₂ emissions as an economically effective means of achieving CO₂ reductions. They also said that they support a common approach on gasoline taxes in EC countries and other measures to encourage reducing motor vehicle fuel consumption.

As of January 1991, France had 56 nuclear power plants in operation, accounting for almost 75 percent of total electricity generation. Five more plants are under construction and are expected to be on-line before the end of the decade.

Germany

In June 1990 the cabinet of the Federal Republic of Germany took the decision to aim for a 25 percent reduction in CO₂ emissions from the 1987 level by the year 2005. In November 1990 the cabinet agreed to a national CO₂ reduction program including this target, and noted that a considerably higher percentage of CO₂ reduction is expected to be achieved in what was formerly East Germany. An overall reduction of 25-30 percent from 1987 levels is expected for the united Germany.

The government has committed itself to a comprehensive strategy to reduce CO₂ emissions, to be implemented on a step-by-step basis. Specific measures being prepared or considered by the federal cabinet include:

- Use of economic instruments such as a CO₂ charge or a climate protection tax, permits and compensation mechanisms.
- Improved insulation and heating technology efficiency in existing buildings and increased energy efficiency standards for new buildings.
- Expansion and increased efficiency of combined heat and power production (cogeneration) and district heating.
- Installation of combined cycle power plants.
- Substitution of the vehicle tax related to engine cubic capacity with a tax related to emission of pollutants, including CO₂. It is expected that, as a result of technical improvements, vehicles in the year 2005 will

on average use 30 percent less energy than comparable 1987 vehicles.

- Improved and expanded environmentally friendly transport systems and expanded rail service for passengers and freight.
- Increased exploitation of renewable and "waste" energies.
- Increased recycling and solid waste minimization.

An estimated US\$160 billion in investments will be necessary to implement all options specified by the year 2005; this cost is expected to be balanced to a large extent by savings from reduced energy needs.

Germany relies heavily on fossil fuels, especially coal and lignite, for its energy supplies. The Germans anticipate that the use of coal will be reduced by 40 percent and the use of oil by 37 percent by the year 2005, while the use of natural gas will increase 20 percent. No increase in the use of nuclear energy is foreseen. Approximately 10 billion deutsche marks (about US\$5.7 billion) per year is spent on West German hard coal subsidies; reduction of those and other coal subsidies is currently the subject of major debate in unified Germany. In a letter to a German electricity utilities association, the EC Commission has called for the volume of subsidized German coal to be cut from 40.9 million tonnes in 1990 to 35.6 million tonnes by 1993.

Greece

Greece has not made any commitments on national CO₂ emissions, but has agreed to the European Community target of CO₂ stabilization.

Environmental protection has become a top priority in Greece as a result of significant urban air pollution problems. In February 1990 a comprehensive environmental protection plan was finalized for the Athens area, with a 4-year budget of 400 billion drachmae (approximately US\$1.9 billion). The plan outlines over 50 measures, including car parking and traffic policies. However, implementation of the plan apparently has been delayed because of political instability.

Lignite, Greece's major indigenous fossil energy source, fueled about 77 percent of its electricity generation in 1989. Greece's Public Power Corporation has shown strong interest in the development of renewable energy sources, particularly wind and geothermal energy in the Greek islands.

Iceland

In November 1990 the Icelandic government announced a proposed goal to stabilize "greenhouse gases" at 1990 levels by the year 2000. Specific measures for achieving this goal are to be presented to the parliament in 1991. Measures being examined include energy efficiency, development of renewable energy sources and reforestation.

Iceland has vast energy resources. The country relies mainly on hydropower and geothermal power for electricity generation and heating. Imported oil is used in the transport sector, which is its most important source of CO₂ emissions. Although Iceland is not highly industrialized, the country consumes considerable amounts of energy, mostly for heating, electricity generation and transport.

Ireland

The Irish government has not set a target for CO₂ emissions, but has agreed to the European Community target of CO₂ stabilization.

In January 1990 the government announced a new, comprehensive national environmental action program. Many of the policies set forth in the program to reduce conventional pollutants will have the effect of slowing the rise in CO₂ emissions. The program stresses the importance of energy conservation and provides an additional 500,000 Irish pounds (about US\$770,000) for improving energy efficiency, recycling municipal solid waste, demonstration projects, information campaigns and other measures. The Department of Environment is working with other departments to develop specific measures to contribute to international efforts on climate policy and to move Ireland in the direction of sustainable development.

Ireland must import all of its oil; the main indigenous energy sources are peat and natural gas. Use of natural gas is likely to increase as new offshore deposits are found and developed and construction is completed on an underwater pipeline to connect Ireland with the United Kingdom's natural gas system. There is also long-term potential for large-scale exploitation of renewable energy sources such as wind and wave energy.

Italy

In May 1990 Italy's Environment Minister announced Italy's intent to stabilize CO₂ emissions at the current level by the year 2000 and to reduce them 20 percent by the year 2005. Italy also plans to phase out CFC production by 1997 and achieve net

forest growth by 1995. The government is analyzing possible measures to achieve the CO₂ goals, including taxes and increased use of natural gas and renewable energy sources.

In December 1990 the Italian Senate approved legislation enabling implementation of a revised National Energy Plan (PEN), which was endorsed by the Council of Ministers in November 1990. The plan provides for short-term and medium-term measures to affect energy consumption. Specific measures include:

- A public awareness campaign on rational energy use.
- Changes in pricing formulas to adjust cost increases as promptly as possible; offsetting price decreases with higher energy taxes; introduction of time-of-use tariffs in the household sector; and more favorable rates and conditions for electricity purchased by the national electricity board from independent electricity generators using combined heat and power production or renewable energy sources.
- Financial incentives for investments in energy efficiency, renewable energy sources, research on new nuclear energy technologies and public transit. Part of the funding for this program is to be collected from a new tax of approximately US\$2.24 per tonne of CO₂ emissions from thermal power plants.
- New energy efficiency building codes; energy auditing services; installation of new light fixtures and controls in public buildings; periodic automobile inspections; enforcement of speed limits; and mandatory energy labelling for appliances.

Italy imports over 80 percent of its total energy requirements and over 95 percent of its total oil requirements. In 1989 oil accounted for 59 percent of Italy's energy supply mix. Three referenda were passed in 1987 questioning nuclear power's role in the nation's energy mix, although the Italian government believes that nuclear energy could play a role in the future if safety and waste containment concerns are addressed with new technologies.

Japan

In October 1990, Japan's Council of Ministers decided on an "Action Program to Arrest Global Warming." It sets as a target, "based on the common efforts of the major industrialized countries to limit CO₂ emissions," the stabilization of Japan's per capita CO₂ emissions at the 1990 level in the year 2000 and beyond. Efforts also will be made to stabilize the total amount of CO₂ emissions in the year 2000 and beyond at about the same level as in 1990. The program also stipulates that methane emissions should not exceed the present level and that, to the

extent possible, nitrous oxide and other greenhouse gases should not be increased.

To meet the target of stabilizing CO₂ emissions, Japan will seek changes in urban and regional design, transport systems, industry structure and energy production systems and the "realization of appropriate life style." Specific goals include:

- Increased urban greenery.
- Promotion of energy efficient buildings, combined heat and power production and district heating and cooling systems.
- Improvement of motor vehicle, aircraft, railway and ship fuel economy, promotion of alternative transportation fuels and improvement of cargo transport efficiency and mass transit services.
- Development of energy-efficient manufacturing processes and promotion of energy efficiency and renewable energy use in the agriculture, forestry and fisheries sectors.
- Development of nuclear, solar, wind, geothermal, natural gas, fuel cells and combined-cycle power generation and reduction of peak-hour electricity demand.
- Improved environmental education, recycling, reduction of excessive packaging, environmental labelling, reduction of working hours and increased efficiency of household appliances and office equipment.

The program also calls for measures to control methane and nitrous oxide emissions, assessment and adoption of measures to control other greenhouse gases, and enhancement of CO₂ sinks through expansion of forests in and around urban areas and rational use of timber resources.

Japan imports over 80 percent of its primary energy requirements. Successful energy efficiency, conservation and fuel switching programs have reduced its oil dependence since 1973, although 57 percent of its energy supply still comes from imported oil. Japan's energy intensity (energy use per unit gross domestic product) is among the lowest in the OECD, and the government's research and development budget reflects a strong commitment to promoting development of energy efficiency and alternative energy technologies. A recent nuclear accident, the worst in Japan's history, has provoked criticism of Japan's nuclear industry and increased public pressure for the development of non-nuclear alternative energy supplies.

Luxembourg

Beyond agreeing to the European Community target of CO₂ stabilization, Luxembourg has not adopted any unilateral commitments on CO₂ emissions. However, in September 1990 the Ministry of Energy announced a campaign to increase consumer awareness of energy efficiency. The government also has decided to support financial measures to encourage investment in energy conservation and the use of renewable energy sources.

These measures involve direct grants to homeowners for energy efficiency investments in existing buildings, direct grants to small- and medium-sized businesses to help finance energy audits and studies on possible energy efficiency measures, and direct grants to installations using new energy efficiency technologies or renewable energy sources, including solar, biomass and wind energy, heat pumps and combined heat and power production. The Ministry of Energy considers energy conservation as a way both to reduce Luxembourg's dependence on imported energy and to achieve cost-effective reductions in a wide range of pollutant emissions.

Luxembourg has the highest per capita CO₂ emissions among the OECD countries. Environmental protection is of particular concern to the country because of its proximity to large industrial areas and hence its exposure to transboundary pollution.

The Netherlands

In 1989, based on a joint cabinet white paper known as the "National Environmental Policy Plan" (NEPP), the Dutch government set a target to stabilize CO₂ emissions at the 1989/1990 level by 2000 at the latest. In June 1990, a revised plan (the NEPP-Plus) was proposed by the cabinet calling for stabilization in 1995 and a 3-5 percent reduction from 1989/1990 levels by the year 2000. This plan was approved by parliament in September 1990.

The most important contribution (75 percent) to reaching these targets is expected to come from the energy sector. The transport sector is expected to account for 15 percent of the reductions, and recycling and improved waste management for 10 percent.

More than half of the energy sector's CO₂ reductions will be achieved through energy efficiency measures. The government is implementing a range of measures, including:

- Expanded public education campaigns.
- Introduction of new building and appliance efficiency standards and tightening of old ones.

- Increased research and development on renewable energy. The research and development budget for renewable energy has been raised from 120 million guilders (about US\$60 million) to 200 million guilders (about US\$100 million) a year.
- Increased or reintroduced subsidies to promote heating and lighting efficiency, insulation retrofitting, solar and wind energy, natural gas-fired combined heat and power production plants and other more efficient energy technologies. Related subsidy budgets have been raised from 175 million guilders (about US\$90 million) to 450 million guilders (about US\$230 million) a year.
- Collaboration with utilities on a major program of investments to reduce pollution and increase energy efficiency within the energy distribution system. Part of the 250 million guilders (about US\$130 million) needed to pay for this program will come from a 1-2 percent increase in electricity and gas tariffs.
- Taxes on fuels, related to their CO₂ emissions. A small CO₂ tax was put in place in February 1990 to raise revenue for conservation measures. This CO₂ tax is added to existing excise taxes and an existing environmental tax.

A recently formed "Steering Group on Regulatory Energy Taxes" will issue a report by the end of 1991 or early 1992 on the potential impacts of substantially increased energy and CO₂ taxes on energy savings, income distribution, employment, purchasing power and so forth.

The Netherlands has large deposits of natural gas, of which it is a net exporter. Over half of the electricity produced in the Netherlands is generated from natural gas. Natural gas-fired combined heat and power units, mainly integrated with industrial facilities, now account for over 15 percent of all electricity generated in the country. Part of the CO₂ emission reduction will be achieved by further fuel switching to natural gas.

Less than 10 percent of the country's electricity is generated by nuclear power plants, hydropower plants and wind turbines. A de facto moratorium on new nuclear power plants has been in effect for 15 years.

In the transportation sector, which contributes about 15 percent of total CO₂ emissions, the plan calls for a stabilization of 1990 emissions in 1994/1995, a reduction to 1986 levels by the year 2000 and an additional 10 percent reduction by 2010. This will be achieved by improving automobile fuel efficiency (there are already high fuel sales taxes and annual vehicle use taxes that encourage the purchase of small, fuel efficient vehicles), reducing private automobile use by improving

public transport systems, increasing various toll and parking rates, and improving bicycle facilities and ride-sharing and shuttle service programs.

The waste sector will also contribute to the CO₂ emission reduction, mainly through boosting the present prevention and recycling systems. In addition, a modest reforestation program of US\$50 million per year, growing to US\$80 million in 1994, will be implemented.

Public opinion polls show widespread support for government policies to reduce greenhouse gas emissions, particularly policies that encourage energy efficiency and development of renewable energy supplies. Although warranted for geographic reasons, concern about possible sea level rise caused by global climate change is not particularly high in the Netherlands due to the long-standing dike-building tradition. However, it is felt that major disturbances in other parts of the world due to a man-made change of climate will be detrimental to the Netherlands because of its dependence on trade.

New Zealand

In July 1990 the New Zealand government agreed to a target of reducing CO₂ emissions 20 percent from the 1990 level by the year 2005. The new government elected in October 1990 announced that the target should be moved up to the year 2000, and also agreed that the New Zealand Climate Change Program, established in 1988, should continue research on the implications of a 60 percent reduction target by 2020.

Policy development to reach this target is underway, although specific measures have not yet been recommended or adopted. Cost-effective energy management is considered fundamental to New Zealand's climate strategy, and it has been agreed that the country should begin with measures that are cost effective, provide the greatest range of benefits to the country, and do not reduce its competitiveness with trading partners.

New Zealanders have expressed particular concern about the possible impacts of climate change and rising sea levels on Pacific islands with small areas and populations concentrated primarily on the coast.

Norway

In 1989 Norway's parliament approved a preliminary goal of stabilizing CO₂ emissions by the year 2000 at the 1989 level. The goal is to be "continuously analyzed in the light of technological development, the outcome of further research, and

the results of international negotiations and agreements," according to a statement made at the Second World Climate Conference in 1990. Norway has a national goal of a complete CFC phase out by 1995.

Energy conservation is a central element of Norway's energy policy. In 1989 a white paper identified an economic potential for reducing energy consumption about 13 percent in residential buildings and about 23 percent in commercial buildings. In June 1990 the parliament approved a new energy law to reform the electricity market through deregulation and increased competition among utilities. The reforms are expected to reduce costs, increase efficiency and flexibility, and improve the ability to compare conservation costs with investment costs and make rational investment decisions.

The government's 1991 budget added new CO₂ taxes and higher sulphur taxes to existing taxes on gasoline and fuel oil. The government also has introduced a CO₂ tax on emissions from oil and gas activities on the Norwegian Continental Shelf. An international tax on emissions of greenhouse gases and a system for trading of emission rights are considered as potential contributors to equalizing the marginal costs of reducing greenhouse gas emissions.

Hydropower supplies 45 percent of Norway's primary energy requirements and 99 percent of its electricity generation. Norway is a major exporter of oil and gas, and energy intensive goods constitute a major part of its non-fossil fuel exports.

Portugal

Portugal has made no formal commitment on CO₂ emissions, but has agreed to the European Community target of CO₂ stabilization.

Two of the six general objectives of Portuguese energy policy are environmental protection and improved energy efficiency. The government will launch a large publicity campaign to increase awareness of the need for energy efficiency. However, as Portugal continues its efforts to expand its economy, energy consumption will increase and CO₂ emissions are expected to continue to grow at least until the year 2000.

Spain

Spain has not set any targets on CO₂ emissions, but has agreed to the European Community target of CO₂ stabilization and asserts that climate change issues must be addressed within an international context. Spain noted at the Second World Climate

Conference that countries with currently low energy requirements should have targets that accommodate expected development. Spain's current level of CO₂ emission is lower than the average in Western Europe, and CO₂ emissions are expected to increase along with energy requirements as Spain's economy grows.

In the 1970s, priorities of the Spanish energy policy included increased use of coal, energy conservation and development of nuclear energy. However, a moratorium on construction of new nuclear reactors was established in 1983. Spain is devoting major efforts to research, development and demonstration of clean coal technologies. A new national energy plan encompassing environmental goals is to be presented to the Spanish parliament in 1991.

Sweden

In January 1991 the Swedish government and Sweden's two other major political parties agreed on a new energy plan expected to be approved by the Swedish parliament this year. In the plan, the government retreats from a target set in 1988 to stabilize CO₂ emissions at the 1988 level by 2000. Instead, the plan sets forth a national strategy to restrict emissions of all greenhouse gases in all sectors. The plan stresses the importance of coordinating national and international actions, and supports an EC-EFTA target to stabilize total CO₂ emissions at the 1990 level by year 2000 and reduce them thereafter.

The plan indicates that if a sufficient number of the measures in the plan are put into effect, the result will be a "heavy reduction of climatic impact from Swedish sources by the year 2000, compared with the present level." Specific measures recommended include:

- Support for investments in combined heat and power production based on biofuels and in wind and solar energy facilities, and greater resources for the development of large-scale wind power.
- Appointment of a biofuels commission and increased support for development and demonstration projects on the use of motor vehicle alcohol fuels.
- A program to reinforce support for development and demonstration of energy efficient products, processes and systems for homes, government buildings and industry.
- A CO₂ tax, dependent on international coordination.

The results of actions taken on energy conservation and new heating and electricity production are to be continuously evaluated. The government is to report on these results in its annual budget bill and to recommend further measures as needed.

Under the new plan, the Swedish government will allocate the equivalent of approximately US\$162 million over the next five years for investment subsidies for combined heat and power production, and US\$286 million to provide additional support for renewable energy sources. The Swedes estimate that investments in energy efficiency and conservation will enable them to reduce their energy consumption by at least 10-15 terawatt-hours, or the equivalent of two to three nuclear plants.

Motor vehicles and heating are responsible for most of Sweden's CO₂ emissions. Nuclear energy accounts for about half of all electricity generated in Sweden, and hydropower accounts for about 48 percent. The Swedish parliament voted in 1980 to phase out all nuclear reactors in the country by the year 2010. The new energy plan overturns the decision to begin the phase-out by 1995, but retains the ultimate goal of complete phase-out by 2010. The new plan also continues a ban on development of additional hydropower.

Switzerland

Although Switzerland has not made a formal commitment on CO₂ emissions, at the Second World Climate Conference in November 1990, the Swiss government pledged to stabilize CO₂ emissions at the 1990 level by the year 2000. The Swiss parliament is expected to decide in 1991 on adoption of the "Energy 2000" action program, which would formalize this target. The program was developed by the federal department of energy and transportation.

A constitutional amendment on energy and a "Decree on the Rational Use of Energy" were endorsed by referendum in September 1990. The constitutional amendment is expected to facilitate the coordination of energy policy between the federal government and the country's 26 sovereign cantons. The amendment gives the federal government authority to regulate energy efficiency and to provide financial incentives for renewable energy technologies, while leaving responsibility for regulation of energy use in buildings with the cantonal governments.

The Decree on the Rational Use of Energy, which was endorsed by the federal parliament in December 1990, calls for a range of measures including efficiency standards for installations, equipment and motor vehicles, federal regulations on metering and billing for space and water heating, federal financial incentives for renewable energy and combined heat and power production, new railway tunnels through the Alps, and traffic management and reduction of speed limits in cantons. Other measures under consideration include additional taxes on fossil fuels and CO₂ emissions and tax incentives for commuters using public transportation.

Most of the electricity in Switzerland is generated by hydropower (57 percent) and nuclear power (41 percent). In the September 1990 referendum a ten-year moratorium on licensing of new nuclear power plants was approved, although a gradual phase-out of nuclear power was rejected. The federal government is seeking to avoid electricity imports, instead focusing on energy efficiency as the primary means of increasing electricity supplies.

Turkey

The Turkish government has not made any commitments to stabilize or reduce greenhouse gas emissions. However, Turkey's 6th Five Year Plan includes policies that have an impact on greenhouse gas emissions from energy production and consumption. Such policies include:

- Economic assessment of environmental factors in energy production and consumption.
- Increased emphasis on research and development on technologies to limit pollution from new electricity generation plants.
- Increased use of natural gas in electricity generation and residential heating.
- Support for research and development programs on renewable energy sources.
- Increased emphasis on energy efficiency.

Turkey is implementing a major program to modernize and privatize industry and build up its infrastructure. With large indigenous fossil fuel resources, Turkey plans to continue to construct new coal-fired power plants. Hydropower supplies 40 percent of the country's electricity generation, and significant new hydropower capacity is under construction.

United Kingdom

In the September 1990 white paper, "This Common Inheritance: Britain's Environmental Strategy," the British government indicated that the U.K. is prepared to set a target of stabilizing CO₂ emissions at the 1990 level by the year 2005 if other countries take similar action. The government is also pursuing measures to reduce emissions of methane from various sources. The combined effect of actions on all greenhouse gases is expected to result in about a 20 percent reduction in the global warming potential of the U.K.'s emissions in 2005 as compared to 1990 levels.

The government plans first to implement those measures which are justified in their own right. Such measures include:

- Continued development and promotion of energy efficiency technologies and management techniques in industry and buildings, and extension of the services of the Energy Efficiency Office, established in 1983 to provide technical assistance to industry and commerce.
- Promoting combined heat and power production to achieve as much as possible of an identified potential of 2000 megawatts of additional capacity by the year 2000.
- Energy labelling of buildings and assessment of potential for strengthening existing building energy efficiency regulations; pressure for an EC agreement on an energy labelling system and minimum efficiency standards for household appliances and industrial heating.
- Increased support for programs to deliver advice and grants to local authority and housing association properties in both the private and public sectors to improve energy efficiency in low-income households
- A campaign to reduce energy consumption in government buildings by 15 percent from 1989 levels over a five-year period.
- Encouraging the development and use of renewable energy sources, working toward a 1000 megawatt generating capacity by the year 2000 (a tenfold increase over the current capacity, excluding Scottish hydropower).
- Reviewing prospects for nuclear power in the next century, taking full account of environmental issues.
- Considering changes in fuel and vehicle taxes; improving enforcement of speed limits; encouraging less emphasis in car advertisements on speed and acceleration emissions; and encouraging development and use of public transport.

The U.K. government believes that further action will be necessary, including increases in energy and fuel prices, but that these measures can only be taken when competitor countries are prepared to take similar action.

The United Kingdom is a net exporter of energy and a major supplier of crude oil to OECD countries. Numerous policies already in place promote energy efficiency and the use of non-fossil fuels.

United States

In "America's Climate Change Strategy: An Action Agenda," announced in February 1991, the United States government projects that as a result of currently planned actions, U.S. greenhouse gas emissions in the year 2000 will be equal to or below 1987 levels. However, the United States has not made any commitment to a stabilization or reduction target for either CO₂ or total greenhouse gas emissions.

The government believes that a "comprehensive approach" must be taken to address climate change. The comprehensive approach, according to the U.S. climate strategy, "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," and "accounts for all greenhouse gases, insuring that choices do not reduce one gas but inadvertently increase another."

Actions described in the climate strategy to control greenhouse gas emissions include:

- Phasing out CFCs and other ozone-depleting substances which are also greenhouse gases more quickly than required by the Montreal Protocol.
- Implementing the Clean Air Act Amendments of 1990 to reduce emissions from utilities, stationary sources and motor vehicles 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.
- Implementing various programs to speed the adoption of energy efficient technologies and practices in homes and businesses.
- Promoting research on and use of non-fossil fuel energy sources, including solar, nuclear and alternative fuels.

For the fiscal year 1992, the U.S. administration has requested US\$495 million for the research and development program on conservation and renewable energy.

The U.S. Congress is currently debating the elements of a national energy policy. More than 150 bills have been introduced by members of Congress since January 1, 1991, including a range of proposals to promote energy efficiency, automobile fuel economy, clean coal technologies, and the use of natural gas, nuclear energy and renewable energy. The outcome of the energy policy debate will significantly affect the ability of the United States to stabilize or reduce its greenhouse gas emission levels.

The United States contributes about 20% of global CO₂ emissions, making it the largest single source of fossil fuel-related CO₂ emissions. Fossil fuels provide about 87 percent of total energy consumption in the United States. The country consumes almost 50 percent of the fossil fuels used by the OECD as a whole.

Emission Targets and Timetables: Other OECD Countries •

	Target	When Set	Instruments/ Strategy	Comments/Caveats	Implementation
Australia	Stabilize CO ₂ , CH ₄ , N ₂ O at 1988 levels by 2000, reduce 20 percent by 2005.	October 1990 Cabinet decision.	E	At SWCC, noted that it was an "interim planning target," and that Australia "will not proceed unilaterally with measures that will have a net adverse economic impact nationally, or on our trade competitiveness."	Industries and energy minister required to report to Cabinet (October 1990) on short-term measures. Government Ecology Sustainable Development working group report on options to meet targets; Energy, Economic Ministry comments by end 1990. Cabinet review of target October 1991.
Austria	Reduce CO ₂ 20 percent from 1988 level by 2005.	June 1990 Cabinet decision.	C, P, R, T, V	"Preliminary" government report indicates reductions easily achievable. Target not yet approved by Parliament.	Studies of implementation measures under way November 1990.
Belgium	Reduce CO ₂ 5 percent from 1990 level by 2000. Explore possibility of further reductions.	Noted at Second World Climate Conference (SWCC) Ministerial.	E, D, N	Policies still being developed. Transfer of implementation responsibilities for environmental regulations to regions 1 January 1989 has complicated Belgian environmental policymaking. Association of Electricity and Gas Producers says CO ₂ emissions will increase because no new nuclear plants will come on line for at least several years.	
Canada	Stabilize all non-CFC gases at 1990 levels by 2000. Explore possibility of 20-percent cut by 2005.	June 1990 Cabinet decision, reiterated in December 1990 Green Plan.	A, B, M, V	Must sell to skeptical energy-producing provinces. Provinces hold substantial sway in energy and environmental policy. Government reports show difficulty reaching stabilization target. Base year originally 1988, moved up to 1990 in November.	Legislation under Green Plan most likely to be introduced in 1991.
Denmark	Stabilize CO ₂ at 1988 level by 2000, reduce 20 percent by 2005, including a 50-percent reduction in energy sector CO ₂ .	Set by government April 1990; approved by Parliament in May.	A, B, C, D, F, R, T	Policy instruments still being developed. "Concrete measures to meet the targets will be introduced over the coming years," according to government statement. Industry association concerned for impact on Danish competitiveness.	
Finland	Stabilize CO ₂ at current level per European Community-European Free Trade Association (EFTA) accord. Agrees with need to reduce emissions 20 percent as soon as possible.	Noted at SWCC Ministerial, November 1990.	T	Noted at SWCC preministerial that decisions on targets "still ahead of us." Policies still being developed. Would have to increase coal use if Swedish nuclear power phased out. 1990 government study says 50-percent increase in CO ₂ 1990-2010 under current policies, stabilization not before 2005 under fossil-fuel minimization program.	National energy policy will be reviewed February 1991. Helsinki recently commissioned group of government experts to study national reduction measures; their report is due April 1991.
France	Stabilize CO ₂ at 2.0 metric tons per capita by 2000.	September 1990 Cabinet decision.	E, N	Allows up to 25-percent increase 1988-2000. Contingent on other industrialized countries taking similar action.	Legislation still sketchy.
Germany	Reduce CO ₂ 25 to 30 percent from 1987 level by 2005, including a 25-percent reduction in former West Germany; control methane whenever possible.	June 1990 Cabinet decision.	C, D, E, L, R, T, V, X	Industry Association concerned about loss of competitiveness. Early 1990 Economics Ministry study shows only 10-percent reduction possible by 2005. Nonetheless, Germany seems committed to target.	Policy recommendations forwarded by inter-agency working group November 1990. Discussion/approval 1991.

Greece	None, but agreed to European Community target.	October 1990.			
Iceland	Stabilize "greenhouse gases" at 1990 levels by 2000.	Noted at SWCC Ministerial, November 1990.	E, R, Z	Examination of policy instruments just beginning.	Proposals to be submitted to Parliament 1991.
Ireland	None, but agreed to European Community target.	October 1990.	C, E		Eight studies commissioned by government should appear in January 1991.
Italy	None, but agreed to European Community target.	October 1990.	F, R, T	Has backtracked from commitment to targets noted by Environment Minister Ruffulo in June 1990. Rapid economic growth makes stabilization difficult. Ruffulo, himself, noted August 1990 that CO ₂ may increase by the year 2000.	Studies under way late 1990 on implementation measures. Revised National Energy Plan due end 1990.
Japan	Stabilize per capita CO ₂ at 1990 level by 2000. Absolute stabilization of methane and, if possible, other gases at current levels.	October 1990, in Action Program to arrest Global Warming adopted by Council of Ministers for Global Environmental Conservation.	E, X, N, D, B, R, L, C	Will implement measures "as they become feasible," says government. Action Program to be implemented without disrupting economic growth. Government using traditional tactics of persuasion and consensus to convince industry, local governments to go along. Government subsidies for electric vehicles being planned. Major auto manufacturer announced plan January 1991 to reduce auto CO ₂ . Tokyo Electric Power Co. developing technology to remove, dispose of CO ₂ in power production.	
Luxembourg	Agreed to European Community target, may follow Belgian target.	October 1990.	E	Assumed EC presidency 1 January 1991. Currently has largest per capita CO ₂ emission among OECD countries.	
Netherlands	Stabilize CO ₂ at 1989-90 level by 1995 (if possible 1994), reduce 3 to 5 percent by 2000.	Announced November 1989. Approved by Parliament 1990.	A, B, D, T	Dutch officials note industry sector supports stabilization by 2000, not necessarily 1995. Policy instruments will be implemented over several years. Measures to reach 5-percent reduction may not be announced until 1995.	Inventory of all emissions control measures will be undertaken by the end of 1991 to determine what additional regulatory and fiscal instruments are needed to meet the targets.
New Zealand	Reduce CO ₂ 20 percent from 1990 level by 2005.	June 1990 Cabinet decision.			Non-CO ₂ greenhouse gases to be addressed in memorandum on climate change, to be published in 1991. Government researching implications of 60 percent CO ₂ cut by the year 2000, 15 percent CH ₄ cut by the year 2020.

Norway	Stabilize CO ₂ at 1989 level by 2000.	1989 Cabinet decision.	T	Target is "preliminary" goal that must be "continuously analyzed in the light of technological development, the outcome of further research, and the results of international negotiations and agreements," according to SWCC statement.	National analysis of scenarios and strategies "nearly complete." November 1990.
Portugal	None, but agreed to European Community target.	October 1990.	E	Current energy policy not established with particular regard to CO ₂ emissions or climate change. CO ₂ emissions expected to grow until at least 2000.	
Spain	None, but agreed to European Community target.	October 1990.	L	Noted at SWCC that small energy consumers should have right to expand. Favors per capita based targets.	New National Energy Plan to be submitted to Parliament by early 1991.
Sweden	February 1991 energy plan drops government's previous insistence (based on 1988 parliamentary mandate) on freezing CO ₂ at 1988 level. Unclear whether it will continue to adhere to EFTA target.	1988 Parliamentary mandate.	N, T	Will not undertake conservation measures in electricity generation and energy-intensive industries unless its competitors do. Having difficulty reconciling emission targets with 1980 referendum that resulted in decision to phase out nuclear power by 2010, which remains intact under February 1991 plan.	Energy plan presumably must still be approved by Parliament. Carbon tax in place late 1990.
Switzerland	No firm commitment other than European Free Trade Association accord; however, Switzerland expects to make 10-percent CO ₂ reduction by 2000. Experts looking at 20-percent reduction by 2005, 50 percent by 2025.	November 1990.	E, T	September 1990 referendum sets 10-year moratorium on licensing of new nuclear plants.	Studies on CO ₂ reduction strategies being carried out in several ministries. Results by summer 1991. Parliamentary decree on rational use of energy expected 1991.
Turkey	None.	NA	E, F, L, R	Ankara believes no urgent need for targets in Turkey until it matches CO ₂ use in other OECD countries.	
United Kingdom	Stabilize CO ₂ at 1990 level by 2005.	June 1990 Cabinet decision.	A, B, D, E, R	Will only take action if its industrial competitors also do so. Voluntary measures preferred.	Tightened building regulations came into force 1 April 1990. Order requiring electricity suppliers to contract for renewables entered into force September 1990. Further orders in coming years.

* Information available as of 22 February 1991 was used in this Matrix.

Key: Instruments/Strategy Legend

A	Increase appliance efficiency standards.
B	Tighter building codes.
C	Encourage energy conservation.
D	Encourage combined heat/power or district heating systems.
E	Stress energy efficiency.
F	Encourage fuel switching.
L	Improved coal combustion technology.
M	Better electricity demand management.
N	Continue/expand nuclear power.

P	New energy pricing scheme.
R	Encourage renewable energy development.
T	Carbon tax.
V	Increase vehicle efficiency standards.
X	More rational transport system.
Z	Reforestation.

Greenhouse Gases

CO ₂	Carbon dioxide
CH ₄	Methane
N ₂ O	Nitrous oxide

This table is Unclassified.

1420-3

CARBON DIOXIDE TARGETS

EEC: stabilize at 1990 levels by year 2000

West Germany: 25% cut by 2005

Netherlands: stabilize by 1994 and 5-8% cut by 2000, then substantial cuts thereafter

Denmark: 20% by 2000 and up to 50% by 2030

Italy: stabilization by 2000 and possible 20% cut by 2005

France, Belgium and Luxembourg: support a Community proposal to stabilize emissions at 1988 levels by 2000

U.K.: stabilize at current levels by 2005

EFTA: Austria, Finland, Iceland, Norway, Sweden and Switzerland
*-EFTA--as a group has joined EC in its goal to stabilize at 1990 levels by 2000.

Austria: 20% by 2005

Switzerland and Norway: freeze at current levels

Sweden: made a commitment but backed out. ~~_____~~

OTHER COUNTRIES

New Zealand: 20% by 2005

~~Canada: stabilize at current levels by 2000~~

Japan: stabilize at 1990 levels by 2000 on a per capita basis

Nov. 1, 1990

Al--

I'm forwarding the USA Today story you were interested in and additional stories that further flesh out the EEC's move. With the addition of the EEC, the tally is as follows on carbon dioxide targets:

1. EEC -- stabilize emissions at 1990 levels by 2000.
2. West Germany -- 25% cut by 2005
3. Netherlands -- stabilize by 1994 and 5-8% cut by 2000; substantial cuts thereafter
4. Denmark -- 20% by 2000 and up to 50% by 2030
5. Italy -- stabilization by 2000 and possible 20% cut by 2005
6. France, Belgium, and Luxembourg -- supported a community proposal to stabilize emissions at 1988 levels by 2000
7. UK -- stabilize at current levels by 2005
8. Austria -- 20% cut by 2005
9. New Zealand -- 20% cut by 2005
10. Norway and Switzerland -- freeze at current levels
11. Canada -- stabilize at current levels by 2000
12. Japan -- stabilize at current levels by 2000
(remember this has a lot of holes -- in addition to only being a stabilization of emission (nothing about concentrations, yet), this is only a percapita cap; increased emissions will be permitted to match pop'n growth.)

We are collecting further info on the proceedings to date and will keep you posted.

kw

Victims honored



Alexander Zenilanchenko, AP

SOVIET PROTEST: About 6,000 Soviet citizens, many holding photographs of relatives who died in labor camps, marched to KGB headquarters in Moscow for the unveiling of a monument to victims of Soviet repression.

"The wave has not yet passed," Arens said. Both attacks came in apparent revenge for Temple Mount deaths Oct. 8 in which 19 Palestinians were killed by police. Since then, five have been killed and 11 wounded in Arab attacks.

GLOBAL WARMING: The United States was under increased pressure to join the rest of the industrialized world in committing itself to action to control so-called global warming. A decision by the European Community to limit carbon dioxide emissions by 2000 has left Washington isolated, said delegates to a Geneva ecology conference.

LEBANON PULLOUT: Five militias, including pro-Iranian Hezbollah and Syrian-backed Amal, agreed to pull out of Beirut to let the government stamp its authority on the city after the defeat of rebel Christian Gen. Michel Aoun.

NORWAY'S PARLIAMENT: Norway's Labor Party leader Gro Harlem Brundtland agreed to form her third government after the collapse of a center-right coalition over Norway's links to the European Community.

At least 31 people died in violence across India Tuesday as a decades-old dispute between Muslims and Hindus over ownership of a mosque came to a head. The dispute, involving a small, one-story mosque in Ayodhya, has left at least 138 people dead in the past week and brought Prime Minister V.P. Singh's government near collapse. Hindu fundamentalists had said they'd begin mosque-site construction Tuesday on a temple to the god Rama. The government, which has had 90,000 Hindus arrested in the past week, says any attempt to destroy the shrine will be blocked.

ISRAELI WARNING:

Israeli Defense Minister Moshe Arens warned Israelis of further Palestinian revenge attacks after an Arab was shot dead for stabbing a Jew and another blew himself up while planting a bomb.

out of impatience. . . . This is not something where you announce sanctions in the morning and hope by the time for the evening news it's all worked out. . . . I've been to a lot of these

the president cannot act if: develops or if provocation (— Sen. George Mitchell, D-M

Britain links up with

By Allen F. Richardson
USA TODAY

LONDON — Britain's historic isolation from continental Europe ended 132 feet under the English Channel Tuesday with the first linkup of the \$15 billion "chunnel."

A probe poked a 2½-inch hole through the chalk, three years after digging first began on the channel tunnel.

By December, a narrow passage will allow workers to make physical contact. And in January, British Prime Minister Margaret Thatcher and French President Francois Mitterrand will exchange a subterranean handshake.

Completion is slated for mid-1993, when about 30 million passengers a year are expected to start shuttling the 30.7 miles underground on high-speed trains between London



SEEING THE LIGHT: The \$15 billion 'chur' glish Channel is expected to be completed

and Paris in three hours.

Just after the linkup Tuesday, eight French workers were hurt in a collision between two small underground trains. Since the project began, nine workers have been killed.

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Bush hits road to 'tak

By Richard Benedetto
USA TODAY

President Bush kicked off the final week of the 1990 election season Tuesday with a battle cry aimed at rallying Republican troops and staving off disaster at the polls.

Its theme: Blame Democrats for the budget mess.

"We've had enough of that, and now we get to take our case to the American people,"

he said at a rally of GOP faithful in a Capitol Hill hotel.

He takes that case on the road Thursday in a whirlwind seven-state, six-day coast-to-coast tour of at least 11 cities.

Also hitting the trail Thursday: Democratic National Committee Chairman Ron Brown, who campaigns in five states with tight races.

His message: Democrats are for working people, elderly and minorities. "Republicans

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Brown, ing popul president' chestnut

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USA Today - Wednesday Oct 31, 1990

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CARBON DIOXIDE TARGETS

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Denmark: 20% by 2000 and up to 50% by 2030

Italy: stabilisation by 2000 and possible 20% cut by 2005.

France Belgium and Luxembourg: support a Community proposal to stabilise emissions at 1988 levels by 2000

U.K. stabilise at current levels by 2005.

EFTA - Austria, Finland, Iceland, Norway, Sweden, Switzerland.

Austria: 20% by 2005

ok Switzerland Norway and Sweden freeze at current levels

} * EFTA -- as a group --
has joined EC in
its goal to
stabilize at 1990 levels
by 2000.

OTHER COUNTRIES

New Zealand: 20% by 2005

Canada: stabilise at current levels by 2000

Japan : stabilise at "^{1990 levels}lowest possible levels" by 2000. (predicted to be 10% above current levels)