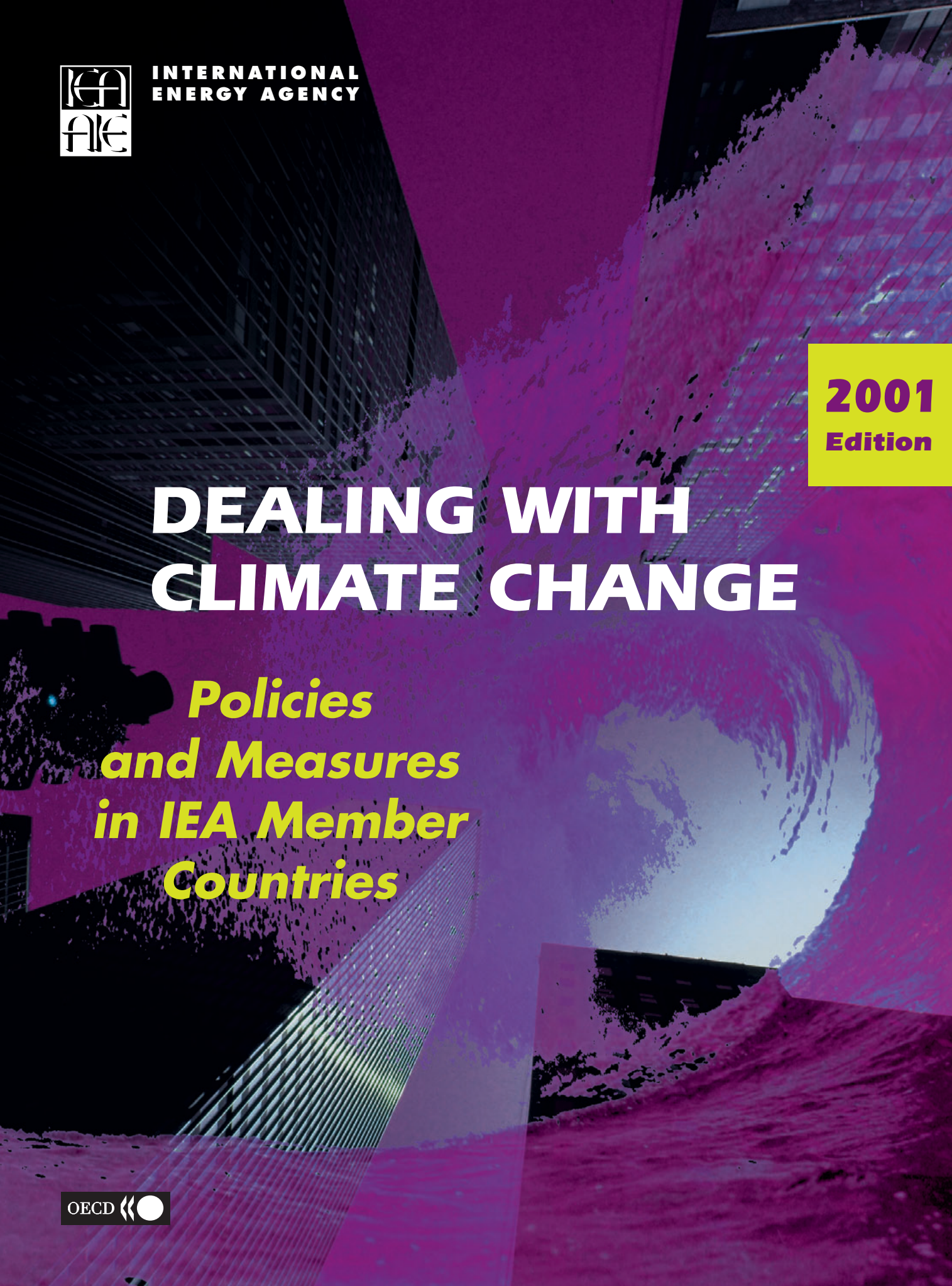

INTERNATIONAL
ENERGY AGENCY
2001
Edition
DEALING WITH
CLIMATE CHANGE
Policies
and Measures
in IEA Member
Countries
OECD

INTERNATIONAL
ENERGY AGENCY

2001
Edition

DEALING WITH CLIMATE CHANGE

Policies and Measures in IEA Member Countries

INTERNATIONAL ENERGY AGENCY

9, rue de la Fédération,
75739 Paris, cedex 15, France

The International Energy Agency (IEA) is an autonomous body which was established in November 1974 within the framework of the Organisation for Economic Co-operation and Development (OECD) to implement an international energy programme.

It carries out a comprehensive programme of energy co-operation among twenty-five* of the OECD's thirty Member countries. The basic aims of the IEA are:

- To maintain and improve systems for coping with oil supply disruptions;
- To promote rational energy policies in a global context through co-operative relations with non-member countries, industry and international organisations;
- To operate a permanent information system on the international oil market;
- To improve the world's energy supply and demand structure by developing alternative energy sources and increasing the efficiency of energy use;
- To assist in the integration of environmental and energy policies.

** IEA Member countries: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, the United States. The European Commission also takes part in the work of the IEA.*

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Pursuant to Article 1 of the Convention signed in Paris on 14th December 1960, and which came into force on 30th September 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed:

- To achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- To contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
- To contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

The original Member countries of the OECD are Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The following countries became Members subsequently through accession at the dates indicated hereafter: Japan (28th April 1964), Finland (28th January 1969), Australia (7th June 1971), New Zealand (29th May 1973), Mexico (18th May 1994), the Czech Republic (21st December 1995), Hungary (7th May 1996), Poland (22nd November 1996), the Republic of Korea (12th December 1996) and Slovakia (28th September 2000). The Commission of the European Communities takes part in the work of the OECD (Article 13 of the OECD Convention).

Foreword

This past year was an eventful one for climate policy. The Intergovernmental Panel on Climate Change released its third assessment report. Describing its conclusions, its chairman, Dr. Robert Watson, said

> "The overwhelming majority of scientific experts, whilst recognising that scientific uncertainties exist, nonetheless believe that human-induced climate change is already occurring and that future change is inevitable. It is not a question of whether the Earth's climate will change, but rather by how much, how fast and where."

On the political front, the Climate Change negotiations, which appeared to have lost momentum after the failure to reach agreement in The Hague in November 2000, were given a new lease on life with the near-unanimous decision taken in July 2001 in Bonn on how to implement the Kyoto Protocol. The United States announced its intention to withdraw from the Kyoto Protocol, but indicated it would provide its own domestic programme to address the climate issue.

Science and diplomatic initiatives notwithstanding, the question remains: what is happening, on the ground, to reduce emissions?

This report offers a comprehensive answer to that question. It provides a thorough listing of new or modified laws, financing initiatives and outreach programmes undertaken by IEA Member countries in the year 2000. It describes policies planned, proposed or enacted by governments. It makes clear the continued engagement of IEA Member countries in both domestic and international efforts to mitigate climate change. It indicates that countries continue to use a portfolio approach to policy-making in the climate area. Most have developed wide-ranging programmes involving regulatory policies, fiscal policies and policy processes. In addition, IEA countries have developed programmes to experiment with "market-based instruments" such as emissions trading and green certificates, and they continued to provide funding for energy research, development and demonstration projects.

The report concludes that, while the list of policies is lengthy, more will be needed in order to address decisively the climate problem. We hope that our information will help support further initiatives.

Robert Priddle
Executive Director

Acknowledgements

This report was principally the work of three members of the IEA's Energy and Environment Division: Jonathan Pershing, Ysé Serret and Maria Virdis. Others, including Kristi Varangu, Richard Baron and Martina Bosi, provided additional comments and input. Jenny Gell and Maggy Madden helped maintain the database. Member governments offered considerable assistance, including reviewing policy listings, and providing updates and corrections.

Table of Contents

Overview

Introduction

Background and Context

The last year has seen major developments in the energy and environment arena. Climate change was the highest priority.

- The year 2000 marked the date for meeting the initial aim of the climate convention: stabilisation of greenhouse gas emissions in developed countries at 1990 levels. Few countries appear to have achieved this goal.
- The Intergovernmental Panel on Climate Change (IPCC) published its Third Assessment Report. The report added certainty to our understanding of climate change. The new data indicate the severity of the climate change problem. The report suggests that changing present trends will require engaging the energy sector, which emits more than three-quarters of all the greenhouse gases contributing to climate change.
- The first part of the sixth session of the Conference of the Parties (COP-6) to the United Nations Framework Convention on Climate Change (UNFCCC) failed to reach a conclusion and had to be suspended. The resumed session in Bonn in July 2001 set a framework agreed by 178 countries on how to implement the Kyoto Protocol.
- The U.S. Administration announced that it will not seek ratification of the Kyoto Protocol.

Issues related to sustainable development took a higher profile. The ninth session of the UN Commission on Sustainable Development, which focused on energy and transport, was held in early 2001. Preparations were initiated for the tenth anniversary of the Rio de Janeiro Earth Summit.

This volume provides information on policies planned, proposed or enacted by governments of IEA Member countries during the year 2000 to reduce energy-related greenhouse gas emissions. Many of these also deal with energy in a wider fashion, supporting economic growth, social development and other aspects of environmental protection.

Government actions undertaken in 2000 indicate the engagement of IEA Member countries in both domestic and international efforts to mitigate climate change. Countries continue to use a portfolio approach to policy-making in the climate area. Most have developed programmes that use a wide range of policy instruments.

Member countries have made different choices about the instruments they will use to reduce emissions. The exact mix seems to depend on cost, social concerns, administrative feasibility and institutional capacity, as well as national culture.

Climate Change — Recent Events

The agreement on climate change adopted in Bonn begins the process of setting a price for greenhouse gas emissions. It makes the ratification and subsequent entry into force of the Kyoto Protocol significantly more likely. On the negative side, without the participation of the United States and with relatively liberal rules on sinks of greenhouse gases, the scale of prospective reductions has sharply decreased. The market price for emissions reductions will fall short of earlier expectations.

A central issue surrounding ratification of the Kyoto Protocol prior to the Bonn meeting was, of course, the anticipated cost. Pre-Bonn estimates foresaw that it would cost about $100 per tonne of carbon to eliminate some 500 million tonnes per year — the "gap" between estimated emissions under a reference scenario, and emissions restrictions called for by Kyoto. Many countries were unwilling to commit to the increase in energy prices and the reduction in economic growth that this forecast implied.

The American Administration's announcement that it would not support the Kyoto Protocol — and, consequently, that it would not take part in the Bonn agreement — severely limits the scope of the accord. The United States has indicated its intent to come forward with its own programme. Paradoxically, however, its absence is likely to make the agreement easier for the remaining parties to implement. The biggest potential buyer of tradable emissions credits will no longer be eligible to compete for the lowest-cost tonnes. As a result, the international market price of reductions will tumble dramatically — by much more, indeed, than the 36% that is the American share of the developed world's emissions. The cost of a one-tonne carbon certificate can be expected to fall by as much as 90%, from an estimated $100 to $10. This will bring compliance costs to the remaining countries well within a politically tolerable range.

The agreement reached in Bonn does not fully clarify how countries are to implement their Kyoto commitments. Governments must still assess the agreement — together with subsequent decisions adopted at COP-7 in Marrakech. However, ratification of the Protocol is now more likely. Countries producing 55% of Annex I emissions must ratify the agreement for it to become binding. The United States represents 36%.

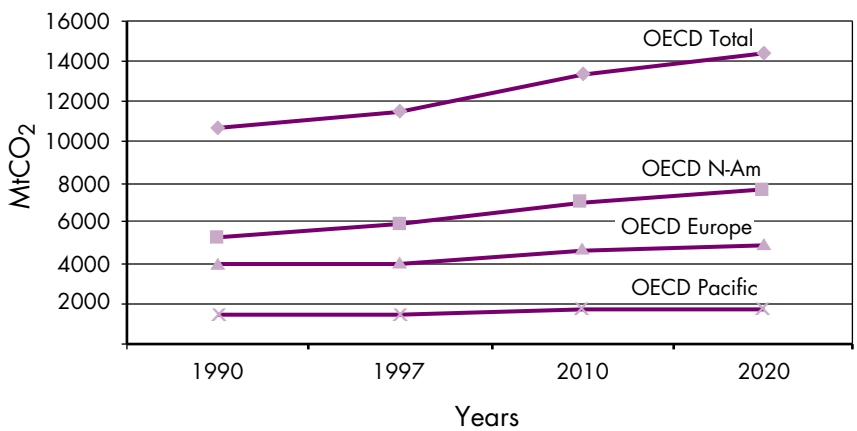
Energy-related Climate Policies

Notwithstanding the uncertainties in the negotiations during 2000 and 2001, IEA Member countries took significant action to reduce greenhouse gas emissions in the energy sector. New policies clustered mainly in three categories: regulatory policies (standards and regulations, including voluntary agreements); fiscal policies (taxes or tax breaks, subsidies, grants and incentives) and policy processes (strategic planning, consultations, outreach). In addition, IEA countries developed programmes to experiment with "market-based instruments" such as emissions trading and green certificates, and they continued (and often retargeted) funding for energy research, development and demonstration projects.

There remains a question as to how — or whether — these policies will be enacted should the Kyoto Protocol *not* enter into force. Although ratification is more likely, it is not a certainty even with the agreement reached in Bonn. The question is particularly pressing for those proposals where implementation is contingent on the adoption of similar programmes by other countries.

There is the more general question of whether currently adopted or planned policies are adequate — either to meet the emissions reduction commitments under the Kyoto Protocol, or to reverse the long-term trend of increasing emissions. While such an assessment is extremely difficult, the answer appears to be no. In the IEA's *World Energy Outlook* published in the year 2000, policies enacted through 1999 were included in the "reference case" projections through 2020. In this scenario, energy-related CO_2 emissions in 2010 (and even in 2020) will be significantly higher than required to meet commitments under the Kyoto Protocol: an overall reduction of approximately 5% with respect to 1990 levels (Figures 1 and 2). The continuing increase in projected emissions throughout the period evaluated indicates the need to formulate and implement additional policies beyond those forming the baseline for this study.

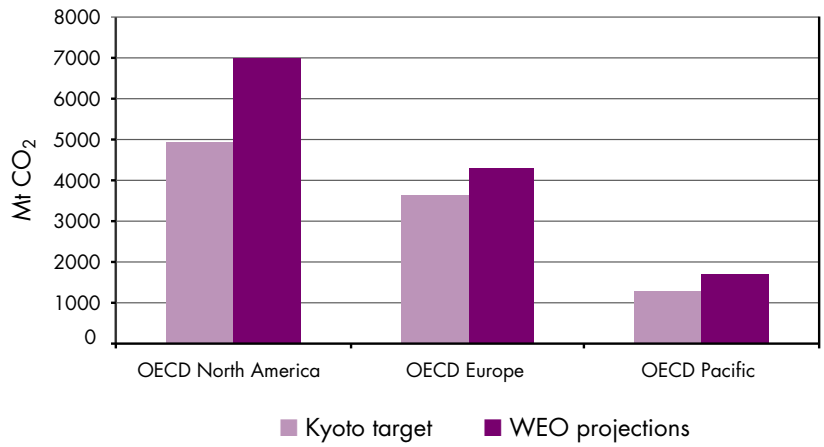
Figure 1. **Total CO_2 from Primary Energy Supply — WEO Reference Case**



Source: *World Energy Outlook 2000* (part D), OECD/IEA Paris, 2000.

While additional policies and measures have been proposed in the year 2000, and some have entered into force, these too, even taken cumulatively with earlier actions, are unlikely to suffice. This is partly due to the lag time for individual policies to take full effect. However, lessons can be learned, and the experiences gained by some countries in the implementation of policies and measures may aid others to adopt increasingly effective programmes.

Figure 2. **CO_2 Projected Emissions and Targets for OECD Regions, 2010**
Million tonnes of CO_2



Source: *World Energy Outlook 2000,* OECD/IEA Paris, 2000

Overview of the Report

No review of national policies and measures to mitigate climate change will ever be complete. However, the data collected and presented in this volume do provide a basis for the review, assessment and comparison of recent activities. The report consists of a detailed review of the policies and measures taken in the year 2000, a discussion of the methodology for data collection and detailed tables containing specific information on the policies and measures of IEA Member countries.

The standard and in-depth reviews of IEA countries regularly conducted by the Agency and reports from national delegations have been the primary sources of information in the database. Other sources have been the web sites of national ministries of energy and the environment, journal articles, and international newsletters specialising in energy and environmental policy. In each case, the final descriptions have been reviewed by governments to ensure accuracy. Some policies that have been enacted for purposes other than climate mitigation may have escaped this review, even though they may have a definite impact on GHG emissions.

The next section, containing the review and analysis, considers policies under five separate categories: fiscal measures; market instruments; regulations and voluntary instruments; research, development and demonstration programmes; and policy processes. It also considers actions carried out by the private sector.

Policies and Measures in IEA Countries: A Detailed Look

Fiscal Measures

European countries and Japan account for the majority of fiscal measures adopted in the past year. Two-thirds of these are various forms of subsidies (grants, soft loans, guaranteed minimum prices) to support and encourage renewable energy or other environmentally benign technologies. Tax exemptions, tax reductions or tax credits — another form of subsidy — are also popular. A number of tax credit schemes are specifically designed to promote new research and development. Such efforts may be increasingly important as basic research in non-commercial technologies by the private sector continues to decline.

Taxes and Subsidies: A Review of New Programmes

Most recently adopted fiscal measures are aimed at encouraging technology improvement and diffusion. The emphasis is on fostering the deployment of commercially available technologies and fuels that have very low greenhouse gas (GHG) emissions but are not yet competitive with conventional fuel sources. More than half the fiscal measures listed here are direct subsidies for GHG reduction programmes (construction of renewable energy power plants, installation of energy-saving devices, retrofitting of buildings, purchase of less polluting buses, public transport infrastructure), or minimum guaranteed price schemes for power generation from renewables. Australia, Canada, Italy, Japan, Sweden and the United States have adopted this type of measure, targeting the electricity generation sector and, to a lesser extent, the building/residential, industry and transport sectors.

Tax relief measures are the second most frequent form of support. About one-fourth of the fiscal measures compiled here consist either of fuel tax reductions or waivers, income tax reductions, or tax credits. These measures most often reward renewable energy sources. In some cases, they also support technologies using lower-emitting fossil fuels, such as natural gas or liquified petroleum gas (LPG), or energy conservation. Tax relief measures are mostly applied to final energy consumption, in the building/residential sector and in transport. In a few cases they apply to electricity generation.

Price support programmes reflect analyses which suggest that in the near term, GHG reductions will be brought about through the enhanced use and improvement of

already existing technologies rather than through technologies now at the laboratory stage. The average time needed for a technology to be adopted commercially, from the theoretical breakthrough to the establishment of the technology in the market, is rarely shorter than thirty years. Thus, entirely new technologies cannot, by definition, make a measurable impact on GHG emissions by 2010. But governments can use a variety of support measures to speed deployment of existing technologies. Besides direct and indirect subsidy schemes and tax incentives, support measures include government procurement, information campaigns and consulting services on energy efficiency and conservation. All these exploit the reduction of cost that follows increased output[1] — known as the "technology experience curve".

The information in the database shows how widely these principles have been accepted by governments. More than two-thirds of the fiscal policies adopted are unambiguous price support measures in favour of renewable energy or of electric power produced through more environmentally benign technologies.

Assessing the effectiveness of such price support mechanisms requires accounting — and assuming an economic value — for a number of factors. These include the prices of other fuel sources; the non-climate-related external costs (local air or water pollution, as well as noise, siting issues, and intermittence of power supply); conflicting or supporting regulatory structures; and the long-term expected changes in energy activities that could emerge as a result of such programmes. Such factors are likely to differ from country to country, so the overall effectiveness of specific policy actions is difficult to assess.

Among the new measures introduced in 2000, new taxes or increases in existing taxes were the *least* frequently applied measure. The few taxes that have been adopted seek to discourage technologies and fuels with high CO_2 or other pollutant emissions. In that sense, they seek to "internalise" environmental costs, although the tax measures themselves often reflect these costs only in a very crude way. Tax increases are applied either to final consumption of fossil fuels, in all end-use sectors but mostly in transport, or to final consumption of electric power when it is fossil fuel-based. There is a clear preference for product taxes, based on the amount of fuel consumed, over emission taxes, based on the amount of pollutant emitted.

In Germany, Hungary, the Netherlands, Norway, and the United Kingdom, excise taxes on oil products increased in the year 2000. But, as conventional fuels are already heavily taxed in Europe and Japan, further tax increases are becoming very unpopular. In late 2000, European lorry drivers set up road blockades to protest against high fuel prices. Some of those protests succeeded, at least temporarily, in forcing governments to ease the fiscal pressure on oil products or to delay planned increases in excise taxes.

1. Experience Curves for Energy Technology Policy, *OECD/IEA Paris, 2000.*

It is no surprise that the prevailing fiscal policy rewards environment-friendly technologies rather than forcing polluting fuels and technologies to bear the full costs of environmental damages. This approach encounters much less resistance from the public, although it does have some potential drawbacks. Subsidies tend to stay in place beyond their "useful" lifetime, and they can discourage further even more desirable technology development.

Focus on oil product taxes: some "climate-unfriendly" trends in 2000

Historically, the main role of taxes on energy products has been to raise revenues for governments. Demand for oil products is rather inelastic with respect to price, which makes them an excellent candidate for such taxes.

In OECD countries, these taxes represent, on average, slightly less than 6% of total tax revenues[2] (6.5% for the EU15[3]). While definitely less productive than income taxes as a source of fiscal revenues, energy taxes are still significant. About 90% of total energy taxes come from motor fuel taxes. Countries dependent on imported energy have also used taxation as a way to decrease this dependency, reinforcing the fiscal justification.

In the last decade, a third motivation has appeared with increasing frequency: the environment. Environmental taxes reflect some of the environmental costs of using fossil fuels, discouraging the use of the resources taxed. Ideal application requires that these taxes fully reflect the magnitude of the environmental costs associated with the use of the fuel in question.

The definition of environmental externalities used by the OECD implies that *any* tax on energy is environmental in nature. A stricter definition, in which taxes are counted only if levied specifically to help attain environmental goals, sharply limits the list of environmentally-related energy taxes. Under this definition, environmental taxes on fossil fuels would include CO_2 or sulphur emission taxes. A number of other taxes levied on vehicle ownership based on engine type and horsepower or on use of highways may also be considered as related to environmental goals. Currently, however, only 1% of total energy taxes is environmentally-based, in the sense that it is proportional to polluting emissions. Ultimately, a tax of a given amount per litre or tonne of fuel will have the same impact on the consumption of that fuel regardless of the specific purpose for which it was created[4]. The impact of a tax depends on the

---

2. OECD/ENV: Environmentally-Related Tax Database. http://www.oecd.org/env/policies/taxes/index.htm. Note that the OECD definition of environmentally-related taxes includes "any compulsory, unrequited payment to general government levied on tax bases deemed to be of particular environmental relevance." This definition includes all energy taxes (which represent around 90% of the total) as well as vehicle taxes, but the database also covers fees and charges for environmental services provided by the government.

3. Commission of the European Communities: Green Paper — Towards a European Strategy for the Security of Energy Supply. COM(2000)769. Brussels, 29 November 2000. Page 57.

4. Jean-Philippe Barde (OECD/ENV): Taxes environnementales et réformes fiscales vertes dans les pays de l'OCDE. Paper presented at the Seminar "Les Réformes Fiscales Vertes en Europe", Paris, 10-11 October 2000.

absolute level of all taxes on a specific fuel, as well as the relative tax on that fuel compared to the tax on other fuels.

While the purpose of an environmental tax is to discriminate against fuels that damage the environment or public health, when it is superimposed on a pre-existing tax designed to promote other objectives, the end result may not support the initial environmental goal. Distortions of this type may frequently be found in the tax structure on fuels, where economic objectives, such as revenue raising or protecting jobs in specific sectors, are pursued together with social welfare or environmental objectives.

Fuel taxation can present some striking anomalies. One is the preferential fiscal treatment accorded to diesel oil in certain countries. While diesel engines are more energy-efficient than conventional gasoline-powered engines, air pollution caused by diesel combustion is much more severe.

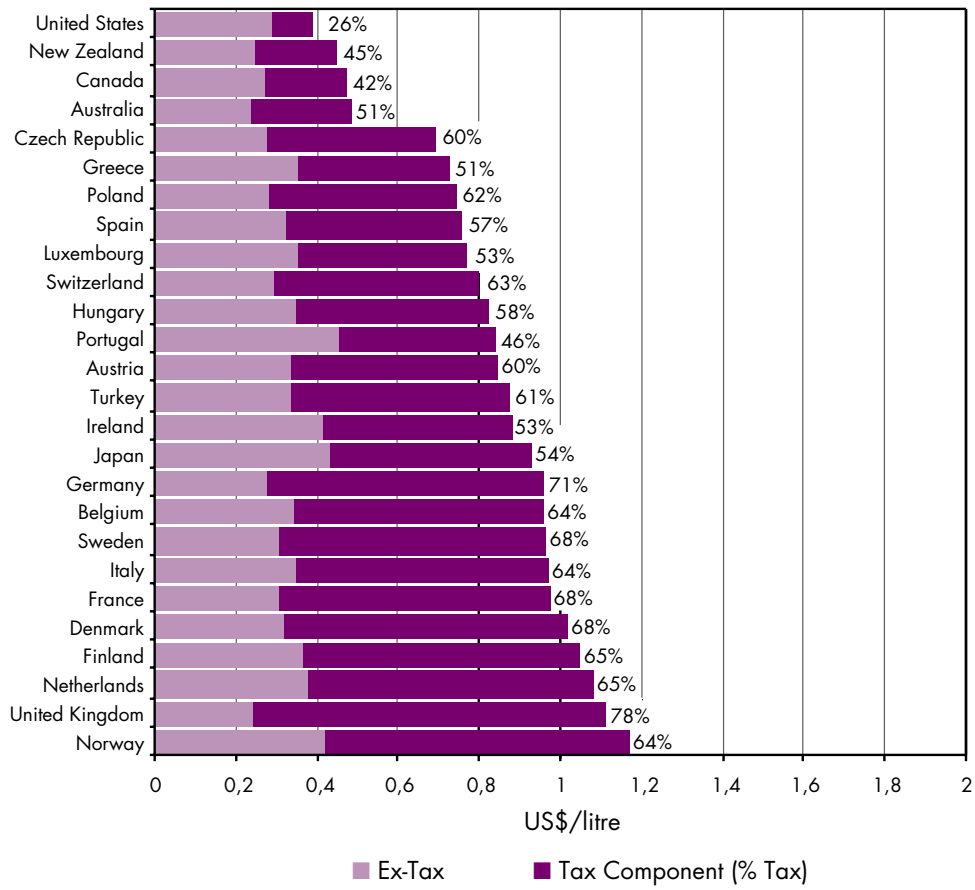
In many European countries, fuel taxes, especially for household consumption, are already very high, and the public is becoming increasingly unwilling to accept new taxes for whatever purpose. Figure 3 on gasoline price and taxes gives an idea of the variation in tax rates in European countries compared with countries in North America or the Pacific. High tax rates and the hostility to new taxes thus often lead policy-makers to favour less polluting fuels or energy technologies through tax reductions or rebates, tax credits, grants and subsidies. At times of high oil prices, *ad valorem* taxes on fossil fuels become unacceptable to certain segments of the population and produce social unrest as demonstrated in 2000.

A closer look at taxation of oil products since 1997 shows some interesting developments for IEA countries. The period considered includes three important events:

- Signing of the Kyoto agreement in late 1997.
- Crash of oil prices in 1998.
- Strengthening of the OPEC cartel, leading to the oil price increases of 1999 and culminating with the wave of protests by European road hauliers in the third quarter of 2000.

As shown in Tables 1 and 2, excise taxes on oil products increased or remained constant in the large majority of IEA countries from 1997 to 2000. In fact, some Northern and Central European countries (including Norway, Sweden, Finland, Denmark, the Netherlands, the United Kingdom, Germany, Spain, Poland, the Czech Republic and Hungary) have followed a policy of progressively increasing oil product taxes.

Figure 3. **Gasoline Prices and Taxes in OECD Countries, 2nd Quarter 2001**



Source: *Energy Prices and Taxes,* OECD/IEA Paris, 2001.

But the oil price increase of 2000, followed by widespread protests and roadblocks, prompted effective tax reductions on oil products — especially those used for transport. While only a few countries actually lowered their fuel taxes (France, Italy, Turkey and Australia), others, like the United Kingdom and Germany, delayed the phase-in of planned tax increases or granted other forms of fiscal relief. Some other countries such as Ireland, Portugal and Greece had already started lowering taxes in 1999, at the first signs of an oil price increase.

The reason for these differences of behaviour between countries is not entirely clear, but a number of elements may be worth noting. The countries that lowered their oil product taxes were not those with the highest consumer prices at the pump (Figure 3), nor those with the highest excise or VAT taxes (Figure 4). Rather, countries that reduced taxes were mostly towards the middle of the range, while the Northern European countries, with both high VAT and CO_2 taxes in place, and therefore the highest consumer prices, did not reduce the tax burden. While oil import dependency may have played a role in government's responses, *overall* energy import dependency

Table 1. **Evolution of Excise Taxes and Value-Added Taxes (VAT) on Oil Products for Heating and Transport Uses, 1997-2000**

Region/ Country	Excise taxes on oil products (Heating and transport uses)	VAT (Oil products and other environmental taxes)
EUROPE		
Austria	Excise taxes remained constant except for light fuel oil (LFO) for households (decreased in early 1999, rose again in mid-2000) and for regular unleaded gasoline (slight decrease since late 1998)	VAT 20%
Belgium	Constant since early 1997	VAT 21%
Czech Republic	Increasing taxes on all oil products for transport	VAT 22%
Denmark	Constant or increasing until mid-1999, then constant again	VAT 25%; tax DKr100/ tonne CO_2 on energy consumption (50% refund for business)
Finland	Increased in early 1998, constant afterwards	VAT 22%, additional CO_2 taxes + oil pollution fee
France	Increased until mid-2000; drop afterwards for all oil products except low sulphur fuel oil (LSFO) and LFO for industrial use	VAT reduced from 20.6% to 19.6% in early 2000
Germany	Constant until early 1999, increasing afterwards	VAT 15% until 1998, 16% afterwards
Greece	Constant or increasing for high sulphur fuel oil (HSFO), low sulphur fuel oil (LSFO) and diesel oil, fluctuating for LFO and decreasing since mid-1998 for gasoline	VAT 18%
Hungary	Increasing	VAT 12%
Ireland	Mostly constant until end 1998, decreasing starting in early 1999. Constant tax for unleaded gasoline	VAT 12.5%
Italy	All taxes increased in early 1999; all except HSFO and LSFO decreased since early 2000	VAT 19% until middle of 1997, 20% afterwards. CO_2 tax introduced in 1999, suspended a year later
Netherlands	Increasing	VAT 17.5%
Norway	Increasing	VAT 23%, CO_2 tax on heavy fuel oil (HFO), LFO, and gasoline.
Poland	Increasing	VAT 22% since 1998
Portugal	Constant taxes on HSFO and LSFO. Taxes on automotive fuels increased until early 1999, decreased afterwards	VAT 17% (except diesel for agriculture)
Spain	Increasing until beginning of 1999, constant afterwards	VAT 16%

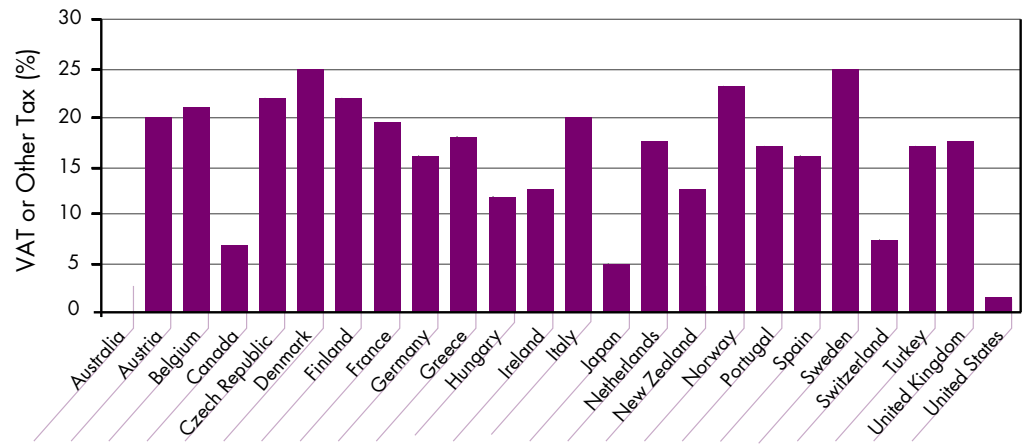
Table 1. **(continued)**

Region/ Country	Excise taxes on oil products (Heating and transport uses)	VAT (Oil products and other environmental taxes)
Sweden	Constant taxes; increase in early 2000 for automotive fuels	VAT 25%, CO_2 tax on LSFO, LFO, diesel oil, gasoline
Switzerland	Mostly constant taxes since beginning of 1998	VAT increased from 6.5% to 7.5% in 1998
Turkey	Strong variations in taxes on HSFO and LSFO; increasing taxes on other fuels until beginning of 2000, then decreasing taxes for gasoline and constant taxes for LFO and diesel oil	VAT increased from 15% to 17% since 1999
United Kingdom	Increasing taxes until mid-2000. LFO and automotive fuel taxes remained constant afterwards	VAT 17.5% on diesel oil and gasoline. LFO taxes decreased from 8% to 5% in 1997
NORTH AMERICA		
Canada	Taxes on diesel oil and gasoline have been constant since 1998. No information on other products	Goods and services tax 7%
Mexico	No information except for diesel oil taxes which increased until beginning of 1999 and decreased afterwards	VAT 15%
United States	No information	Federal sales tax on diesel oil and gasoline 1.3-1.5%; other motor fuel taxes differ in different states
PACIFIC		
Australia	Increasing motor fuel taxes until 1/8/2000, decrease afterwards. No information on other fuels	
Japan	Constant taxes on diesel oil and regular unleaded gasoline. No excise tax on other products	Consumption tax 5% since mid-1997
New Zealand	Constant taxes on motor fuels, no information on the other products	Turnover tax 12.5%

Source: *Energy Prices and Taxes*, OECD/IEA Paris, 2001.

did not determine which country reduced taxes. Nor was there a causal relationship between per capita income and tax relief. Instead, cultural factors, including public attitudes towards the environment, offer a better explanation.

Figure 4. **Taxes on Oil Products: VAT Tax Level (%) in 1997-2000**



Source: *Energy Prices and Taxes*, OECD/IEA Paris, 2001

There are clearly valid arguments in favour of reassessing the principles of taxation on energy products, and particularly oil products, and of reviewing their consistency. But the recent retreat by various IEA governments in the face of social unrest indicates wavering with respect to environmental goals. Indeed, the extent of the retreat on taxes may have offset even the cumulative results of the other, more modest climate-mitigation efforts.

Table 2. **Overall Trends in Excise Taxes for Oil Products in IEA Countries: 1997-2000**

Increase	**No change**	**Decrease**
Czech Republic	Belgium	Austria
Denmark	Canada	France
Finland	Japan	Greece
Germany	Switzerland	Ireland
Hungary	United States	Italy
Netherlands		Portugal
New Zealand		Turkey
Norway		
Spain		
Sweden		
United Kingdom		

Source: *Energy Prices and Taxes*, OECD/IEA Paris, 2001.

Market Instruments

Market instruments, particularly emissions trading and tradable renewables certificates, are becoming increasingly important in IEA Member countries' strategies to deal with climate change. In 2000, policies and measures involving this type of instrument were adopted or planned by seven countries and by the European Union.

Review of New Programmes

A number of new emissions trading systems became operational in 2000, and other regimes were proposed or planned — even in countries that had until recently rejected this approach. The EU launched its scheme through a Green Paper on GHG Emissions Trading that was intended to stimulate a wide debate on the system. Emissions trading schemes are becoming operational in the United Kingdom, where a domestic programme is to begin in late 2001, and in Denmark, where permits are to be sold as of 2001. Systems are under discussion in other countries as well. Proposals are being developed by the Australian government. The national strategy to reduce greenhouse gases being worked out in Norway includes a national system of tradable quotas. The Swedish government is elaborating an Emissions Trading Scheme as part of the national GHG emissions reduction programme. Germany has established a working party to evaluate the implementation of an emissions trading scheme, and the Netherlands has formed an independent commission to prepare a proposal for a domestic trading scheme.

The further development of emissions trading appears to depend in part on international circumstances, especially the ratification and entry into force of the Kyoto Protocol or of similar agreements on a regional basis. Australia has said that its domestic regime will not be adopted without an international agreement on trading. Finland wants its system to be part of a plan that would include the EU, all the Nordic countries and the countries around the Baltic Sea. Progress under the UNFCCC has been slow, but, with the agreement in Bonn, these programmes may be given additional impetus.

Tradable Renewable Certificates (TRCs) systems have received increasing attention over the past year, and Green Certificates Schemes have been enacted in several IEA Member countries, including Belgium and Australia. The Australian Renewable Energy Act, passed in December 2000, provides for Renewable Energy Certificates as a way for power retailers to buy electricity from renewable sources. Retailers are now required by law to buy 2% of their power from renewable sources — for a total of 9,500 gigawatt-hours. In Sweden, the government has been investigating the possibility of using green certificates to encourage electricity production from renewables. A group of European countries, including Finland, Germany, Italy, the Netherlands, Norway and the United Kingdom, plans to start trading renewable energy certificates in April 2001 on an experimental basis.

Four countries (the Netherlands, Norway, Sweden and the United Kingdom) reported on new project-based programmes. These were preparatory for Joint Implementation (JI) or the Clean Development Mechanisms (CDMs) under the Kyoto Protocol, in support of the World Bank's Prototype Carbon Fund, or under the "Activities Implemented Jointly" programme of the Climate Convention.

Trends and Analysis

Trading systems can significantly reduce the overall costs of compliance. While a global system with agreed rules would clearly lower overall transaction costs, the number of countries experimenting with national programmes indicates that local systems bring advantages as well.

A number of key rules must be worked out in order for such systems to operate. National emission trading schemes adopted or planned by IEA Member countries during the year 2000 differ in their design, especially in the nature of participants and the principles of permit allocation. For example, the European Union's proposal limits participation to electric utilities and large industrial sources, while the British system will be open to all companies operating in the United Kingdom which commit to binding GHG emissions limits. With respect to the initial allocation of permits, the quotas in the EU programme are to be auctioned off, whereas the allocation in the United Kingdom and in Sweden will be through grandfathering (based on current emissions). Green certificates programmes have led governments to establish rules on such key issues as eligibility and coverage. In Australia, fossil fuels and waste products derived from fossil fuels are excluded. In the Walloon Region of Belgium, green certificates will apply to combined heat and power generation on the basis of avoided CO_2 emissions, and in Denmark, the definition of renewables excludes large hydroelectric projects. The Australian scheme applies to all wholesale purchases of electricity on grids of over 1,000 MW of installed capacity. Legislation in Belgium applies quotas to energy distributors or grid managers.

Implementation issues, including those related to the development of new institutions, have also been discussed. In the United Kingdom, the Emissions Trading Authority established by the government is to be responsible for the day-to-day functioning of the scheme, including operation of the registry of allowance holdings and emissions, approval of emissions reduction projects and levying any penalties for non-compliance. In Australia, the Office of the Renewable Energy Regulator will be in charge of the registration of renewable energy certificates, which must be approved by the same body before they are considered valid.

Verification is essential to credible emissions trading. Some countries have proposed a two-tier approach to verification of emissions data in order to achieve credibility while minimising the administrative burden placed on participants. In the United Kingdom, the government plans to involve independent third parties in the verification of annual data and other information to demonstrate compliance.

Most trading proposals leave the operation of tradable permits systems to government regulators. However, the private sector has an interest in undertaking this role in some cases, including in the United Kingdom. The International Petroleum Exchange has proposed to undertake accounting and reconciliation functions required for the market. There is an open debate as to whether some key functions, such as setting emissions caps, allocating permits and enforcement, should remain with the government or not.

The option of fixed-price penalties for non-compliance has been adopted in the Australian Renewable Energy Certificates scheme (with penalties of A$ 40 per MWh) as well as in the tradable green certificate programme approved by the Flemish Region of Belgium. The United Kingdom GHG scheme currently contains no sanctions for non-compliance, relying instead on tax exemptions as incentives. A voluntary approach has been chosen by other IEA Member countries. In the longer run, the introduction of a full penalty regime will be considered if non-compliance becomes a serious problem. The international agreement adopted in Bonn in July 2001 calls for penalties as well. Countries that exceed their emissions targets are to pay back the excess at a rate of 1.3 tonnes for every tonne over the target level.

Systems of tradable permits remain in large part theoretical at this stage. In the United Kingdom, the rules for the application of the financial incentive have been delayed. Once scheduled to be available in March 2001, the details of the economic incentives to companies that participate in the emissions trading are now to be released only in July[5]. In addition, some major questions about the design of national schemes remain unanswered. In the United Kingdom there is disagreement over issues such as whether electricity generators emissions should be allocated to the end-users of the electricity, whether the scheme should cover CO_2 or all greenhouse gases, and how emissions reduction through the use of renewable energy sources should be considered. Major uncertainties remain on issues like the validity and quantity of trades the scheme can attract as well as over likely price levels. These questions are all the more difficult to answer as central characteristics of the emissions markets, such as price ranges and liquidity, are themselves dependent on the level of participation.

The experience gained over the coming years by IEA Member countries will be valuable and can be expected to cast a new light on implementation issues. The British and Danish Emissions Trading Schemes, scheduled to be operational in 2001, the Australian Renewable Energy Certificates, created as of 1st April 2001, the green certificate trading in Denmark, anticipated to be fully functional by 2002, and the Belgian regional programmes will be valuable test cases.

5. They had yet to be released as of 31 July 2001.

Regulations and Voluntary Agreements

Regulatory approaches involving mandates, standards and voluntary agreements make up more than one-quarter of all energy-related climate change policies and measures adopted or planned by IEA Member countries in 2000. Adjustments or additions to existing regulatory or voluntary programmes have been made by more than 15 Member countries. New actions include energy performance standards, especially for appliances, with new measures passed or announced in the Czech Republic, New Zealand and the United States, as well as at the EU level. New laws promoting energy savings in buildings were promulgated or entered into force. The Spanish law on construction requirements became effective in 2000. New laws were promulgated in France, existing requirements in the Netherlands were tightened and new energy conservation ordinances were prepared in Germany.

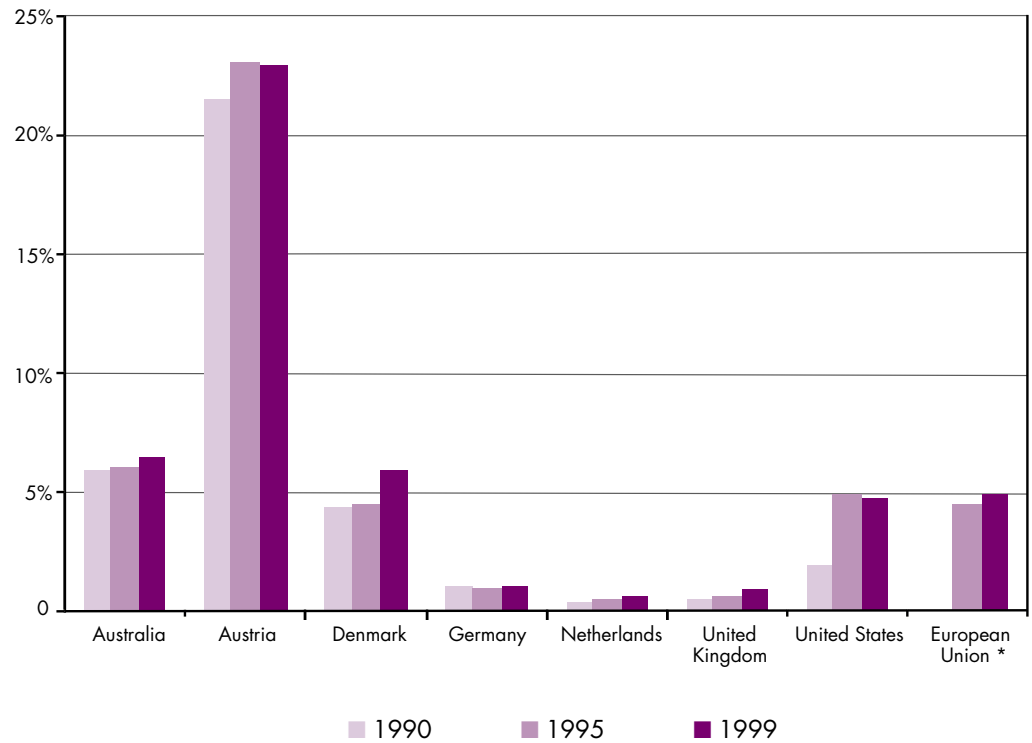
Regulations and Mandatory Standards

Most policies and measures involving mandates and standards are aimed at raising the share of renewable energy in the energy mix. During 2000, several IEA Member countries have adopted or planned green energy obligations, including Australia, Belgium and the United Kingdom. Australia passed legislation requiring electricity retailers to increase by 2% the power they sell from renewable energy sources by 2010. The United Kingdom announced a proposal requiring electricity suppliers to buy up to 10% of their power from renewable energy generators. These measures follow similar initiatives in other countries: Austria (1998), the Netherlands (1998), Denmark (1999) and Italy (1999).

Green energy obligations have been enacted in Australia in the Renewable Energy Act passed in 2000, with commitments similar to those adopted earlier in Italy, Austria and the Netherlands. Other countries have set an "objective" for generating a minimum share of electricity from renewable sources, but not a binding obligation. This is the case for Belgium, where the Flemish Region approved a decree to increase renewable energy consumption from current levels to 1% in 2001, 3% in 2004 and 5% in 2010. The Walloon Region is currently preparing a decree seeking to integrate a renewable standard, and a combined heat and power standard on the basis of avoided CO_2 emissions.

The proposed European Union directive on the promotion of electricity from renewable energy sources in the internal electricity market — COM(2000)884 — sets indicative figures for Member States' targets for the contribution of renewable energy sources to gross electricity consumption by 2010. These targets, which include the contribution of hydropower, are listed in Table 3. It is anticipated that the majority of new renewable sources will be non-hydro-based.

Figure 5. **Contribution of Renewable Energies to Total Primary Energy Supply**



* Data for the European Union are available as from 1995.
Source: *Energy Balances of OECD Countries*, OECD/IEA Paris, 2001 Edition.

Most national policies focus on electricity suppliers. Austria requires suppliers to purchase 8% of electricity from small hydro in 2000, and 4% from renewables (excluding hydro) by 2007. Australia, the Netherlands and the United Kingdom have similar requirements. Other countries place obligations for compliance on the producer of electricity, such as Italy under the law setting a 2% obligation to be met by 2002. Still others focus on consumers. In Denmark, electricity consumers are required to buy 20% of their electricity from renewable energy sources by 2003. In some cases, while a common national law has not been passed, local laws are being proposed or have been adopted. For example, Texas, like six other US states, has adopted Renewables Portfolio Standards calling for a minimum content of new renewables. Texas is on track to become the state with the second largest installed renewable energy capacity by the end of 2001.

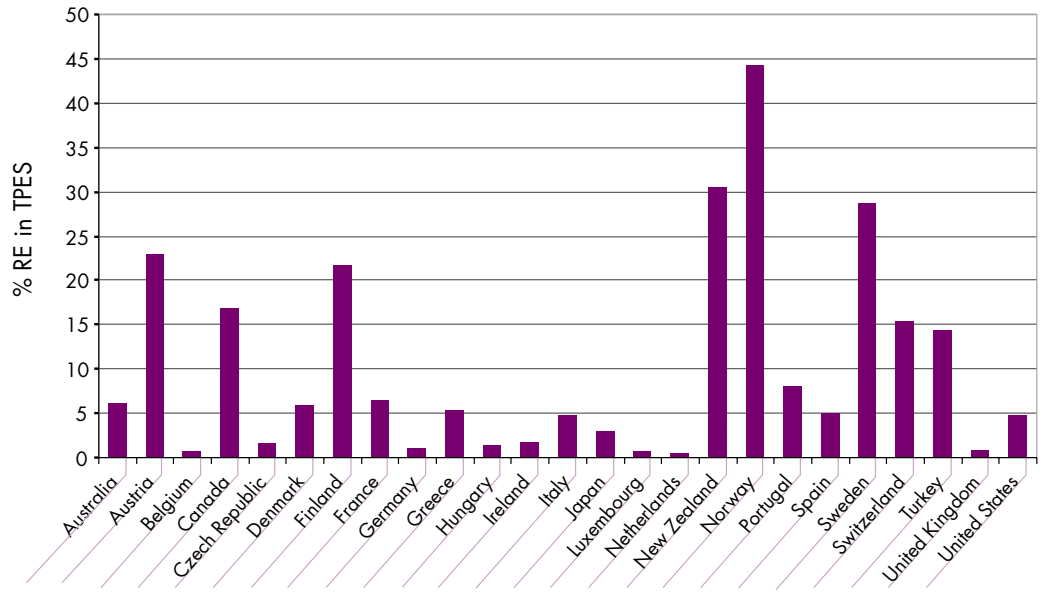
Table 3. **Indicative Targets for European Union Member States' National Electricity Produced from Renewable Energy Sources**

	Renewable energy* (TWh) 1997	Renewable energy as a percentage of total final consumption** 1997	Proposed target percentage of renewables as a share of total final consumption** 2010
Belgium	0.86	1.1	6.0
Denmark	3.21	8.7	29.0
Germany	24.91	4.5	12.5
Greece	3.94	8.6	20.1
Spain	37.15	19.9	29.4
France	66.00	15.0	21.0
Ireland	0.84	3.6	13.2
Italy	46.46	16.0	25.0
Luxembourg	0.14	2.1	5.7
Netherlands	3.45	3.5	9.0
Austria	39.05	70.0	78.1
Portugal	14.30	38.5	39.0
Finland	19.03	24.7	31.5
Sweden	72.03	49.1	60.0
United Kingdom	7.04	1.7	10.0
European Union	**338.41**	**13.9%**	**22% *** **

* Data refer to the national production of renewable energy in 1997.
** The percentage contributions of renewable energy in 1997 and 2010 are based on national production of renewables divided by gross national electricity consumption. In the case of internal trade of renewable energy (with recognised certification or origin registered) the calculation of these percentages will influence 2010 figures by Member State but not the Community total.
*** Rounded figure resulting from the reference values above.

Source: Proposed European Union directive on the promotion of electricity produced from renewable energy sources in the internal electricity market — COM (2000)884.

Figure 6. **Contribution from Renewable Energies in IEA Member Countries in 1999**



Source: *Energy Balances of OECD Countries*, OECD/IEA Paris, 2001 Edition.

Voluntary Agreements

In addition to the mandatory policies enacted during the past year, nine IEA Member countries and the European Union have adopted or planned further "voluntary" approaches to reduce emissions. Most of these agreements have been negotiated with industry to reduce CO_2 emissions. The focus of the effort is on reducing energy use, as in the agreements negotiated in the Netherlands in 2000, or more generally on GHG reductions. Both a Swiss and a German agreement set industry "voluntary" targets to reduce CO_2 and other greenhouse gas emissions in order to avoid a possible future tax increase. Over the past year, three agreements have also been passed in the transport sector in Canada and Sweden, as well as at EU level. These agreements involve the automotive industry; they seek to increase vehicle fuel efficiency in Canada and the EU, and develop new technologies in Sweden. The agreement signed between the Swedish government and the car companies to promote the development of environment-friendly technologies is one of the few agreements of the "co-operative" type, creating a government-private sector partnership, negotiated last year.

Most voluntary agreements (VAs) adopted or planned during the year 2000 are collective agreements signed with industrial organisations. These are to be distinguished from agreements concluded with individual industrial plants, an

approach widely used in Japan. In 2000 as in previous years, the Dutch government has negotiated voluntary agreements with industry sectors. The two newly negotiated "covenants" involve the rubber and plastic industry, and the meat-packing industry. In Germany, an Agreement on Climate Protection has been signed between representatives of the federal government and representatives of industry federations and associations. Participation by citizen associations, a common practice in many earlier Japanese agreements, is less commonly found in the agreements negotiated in 2000.

Among the agreements negotiated, some contain regulatory requirements and/or legally-binding objectives. In the classification system developed by the IEA in 1999 (*Dealing With Climate Change, 2000*), such agreements are classified as "strong". The "strong VA" approach has been used particularly in the Netherlands, where both new "covenants" negotiated in 2000 are of this type. A regulatory threat for non-compliance is also present in the voluntary agreement initiated by Switzerland in 2000. In this case, if the targets are not achieved, a CO_2 emissions tax will be phased in after 2004. The industry agreement on reducing CO_2 emissions reached in Germany is similar. If the targets are voluntarily met, the government has promised to postpone regulations that establish legally-binding goals. However, most voluntary agreements adopted or planned by IEA Member countries during 2000 did *not* contain legally-binding consequences for non-attainment of goals.

To date, there has been no attempt to determine whether the stringency and effectiveness of voluntary agreements varies with their nature. In future, it may be possible to compare "strong" VAs with "weak" VAs with regard to how much of a deviation from business-as-usual they call for — and with regard to their effectiveness in delivering the projected change. It is *a priori* politically easier to set a more stringent commitment if there is no consequence for non-attainment. However, as "weak" VAs may be the precursor to subsequent legal requirements, there may be countervailing pressures that limit the commitments even in "weak" agreements.

While the combination of VAs with regulatory backstops was a relatively common policy approach in the past year, a number of countries also considered combining VAs with other kinds of instruments. The United Kingdom proposed combining a voluntary approach and a system of tradable permits. Switzerland is currently negotiating voluntary agreements combining both emissions trading and CO_2 tax offsets.

Few new VA programmes were begun in 2000, but this may not be very significant. A considerable number of VAs were adopted in previous years and remain in force. Most IEA Member countries where voluntary agreements have been implemented or planned over the year 2000 had already used or considered using the approach in 1999. Newcomers include Australia, where the government and industry have been working out a voluntary agreement to achieve best-practice efficiency standards in reducing GHG emissions, and Sweden, where the government and the car industry have signed an R&D agreement.

For the majority of IEA countries in which voluntary agreements were signed in 2000, this approach constitutes a central policy instrument in the field of environment. In the

Netherlands, the voluntary agreements negotiated in 2000 are the last in a series of covenants with the industrial sector reached under the National Environment Policy. To date, more than ten industry sectors have concluded agreements with the Dutch government, including the basic metallurgical industry (1992), chemical industry (1993), dairy industry (1994), printing and allied trades (1993), electro-metallurgic industry (1995), textiles and carpet industry (1996), and the paper and cardboard industry (1996). Voluntary agreements are an important element of Japanese environmental policy, as are agreements negotiated at the local level — which have largely replaced regulatory instruments and unilateral commitments by industrial organisations. Voluntary agreements play a prominent role in Canada, where they cover a variety of sectors and constitute an important component of national policy in the field of climate change (for a more thorough review of voluntary approaches, see OECD, *Voluntary Approaches for Environmental Policy,* 1999).

Voluntary approaches continue to offer a way to involve and motivate the private sector in efforts to mitigate climate change. The continuing negotiation of new VAs combined with other policy instruments suggests that the voluntary approach is likely to continue to be used in the future. But the question remains whether voluntary agreements, in fact, lead to measurable emissions reductions.

Some reviews of earlier programmes suggest significant success; the best example is a VA between the U.S. Department of Energy and the electricity-generating sector. However, such comparisons are often made against a business-as-usual reference case, and assume that the alternative is a "no-policy" scenario. Clearly, a different result would emerge if it were assumed that the alternative case was either a binding obligation or a price signal.

The difficulty of evaluating VA effectiveness is further exacerbated by the fact that this family of environmental policy instruments includes a diversity of approaches. Many voluntary agreements are associated with complementary policies, which makes the assessment of the specific impact of the VA portion of the policy difficult. Furthermore, the success of some VAs appears to depend on features such as private sector enforcement and compliance programmes, elements lacking in many voluntary agreements. In addition, many VAs depend for their success on cultural norms in countries, making them difficult to transfer to other countries without considerable adjustment (for example the Japanese "Top-Runner Program").

Research, Development and Demonstration (RD&D) Policies

One traditional area of government intervention is funding for energy research and technological development. Firms routinely undertake R&D activities aimed at producing profitable new products and processes. Research, especially in the early

stages, is risky and has long payback periods. Furthermore, the "knowledge capital" produced through R&D investment is often an intangible asset that cannot be mortgaged or used as collateral when seeking market financing. In addition, assets produced through basic research cannot be easily or entirely appropriated by the firm that launched the research[6].

As a result, the private sector tends to avoid *basic* research, and to concentrate rather on commercial and pre-commercial activities. The "inappropriability problem" can lead to lower-than-desirable investments in private sector R&D.

For these reasons, governments often make up part of the shortfall with public money or give encouragement through fiscal incentives. The earlier the stage of research and technology development, the higher the share of government funding and participation provided, either directly or through financing to academia and research institutes.

In the context of climate change mitigation, the development of new, more energy-efficient and less polluting technologies can contribute to economic growth and increase energy services while also helping avoid irreversible damage to the environment. Unfortunately, governments have demonstrated only limited attention to energy research. Protracted periods of reduced spending, especially in the early stages of R&D, have slowed the speed of technological improvement, as measured by the frequency of significant innovations in the sector.

Government funding of RD&D is particularly popular in the United States, Japan, Australia and in some of the Northern European countries, especially Sweden and Denmark. In the year 2000, the United States alone accounted for one-third of the RD&D measures reported by IEA countries. In Member countries generally, programmes were fairly equally distributed between research, development and demonstration projects. Climate and energy-related RD&D in 2000 were mostly directed towards the development of renewable energy sources such as offshore wind, solar (both photovoltaic and high-temperature), biofuels and technologies that use fossil fuels in a cleaner way (fuel cells, clean coal technologies, CO_2 storage and disposal). Governments have provided funds both for laboratory research and for demonstration or pilot applications, often in the form of tax credits on R&D investments. In some cases, the research effort involved government-industry partnerships.

Individual countries often focus their efforts in particular areas. Denmark, Japan and Germany have been extremely active in promoting and developing wind power. Research on solar photovoltaics continues strongly in Japan, while in Italy the concentration is on power production from high-temperature solar technologies. Energy production from biomass and biofuels is the object of several research programmes in the United States and Australia. Sweden is active in the development of more environment-friendly transport technologies and does so in the framework of

6. For a thorough review of the economic literature on the so so-called "R&D Investment/Market failure" model, refer to A. Jaffe, R. Newell and R. Stavins: "Technological Change and the Environment". Resources for the Future, Discussion paper 00-47. October 2000. pp.9-17.

government-industry partnerships and voluntary agreements. Studies and assessments on energy efficiency and conservation in industry, households and transport are carried out in many countries, including Switzerland, the United Kingdom and the United States. Clean coal technologies attract interest in the United States and Spain.

The information collected in this database does not contain information on government-funded R&D activities and programmes in the area of nuclear power. It is known from other sources that in IEA countries, government spending on nuclear technologies, both fission and fusion, represents more than half the total public budget for energy R&D.

There has been a slight decline both in the number of new RD&D projects in IEA countries and in the share R&D policies represent in the total effort, compared to 1999. Countries seem to have focused more of their technology development effort on encouraging technology deployment and market penetration through fiscal measures. Whether this decline in the number of projects and policies is matched by a decrease in government R&D spending is difficult to say, as R&D spending figures for the year 2000 are not yet available.

Policy Processes

A large share of the new policies adopted in 2000 consisted of consultations, outreach and advisory efforts. Approximately one-third of IEA Member countries' actions in the year 2000 is of this type.

Consultation processes play a significant role in the elaboration of national strategies. In Belgium, the Federal Plan for Sustainable Development approved by the Council of Ministers on 20 July, includes many suggestions derived from a preliminary consultation on the draft of this plan. Following the presentation of the United Kingdom's proposal for a greenhouse gas emissions trading scheme in March 2000, the government launched a broad consultation on its design before formulating detailed rules. The programme that has been proposed was elaborated by a group set up in 1999 including representatives from industry and government. Consultations are under way in New Zealand to develop a national Climate Change Program with specific energy efficiency schemes. Canada has taken a similar approach, with a series of public discussions called "Tables" held around the country to gather input for 16 different aspects of the national climate policy initiative, including emissions trading, voluntary agreements with the private sector, and the design and implementation of new regulations. Canada's consultative National Climate Change Process resulted in the establishment of the National Implementation Strategy on Climate Change announced in October 2000.

Consultative programmes have been especially popular in the design of "market instruments" such as tradable permits — where countries tend to have less experience, and where domestic political concerns may be acute. Australia, Finland

and the United Kingdom have launched consultation processes on the elaboration of emissions trading schemes. In all three cases, these reviews produced initial reports in 2000. Though their form varies from one country to the other, consultations tend to involve a wide range of stakeholders, including representatives of national and local governments, private companies and associations, public interest groups and non-governmental organisations (NGOs), as well as experts from academic institutions.

It is hard to assess the efficacy of consultation policies. Although in some cases the main result of these consultative programmes seems to be delay or inaction, this approach can play a significant part in developing policies and reaching workable outcomes, particularly for federal states.

Private-Sector Initiatives

This book's focus is on government policies and measures. But quite a bit is happening in the private sector. The importance of its efforts should not be discounted.

As is clear from the listings in this volume, governments often support industrial efforts, both directly and indirectly. Government programmes provide a framework for reporting on industry actions. Voluntary registries already established in a number of IEA countries provide for annual reporting by companies of their climate change actions, in order to demonstrate progress in achieving established corporate goals. Other governments have signed memoranda of understanding ("voluntary agreements") with a company or group of companies, usually within a specific sector (see section above on voluntary agreements). This form of government-industry partnership is a well-established practice in many IEA countries. Green certificates programmes — one of the most active new tools in 2000 — provide the newest avenue for companies' engagement through the purchase, sale and trading of energy from renewable sources (see section above on market instruments).

Companies are not all waiting for governments to legislate before they act. Companies and groups of companies with similar objectives are establishing internal greenhouse gas reduction targets, undertaking bilateral trades of carbon credits, and altering their portfolios of fuels to lower GHG emissions. Emissions trading associations and pilot trading programmes are being established both publicly, as in the United Kingdom, and privately, as in the case of the Chicago Climate Exchange.

Developing tools to assess corporate performance has been a high priority in the private sector. Monitoring and verification are often key items in corporate programmes — even where companies are not yet bound by any legal reduction commitments. Accurate data collection, handling and documentation are preconditions to accurate tracking and reporting. Good monitoring systems will be important if companies want to participate in emissions trading or other "market mechanisms". Some companies have employed external auditors or NGOs to examine their environmental performance.

There is also growing co-operation between industry and environmental NGOs. Some companies have used NGOs as consultants in establishing their corporate policies and measures, or as independent monitors and auditors.

The role of corporations is likely to increase as IEA countries move to establish further domestic and international policies and measures to meet their Kyoto or domestic targets. Box 1 provides a sample of some new initiatives.

Box 1. Industry Initiatives

The following are just a few examples of industry initiatives undertaken in 2000 in IEA Member countries. These illustrate the spectrum of types of actions — including partnerships between government and industry and between industry and non-governmental organisations.

- The Partnership for Climate Change is a collaboration of businesses — including BP, Shell International, Suncor Energy Inc. (Canada), Pechiney (France) and Ontario Power Generation — and Environmental Defense, an environmental non-governmental organisation (NGO). Each new member must agree to: declare a global GHG emissions-limitation commitment backed by actions to achieve it; measure, track and publicly report its net GHG emissions; employ innovative strategies to work together with customers and suppliers; and share its experiences and learning. The objective is to achieve an aggregate reduction of emissions of 15% below 1990 levels within 10 years. The group is committed to demonstrating the use of market instruments.
- The World Resources Institute (WRI) is the organising body for a group drawn from businesses, governments and NGOs to design, disseminate and promote an international corporate protocol for measuring and reporting business GHG emissions. It is called the GHG Protocol Initiative. It includes companies (such as Norsk Hydro, Tokyo Electric Power Co., and the Clean Energy Group), intergovernmental organisations, NGOs and research institutes (such as the World Wildlife Fund, the Tata Energy Research Institute, the United Nations Environment Programme, the Environmental Protection Agency and the World Bank). Launched in 1999 jointly with the World Business Council for Sustainable Development (WBCSD), the group has focused on methods to record corporate emissions over product life cycles.
- The Renewable Energy Certificate System (RECS) was formed by 50 European power companies from the Netherlands, Norway, Sweden, Denmark, Belgium, Italy and the United Kingdom. It plans to develop an Internet-based market to trade green power from renewable energy sources. The RECS certificates will be issued in a uniform way in all participating countries and regions. The exchange is to be launched in 2001.

- In a significant turn-about, Ford Motor Company acknowledged that there is now "more than enough evidence of climate change to warrant an immediate and comprehensive — but considered — response". The company strengthened its programmes to monitor and conserve energy, including a commitment to improve the fuel efficiency of its sport utility vehicles by 25% within five years. It engaged a team of senior executives, supported by a team from across its business units, to establish a climate change inventory and baselines for the company, to consider a range of measures and to develop short- and long-term strategic options, including using renewable energy sources.
- As part of a diversified effort, the Shell Group in 2000 began its own emissions trading programme as part of its actions to meet its voluntary pledge to make a 10% reduction in GHG emissions by 2002, compared with 1990. Shell's board agreed last year to incorporate the cost of carbon into any major investment proposal.
- A feasibility study for the Chicago Climate Exchange sets the stage for the establishment of a voluntary pilot trading market in the American Midwest. Twenty-five companies and non-profit organisations have agreed to participate (including Ford, DuPont, Suncor, PG&E National Energy Group and International Paper). The exchange — which is to be launched in 2001 — is hoping to help develop rules and regulations for emissions trading.

Appendix

Policies and Measures: Tabulations and Comparisons with 1999 Data

The figures and tables in this appendix indicate the diversity and focus of national programmes. They also provide a comparison with data from 1999 (*Dealing with Climate Change*, 2000). However, a number of caveats must be borne in mind when considering this information:

- The number of polices is not an indication of the effectiveness of actions.
- There is no distinction made — either in this appendix, or in the database itself — between "large-scale" policies, such as a new tax, and "small-scale" policies, such as the building of a demonstration project.
- The fact that policies in a given area are not listed for some countries does not indicate that those countries are taking no action in that area. It mainly indicates that no new policy or modification of an existing policy was undertaken during the year referenced.
- Some policy actions have an impact on many sectors, or a single programme may include many instruments. In such cases, all sectors and all instruments are listed separately in the table.
- Figures A-1 and A-2 which aggregate policies for 1999 and 2000 should be taken as indicative only. Some double counting (*e.g.* policies planned in 1999 and taken in 2000) may be included.

Notwithstanding these limitations, the tables and figures do provide a broad perspective on the focus of new programmes and efforts. It is clear, for example, that a broad range of measures is being taken in most countries, although the largest share of specific actions is in the energy production sector. While most countries use all available policy instruments, there is an emphasis on fiscal measures, as well as on outreach. Finally, it is clear that emissions trading is an emerging focus of new policies.

Table A-1. **Energy-Related Policies and Measures in the IEA Database** — *Policies by Sector, 2000*

	Buildings		Transport		Industry		Energy Production		All Sectors		Total		
	Taken	**Planned**	**Taken**	**Planned**	**Taken**	**Planned**	**Taken**	**Planned**	**Taken**	**Planned**	**Taken**	**Planned**	**Total**
Australia	1		1	1	1	2	4	4	3	1	10	8	**18**
Austria							1			1	1	1	**2**
Belgium	3	1	1	1	1	2	3	1	2	1	10	6	**16**
Canada			1	2			5		5		11	2	**13**
Czech Republic	2				1		2		1	1	6	1	**7**
Denmark			3	1			3		3		9	1	**10**
Finland			1					1	1	1	2	2	**4**
France	4		1		1		2		3		11		**11**
Germany	3	1	2		3		3			1	11	2	**13**
Greece			2							1	2	1	**3**
Hungary					1				1		2		**2**
Ireland	3						1		3		7		**7**
Italy	3		4		1		1	1	1		10	1	**11**
Japan	5		2	1	3		3		2		15	1	**16**
Luxembourg			1						1	1	2	1	**3**
Netherlands	1		1			1			3	2	5	3	**8**
New Zealand	3	2	1				1		1	2	6	4	**10**
Norway	1					1	1	2	2	1	4	4	**8**
Portugal			2						1		3		**3**
Spain	1				1		2		1		5		**5**
Sweden	1		2		1	1	3	1	3	3	10	5	**15**
Switzerland				1				1	1	1	1	3	**4**
Turkey	1	1							1		2	1	**3**
United Kingdom	2	2	1	1	1		1	1	1	3	6	7	**13**
United States	2	5	8	2	5		6	2	1		22	9	**31**
European Union	2	1	4	1		2	2	2	3	1	11	7	**18**
Total	**38**	**13**	**38**	**11**	**20**	**9**	**44**	**16**	**44**	**21**	**184**	**70**	**254**

Table A-2. **Energy-Related Policies and Measures in the IEA Database —** *Policies by Instrument, 2000*

	Fiscal		Tradable Permits		Regulatory Instruments		Voluntary Agreements		RD&D		Policy Processes & Outreach		Total		
	Taken	Planned	Taken	Planned	Taken	Planned	Taken	Planned	Taken	Planned	Taken	Planned	Taken	Planned	Total
Australia	5		1	1		3	1	1		2	2		9	7	**16**
Austria					1							1	1	1	**2**
Belgium	1	2	1	1	3			2			4	1	9	6	**15**
Canada	6		1				1		6	1	4	1	18	2	**20**
Czech Rep		1			3						1		4	1	**5**
Denmark	2		2						1		4	1	9	1	**10**
Finland			1	1							1	2	2	3	**5**
France	4				1				1		4		10		**10**
Germany	4			1		1	2				2		8	2	**10**
Greece	2											1	2	1	**3**
Hungary	1				1						1		3		**3**
Ireland	1								2		5		8		**8**
Italy	6				1					1	1		8	1	**9**
Japan	4	1	1				2		4		3		14	1	**15**
Luxembourg											2	1	2	1	**3**
Netherlands			3	1	1			1			2	2	6	4	**10**
New Zealand				1	3	1		1			2	1	5	4	**9**
Norway	1		1	1	1	1					1	1	4	3	**7**
Portugal	1								1		2		4		**4**
Spain	1				1				1		1		4		**4**
Sweden	6		1	2			1	1	1		1	4	10	7	**17**
Switzerland	1	3				1	1	1					2	5	**7**
Turkey					1	1					1		2	1	**3**
United Kingdom	2	1		3	2			1	1	1	3	4	8	10	**18**
United States	5	2			2	4	2	1	11	1	4		24	8	**32**
European Union	1	1		1	3	1	2		5			2	11	5	**16**
Total	**54**	**11**	**12**	**13**	**24**	**13**	**12**	**9**	**34**	**6**	**51**	**22**	**187**	**74**	**261**

Taken = Adopted and/or implemented and/or modified. Planned = Planned and/or announced.

Table A-3. **Energy-Related Policies and Measures in the IEA Database** — *Policies by Sector, 1999*

	Buildings		Transport		Industry		Energy Production		Technology		Total		
	Taken	**Planned**	**Taken**	**Planned**	**Taken**	**Planned**	**Taken**	**Planned**	**Taken**	**Planned**	**Taken**	**Planned**	**Total**
Australia	1	5	5	7	9	2	5	2	1		21	16	**37**
Austria	1		1		1		1		1		5		**5**
Belgium	3	2	4	2	3	3	4	4	2	1	16	12	**28**
Canada	17		20	2	23	4	21	6	13		94	12	**106**
Czech Republic	1	1	1	2	1	2	2	1	1		6	6	**12**
Denmark	1		1	1	2		4	1			8	2	**10**
Finland	1	1		1	2	1	2	1	1	1	6	5	**11**
France	9	4	3	2	4	1	5	5	1	1	22	13	**35**
Germany	4	2	1	1	2	2	2	3			9	8	**17**
Greece	1		6	1			2	3			9	4	**13**
Hungary	3	1	3	1	3	1	3	1			12	4	**16**
Ireland	1	5	2	3	3	3	2	4			8	15	**23**
Italy		1	2	2	3		2	2			7	5	**12**
Japan	8		6	1	4		4	1	3	1	25	3	**28**
Luxembourg	3	4	4	2	3	1	4	2			14	9	**23**
Netherlands	3	8	3	5	7	9	6	11	1		20	33	**53**
New Zealand	1	1	1	1	1	1	1	1			4	4	**8**
Norway	2	2	4		5	2	3	4		1	14	9	**23**
Portugal	2	1	6	1	3	1	2	1			13	4	**17**
Spain		1	1		1		2	1	1		5	2	**7**
Sweden	1	1	1		1	1	1	1			4	3	**7**
Switzerland	7	2	8	2	7	2	5	2			27	8	**35**
Turkey	1		1		1		1				4		**4**
United Kingdom	1	3	3	6	1	3	1	4			6	16	**22**
United States	4	7	3	11	4	8	10	14	4	7	25	47	**72**
European Union	2	4	4	8	2	4	1	7	1		10	23	**33**
Total	**78**	**57**	**94**	**62**	**96**	**51**	**95**	**82**	**30**	**12**	**384**	**263**	**657**

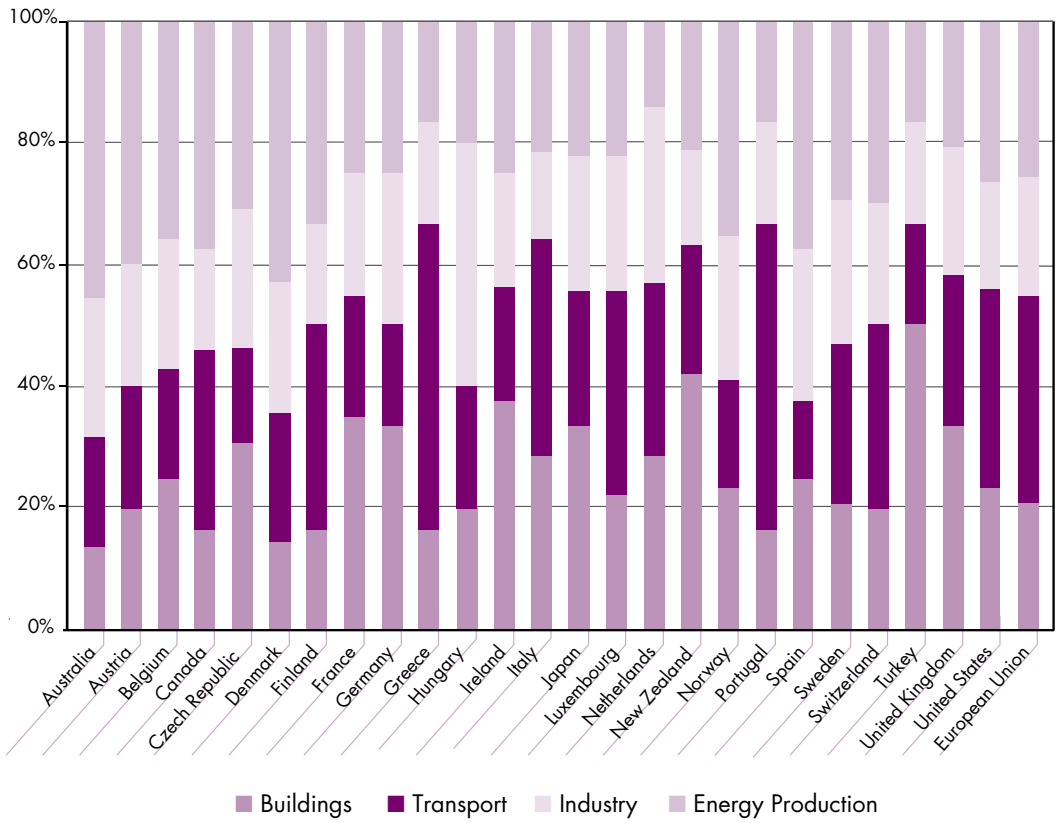
Table A-4. **Energy-Related Policies and Measures in the IEA Database** — *Policies by Instrument, 1999*

	Fiscal		Tradable Permits		Regulations and Voluntary Agreements		RD&D		Policy Processes & Outreach		Total		
	Taken	**Planned**	**Taken**	**Planned**	**Taken**	**Planned**	**Taken**	**Planned**	**Taken**	**Planned**	**Taken**	**Planned**	**Total**
Australia		7	2	1	3	5	2		10	2	17	15	**32**
Austria									1		1		**1**
Belgium		2	1	1		3			4	3	5	9	**14**
Canada	6	2	8	2	6	1	9	1	12		41	6	**47**
Czech Republic		1				3			2		2	4	**6**
Denmark	1	1	2	1	3						6	2	**8**
Finland	2				2	1	1		2		7	1	**8**
France	6	3		1	4	7	3	1	3		16	12	**28**
Germany	4	5		1	2	3			1		7	9	**16**
Greece	6					2	2	1	1		9	3	**12**
Hungary	1				1			1	1		3	1	**4**
Ireland	1	3						1	3		4	4	**8**
Italy	2	1		1	3	3			1		6	5	**11**
Japan	2	2			6		4	1	3		15	3	**18**
Luxembourg	3	4			2		1	1	2	3	8	8	**16**
Netherlands	3	7	2	2	5	5	2		1	3	13	17	**30**
New Zealand			1	1					1		2	1	**3**
Norway	2	2		3	1		1	2		1	4	8	**12**
Portugal	6	1			2	1	1		1		10	2	**12**
Spain			1	1	2	1	1			1	4	3	**7**
Sweden			2	1				1			2	2	**4**
Switzerland	1	3			6		1		3		11	3	**14**
Turkey									2		2		**2**
United Kingdom	1	4		2		3			2	1	3	10	**13**
United States	1	4		2	2	9	8	10	2	4	13	29	**42**
European Union		2			5	10		1	2	3	7	16	**23**
Total	**48**	**54**	**19**	**20**	**55**	**57**	**36**	**21**	**60**	**21**	**218**	**173**	**391**

Taken = Adopted and/or implemented and/or modified. Planned = Planned and/or announced.

Figure A-1. **Policies by Instrument: 1999 + 2000 (Taken and Planned)**

Figure A-2. **Policies by Sector: 1999 + 2000 (Taken and Planned)**



Methodology

Introduction

Section II of this volume provides a compendium of energy-related policies and measures that were taken or planned in 2000 by IEA Member countries to address climate change. In addition to the policy-related information, the section presents key indicators on energy use and CO_2 emissions for each country. A sectoral division of 1999 CO_2 emissions is provided, as is a listing of total primary energy supply (TPES) and CO_2 emissions for 1990, 1995 and 1999. Emissions and energy data are drawn from the IEA publication: *CO_2 Emissions from Fossil Fuel Combustion: 1971-1999*.

A compendium of national policies is most useful when it allows detailed comparisons among countries. Therefore, the material in this volume has been classified according to a variety of criteria and factors, each of which is described below. National circumstances, however, are never precisely equivalent. For example, a tax policy in the transport sector in Italy may not be readily comparable with a policy similarly classified in Australia. Thus, inter-country, inter-sectoral or inter-policy comparisons should be treated with caution.

In addition, any effort to compile policy information on countries is bound to be incomplete — and this book is no exception. Some countries do not maintain centralised records of policy actions. Some devolve authority to act to regional or local authorities. And the data in this volume are limited to new policies or measures enacted or proposed in 2000. Thus, policies that have been initiated in prior years — but not modified in 2000 — will not be represented here. The IEA intends to maintain and update this database in the future.

This section briefly describes the sources of the data in the tables, and the process used to collect and review them. It then presents a brief explanation of the structure of the data tables in Section II and the classification used.

Methodology for Data Collection

In early 2001, as part of an expanded effort to collect and exchange information on Member countries' energy policies, information was collected on energy and energy-related policies and measures implemented or planned in the year 2000 to mitigate climate change. Data were collected from government ministries, agencies and departments, including information posted on Internet sites (see Annex 1), from

international organisations, including the UN Framework Convention on Climate Change and the Asia Pacific Energy Research Centre; and from periodicals and journals. Once compiled, this information was submitted to Member countries for their review and revision, as well as for additions or deletions.

Certain criteria for data collection were established in the interest of promoting uniformity, and of narrowing and focusing the data management task:

- Information listed was required to be for specific measures rather than general statements. Statements such as "energy efficiency was promoted" are not included.
- All policies listed were required to have a clear link to CO_2 or GHG reduction in the energy sector. This was interpreted broadly to include energy use in transport, industry and agriculture, as well as in power generation.
- Information was requested, although very infrequently provided, on the projected effects of policies to limit or reduce emissions.

Readers are invited to submit in writing to the Agency additional information on climate change policies and measures in energy or energy-related sectors in IEA countries.

Scope of the Database

Timing of Policies and Measures Collected for the Database

This publication records actions taken by IEA Member countries to deal with climate change during the year 2000. Policies and measures are included in the database only if they were implemented or announced between 1 January and 31 December 2000, or if they existed before this period but were modified during 2000. The scope of the database is summarised in Table 4.

Table 4. **Scope of the Database**

Measures Taken in 2000 *New measures adopted and/or implemented; existing measures modified*	161
Measures Planned in 2000	63

Some policies and measures, while undertaken in the year 2000, are *not* included in this database. These are:

- Measures concerning the capture and storage of GHG unrelated to energy production.
- Measures adopted, planned or modified in the year 2000 which may lead to an *increase* in GHG emissions, such as decreases in fossil fuel taxes.

- Measures proposed during the time period considered but subsequently rejected, such as the energy tax proposed by the Swiss Confederation and rejected in a national referendum in September 2000.
- Measures announced within the time period but subsequently cancelled; one example is the decision taken in March 2001 by President George W. Bush not to seek mandatory emissions reductions of carbon dioxide at electric power plants, contrary to the announcement made during the U.S. presidential campaign.

Few measures are listed that relate to non-CO_2 greenhouse gases. Countries provided little information on such activities, and the public literature provides few examples. It is assumed that this scarcity results from the fact that few energy-related policies address these gases as the majority of the emissions result from agriculture and industrial processes.

Data Classifications and Database Categories

The data have been classified in a system of categories and sub-categories. The database, developed in a fully searchable format using Microsoft Access™, also contains a variety of information.

- *Country:* The IEA Member country implementing the measure.
- *Type and Classification:* Policies have been divided into the categories and sub-categories summarised in Table 5.
- *Applicable Sector(s) and Sub-sector(s):* The sectors and sub-sector categories are listed in Table 6.
- *Fuel Source and Fuel Source Sub-category(ies):* These two fields list the fuel source and fuel source sub-category to which the policy is applicable (Table 7). Some instruments may be applicable to all fuels or all source sub-categories.

Classifications used in the database have been modified from those used in the 1999 text to homogenise and clarify categories. The changes concern the following categories:

- *Policy Types and Classifications*
  - Renaming of the "Market" category as "Tradable Permits".
  - Removal of the classification designation "under development" which refers to a status.
  - Splitting of the category "Regulations and Voluntary Agreements" into two categories: "Regulatory Instruments" and "Voluntary Agreements".
  - Introduction of two new sub-categories for the classification "Voluntary Agreements": "Strong" (containing legally-binding objectives and a strong regulatory threat), "Weak" (without penalties for non-compliance).

- Renaming of the category "Technology Research, Development & Dissemination" as "Research, Development & Demonstration" (RD&D) and introduction of a new sub-category "Demonstration Projects".
- Introduction of a new sub-category for the type "Policy Processes and Outreach": "Institutional Development".

- *Applicable Sector(s) and Applicable Sub-sector(s)*
  - The formerly separate sector "Community Use" becomes a sub-sector of "Buildings" which is now subdivided into "Residential" and "Non-residential".
  - The former "Electricity Generation" sector is broadened and renamed "Energy Production". "Electricity Generation" becomes a sub-sector with newly added sub-sectors: "Exploration/extraction", "Refining", and "Transmission/ transport".
  - The sector "Technology" is removed.
- *Fuel Source and Fuel Source Sub-sector(s)*
  - The fuel source sub-sector "Peat" is moved to the "Fossil Fuels" sub-sector categories.
  - "Heat Pumps" is removed from the "Renewables" sub-sector categories.

Table 5. **List of Policy Types and Classification Sub-categories**

Policy Type	Classification
Fiscal	Taxes (tax, tax exemption, tax reduction, tax credit) Fees/charges, Refund systems Subsidies (transfers, grants, preferential loans)
Tradable Permits	Emissions trading Green certificates Project-based programmes (including CDM and JI)
Regulatory Instruments	Mandates/standards Regulatory reform
Voluntary Agreements	"Strong" "Weak"
Research, Development & Demonstration (RD&D)	Research programmes Technology development Demonstration projects Technology information dissemination
Policy Processes and Outreach	Advice/aid in implementation Consultation Outreach/information dissemination Strategic planning Institutional development

Table 6. **List of Sector and Sub-sector Categories**

Sector	Sub-sector(s)	Sub-sector Details
Buildings	Residential Non-residential Community use	Space heat; water heat; cooking; lighting; appliances;other residential; all residential; commercial, public district heating
Transport	Passenger	Cars; bus; rail travel; inland air; trucks; other travel; all travel
	Freight	Rail freight; inland water; other freight; all freight
Industry	Manufacturing	Paper & pulp; chemicals; non-metallic metals; iron & steel; non-ferrous metals; food & beverages; industrial appliances; equipment; other manufacturing; all manufacturing
	Non-manufacturing	Agriculture & fishing; mining; construction; other industry
Energy Production	Exploration/extraction Refining Transmission/transport Electricity generation	

Table 7. **List of Fuel Source and Fuel Source Sub-sector Categories**

Fuel Source	Fuel Source Sub-sector
Fossil Fuels	Oil; Coal; Gas; Peat; All
Electricity	
Renewables	Hydro; Biomass; Waste; Wind; Solar; Geothermal/Ocean; Tidal/Waves; All
Nuclear	
Hydrogen	

In addition to the policy listings provided in Tables 5 to 7, the database contains information on each policy. Data include:

- *Status:* This field notes whether the initiative is currently being implemented or is still in a planning stage. In Section II of this volume, this information is reflected in the policy description. Note that the text printed in italics represents policies that have been proposed, but may not yet be implemented.
- *Date promulgated, date effective, date revised:* This field provides information on the date the policy was promulgated, the date it became effective, the date it has been or is expected to be revised, and whether there is a sunset clause for the initiative (i.e., when the initiative expires) and, if so, when.

- *Milestones, milestone dates:* These fields list interim or final targets to result from implementation, whether actual or anticipated.
- *Funding:* This field lists information on the amount of money being spent annually or over the life of the programme. Few of the policy initiatives in the database include this information.
- *Agency/authority, contact:* The name of the implementing agency and the contact person for the activity in question.
- *References/documents:* A listing of reference materials providing further information or reporting on the action.

IEA Country Actions

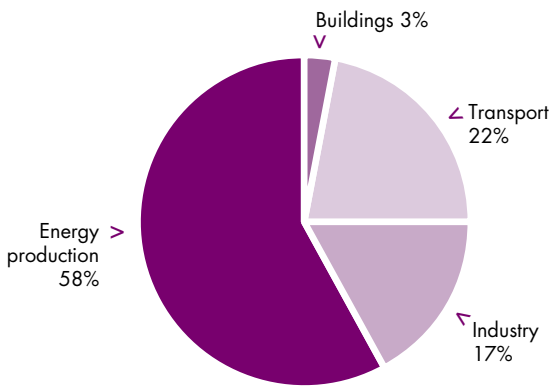
AUSTRALIA

Key Indicators

	1990	1995	1999
TPES (Mtoe)	87.54	94.54	107.93
TPES/Capita (toe per capita)	5.12	5.23	5.69
TPES/GDP (toe per thousand 1990 US$ PPP)	0.26	0.24	0.23
CO_2 Emissions (Mt of CO_2)	258.86	279.16	326.64
CO_2/Capita (t CO_2 per capita)	15.15	15.45	17.22
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.78	0.71	0.70

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal	**Subsidy**	The Federal Budget adopted in May 2000 allocated nearly A$ 800 million of additional funding to greenhouse gas reduction programmes over four years. These measures are known collectively as Measures for a Better Environment.	All	All
Fiscal	**Subsidy**	The Measures for a Better Environment package adopted in 2000 featured a A$ 400 million competitive bidding programme for grant funding for sub-commercial abatement projects, the Greenhouse Gas Abatement Program (GGAP). The programme commenced in 2000 and runs until 2004. This measure aims to reduce Australia's net greenhouse gas emissions by supporting projects that are likely to result in substantial emissions reductions or substantial sink enhancement. Applicants from across the economy can seek funding for large-scale, cost-effective investment projects in a competitive bidding process. To qualify, projects must lead to quantifiable abatement not expected to occur in the absence of GGAP funding and with existing Commonwealth or state government programmes alone. Winning bids must minimise both GGAP funds needed and net national cost per tonne of CO_2 equivalent abated in 2008-2012. Priority is given to projects that deliver abatement exceeding 250,000 tonnes of carbon dioxide equivalent per year. The first round of the programme is to be completed in 2001.	All	All

Policy Type	Classification	Policy Description	Sector	Energy
Fiscal	**Subsidy**	The Measures for a Better Environment package adopted in 2000 delivered new funding of A$ 321 million for renewable energy, by creating a new Remote Renewable Power Generation Program (up to A$ 264 million), which provides up to 50% of the capital cost of installing new renewable power facilities in off-grid applications.	Energy Production (Electricity Generation)	Renewables
Fiscal	**Subsidy**	Under the Measures for a Better Environment package, the Alternative Fuels Conversion Program was created with a budget of A$ 75 million to provide up to 50% of the capital cost of conversion of diesel vehicles (over 3.5 tonnes GVM) to CNG and LPG and to support alternative fuels industry and technology development. The package also includes complementary measures, such as the Diesel and Alternative Fuels Grants Scheme which, *inter alia*, provides rebates for the use of specified renewable and alternative fuels, funded through tax expenditures additional to the above amounts.	Transport Industry	Fossil Fuels Renewables
Fiscal	**Subsidy**	The Measures for a Better Environment package adopted in 2000 delivered a new Photovoltaic Rebate Program (A$ 26 million), which provides up to 50% rebate for the cost of installing roof-top PV power systems on houses and community-use buildings.	Buildings (Residential, Community Use)	Renewables
Tradable Permits	**Green Certificates**	The Renewable Energy (Electricity) Act 2000, that supports the implementation of the Mandatory Renewable Energy Target (MRET), was passed by the Australian Federal Parliament in December 2000. The government's renewable energy target seeks to raise the contribution of renewable energy sources in Australia's electricity mix by 9,500 GWh per year by 2010, corresponding to a 2% increase from 10.5% to 12.5%. Under this measure, tradable Renewable Energy Certificates (RECs) will be used to demonstrate compliance with the objective. Wholesale energy purchasers will have to purchase increasing amounts of electricity generated from renewable sources from 1 April 2001. In order to discharge their liability, liable parties will need to surrender Renewable Energy Certificates to the Renewable Energy Regulator. A Renewable Energy Certificate represents one MWh of electricity. A penalty payment for non-compliance has been set at A$ 40 per MWh (non-tax deductible). This act applies as from 1 April 2001.	Energy Prod. (Electricity Generation)	Renewables
Voluntary Agreements	**Strong VA**	On 1 July 2000, Australia introduced efficiency guidelines for power generators using fossil fuels as a voluntary measure. The standards apply to new projects and existing power generators above a minimum threshold, whether grid-connected, off-grid or self-generators. The minimum threshold is 30 MW capacity, 50 GWh electrical output, and capacity factor of 5% or more in each of the last three years. The best-practice efficiency guidelines for new plants are: Natural gas plant, 52% net thermal efficiency (Higher Heating Value HHV); Black coal plant, 42% net thermal efficiency (HHV), and Brown coal plant, 31% net thermal efficiency (HHV). The measure is being implemented through legally-binding, 5-year Deeds of Agreement between the Commonwealth and affected businesses.	Energy Prod. (Electricity Generation)	Fossil Fuels

Policy Type	Classification	Policy Description	Sector	Energy
Policy Processes and Outreach	**Institutional Development**	The Victorian government announced in May 2000 that it was establishing a Sustainable Energy Authority to facilitate energy efficiency and the use of renewable energy. More than A$ 20 million have been allocated over the next four years for the authority, which has replaced Energy Efficiency Victoria.	All	All
Policy Processes and Outreach	**Institutional Development** **Advice/Aid in Implementation**	In December 2000, the Commonwealth Government established the Office of the Renewable Energy Regulator (ORER) with a budget of A$ 6.5 million for the first four years. ORER's role is to administer the Mandatory Renewable Energy Target (MRET).	Energy Prod. (Electricity Generation)	Renewables
		policies and measures planned in 2000		
Tradable Permits	***Emissions Trading***	*After the release of four discussion papers on emissions trading in 1999, the Australian Greenhouse Office has been working on a proposal with a range of options in 2000. The federal government announced it would only mandate domestic emissions trading when the Kyoto Protocol is ratified by Australia, enters into force and there is an established international emissions trading regime.*	*All*	*All*
Regulatory Instruments	***Mandates/ Standards***	*The government is considering a proposal for a "greenhouse trigger" under the Environment Protection and Biodiversity Conservation Act 2000, which would allow the federal government to exercise greater control over approvals for any project which emitted more than 500,000 tonnes of carbon dioxide equivalent a year.*	*Industry (Manufacturing)* *Energy Prod. (Electricity Generation)*	*Fossil Fuels*
Regulatory Instruments	***Mandates/ Standards***	*The Queensland government announced in May 2000 that electricity retailers would be required to source a minimum of 15% of power needs from gas-fired (13%) or renewable energy sources (2%), from 1 January 2005.*	*Energy Prod. (Electricity Generation)*	*Renewables*
Regulatory Instruments	***Mandates/ Standards***	*In 2000, the Queensland government announced that it will not issue any more coal-fired power station licences unless absolutely necessary.*	*Energy Prod. (Electricity Generation)*	*Fossil Fuels (Gas, Coal)*
Voluntary Agreements	***Weak VA***	*Under a programme entitled the Energy Efficiency Best Practice Program, the government and industry are negotiating a voluntary agreement to achieve best-practice efficiency standards aimed at reducing greenhouse gas emissions.*	*Industry*	*All*
RD&D	***Demonstration Projects***	*The Australian government announced a wide variety of demonstration projects over the year 2000. As an example, the government announced that a demonstration plant using a process of biomass energy production developed by the government's research organisation (CSIRO) will be built in Western Australia in 2001. The plant will generate electricity (1 megawatt) and produce activated carbon (700 tonnes) and eucalyptus oil (200 tonnes).*	*Energy Prod. (Electricity Generation)*	*Renewables (Biomass)*

Policy Type	Classification	Policy Description	Sector	Energy
RD&D	***Research Programmes***	*Australia's federal government announced in September 2000 that it will fund a study into the commercial viability of increasing ethanol fuel production by the sugar industry. This study, estimated to cost A$ 20,000, will be co-ordinated by the Australian Bureau of Agricultural and Resource Economics (ABARE). This initiative builds on an existing commitment of A$ 2 million for a ligno-cellulosic ethanol pilot plant.*	*Transport*	*Renewables (Biomass)*

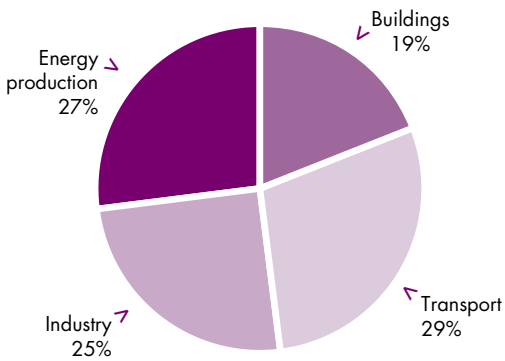
AUSTRIA

Key Indicators

	1990	1995	1999
TPES (Mtoe)	25.22	26.37	28.43
TPES/Capita (toe per capita)	3.27	3.28	3.51
TPES/GDP (toe per thousand 1990 US$ PPP)	0.16	0.15	0.15
CO_2 Emissions (Mt of CO_2)	56.80	58.17	61.68
CO_2/Capita (t CO_2 per capita)	7.36	7.23	7.62
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.36	0.34	0.33

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Regulatory Instruments	**Mandates/ Standards**	In 2000, the federal government adopted the Energy Liberalisation Act requiring distribution system operators to purchase electricity from renewables (excluding hydropower) up to a certain share (2001: at least 1%, 2003: at least 2%, 2005: at least 3%, 2007: at least 4%) of their electricity sales derived from these renewables. The act entered into force in December 2000.	Energy Prod. (Electricity Generation)	All
		policies and measures planned in 2000		
Policy Processes and Outreach	***Strategic Planning*** ***Consultation***	*The Austrian government is elaborating the National Climate Strategy based on a December 1999 study. The programme is now in the last stage of consultation with the relevant stakeholders. The Climate Strategy consists of seven packages of measures (space heating/private consumption, electricity and heat production, transport, industry, waste management, agriculture and forestry, and other greenhouse gases).*	*All*	*All*

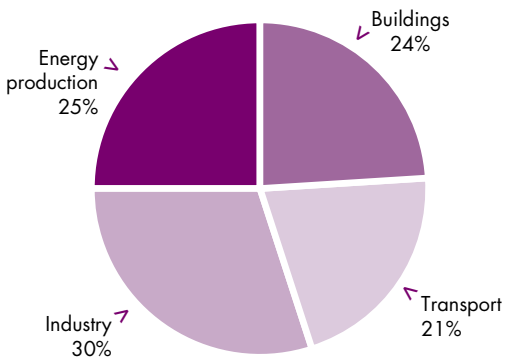
BELGIUM

Key Indicators

	1990	1995	1999
TPES (Mtoe)	48.43	52.39	58.64
TPES/Capita (toe per capita)	4.86	5.17	5.74
TPES/GDP (toe per thousand 1990 US$ PPP)	0.24	0.24	0.24
CO_2 Emissions (Mt of CO_2)	106.53	112.88	116.40
CO_2/Capita (t CO_2 per capita)	10.69	11.14	11.39
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.52	0.51	0.48

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal	**Subsidy**	Different financial incentives have been introduced by the regions in 2000 for the improvement of energy efficiency in buildings. Two regions allocate subsidies to municipalities, local public bodies, schools and hospitals for energy-efficient investments: the Brussels-Capital Region subsidises energy audits in buildings to cover 50% of the cost and the Walloon Region grants a subsidy of maximum BF 55,000 to low-income households for energy efficiency improvements.	Buildings (Residential)	All
Tradable Permits	**Green Certificates**	In conjunction with the decisions taken in April 2000 at the federal level acknowledging the need for a Green Certificates scheme, the Flemish Region approved a frame-decree on July 2000 relating to the liberalisation of the electricity market. The implementing decree foresees a tradable Green Certificates programme that aims to increase renewable energy consumption from current levels to 1% in 2001, 3% in 2004 and 5% in 2010. Energy distributors will have new obligations, with a penalty of about 12 eurocents per kWh. The programme is in a test phase with voluntary action by all market players. Pending reactions from the concerned regional and European jurisdictional bodies, mandatory actions are planned to begin in January 2001.	Energy Prod. (Electricity Generation)	Renewables
Regulatory Instruments	**Mandates/ Standards**	The European directives on energy labelling of dish-washers, dryers and washing machines have been transposed into Belgian law. For refrigerators and freezers, energy labelling was also implemented.	Buildings (Residential)	All

Policy Type	Classification	Policy Description	Sector	Energy
Regulatory Instruments	**Regulatory Reform**	A royal decree that determines the *ad hoc* conditions and procedures to deliver the required authorisations to install and operate wind parks, in the offshore areas, was promulgated in December 2000. The windmill park is expected to play a major part in achieving the government's aim of providing 3.5% of the country's electricity consumption from renewable sources.	Energy Prod. (Electricity Generation)	Renewables (Wind)
Regulatory Instruments	**Regulatory Reform**	In April 2000, the federal government decided that all generators of electricity from renewables will become progressively free to choose their electricity supplier if they need more electricity than they can generate. Also, consumers who buy a significant amount of their electricity from renewable sources are eligible to choose their electricity supplier. The Flemish Parliament approved the decree regarding the liberalisation of the electricity market, which foresees the following categories as eligible: producers using high-quality CHP (combined heat and power production) installations or renewables for electricity generation (up to a certain ceiling), consumers of renewable electricity generated by means of a CHP unit (for the amount of electricity) or consumers using heat from CHP units or renewables, consumers using heat from a supplier who generates this heat by means of CHP units or renewables (for maximum 500 kWh electricity per GJ heat). In Wallonia, the approval of a corresponding decree is under way; it will also aim at the gradual opening of the market for producers using CHP and renewables for electricity generation, as well as consumers using renewable electricity and/or electricity generated by means of a CHP unit or using heat from CHP units or renewables.	Energy Prod. (Electricity Generation)	Renewables
Policy Processes and Outreach	**Outreach/ Information Dissemination** **Advice/Aid in Implementation**	The regional ministers have set up information networking providing practical information to individuals and small and medium-sized enterprises seeking to save energy through energy efficiency improvements. Specialised agencies and energy information kiosks also organise information campaigns and issue brochures. Campaigns seek to discourage direct electric heating and promote the use of natural gas heating; the Walloon Region organises several *ad hoc* training programmes for energy managers; VITO, the Flemish Institute for Technological Research, raises energy awareness among the public (and in the industrial sector) through EMIS, the Information System on Energy and Environment (www.emis.vito.be). In Brussels-Capital, the Agence Bruxelloise de l'Energie – Brussels EnergieAgentschap (ABEA) provides practical advice and information on existing subsidy schemes for RUE (rational use of energy) and renewable energy applications to individuals and small enterprises.	Industry Buildings (Residential, Non-Residential)	All

Policy Type	Classification	Policy Description	Sector	Energy
Policy Processes and Outreach	**Strategic Planning**	A first progress report on the implementation of the Flemish CO_2 / Rational Use of Energy (RUE) was provided in 2000. The CO_2 / RUE Plan presented to the Flemish government on November 1999 contained a package of measures and innovative technologies in order to reach the CO_2 reductions foreseen in the Kyoto Protocol. The progress report was based on an exhaustive analysis of the measures mainly along four lines, the residential and tertiary sectors, the industry (only the measures not specific to a particular sector), CHP and renewables. The package, if fully implemented, should enable Flanders to come to a CO_2 emissions reduction of 11.9 megatonnes, which represents a bit more than the total required reduction) and is divided between CHP (3.3 megatonnes), renewables (4.1 megatonnes), industry (0.8 megatonnes) and residential tertiary sector (3.7 megatonnes).	All	All
Policy Processes and Outreach	**Strategic Planning** **Consultation**	The "Federal Plan for Sustainable Development" proposal from the Interministerial Department for Sustainable Development has been approved by the Council of Ministers in July 2000. Reducing energy consumption by 7.5% in 2010 compared to 1990 is a priority objective. Measures planned also include a collaboration agreement between the federal government and the regional governments to increase the production of electricity from renewable energy sources by more than 3% in 2004, with further increases afterwards. The plan indicates that appropriate measures will be taken to make the system of green certificates attractive for the electricity producers, as well as harmonised and transparent. If no agreement at EU level is reached, Belgium is planning to take steps unilaterally to introduce an energy/CO_2 tax.	All	Fossil Fuels Electricity Renewables
Policy Processes and Outreach	**Outreach/ Information Dissemination**	Belgium took part in the European car-free day initiative held on 22 September 2000. The car-free day is designed to help reduce air pollution in European cities as well as address the need to change mobility patterns as a way to boost use of public transport.	Transport (Passenger)	Fossil Fuels (Oil)
		policies and measures planned in 2000		
Fiscal	***Tax***	*The government is considering new vehicle taxing systems which should stimulate the purchase and use of new cars and other vehicles with relatively low energy consumption and with emission values in accordance with the Euro 3 or Euro 4 emission standards. These new taxing schemes would partly replace the existing vehicle and fuel taxes.*	*Transport (Passenger)*	*Fossil Fuels (Oil)*
Fiscal	***Tax Exemption***	*The Federal Council of Ministers decided in October 2000 to promote energy efficiency measures in the residential sector by means of a fiscal deduction. The decision should enter into force incrementally between 2002 and 2004 for an annual account of BF 1.5 billion (€37 million). Acceptable energy efficiency investments are: improved roof insulation of*	*Buildings (Residential)*	*All*

Policy Type	Classification	Policy Description	Sector	Energy
		dwellings, installation of high-quality double glazing, solar boilers, photovoltaic panels and thermostatic vans, replacement of boilers older than 20 years, and energy auditing.		
Tradable Permits	***Green Certificates***	*In conjunction with the decisions taken in April 2000 at the federal level acknowledging the need for a Green Certificates scheme, the Walloon government is introducing legislation to support the production of green electricity and good quality CHP in the region facilitated by green certificate trading. The Walloon government is planning for a 3% quota in 2001, increasing by 1% per year to 6% in 2004. The Brussels-Capital Region is preparing similar legislation.*	*Energy Prod. (Electricity Generation)*	*Renewables*
Voluntary Agreements	***Weak VA***	*Flanders has announced in 2000 that it will propose voluntary agreements to the energy-intensive industry from 2001 on. For the large energy-intensive industry, the agreements are based on the principle of benchmarking. Participating companies commit themselves to bring their energy efficiency up to world top level by 2008, at the latest by 2012. As for the smaller energy-intensive industry, participating companies will be requested to carry out energy-saving investments, which are economically justified. Periodical audits will define the suitable investment programmes.*	*Industry (Manufacturing)*	*Electricity* *Fossil Fuels*
Voluntary Agreements	***Weak VA***	*Wallonia is planning to conclude covenants on energy efficiency with different industrial sectors. In July 2000, the Walloon minister in charge of energy matters signed two letters of intent with the paper and chemical sectors. Within 12 months these letters of intent are to lead to voluntary agreements to reduce energy consumption by 2010.*	*Industry (Manufacturing)*	*Electricity* *Fossil Fuels*
Policy Processes and Outreach	***Strategic Planning*** ***Consultation***	*The Federal Secretary of State for Energy has issued a draft of the "National Plan on Climate Change" which should be finalised by the middle of 2001. The plan will aim to formulate a coherent national policy with sufficient measures, both for individual industries and sectors and across the board, to realise the emissions reduction objectives set out in the Kyoto Protocol. The national legal framework of this plan will be realised by means of co-operative agreements between the federal government, the regions and the communities, and will include intermediate targets for 2003 as well as a monitoring mechanism for each concerned sector. The draft national plan includes a package of new federal measures enabling the use of more environment-friendly energy products (green certificates, tariff structures), upgrade towards more energy-efficient technologies (increase of the fund aiming at the rational use of energy) and the reduction of energy demand and energy services (environment-friendly fuels or engines). The introduction of these incentive mechanisms is expected to collectively achieve the requisite reduction of CO_2 emissions.*	*All*	*All*

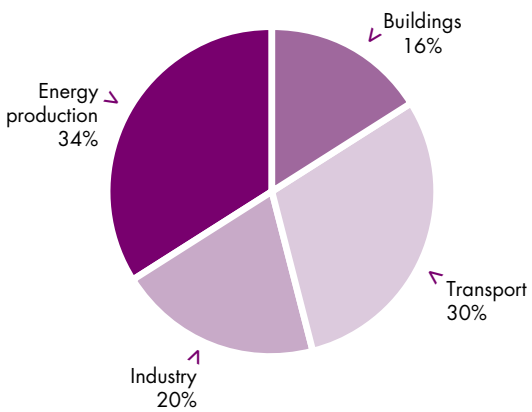
CANADA

Key Indicators

	1990	1995	1999
TPES (Mtoe)	209.09	231.75	241.78
TPES/Capita (toe per capita)	7.55	7.90	7.93
TPES/GDP (toe per thousand 1990 US$ PPP)	0.34	0.34	0.31
CO_2 Emissions (Mt of CO_2)	430.21	461.20	503.55
CO_2/Capita (t CO_2 per capita)	15.53	15.71	16.51
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.70	0.69	0.65

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal **RD&D**	**Subsidy** **Technology Information Dissemination**	The EcoAction 2000 programme was announced in January 2000 by Environment Canada. It represents a commitment of over C$ 1.8 million in funding for environmental projects. Reduction in greenhouse gas emissions is a priority environment issue in this funding programme.	All	All
Fiscal **Policy Processes and Outreach**	**Subsidy** **Strategic Planning**	In October 2000, the Government of Canada unveiled its Action Plan 2000 on Climate Change with funding of C$ 500 million to be confirmed in Budget 2001. Combined with the C$ 625 million announced in Budget 2000, this investment will result in a commitment of up to C$ 1.1 billion. Action Plan 2000 takes action on many fronts, including expanding the use of low- or non-emitting energy sources by four times current levels; increasing the use of ethanol in gasoline; investing in the refuelling infrastructure for fuel cell vehicles; direct support of new technologies and development of technology networks; study of energy efficiency and early application of renewable energy technology in remote (non-grid) communities; and analysing policy options such as domestic emissions trading. A number of projects in these areas were announced during 2000. These include a Green Municipal Enabling Fund, education and outreach programmes, and technological support. For example, the government will invest in a landfill gas project to turn this into liquefied natural gas for use in vehicles to study the cost-effectiveness of this technology.	All	All

Policy Type	Classification	Policy Description	Sector	Energy
Fiscal **RD&D**	**Subsidy** **Demonstration Projects**	The government of Saskatchewan will provide C$ 2 million and the Government of Canada C$ 1 million to monitor the capture and storage of CO_2 in the Weyburn (Saskatchewan) oil field. Approximately 5,000 tonnes per day of CO_2 will be injected into the first phase of field development.	Energy Prod. (Exploration/ Extraction)	Fossil Fuels (Oil)
Fiscal	**Subsidy**	In October 2000, Natural Resources Canada announced a contribution of C$ 12.4 million over 10 years to SaskPower, Saskatchewan's electrical utility, for the development of a green power market in Saskatchewan. Under the project, by 2002 half of the power consumed by government-owned and operated facilities in Saskatchewan will be wind-powered.	Energy Prod. (Electricity Generation)	Renewables (Wind)
Tradable Permits	**Project-based Programmes**	Canada will contribute to the World Bank's Prototype Carbon Fund which began operations in early 2000 to help developing countries invest in technologies to curb greenhouse gas emissions. The $150 million new fund, launched by the World Bank, is financed by industrial nations and corporations which will receive emissions reduction certificates.	All	All
Voluntary Agreements **Policy Processes and Outreach**	**Weak VA** **Outreach/ Information Dissemination**	The Government of Canada and the country's retail auto industry (Canadian Automobile Dealers Association) signed a memorandum of understanding in June 2000 under which the association will promote consumer purchase decisions towards more fuel-efficient vehicles.	Transport (Passenger)	Fossil Fuels
RD&D **Fiscal**	**Technology Development** **Subsidy**	In 2000, the Canadian government announced a C$ 53 million loan to Rolls-Royce Industries Canada Inc. for a research project on more efficient industrial gas turbines technologies.	Energy Prod. (Electricity Generation)	Fossil Fuels (Gas)
RD&D **Fiscal**	**Technology Development** **Subsidy**	The Government of Canada, through the Climate Change Action Fund (CCAF), announced in September 2000 that it was committing $1.1 million to innovative projects designed to reduce greenhouse gas emissions.	All	All
RD&D	**Demonstration Projects**	The Government of Canada is investing more than C$ 2 million to help develop and build a prototype heat and power plant using solid oxide fuel cell technology, along with a number of other partners (including the US Department of Energy). Ontario Power Corporation will build and operate the world's largest pre-commercial solid oxide fuel cell CHP plant.	Energy Prod. (Electricity Generation)	Fossil Fuels (Gas)
RD&D **Policy Processes and Outreach**	**Technology Information Dissemination** **Outreach/ Information Dissemination**	In June 2000, the Government of Canada signed a three-year agreement with the Geothermal Heat Pump Consortium for the promotion of the use of geothermal energy for heating and cooling. The consortium is to develop a package of marketing services to accelerate take-up of geothermal energy systems.	Energy Prod. (Electricity Generation)	Renewables (Geothermal/ Ocean)

CANADA (CONTINUED)

Policy Type	Classification	Policy Description	Sector	Energy
Policy Processes and Outreach	**Strategic Planning**	The National Implementation Strategy on Climate Change and the First National Business Plan were approved in October 2000, in all provinces except Ontario. The First National Business Plan sets out concrete measures proposed by the provinces and territories to implement the strategy and reduce greenhouse gas emissions.	All	All
		policies and measures planned in 2000		
RD&D	***Research Programmes***	*The Government of Canada announced funding of more than C$ 1 million for a Saskatchewan Research Council project to develop a new computer system for natural gas and fuel-celled vehicles.*	*Transport*	*Fossil Fuels (Gas)*
Policy Processes and Outreach	***Advice/Aid in Implementation***	*Natural Resources Canada announced in September 2000 a training programme "Smart Driver for Forestry Trucks" to improve the fuel efficiency for the forest trucking industry.*	*Transport (Trucks)*	*Fossil Fuels (Oil)*

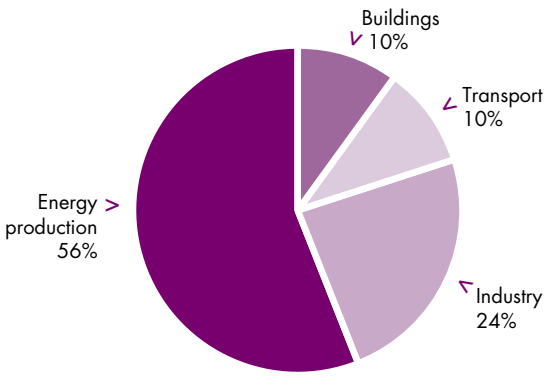
Czech Republic

Key Indicators

	1990	1995	1999
TPES (Mtoe)	47.40	41.38	38.58
TPES/Capita (toe per capita)	4.57	4.01	3.75
TPES/GDP (toe per thousand 1990 US$ PPP)	0.35	0.32	0.30
CO_2 Emissions (Mt of CO_2)	153.77	125.57	109.96
CO_2/Capita (t CO_2 per capita)	14.84	12.16	10.69
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	1.15	0.98	0.85

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Regulatory Instruments	**Mandates/ Standards**	The Energy Economy Act approved by the Czech Parliament in 2000 aims at introducing obligatory energy audits in buildings and production sites. All facilities consuming energy above a specified limit (35 TJ/year for private facilities) will be obliged every eight years to hire a state-approved auditor to prepare the facility´s energy audit. The same is valid in the case of facilities in public ownership, the difference being that the determined limit of annual energy consumption will be lower (1.5 TJ/year).	Buildings (Residential, Non-Residential) Industry (Manufacturing)	Electricity Fossil Fuels Renewables
Regulatory Instruments	**Mandates/ Standards**	The Energy Economy Act approved by the Czech Parliament in 2000 calls for the introduction of energy labels and energy standards not only for domestic electric appliances but also for many technical components in the energy production and distribution sector.	Buildings (Residential) Energy Prod.	Electricity
Regulatory Instruments	**Mandates/ Standards**	The Energy Economy Act approved by the Czech Parliament in 2000 calls for the construction of co-generation units. The act requires construction of plants for combined heat and power production (co-generation) for all boilers larger than a specified size unless energy audits indicated technical or economic barriers.	Energy Prod. (Electricity Generation)	Electricity Renewables
Policy Processes and Outreach	**Strategic Planning**	In 2000, the Czech government approved the new Energy Policy. The law includes environmental goals such as an increase in the use of alternative sources of energy to between 3% and 6% of the total energy consumed by the country by 2010.	All	All

CZECH REPUBLIC (CONTINUED)

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures planned in 2000		
Fiscal	***Tax***	*A "Draft plan of gradual ecologisation of the tax system" was submitted to the Czech government for approval in September 2000. The draft reform imposes a consumer tax on fuels and electricity (at the end of the consumer chain). It exempts from tax renewable energy sources, utilisation of waste and exhaust heat. However, the act in its final wording will not be discussed in Parliament before 2002.*	*All*	*Fossil Fuels*
	Tax Exemption			*Electricity*
				Renewables

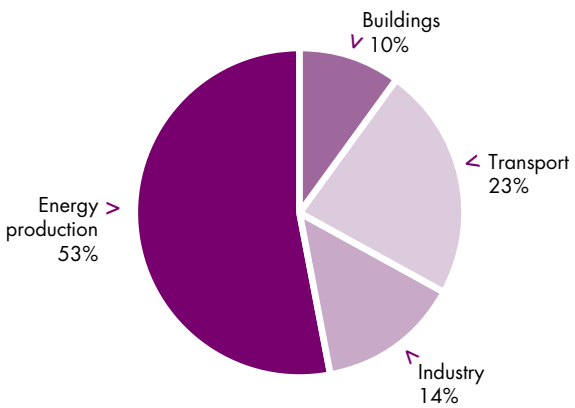
DENMARK

Key Indicators

	1990	1995	1999
TPES (Mtoe)	17.85	20.30	20.07
TPES/Capita (toe per capita)	3.47	3.89	3.77
TPES/GDP (toe per thousand 1990 US$ PPP)	0.16	0.17	0.15
CO_2 Emissions (Mt of CO_2)	50.93	57.71	53.64
CO_2/Capita (t CO_2 per capita)	9.91	11.05	10.08
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.47	0.48	0.40

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal	**Tax**	The Danish Parliament decided to increase the energy tax on natural gas from 1 January 2000 to a level corresponding to approximately 85% of the energy tax on fuel oil. In addition, after a decision taken by the Parliament in 1998, taxes on other fuels were also increased: gasoline (DKr 3.73/litre to 3.85/litre), diesel (DKr 2.52 /litre to 2.75/litre), diesel light (DKr 2.34/litre to 2.57/litre), fuel oil (DKr 1.91/kg to 1.95/kg), coal (DKr 1,250/tonne to 1,300/tonne), electricity (DKr 0.481/kWh to 0.536/kWh).	All	Fossil Fuels (Oil, Gas)
Fiscal	**Tax Reduction**	From 1 January 2000 the registration fee for cars has been changed in order to promote new energy-efficient vehicles. The Danish Parliament reduced the registration tax for such cars (both gasoline and diesel) consuming less than 4 litres/100 km for gasoline cars and less than 3.6 litres/ 100 km for diesel cars. The reduction varies from 1/6 to 4/6 of the existing fee. From 1 January 2000, another 4 categories have been added to the green owner fee, and the lowest tax category is now for diesel cars which consume less than 3.1 litres /100 kilometres.	Transport (Passenger)	Fossil Fuels (Oil)
Tradable Permits	**Emissions Trading**	The Act on CO_2 Quotas for Electricity Production entered into force in July 2000 after approval by the European Commission in April 2000. For the period 2001-2003, a ceiling has been set for total CO_2 emissions from the electricity sector which will be reduced gradually from 22 million tonnes of CO_2 in 2001	Energy Prod. (Electricity Generation)	Fossil Fuels Electricity

Policy Type	Classification	Policy Description	Sector	Energy
		to 20 million tonnes in 2003. The State will allocate emission permits for free to electricity producers in Denmark based on their historical emissions between 1994 and 1998. The quota system calls for individual Danish power companies' receipts of CO_2 emission permits each year to be gradually reduced. If the annual quota is exceeded, the production companies will have to pay DKr 40 per tonne of carbon dioxide from 2001 to 2003. The revenue will be spent on energy-saving measures. The CO_2 Quota Act is to be applied as from 2001.		
Tradable Permits	**Green Certificates**	The law promoting green energy consumption entered into force in 2000. Under the new electricity legislation, the share of electricity generated from renewable sources (principally wind turbines) is expected to rise to 20% by the end of 2003. Market mechanisms are to be introduced for trade in renewable energy. This renewable energy market will be developed in stages with a view to the market functioning fully in 2003.	Energy Prod. (Electricity Generation)	Renewables (Wind)
RD&D	**Demonstration Projects**	The planning of the first two large-scale offshore wind farm demonstration projects is entering the final phase. These projects are part of a comprehensive large-scale demonstration programme for offshore wind energy in Denmark that encompasses five 150 MW offshore wind farms scheduled for completion before the end of 2008. The government's goal is to produce 5,500 MW wind power before 2030, the majority of which is to be offshore wind power. It corresponds to approximately half of the Danish electricity consumption.	Energy Prod. (Electricity Generation)	Renewables (Wind)
Policy Processes and Outreach	**Strategic Planning**	In March 2000, the Danish government launched "Climate 2012" that provides an overall view of Danish climate change policy and is intended to prepare for ratification of the Kyoto Protocol. The steps by which the Danish government will meet its obligations are outlined. These steps include: submitting an action plan for the transport sector; updating the energy action plan "Energy 21" establishing a programme on the Kyoto mechanisms; determining future regulation of industrial greenhouse gases.	All	All
Policy Processes and Outreach	**Strategic Planning**	In May 2000, the Danish government passed a new act concerning the promotion of energy conservation. The act sets the overall framework for co-ordination of, and priority given to, energy-saving initiatives for all sectors, actors and measures. It enables the appointment of local energy conservation committees to co-ordinate local work to save energy, and establishes new initiatives for energy conservation in the public sector. The act complements requirements for energy savings in the Electricity Supply Act, the Natural Gas Supply Bill and amendments to the Heat Supply Act.	All	Electricity Fossil Fuels
Policy Processes and Outreach	**Outreach/ Information Dissemination**	Denmark took part in the European car-free day initiative held on 22 September 2000. The car-free day is designed to help reduce air pollution in European cities as well as address the need to change mobility patterns as a way to boost use of public transport.	Treansport (Passenger)	Fossil Fuels (Oil)

DENMARK (CONTINUED)

Policy Type	Classification	Policy Description	Sector	Energy
Policy Processes and Outreach	**Outreach/ Information Dissemination**	Energy labelling of cars was implemented in Denmark in April 2000. The label gives the consumer information on energy consumption and CO_2 emissions.	Treansport (Passenger)	Fossil Fuels (Oil)
		policies and measures planned in 2000		
Policy Processes and Outreach	***Strategic Planning***	*The Danish Ministry of Transport published a report on "Measures to reduce CO_2 emissions in the transport sector" in March 2000. It is now being followed by an "Action plan for reducing CO_2 emissions in the Danish transport sector" which will be published in spring 2001.*	*Transport*	*All*

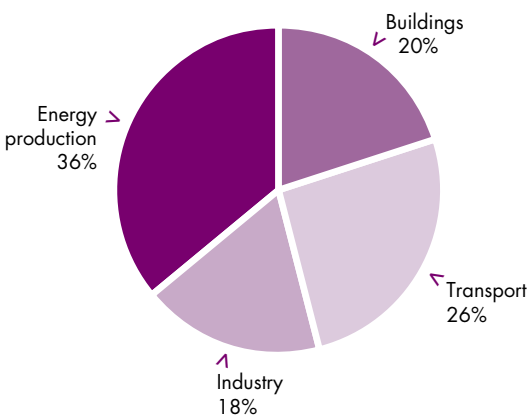
European Union

Key Indicators

	1990	1995	1999
TPES (Mtoe)	1 322.57	1 375.62	1 443.74
TPES/Capita (toe per capita)	3.61	3.68	3.83
TPES/GDP (toe per thousand 1990 US$ PPP)	0.20	0.19	0.18
CO_2 Emissions (Mt of CO_2)	3 111.76	3 079.50	3 115.87
CO_2/Capita (t CO_2 per capita)	8.50	8.25	8.26
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.46	0.42	0.39

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal	**Tax Exemption**	In November 2000, the European Commission approved a five-year mineral oil tax exemption for high-efficiency combined cycle gas turbine plants in Germany. This measure aims at helping to stimulate energy-saving technologies that will aid the EU in meeting its Kyoto Protocol greenhouse gas reduction requirements.	Energy Prod. (Electricity Generation)	Fossil Fuels (Gas)
Regulatory Instruments	**Mandates/ Standards**	In January 2000, the new directive requiring passenger cars sold in the European Union to carry a label on fuel economy and carbon dioxide emissions starting in 2001, came into effect. The directive (1999/94/EC) was approved by the European Parliament and Council in December 1999. Along with requiring the label on cars, the law also calls on member States to work with manufacturers to develop a consumer's guide on fuel economy and CO_2 emissions, to be distributed free of charge. Member States are required to transpose the directive into national law by January 2001. Moreover, they are required by December 2003 to submit a report to the European Commission on the effectiveness of the directive's provisions, covering the period from January 2001 to December 2002.	Transport` (Passenger)	Fossil Fuels (All)
Policy Processes and Outreach	**Outreach/ Information Dissemination**			

Policy Type	Classification	Policy Description	Sector	Energy
Regulatory Instruments	**Mandates/ Standards**	In July 2000, the European Parliament approved the legislation on energy aimed at low-cost reductions in CO_2. It included options for reducing energy consumption studied by the European Commission such as improving the efficiency of fluorescent lights. A directive presented by the executive European Commission set minimum efficiency standards for fluorescent lighting units (COM [1999] 296). A preliminary set of efficiency standards will apply in 2003. Ballasts complying with current national requirements can continue to be sold over that period. In 2005, a second, more stringent set of standards will be introduced.	Buildings (Non-Residential)	Electricity
Regulatory Instruments	**Mandates/ Standards**	The European Commission adopted on 21 December 2000 its new guidelines on state aids for environmental purposes. Valid until 31 December 2007, they are designed to inform member States under what conditions the Commission, as the guardian of fair competition in the internal market, can be expected to approve assistance with an environmental purpose to companies. For example, in view of the huge task Kyoto presents in terms of greenhouse gas reduction targets, aid to investment in energy saving, renewables and the combined production of heat and power is allowed up to 40%. Small and medium-sized enterprises (SMEs) may enjoy 10% extra, and a bonus can also be accorded to investment in disadvantaged regions assisted by the member States. Furthermore, for both renewables and combined heat and power, operating aid enabling a fair return on capital is permitted. Various channels may be used to that effect, including subsidies making up the difference between the market price and the production cost of renewable energy, market mechanisms like "green certificate" schemes, or support based on the calculation of the environmental damage avoided thanks to renewable energy or combined heat and power.	All	Renewables
Voluntary Agreements	**Strong VA**	In April 2000, the European Commission formally adopted a carbon dioxide reduction agreement reached with groups representing the Korean and Japanese automobile manufacturers that formalises a voluntary agreement negotiated over the past two years. The agreement requires that all Japanese- and Korean-manufactured cars sold in Europe emit no more than 140 grams of carbon dioxide per kilometre as of 2009. It is equivalent to the voluntary agreement signed with the European Automobile Manufacturers' Association in 1998. This negotiated approach will ensure that, based on 1995 levels, the fuel consumption of all auto imports from the two Asian countries will drop by approximately 2% annually, which is equal to about 4 grams of carbon dioxide per kilometre per year. Moreover, indicative interim targets for 2003/2004 have been set.	Transport (Passenger)	All
Voluntary Agreements	**Weak VA**	In January 2000, the European Union issued environmental criteria that have to be met for refrigerators and washing machines seeking the Union's eco-label. Energy efficiency is among the criteria included in Decisions 2000/40/EC and 2000/45/EC.	Buildings (Residential)	Electricity

EUROPEAN UNION (CONTINUED)

Policy Type	Classification	Policy Description	Sector	Energy
Policy Processes and Outreach	**Strategic Planning**	In 2000, the Commission services have been elaborating a working paper on the Integration of Environmental Aspects and Sustainable Development into the Energy and the Transport Policies, to respond to the Council's request. A Review Report evaluates recent energy and transport market trends, describes current Community policy initiatives and outlines future actions that contribute to sustainable development.	Energy Prod. (Electricity Generation) Transport (Passenger)	Fossil Fuels Renewables
Policy Processes and Outreach	**Strategic Planning** **Consultation**	In March 2000, the European Commission launched the European Climate Change Programme (ECCP), whose goal is to identify a strategy to implement the Kyoto Protocol. The overall strategy features a twin-track approach: a green paper on greenhouse gas emissions trading within the European Union and a broader multi-stakeholder consultation, the ECCP, which will help the Commission develop Community measures for reducing greenhouse gas emissions by feeding in the necessary expertise from member States, businesses and non-governmental organisations (NGOs). The process has focused on the key areas for emissions reduction. A number of technical working groups have been meeting in the past twelve months to discuss policy options in areas such as energy, transport, industrial gases and emissions trading. An ECCP progress report was delivered in November 2000. The ECCP final report is expected by June 2001.	All	All
Policy Processes and Outreach	**Outreach/ Information Dissemination**	The European Commission announced that a European car-free day would be held on 22 September 2000. The car-free day is designed to help reduce air pollution and noise in European cities as well as address the need to change mobility patterns as a way to boost use of public transport, bicycle, intermodality, sustainable goods delivery, etc. Some 760 cities from 26 European countries participated in the event.	Transport (Passenger)	Fossil Fuels (Oil)
Policy Processes and Outreach	**Strategic Planning**	In November 2000, the European Commission released the Green Paper "Towards a European Strategy for the Security of Energy Supply", which presents a draft outline for a European long-term energy strategy. Climate change and rising greenhouse gas emissions, related to rising energy demand, are cited as a major catalyst for action. The Green Paper highlights the need for greater controls on energy consumption in the interests of reducing demand and emissions, and considers the use of regulatory and fiscal instruments. With regard to supply, there is considerable interest in the development of new and renewable energies, including alternative fuels for transport, to tackle climate change. All interested parties and individuals are invited to join in the debate on the Green Paper, which will last until end November 2001. Following this, the Commission will prepare a response.	All	All

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures planned in 2000		
Fiscal	***Tax***	*Within a framework for the taxation of energy products, the European Commission, in its proposal (COM[97]30) for a Council directive restructuring the Community framework for the taxation of energy products, makes provision for member States to tax, on an optional principle, national flights and flights between member States on the basis of bilateral agreements. According to this proposal, member States shall continue to apply the existing general exemption from excise duty of fuels used for the purpose of air navigation, other than private pleasure flying, for as long as such products are obliged to be exempted under international obligations (in particular the 1944 Chicago Convention). The European Parliament (EP) suggested in September 2000 that the European Union should impose environmental levies on airlines if ongoing international talks on taxing aviation fuel fail to achieve agreement. The Commission presented a communication on taxation of aircraft fuel, in March 2000 (COM[2000]110). Both the Council and the EP endorsed the Commission's recommendation to intensify action within the ICAO (International Civil Aviation Organisation) framework for the introduction of taxation on aviation fuel and other instruments with similar effects. The EP, in its resolution of 13 December 2000, urged the Commission to,* inter alia*, submit a communication containing proposals for internal EU measures, if no satisfactory measures are taken by the ICAO.*	*Transport (Passenger)*	*Fossil Fuels (Oil)*
Tradable Permits	***Emissions Trading***	*The European Union has issued a Green Paper on Greenhouse Gas Emissions Trading in March 2000. The paper intends to launch a discussion on emissions trading within the European Union, and the relationship between emissions trading and other policies and measures to address climate change. The comments on the Green Paper by EU member States were solicited by September 2000. The proposed system outlined in the paper would be limited to large electric utilities and industrial sources. Emissions trading would only cover CO_2 in the pre-2008 period. The system would however be designed to include other greenhouse gases in the long run. The Green Paper advocates that the EU trading scheme should begin in 2005.*	*Energy Prod. (Electricity Generation)* *Industry (Manufacturing)*	*Fossil Fuels* *Electricity*
Regulatory Instruments	***Mandates/ Standards***	*The European Commission has presented a draft directive on the Promotion of Electricity from Renewable Energy Sources in May 2000. This proposal for a directive requires the 15 member States to set and meet national indicative targets for the consumption of electricity from renewable energy sources consistent with reference values set out in the annex to the directive and the climate change commitments accepted by the Community pursuant to Kyoto. The European Parliament stated its opinion on the proposal for a directive on 16 November 2000. While favouring the Commission's general approach, the Parliament suggested amendments that*	*Energy Prod. (Electricity Generation)*	*Renewables*

Policy Type	Classification	Policy Description	Sector	Energy
		would ensure that current national support schemes would be protected for at least 10 years from the date the new directive comes into force. Other amendments seek to widen the definition of "renewable energy sources". Following the European Parliament's opinion of 16 November 2000, the Commission adopted an amended proposal for a directive on 28 December 2000. This amended proposal allows the decomposition of the biodegradable fraction of separated municipal wastes to be recognised as a renewable source of energy; however, it does not include peat, as the European Parliament had also wanted.		
Policy Processes and Outreach	***Strategic Planning***	*In April 2000, the European Commission proposed an energy efficiency plan that includes a call for new voluntary agreements in a range of sectors such as steel, paper, cement and textile, similar to the one recently agreed to by automobile manufacturers regarding carbon dioxide emissions and cars. Some of the other measures outlined in the proposed energy efficiency action plan are as follows: increased consumer information via labelling and efficiency requirements on household appliances and commercial and other end-use equipment; co-ordinated EU action plans for long-term agreements with industry; an amendment to directive 93/76/EEC dealing with better energy certification for insulation standards and boiler inspections; establishment of EU-wide energy audits; and improvement in monitoring and evaluation.*	*Industry (Manufacturing)* *Buildings (Residential, Non-Residential)*	*Electricity* *Fossil Fuels*
Policy Processes and Outreach	***Strategic Planning***	*One of the priorities of the Sixth Environmental Action Plan drafted by the European Commission, in 2000, is climate change. The plan sets a priority on reducing greenhouse gases by between 20% and 40% from 1990 levels by 2020.*	*All*	*All*

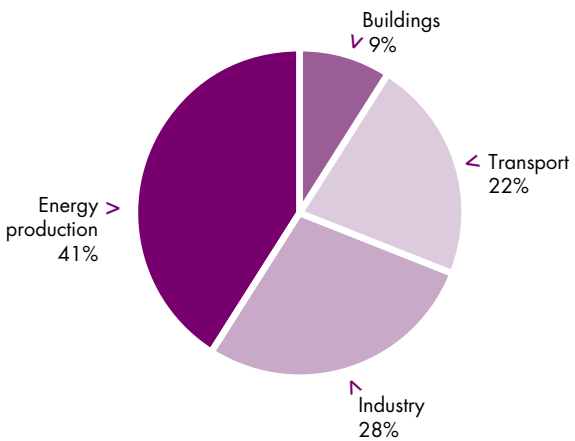
FINLAND

Key Indicators

	1990	1995	1999
TPES (Mtoe)	28.81	29.26	33.37
TPES/Capita (toe per capita)	5.78	5.73	6.46
TPES/GDP (toe per thousand 1990 US$ PPP)	0.29	0.30	0.29
CO_2 Emissions (Mt of CO_2)	54.98	56.37	55.75
CO_2/Capita (t CO_2 per capita)	11.03	11.04	10.79
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.55	0.59	0.48

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Tradable Permits	**Project-based Programmes**	Finland will contribute to the World Bank's Prototype Carbon Fund which began operations in early 2000 to help developing countries invest in technologies to curb greenhouse gas emissions. The $150 million new fund, launched by the World Bank, is financed by industrial nations and corporations which will receive emissions reduction certificates.	All	All
Policy Processes and Outreach	**Outreach/ Information Dissemination**	Finland took part in the European car-free day initiative held on 22 September 2000. The car-free day is designed to help reduce air pollution in European cities as well as address the need to change mobility patterns as a way to boost use of public transport.	Transport (Passenger)	Fossil Fuels (Oil)
		policies and measures planned in 2000		
Tradable Permits	***Emissions Trading***	*The Finnish Committee on the Kyoto Mechanisms submitted its interim report on a national emissions trading scheme in October 2000. The committee, consisting of government participants and representatives of interest groups and non-governmental organisations, had been appointed by the Minister of Trade and Industry, in 1999, to draw up a proposal for the implementation of the Kyoto mechanisms. The committee concluded that rather than implementing a*	*Energy Prod. (Electricity Generation)*	*All*
Policy Processes and Outreach	***Consultation***			

Policy Type	Classification	Policy Description	Sector	Energy
		national system, Finland should consider joining the trading scheme within the EU. It should also investigate joining an emissions trading scheme that would encompass the Nordic countries and the countries around the Baltic sea.		
Policy Processes and Outreach	***Strategic Planning***	*The Finnish government has drawn up the National Climate Strategy on how to meet the targets set in the Kyoto Protocol, and those relating to the burden shared by member States of the European Union. The National Climate Strategy, which will be completed by the government in 2001, contains the principles, targets and actions that the government finds necessary so as to meet Finland's national target. In order to meet the climate strategy targets, it is necessary to implement an energy conservation programme, and a programme promoting renewable sources of energy. Together, these two programmes could account for about a half of the targeted emissions reduction. The remainder of the target would be met through measures such as limiting the growing use of coal by increasing the utilisation of natural gas, or by building nuclear power plants, or by a combination of these two measures.*	*All*	*All*

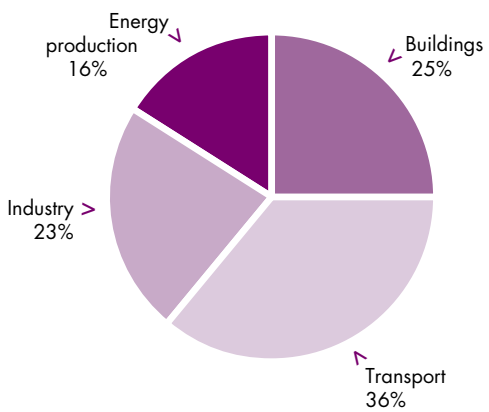
FRANCE

Key Indicators

	1990	1995	1999
TPES (Mtoe)	226.07	239.81	255.04
TPES/Capita (toe per capita)	3.89	4.04	4.23
TPES/GDP (toe per thousand 1990 US$ PPP)	0.20	0.20	0.19
CO_2 Emissions (Mt of CO_2)	352.68	354.53	380.62
CO_2/Capita (t CO_2 per capita)	6.06	5.97	6.31
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.31	0.30	0.29

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal	**Tax Exemption**	In January 2000, the exemption from the "internal tax" on natural gas, refinery gas, and low-sulphur heavy fuel used in co-generation facilities became effective. This measure, promulgated in the Finance Law for 2000, runs until December 2003.	Energy Prod. (Electricity Generation)	Fossil Fuels (Gas, Oil)
Fiscal	**Tax Credit**	The budget for 2001 introduces a tax credit for acquiring energy production equipment which uses a renewable source of energy, and installed in new housing. The credit is equal to 15% of the amount of the purchase price.	Buildings (Residential Non-Residential)	Renewables
Fiscal	**Subsidy**	In the Framework Law of November 2000 relating to the modernisation and development of the public electricity service, a price list for electricity based on renewable energy has been implemented: for wind energy, each producer will have the possibility to sign a 15-year contract which will allow a remuneration of the order of FF 0.55/kWh for the first five years of produced energy; for hydroelectricity, each producer will be able to sign a 20-year contract which will allow FF 0.040/kWh for energy produced by power stations less than 500 KW and FF 0.36/kWh for power stations over 500 KW; concerning household waste incinerators, the price for buying this produced electricity will be FF 0.299/kWh for a medium-voltage connection and FF 0.274/kWh for high-voltage connections. The total charge will amount to FF 4.7 billion per year for the electricity sector in 2010.	Energy Prod. (Electricity Generation)	Renewables (Wind, Hydro, Waste)

Policy Type	Classification	Policy Description	Sector	Energy
Fiscal	**Subsidy**	The subsidies provided through the French Agency for Environment and Energy Management (ADEME) for using wood energy (currently available only in about half of French regions) have been extended to all regions in 2000.	Buildings (Residential) Industry (Manufacturing)	Renewables (Biomass)
Regulatory Instruments	**Mandates/ Standards**	The new 2000 Thermal Regulation promulgated in November 2000 applies to new residential and light industrial buildings. It consists of a decree on the thermal characteristics of construction and an order relating to the thermal characteristics of new buildings and new additions to existing buildings. The clauses of these two new laws apply to all construction projects for which planning permission is to be requested after June 2001. The new rules apply standards that are 20% more stringent than previous ones for the residential sector, and 40% more stringent in the light industry sector. The National Programme for Tackling Climate Change allows for periodically increasing the standards, beginning in 2005.	Buildings (Residential, Non-Residential)	Fossil Fuels Renewables Electricity
RD&D	**Technology Development**	In 2000, actions taken in the overseas departments (DOM) favouring solar energy became effective in French regions. Approval was given to ADEME to liaise with willing regions for a new programme, HELIOS 2006, which was designed to support the development of solar-powered hot water heaters. The new programme is budgeted at FF 30 million/year.	Buildings (Residential)	Renewables (Solar)
Policy Processes and Outreach	**Outreach/ Information Dissemination**	France took part in the European car-free day held on 22 September 2000. This initiative is designed to help reduce air pollution in European cities as well as address the need to change mobility patterns as a way to boost use of public transport.	Transport (Passenger)	Fossil Fuels (Oil)
Policy Processes and Outreach	**Strategic Planning**	The French government released the "National Programme for Tackling Climate Change 2000/2010" in January 2000. The measures announced in the plan range from new taxes on energy and other emissions, to stringent standards for agriculture, transport, and waste sectors. The climate change action also includes a number of measures aimed at promoting the use of renewable energy sources and reducing greenhouse gas emissions, including new construction norms for heating and thermal insulation to reduce energy consumption.	All	All
Policy Processes and Outreach	**Strategic Planning**	The "Programme National d'Amélioration de l'Efficacité Energétique" (PNAEE) was announced by the French government in December 2000. The programme is a complement to the National Communication on Climate Change. It aims to mobilise all households, small businesses and local government to act on energy saving. It allows for the creation of a network of information on energy efficiency and the development of a media campaign. It includes a number of measures to improve energy efficiency of transport, construction, industry and renewable energy. The PNAEE proposes to substantially increase the budget of the Agence de l'Environnement et de la Maîtrise de l'Energie for actions on energy saving (of the order of FF 300 million/year). The total budget allocated to energy efficiency will be approximately FF 950 million for 2001.	All	All

FRANCE (CONTINUED)

Policy Type	Classification	Policy Description	Sector	Energy
Policy Processes and Outreach	**Outreach/ Information Dissemination** **Advice/Aid in Implementation**	The French government decided in December 2000 to create an information network on energy efficiency "Points Info Energie". This network is to be set up in partnership with local government. Its purpose is to supply local information concerning energy saving and renewable energy, intended for private households, small enterprises and local government. Five hundred people will be recruited to operate this network with a funding of FF 100,000 per year per person.	All	All

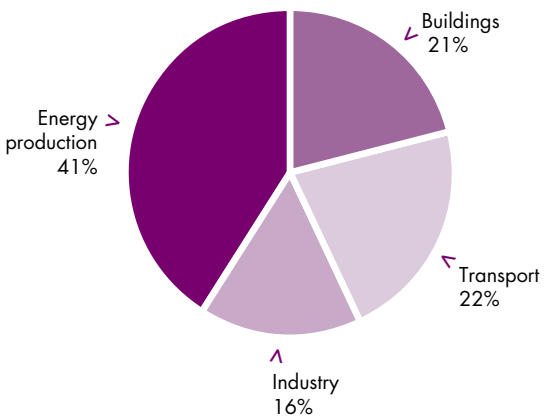
GERMANY

Key Indicators

	1990	1995	1999
TPES (Mtoe)	355.54	339.87	337.20
TPES/Capita (toe per capita)	4.48	4.16	4.11
TPES/GDP (toe per thousand 1990 US$ PPP)	0.22	0.19	0.18
CO_2 Emissions (Mt of CO_2)	961.90	865.93	825.06
CO_2/Capita (t CO_2 per capita)	12.12	10.60	10.05
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.60	0.50	0.45

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal	**Tax**	The second stage of the ecological tax reform entered into force in 2000. In a first step, the government introduced in 1999 a one-time tax hike of DM 0.06 per litre on gasoline, DM 0.04 per litre on heating fuel, DM 0.032 per kWh on natural gas, and DM 0.02 per kWh on electricity. Starting 1 January 2000, the tax increases in yearly steps of DM 0.06 per litre on gasoline and DM 0.005 per kWh on electricity through 2003. The German government has decided compensation for some groups hit hardest by its "ecological tax" on gasoline and heating fuel. Measures have been decided such as increased tax breaks for commuters and granting one-time financial support of DM 5 per square metre of living space for low-income households.	Industry (Manufacturing) Transport (Passenger) Buildings (Residential)	Fossil Fuels Electricity
Fiscal	**Subsidy**	The Co-generation Act, which came into force in May 2000, guarantees temporary protection for existing co-generation installations operated for the public grid. Similar to the assistance for electricity produced from renewable energies, such units initially receive a guaranteed minimum sales price for their electricity in the amount of DM 0.09/kWh (€0.05/kWh) from the grid operator. This minimum sales price will be lowered by the annual amount of DM 0.005/kWh (€0.02/kWh) up to the expiration of the act at the end of 2004 (at the latest). The companies that run the grid initially receive a bonus of DM 0.03/kWh from the transmission system operator. This bonus will be lowered also by the annual amount of DM 0.005/kWh.	Energy Prod. (Electricity Generation)	Fossil Fuels (Coal, Gas, Oil) Renewables (Waste)

Policy Type	Classification	Policy Description	Sector	Energy
		The charge resulting from the bonus has been levelled out between the transmission system operators.		
Fiscal **Policy Processes and Outreach**	**Subsidy** **Strategic Planning**	In 2000, the German government introduced a new system of financial aid for renewable energy sources. The Renewable Energies Act which came into effect 1 April 2000 targets a 12% share for electricity produced from renewable energy by 2010. The act is a revision of the 1990 Act on the Sale of Electricity to the Grid, which introduced a system of guaranteed sales prices for electricity from renewable energy sources such as wind, hydro, and solar energy. Producers of electricity from such sources will be able to sell to the grid at a price guaranteed by the law. Grid operators shall be obliged to connect to their electricity generation installations (hydrodynamic power, wind energy, solar radiation energy, geothermal energy, gas from biomass) to purchase electricity in accordance with defined provisions.	Energy Prod. (Electricity Generation)	Renewables (Wind, Hydro, Solar)
Voluntary Agreements	**Strong VA**	In 2000, an agreement was reached between the German government and industry representatives according to which German industry will reduce CO_2 emissions per unit of output by 28% of the 1990 level by 2005, more than the 20% originally planned. Industry will also reduce emissions by 35% of the 1990 level by 2012. That deal includes not only CO_2 but also the other five greenhouse gases listed in the Kyoto Protocol. In return, the government will postpone regulatory measures to reach the reduction goals and take the contribution of industry into account in the eco-tax.	Industry (Manufacturing) Energy Prod. (Electricity Generation)	Fossil Fuels Electricity
Voluntary Agreements	**Weak VA**	In 2000, the German government supported voluntary labelling programmes, such as the GED-Label for electrical appliances in households and offices.	Buildings (Residential, Non-Residential)	Electricity
Policy Processes and Outreach **Fiscal**	**Strategic Planning** **Subsidy**	The German government presented the National Climate Protection Programme in October 2000 with the aim of a 25% CO_2 emissions reduction from 1990 levels by 2005. The programme sets reduction objectives per sector. To reach this goal, the government has enforced or is planning a number of measures. The measures include an increase of energy production from combined heat and power plants, an Energy Savings Ordinance and a new voluntary pledge by German industrial associations to reduce their emissions. Furthermore, the federal cabinet has earmarked DM 400 million a year for investments in energy efficiency in old residential buildings until 2005. Tax breaks and an agreement with the automobile industry are to help proliferation of energy-efficient cars, and an additional levy on air traffic is considered.	Buildings (Residential) Industry (Manufacturing) Transport (Passenger, Freight)	Electricity Renewables Fossil Fuels

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures planned in 2000		
Tradable Permits	***Emissions Trading*** ***Consultation***	*The German government has set up a working party led by the Federal Ministry for the Environment the objective of which is the evaluation of the possibilities and conditions for the implementation of an emissions trading scheme in Germany. The working party involves the relevant commercial and social players and should come up with an interim report and concrete policy recommendations by the end of 2001.*	*All*	*All*
Regulatory Instruments	***Mandates/ Standards***	*The German government has kept on working on the Energy Conservation Ordinance in 2000. This Ordinance on Energy Conservation in Buildings is to bring together the previous Thermal Insulation Ordinance and the Heating Installations Ordinance in order to achieve an overall energy optimisation of new buildings. By stricter insulation standards, the heating needs of new buildings are to be lowered to approximately 70 kWh/m² corresponding to a reduction of 30% compared to current standards. Furthermore, heating boilers installed before October 1978 will have to be replaced. The Energy Conservation Ordinance should be passed by autumn 2001.*	*Buildings (Residential Non-Residential)*	*Fossil Fuels* *Electricity*

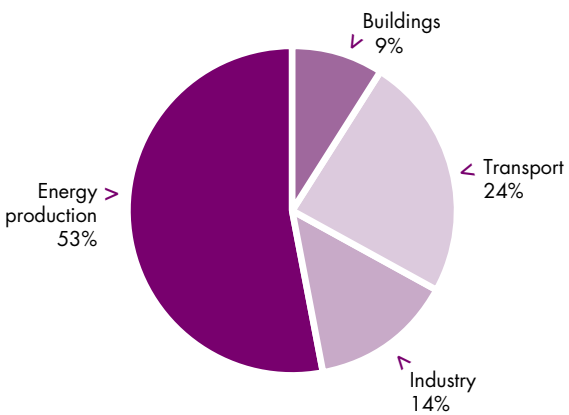
GREECE

Key Indicators

	1990	1995	1999
TPES (Mtoe)	21.77	23.16	26.89
TPES/Capita (toe per capita)	2.14	2.22	2.55
TPES/GDP (toe per thousand 1990 US$ PPP)	0.18	0.18	0.18
CO_2 Emissions (Mt of CO_2)	70.58	73.05	84.16
CO_2/Capita (t CO_2 per capita)	6.95	6.99	7.99
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.58	0.56	0.57

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal	**Subsidy**	Athens' new subway system was inaugurated in January 2000 after eight years of construction.	Transport (Passenger)	Electricity
Fiscal	**Subsidy**	The programme concerning the provision of low-polluting natural gas buses to Athens bus fleet became effective in September 2000.	Transport (Passenger)	Fossil Fuels (Gas)
		policies and measures planned in 2000		
Policy Processes and Outreach	***Institutional Development***	*The creation of an Energy Regulatory Authority (ERA) which will have competences covering electricity, natural gas and other energy sectors has been announced by the Greek government in 2000.*	*All*	*All*

HUNGARY

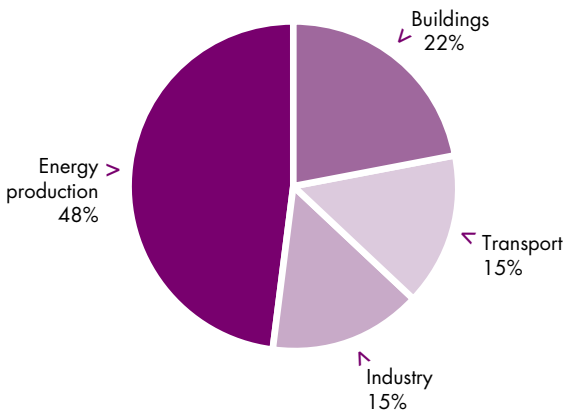
Key Indicators

	1990	1995	1999
TPES (Mtoe)	28.44	25.53	25.29
TPES/Capita (toe per capita)	2.74	2.50	2.51
TPES/GDP (toe per thousand 1990 US$ PPP)	0.27*	0.28	0.24
CO_2 Emissions (Mt of CO_2)	70.53	58.61	60.46
CO_2/Capita (t CO_2 per capita)	6.80	5.73	6.01
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.67*	0.63	0.56

** estimated.*

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal **Policy Processes and Outreach**	**Subsidy** **Strategic Planning**	In 2000, the Hungarian government allocated Ft 1 billion (US$ 20 million) from the state budget to support energy efficiency and renewables as planned in the Energy-Saving Strategy programme adopted in 1999. In order to implement this programme aiming at increasing energy efficiency by 3.5% yearly, reducing CO_2 emissions by 5Mt/year and increasing renewables from 28 PJ in 1999 to 50 PJ in 2010, an action plan has been adopted by the government. These measures which are to be effective from 1 January 2000 include: grants to perform regular audits revealing energy loss in production, grants to improve the energy management of local governments and grants provided for the population and public institutions to save energy sources.	All	Electricity Renewables Fossil Fuels
Regulatory Instruments	**Mandates/ Standards**	The Hungarian government adopted a law on waste management in May 2000 which promotes the reduction of energy consumption. The law, which will take effect 1 January 2001, will require producers to use the most energy-efficient technology.	Industry (Manufacturing)	Electricity Fossil Fuels

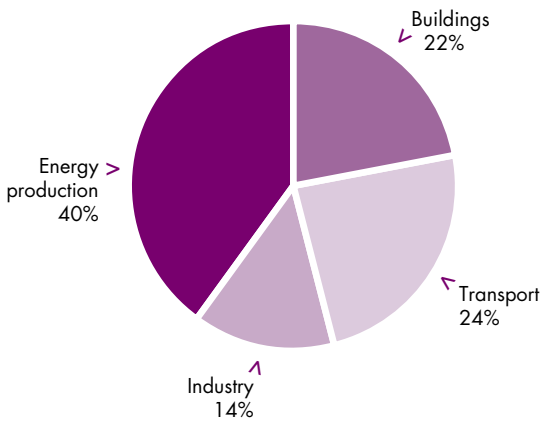
IRELAND

Key Indicators

	1990	1995	1999
TPES (Mtoe)	10.46	11.35	13.98
TPES/Capita (toe per capita)	2.98	3.15	3.73
TPES/GDP (toe per thousand 1990 US$ PPP)	0.20	0.17	0.15
CO_2 Emissions (Mt of CO_2)	30.26	32.67	39.92
CO_2/Capita (t CO_2 per capita)	8.63	9.07	10.66
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.58	0.50	0.43

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal **RD&D**	**Subsidy** **Technology Development**	Under the Economic and Social Infrastructure Operational Programme of the National Development Plan 2000-2006 that became effective in 2000, £146 million was made available for the development and implementation of energy efficiency and renewable energy initiatives. In the energy sector, a key priority in the National Development Plan will be to identify those areas of expenditure which will assist Ireland in complying with its obligations under the Kyoto Protocol to the UN Convention on Climate Change.	All	All
Policy Processes and Outreach	**Strategic Planning**	Ireland's Climate Change Strategy was launched in November 2000. The strategy provides a framework for climate change abatement across all sectors of the economy. Key initiatives include: a commitment to put in place an appropriate framework for greenhouse gas taxation, prioritising CO_2 emissions, from 2002 on; a commitment to participate in international emissions trading (as a supplement to and not a substitute for domestic action); a range of measures to address fuel efficiency in transport and to favour more energy-efficient houses.	All	All
Policy Processes and Outreach	**Strategic Planning**	The Green Paper on Sustainable Energy, published in September 1999, outlined a new and increased role for the Irish Energy Centre in implementing government policy on energy efficiency and renewable energy. This would involve the centre becoming an independent statutory body under the	All	All

Policy Type	Classification	Policy Description	Sector	Energy
		aegis of the Minister for Public Enterprise. A bill to effect this transition was approved by the government for formal drafting in July 2000. This legislation is a natural progression in the development of the centre which will ultimately become the primary implementing agency in the government's strategy on climate change and the promotion of energy efficiency and renewable energy measures. An interim board was appointed in December 2000 to oversee the centre's transition.		
Policy Processes and Outreach	**Outreach/ Information Dissemination** **Advice/Aid in Implementation**	The programme of the Energy Awareness Week that promotes energy efficiency, particularly to domestic customers, achieved international recognition in 2000 when it secured second prize in the campaigns section of the International Energy Globe Awards 2000.	Buildings	All
Policy Processes and Outreach	**Strategic Planning**	A structured consultative process with key actors on a proposed "House of Tomorrow RD&D" programme has led to the identification of themes and priorities.	Buildings (Residential)	All
RD&D	**Technology Development**			
Policy Processes and Outreach	**Strategic Planning**	In July 2000, the Renewable Energy Strategy Group published a report "Strategy for Intensifying Wind Energy Deployment", examining the aspects of, and constraints to, the further development of wind energy in Ireland. The strategy recommended is designed to meet the targets set for the deployment of renewable energy at least cost, and focuses on three key elements: electricity markets, electricity networks and spatial planning. The aim is to secure an additional 500 MW of renewable energy-based electricity-generating capacity by 2005.	Buildings (Community Use) Energy Prod. (Electricity Generation)	Electricity Renewables

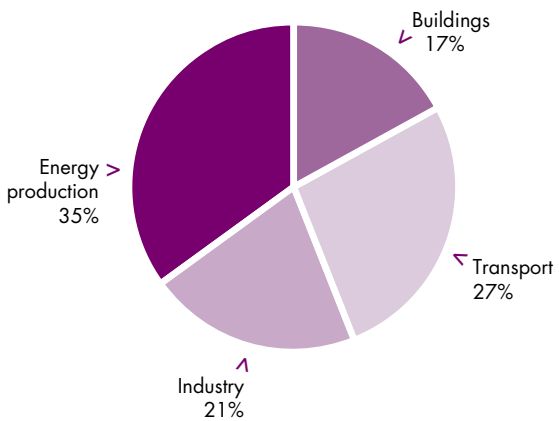
ITALY

Key Indicators

	1990	1995	1999
TPES (Mtoe)	151.67	159.82	169.04
TPES/Capita (toe per capita)	2.67	2.79	2.93
TPES/GDP (toe per thousand 1990 US$ PPP)	0.14	0.14	0.14
CO_2 Emissions (Mt of CO_2)	399.38	412.46	422.43
CO_2/Capita (t CO_2 per capita)	7.04	7.20	7.33
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.37	0.36	0.34

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal	**Tax Credit**	Under the financial law approved in December 2000, users connected to a geothermal district-heating grid will receive a tax credit equal to L 40,000/kW of power committed, in order to foster the use of geothermal energy. This tax credit is to be applied as a supplement to existing favourable provisions. An identical provision applies to users connected to a district-heating grid fuelled by biomass.	Buildings (Residential, Non-Residential) Industry (Manufacturing)	Renewables (Geothermal/ Ocean, Biomass)
Fiscal	**Tax Reduction**	The financial law approved in December 2000 establishes a reduced excise tax (L 560,000/1,000 litres) for fuels having a reduced environmental impact, such as bioethanol, ETBE, unleaded gasoline and fuel additives from biomass.	Transport (Passenger, Freight) Buildings	Renewables Fossil Fuels
Fiscal	**Tax Exemption**	The financial law approved at the end of the year 2000 will exempt from the excise taxes up to 0.3 Mt biodiesel to be used as transportation or heating fuel. This represents an increase from the 0.1 Mt exemption of biodiesel for use in transportation provided in 1999.	Transport (Passenger) Buildings	Renewables
Fiscal	**Subsidy**	Under the financial law approved in December 2000, the townships will receive financial support to reduce the use of cars, urban pollution and urban congestion.	Transport (Passenger)	Fossil Fuels

Policy Type	Classification	Policy Description	Sector	Energy
Fiscal	**Subsidy**	The financial law, approved at the end of the year 2000, establishes a fund for the reduction of atmospheric emissions and the promotion of energy efficiency and sustainable energy sources. The fund is financed from a portion equal to 3% of the receipts accruing from the Law 23/12/1998 N.448 (carbon tax). Among other activities, the fund will finance up to 80% of the cost of programmes for installation of solar collectors (mostly PV), particularly in southern Italy, and reforestation programmes to increase absorption of CO_2.	All	All
Regulatory Instruments **Fiscal**	**Regulatory Reform** **Subsidy**	A regulation adopted in 2000 liberalises electricity production from small PV installations and fosters the implementation of the project "10,000 PV roofs" promoted by the Ministry of the Environment and ENEA (the Italian National Agency for New Technologies, Energy and Environment).The regulation concerns local exchanges (purchase, sale) of electricity between the grid manager (Manager of the Electric Market, responsible for electricity transmission) and small autoproducers of electricity from photovoltaic plants of less than 20 kW of installed capacity. According to this regulation, the sale price of excess power to the grid is to be set equal to the purchase price from the grid, regardless of the time of the day and the season.	Energy Prod. (Electricity Generation)	Renewables (Solar)
Policy Processes and Outreach	**Outreach/ Information Dissemination**	In 2000, the Italian government encouraged Italian cities to participate in a series of four so-called "Ecological Sundays" in which car circulation was strictly limited and environment-friendly alternatives promoted.	Transport (Passenger)	Fossil Fuels (Oil)
		policies and measures planned in 2000		
RD&D	***Demonstration Projects***	*In 2000, ENEA has been requested to develop a demonstration project for a solar thermo-electric plant in Sicily with the support of national industries and using the best available technologies.*	*Energy Prod. (Electricity Generation)*	*Renewables (Solar)*

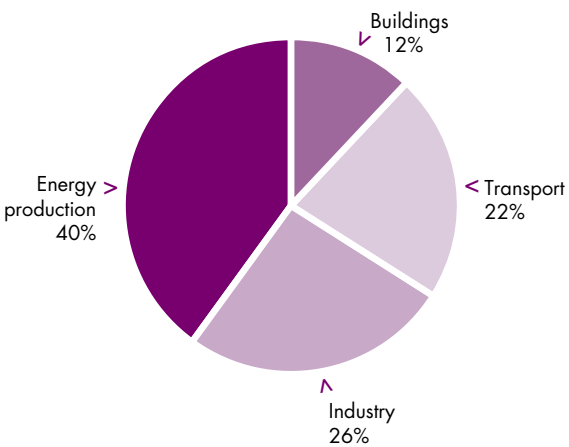
JAPAN

Key Indicators

	1990	1995	1999
TPES (Mtoe)	438.83	497.74	515.45
TPES/Capita (toe per capita)	3.55	3.96	4.07
TPES/GDP (toe per thousand 1990 US$ PPP)	0.17	0.18	0.17
CO_2 Emissions (Mt of CO_2)	1,018.72	1,099.86	1,127.40
CO_2/Capita (t CO_2 per capita)	8.25	8.76	8.90
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.38	0.39	0.38

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal	**Subsidy**	In 2000, the Japanese government provided subsidies for environment-friendly community energy projects such as regional heat supply systems and waste power generation. The purpose of this policy is to make the best possible use of waste heat or surplus energy produced by power generation. The amount of the subsidy for this programme is 1,751 million yen.	Buildings (Community-Use) Energy Prod. (Electricity Generation)	Fossil Fuels (Oil, Gas) Electricity
Fiscal	**Subsidy**	In 2000, the New Energy and Industrial Technology Development Organisation (NEDO) provided subsidies for projects that contribute to accelerating the introduction of new and renewable energy and are based on plans made by local governments. The projects reflect local natural conditions. Typical examples are the development of solar and wind energy. The amount of the subsidy for this programme is 1,232 million yen.	Industry (Manufacturing)	Renewables (Solar, Wind)
Fiscal	**Subsidy**	Government funding has been provided to upgrade some passenger train lines to enable the passage of freight trains. The initiative is designed to help promote modal shift of trunk freight transport from trucks to railways.	Transport (Freight)	Electricity Fossil Fuels
Fiscal	**Subsidy**	In order to accelerate the diffusion of new and renewable energy in Japan, NEDO (New Energy and Industrial Technology Development Organisation) implemented, in 2000, a measure to support companies that use new and renewable energy by providing subsidies. An example is a	Industry (Manufacturing)	Renewables Fossil Fuels

Policy Type	Classification	Policy Description	Sector	Energy
		subsidy for companies that utilise gas-fired co-generation. Funding for this programme in 2000 was approximately 11.5 million yen.		
Tradable Permits	**Project-based Programmes**	Japan will contribute to the World Bank's Prototype Carbon Fund which began operations in early 2000 to help developing countries invest in technologies to curb greenhouse gas emissions. The $150 million new fund, launched by the World Bank, is financed by industrial nations and corporations which will receive emissions reduction certificates.	All	All
Voluntary Agreements	**Weak VA**	In 2000, a voluntary agreement was approved to change the energy source of signs and markings in seaways (e.g. buoys and lighthouses) to renewable energy such as solar or ocean/tidal.	Transport (Freight)	Renewables (Geothermal/ Ocean, Solar)
Voluntary Agreements	**Weak VA**	A new energy efficiency labelling system was implemented by Japan in 2000. It is a voluntary agreement covering household electric appliances based on the Japanese Industrial Standard (JIS). The system provides energy efficiency labels placed on the appliances that indicate the degree to which energy-efficient targets, specified by the Law Concerning the Rational Use of Energy, have been achieved, so that consumers can compare the energy efficiency performance of different products.	Buildings (Residential)	Electricity
RD&D	**Technology Information Dissemination**	In 2000, the Energy Conservation Centre Japan (ECCJ) published a Catalogue of High-Performance Energy-Efficient Appliances. This catalogue compiles lists of household appliances that show high-performance energy efficiency. Each appliance is categorised by factors such as size and performance. It is also available on the web site.	Buildings (Residential)	Fossil Fuels (Oil, Gas) Electricity
RD&D	**Research Programmes**	The Energy Conservation Centre Japan (ECCJ) studied stand-by power losses in the household sector and published the results in August 2000. The report proposed several policy options for reducing losses.	Buildings (Residential)	Electricity
RD&D	**Demonstration Projects**	A field test was conducted in 2000 to diffuse wind power in Japan. Wind power stations were introduced in 18 areas corresponding to different natural environments. Data will be collected by operating these stations.	Energy Prod. (Electricity Generation)	Renewables (Wind)
RD&D	**Research Programmes**	To reduce the cost of photovoltaics and accelerate their diffusion, the New Energy and Industrial Technology Development Organisation (NEDO) implemented a series of technology development programmes in 2000 on the increase of productivity and conversion efficiency improvements.	Energy Prod. (Electricity Generation)	Renewables (Solar)
Policy Processes and Outreach	**Advice/Aid in Implementation**	The Japanese government set up the Committee on Advanced Demand Side Management (DSM) in March 2000. The committee was established to improve energy conservation on the demand side, with particular emphasis on the residential/commercial sector. This initiative comes as a complement to energy conservation measures already taken which were focused on the supply side, such as the introduction of the Top Runner programme in 1999.	Buildings (Residential Non-Residential)	Electricity

Policy Type	Classification	Policy Description	Sector	Energy
Policy Processes and Outreach	**Advice/Aid in Implementation**	In 2000, the Japanese government formulated new inspection guidelines for improving energy efficiency at first-class, designated industries, that together consume 70% of the total amount of energy used by the industrial sector. The on-site surveys based on the new guidelines will start in April 2001.	Industry (Manufacturing)	Electricity Fossil Fuels
Policy Processes and Outreach	**Outreach/ Information Dissemination**	In 2000, the Japanese Minister of Environment rewarded, in each sector, initiatives that had greatly contributed to reduce greenhouse gas (GHG) emissions such as enhancing public awareness or introducing renewable energy. Examples are reward for a car-rental agent who deals only in low-polluting cars, for a non-profit organisation that promotes the diffusion of ecological houses which utilise stocked snow for air conditioning, and for a voluntary organisation that established a micro hydroelectric power plant in a mountain village in Nepal.	All	All
		policies and measures planned in 2000		
Fiscal	***Tax***	*The Japanese government is planning to reduce the automobile acquisition tax, the tax on low-polluting vehicles (methanol, hybrid, compressed natural gas and electric) and certain fuel-efficient and low-emissions vehicles. It is also planning to raise the tax on old polluting vehicles in order to promote the development and social acceptance of environmentally sound vehicles. These measures are aiming at curbing global warming and controlling local air pollution.*	*Transport (Passenger)*	*Fossil Fuels*

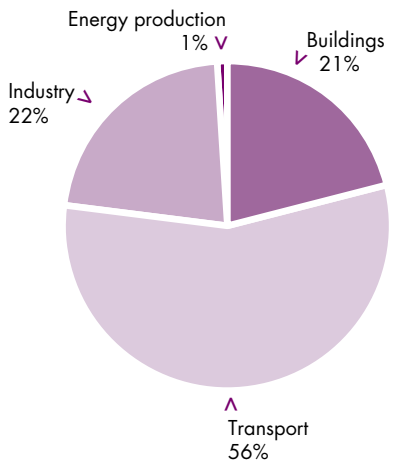
LUXEMBOURG

Key Indicators

	1990	1995	1999
TPES (Mtoe)	3.57	3.38	3.49
TPES/Capita (toe per capita)	9.27	8.18	8.00
TPES/GDP (toe per thousand 1990 US$ PPP)	0.34	0.24	0.20
CO_2 Emissions (Mt of CO_2)	10.47	8.19	7.48
CO_2/Capita (t CO_2 per capita)	27.18	19.83	17.15
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.98	0.59	0.43

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Policy Processes and Outreach	**Strategic Planning**	The government presented the "National Strategy to reduce GHG emissions" in May 2000. The domestic programme focuses on six main issues including: the progressive introduction of an ecotax system in the field of energy, energy efficiency in energy production, and energy savings in the building sector. Renewable energies (wind, solar, biomass) are also considered as a priority with an objective of providing 10% of national total electricity consumption by 2010 from renewables.	All	All
Policy Processes and Outreach	**Outreach/ Information Dissemination**	Luxembourg took part in the European car-free day initiative held on 22 September 2000. The car-free day is designed to help reduce air pollution in European cities as well as address the need to change mobility patterns as a way to boost use of public transport.	Transport (Passenger)	Fossil Fuels (Oil)
		policies and measures planned in 2000		
Policy Processes and Outreach	**Outreach/ Information Dissemination**	*In 2000, the government announced the launching of a large-scale awareness campaign. This campaign, intended for all households, includes a newspaper setting out the objectives of the Grand Duchy's environmental policy and a booklet presenting the priorities of the "National Strategy to reduce GHG emissions".*	*All*	*All*

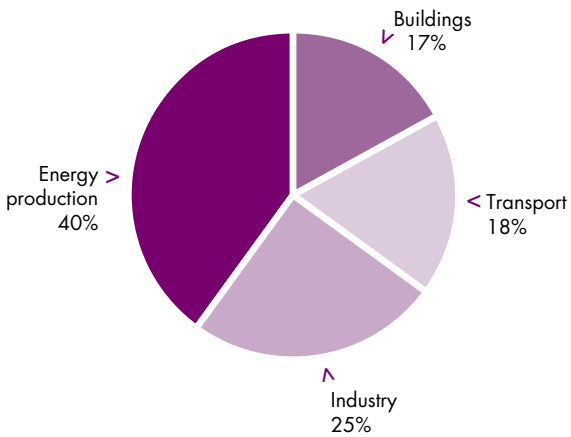
NETHERLANDS

Key Indicators

	1990	1995	1999
TPES (Mtoe)	66.47	73.17	74.07
TPES/Capita (toe per capita)	4.45	4.73	4.69
TPES/GDP (toe per thousand 1990 US$ PPP)	0.22	0.22	0.20
CO_2 Emissions (Mt of CO_2)	159.79	174.48	170.64
CO_2/Capita (t CO_2 per capita)	10.69	11.29	10.80
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.54	0.53	0.45

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Tradable Permits	**Project-based Programmes**	The Netherlands will contribute to the World Bank's Prototype Carbon Fund which began operations in early 2000 to help developing countries invest in technologies to curb greenhouse gas emissions. The $150 million new fund, launched by the World Bank, is financed by industrial nations and corporations which will receive emissions reduction certificates.	All	All
Tradable Permits	**Project-based Programmes**	The first Dutch government tender to purchase emissions reduction units (ERUs) from companies conducting joint implementation projects in Annex B countries was announced in May 2000. The transaction was on 4.2 Mt of CO_2 for a total amount of €40 million.	All	All
Regulatory Instruments	**Mandates/ Standards**	The Energy Performance Standard (EPN) set out in the Building Act was tightened as of 1 January 2000. The requirements for new residential properties is now 1.0 instead of 1.2, which means that buildings must be designed in such a way that no more than 1,000 cubic metres of natural gas will be required each year for heating, hot water and cooking in a standard-size dwelling.	Buildings (Residential)	Fossil Fuels
Policy Processes and Outreach	**Outreach/ Information Dissemination**	The Netherlands took part in the European car-free day initiative held on 22 September 2000. The car-free day is designed to help reduce air pollution in European cities as well as address the need to change mobility patterns as a way to boost use of public transport.	Transport (Passenger)	Fossil Fuels (Oil)

Policy Type	Classification	Policy Description	Sector	Energy
Policy Processes and Outreach **Tradable Permits**	**Strategic Planning** **Project-based Programmes**	In March 2000, the Dutch government presented the second part of its plan to meet greenhouse gas emissions reductions. Part one of the plan, which received parliamentary approval in November 1999, dealt with domestic measures. The Netherlands' Climate Policy Implementation Plan Part two states that half of the Dutch commitment will be achieved in co-operation with other countries through the use of "flexible mechanisms". The plan provides an initial proposal for implementing the mechanisms.	All	All
		policies and measures planned in 2000		
Tradable Permits ***Policy Processes and Outreach***	***Emissions Trading*** ***Consultations***	*The Dutch government set up an independent commission in August 2000 to elaborate a proposal on a domestic emissions trading scheme. The report is to be delivered to the Ministry of Environment in 2001.*	*All*	*All*
Voluntary Agreements	***Strong VA***	*The Dutch government is negotiating "covenants" with the rubber and plastic industry and with the meat industry on energy use reduction objectives.*	*Industry (Manufacturing)*	*Fossil Fuels* *Electricity*
Policy Processes and Outreach	***Strategic Planning***	*In 2000, the Dutch government started working on the fourth National Environmental Policy Plan (NEPP4) to be issued in 2001. The new national plan will deal with the most persistent current environmental problems, including greenhouse gases and particularly CO_2 emissions.*	*All*	*All*

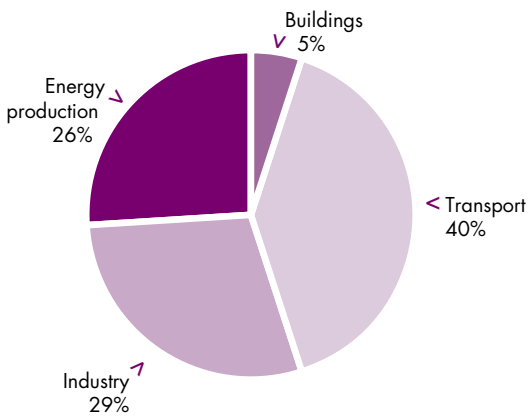
New Zealand

Key Indicators

	1990	1995	1999
TPES (Mtoe)	13.98	15.98	18.18
TPES/Capita (toe per capita)	4.16	4.37	4.77
TPES/GDP (toe per thousand 1990 US$ PPP)	0.26	0.26	0.27
CO_2 Emissions (Mt of CO_2)	21.88	25.17	29.79
CO_2/Capita (t CO_2 per capita)	6.50	6.89	7.82
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.41	0.40	0.44

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Regulatory Instruments	**Mandates/ Standards**	The government decided, in October 1999, to enhance energy provisions under the Building Code. The provisions were implemented in December 2000. These provisions increase insulation requirements in the cooler parts of the country; set maximum heat loss levels for hot water systems and set limits on building heat loss and lighting levels in commercial buildings. The energy provisions are estimated to create cumulative CO_2 reductions of 1.5 million tonnes after 15 years of implementation.	Buildings (Residential)	Electricity
Regulatory Instruments	**Mandates/ Standards**	In November 2000, it was decided that Minimum Energy Performance Standards (MEPS) will be adopted for three product classes; domestic electric hot water cylinders, fluorescent lamps and fluorescent ballasts. Approval is being sought for three additional product classes; three-phase cage induction motors, refrigerators and freezers, and packaged air-conditioners.	Buildings (Residential, Non-Residential)	Electricity
Policy Processes and Outreach	**Institutional Development** **Outreach/ Information Dissemination**	The Energy Efficiency and Conservation Act 2000, promulgated in May 2000, established the Energy Efficiency and Conservation Authority (EECA) as a separate Crown entity. EECA has been funded to encourage, promote and support energy efficiency, energy conservation and the use of renewable energy.	All	Electricity Renewables

Policy Type	Classification	Policy Description	Sector	Energy
Policy Processes and Outreach **Regulatory Instruments**	**Strategic Planning** **Mandates/ Standards**	New Zealand's House of Representatives passed the Energy Efficiency and Conservation Act 2000 in May 2000. The act will be effective starting 1 July 2001. It puts emphasis on the importance of renewable energy sources with the development of biomass, wind, solar, small hydro, and other types. The act provides for the establishment of mandatory energy performance standards for energy-using products such as appliances, equipment and vehicles. The first minimum energy performance standards will apply to fluorescent lighting and hot water cylinders. The implementation of energy performance labels for whiteware, including fridges, dishwashers and washing machines, has also been approved. The labels should be introduced in 2001. Public consultation will take place before regulations are passed to make standards and labelling mandatory.	Energy Prod. (Electricity Generation) Buildings (Residential) Transport (Passenger)	Renewables Electricity Fossil Fuels
		policies and measures planned in 2000		
Tradable Permits	***Emissions Trading***	*Since June 2000, the government has been developing policy and legislation for the purposes of implementing an emissions trading regime in New Zealand.*	*All*	*All*
Regulatory Instruments	***Mandates/ Standards***	*In November 2000, it was decided that Mandatory Energy Performance Labelling (MEPL) will be applied to those product classes regulated in Australia, and implemented along similar lines. The government plans to introduce MEPL in February 2002.*	*Buildings (Residential)*	*Electricity*
Voluntary Agreements	***Weak VA***	*The Ministry of Energy announced in 2000 that under the Government Energy Efficiency Leadership Programme, large publicly-funded organisations will sign an energy efficiency agreement with the Energy Efficiency and Conservation Authority (EECA). Participants are expected to include the defence forces, police, hospitals, tertiary education providers and Crown Research Institutes.*	*Buildings (Non-Residential)*	*Fossil Fuels* *Electricity*
Policy Processes and Outreach	***Consultation*** ***Strategic Planning***	*A consultation process with interested parties is under way to develop New Zealand's Climate Change Programme. Already engaged in the policy development process are the major emitters of greenhouse gases, particularly industry, the forestry sector and major environmental NGOs. Dialogue meetings will continue until March 2001, after which the government will outline a proposed package of measures.*	*All*	*All*

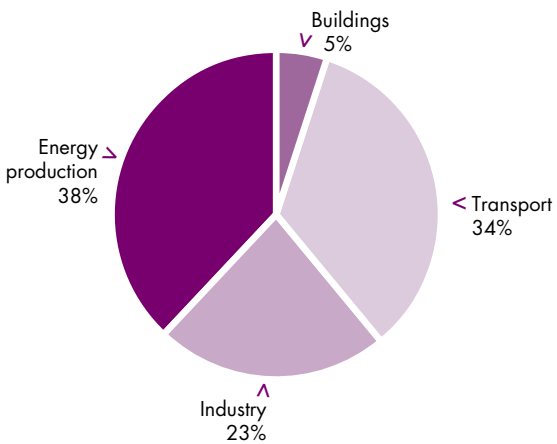
NORWAY

Key Indicators

	1990	1995	1999
TPES (Mtoe)	21.48	23.49	26.61
TPES/Capita (toe per capita)	5.06	5.39	5.96
TPES/GDP (toe per thousand 1990 US$ PPP)	0.25	0.23	0.23
CO_2 Emissions (Mt of CO_2)	28.53	32.71	38.23
CO_2/Capita (t CO_2 per capita)	6.73	7.51	8.57
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.34	0.32	0.33

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal	**Subsidy**	The government has granted NKr 340 million in the budget for 2001 to promote a shift in the use and production of energy. Approximately NKr 60 million would be used for work directly tied to energy efficiency. The government has stated its objective to increase "new renewable capacity" (i.e. other than large-scale hydro) by 7 TWh. This will include increasing annual use of central heating based on new renewable energy sources, heat pumps and waste heat by 4 TWh by the year 2010; and the construction of wind generators with a production capacity of 3 TWh/year by the year 2010.	All	Renewables (Wind) Electricity
Tradable Permits	**Project-based Programmes**	Norway will contribute $10 million over the next 10 years to the World Bank's Prototype Carbon Fund which began operations in early 2000 to help developing countries invest in technologies to curb greenhouse gas emissions. The $150 million new fund, launched by the World Bank, is financed by industrial nations and corporations which will receive emissions reduction certificates.	All	All
Regulatory Instruments	**Regulatory Instruments**	The Water Resources and Energy Directorate (NVE) announced in December 2000 that it had given state-owned utility Statkraft three separate concessions to build wind farms. The project will produce a total of around 800 GWh of renewable energy per year. The largest of the three planned wind farms at Smoela would consist of 70 turbines with a total installed capacity of 144 MW of electricity.	Energy Prod. (Electricity Generation)	Renewables (Wind)

Policy Type	Classification	Policy Description	Sector	Energy
Policy Processes and Outreach	**Outreach/ Information Dissemination**	The Energy Efficiency Network for Buildings (EENB) published its third report in July 2000. Through formalised co-operation, participants such as private owners of commercial buildings, house building co-operatives, local authorities and buildings administrators exchange information and experience on energy-efficient projects. Participants are obliged to submit information on their consumption of energy in buildings for use in a national statistics database.	Building (All)	All
		policies and measures planned in 2000		
Tradable Permits	***Emissions Trading***	*In December 1999, a commission appointed by the government released its report outlining the design of a domestic trading system for greenhouse gases. Since, the Norwegian government has been preparing a white paper on policies and measures to reduce national emissions of greenhouse gases which includes a national quota system. The white paper is to be released in June 2001.*	*Energy Prod. (Electricity Generation)* *Industry (Manufacturing)*	*Fossil Fuels* *Electricity*
Regulatory Instruments	***Mandates/ Standards***	*In March 2000, the Parliament voted in favour of emissions standards based on currently available technology for the future construction of gas-fired power plants, until an international GHG emissions trading is established. This decision is expected to lead to reduced imports of coal-fired electricity.*	*Energy Prod. (Electricity Generation)*	*Fossil Fuels (Gas, Coal)*
Policy Processes and Outreach	***Institutional Development***	*In 2000, the Ministry of Petroleum and Energy announced the establishment of a new central energy efficiency agency that will be responsible for implementing energy efficiency policy and programmes, and for increased use of new renewables. The new body will be established in 2001 taking over from the Norwegian Water Resources and Energy Administration (NVE). It will also be given responsibility for work at present carried out through the regional Energy Efficiency Centres.*	*All*	*Electricity* *Renewables*

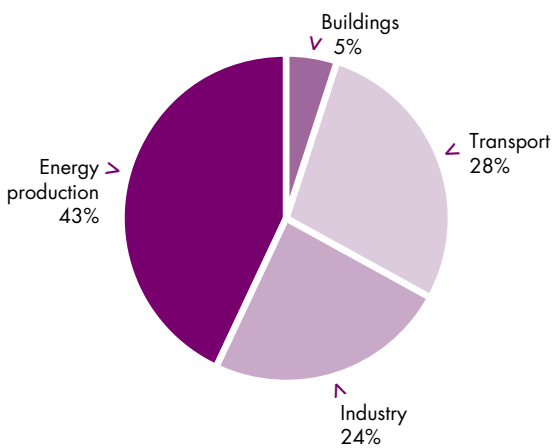
PORTUGAL

Key Indicators

	1990	1995	1999
TPES (Mtoe)	16.42	19.26	23.63
TPES/Capita (toe per capita)	1.66	1.94	2.37
TPES/GDP (toe per thousand 1990 US$ PPP)	0.13	0.14	0.15
CO_2 Emissions (Mt of CO_2)	39.61	48.76	60.38
CO_2/Capita (t CO_2 per capita)	4.00	4.92	6.05
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.32	0.36	0.39

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal	**Tax Reduction**	State budget 2001, introduced in 2000, provides for a 50% reduction of the tax on the purchase of vehicles when they use exclusively liquefied petroleum gas (LPG) or natural gas. When they are driven by hybrid engines that use conventional fuels but can also use LPG, natural gas, electricity, or solar energy, a 40% reduction of that tax is provided. These measures create an incentive for the market penetration of low-carbon fuels.	Transport (Passenger)	Fossil Fuels (LPG/NG) Electricity Renewables (Solar)
Policy Processes and Outreach	**Consultations**	In 2000, a new programme in favour of the development of economic activities under the European Union's Community Support Framework (POE) was prepared. Under this programme, new regulations providing incentives to energy efficiency and energy diversification (renewables) projects were adopted.	All	All
RD&D	**Technology Development**			
Policy Processes and Outreach	**Outreach/ Information Dissemination**	Portugal took part in the European car-free day initiative held on 22 September 2000. The car-free day is designed to help reduce air pollution in European cities as well as address the need to change mobility patterns as a way to boost use of public transport.	Transport (Passenger)	Fossil Fuels (Oil)

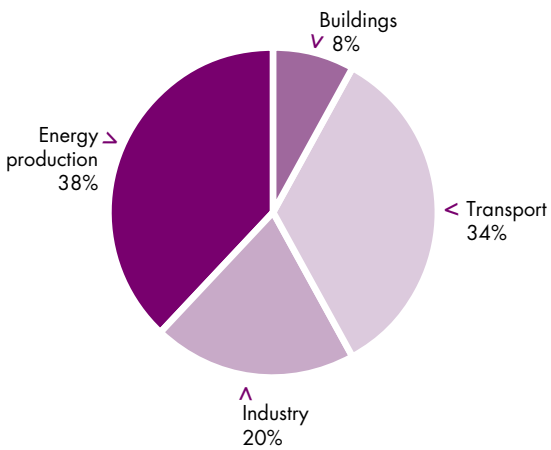
SPAIN

Key Indicators

	1990	1995	1999
TPES (Mtoe)	90.53	103.13	118.47
TPES/Capita (toe per capita)	2.33	2.63	3.01
TPES/GDP (toe per thousand 1990 US$ PPP)	0.16	0.17	0.17
CO_2 Emissions (Mt of CO_2)	206.42	234.75	266.76
CO_2/Capita (t CO_2 per capita)	5.31	5.99	6.77
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.37	0.39	0.39

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal	**Subsidy**	The Real Decreto 2818/1998 promoting electricity generation from renewable energy sources, waste and CHP, based on feed-in tariffs, was revised in 2000, and a new price at which a utility or supplier has to purchase renewable electricity from private generators has been fixed. It ranges from €0.03 per kWh (for secondary biomass) to € 0.36 per kWh (for PV under 5 kW).	Energy Prod. (Electricity Generation)	Renewables
Regulatory Instruments	**Mandates/ Standards**	The law on Construction Requirements (Ley 38/1999, de Ordenacion de Edificacion) became effective in May 2000. It includes provisions for energy-efficient housing, such as general building insulation. The laws implementing regulations have not yet been approved, so the regional authorities currently are not obligated to require the certification procedure.	Buildings (Residential)	Fossil Fuels Electricity Renewables
RD&D	**Research Programmes**	The National RD&D Plan (2000-2003), promulgated by the Spanish government in 1999, became effective in 2000. The plan integrates many horizontal and specific programmes such as the National Energy Programme (PROFIT-Energía). It focuses on four key actions: cleaner energy systems, including renewable energy sources (RES) and fuel cells; technologies for the transmission, storage, distribution, and rational and efficient use of energy; new propelling systems and fuels for the road transport sector; and complementary actions (fossil fuels, RES integration, nuclear safety, environmental impact, etc.).	All	All

Policy Type	Classification	Policy Description	Sector	Energy
Policy Processes and Outreach	**Strategic Planning**	The Promotion Plan of Renewable Energies ("Plan de Fomento de las Energías Renovables en España"), adopted by the Spanish government in 1999, became effective in January 2000. It calls for doubling the RES share in the primary energy supply quota from 6 to 12%; this objective is to be attained. The main energies and areas that are considered by the plan are: biomass, wind, hydropower, solar and the urban solid waste.	Energy Prod. (Electricity Generation) Industry (Manufacturing)	Renewables

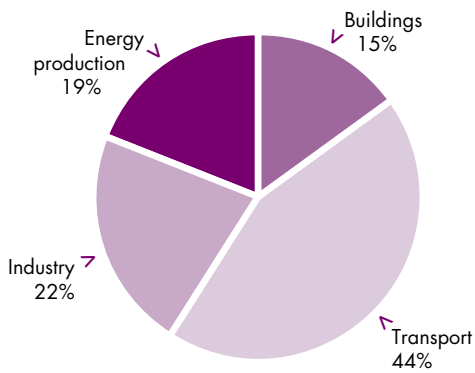
SWEDEN

Key Indicators

	1990	1995	1999
TPES (Mtoe)	46.67	49.82	51.09
TPES/Capita (toe per capita)	5.45	5.64	5.77
TPES/GDP (toe per thousand 1990 US$ PPP)	0.27	0.28	0.26
CO_2 Emissions (Mt of CO_2)	51.15	53.74	51.79
CO_2/Capita (t CO_2 per capita)	5.97	6.09	5.85
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.30	0.31	0.26

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal	**Tax**	In 2000, a budget proposal was presented by the Swedish government to Parliament to increase energy taxation by SKr 3 billion, in 2001, in the form of green tax exchange (the bulk of the money is to replace lost tax revenue). The carbon dioxide tax rate is raised from SKr 370 to SKr 530 per tonne. The tax on diesel goes up by SKr 0.117 per litre and taxes on electricity by SKr 0.019 per kWh.	All	Fossil Fuels (All)
Fiscal	**Tax Exemption** **Subsidy**	Swedish budget bill for 2001 proposed to prolong the tax exemptions for electricity generated from wind power to the end of 2002. This "environmental bonus", introduced in 1994, provides the opportunity for deduction of the energy tax due on electricity produced from wind power. The subsidy currently amounts to SKr 0.162/kWh. The European Commission approved the temporary measure in October 1999. The government proposes that the measure remains in force until it can be replaced by the market-based support schemes currently in preparation. This will require renewed approval by the European Commission.	Energy Prod. (Electricity Generation)	Renewables (Wind)
Fiscal	**Subsidy**	The Swedish government introduced in June 2000 an investment support scheme for solar heating. Home owners can apply for an investment grant corresponding to SKr 2.50 per kWh of calculated yearly supply for investments in solar heating installations.	Buildings (Residential)	Renewables (Solar)

Policy Type	Classification	Policy Description	Sector	Energy
Fiscal	**Subsidy**	A programme of support for Local Investment Programmes (LIP) was established in 1997 and a budget of SKr 5,400 million, later increased to SKr 7,200 million was allocated for the period 1998–2003. The programme is designed to support local governments' investments in technology to achieve lower environmental impacts, more efficient use of energy and resources, and to promote the use of renewable resources. The Swedish government in 2000 has granted support amounting to SKr 1,200 million to local governments for 56 local investment programmes. Since the start of the programme, in 1998, a total of SKr 5,300 million has been granted to 125 local governments. The supported programmes are, according to the applicants, expected to lead to a total lowering of the energy use by 2.1 TWh per year, and the conversion to renewable energy sources to contribute a total annual energy supply of 2.3 TWh. Carbon dioxide emissions are expected to decrease by 1.57 million tonnes per year thanks to the investment programmes.	All	Renewables (All)
Fiscal	**Subsidy**	In the budget bill for the year 2001, the Swedish government proposed an additional funding of SKr 40 million per year to support wind power installations under the Swedish Energy Policy programme initiated in 1998.	Energy Prod. (Electricity Generation)	Renewables (Wind)
Fiscal	**Subsidy**	An interim support scheme for small-scale electricity production (production plants < 1.5 MW) has been established. The aim is to ensure the conditions that will allow small-scale renewable electricity production to achieve further market penetration. The support amounts to SKr 0.09 per kWh. The support measure was approved by the European Commission in June 2000, and was established on 15 July 2000 in Government Bill 1999/2000:134 "Economic conditions for the production of electricity from renewable energy sources". The interim support is proposed to be in force up to the end of 2002. Work on establishing a new support scheme for renewable electricity production is under way.	Energy Prod. (Electricity Generation)	Renewables
Tradable Permits	**Project-based Programmes**	Sweden will contribute to the World Bank's Prototype Carbon Fund which began operations in early 2000 to help developing countries invest in technologies to curb greenhouse gas emissions. The $150 million new fund, launched by the World Bank, is financed by industrial nations and corporations which will receive emissions reduction certificates.	All	All
Voluntary Agreements	**Weak VA**	An agreement was signed in April 2000 between the Swedish government and the vehicle manufacturing companies in Sweden. This joint government and industry programme is a five-year R&D programme aimed at the development of new technologis to minimise the environemental impact of cars and heavy vehicles. There are several sub-programmes, including on advanced combustion technology, fuel-cell technology and electric-hybrid vehicles. The total budget for the programme over the period 2000–2005 is SKr 1,800 million. Public funding is SKr 500 million.	Transport (Passenger)	All
RD&D	**Technology Development**		Industry (Manufacturing)	

Policy Type	Classification	Policy Description	Sector	Energy
Policy Processes and Outreach	**Outreach/ Information Dissemination**	Sweden took part in the European car-free day initiative held on 22 September 2000. The car-free day is designed to help reduce air pollution in European cities as well as address the need to change mobility patterns as a way to boost use of public transport.	Transport (Passenger)	Fossil Fuels (Oil)
		policies and measures planned in 2000		
Tradable Permits	***Emissions Trading***	*The Swedish government is elaborating an Emissions Trading System as part of the national GHG emissions reduction scheme. A report was published by the Ministry of Industry, Employment and Communications in April 2000: "Trade to Meet Climate Goals". The report suggests that the permits should be auctioned off according to the "polluter pays" principle. The introduction of the Emissions Trading System could replace the Swedish current CO_2 tax system.*	*All*	*All*
Policy Processes and Outreach	***Strategic Planning***			
Tradable Permits	***Green Certificates***	*The government is investigating a market-based support scheme, green certificates, to encourage electricity production from renewable energy sources. The new measures are planned to replace by 2003 the operational support currently in place.*	*Energy Prod. (Electricity Generation)*	*Renewables (All)*
Policy Processes and Outreach	***Strategic Planning***	*The short-term part of the Swedish Energy Policy Programme includes measures covering the period 1998-2002 to promote energy efficiency. Work has now been initiated to evaluate the current measures and develop new energy efficiency measures to be initiated in 2003. A government bill is planned for submission to Parliament in early 2002.*	*All*	*All*
Policy Processes and Outreach	***Advice/Aid in Implementation***	*In August 2000, the Swedish government decided to appoint a negotiator whose task is to propose a programme of long-term agreements for energy efficiency in energy-intensive industries. The purpose is to achieve an effective use of energy and a cost-effective reduction of emissions of greenhouse gases. During the fact-finding process the negotiator shall keep regular contacts with the industry involved. The negotiator shall also make preparations for the notification of the programme to the European Commission.*	*Industry (Manufacturing Non-Manufacturing)*	*All*
Voluntary Agreement	***Weak VA***			
Policy Processes and Outreach	***Strategic Planning***	*A bill is being prepared for submission to Parliament presenting climate change policy measures recommended by a Government Commission for Measures Against Climate Change.*	*All*	*All*
	Consultation			

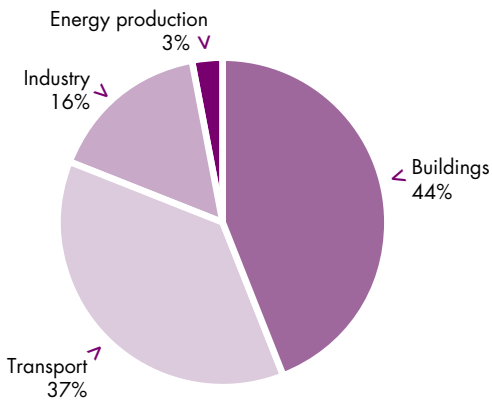
SWITZERLAND

Key Indicators

	1990	1995	1999
TPES (Mtoe)	25.06	25.27	26.69
TPES/Capita (toe per capita)	3.73	3.59	3.74
TPES/GDP (toe per thousand 1990 US$ PPP)	0.14	0.14	0.14
CO_2 Emissions (Mt of CO_2)	39.88	39.75	41.13
CO_2/Capita (t CO_2 per capita)	5.94	5.65	5.76
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.22	0.22	0.21

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Voluntary Agreements	**Strong VA**	The Federal Law on the Reduction of CO_2 Emissions, adopted by the Swiss government in 1999, entered into force in May 2000. The law commits Switzerland to reducing its emissions of carbon dioxide by 10% from 1990 levels over the next 10 years. Different targets are set out for achieving CO_2 cuts according to the emission source: emissions from heating fuels such as light fuel oil and natural gas must be reduced by 15% from 1990 levels by 2010, while emissions from vehicle fuels such as gasoline and diesel must be reduced by 8% over the same period. Voluntary agreements between the government and industry on cutting CO_2 emissions are given the priority. If it appears that the targets are not being achieved, the law authorises the Swiss government to introduce a CO_2 emissions tax after 2004. The maximum rate of the tax is fixed at SFr 210 (US$ 130) per metric tonne of emissions, equivalent to US$ 0.30 per litre of gasoline. Discussions between the Swiss Energy Agency and the largest industrial energy consumers on voluntary arrangements have started.	All	Fossil Fuels
Fiscal	**Tax**			

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures planned in 2000		
Fiscal	***Tax***	*In 2000, the Swiss government elaborated a scheme to tax trucks. The tax on trucks over 3.5 tonnes will be effective in 2001. This tax is related to distance and weight and is intended to internalise the cost of freight transport. The maximum charge is set at SFr 0.02 per km-tonne in 2001 and will increase to SFr 0.03 in the future. The tax will raise SFr 1,500 millions and will be used for investments in rail infrastructure. One-third of the revenues will go to the cantons.*	*Transport (Passenger Freight)*	*Fossil Fuels (Oil)*
Regulatory Instruments	***Regulatory Reform***	*In December 2000, the Swiss Parliament adopted the law on the electricity market. The federal law on the electricity market contains some regulations on renewable energy. It gives the possibility to choose the origin of electricity production, funds federal loans for the modernisation and maintenance of existing hydropower plants and calls for free access to the electricity grid for renewable electricity plants with less than 1 MW (0.5 MW for hydropower) capacity. The law will be voted by plebiscite in December 2001; if passed, it will become effective in 2002.*	*Energy Prod. (Electricity Generation)*	*Electricity*
Fiscal	***Subsidy***			*Renewables*
Voluntary Agreements	***Weak VA***	*In 2000, the Swiss government elaborated the SwissEnergy action plan, which follows on from the Energy2000 programme. The objectives of SwissEnergy are to reduce the consumption of fossil fuels, to stabilise the consumption of electricity and to increase the contribution of renewables to the energy supply. The targets will be reached in extensive co-operation with the cantons and the private sector. Voluntary agreements, funding measures favouring energy savings, funding of cantons, promoting renewable energy, research, training courses, dissemination of information are the main tasks of the action plan. SwissEnergy will start in 2001.*	*All*	*All*
Fiscal	***Subsidy***			

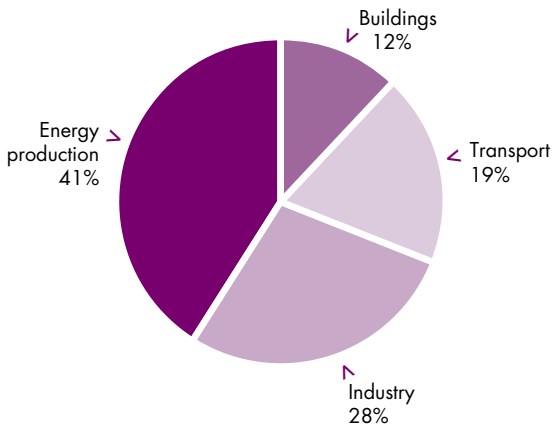
TURKEY

Key Indicators

	1990	1995	1999
TPES (Mtoe)	52.65	61.40	70.33
TPES/Capita (toe per capita)	0.94	1.00	1.07
TPES/GDP (toe per thousand 1990 US$ PPP)	0.18	0.18	0.18
CO_2 Emissions (Mt of CO_2)	128.80	155.43	181.19
CO_2/Capita (t CO_2 per capita)	2.29	2.52	2.75
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.43	0.45	0.46

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Regulatory Instruments	**Mandates/ Standards**	The new Heat Insulation Standards became effective in June 2000. While existing buildings require about 200 to 250 kWh/m², the new standards should bring down heating energy requirements to 100-150 kWh/m².	Buildings (Residential, Non-Residential)	Fossil Fuels Electricity Renewables
Policy Processes and Outreach	**Strategic Planning**	In 2000, studies regarding the environmental impacts of the energy sector have been started as a precursor to a new joint mitigation project with the World Bank. The Base Case scenario, a starting point for the current energy demand and supply projection, will be the reference point for different options covering increasing energy efficiency, improving technologies, inter-fuel substitution, reducing the electricity transmission and distribution losses, and improving fuel quality.	All	All
		policies and measures planned in 2000		
Regulatory Instruments	***Mandates/ Standards***	*In 2000, the Turkish government is planning to introduce a decree that will impose savings in power use in government buildings and cut-down on street lighting.*	*Buildings (Non-Residential)*	*Electricity*

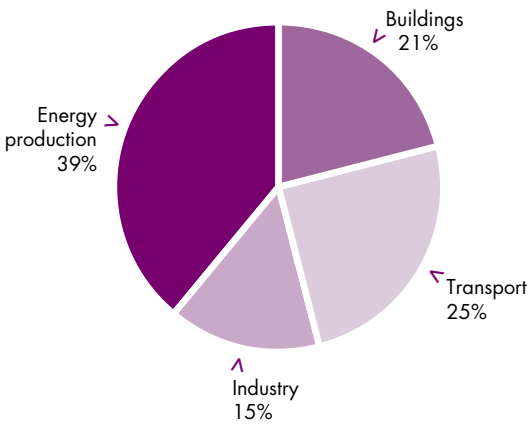
UNITED KINGDOM

Key Indicators

	1990	1995	1999
TPES (Mtoe)	213.10	224.53	230.32
TPES/Capita (toe per capita)	3.70	3.83	3.87
TPES/GDP (toe per thousand 1990 US$ PPP)	0.21	0.21	0.19
CO_2 Emissions (Mt of CO_2)	560.30	535.80	519.16
CO_2/Capita (t CO_2 per capita)	9.73	9.14	8.73
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.56	0.49	0.43

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal	**Tax Exemption Tax Credit**	The Green Fuels Challenge was unveiled by the Chancellor in the pre-budget report in November 2000. The programme aims to stimulate industry to develop practical proposals for alternative fuels. Following a consultation with industry led by the Department of the Environment (DETR), Budget 2001 announced reductions in duty on biodiesel and further reductions in duty on road fuel gases. The Budget also announced duty reductions or exemptions for pilot studies for vehicles running on longer-term fuels, in particular fuels for use in fuel cells, such as hydrogen and methanol.	Transport (Passenger)	Fossil Fuels Renewables
Policy Processes and Outreach	**Consultation**		Industry	
Regulatory Instruments	**Mandates/ Standards**	The Market Transformation Programme introduced energy labels for stand-by power of new televisions and video-cassette recorders as well as for washing machines. This programme, effective since 1997, is a policy research, development and support project aiming to encourage products (including lighting, heating and other office equipment) which do less harm to the environment, using less energy, water and other resources over their lifetime. Other energy labels introduced since 1994 include: refrigerators & freezers (1994 and 1999), washing machines and electric tumble dryers (1996), combined washer-dryers (1997), least efficient boilers (1998), dishwashers & lamps (1999).	Buildings (Residential)	Electricity
Policy Processes and Outreach	**Outreach/ Information Dissemination**			

UNITED KINGDOM (CONTINUED)

Policy Type	Classification	Policy Description	Sector	Energy
Regulatory Instruments	**Mandates/ Standards**	In the UK, under new provisions in the revised Building Regulations 2000, approved in September, house builders will be required to visually display energy ratings of new homes as well as to notify the building control body of performance. The new energy labelling requirement was to come into force on 1 January 2001.	Buildings (Residential)	Electricity
RD&D	**Technology Development**	The UK government announced a £260 million package for measures over 2001/02-2003/04 to stimulate renewable energy comprising: £89 million towards capital grants to help develop offshore wind, energy crop power generation projects and small-scale biomass heating projects, through the New Opportunities Fund; planting grants for energy crops (short rotation coppice and miscanthus) of £12million; an initial funding of £10 million to kick-start a major solar PV demonstration scheme; a further £100 million to bring on stream new generation renewable energy technologies; and an expanded renewable energy research and development programme of £55.5 million. These measures are additional to the substantial boost for renewable energy coming from the Renewables Obligation and exemption from the Climate Change Levy. This new investment will underpin the government's objective of increasing the contribution of electricity supplied from renewables to 10% by 2010.	Energy Prod. (Electricity Generation)	Renewables (All)
	Demonstration Projects			
Fiscal	**Subsidy**			
Policy Processes and Outreach	**Strategic Planning**	The UK's climate change programme was published in November 2000. The programme contains a broad package of policies and measures across all sectors of the economy from transport to agriculture. The programme estimates that the UK's greenhouse gas emissions could be reduced by 23% below 1990 levels by 2010. This means that carbon dioxide emissions alone could be cut by 19% below 1990 levels. The package comprises policies such as: the climate change levy package, including climate change agreements; a new Carbon Trust to accelerate the take-up of cost-effective, low-carbon technologies; support of £30 million for a domestic emissions trading scheme; targets to deliver 10% of the UK's electricity supply from renewable sources of energy and to at least double the capacity of combined heat and power; the EU voluntary agreements with car manufacturers to improve fuel efficiency by at least 25%, backed up by changes to vehicle excise duty and company car taxation; the 10-Year Plan for transport; and the new Energy Efficiency Commitment for 2002-2005 which requires electricity and gas suppliers to help their domestic customers to save energy and cut fuel bills.	All	All
	Consultation			

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures planned in 2000		
Tradable Permits ***Policy Processes and Outreach***	***Emissions Trading*** ***Consultation***	*The UK government is elaborating an Emissions Trading Scheme which will be complementary to the Climate Change Levy (CCL) introduced in the 2000 budget and to be implemented in April 2001. A consultation process has been launched with industry and a report was provided by the UK Emissions Trading Group in March 2000: "Outline Proposal for a UK Emissions Trading Scheme". The UK Emissions Trading Scheme is based on this proposal. It was presented in the paper "A Greenhouse Gas Emissions Trading Scheme for the United Kingdom", which was published with the country's pre-budget report in November. The domestic emissions trading system has the following characteristics: it is designed to include all six greenhouse gases identified in the Kyoto Protocol; the system will be open to all companies operating in the UK who commit themselves to binding GHG emissions limits under the scheme; the permits would be allocated for the period 2001-2012 and the allocation would be through grandfathering; there are three categories of participants (those accepting targets, those accepting unit targets and those undertaking specific GHG reduction projects).*	*All*	*All*
Tradable Permits	***Green Certificates***	*As part of the UK's Climate Change Programme, the Government announced in 2000 that UK electricity suppliers will be required to supply a specified proportion of their electricity from eligible renewable energy sources. The Government is expecting to hold a statutory consultation shortly on the exact detail of the Obligation, which will be implemented through secondary legislation and will last for 25 years. Should the cost of supplying renewable electricity become prohibitively high, suppliers can choose the buy out option as an alternative to supplying what would be the more expensive renewable – generated electricity. It is proposed that buy out receipts will be recycled to suppliers in proportion to the extent that they meet with the targets set out in the Obligation, as evidenced by the redemption of Renewables Obligation Certificates.*	*Energy Prod. (Electricity Generation)*	*Renewables*
Tradable Permits ***Policy Processes and Outreach***	***Project-based Programme*** ***Consultation***	*The Advisory Committee on Business and the Environment (ACBE), set up by the British government to provide a dialogue between government and business, issued a report in May 2000: "Assessment of Joint Implementation and Clean Development Mechanism: Potential Opportunities for UK Business". The ACBE report makes several recommendations to the government on its preferred format for the two project-based Kyoto mechanisms, Joint Implementation (JI) and the Clean Development Mechanism (CDM), and on how to promote involvement of UK businesses. One of the key recommendations is that government sets up a "Kyoto Mechanisms Office" to advise businesses on opportunities arising from JI and CDM.*	*All*	*All*

UNITED KINGDOM (CONTINUED)

Policy Type	Classification	Policy Description	Sector	Energy
Voluntary Agreements	***Weak VA***	*The Advisory Committee on Consumer Products and the Environment (ACCPE) was set up in 1999 to advise on ways of achieving more sustainable goods and services. In its first report, published in October 2000, the committee recommended that the government develop a "family of labels" for cars, homes and domestic equipment based on the style and grading of the EU energy label in order to provide consumers with information about the energy efficiency of their purchases. The government is working on the development of these proposals.*	*Buildings (Residential)* *Transport (Passenger)*	*Electricity* *Fossil Fuels (Gas)*
Policy Processes and Outreach	***Consultation***			
RD&D	***Technology Development***	*The Department of Transport, Environment, and the Regions announced in 2000 that a Carbon Trust will be set up at the same time as the UK's Climate Change Levy to spur adoption of energy-efficient technologies. The £120 million earmarked for the trust in its first year will initially be concentrated on accelerating the adoption of energy-efficient technologies, particularly by small and medium-sized enterprises.. The trust will also fund a major low-carbon research, development and demonstration programme to bring forward low-carbon technologies, and an expanded business energy auditing and advice service. The trust's funds include a scheme of tax incentives for low-carbon investments worth up to £70 million in 2001/02.*	*All*	*All*
Fiscal	***Tax Credit*** ***Tax Exemption***			
Policy Processes and Outreach	***Consultation***	*The UK government launched a consultation on a project aimed at obligating gas and electricity suppliers to encourage and assist domestic consumers to make energy savings through measures such as insulation and energy-efficient appliances and lighting.*	*Buildings (Residential, Community Use)*	*Fossil Fuels (Gas)* *Electricty*

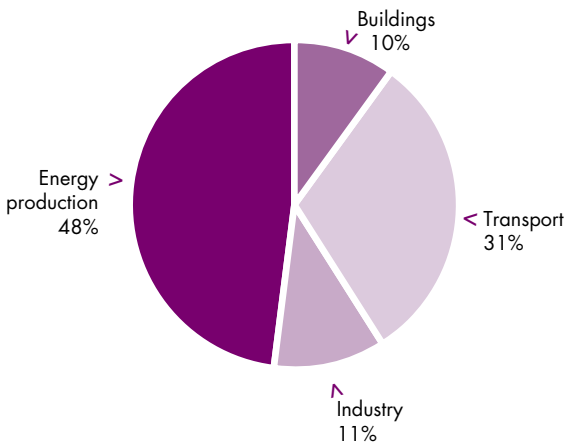
UNITED STATES

Key Indicators

	1990	1995	1999
TPES (Mtoe)	1,925.58	2,086.17	2,269.98
TPES/Capita (toe per capita)	7.70	7.93	8.32
TPES/GDP (toe per thousand 1990 US$ PPP)	0.30	0.28	0.26
CO_2 Emissions (Mt of CO_2)	4,829.39	5,069.43	5,522.44
CO_2/Capita (t CO_2 per capita)	19.32	19.27	20.23
CO_2/GDP (kg CO_2 per 1995 US$ PPP)	0.74	0.69	0.64

Sources: IEA - *CO_2 Emissions from Fuel Combustion (2001 Edition), Energy Balances of OECD Countries (2001 Edition).*

CO_2 Emissions by Sector in 1999



Country Actions in 2000

Policy Type	Classification	Policy Description	Sector	Energy
		policies and measures taken in 2000		
Fiscal	**Tax Credit**	A law adopted in Maryland in May 2000 introduces a new package of tax incentives for energy efficiency and renewable energy. Among the specific provisions included in this legislation is a $2,000 reduction in the state titling taxes for buyers of new electric or qualified hybrid vehicles.	Transport (Passenger) Industry	Electricity Renewables
Fiscal	**Subsidy**	In March 2000, the U.S. Department of Energy announced $132.7 million in state grants to improve the Energy Efficiency of Low-Income Households. Households that qualify for the Weatherization Assistance Program may be eligible for several energy-efficient services that include installing insulation and ventilation fans and insulating water heater systems.	Buildings (Residential)	Electricity
Fiscal	**Subsidy**	In September 2000, the U.S. Trade and Development Agency gave a grant to Poland's biggest brown coal-driven electrical plant, Belchatow, in western Poland, for modernising the boilers. The grant will be used for the implementation of the new technologies which self-adjust the burning process in boilers. The technological upgrade will cut emissions of air pollutants generated by the country's power giant, which produces 4,500 megawatts annually.	Energy Prod. (Electricity Generation)	Fossil Fuels (Coal)

Policy Type	Classification	Policy Description	Sector	Energy
Fiscal	**Subsidy**	In April 2000, the U.S. Energy Department announced the commitment of federal government agencies to purchase electricity generated by wind power. Regional offices of federal government agencies located along the Colorado Front Range have committed to purchase more than 10 megawatts of electricity generated by wind turbines. Participating federal agencies will pay a small premium for each 100 kWh block of wind-generated electricity purchased.	Energy Prod. (Electricity Generation)	Renewables (Wind)
Regulatory Instruments	**Mandates/ Standards**	The U.S. Administration signed an Executive Order in April 2000 on "Greening the Government through Federal Fleet and Transportation Efficiency". By the end of fiscal year 2005, all federal agencies operating 20 or more motor vehicles within the United States must implement a strategy for reducing their entire fleet's annual petroleum consumption by at least 20%, relative to FY 1999 petroleum consumption level. A second Executive Order was signed in April 2000 aimed at reducing federal commuting. The "Federal Workforce Transportation" order directs that the federal agencies in the Washington D.C. area offer their employees up to $65 per month in transit and vanpool benefits.	Transport (Passenger)	Fossil Fuels (Oil)
Regulatory Instruments	**Mandates/ Standards**	In September 2000, the U.S. Department of Energy announced the adoption of new standards to improve the energy efficiency of fluorescent lamp ballasts in commercial and industrial applications based on an agreement between the lighting industry and energy efficiency advocates. The new standards will go into effect on 1 April 2005. After that time, fluorescent lamp ballasts produced by lighting manufacturers for commercial and industrial new construction or the renovation market must be electronic ballasts that meet the new standards. Magnetic ballasts will be available until 2010 for building owners to maintain current systems.	Buildings (Non-Residential)	Electricity
Voluntary Agreements **Policy Processes and Outreach**	**Weak VA** **Advice/Aid in Implementation**	A new partnership between the federal government and private industry has been set up: Climate Savers. Johnson & Johnson and IBM were the first two companies to join the project in 2000. The partnership aims at helping business voluntarily lower energy consumption and reduce emissions of greenhouse gases. In joining Climate Savers, companies make specific commitments to reduce those emissions and participate in an independent verification process.	Industry (Manufacturing)	All
Voluntary Agreements	**Weak VA**	The federal government launched the "Commuter Choice Leadership Initiative" in 2000 to encourage employers to offer a broad range of commuting options to their employees as part of company benefit packages. Some options include teleworking, carpooling services, transit vouchers, and cash in lieu of parking spaces.	Transport (Passenger)	Fossil Fuels

UNITED STATES (CONTINUED)

Policy Type	Classification	Policy Description	Sector	Energy
RD&D	**Technology Development**	The Biomass Research and Development Act signed in June 2000 comes as a complement to the Executive Order on Bioproducts and Bioenergy issued by the U.S. government in 1999. The act authorises $49 million in funding over a five-year period and establishes a technical advisory committee and agency board to co-ordinate activities related to biobased products and bioenergy.	Industry (Manufacturing)	Renewables (Biomass)
RD&D	**Technology Development**	In December 2000, the U.S. Department of Energy granted $15 million over five years for research, development and testing of advanced natural gas engines. The public-private partnership aims to improve engine efficiency.	Transport	Fossil Fuels (Gas)
RD&D	**Technology Development**	In July 2000, the U.S. Department of Energy granted $7 million for developing enzymes to convert wood chips, corn stalks and other biomass "waste" to ethanol.	Transport (Passenger)	Renewables (Biomass)
RD&D	**Technology Development**	In February 2000, the U.S. Department of Energy announced a grant to develop and validate advanced automotive technologies for cars and light trucks that are ultra fuel-efficient and low in emissions under the Cooperative Automotive Research for Advanced Technology Program (CARAT).	Transport (Passenger)	Fossil Fuels (Oil)
RD&D	**Technology Development**	In July 2000, the U.S. Department of Energy announced it will grant $8 million over the next two years for research that could lead to the development of cleaner burning fuels for use in large-scale utility and industrial boilers. The fuels will be used in "co-firing", a process that combines traditional fossil fuels with biomass.	Industry Energy Prod.	Renewables (Biomass) Fossil Fuels
RD&D	**Technology Development**	In July 2000, the U.S. Department of Energy granted $40 million to six industrial partners for research, development and testing of highly efficient microturbine systems designed for on-site power production, cooling, heating, and power and mechanical drive applications.	Energy Prod. (Electricity Generation)	Fossil Fuels (Gas)
RD&D **Fiscal**	**Technology Development** **Subsidy**	In 2000, the U.S. Administration announced it would fund climate change programme funding with $2.4 billion in fiscal year 2001. The funding includes accelerated efforts to develop clean energy sources in the United States and abroad, and a new Clean Air Partnership Fund to increase state and local efforts to reduce greenhouse gases.	All	All
RD&D	**Technology Development**	The U.S. Administration announced a 10-year research and development partnership in April 2000: the "21st Century Truck Initiative". This initiative between the U.S. government and corporate partners will seek to increase the fuel economy of trucks. The programme's cost-share investments in advanced technologies will lead, within 10 years, to production prototypes.	Transport (Freight)	Fossil Fuels (Oil)
RD&D	**Technology Information Dissemination**	In May 2000, the U.S. Department of Energy granted $2.7 million to help promote the development of wind energy across the United States with projects targeting wind energy information campaigns.	Energy Prod. (Electricity Generation)	Renewables (Wind)

Policy Type	Classification	Policy Description	Sector	Energy
Policy Processes and Outreach **RD&D**	**Strategic Planning** **Technology Development**	In December 2000, the U.S. Energy Department unveiled its "Strategic Plan for Distributed Energy Resources" to develop energy technologies over the next two decades. The six separate strategic areas addressed under the plan include the co-ordination of activities with RD&D in renewable energy development such as concentrating solar power systems, geothermal, photovoltaic systems and wind energy; the co-ordination of a diverse portfolio of research, development and demonstration (RD&D) investments in distributed natural gas technologies; the establishment of collaborative technology transfer partnerships with industry, state agencies, universities and national laboratories as well as conducting systems integration, implementation and outreach activities aimed at addressing infrastructure, institutional and regulatory needs.	Energy Prod. (Electricity Generation)	All
Policy Processes and Outreach	**Outreach/ Information Dissemination**	In October 2000, the Environmental Protection Agency and the Department of Energy released the annual fuel efficiency rating for all cars and trucks sold in the United States. The vehicle-by-vehicle guide is available on a World Wide Web site designed to inform car buyers about greenhouse gas emissions associated with different fuel economy ratings. Estimated annual fuel costs are also provided for each model year 2001 vehicle.	Transport (Passenger)	Fossil Fuels
Policy Processes and Outreach **RD&D**	**Advice/ Aid in Implementation** **Technology Information Dissemination**	In December 2000, the U.S. Energy Department announced that $5.3 million will be granted to help manufacturers improve energy efficiency. University-based industrial assessment centres will be created to conduct energy efficiency audits of manufacturing plants.	Industry (Manufacturing)	Electricity Fossil Fuels
		policies and measures planned in 2000		
Fiscal	***Subsidy***	*In April 2000, the U.S. Department of Energy announced it was awarding $630,000 in grants to state and local partnerships to help install a million solar roofs on buildings across the nation by 2010 in the framework of the Million Solar Roofs Initiative.*	*Buildings (Residential, Non-Residential)*	*Renewables (Solar)*
Regulatory Instruments	***Mandates/ Standards***	*In October 2000, the U.S. Department of Energy proposed new energy efficiency standards for residential clothes washers. The standards will go into effect in two stages, 1 January 2004, and 1 January 2007. The first stage would reduce clothes washer energy use by 22% and the final stage would reduce energy use by 35%. The final version of the standards is expected to be issued by April 2001.*	*Buildings (Residential)*	*Electricity*

UNITED STATES (CONTINUED)

Policy Type	Classification	Policy Description	Sector	Energy
Regulatory Instruments	***Mandates/ Standards***	*In 2000, the U.S. government announced that it was planning to increase the nation's Corporate Average Fuel Economy standards (CAFE) for sport utility vehicles to combat climate change. The National Academy of Science has been asked to assess the implication of this measure in order to guide a decision.*	*Transport (Passenger)*	*Fossil Fuels (Oil)*
Regulatory Instruments	***Mandates/ Standards***	*In 2000, the U.S. Energy Department proposed new efficiency standards for central air-conditioning and heat pumps which will have to consume 20% to 30% less. In addition, a new standard making water heaters 5% to 9% more efficient was proposed in April.*	*Buildings (Residential)*	*Electricity*
Regulatory Instruments	***Mandates/ Standards***	*In 2000, the federal government announced that it was planning to phase out older coal-fired electric power plants as part of the strategy to deal with climate change.*	*Energy Prod. (Electricity Generation)*	*Fossil Fuels (Coal)*
Voluntary Agreements	***Weak VA***	*In October 2000, the U.S. Department of Energy and the building industry released a 20-year plan to make the next generation of commercial buildings more energy-efficient. The goal is to reduce the energy use of new commercial buildings by 20% by the year 2010, and by 50% by 2020.*	*Buildings (Non-Residential)*	*Electricity* *Fossil Fuels*
RD&D	***Technology Development***	*The U.S. Administration proposed in February 2000 a tax incentives package to encourage the use of clean energy technologies, and increased R&D funding in energy-efficient technology and renewable sources of energy. The tax incentives would amount to $4 billion over five years. Consumers who buy energy-efficient products and producers of energy from renewable sources would receive the incentives. The incentives include a $1,000 to $2,000 credit towards the purchase of a new energy-efficient home, a 20% tax credit for the purchase of certain energy-efficient products for homes and buildings, and a $1,000 to $2,000 credit for installing a solar energy system. Tax credits would be provided for "clean energy" by extending by 30 months the 1.5 cent per kilowatt-hour tax credit for production of electricity from wind and biomass.*	*Buildings (Residential)* *Transport (Passenger)* *Energy Prod. (Electricity Generation)*	*Renewables (Biomass, Solar, Wind)* *Electricity* *Fossil Fuels*
Fiscal	***Tax Credit***			

Annexes

ANNEX 1

DIRECTORY OF WEB SITES

The following table contains some useful web sites for energy and environment agencies within national governments as well as the Internet addresses of national and international organisations in energy-related fields.

AUSTRALIA

Agency/Authority	Internet Address
Australian Greenhouse Office	http://www.greenhouse.gov.au
Environment Australia	http://www.ea.gov.au/
Department of Foreign Affairs, Investment, and Trade	http://www.dfat.gov.au/environment/climate/
Department of Agriculture, Fisheries and Forestry Australia	http://www.affa.gov.au/
Australian Geological Survey Organisation	http://www.agso.gov.au/mreb/ee/
Australia and New Zealand Minerals and Energy Council	http://www.isr.gov.au/resources/anzmec/index.html

AUSTRIA

Agency/Authority	Internet Address
Austrian Council on Climate Change	http://www.accc.gv.at/
Austrian Energy Agency	http://www.eva.ac.at/(en)/index.htm
Federal Environment Agency	http://www.ubavie.gv.at/
Ministry of Science and Transport	http://www.bmwf.gv.at/
Austrian Ministry of Environment*	http://www.bmu.gv.at/

Belgium

Agency/Authority	Internet Address
National Climate Change Office	http://www.environment.fgov.be/Root/tasks/atmosphere/klim/set_en.htm
Federal Planning Bureau	http://www.plan.be
Ministry of Economic Affairs	http://www.mineco.fgov.be
The Energy Administration of the Walloon Region*	http://mrw.wallonie.be/dgtre
The English pages of the Flemish Region	http://www.flanders.be/
The Environment Institute of Brussels-Capital*	http://www.ibgebim.be/
The Flemish Institute for Technological Research	http://www.vito.be/english/index.htm

Canada

Agency/Authority	Internet Address
Government of Canada Climate Change Web Site	http://www.climatechange.gc.ca/
Environment Canada	http://www.ec.gc.ca/
Office of Energy Efficiency	http://oee.nrcan.gc.ca/
Office of Energy Research and Development	http://www.nrcan.gc.ca/es/oerd/
Department of Foreign Affairs – CDM and JI Office	http://www.dfait-maeci.gc.ca/cdm-ji
Climate Change Voluntary Challenge and Registry	http://www.vcr-mvr.ca/

Czech Republic

Agency/Authority	Internet Address
Ministry of the Environment	http://www.env.cebin.cz/_nav/_index_hp_en.html
Czech Power Company	http://www.cez.cz/

Denmark

Agency/Authority	Internet Address
Danish Ministry of Environment and Energy	http://www.mem.dk/ukindex.htm
Danish Energy Agency	http://www.ens.dk/uk/index.asp
Danish Environmental Protection Agency	http://www.mst.dk/homepage/
Ministry of Foreign Affairs	http://www.um.dk/english/

European Union

Agency/Authority	Internet Address
European Climate Change Programme	http://europa.eu.int/comm/environment/climat/eccp.html
European Commission DG – Energy & Transport	http://europa.eu.int/comm/dgs/energy_transport/index_en.html
European Commission DG – Environment	http://europa.eu.int/comm/dgs/environment/index_en.htm
European Environment Agency	http://www.eea.eu.int

Finland

Agency/Authority	Internet Address
Ministry of Trade and Industry	http://www.vn.fi/ktm/index.html
Ministry of the Environment	http://www.vyh.fi/eng/moe/moe.html
Environmental Administration	http://www.vyh.fi/eng/orginfo/organisa/organisa.htm
Finnish Environment Institute	http://www.vyh.fi/eng/fei/fei.html
Finnish Energy Industry	http://www.energia.fi/eindex.html

France

Agency/Authority	Internet Address
French Agency for Environment and Energy Management (ADEME)	http://www.ademe.fr/
Inter-ministerial Task Force on Climate Change (MIES)*	http://www.effet-de-serre.gouv.fr
Ministry of the Environment	http://www.environnement.gouv.fr/
Ministry of the Economy, Finance and Industry	http://www.minefi.gouv.fr/
International Research Centre on Environment and Development (CIRED)	http://www.centre-cired.fr/
Institute of Energy Policy and Economics (IEPE)	http://www.upmf-grenoble.fr/iepe/

Germany

Agency/Authority	Internet Address
Federal Ministry of Economics and Technology	http://www.bmwi.de/
Federal Environment Ministry	http://www.bmu.de/index1.htm
Federal Environment Agency	http://www.umweltbundesamt.de/index-e.htm

GREECE

Agency/Authority	Internet Address
Hellenic Ministry of the Environment, Physical Planning, and Public Works	http://www.minenv.gr
Ministry of Foreign Affairs	http://www.mfa.gr/
Ministry of the Interior, Public Administration, and Decentralisation	http://www.ypes.gr/
Ministry of Labour and Social Affairs*	http://www.labor-ministry.gr/
Ministry for Development	http://www.ypan.gr
Institute for Environmental Research and Sustainable Development	http://www.meteo.noa.gr/

HUNGARY

Agency/Authority	Internet Address
Ministry of Economic Affairs – Energy Office	http://www.gm.hu/kulfold/english/index.htm
Ministry for the Environment*	http://www.ktm.hu/

IRELAND

Agency/Authority	Internet Address
Department of the Environment and Local Government	http://www.environ.ie/
Environment Protection Agency	http://www.epa.ie/
Department of Foreign Affairs	http://www.irlgov.ie/finance/defaultbody.htm
Department of Public Enterprise	http://www.irlgov.ie/tec/
Ministry of Finance	http://www.irlgov.ie/iveagh/default.htm

ITALY

Agency/Authority	Internet Address
National Agency for the New Technologies, Energy, and the Environment	http://www.sede.enea.it/
Ministry of the Environment*	http://www.minambiente.it/Sito/home.asp
Environmental Protection Agency*	http://www.aicq.it/ampa/manuale/present.htm (to become: www.anpa.it)
Italian Regulatory Authority for Electricity and Gas	http://www.autorita.energia.it/
Ministry of Industry*	http://www.minindustria.it
Manager of the National Transmission Grid*	http://www.grtn.it/

Japan

Agency/Authority	Internet Address
Agency for Natural Resources and Energy (ANRE)	http://www.enecho.meti.go.jp/
Ministry of Environment	http://www.env.go.jp/en/index.html
Ministry of Foreign Affairs	http://www.mofa.go.jp/index.html
Ministry of Economy, Trade and Industry (METI)	http://www.meti.go.jp/english/index.html
Ministry of Finance	http://www.mof.go.jp/
Ministry of Land, Infrastructure and Transport	http://www.mlit.go.jp/english/index.html
Ministry of Agriculture, Forestry and Fisheries	http://www.maff.go.jp/index.html
Ministry of Public Management, Home Affairs, Posts and Telecommunications	http://www.soumu.go.jp/english/index.html
Japan International Co-operation Agency	http://www.jica.go.jp/english/
Central Research Institute of Electric Power Industry	http://criepi.denken.or.jp/index.html
Federation of Electric Power Industries	http://www.fepc.or.jp/english/index.html
Japan Federation of Economic Organizations ("Keidanren")	http://www.keidanren.or.jp/index.html
Ministry of Education, Culture, Sports, Science and Technology	http://www.mext.go.jp/english/index.htm
National Institute for Environmental Studies	http://www.nies.go.jp/index.html
Institute of Energy Economics of Japan	http://eneken.ieej.or.jp/e_index.html

Luxembourg

Agency/Authority	Internet Address
Ministry of Economic Affairs – Energy Direction	http://www.etat.lu/SEE/
Ministry of the Environment*	http://www.mev.etat.lu/

Netherlands

Agency/Authority	Internet Address
Ministry of Housing, Spatial Planning, and the Environment	http://www.minvrom.nl/minvrom/pagina.html
The Netherlands Agency for Energy and the Environment (NOVEM)	http://www.novem.org/
Ministry of Economic Affairs	http://www.ez.nl/
Ministry of Transport, Public Works and Water Management	http://www.minvenw.nl/cend/dco/home/
Energy Research Centre of the Netherlands	http://www.ecn.nl/main.html
National Institute of Public Health and the Environment (RIVM)	http://www.rivm.nl/

New Zealand

Agency/Authority	Internet Address
Ministry of Economic Development	http://www.med.govt.nz/
Ministry of the Environment	http://www.mfe.govt.nz/
Energy Efficiency and Conservation Authority	http://www.eeca.govt.nz/

Norway

Agency/Authority	Internet Address
Ministry of the Environment	http://www.odin.dep.no/md/engelsk/index-b-n-a.html
Norwegian Pollution Control Authority	http://www.sft.no/english/
Ministry of Petroleum and Energy	http://www.oed.dep.no/
Institute for Energy Technology	http://www.ife.no/

Portugal

Agency/Authority	Internet Address
Ministry of Industry – Energy Direction*	http://www.dge.pt
Directorate-General for the Environment*	http://195.22.0.189/arvore.html
Environmental Information to the Public*	http://www.ipamb.pt/
National Laboratory for Civil Engineering	http://www-ext.lnec.pt/index.phtml
Centre for Energy Conservation*	http://www.cce.pt/Hpage/homepage.asp

Spain

Agency/Authority	Internet Address
Ministry of Economy*	http://www.mineco.es/
Ministry of the Environment*	http://www.mma.es/index.html
Ministry of Sciences and Technology*	http://www.mcyt.es/
National Commission for Energy	http://www.cne.gob.ni/
Institute for Energy Diversification*	http://idae.qsystems.es/home.asp
Research Centre for Energy, Environment and Technology	http://www.ciemat.es/eng/index.html

Sweden

Agency/Authority	Internet Address
Ministry of the Environment	http://miljo.regeringen.se/
Ministry of Industry	http://www.industry.ministry.se/
Swedish National Energy Administration	http://www.stem.se/
Swedish Environmental Protection Agency	http://www.environ.se:8084/
Ministry of Foreign Affairs	http://www.utrikes.regeringen.se/inenglish/index.html

Switzerland

Agency/Authority	Internet Address
Swiss Federal Department for the Environment, Transport, Energy and Communication	http://www.uvek.admin.ch
Swiss Federal Office of Energy	http://www.swiss-energy.ch
Swiss Agency for the Environment, Forests and Landscape (BUWAL)	http://www.buwal.ch/e/themen/umwelt/klima/index.htm

Turkey

Agency/Authority	Internet Address
Ministry of Environment*	http://www.cevre.gov.tr
Ministry of Energy and Natural Resources*	http://www.enerji.gov.tr/
Ministry of Foreign Affairs	http://www.mfa.gov.tr/
State Planning Organization	http://www.dpt.gov.tr
Directorate-General of Meteorology	http://www.meteor.gov.tr
State Institute of Statistics	http://www.die.gov.tr

United Kingdom

Agency/Authority	Internet Address
Department of Trade and Industry – Energy section	http://www.dti.gov.uk/energy/index.htm
Department for Environment, Food & Rural Affairs	http://www.defra.gov.uk/environment/index.htm
Environment Agency	http://www.environment-agency.gov.uk/

United States

Agency/Authority	Internet Address
Department of Energy	http://www.energy.gov/
Environmental Protection Agency – Climate Change Site	http://www.epa.gov/globalwarming/
State Department – Climate Change Site	http://www.state.gov/www/global/global_issues/climate/index.html
National Oceanic and Atmospheric Administration	http://www.eis.noaa.gov/
Global Change Research Information Office	http://www.gcrio.org/

International / Intergovernmental Organisations

Agency/Authority	Internet Address
Asian Pacific Energy Research Centre (APERC)	http://ns.ieej.or.jp/aperc/
Energy Charter	http://www.encharter.org/index.jsp
Intergovernmental Panel on Climate Change (IPCC)	http://www.ipcc.ch/
International Energy Agency (IEA)	http://www.iea.org/
International Institute for Applied Systems Analysis (IIASA)	http://www.iiasa.ac.at/
Organisation for Economic Co-operation and Development (OECD)	http://www.oecd.org/
United Nations Development Programme (UNDP)	http://www.undp.org/
United Nations Environment Programme (UNEP)	http://www.unep.org
United Nations Framework Convention on Climate Change (UNFCCC)	http://www.unfccc.int/
Country Information with Links to National Web Sites	http://www.unfccc.int/resource/country/
Reviews of National Communications	http://www.unfccc.int/resource/idr.html
Table of National Communications	http://www.unfccc.int/resource/natcom/index.html
United Nations Industrial Development Organization (UNIDO)	http://www.unido.org/
United Nations Sustainable Development (UNSD)	http://www.un.org/esa/sustdev/
World Bank – Global Climate Change	http://www-esd.worldbank.org/cc/
World Energy Council (WEC)	http://www.worldenergy.org/wec-geis/

** Web Site not available in English.*

Annex 2

Glossary

CDM	Clean Development Mechanism
CHP	Combined heat and power production; sometimes, when referring to industrial CHP, the term "co-generation" is used
CNG	Compressed natural gas
CO_2	Carbon dioxide
ERU	Emissions reduction unit
FCCC	Framework Convention on Climate Change
GHG	Greenhouse gas
GJ	Gigajoule, or 1 joule × 10^9 (a joule is a unit of energy)
GVM	Gross vehicle mass
GW	Gigawatt, or 1 watt × 10^9
GWh	Gigawatt-hour
HFO	Heavy fuel oil
JI	Joint Implementation
LFO	Light fuel oil
LNG	Liquefied natural gas
LPG	Liquefied petroleum gas; refers to propane, butane and their isomers, which are gases at atmospheric pressure and normal temperature
Mt	Million tonnes

MW	Megawatt of electricity, or 1 watt × 10^6
MWh	Megawatt-hour, or one megawatt × one hour, or one watt × one hour × 10^6
NG	Natural gas
NGO	Non-governmental organisation
PV	Photovoltaics
R&D	Research and development
RD&D	Research, development and demonstration
RES	Renewable energy source
SMEs	Small and medium-sized enterprises
TJ	Terajoule, or one joule × 10^{12}
TPES	Total Primary Energy Supply
TW	Terawatt, or one watt x 10^{12}
TWh	Terawatt-hour, or one terawatt x one hour, or one watt × one hour × 10^{12}
UNFCCC	United Nations Framework Convention on Climate Change
VA	Voluntary Agreement

Annex 3

Units and Conversions

To:	**TJ** Terajoule	**Gcal** Gigacalorie	**Mtoe** Million tonnes of oil equivalent	**MBtu** Million British thermal units	**GWh** Gigawatt-hour
From:	Multiply by:				
TJ	1	238.8	2.388×10^{-5}	947.8	0.2778
Gcal	4.1868×10^{-3}	1	10^{-7}	3.968	1.163×10^{-3}
Mtoe	4.1868×10^{4}	10^{7}	1	3.968×10^{7}	11.630
MBtu	1.0551×10^{-3}	0.252	2.52×10^{-8}	1	2.931×10^{-4}
GWh	3.6	860	8.6×10^{-5}	3412	1

ORDER FORM

IEA BOOKS

Fax: +33 (0)1 40 57 65 59
E-mail: books@iea.org
www.iea.org/books

INTERNATIONAL ENERGY AGENCY

9, rue de la Fédération
F-75739 Paris Cedex 15

I would like to order the following publications

PUBLICATIONS	ISBN	QTY	PRICE	TOTAL
☐ **Dealing with Climate Change - 2001 Edition**	**92-64-19518-1**		**$100**	
☐ Dealing with Climate Change - 2000 Edition	92-64-18560-7		$100	
☐ CO_2 Emissions from Fuel Combustion 1971-1999	92-64-08745-1		$150	
☐ World Energy Outlook 2000	92-64-18513-5		$150	
☐ International Emission Trading - *From Concept to Reality*	92-64-19516-5		$100	
☐ Things that Go Blip in the Night	92-64-18557-7		$100	
☐ Toward a Sustainable Energy Future	92-64-18688-3		$100	
☐ Saving Oil and Reducing CO_2 Emissions in Transport	92-64-19519-X		$125	
		TOTAL		

DELIVERY DETAILS

Name _____ Organisation _____

Address _____

_____

Country _____ Postcode _____

Telephone _____ E-mail _____

PAYMENT DETAILS

☐ I enclose a cheque payable to IEA Publications for the sum of US$ _____ or Euros _____

☐ Please debit my credit card (tick choice). ☐ Access/Mastercard ☐ VISA

Card no: _____

Expiry date: _____

Signature:

OECD PARIS CENTRE
Tel: +33 (0)1 45 24 81 67
Fax: +33 (0)1 49 10 42 76
E-mail: distribution@oecd.org

OECD BONN CENTRE
Tel: +49 (228) 959 12 15
Fax: +49 (228) 959 12 18
E-mail: bonn.contact@oecd.org

OECD MEXICO CENTRE
Tel: +52 (5) 280 12 09
Fax: +52 (5) 280 04 80
E-mail: mexico.contact@oecd.org

You can also send your order to your nearest OECD sales point or through the OECD online services: www.oecd.org/bookshop

OECD TOKYO CENTRE
Tel: +81 (3) 3586 2016
Fax: +81 (3) 3584 7929
E-mail: center@oecdtokyo.org

OECD WASHINGTON CENTER
Tel: +1 (202) 785-6323
Toll-free number for orders:
+1 (800) 456-6323
Fax: +1 (202) 785-0350
E-mail: washington.contact@oecd.org

IEA PUBLICATIONS, 9, rue de la Fédération, 75739 PARIS Cedex 15
Pre-press by Linéale Production. Printed in France by Sagim
(61 01 32 1 P) ISBN 92-64-19518-1 2001