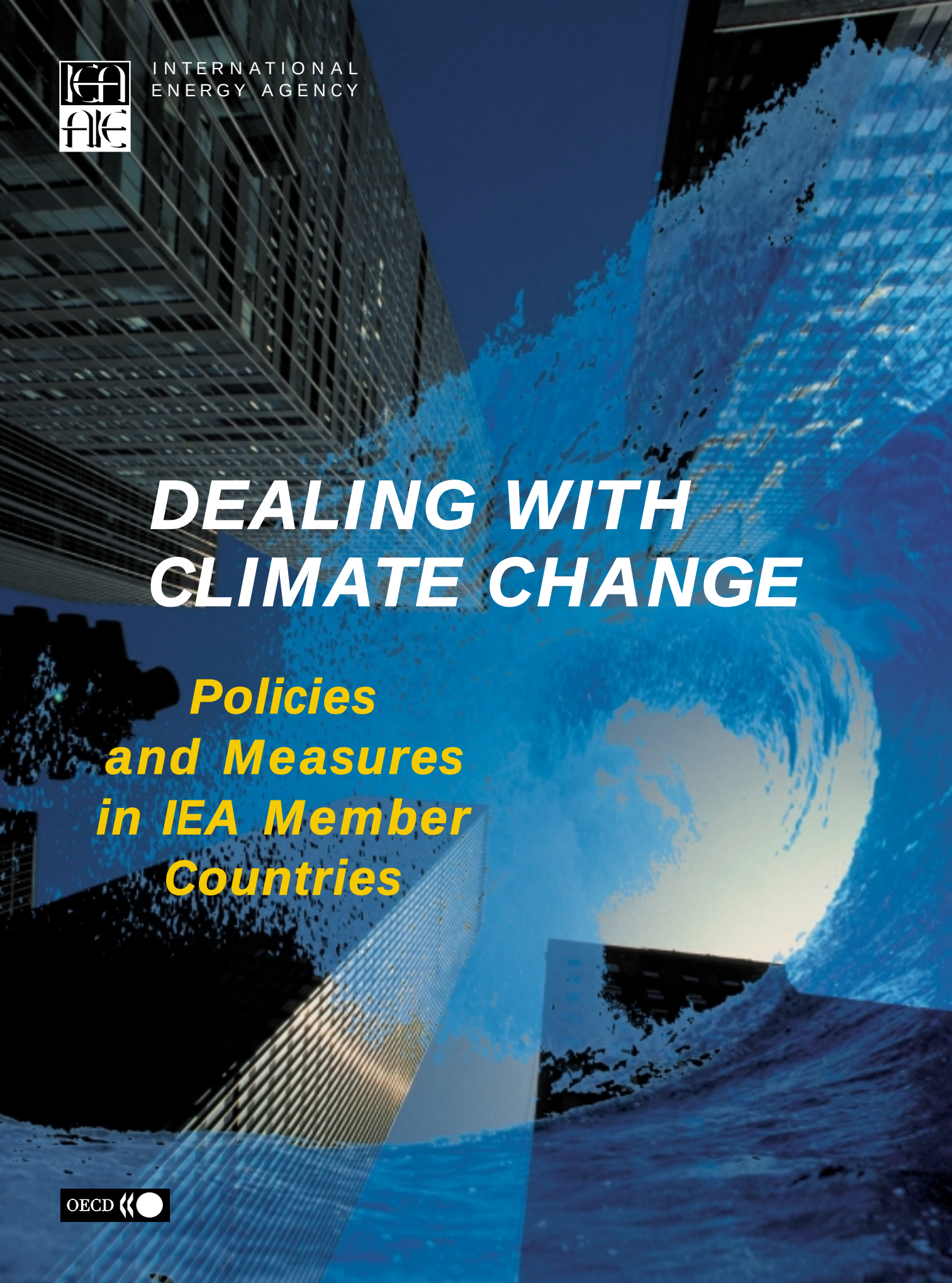
INTERNATIONAL
ENERGY AGENCY
DEALING WITH
CLIMATE CHANGE
Policies
and Measures
in IEA Member
Countries
OECD

INTERNATIONAL
ENERGY AGENCY

DEALING WITH CLIMATE CHANGE

Policies and Measures in IEA Member Countries

INTERNATIONAL ENERGY AGENCY

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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-four* of the OECD's twenty-nine 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, 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) and the Republic of Korea (12th December 1996). The Commission of the European Communities takes part in the work of the OECD (Article 13 of the OECD Convention).

Foreword

Climate change continues to be the most important long-term energy and environment issue we face. Energy production and use is the major source of the greenhouse gas emissions that lead to climate change, and energy policy will play a major role in the solution of the climate change problem. Under the Kyoto Protocol, adopted in 1997 (but not yet in force), OECD Members and economies in transition have pledged to reduce their net greenhouse gas emissions by more than 5% below 1990 levels.

Countries have followed up on their climate mitigation commitments in two ways. First, they are elaborating the details of the new market instruments established under the Protocol, such as the Clean Development Mechanism and emissions trading. Second, they are focussing on direct action to reduce emissions domestically. Actions already taken include tax and regulatory policies, voluntary agreements between governments and private companies, and new investment in research and development.

This study details over 300 of the actions undertaken in 1999. Each country has contributed to and endorsed the description of the country data describing its activities. The report is therefore an authoritative source of information on new policies to mitigate climate change in the energy sector. While it is not a complete review, it does demonstrate the magnitude and diversity of the effort being mounted.

The sheer volume of actions is noteworthy. Unfortunately, even with this growing effort, it is by no means assured that the Kyoto targets will be met. Further action will be needed. It is hoped that this volume will promote an exchange of information that can help countries select the best measures to meet their Kyoto commitments, and to pursue the longer-term objective of stabilising greenhouse gases in the atmosphere.

Robert Priddle
Executive Director

Acknowledgements

The IEA would like to acknowledge the assistance that all Member countries provided in the preparation of this volume. The information gathering task fell mainly on heavily-burdened national agencies – which nonetheless contributed material in a useful and timely fashion.

This report was principally the work of four individuals in the Energy and Environment Division: Jonathan Pershing and Kristi Varangu, who were responsible for the analytical work and project oversight, and Amy Emmert and Stéve Gervais, who compiled and maintained the database of energy policies in Member countries. Critical advice and comment was provided on drafts by others in the IEA, and by the IEA Standing Group on Long Term Co-operation.

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Overview

Introduction

Background and Context

In responding to the problem of climate change governments will need to act to change the ways in which societies produce and consume goods and services. In 1992, in the United Nations Framework Convention on Climate Change, the need to undertake such policies was explicitly agreed. The Convention requires all Parties to:

> "Formulate, implement, publish and periodically update national, and where appropriate regional programmemes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and measures to facilitate adequate adaptation to climate change." [1]

Policies were to be adopted and measures were to be taken to return emissions by the Parties to 1990 levels by the year 2000. Despite some progress, nearly all OECD countries[2] will exceed the ceiling set by the Convention (see Figure 1 and Table 1).

In 1995, Parties recognised the continued increase in emissions, acknowledged that the aim of the Convention would not be met in large part, and negotiated and adopted the Kyoto Protocol. The Protocol sets legally binding targets for greenhouse gas (GHG) emissions in the 2008-2012 time frame, more ambitious than targets in the Convention. Specific reduction goals were set for all OECD countries[3], as well as countries with economies in transition. For most countries, the commitment entails a reduction below 1990 levels (or, for countries with economies in transition, a commitment to keep emissions below those levels whether or not this entails a reduction). For a few countries, the obligation is to limit growth to a small increase over 1990 levels. For some others, the base year may be altered (particularly for countries with economies in transition to market economies; specific commitments are detailed in Table 1 below). In addition, countries are allowed to "bubble" their emissions (to take on a commitment as a group). So long as the total is within the agreed amount, individual national allocations within the "bubble" can be shared out by the nations involved. The European Union chose to reallocate in this manner, and their revised targets are also listed below.

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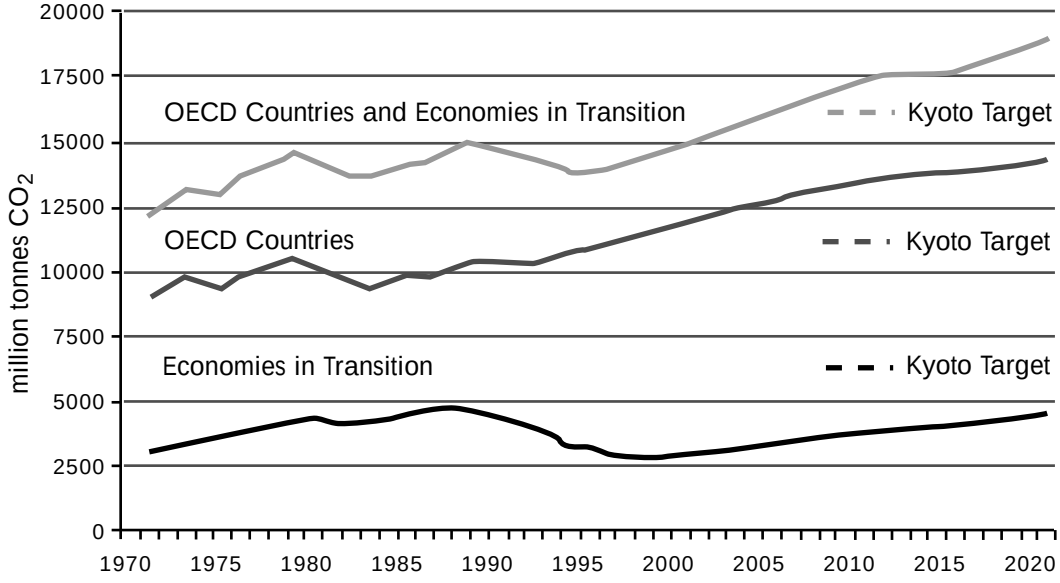
1. UNFCCC Article 4.1(b)

2. "New" OECD member countries, i.e. those which joined after 1992, do not have similar commitments. Mexico and Korea are still considered non-Annex I countries under the terms of the Convention and Kyoto Protocol. Hungary, Poland and Czech Republic (and soon to be new member Slovak Republic), are considered economies in transition within Annex I. Finally, Turkey has yet to ratify the Convention and become a Party to the obligations therein.

3. As noted earlier, this excludes Korea, Mexico and Turkey (which cannot adopt the Protocol without first ratifying the Convention).

Figure 1. **Energy-Related GHG Emissions of Annex I Countries: 1990-2020 (estimated)**



Source: IEA World Energy Outlook, 1998.

Table 1. **Annex B Targets in the Kyoto Protocol**

Party	**1990 GHG emissions** (tonne CO_2 Equiv)	**% change 1990-98**	**Kyoto Target** (% change from 1990)
Australia	423	14.5	8.0
Austria	75	6.5	–13.0
Belgium	136	6.5	–7.5
Bulgaria	157	–46.3	–8.0
Canada	611	13.2	–6.0
Croatia	NA	NA	–5.0
Czech Republic	190	–22.2	–8.0
Denmark	70	9.5	–21.0
Estonia	41	-46.6	–8.0
Finland	75	1.5	0.0
France	554	0.9	0.0
Germany	1209	–15.6	–21.0
Greece	105	18.1	25.0
Hungary	102	–17.7	–6.0
Iceland	3	4.7	10.0
Ireland	53	19.1	13.0
Italy	519	4.4	–6.5
Japan	1175	9.4	–6.0

Latvia	36	–67.8	–8.0
Liechtenstein	260	NA	–8.0
Lithuania	52	–53.7	–8.0
Luxembourg	13	–24.0	–28.0
Monaco	111	30.6	–8.0
Netherlands	218	8.4	–6.0
New Zealand	73	2.5	0.0
Norway	52	7.7	1.0
Poland	564	–28.7	–6.0
Portugal	64	17.2	27.0
Romania	229	–28.5	–8.0
Russian Federation	2999	–29.6	0.0
Slovakia	76	–30.8	–8.0
Slovenia	19	NA	–8.0
Spain	306	21.0	15.0
Sweden	69	6.4	4.0
Switzerland	53	1.3	–8.0
Ukraine	919	–50.5	0.0
United Kingdom	741	–8.3	–12.5
United States	6049	11.2	–7.0

Source: UNFCCC Official Data, FCCC/SBI/2000/11.

Notes: Bulgaria's base year is 1988, Hungary's base year is an average of 1985-87. Poland's base year is 1988; Romania's base year is 1989. Data from Hungary, Iceland, Italy, and Luxembourg are from 1995. Data for Romania and the Russian Federation are for 1994. Data from Japan, Luxembourg, Monaco are from 1996.

EU Country targets are listed according to the "EU Burdensharing Agreement" of 1999.

GHG emissions of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6, using 1995 IPCC global warming potentials.

Recognising the importance of implementing policies and measures, the Kyoto Protocol adopted additional language further specifying the need for governments to adopt appropriate policies, calling, in Article 2, for "[e]ach Party included in Annex I, in achieving its quantified emission limitation and reduction commitment…[to] implement and/or further elaborate policies and measures in accordance with its national circumstances….[and] cooperate with other such Parties to enhance the individual and combined effectiveness of their policies and measures…"[4]

Mindful that the emissions of *all* greenhouse gases lead to climate change, the Protocol includes not only CO_2, but methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6). Furthermore, the commitments include not only the sources of CO_2, but also "sinks". [5]

4. Kyoto Protocol, Article 2(a) and (b)

5. Sinks are defined under the Convention as any process, activity or mechanism which removes a GHG, an aerosol or a precursor of a GHG from the atmosphere. Examples include absorption of CO_2 in forests and through land use change.

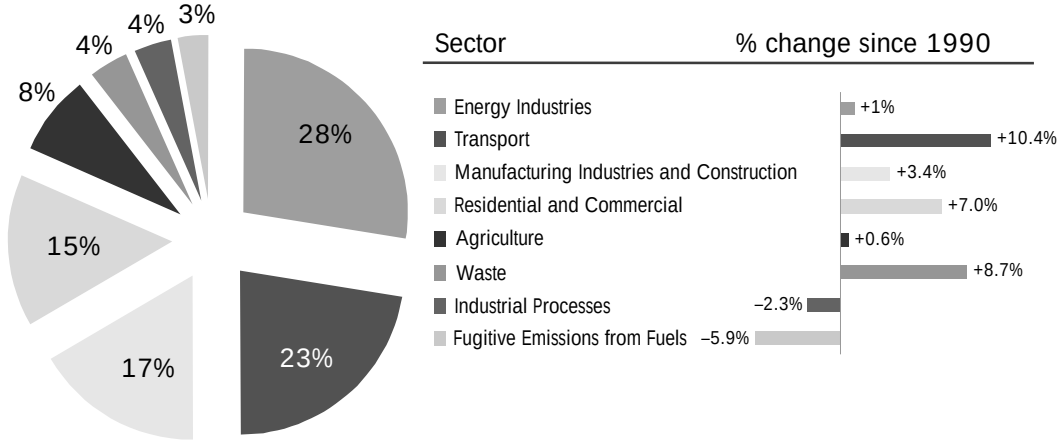
As can be seen from both Table 2 and Figure 2 below, in Annex I countries, CO_2 accounts for the largest share of emissions, while emissions from the energy supply and end-use sectors (transport, industry, residential and commercial) account for nearly 85% of the total. It should be noted, however, that there are important differences in the patterns of individual countries. For example, agriculture accounts for a very large share of total emissions in Australia and NZ. Such statistics, however, are uncertain. Among the sources of emissions, the best data available are often for emissions of CO_2, and within the CO_2 data, for energy.

Table 2. **Shares of Greenhouse Gases from Energy**

	CO_2	CH_4	N_2O	Others	Σ
Shares in Total GHG	82%	12%	4%	2%	100%
Contribution of Energy Sector	96%	35%	26%	NA	85%
Main Source within Energy Sector	Fuel Combustion	Fugitive emissions	Fuel Combustion	NA	

Source: UNFCCC "Second compilation and synthesis of second national communications", FCCC/CP/1998/11/Add.1, September 1998.

Figure 2. **1996 OECD GHG Emissions[6] by Sector (Carbon dioxide, Methane and Nitrous oxide)**



Source: National Climate Policies and the Kyoto Protocol. OECD, 1999, p. 25.

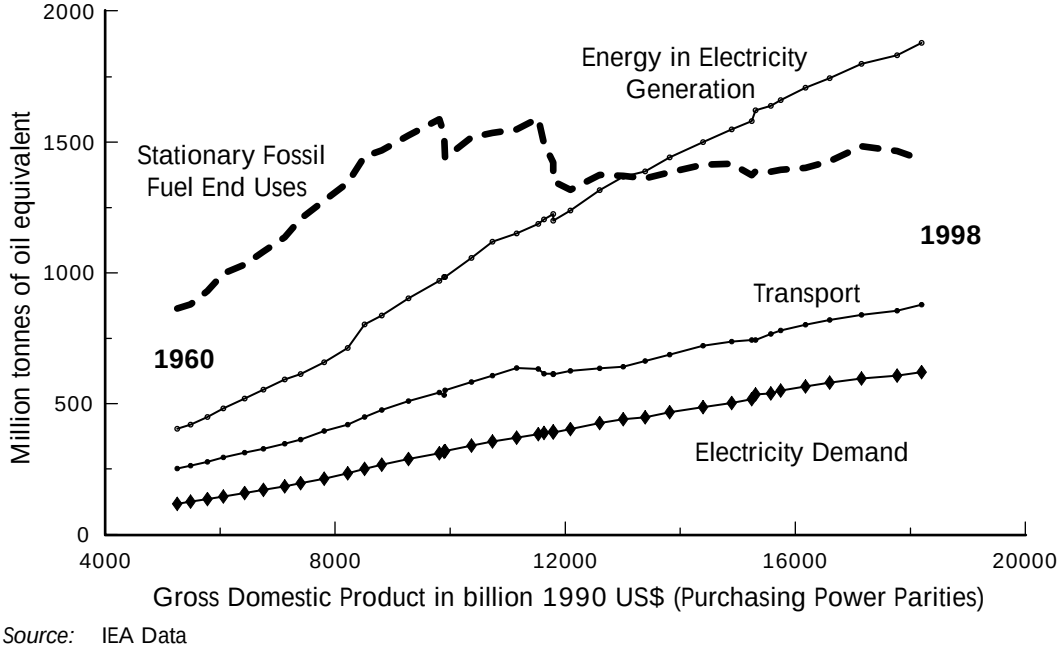
6. Excluding Korea, Mexico and Turkey

Evaluating Emission Trends in the Energy Sector: a Tool for Policy Analysis

Given the predominance of energy-related CO_2 emissions, most current national policies — and the majority of mitigation analyses — cover CO_2 energy policies. Examining trends in various end-use sectors makes it possible to determine (1) the areas in which growth is most rapid and (2) which sectors may warrant emphasis for future policy choices. In order to make cost-comparisons among policies, it would also be necessary to compute and compare marginal mitigation costs across and within sectors for various options.

A number of additional analytic tools can be useful. One element of policy analysis calls for disaggregating emissions into component sectors. Figure 3 presents one such disaggregation, of the energy relative to GDP. It indicates a regular (almost linear) correlation between GDP and energy used, with sharp breaks only during the oil shocks of the 1970's and early 1980's — and even then only in the stationary fossil-fuel end-use category. This near-linear correlation suggests that to reduce emissions, growth in GDP and energy growth must be de-coupled — or the energy sector must be substantially decarbonised. It is notable (see figure 4) that to some extent each of these are starting to occur.

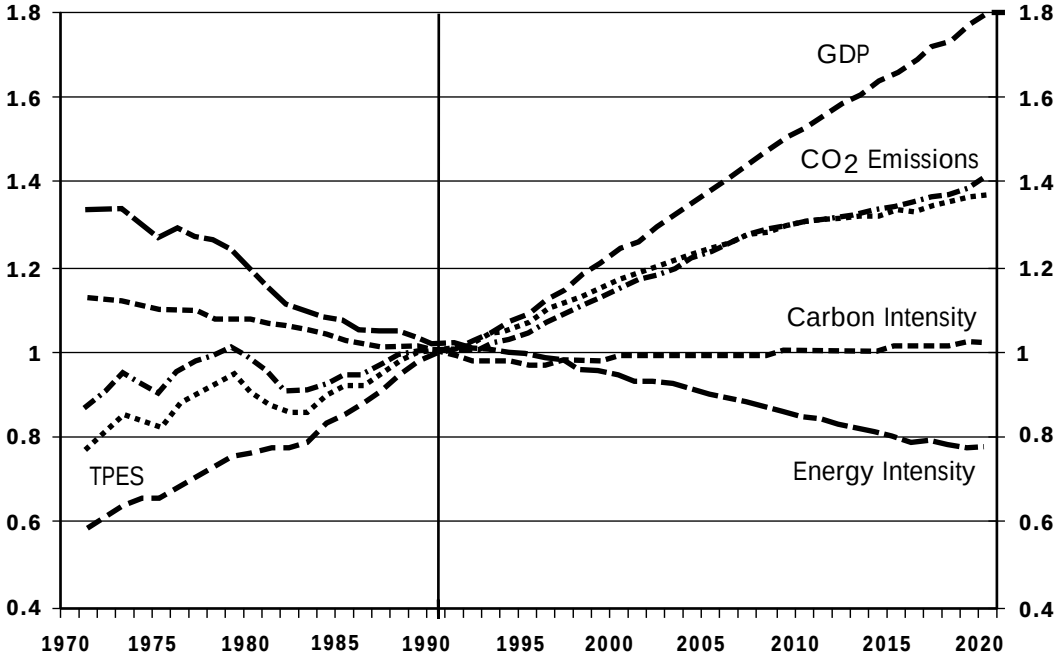
Figure 3. **Energy Demand in IEA Countries: a Sectoral View — 1960-1998**



Source: IEA Data

A number of factors affect energy-related emission trends, including population, GDP, primary energy supply, and carbon intensity. Looking at the trends in these factors in IEA member countries, we can determine the underlying drivers for overall growth in CO_2 (figure 4). It is clear from the statistics that both energy intensity and carbon intensity are currently declining, and they are expected to continue to decline. However, overall CO_2 levels are growing. Therefore, to reduce total emissions, it will be necessary to create further reductions to offset the growth in other components of the economy that contribute to emissions growth.

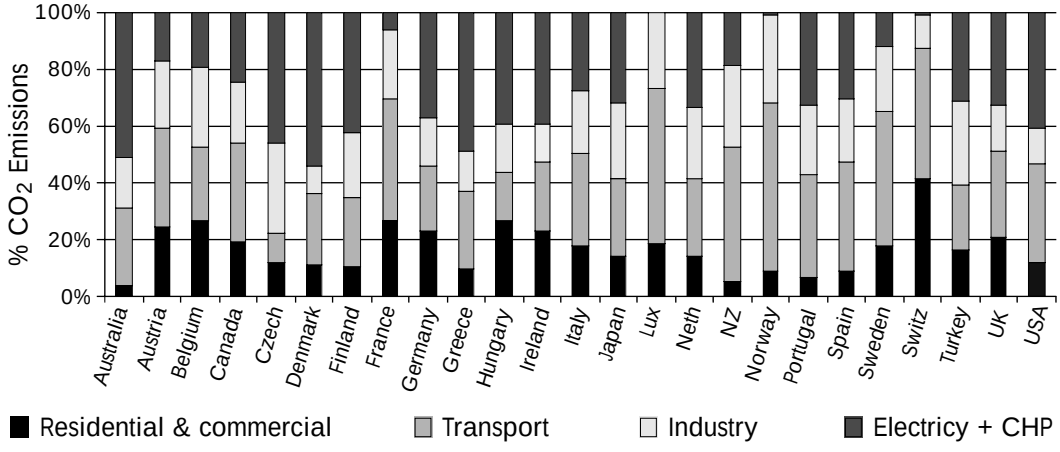
Figure 4. **Key Factors Affecting Energy-Related Carbon Emissions in Industrialized Nations, 1970-2020**



Source: IEA Data and projections

While they are useful, broadly aggregated figures such as those in Figure 4 mask considerable differences between countries. For better policy analysis — and the development of policies appropriate to national circumstances — we must use more detailed local or regional statistics. Data do exist to undertake such analyses: Figure 5 indicates the share of energy-related emissions from each sector in each of the IEA member countries.

Figure 5. **CO_2 Emissions from Energy and Energy-Related Sectors**



Source: IEA data

The figure shows some important differences. Some countries, like Norway and Switzerland, produce no emissions from electricity generation because their entire production is from hydro-electricity or nuclear power. Other countries, mainly those with warm climates or very high efficiency buildings, have only a tiny share of emissions from the residential and commercial sector.

There are more clear "groupings" of countries with common circumstances. The members of such groups can be determined statistically, through a technique known as "cluster analysis". This technique is a multivariate statistical procedure that starts with a data-set containing information about a sample of entities, and reorganises these entities into homogeneous groups.

A simple cluster analysis undertaken with IEA national data on the share of energy used in the residential/commercial sector, the industry sector, the transport sector and in electricity generation indicates five "categories" (see Figure 6):

(1) Those with a high share of emissions from power generation and moderately high transport emissions but few emissions from industry or the residential/ commercial sectors;

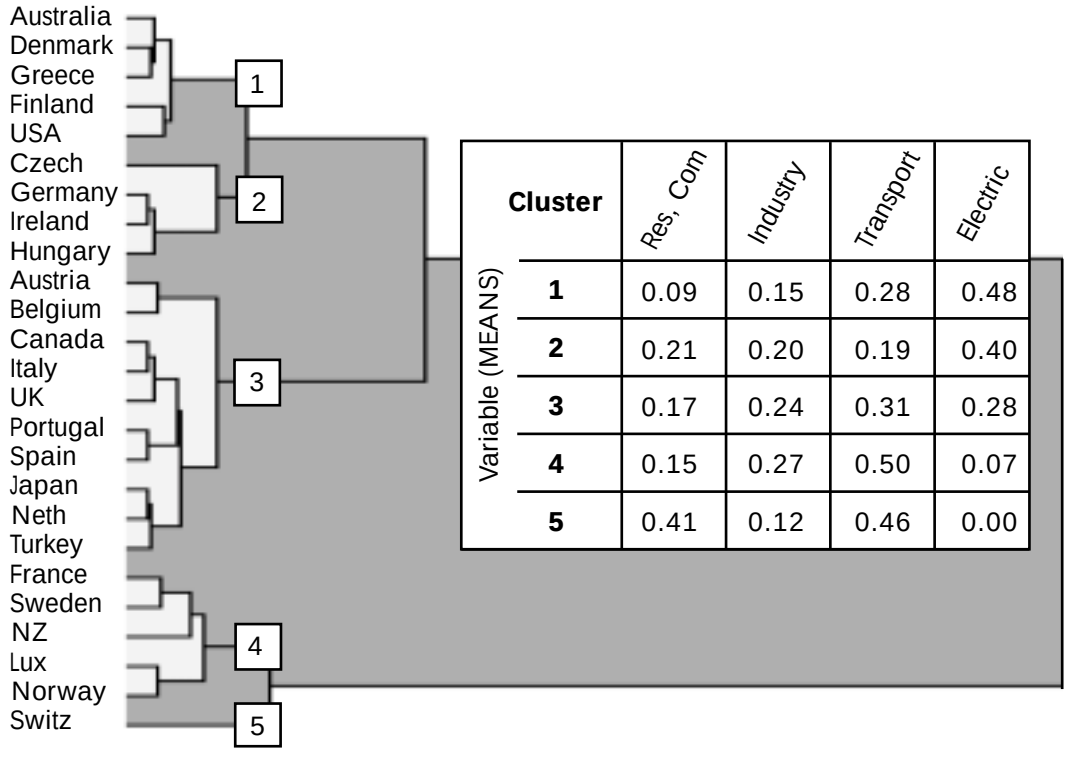
(2) Those with a high share of emissions from power generation, and an even distribution of emissions from other sectors;

(3) Those with even distributions of emissions from all sectors;

(4) Those with high transport emissions and high industry emissions but low residential/commercial and power generation emissions;

(5) Those with no power generation emissions, but with high transport and residential/commercial emissions.

Figure 6. **CO_2 from Energy: Country Groupings Using a Cluster Analysis (table shows means for each variable)**



Variable (MEANS)

Cluster	Res, Com	Industry	Transport	Electric
1	0.09	0.15	0.28	0.48
2	0.21	0.20	0.19	0.40
3	0.17	0.24	0.31	0.28
4	0.15	0.27	0.50	0.07
5	0.41	0.12	0.46	0.00

Note: The distance away from the left side of the graph represents the correlation between groups — the larger the distance, the lower the correlation. Thus, for example, the countries in group 1 are closely correlated, but the correlation between group 1 and 2 is lower, while that between group 1 and groups 4 and 5 is extremely poor.

It might be tempting to assume that a policy adopted in one country in a particular group would be applicable to other countries in the same group. But, such assumptions usually fail to take into account significant variations between countries in the same group. Such variations may be critical in assessing the appropriateness of given policy — and a proper recognition of this may prevent a policy from being applied across countries.

Some indicators are available to help analyse variances. Table 3 indicates the extent of such variations within OECD Member countries. It is, thus, not surprising that the policies and measures taken by countries do not fall neatly into groups in the manner of those listed above.

Table 3. **Variations in Key Indicators across OECD Countries**

INDICATOR	VARIABILTY FACTOR
Primary energy/GDP	2.5
CO_2/GDP	2.5
Heating degree days	5
Distance driven/capita	3.5
Freight tons hauled	2
Home size	2
Road fuel prices	3

Source: "CO_2 Emission Trends and Reduction Opportunities in Transport, Households and Commerical Sectors", L. Fulton, F. Unander, L. Schipper and C. Difiglio; www.iea.org.

Note: The variability factor is the multiple by which the highest value exceeds the lowest value within the OECD Member countries.

Policies and Measures in the Member Countries

The literature describes a wide variety of policies open to governments in seeking to reduce emissions of greenhouse gases from energy and energy-related sectors. Two further factors should be considered: how rapidly the policy will realise change (this is dictated by the rate of capital stock turnover); and which decision-makers ought to be involved (this may dictate the ultimate form of the policy). Table 6 describes some of the characteristics of each sector and some of the recent policy choices that governments have made.

Few of the policy choices in this general structure are climate specific. Most aim to achieve multiple policy objectives. Indeed, countries have undertaken many climate-related policies for reasons having nothing to do with climate change. And some of these policies may be substantially more influential than those adopted solely for the purpose of moderating greenhouse gas emissions. Improved energy efficiency, restructuring and liberalisation of energy markets, improved local or regional air quality, reduced traffic congestion, waste management and methane recovery, the capture and/or elimination of fugitive fuels and environmentally sustainable forestry practices, all provide ancillary benefits. So long as mitigating climate change is not a high political priority, meeting these concerns may cover the majority of emissions reductions. This relates to another element of the UNFCCC — the commitment, detailed in Article 4.1(f) that Parties shall "…take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions…."

On the other hand, recent policy decisions within IEA Member countries reveal a much more climate-specific policy intent. Policies are labelled as climate-focused, and often have the explicit goal of reducing GHG emissions.

Table 4. **Policy Relevant Features of Emissions Sectors, and Main Policy Developments by Sector**

	Capital Stock Turnover	Decisionmakers	OECD Policy Developments
Residential/ Commercial		Large numbers of individual consumers, contractors, financial institutions	Regulatory and social instruments; building-efficiency standards, audits, fiscal incentives, labelling
– Buildings	> 50 years		
– Appliance, Office Equipment	< 10 years		
Gas/Oil/Power Production	> 30 years	Small number of large players, sometimes government-controlled	Electricity and gas market liberalisation and deregulation, subsidy reform, shift in policies for environment, R&D
Industry	>10-15 years	Relatively small number, profit driven	Voluntary approaches, energy intensity improvements, emissions regulations
Transport		Government and private sector actors, complex policy process	Limited infrastructure policies (some regulatory reforms, land-use planning). More vehicle-efficiency standards, fuel taxes, R&D
– Infrastructure	> 50 years		
– Road Vehicles	> 10-15 years		

Source: National Climate Policies and the Kyoto Protocol. OECD, 1999.

Tables 5 and 6 provide an overview of the new information collected and published in part II of this volume. The data indicate a fairly even distribution of policies across sectors, with the majority of countries that have policies acting in multiple sectors.

While no clear indication of policy patterns emerges from the data, it is possible to categorise policy actions of countries into several distinct groups (as is done in Tables 5 and 6):

- Fiscal policies — including taxes, subsidies (and subsidy removals);
- Market mechanisms — including cap-and-trade programmes and project-based programmes such as joint implementation and the Clean Development Mechanism;
- Regulatory policies and Voluntary Agreements — including regulations, standards, directives and executive orders as well as partnerships between government and private sector and voluntary agreements;
- Research and Development (R&D) policies; and
- Policy processes — where counties are developing outreach programmes or consultative processes to develop, review or implement proposed policy choices.

In addition to categorising policies according to the instruments used to promote them, policies may also be sorted according to the sector they seek to influence: residential/commercial, transport, industry and manufacturing, electricity generation and technology. Understanding the implications of both policy instruments and sectoral targets facilitates inter-country comparison.

Cluster analysis based on policy instruments used does not show any strong correlations. Neither does the comparison between sectoral distributions of country emissions policy emphases: there is no consistent match between the share of emissions in a given sector and the country's policy emphasis. Correlations may in fact be more robust than they appear to be but because of the limits of this database (which only reports on actions taken in 1999, and does not reflect earlier policy programmes) relationships do not emerge. In addition, the numbers of policies in a given sector, or using a given instrument, in climate change is not necessarily indicative of the importance or effectiveness of the approach. This statistical analysis did not weight the importance of specific actions, but only considered numbers of policies and measures and this too may have obscured some important relationships.

A review of individual cases does provide interesting results however. For example, nearly half of Switzerland's energy-related emissions are in the transport sector. It is thus not surprising that more than a quarter of Swiss policies also focus in this sector. Furthermore, the focus is clearly on behavioural change, as Switzerland, which is not an automobile manufacturer cannot have much effect on the development of new technologies. However, given the high costs of mitigation in the transport sector, it is also unsurprising that Switzerland has chosen to focus its climate mitigation efforts in other sectors.

Conversely, several counties in which transport also makes up a large share of national emissions have taken a smaller share of their policies in this sector: Finland and Ireland. This may in part be due to the fact that policies such as high fuel taxes, high road fees, and, taxes on vehicle purchases already exist, so policymakers consider the transport sector to be heavily burdened compared to other sectors. But similar conditions apply in Switzerland as well; such simple policy assessments may not apply.

Table 5. **Tabulation of Energy-Related Policies and Measures in the IEA Database.** *Data from 1999 Policies and Measures Database*

Country	Fiscal		Market		Regulatory		R&D		Policy Process		Total		
	Impl	Plan	Impl	Plan	Impl	Plan	Impl	Plan	Impl	Plan	Impl	Plan	Total
Australia	0	7	2	1	3	5	2	0	10	2	17	15	**32**
Austria	0	0	0	0	0	0	0	0	1	0	1	0	**1**
Belgium	0	2	1	1	0	3	0	0	4	3	5	9	**14**
Canada	6	2	8	2	6	1	9	1	12	0	41	6	**47**
Czech Rep	0	1	0	0	0	3	0	0	2	0	2	4	**6**
Denmark	1	1	2	1	3	0	0	0	0	0	6	2	**8**
EU	0	2	0	0	5	10	0	1	2	3	7	16	**23**
Finland	2	0	0	0	2	1	1	0	2	0	7	1	**8**
France	6	3	0	1	4	7	3	1	3	0	16	12	**28**
Germany	4	5	0	1	2	3	0	0	1	0	7	9	**16**
Greece	6	0	0	0	0	2	2	1	1	0	9	3	**12**
Hungary	1	0	0	0	1	0	0	1	1	0	3	1	**4**
Ireland	1	3	0	0	0	0	0	1	3	0	4	4	**8**
Italy	2	1	0	1	3	3	0	0	1	0	6	5	**11**
Japan	2	2	0	0	6	0	4	1	3	0	15	3	**18**
Luxembourg	3	4	0	0	2	0	1	1	2	3	8	8	**16**
Netherlands	3	7	2	2	5	5	2	0	1	3	13	17	**30**
New Zealand	0	0	1	1	0	0	0	0	1	0	2	1	**3**
Norway	2	2	0	3	1	0	1	2	0	1	4	8	**12**
Portugal	6	1	0	0	2	1	1	0	1	0	10	2	**12**
Spain	0	0	1	1	2	1	1	0	0	1	4	3	**7**
Sweden	0	0	2	1	0	0	0	1	0	0	2	2	**4**
Switzerland	1	3	0	0	6	0	1	0	3	0	11	3	**14**
Turkey	0	0	0	0	0	0	0	0	2	0	2	0	**2**
UK	1	4	0	2	0	3	0	0	2	1	3	10	**13**
USA	1	4	0	2	2	9	8	10	2	4	13	29	**42**
TOTAL	**48**	**54**	**19**	**20**	**55**	**57**	**36**	**21**	**60**	**21**	**218**	**173**	**391**

Note: Totals in Tables 5 and 6 are not identical as many policies affect multiple sectors, and are listed as a separate policy in each sector on which the reporting country anticipates an emissions impact.

Table 6. **Tabulation of Energy related policies and measures in the IEA Database.** *Data from 1999 Policies and Measures Database*

Country	Residential, Commercial		Transport		Industry, Manuf, Services		Electricity Generation		Technology		Total		
	Impl	Plan	Impl	Plan	Impl	Plan	Impl	Plan	Impl	Plan	Impl	Plan	Total
Australia	1	5	5	7	9	2	5	2	1	0	21	16	**37**
Austria	1	0	1	0	1	0	1	0	1	0	5	0	**5**
Belgium	3	2	4	2	3	3	4	4	2	1	16	12	**28**
Canada	17	0	20	2	23	4	21	6	13	0	94	12	**106**
Czech Rep	1	1	1	2	1	2	2	1	1	0	6	6	**12**
Denmark	1	0	1	1	2	0	4	1	0	0	8	2	**10**
EU	2	4	4	8	2	4	1	7	1	0	10	23	**33**
Finland	1	1	0	1	2	1	2	1	1	0	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	0	0	9	8	**17**
Greece	1	0	6	1	0	0	2	3	0	0	9	4	**13**
Hungary	3	1	3	1	3	1	3	1	0	0	12	4	**16**
Ireland	1	5	2	3	3	3	2	4	0	0	8	15	**23**
Italy	0	1	2	2	3	0	2	2	0	0	7	5	**12**
Japan	8	0	6	1	4	0	4	1	3	1	25	3	**28**
Luxembourg	3	4	4	2	3	1	4	2	0	0	14	9	**23**
Netherlands	3	8	3	5	7	9	6	11	1	0	20	33	**53**
New Zealand	1	1	1	1	1	1	1	1	0	0	4	4	**8**
Norway	2	2	4	0	5	2	3	4	0	1	14	9	**23**
Portugal	2	1	6	1	3	1	2	1	0	0	13	4	**17**
Spain	1	1	1	0	2	0	2	1	1	0	4	2	**6**
Sweden	1	1	1	0	1	1	1	1	0	0	4	3	**7**
Switzerland	7	2	8	2	7	2	5	2	0	0	27	8	**35**
Turkey	1	0	1	0	1	0	1	0	0	0	4	0	**4**
UK	1	3	3	6	1	3	1	4	0	0	6	16	**22**
USA	4	7	3	11	4	8	10	14	4	7	25	47	**72**
TOTAL	**78**	**57**	**94**	**62**	**96**	**51**	**95**	**82**	**30**	**11**	**383**	**263**	**656**

Evaluating Effectiveness of Policy Instruments — "Good Practices"

Broadly, "good practice" policies seek to:

- maximise both economic efficiency and environmental protection (both in terms of climate change and other environmental issues);
- be politically feasible;
- minimise red tape and overhead;
- have positive feedback effects in such areas as competition, trade and social welfare (or at least not conflict with policies in those areas).

There is no single "silver bullet" climate change policy that would apply across all countries. Ongoing work in the IEA and OECD, as well as a review of current polices and measures do point to a set of leading policy recommendations:

1) **Getting prices right is a key to cost-effective responses**. Subsidy reform, especially in energy and agriculture, can have economic and environmental benefits. Case studies in OECD countries indicate that abolition of selected fossil fuel subsidies could reduce CO_2 emissions from the energy sector by 1 to 8%. Reform of fiscal policies, to ensure consistency between economic and greenhouse objectives, is also important. The prevalence of tax policies in the database points to the effort to internalise environmental impacts — in effect, get the prices better if not entirely "right".

2) **Using market approaches is likely to reduce the costs of meeting targets**. Domestic emissions trading is a leading example of how environmental policies can operate in a market framework to achieve emissions reductions cheaply. The database shows that several countries are adopting prototype systems. These may provide valuable experience for international emission trading as foreseen under the Protocol.

3) **A mix of policies and measures is required**. Markets have obvious shortcomings such as lack of information and conflicting incentives. As a result, voluntary approaches, standards, government purchasing policy, incentives and seed funding in R&D, will be a necessary part of the policy mix. Cost-effectiveness must be a key criterion in the design and implementation of these measures.

4) **Closer monitoring and assessment of emissions and of the impact of measures is also required.** Legally-binding targets require monitoring systems, indicators and benchmarks for performance to provide information that is transparent, accurate and reliable. Such systems will help countries by providing invaluable feedback and information to facilitate policy learning. To date, countries have not provided information on the extent of their monitoring and reporting of policy effectiveness.

5) **Good institutions will be necessary to meet the multi-faceted challenge of climate change.** Many ministries, different levels of government and other stakeholders must be involved from an early stage to build consensus and to take action. While a number of countries reported on the institutions being developed to implement new policies (particularly in the emissions trading area), policy co-ordination does not seem to be a high priority. Overlapping and possibly conflicting priorities may, therefore, reduce the overall effectiveness of national programmes.

6) **International co-operation is vital.** With many countries working to reduce emissions simultaneously, we can and should learn from each other. This requires regular contact between countries to share their experiences. This database is a contribution to the data exchange that is required. Continued and enhanced efforts will clearly be needed to take advantage of international synergies and to benefit from developing global experience.

While the list above represents criteria for good practice, two significant barriers exist: the price of action is too high, and the political will to act is not available.

Recent economic analyses have suggest that the marginal abatement costs for reducing emissions within OECD countries through domestic actions would range from $50 to over $1000 per ton of carbon[7]. While no country has yet completed its policy package, imputed costs of existing policies are significantly lower. For example, the highest cost of non-compliance for any emissions trading programme is $125/ton, proposed by Switzerland; others such as Denmark, call for only approximately $6 per ton. In combination, the overall relatively low levels of expenditure from current and proposed policies, as well as the limited extent of total policy packages suggests that it is unlikely that the existing effort will be adequate to meet the Kyoto objectives. Either additional policies or increases in the strictness of the application of existing policies will be required.

The most critical barrier to the adoption of new policies will be political: plans to change individual and corporate behaviour will initially meet resistance. Unsurprisingly, most governments have turned to various forms of consultations at national and regional level to build consensus around specific options. Such approaches differ according to national circumstances. Canada has instituted a series of public information and consultation programmes; Australia has promoted surveys to evaluate consumer preference as well as holding public consultations; Belgium has called for the formation of panels of experts to evaluate possible new policies and report back to the government; Ireland established a new national institution to promote a broad dialogue on sustainable development; in the US, academic institutions have held meetings on the science of climate change in an effort to promote action and awareness.

7. OECD, 1999 "Action Against Climate Change." While marginal costs are high, the OECD concludes that average costs are much lower (e.g. less than 0.5% of GDP in 2010). Most models do not fully account for distributional costs — which may be significant.

Policy Instruments — A More Detailed Look

The breadth of the new policy initiatives is extremely wide. To show the diversity of the international effort, and to consider some of the most important package elements, we look at three areas in greater detail: tax policies, emissions-trading programmes, and voluntary agreements. This examination is not meant in any way to suggest that other efforts, such as R&D programmes or consultative processes, are less valuable.

Tax Policies

Nearly all OECD countries adopted some form of new fiscal policy in 1999 in their effort to mitigate climate change (see Tables 5 & 6). Such policies are among the most economically efficient mechanisms to reduce emissions. OECD and IEA studies such as the World Energy Outlook 1999 suggest that subsidy removal would have rapid and beneficial effects not only with respect to GHG reductions, but also in stimulating national economies. Similarly, tax policies, as well as emission trading policies, allow markets efficiently to allocate resources to reduce emissions at lowest cost.

Of course, political constraints clearly apply to many fiscal policies. Subsidies are provided to support certain social values and certain economic sectors. Their removal can lead to social disruption. Similarly, fiscal policies such as taxes are also affected by political constraints. Concerns about possible loss of competitiveness in vulnerable industries leads countries to exempt them from taxes, or to apply taxes below the level required to generate emissions reductions. Broadly speaking however, fiscal policies are easy to implement. All governments have mechanisms for tax collection in place at both upstream and downstream points. Where new taxes or subsidy removal are decided upon, relatively low costs and limited additional administrative burdens are incurred.

Some incentives, of course, promote new or modified behaviours. Such subsidies can be effective if used over a short period to help establish niche markets for new, clean technologies. Such policies can provide a direct price signal to the market and become economically efficient forms of promoting programmes which face other barriers. However, they may be economically inefficient instruments and even environmentally harmful if they remain in place too long –limiting other types of environmental innovation in favour of the subsidised alternative.

A number of OECD countries subsidise various forms of energy use; for example, over 5% of the coal produced in IEA Member countries is subsidised. However, such subsidies have been declining. Since 1992, Belgium, Portugal and the UK eliminated coal subsidies. In spite of the continuing subsidisation of some fossil fuels, the database in this book shows that no IEA country has inititated a reduction in any energy subsidies as one of their 1999 policy actions. This may be due to the

restrictions in the database; the United Kingdom reported in its first national communication that subsidy reform was a key part of its climate action programme.

Eight countries have, or propose to add, subsidies in sectors ranging from transport (Japanese subsidies for clean energy vehicles), to power generation (the Irish subsidies for renewables) to the residential/commercial sectors (the Australian subsidies to community-use buildings which include photovoltaic systems).

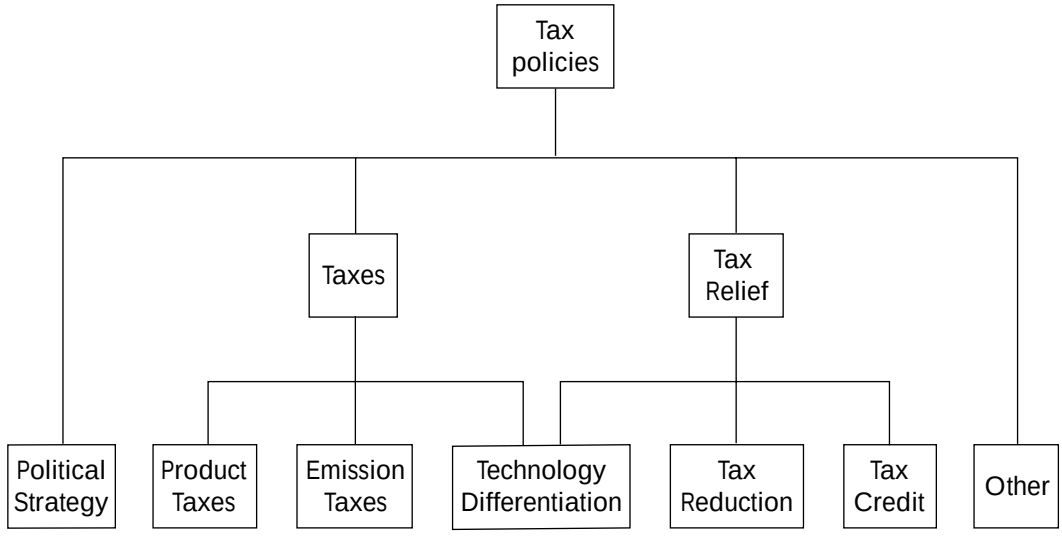
A number of countries have decided to impose new taxes. In the IEA database, 19 of 26 countries report undertaking or planning tax policy changes that will influence GHG emissions. Of the more than 60 tax policies proposed or enacted, one third relate to transport, while more than half address fossil fuels, and 11 are carbon or emission taxes. More than half of the total policies listed have yet to be enacted.

The use of economic instruments, particularly eco-taxes, has increased considerably over the last 10 years in IEA Member countries. Only a limited number of countries has taken strong moves towards green tax reform. Yet recent experiences suggests that environmental taxes can be an effective tool to mitigate greenhouse gas (GHG) emissions in a number of cases. Work by the OECD shows that concerns about fairness and competitive capacity are often overstated. These concerns can be addressed in a number of ways. Real opportunities exist for the successful implementation of green tax reforms.

IEA Member countries are recognising these opportunities — in 1999, 65 tax instruments to encourage the reduction of GHG emissions were initiated by Member governments. The tax instruments used varied considerably (see tables 7, 8 and 9 below), as did their impact. The composite picture provided by these policies indicates that Member countries are actively examining a variety of mitigation tax measures. A distinction must be made between those measures that are directly linked to GHG emissions and others that affect emissions indirectly. Among all the 1999 policies, the second type was prevalent. In fact, only eleven policies from the database can be defined strictly as "emissions taxes".

As an aid to analysing the information contained in the 1999 database, the classification pictured in figure 7 below is proposed.

Figure 7. **Classification Diagram**



Political Declarations: Most policies included in this category require international action — the securing of which is often problematical. Thus, many of these measures include only broad descriptions rather than precise policy details. Thus, for example, this group contains all measures related to broad regionally harmonised tax policies.

Example (Belgium / all sectors)
"Acknowledging that one of the main features of the Belgian economy is its open structure, the Belgian government will pursue support for a breakthrough in the European discussions on the harmonisation of energy taxation and will also investigate the implications of unilateral action (besides the introduction of the «cotisation energie» in 1993)."

Taxes: Two main subcategories are proposed for the general group of tax policies: emissions taxes and product taxes.

- **Emission taxes** involve payments directly related to the pollution caused — whether emitted into air, the water or on the soil or due to the generation of noise. Emission taxes generally deal with one type of emission at a time. Most taxes are directed at the final emitter rather than an upstream source, and are usually applied only to stationary sources because of their high monitoring and administrative costs. For political or technical reasons, many of these general taxes also have numerous exemptions.

  Example (Finland / all sectors)
  "The Finnish parliament has approved legislation to raise Finland's base tax on CO_2 emissions from FMK 82 (US $15) per ton of CO_2 to FMK 102 ($19). Use of wood as fuel will remain tax-exempt; however, taxes on peat will rise from FMK 4.9 ($.90) to FMK 9 ($1.60) per kWh of energy produced".

- **Product charges or taxes** can be a substitute for emission taxes when direct measurement of emissions is not possible. More generally, product taxes add an explicit price for environmental damages. A product tax may be levied based on the units of harmful substance contained in products. For example, a carbon tax is based on the carbon content of a particular fossil fuel. The product tax may also be levied per unit of product when the intent is to reduce overall consumption. Product charges may be applied to raw materials, intermediate or final consumer products. When applied to consumer products, they are often called consumption taxes or final-product taxes. Consumption taxes may be used when pollution is closely linked to consumer demand, as in the case of disposable products that compete with reusable alternatives, or that of penalties for inefficient cars.

  The taxation may be linked either to the product itself or to the part of its contents that are detrimental. When they are applied to raw material (coal to produce electricity) or intermediate products (polyvinylchloride to produce plastic), product taxes are referred to as input taxes. Emission taxes on production activities and input taxes are referred to as production taxes.

  Example (Switzerland / all sectors)
  "The two Swiss parliamentary chambers have agreed to a tax of 0.3 centimes per kWh for non-renewable fuels like petroleum, gas, coal, and uranium. The tax will raise about 450 million swiss francs a year and the revenues will be used to promote renewable energies (especially solar), energy efficiency measures in buildings and hydroelectric power."

Tax Relief consists of various provisions in tax systems designed to encourage particular kinds of consumer or business behaviour. They provide a reduction or an exemption from an existing or new tax or a credit for undertaking specific activities.

- **Tax Credit:** The most common form of tax credit is accelerated depreciation, but many countries also provide tax credits for certain types of investment, such as pollution control equipment, or for research and development.

  Example (United States / Electricity generation)
  "A package of biomass tax credits is proposed for the Fiscal Year 2000 Budget, allowing an extension of five years to the current tax credit of 1.5 cents per kilowatt hour for electricity produced from biomass. In addition, the proposal expands the types of biomass eligible for the credit to include certain forest-related, agricultural, and other resources. Finally, the package includes a 1.0 cent per kilowatt hour tax credit for electricity produced by co-firing biomass in coal plants".

- **Tax Reduction** relates to reductions in existing indirect taxes, such as excise duties, sales taxes or value added taxes for environmental ends.

  Example (France / Buildings)
  "The government decided to lower the VAT by 15 percentage points (from 20.6% to 5.5%) for remodelling or home improvement steps on housing units over two

years old. This measure begins on 15 September 1999 and ends on 31 December 2002. It replaces the previous tax reduction allowing for large expenditures other than moving."

Between these two main categories of tax policies lies a group of policies related to technology.

- **Technology differentiation** refers to variations in taxes applying to various technologies depending on their emissions and fuel consumption. This type of measure can occur in two forms: either an increase of existing taxes on polluting technologies or a reduction of taxes on technologies with high energy efficiency.

  Example (Luxembourg / Transport)
  "The National Plan on Sustainable Development included a plan to establish taxes on vehicles based on fuel consumption and emissions in order to provide an incentive for the purchase of less polluting vehicles."

Some policies adopted by countries did not fit into any of these categories: hence the "Other" category.

Example (Japan)
"The «Telework» initiative allows work to be done away from the office using information and communications technology so as to reduce energy used for commuting. Construction of «telework» centres was subsidised, wide area information/communications network model design projects were implemented, and a tax system to promote «telework» was introduced."

A preliminary sorting by categories is provided in Table 7 below.

Among 26 countries listed in the database, only six (Austria, Hungary, New Zealand, Spain, Sweden and Turkey) did not make use of tax instruments to reduce their emissions of greenhouse gases in 1999.

Of the measures that were taken, 40 are in the category of "Taxes". These are distributed among 17 countries. "Tax relief" measures were adopted by only eight countries in 1999.

A distinction should also be made between measures directly linked to the polluting activity, and others that affect emissions only indirectly. Among all the 1999 policies, the indirect approach was strongly favoured — in fact, only 12 policies from the database can be strictly defined as "emissions taxes".

Table 7. **Classification by Country**

Country	Political Declaration	Taxes			Tax Relief		Other	Total
		Product Taxes	Emissions Taxes	Technology Differentiation	Tax Reduction	Tax Credit		
Australia				1		2		**3**
Belgium	1							**1**
Canada					2	2		**4**
Czech Rep		1						**1**
Denmark		1	1					**2**
EU	1	2						**3**
Finland			1					**1**
France		1	1	2	3	1		**8**
Germany		2			2			**4**
Greece				1				**1**
Ireland			2					**2**
Italy			1					**1**
Japan		1					2	**3**
Luxembourg	1	4						**5**
Netherlands	1	3	1		2	1		**8**
Norway		3	1					**4**
Portugal	1	1			3			**5**
Switzerland		3	1		1			**5**
UK		1	2	2				**5**
USA						3		**3**
TOTAL	**5**	**23**	**11**	**6**	**13**	**9**	**2**	**69**

Source: IEA Database on Policies and Measures

Table 8. **Breakdown by Sector**

Sector	Political Declaration	Taxes			Tax Relief		Other	Total
		Product Taxes	Emissions Taxes	Technology	Tax Reduction	Tax Credit		
Residential/ Commercial		2			2	3		**7**
Transport	1	9	2	6	2	6	2	**28**
Industry/ Manufactuing		1	2		5	4	1	**13**
Power Generation		3	1		5	3		**12**
All	4	4	7	1		4		**20**
N/A						1		**1**
Total	**5**	**19**	**12**	**7**	**14**	**21**	**3**	**81**

Source: IEA Database on Policies and Measures

Note: As policies may apply to more than one sector or fuel, numbers may not be equal across tables.

Table 9. **Breakdown by Energy Source**

Sector	Political Declaration	Taxes			Tax Relief		Other	Total
		Product Taxes	Emissions Taxes	Technology	Tax Reduction	Tax Credit		
Fossil Fuel	1	11	11	7	6	6	2	**44**
Electricity		3			1			**4**
Renewables					3	2		**5**
Other					1	1		**2**
All	4	4				6		**14**
N/A					1			**1**
Total	**5**	**18**	**11**	**7**	**12**	**15**	**2**	**70**

Source: IEA Database on Policies and Measures

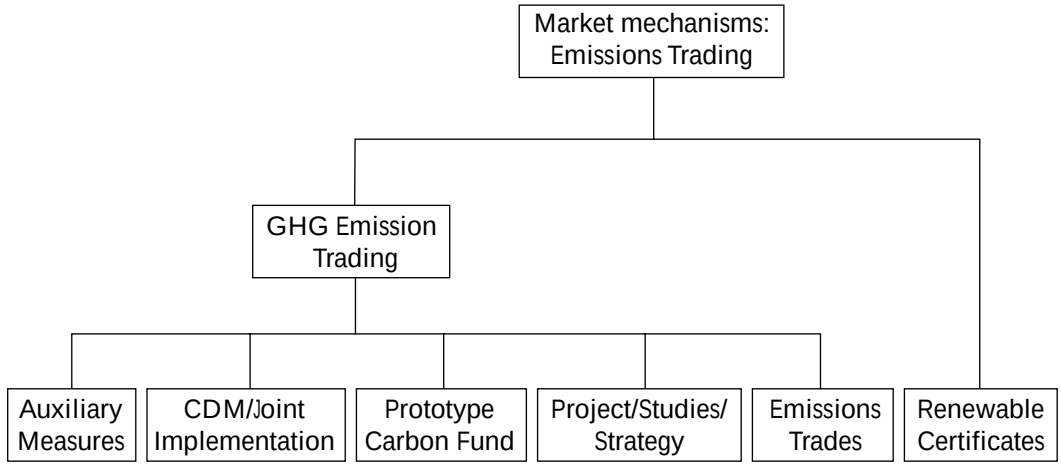
Tables 8 and 9 show the distribution of tax measures according to the targeted sector and energy source. On the basis of the number of measures alone, the target of the largest share of tax policies is transport, and fossil fuels. Care must be taken with such interpretations, however, as a number of policies are directed broadly at all sectors, while for a number of other policies, data regarding the policy target group are not available.

MARKET MECHANISMS: Emissions Trading

Proposals for emissions trading were adopted by only four countries in 1999. An additional nine countries, and the European Community, are currently in discussions on the possible adoption of emissions trading policies, and some international institutions are also engaged in trading (the World Bank with its Carbon Fund). Theoretical analyses suggest that this approach, like taxes, is a sound method for cost-effectively reducing emissions. Such policies can also deliver environmental results. However, few countries have yet grappled with the difficult task of allocating emissions quotas within sectors — and the political feasibility of such policies is still an open question. While the administrative complexity of such policies is an issue, the fact that so many countries are exploring a domestic trading regime does suggest a degree of political support.

These programmes range from allowing sales of certificates for renewable energy to project-based offsets between private sector companies to fully-fledged GHG emissions trading systems. The following classification is proposed for considering emissions trading policies:

Figure 8. **Emissions Trading Classification Diagram**



Greenhouse Gas Emissions Trading

A key element of the Kyoto Protocol is a set of flexibility mechanisms: emissions trading, joint implementation and the Clean Development Mechanism. Several countries have put these mechanisms on their agenda to meet their emissions reduction commitments.

- **Auxiliary measures**

  Implementing the Kyoto mechanisms requires a series of additional preparatory actions. To begin a trading programme requires the prior allocation of permits to trading entities. How transactions are to be registered, monitored and verified has to be considered. This category collects such policies that are not related to trading per se, but rather to preliminary implementation steps.

  Example: Quotas (Denmark / Electricity Generation)
  "The newly adopted act on emissions quotas for the electricity sector introduces a limit on CO_2 emissions from electricity production. Overall quotas are set at 23, 22, 21 and 20 million tons of CO_2 respectively for the years 2000, 2001, 2002 and 2003. Each power company will be allocated a specific emissions quota and will be subject to a fine of approximately US $5.90 per ton CO_2 for excess emissions. Unused quotas may be banked and applied the following year. The quotas will be renegotiated in 2001, when Denmark expects that companies will be able to trade quotas internationally, either within the Nordic or Baltic regions or at the EU level".

- **Clean Development Mechanism (CDM) and Joint Implementation (JI)**

  The joint implementation mechanism (Article 6 of the Kyoto Protocol) allows one Annex 1 country to sponsor an emissions-reduction project in another Annex 1 country and thereby acquire credit for the emission reduction, or part of it, as if it had occurred in the sponsoring country. Undertaking such a project-based credit exchange requires developing a baseline: an estimation of what emissions would have been in the absence of the project. The volume of credits is the difference between the baseline and the project's actual emissions. CDM activities allow for similar project-based exchanges between Annex I and developing countries. Rules for the operation of both mechanisms are still under negotiation.

  Example (Japan / Electricity Generation, Manufacturing, Other Industry)
  "Japan and Russia have announced an agreement in which Japan will assist Russian businesses in reducing their GHG emissions and, in return, will receive credits for those reductions to count toward Japan's GHG target. According to the plan, personnel from Japanese firms will visit about 20 Russian facilities, including power plants, pipelines, and steel mills, to assist in improving the plants' energy efficiency. The project will be supported by loans from the Export-Import Bank of Japan."

- **Prototype Carbon Fund**

  Recognising that climate change would have a significant impact on its client countries, the World Bank has established the Prototype Carbon Fund. Both private sector companies and governments have contributed to the PCF, which will use its resources to support projects to reduce emission reductions consistent with the Kyoto Protocol and the emerging framework for joint implementation and the Clean Development Mechanism. Contributors to the PCF will receive a *pro rata* share of emission reductions, verified and certified in accordance with carbon purchase agreements reached with the countries hosting the projects.

  Example (Sweden)
  "The Government is joining four other countries and 12 private sector partners in contributing to participate in the World Bank's recently announced Prototype Carbon Fund. The Fund will enable countries to learn through experience how the CDM and JI mechanisms of the Kyoto Protocol could benefit both developed and developing countries."

- **Studies/Strategy Develoment**

  Although the benefits that might be expected from a tradable emission permit system are numerous, it has yet to be demonstrated that these benefits will actually arise once programmes are introduced. The only empirical evidence concerning a fully operating tradable permit system is in the United States — and US circumstances may not apply to other countries.

  Many countries are still discussing how such programmes might be implemented. The number of such projects (10 in 1999) led to the creation of a separate category in this analysis.

  Example (Australia / Sector: N/A)
  "A feasibility study on the introduction of a national emissions trading system to help Australia meet its commitments under the Kyoto Protocol has resulted in four detailed public discussion papers on issues such as coverage, permit allocation, the treatment of sinks, and designing the market, and another paper on early greenhouse action. The Government is to consider advice on the feasibility of domestic emissions trading in 2000."

- **Emissions Trades**

  While rules for the CDM and JI, as well as for domestic and international emissions trading have yet to be agreed, a number of trades have already taken place, mainly between private entities — but occasionally between governments.

  Example (Canada / Other Industry & Electricity Generation)
  "A group of 10 Canadian energy companies will pay Iowa farmers a fee for reducing carbon emissions or capturing additional carbon in soils (thus earning the companies credit for cutting carbon dioxide emissions). The agreement requires farmers to practice no-till or minimum-till farming to lower carbon

emissions. The first deal is expected to produce 1.3 million tons of carbon credits for 2000 and up to 6 million tons by 2012. The price paid varies between 50 cents and $2.50/ton of carbon credits."

Renewable Certificates

While the majority of actions in this broad category specifically address emissions of greenhouse gases, a related effort addresses energy specifically — and thus, only indirectly affects GHG emissions. The "Green Certificate" system obliges electric utilities to supply customers with a percentage of renewable electricity (green quotas), and then allows the quotas to be traded.

Example (Denmark / Electricity Generation)
"Trade in electricity from renewable energy will be launched on January 1, 2002. A law promoting green energy consumption enters into force. The framework for the bourse will be regulated by the government; however, once the system is running, there will be no government interference. System regulators and net operators will be responsible for measuring renewable electricity production and issuing certificates representing the number of kilowatt hours on offer."

A preliminary classification of emissions trading programmes is provided in the table below:

Table 10. **Emissions Trading**

Country	Auxiliary Measures	JI/ CDM	PCF	Strategy/ Studies	Emissions Trading	Renewables Certificates/Electricity	Total
Australia				2		1	**3**
Belgium				1		1	**2**
Canada		5	1	4	1		**11**
Denmark	1	1			1	1	**4**
Finland			1				**1**
France						1	**1**
Germany						1	**1**
Italy						1	**1**
Netherlands		2	1		1	1	**5**
New Zealand	1			1			**2**
Norway	1	1	1		1		**4**
Spain						2	**2**
Sweden		1	1	1			**3**
UK					1	1	**2**
USA				1		1	**2**
TOTAL	**3**	**10**	**5**	**10**	**5**	**11**	**44**

Source: IEA Database on Policies and Measures

During 1999, 15 countries and the European Union proposed or adopted programmes related to tradable permits. The majority of the actions fall into three categories: "Studies/Strategy Development", "JI/CDM" project activities, and Renewables Certificates. Of these countries, the most active was Canada, with 11 separate listings. However, the majority of these were for individual JI/CDM projects or for planning efforts — and many of the remainder were for small-scale projects between private sector actors. The Scandinavian countries and the Netherlands have also taken noteworthy action. But, the lack of internationally agreed rules has clearly hindered the further development of this policy choice.

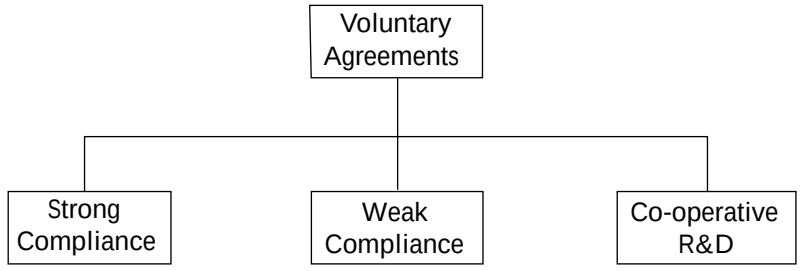
Voluntary agreements

The inadequacy of current policies and measures to meet national emissions commitments has led countries to search for more innovative solutions, and particularly for new ways in which to engage the private sector in the mitigation process. One such approach is through voluntary agreements or VAs. VAs differ from other instruments in that they are the product of agreements negotiated directly between government and business (or industry associations), rather than the result of mandates imposed by the government. Often deliberately combined with "back-stop" fiscal or regulatory policies, VAs offer flexible and cost-effective solutions to mitigation dilemmas.

In 1999, 20 voluntary agreements were initiated by IEA Member governments, with four in the electricity-generating sector, two for the transport sector, and 11 for industry in general. These VAs were diverse. They included target-based, performance-based and R&D-based mechanisms, and they were surrounded by a variety of complementary policies — showing that countries are exploring the full range of possibilities associated with this instrument. All of the 1999 examples suggest that VAs rank high in terms of economic efficiency, political feasibility, low overhead, and low impacts on other policy areas. Government are refining their use of VAs by co-ordinating strategies between levels of government and by giving VAs high priority in their climate change agendas and national communications. This strategy is likely to continue to grow in popularity in the coming years.

Since the incentives for participation or penalties for non-compliance vary considerably among agreements, the three major types of VAs can be classified as: "strong" (containing legally binding objectives and a strong regulatory threat); "weak" (without penalties for non-compliance but with incentives for the achievement of targets); and "co-operative" (consisting of incentives for the development and implementation of new technology).

Figure 9. **Voluntary Agreement Classification Diagram**



Strong Compliance VA's

These agreements call for setting emissions targets by participating entities. Once targets are voluntarily agreed, they become legally binding. Industry's compliance is gained either by the government promising offsets from future regulatory (or fiscal) action or its brandishing a strong regulatory threat.

Example (Netherlands / Manufacturing, Electricity Generation)
"A benchmarking agreement was reached between the Ministry of Economic Affairs, Ministry of Environment, Federation of Netherlands Industry (VNO-NCW) and five sector organisations, including the Association of Dutch Chemical Industry (VNCI), the Association of Dutch Paper and Cardboard Manufacturers (VNP), the Dutch Electricity Generating Board (SEP), and the bodies representing the metallurgical industry and refineries. The covenant requires member companies to systematically improve their energy efficiency rate per unit of product and to monitor their energy use more scrupulously. Its scope is significant — member companies of the five sector organisations that have an annual energy use greater than 0.5 petajoules are expected to join the covenant, meaning that it will eventually apply to 80 percent of Dutch industrial energy use."

Weak Compliance VA's

Here, performance goals are not legally binding or explicitly designed to pre-empt future regulatory action. No regulatory threat exists for non-compliance. Incentives motivate companies directly to reduce GHG emissions by meeting quantified targets. Incentives can also spur *indirect* emissions reductions through the achievement of improvements in energy efficiency.

Example (Canada / all sectors)
"Canadian energy and environment ministers announced the establishment of a process for providing credit to industry and other stakeholders for taking early action on reducing GHG emissions. The ministers stated that they would consider in their credit system measures already taken under such programmes as the national Voluntary Challenge and Registry Programme (VCR) and British Columbia's pilot emissions training programme. Ministers also agreed to strengthen the VCR,

calling for its board of directors to "clearly define and standardise methods of reporting the achievements of participants," and to report on progress to the ministers' next joint meeting".

Co-operative R&D

Goals are set to develop and implement clean energy or energy-efficient technology. Immediate investments focus on developing and implementing new technologies, reducing emissions both directly and indirectly.

Example (USA / Manufacturing/ Other Industry)
"The Industries of the Future Programme works co-operatively with the nations most energy-intensive industries — such as aluminium, glass, chemicals, forest products, mining, petroleum refining and steel — on research to develop technologies that increase energy and resource efficiency. Together, participating industries use more than 80 percent of all energy consumed in US manufacturing. Promising collaborative efforts include improvements in the process of making steel, pulp and paper, and other energy-intensive products that could dramatically increase efficiency and lower GHG emissions. The Department of Energy estimates that participating industries will prevent emissions of more than 25 million tons of carbon equivalent and realise $4 billion in energy cost savings."

The following table shows the breakdown of voluntary agreements initiated by IEA governments in 1999.

Table 11. **Voluntary Agreements**

Country	Electricity Generation	Transport	Industry/ Manufacturing	General/ Other	Total
Belgium			1		**1**
Canada	2		1		**3**
EU		2			**2**
France	1		1		**2**
Germany			1		**1**
Italy			3	1	**4**
Japan			1	1	**2**
Netherlands			2		**2**
Portugal	1				**1**
Switzerland			1	1	**2**
USA				1	**1**
Total	**4**	**2**	**11**	**4**	**21**

Source: IEA database on Policies & Measures

During 1999, 21 voluntary agreements were promulgated or implemented by ten countries and the European Union. Of these, only four were of the co-operative type, while 12 used a strong compliance structure, and 5 a weak compliance structure.

The small number of VAs in the database is somewhat misleading. In a 1996 IEA/OECD survey, 350 voluntary actions and programmemes were identified. At that time, most countries had implemented voluntary agreements on fossil fuel use, electricity generation, energy-savings measures and industrial processes. So, the voluntary agreements undertaken by IEA Member countries in 1999 represent only a portion of the recent effort. Furthermore, several of these policies (such as the benchmarking covenant in the Netherlands and the Italian framework agreement) provide bases for additional voluntary agreements. The number of VAs resulting from 1999 efforts could ultimately be significantly higher than suggested in the numbers above.

Virtually all of the VAs were accompanied by clearly identifiable complementary policies, an indication that countries are aware of the potential for reinforcing emissions reductions goals through other policy mechanisms. The framework nature of the majority of these agreements, and the commitment by several IEA Member countries to this type of instrument, suggest that VAs will continue to be a prominent component of national mitigation agendas.

Conclusions

The extent of the government action undertaken in 1999 — there are more than 300 separate policies and measures in this listing alone — indicates a high level of engagement by IEA Member countries in both domestic and international efforts to mitigate climate change. The overall effort is remarkable not only for its size, but also for its diversity. Countries have adopted a portfolio approach to policy-making in the climate arena. Most have developed programmes that seek to address all sectors, and use all available economic levers. Indeed, a very large number of "climate-related measures" are aimed primarily at general environmental protection (air pollution, or traffic congestion) or at energy regulation. Different countries have, of course, 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 cultural preferences.

There is no such thing as a "one size fits all" policy. Nonetheless, it is possible to develop some standards for "good practice". To date, national choices seem only partially to reflect such considerations. In spite of the numerous actions taken over the past several years to mitigate climate change, there remains considerable scope for further improvements.

★ ★ ★ ★ ★

This volume is a first effort to compile a listing of new programmes being implemented to deal with energy and climate change. It provides a snapshot of activity at one point in time. As it gives no historic reference, and does not assess exactly how each programme will work to deliver emissions reductions, it cannot in its present configuration be properly used to assess trends.

We hope that future editions of this work may make such assessments possible. They will gradually come to include perspectives on progress, better cost and benefit analyses of specific efforts, as well as a checklist of national and international emissions reductions. In the interim, the information contained in this document can be used to identify new options in countries to address a real and growing threat to our global environment.

Methodology

Introduction

A compendium of national policies is most useful when it allows fairly detailed comparisons between countries. We have, therefore, classified the material in this document according to a variety of criteria and factors, each of which is described below. We are aware, however, that national circumstances are never precisely equivalent. For example, a tax policy in the transport sector in Italy may not readily apply to or be comparable with a policy similarly classified in Australia. Inter-country, inter-sectoral or inter-policy comparisons should be treated with caution.

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 countries 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 1999. Thus, policies that may have been initiated in prior years — but not modified in 1999 — may be in place, but not be represented here.

This compilation should be viewed as a work in progress. The IEA intends to maintain and update this database in the future.

This section briefly describes the sources of the data and the process used to collect and review them. It then provides a brief explanation of the structure of the data tables in Part II of this volume, and in more detail, in the CD-ROM that accompanies this book.

Data Sources

In late 1999 and early 2000, as part of an expanded effort to collect and exchange information on Member country energy policies, an effort was launched to collect data on specific policy actions taken by countries during 1999 to address climate change. Information was collected from: government ministries, agencies and departments (including from data posted on internet sites listed in the Annex to this section); from international organisations (the UN Framework Convention on Climate Change; the Asia Pacific Energy Research Centre); and from periodicals and journals reporting on policy actions. This information was compiled and then submitted to Member countries for their review and revision, as well as for additions or deletions of incorrect material.

Certain criteria were established for this database, both 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 not always submitted) on the projected effects of policies to limit or reduce emissions.

In addition to the information on government actions, some information is also included on specific actions being taken within the private sector. This information should be considered as much less complete than available for government programmes — although it may ultimately prove that individual corporate activities are among the most successful efforts to mitigate climate change.

Inasmuch as the IEA intends to continue to update its database, readers are invited to submit additional information on climate change policies and measures in energy or energy-related sectors in IEA countries, in writing to the Agency.

Data classifications and database categories

The policies and measures data have been classified under a system of categories and subcategories described in this section. The database, developed in a fully searchable format using Microsoft Access™, also contains a variety of additional information, as noted below.

- *Country:* The IEA member country implementing the measure.
- *Type and classification:* Policies have been divided into the categories and subcategories summarised in Table 1.

Table 1. **List of Policy Instruments and Classification Subcategories.**

INSTRUMENT	Classification
Fiscal	Tax, including tax exemptions or credits, Subsidy
Market	Emissions Trading and/or Project-Based Programmes; Green Certificates; "Under Development"[1]
Regulatory	Regulatory Reform; Mandates/Standards; Voluntary Agreements; Labelling
R&D	Funding; Incentives; Research Programs; Technology Development
Policy Processes	Advice/Aid in Implementation; Consultation; Outreach; Strategic planning; Infrastructure management

1.This category reflects emission trading programmes under development but which have yet to be formally established.

- *Applicable Sector(s) and Sub-sector(s):* The sectors and sub-sector categories are listed below in Table 2.

Table 2. **List of Sector and Sub-sector Categories**

Applicable Sector(s)	Sub-sector(s)*
Residential	Space Heat; Water Heat; Cooking; Lighting; Appliances; Other Residential; All Residential
Community-Use	
Buildings	
Travel	Cars; Bus; Rail; Inland Air; Trucks; Other Travel; All Travel
Freight	Rail-Freight; Inland Water; Other Freight; All Freight
Services	
Industry-Manufacturing	Paper & Pulp; Chemicals; Non-metallic Metals; Iron & Steel; Non-ferrous Metals; Food & Beverages; Industrial Appliances; Equipment; Construction; Mining; Other Manufacturing; Other Industry; All Manufacturing
Electricity Generation	
Technology	

**Note:* the printed version of the database does not include all sub-sectors; for a full listing of those applicable to each measure, please consult the CD-ROM version.

- *Fuel Source and Fuel Source Sub-category(ies):* These two fields list the fuel source and fuel source subcategory to which the policy is applicable (Table 3). Note that some instruments may be applicable to all fuels or all source subcategories.

Table 3. **List of Fuel Source and Fuel Source Sub-categories**

Fuel Source	Fuel Source subcategories*
Fossil Fuels	Oil; Coal; Gas; All
Electricity	
Renewables	Peat; Hydro; Biomass; Waste; Wind; Solar; Geothermal/Ocean; Tidal Waves; Heat Pumps; All
Nuclear	

** Note:* the printed version of the database does not include all fuel source sub-categories; for a full listing of those applicable to each measure, please consult the CD-ROM version.

Other Database Information

In addition to the detailed policy listings provided above, the CD-ROM version of the database contains additional information on each policy. Data provided in that version includes:

- *Status:* This field notes whether the initiative is currently being implemented or is still in a planning stage. In Part II of this volume, this information is reflected in the policy description. Note that in this volume, the status is reflected by italics — text that is italicised 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 milestones (i.e. interim or final targets to result from implementation, whether actual or anticipated) that may exist for the activity.
- *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 data.
- *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

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	***Subsidy***	*The revised "A New Tax System" includes several Greenhouse measures, over a four year period, announced as part of the "Measures for a Better Environment". Under one such measure, a funding package would provide $Aus 400 million targeted at maximising emissions reduction and increasing sink enhancement capacity through the Australian Greenhouse Gas Abatement Programme.*	*Transport/ Industry/ Residential/ Commercial*	*Fossil Fuels Renewables*
Fiscal	***Subsidy***	*The Alternative Fuel Conversion Programme is one of the programmes featured in the revised "A New Tax" System. Scheduled to commence in July 2000, this programme will provide either: up to a 50 per cent grant to purchasers compensating for the difference in the price of alternative fuel vehicles and conventionally fuelled vehicles; or up to a 50 per cent grant towards the cost of converting vehicles to CNG or LPG.*	*Travel (Cars, Bus, Trucks) Freight (Other Freight)*	*Fossil Fuels (Oil)*
Fiscal	***Subsidy***	*Under the revised "A New Tax" System the government will encourage conversion from diesel generation to renewables in remote areas through grants of $Aus 264 million for states/ territories under the Renewable Remote Power Generation Programme, to rebate up to 50% of the installation costs of renewable remote area power supplies.*	*Residential Community Use Electricity Generation*	*Renewables*
Fiscal	***Subsidy***	*The revised "A New Tax System" provided a programme of up to $Aus 31 million to rebate up to half the costs (or $Aus 8.25k per household) for installing household photovoltaic systems.*	*Residential (Other Residential/ Community Use)*	*Renewables*
Fiscal	***Tax Credit***	*A 100% excise credit is provided under "A New Tax System" (estimated at over $Aus 300 million) for rail transport to improve its competitive position.*	*Travel (Rail-Travel) Freight (Rail-Freight)*	*Fossil Fuels*
Fiscal	***Tax Credit***	*The Energy Credit scheme will provide price incentives and funding for conversion from the dirtiest fuels to the most appropriate and cleanest fuels. This scheme will be developed jointly by the Government and the Australian Democrats to replace the diesel fuel credit scheme on 1 July 2002 (after the existing scheme expires due to a sunset clause).*	*Travel Freight*	*Fossil Fuels (Oil)*
Fiscal ***Regulatory***	***Tax*** ***Mandates/ Standards***	*Differential excise treatment of low and high sulphur diesel will provide an incentive to switch demand and speed the introduction of new refinery capital investment over the period 2000 to 2005. Diesel fuels eligible for fuel credits will be restricted to ultra low sulphur diesel 50 ppm (0.005%) from 2006. The introduction and use of low sulphur diesel fuels will be encouraged by: negotiation with the oil majors of the early voluntary introduction of diesel at 50 ppm in urban areas in 2000; and diesel standard set at 50 ppm by the end of 2002 for road transport fuel. Additionally, there will be an increase in the diesel excise for high sulphur fuel above 50 ppm, so that the relevant effective diesel excise payable increases by 1 cent per litre from 1 January 2003 and 2 cents per litre from 1 January 2004.*	*Travel (Cars, Bus, Trucks) Freight (Other Freight)*	*Fossil Fuels (Oil, Diesel)*

Instrument	Classification	Policy Description	Sector	Energy
Market **Policy Processes**	**Under Development** **Consultations**	A feasibility study on the introduction of a national emissions trading system to help Australia meet its commitments under the Kyoto Protocol has resulted in four detailed public discussion papers on issues such as coverage, permit allocation, and treatment of sinks. The Government is to consider advice on the feasibility of a domestic emissions trading scheme in early 2000.	N/A	N/A
Market **Policy Processes**	**Under Development** **Consultations**	The Australian Greenhouse Office (AGO) released the third in its series of papers discussing the various aspects of emissions trading, the latest focusing on credits for carbon sequestration.	Electricity Generation Manufacturing Other Industry	N/A
Regulatory	**Labelling**	As part of the environment strategy for the motor vehicle industry, a mandatory model-specific fuel consumption-labelling scheme for new passenger cars is being implemented through an Australian Design Rule (ADR).	Travel (Cars)	Fossil Fuels (Oil)
Regulatory	**Mandates/ Standards**	New fuel specification standards applying from 1 January 2000 make Western Australia the first state in Australia to eliminate lead from all petrol sold and to achieve "Euro 2" standards in diesel fuel. The State will also be moving towards "Euro 4" standards in coming years.	Travel (Cars)	Fossil Fuels (Oil)
Regulatory	**Mandates/ Standards**	Minimum Energy Performance Standards have been introduced for refrigerators, freezers, and electric water heaters.	Manufacturing Other Industry (Appliances)	Electricity
Regulatory	***Mandates/ Standards***	*"Euro 2" vehicle emission standards for new vehicles will be introduced from 2003 and from 2004 for continuing models. "Euro 3" vehicle emission standards will be introduced from 2005 and from 2006 for continuing models. "Euro 4" is not yet sufficiently defined for petrol engines to enable a date for adoption to be set.*	*Travel (Cars, Trucks)* *Freight (Other Freight)*	*Fossil Fuels (Oil)*
Regulatory	***Mandates/ Standards***	*The Commonwealth will develop a diesel National Environment Protection Measure to be introduced as soon as possible and specifically to address the issue of emissions from the in-service diesel fleet by establishing: in-service emission tests/ inspection protocols and programmes for diesel vehicles; a minimum performance standard for all in-service diesel vehicles which were not certified to an agreed international standard at the time they entered the market; and in-service emission standards, based on compliance with original certification standards, for all diesel vehicles certified to international standards (Euro 2, 3, etc.).*	*Travel (Cars, Trucks)* *Freight (Other Freight)*	*Fossil Fuels (Oil)*

Australia (continued)

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	***Mandates/ Standards***	*The Federal Cabinet has confirmed arrangements to deliver the Prime Minister's commitment to boost the contribution of renewable energy to Australia's electricity supply by 2 percent by 2010. The announcement followed final consultations with several national industry bodies aimed at providing certainty for industry and implementation of the measure at the lowest cost possible. A fixed target has been established of 9,500 GWh in 2010, based on ABARE 1996/97 data as a baseline. The targets will be implemented with a system of tradable certificates, on the basis of an accredited generator delivering electricity to a grid, end point user or directly to a retailer or wholesaler buyer. Solar water heating is also eligible. The Government has also agreed that the penalties for non-compliance should be set at $40/MWh. Legislation to enforce the 2% target will be introduced in June 2000, with the measure to be phased in from January 2001.*	*Electricity Generation*	*Renewables*
Market	***Green Certificates***			
R&D	**Funding**	A $Aus 56 million (over 5 years) competitive grants programme was launched under the revised "*A New Tax System"* to boost the commercialisation of renewables under the Renewable Energy Commercialisation Programme (RECP). It will facilitate a range of activities surrounding the development and wider use of renewable energy products and services.	Electricity Generation	Renewables (all)
R&D	**Funding**	The Renewable Energy Equity Fund (REEF) provides venture capital to small, innovative companies for the development of renewable technologies, on a 2:1 basis with private equity through licensed funds management companies. $Aus 20 million will be provided over 10 years. The renewable Energy Showcase grants programme supports a few strategically important renewable energy projects which have strong commercial potential, are technically proven, and have potential for widespread application. $Aus 10 million was provided for this programme, which is now closed to new applicants. The programme became effective in 1999.	Industry	Renewables
Policy Processes	**Consultations**	In 1999, the Australian Greenhouse Office held a series of 7 public consultation forums across the country to discuss the Alternative Fuel Conversion Programme and the Alternative Fuels Grant Scheme featured in the Government's "A New Tax System".	Travel (Cars, Trucks, Other Travel) Freight	Fossil Fuels (Oil)
Policy Processes	**Consultations**	The Downstream Petroleum Products Action Agenda (DPPAA) was a statement developed jointly between the Ministry for Industry, Science, and Resources and the Australian Institute of Petroleum. The Action Agenda provided a vision of the future role of the industry in the Australian economy and also action that could be taken on environmental issues — such as the need for uniform national standards on fuel. It also raised a number of other important issues related to greenhouse gas mitigation measures, microeconomic reform and excise matters.	Electricity Generation Other Industry	Fossil Fuels (Oil)

Australia (continued)

Instrument	Classification	Policy Description	Sector	Energy
Policy Processes	**Consultations**	Members of the Australian wind energy community formed the Australian Wind Energy Association to consult with governments and to promote the development of wind energy technology in Australia.	Electricity Generation	Renewables
Policy Processes	**Consultations**	According to a recent consultation paper, new projects in Australia that would likely be major emitters of GHGs would face an assessment process under the nation's new Environment Protection and Biodiversity Conservation (EPBC) Act known as a "greenhouse trigger". This essentially means that the government could refuse to approve a project application because of the extent of the project's GHG emissions, including its emissions relative to other projects. The release of the consultation paper, "Possible Application of a Greenhouse Trigger under the Environment Protection and Biodiversity Conservation Act of 1999" carried out a commitment made by Australia's prime minister last May that once the EPBC Act was passed, the government would begin a consultation process with the states and other stakeholders on whether to apply the greenhouse trigger to new projects. The act's provisions come into effect in July. The consultation paper was prepared for the government by ICF Consulting.	All	N/A
Policy Processes ***Regulatory***	***Consultations*** ***Mandates/ Standards***	*The building industry has agreed to the incorporation of mandatory energy efficiency standards in the Building Code of Australia. A recently completed scoping study will provide the Australian Building Codes Board with a basis for developing building energy efficiency codes.*	*Residential Community-Use Buildings*	*Electricity*
Policy Processes	**Outreach**	The Australian Galaxy Energy Awards, hosted by Energy Efficiency Victoria, were awarded to the most energy efficient products in a variety of categories (refrigerators, air conditioners, dishwashers, etc.). They complement the existing Energy Rating Labels. Certificates of excellence were also given to a variety of outstanding appliances and suppliers.	Manufacturing (Appliances)	Electricity
Policy Processes	***Outreach***	*As part of the National Greenhouse Strategy funding allocation, an audit of existing Commonwealth, State and Territory government energy information services is to be conducted. The objective is to enhance the effectiveness and efficiency of delivery of energy efficiency and GHG abatement information programmes by all levels of government. Examples of existing services and measures to be included in this review are: energy magazines, databases, internet sites, educational videos and CD's and energy inquiry services.*	*Residential/ Industry*	*Fossil Fuels/ Electricity/ Renewables*
Policy Processes	**Study**	A Co-operative Research Centre (CRC) on Greenhouse Accounting has been awarded $Aus 15.3 million over 7 years to ensure that Australia is in the strongest position possible to argue internationally for a comprehensive system of accounting for carbon emissions and sinks, as well as that these measures contribute to the core goals of reducing the impact of climate change and are viewed as a cost effective approach. Partners in the CRC will provide an additional $Aus 55 million in cash and in-kind resources.	All	N/A

Australia (continued)

Instrument	Classification	Policy Description	Sector	Energy
Policy Processes	**Study**	A recent study of the Australian coal mining industry undertaken by the Australian Geological Survey Organisation (AGSO) found that there was a significant range in energy intensity among coal mines and thus opportunities for considerable energy savings. Regarding GHG mitigation, figures reported indicate a significant range in greenhouse intensity among open cut and among underground mines. The study recommends the development of better methods to estimate emissions from coal mines, particularly for open cut mines.	Other Industry (Mining)	Coal
Policy Processes	**Study**	Recent surveys conducted by Energy Efficiency Victoria have shown increased consumer interest in energy efficiency. Over 85% of people surveyed believed that Energy Rating Labels found on major appliances were influential when choosing a model.	Manufacturing Other Manufacturing	N/A

Austria

Instrument	Classification	Policy Description	Sector	Energy
Policy Processes	**Study**	According to the Austrian Council on Climate Change (ACCC), Austria should have no difficulty meeting its target under the Kyoto Protocol. The ACCC analysis suggests that the bulk of the reductions can come from energy production, transportation, and building insulation (contributing reductions of 8.8, 2.2, and 4.4. Mt of CO_2 equivalent respectively). Meanwhile, ACCC suggests that industry will have to contribute reductions of only 0.6 Mt CO_2 equivalent. The figures are not based on ACCC estimates, but on data provided by the various sectors. For the energy sector, incineration of waste is a critical component, providing some 2.2 Mt of reductions. Other areas identified as important by the ACCC are district heating, combined heat and power (cogeneration) and biomass.	All	N/A

Belgium

Instrument	Classification	Policy Description	Sector	Energy
Fiscal *Policy Processes*	*Tax* *Under Development*	*Acknowledging that one of the main features of the Belgian economy is its open structure, the Belgian government will pursue support for a breakthrough in the European discussions on the harmonisation of energy taxation and will also investigate the implications of unilateral action (besides the introduction of the "cotisation energie" in 1993).*	*All*	*All*
Market **Policy Processes**	**Under Development**	The parliamentary and federal advisory committee, the Federal Council for Sustainable Development (FRDO-CFDD) issued a call to Belgian authorities to further examine international flexibility mechanisms.	All	All
Market *Regulatory*	*Green Certificates* *Mandates/ Standards*	*Federal and regional authorities are considering new energy efficiency and renewable energy strategies: The Flemish decree for the liberalisation of the distribution side of the electricity sector will introduce a system of green certificates to promote renewable energy systems (RES). The Walloon region is considering a system of renewable energy certificates. The new federal electricity law foresees a legal framework to award concessions for the building and exploitation of offshore windparks.*	*Electricity Generation*	*Renewables Electricity*
Regulatory *Fiscal*	*Voluntary Agreements* *Tax*	*The new government, both at federal and regional levels, underlined the importance of voluntary agreements concerning energy efficiency with industry, and a coordinated strategy between all government levels is currently under construction. The link between voluntary agreements and energy taxation will be examined.*	*Industry*	*Electricity*
Regulatory *Policy Processes*	*Mandates/ Standards* *Consultations*	*High priority has been given to actions in the field of energy efficiency and CHP. This is reflected in the following elements: the Walloon objective to reach 200,000 m^2 of solar panels (thermic solar) in the next 10 years and the Flemish objective to reach a contribution of 3% electricity from RES in total energy consumption by 2004 instead of by 2010. As a result of consultations with the electricity experts group "groupe de Keuleneere" (established by the government), the liberalisation will be advanced, meaning that the price of electricity will decrease and the market will open more rapidly. For this reason, measures aimed at improving the energy efficiency or targeting renewable sources of energy will be examined through the existing consultation process.*	*Electricity Generation*	*Renewables (Solar) Electricity*
Policy Processes	**Consultations/ Study**	The Federal Council for Sustainable Development (FRDO-CFDD) issued an advisory recommendation to the Belgian authorities on further implementation of the Kyoto Protocol, noting in particular the longer term — when emissions reductions of as much as 50% below 1990 levels will be required.	All	All

Instrument	Classification	Policy Description	Sector	Energy
Policy Processes	**Study**	With respect to the rational use of energy (RUE) and the reduction of CO_2 emissions, the Flemish Government has approved the new version of its CO_2/RUE policy plan at the end of November 1999 on the basis of a first study of the reduction potential and the possible measures in the field of energy efficiency, renewable energy sources and transportation. Achieved within the framework of the "Flemish programme to impulse the energy technology", the study lists about forty measures which represent the Flemish contribution to the national commitment to reduce GHG emissions by 7.5% between 2008 and 2012. The study is next to establish reduction potentials in the future, as the policy plan is foreseen to evolve dynamically as new technical and economic data are developed.	All	Renewables Fossil Fuels (Oil)
Policy Processes	**Study**	The Federal Ministry of Economic Affairs ordered two research centers (in the Flemish and Walloon Regions) to undertake a co-ordinated study aimed at examining the potential reduction of CO_2 emissions through additional measures (beyond fiscal instruments) and which might be considered for the electricity sector (with some scenarios in the electricity sector orientations and the analysis tariffs) as well as for the transport sector.	Electricity Generation Travel Freight	All
Policy Processes	***Study/ Consultations***	*The Federal Secretary of State for the Environment commissioned a study elaborating and analysing a policy trajectory that would enable Belgium to meet its Kyoto target at least cost, calling for an emphasis of unilateral domestic measures and excluding the replacement of existing nuclear power plants after decommissioning. Building on the results of this study and other studies prepared by other Federal Departments and the Regions, a new national plan to reduce GHG emissions will be developed in the course of 2000.*	*All*	*All*

Canada

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	**Subsidy**	The Commercial Building Incentive Programme has been expanded effective April 1, 1999, to include multi-unit residential buildings, doubling the number of projects eligible for funding. The programme, introduced in 1997, helps offset the cost of designing energy-efficient buildings by offering a one-time financial incentive to building owners and developers. To be eligible, building designs must be 25% more efficient than the guidelines set out in the Model National Energy Code for Buildings. CBIP contributes twice the estimated annual energy cost savings for approved designs, up to a maximum of $80,000.	Buildings Residential Commercial	All
Fiscal **Policy Processes**	**Subsidy** **Advice/Aid in Implementation**	The Natural Gas for Vehicles initiative (renewed to 2001 in 1999) serves to encourage the production and use of alternative fuels and alternative fuel vehicles. The initiative comprises economic/ market studies, emissions and safety assessments, information and technology transfer and assistance to industry to promote and demonstrate cost-effective applications. This programme will provide a contribution of $2,000 for each factory-built natural gas vehicle, a contribution of $500 for road vehicles converted to natural gas, a contribution to help foster new refuelling outlets, cost-shared marketing and awareness activities, and co-funded research and development.	Travel (Cars, Bus, Trucks)	Fossil Fuels (Gas)
Fiscal	**Tax Credit**	The 1999 Federal Budget made generating equipment fuelled by flare gas at oil fields eligible for a higher capital cost allowance under federal tax regulations. This helps to reduce GHG emissions in the oil and gas industry due to a more controlled combustion process, as well as through the displacement of coal-fired electricity generation.	Electricity Generation Other Industry	Fossil Fuels (Oil, Gas)
Fiscal	***Tax Credit***	*To encourage the more efficient process of district heating, the 2000 federal government's Budget (developed in 1999) proposes to extend the Manufacturing and Processing (M&P) tax credit to corporations that produce, for sale, steam for uses other than the generation of electricity. This change will ensure that all producers of steam for sale will face the same income tax rate. Access to the credit will be phased in beginning January 1, 2000, with a three-percentage-point reduction. In each of the two subsequent years, there will be additional two-percentage-point reductions. The phase-in to M&P treatment will be completed in 2002. These proposed rate reductions are to be prorated for taxation years that straddle calendar years.*	*Industry* *Manufacturing*	*N/A*
Fiscal	***Tax credit***	*The federal government's 2000 budget (developed in 1999) proposes several adjustments to improve the Capital Cost Allowance (CCA) system to encourage investment in energy efficient equipment. Proposed changes include: an increase in the CCA rate for certain railway assets from 10 to 15 per cent; an extension of the separate class election to include manufacturing and processing equipment; and an increase in the CCA rates from 4 per cent to 8 per cent for electrical generating equipment (other than buildings and other structures), and for production and distribution equipment (other than buildings and other structures) of water or heat.*	*Industry* *Travel (Rail)* *Electricity Generation* *Manufacturing*	*Fossil Fuels*

Canada (continued)

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	**Tax credit** **Subsidy**	The 1999 British Columbia budget contains measures that will help to reduce greenhouse gas emissions and partially fulfil some of the Greenhouse Gas Forum's recommendations. These include: a commitment to review opportunities for a revenue-neutral tax shift that will encourage "environmentally sound" business practices; a partial sales-tax rebate for factory-produced, alternative-fuel vehicles; and a future motor-fuel tax exemption for ethanol used in gasoline blends, once a commercial-scale ethanol plant is in operation in the province.	Industry Commercial Travel Freight	All
Fiscal	**Subsidy**	British Colombia's provincial government has committed $1.167 billion to extend Greater Vancouver's rapid transit SkyTrain line and purchase 60 new SkyTrain vehicles, as the result of a June 1998 agreement with Bombardier Inc. The line, linking Vancouver to Coquitlam and New Westminster, will help control vehicle emissions (including greenhouse gas emissions) by providing a low-emission alternative to the motor vehicle. Completion is expected in 2001.	Travel (Rail-Travel)	Fossil Fuel (Oil)
Market	**Emissions Trading**	The Greenhouse Gas Emission Reduction Trading Pilot (GERT) is designed to test the effectiveness of emission reduction trading for greenhouse gases in the Canadian context. This pilot is a partnership between the Canadian federal government, a number of provinces, industry, labour and environmental groups. During the Pilot, buyers and sellers of emission reductions submit documentation on traded projects to a multi-stakeholder committee for review. If the emission reductions satisfy the requirements of the GERT Pilot, they are registered and will be eligible for recognition against future compliance obligations. Emission reductions can be generated by projects that: reduce emissions (e.g. through fuel-switching or upgrading energy efficiency of equipment); avoid increases in emissions that would otherwise have occurred (e.g. by using renewable energy or less carbon-intensive technologies). GERT completed 2 reviews of projects in 1999.	Electricity Generation Manufacturing Other Industry (Paper & Pulp)	All
Market	**Emissions Trading**	In 1999, Canadian oil sands producer Suncor Energy purchased 100,000 metric tons of GHG emissions credits from U.S. Utility Niagara Mohawk Power Corporation, representing one of the world's first cross-border emissions trades. The agreement between Suncor and Niagra Mohawk calls for the Niagara Mohawk to transfer to Suncor credit for the significant reductions it has made in its GHG emissions from 1990 levels. It commits Niagara Mohawk to reinvesting at least 70 percent of net proceeds from the sale to new projects to further reduce its GHG emissions. The agreement also includes options for the purchase of up to an additional 10 million metric tons of GHG emission reduction credits per year over a 10 year period starting in 2001, depending on the provision of credits by the Canadian and U.S. Governments.	Electricity Generation	Fossil Fuels Electricity

Canada (continued)

Instrument	Classification	Policy Description	Sector	Energy
Market	**Emissions Trading**	Ontario Power Generation Inc., the Canadian electricity utility, announced in October 1999 that it bought 2.5 million metric tons of CO_2-equivalent emissions reductions from Zahren Alternative Power Corporation of Avon, Connecticut, USA, an operator of landfill gas collection and energy projects. PricewaterhouseCoopers will independently verify reductions, and Environmental Financial Products of Chicago brokered the deal.	Electricity Generation Other Industry	Electricity Fossil Fuels
Market	***Emissions Trading***	*A group of 10 Canadian energy companies will pay Iowa farmers a fee for reducing carbon emissions or capturing additional carbon in soils (thus earning the companies credit for cutting carbon dioxide emissions). The agreement requires farmers to practice no-till or minimum-till farming to lower carbon emissions. The first deal is expected to produce 1.3 million tons of carbon credits for 2000 and up to 6 million tons by 2012. The price paid varies between $0.50 and $2.50/ton of carbon credits.*	*Electricty Generation Agriculture & Fishing*	*N/A*
Market	**Under Development**	The Government is joining four other countries and 12 private sector partners in contributing $15 million to participate in the World Bank's (WB) recently announced Prototype Carbon Fund. The Fund will enable countries to learn through experience how the CDM and JI mechanisms of the Kyoto Protocol could benefit both developed and developing countries.	All	All
Market	**Under Development**	In 1999, the Government of Alberta and stakeholders completed an Alberta Technology Strategy for the Management of Greenhouse Gas Emissions, which has two main objectives: to ensure the effective deployment of technologies; and to capitalize on global opportunities for exporting climate-friendly technology solutions developed and adapted in Alberta. These objectives are to be accomplished by creating an enabling environment within Alberta, ensuring timely availability of required technologies. Climate Change Central is expected to coordinate implementation of the strategy.	Technology	All
Market	**Under Development**	British Columbia is committed to carrying out effective early actions. Many of these actions are already taking place and are based strongly on the Greenhouse Gas Forum's recommendations. However, more early actions are also occurring through additional government activity and efforts that are already under way. Early actions will also take place through the new Green Economy Initiative, announced in the 1999 budget, which is targeted at fostering economic growth that sustains and enhances the environment.	All	All
Market	**Under Development**	SaskPower will pay the province of Saskatchewan $6 million between 1999 and 2001 to undertake silviculture activities including the planting of approximately 5 million trees and the establishment of a Forest Carbon Reserve. The government of Saskatchewan has agreed to transfer to SaskPower greenhouse gas emission reduction credits equal to 6 million tonnes of carbon, an amount equal to the sequestration from the silviculture activities. The agreement was initiated in 1999 and will run for 50 years.	Electricity Generation Other Industry (Forestry)	Fossil Fuels

Canada (continued)

Instrument	Classification	Policy Description	Sector	Energy
R&D	***Research Programme***	*Production of fuel ethanol from wood residue has major potential to reduce greenhouse gas emissions from the transportation sector, reduce wood smoke and provide added value to the forest sector. In December 1998, the British Colombia Ministry of Environment, Lands and Parks and Environment Canada released a study on the feasibility of making ethanol from B.C. wood residue and the available wood-to-ethanol technologies (Wood Ethanol: A B.C. Value-Added Opportunity). The report concluded that none of the technologies reviewed are commercially viable yet. It recommended the establishment of a process development programme to: adapt and scale up technologies; find added-value uses for lignin; use bark; and improve softwood preparation for production. As a result of the wood ethanol report, the provincial government is now considering establishing an ethanol process development programme at the University of British Columbia, with partial government and private sector funding.*	*Travel Freight*	*Fossil Fuel (Oil) Renewables*
Market **Policy Processes** **R&D**	**Emissions Trading** **Outreach** **Funding**	The Climate Change Action Fund (CCAF) was announced by the Government of Canada in 1998 and will invest $Can 150 million in climate change projects over three years. These investments are also leveraging significant funding from project proponents and other private sector and government partners. The Fund has four components: public education and outreach; technology early action measures (TEAM—to encourage deployment and development of technologies that reduce climate change and help the economy); science, impacts and adaptation; and the foundation analysis (to analyse options to meet Canada's emission target). In 1999, among the projects announced under the CCAF included: $500,000 towards the $3 million Montreal 2000 Electrical Vehicle Fleet Project, a project which promotes the use of electric vehicles and which is also funded by Montreal 2000, the Government of Quebec, Hydro Quebec, Norvic Traction, Les sports motorises ISAAC, and the various partner-users; $10 million to support Iogen Corporation of Ottawa, working with Petro-Canada, in developing and demonstrating a system for production of ethanol from a variety of biomass, for powering motor vehicles; an international clean air day in Quebec to raise public awareness about the impact of vehicle emissions; a seminar and information programme aimed at increasing awareness of carbon emissions trading opportunities in Alberta's forest products industry; and a community energy saving project in Sudbury, Ontario.	All	All
Market **Policy Processes**	**Emissions Trading** **Consultations/ Trading**	In March, 1999, the National Round Table on the Environment and the Economy (NTREE), an agency formed to advise Canadian policy-makers on sustainable development, released a report on "Canada's Options for a Domestic Greenhouse Gas Emissions Trading." The report notes the importance of international emissions trading for the successful implementation of the Kyoto Protocol. It also advocates a domestic emissions trading scheme, beginning with a voluntary GHG credit trading programme, as a key tool in Canada's overall strategy to meet its Kyoto target.	All	All

Canada (continued)

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	**Labelling**	Funding of $3 million per year over 3 years has been allocated to the EnerGuide for Houses programme, which encourages Canadians to improve the energy performance of their homes. The budget for 1999/2000 was $2.607 million. An expansion of the EnerGuide Labelling Programme for home appliances and equipment, this programme, announced in February 1999, provides home owners with the facts they need to make informed decisions about energy efficiency in activities ranging from home improvements to buying a home. Licensed professional energy owners produce a detailed report on energy consumption, calculate an energy efficiency rating, and list recommended energy efficiency upgrades and estimated costs. After energy improvements have been made, a final EnerGuide for Houses rating will offer visible, impartial evidence of the homeowner's investment. Home buyers can use the rating to compare the energy performance and energy efficiency upgrade potential of similar houses.	Residential	Electricity Fossil Fuels
Regulatory	**Mandates/ Standards**	Drive Clean is one of the most comprehensive emission-testing programmes in North America. In April 1999, the Drive Clean programme began mandatory vehicle emissions testing in the Greater Toronto Area and Hamilton-Wentworth Region. It will stretch from Peterborough to Windsor by 2001. The truck and bus component of the programme began in September 1999. Ontario will be one of only three jurisdictions in North America testing trucks and buses as well as cars. The programme is projected to reduce smog-causing pollutants from vehicles in the programme area by 22 per cent over the course of the programme. Greenhouse gases are also projected to decline.	Travel Freight	Fossil Fuel (Oil)
Regulatory	**Mandates/ Standards**	The Mandatory Monitoring and Reporting Regulation requires electricity generators to monitor and publicly report emissions of 28 substances, including carbon dioxide. The timing of the regulation´s implementation is intended to ensure that strong environmental protection measures are in place for the anticipated start in late 2000 of Ontario's competitive electricity market.	Electricity Generation/CHP/ District Heating	Electricity
Regulatory	**Regulatory Reform**	In July 1998, the British Colombia legislature created the Greater Vancouver Transportation Authority, which became responsible for all transit and regional transportation functions in the Lower Mainland. Renamed "TransLink" in April 1999, this new regional transportation network is intended to improve transportation management in the region, reducing energy consumption and related greenhouse gas emissions.	Travel Freight	Fossil Fuel (Oil)

Canada (continued)

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	**Voluntary Agreements**	Canadian energy and environment ministers announced the establishment of a process for providing credit to industry and other stakeholders for taking early action on reducing GHG emissions. The ministers stated that they would consider in their credit system measures already taken under such programmes as the national Voluntary Challenge and Registry Programme (VCR) and BC's pilot emissions trading programme. Ministers also agreed to strengthen the VCR, calling for its board of directors to "clearly define and standardise methods of reporting the achievements of participants," and to report on progress to the ministers' next joint meeting.	Industry	All
Regulatory	**Voluntary Agreements**	The Alberta Department of Resource Development and the Energy and Utilities Board, together with stakeholders, have taken actions to facilitate electricity generation from solution gas that would otherwise have been flared. Key priorities have been the creation of a royalty waiver programme (announced in July 1999) removing barriers to electricity generation using solution gas that otherwise would be flared (e.g., exempting otherwise flared solution gas from the Electric Utilities Act).	Electricity Generation	Fossil Fuel (Gas)
Regulatory	**Voluntary Agreements**	In June 1998, the Clean Air Strategic Alliance (CASA) recommended to Alberta's Energy and Utilities Board (EUB) a 25 percent reduction on volumes flared by 2001 and stringent performance standards for the remaining flares in Alberta. CASA's recommendations are incorporated in the EUB's July 1999 Flaring Guide. A 25 percent reduction in flaring volumes would reduce carbon dioxide emissions by an estimated 1.25 megatonnes of CO_2 — a 0.7 percent decrease in Alberta emissions.	Electricity Generation Other Industry	Fossil Fuel (Gas)
R&D	**Funding** **Technology**	The Petroleum Technology Research Centre (PTRC) is a new agency in Saskatchewan that will coordinate and promote petroleum-related research. It will coordinate work at the University's new created Petroleum Engineering Group and the Saskatchewan Research Council's Petroleum Division. The PTRC will also act as a mechanism to transfer information on oil and gas production technology to the industry in the province. Work on the Weyburn Monitoring Project will be managed by the PTRC. Weyburn field will be the first commercial project in the world where there will be the opportunity to begin monitoring prior to the first injection of CO_2. It is also one of the best documented fields in the world — the regulations in place in Saskatchewan have resulted in one of the world's most complete oil field databases. The intent is to bring together an international team of experts, which will work in partnership with PanCanadian to study the injection and fate of CO_2 in the reservoir.	Industry Technology	Fossil Fuels
R&D	**Incentives**	Under the Advanced Energy Technologies for High Temperature Processes Programme (effective in 1999), R&D is focused on coke-making and pulverised coal injection on behalf of Canadian coal and steel producers. Activities include improving the energy efficiency of the iron making process, supercoke, extending coke oven life, mineral additions to improve coke quality and pulverised coal injections. Computer modelling capabilities for blast furnace optimisation are also developed.	Industry (Iron & Steel, Non-Ferrous Metals, Mining) Technology	Fossil Fuel (coal)

Canada (continued)

Instrument	Classification	Policy Description	Sector	Energy
R&D	**Resource Research** **Technology**	Natural gas, as a relatively clean fossil fuel, represents an attractive energy alternative to coal and oil. Provided that adequate supplies of natural gas can be secured for Canada, conversion to natural gas as a fuel source offers potential reduction in greenhouse gas emissions. Gas hydrates incorporate natural gas into a solid ice-like structure under conditions of low temperature and high pressure, such as those found in deep permafrost and offshore sediments. On a world-wide basis natural gas hydrates are thought to represent huge unconventional energy resource (estimated to be twice that of all conventional hydrocarbon sources combined), however the technologies for extraction of natural gas from hydrate deposits has not been developed. Scientists with Natural Resources Canada's Geological Survey of Canada (GSC) are leading an international scientific research programme to appraise natural gas hydrates as an energy source and to develop and test new exploration and production technologies.	Industry Technology	Fossil Fuel (Gas)
R&D	***Resource Research***	*Nine countries (including Argentina, Brazil, Canada, France, Japan, the Republic of Korea, the United Kingdom, and the United States) have agreed to pursue the development of so-called Generation IV nuclear power plants. These countries noted that energy demand will increase significantly in the next 50 years and that nuclear power still holds important advantages in terms of air pollution and energy supply. The next step will be assigning a technical group consisting of government representatives to discuss the technological issues involved and make recommendations about multilateral co-operation.*	*Electricity Generation* Technology	*Nuclear*
R&D	**Technology Development**	On December 17, 1999 the government of Saskatchewan and Natural Resources Canada announced the establishment of the International Test Centre for Carbon Dioxide Capture. The $8.5 million facility will develop technologies to reduce carbon dioxide emissions, especially those produced by the energy sector. The Centre has two components: a $5.2 million pre-commercial scale demonstration plant at SaskPower's Boundary Dam Power Station and a $3.3 million pilot plant at the University of Saskatchewan for technology development and screening work.	Electricity Generation Technology	Fossil Fuels
R&D	**Technology Development**	The Centre for Research in Cleaner Manufacturing was established in early 1999 to develop scientific and engineering platforms for evaluating and guiding innovation in clean, commercially viable technologies and production processes, including those that help reduce greenhouse gas emissions.	Manufacturing Technology	All
R&D	**Technology Development**	In August 1999, the Government of Canada launched the *National Fuel Cell Research and Innovation Initiative,* announcing a $30 million investment to further strengthen industry's R&D. As part of the initiative, a new National Fuel Cell Research Facility at the National Research Council's Innovation Centre on the University of British Columbia campus, was inaugurated. Funding for the project is provided from existing programmes.	Manufacturing/ Industry Transport Technology	Renewables

Canada (continued)

Instrument	Classification	Policy Description	Sector	Energy
R&D	**Technology Development**	The Government of Canada announced in 1999 that it would provide $100 million to establish a Sustainable Development Technology Fund, which is envisioned to be administered by a third-party foundation. The Fund will stimulate the development and demonstration of environmental technologies, particularly those aimed at reducing greenhouse gas emissions and air quality solutions. Funding would be available to the private sector, research centres and other institutes.	Technology	All
Policy processes	**Advice/Aid in Implementation**	The Canadian federal budget 1999 provided $1.6 million over three years to help the Federation of Canadian Municipalities initiate a programme to help municipalities identify opportunities for energy savings in their operations.	All	All
Policy processes	**Advice/Aid in Implementation**	The Government is providing $100 million over four years to encourage partnerships with developing countries. These partnerships will: help developing countries undertake projects to start reducing their GHG emissions; provide opportunities for business to sell its world-class technology and know-how; secure cost-effective emission reduction credits that can be used to help Canada achieve its Kyoto target; and help level the playing field in the race to meet the growing world demand for climate-friendly goods and services.	All	All
Policy processes	**Consultations/ Study**	The Canadian government has participated as an observer in the preparation of the Canadian Early Emission Reduction Programme's (CEERP) concept paper (released in June 1999), which contains a framework to reward emitters for taking prompt action to reduce their greenhouse gases. The proposal is expected to be delivered for consideration to the National Air Issues Co-ordinating Committee of federal and provincial energy and environment ministers. Approximately 20 stakeholders participate in CEERP, including industries such as TransAlta Utilities, Suncor Energy, Alcan, and NGOs like Pollution Probe and the Pembina Institute.	All	All
Policy processes	**Consultations**	On April 30 and May 1, 1999, the Alberta Economic Development Authority and the Government of Alberta sponsored a provincial Climate Change Round Table of over 100 leaders from industry, academia, municipal governments and environmental groups, ass well as the public. The Round Table produced a consensus to take immediate action on climate change. One of the key recommendations was to establish a provincial coordinating body — Climate Change Central (C3) — to be operated as a public/private sector partnership. Premier Ralph Klein committed to creating C3 to promote implementation of actions, be a catalyst and coordinator, and monitor and report on progress. Climate Change Central was established in the fall of 1999.	All	All

Canada (continued)

Instrument	Classification	Policy Description	Sector	Energy
Policy processes	**Consultations**	The British Colombia government initiated and is a member of the Greenhouse Gas Forum, with representatives of local governments, industry, business, labour and environmental groups. The Forum's mandate is to: advise the Minister of Environment, Lands and Parks, and the Minister of Energy and Mines, on climate change policy; and aid the development and implementation of actions to reduce greenhouse gas (GHG) emissions. In September 1998, the Forum provided the ministers of Environment and Energy with its Plan for Early Action. The plan includes 18 early actions the Forum recommends the province should take to cut GHG emissions, in such areas as transportation, energy efficiency, technology and education. The B.C. government has begun to execute many of these actions and hopes that, over time, all of them can be carried out. In the meantime, some recommendations require further consultation and/or development before a final decision can be made on implementation. The ministers of environment reported in February 1999 on the status of implementation of early actions.	All	All
Policy processes	**Outreach**	The Government of Canada and the Canadian Renewable Fuels Association (CRFA) launched a campaign in April 1999 to remind drivers to use ethanol blended fuels, a practice which can reduce CO_2 emissions by up to 10 percent and CO emissions by up to 30 percent. Stickers placed on the dashboard and near the fuel tank of more than 6,000 federal fleet vehicles remind drivers of government vehicles to choose ethanol-blended fuels. Additionally, CRFA has provided a directory of retail locations of the approximately 1,000 filling stations in Canada that dispense these fuels. According to the Alternative Fuels Act, government vehicles are required to use alternative fuels where cost effective and operationally feasible. To assist fleet managers, Natural Resources Canada's Fleet Wise programme provides information and tools aimed at reducing emissions, while at the same time increasing the operational efficiency in the federal fleet and cutting costs.	Travel (Cars)	Fossil Fuels Renewables
Policy processes	**Outreach Advice/Aid in Implementation**	EcoAction 2000 provides financial assistance and advice to non-profit Canadian groups that want to undertake local environmental projects. It offers free information on transportation issues, hundreds of practical environmental tips for Canadians and their communities, and special resources targeted at youth and educators.	All	All
Policy processes	**Outreach**	The Alberta Clean Air Strategic Alliance Board established a multi-stakeholder Climate Change Project Team in June 1998. In December 1998, the team and Alberta Resource Development sponsored a Workshop on Demand Management and Conservation in Alberta's Electricity Industry. The team is currently examining barriers to action on climate change and is developing an outreach pilot aimed at Alberta communities.	Electricity Generation	All

Canada (continued)

Instrument	Classification	Policy Description	Sector	Energy
Policy processes **Fiscal**	**Advice/Aid in Implementation** **Subsidy**	The Government of Canada is providing $100 million through the Green Municipal Investment Fund to help municipalities take action. This fund will provide loans and loan guarantees to enable recipients to carry out direct energy efficiency measures such as retro-fitting of buildings and public transit systems which will result in reduced greenhouse gas emissions. The fund will leverage concrete investments from municipal, provincial and territorial governments as well as increase public-private partnerships.	Travel Freight Buildings	All
Policy processes	**Study**	Emission pricing offers the best approach to encouraging reductions in GHG emissions, according to a recent report released by Canada's National Climate Change Secretariat. The report, produced by the joint government/private sector advisory body's subgroup on electricity industry issues indicated that a combination of regulation and more flexible approaches involving emission pricing would be necessary to meet Canada's commitments under the Kyoto Protocol. In the short term, the report identified a number of actions that Canada's federal and provincial governments should take to set the stage for a long-term solution to reduce emissions of greenhouse gases, including: improved emissions reporting and consumer information, enhanced policy clarity and regulatory efficiency to ensure the availability of environmentally and socially acceptable hydroelectric developments.	All	All

Czech Republic

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	***Tax***	*In 1999 the Czech government developed (and on 5 January 2000 approved) the draft Act on Energy Management, promoting energy efficiency through a fee on electricity usage and introducing a 0,01 Czech crown tax per kilowatt hour of electricity. The law also directs companies and individuals to carry out energy efficiency audits at buildings and production sites. The draft Act is currently being debated in the Chamber of Deputies of the Parliament.*	*All*	*Electricity*
Regulatory	***Mandates/ Standards***			
Regulatory	***Mandates/ Standards***	*In 1999, the Czech Government approved a decree of the Ministry of Transport and Communications No 224/1999 Coll., amending existing law, and prohibiting the sale of leaded petrol in the Czech Republic from 1 January 2001.*	*Travel Cars*	*Fossil Fuels (Oil)*
Regulatory	***Regulatory Reform***	*The Czech Government approved a draft act on business conditions and the execution of State administration in the energy branch. It also amended other laws (the Energy Act) strengthening the role of regulation in the energy industry by establishing the Regulatory Authority. This draft law is in compliance with EU legislation. The act is expected to enter into force on 1 January 2001.*	*Industry*	*Electricty*
Policy Processes	**Advice/Aid in Implementation**	The State Programme to Support Energy Saving and Use of Renewable Sources for the year 2000 was approved by Government resolution No 1261 from 29 November 1999.	All	Renewables
Policy Processes	**Study**	The Czech government drafted a new energy strategy outlining three different options for energy development. The first of these is based on using domestic natural resources, primarily coal. This option would be the least costly but would also have the largest environmental impact and would result in a rapid depletion of domestic fossil fuel sources. The second option is based on increased use of imported natural gas and reduced use of coal and envisions a number of energy-saving measures. Both options foresee completion of the second nuclear power plant, located at Temelin. The third option calls for investments in energy conservation and the development of renewable energy sources. Under this version, construction of the Temelin plant would be halted and the plant would either be converted to a different energy source — probably natural gas — or abandoned altogether. This option would have the lowest environmental impact, but would be the most costly over the next decade. (Note: the government approved a new energy policy in 2000; details of that plan are not included here.)	Electricity Generation	N/A

Denmark

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	**Tax Subsidy**	CO_2 taxes on Danish industries and households were revised in 1999. The green tax system includes five different tax levels combined with reallocation back to the sector as subsidies for energy efficiency activities, voluntary agreements, etc.	All except transport	N/A
Fiscal	***Tax***	*The Danish Economic Council, an independent economic advisory council of the Danish government, is recommending the introduction of green taxes on ferries. (EU regulations have previously blocked national taxes on international ferries. Denmark is currently working to have that policy changed to permit taxing the ferries.)*	*Travel*	*N/A*
Market	**Emissions Trading**	The Danish Energy Agency launched a Joint Implementation Pilot Programme to promote private sector investment in the Baltic region. The Programme is to design incentive structures for GHG emission reductions that will induce industrial enterprises and power companies to implement demonstration projects. Their experiences will then be used to develop models for future incentives to participate in an international JI system.	Manufacturing Other Industry Electricity Generation	N/A
Market	***Emissions Trading***	*In 1999, the Danish government announced that trade in electricity from renewable energy will be launched on January 1, 2002, under a law promoting green energy consumption that enters into force in 2000. The framework for the bourse will be regulated by the government; however, once the system is running, there will be no government interference. System regulators and net operators will be responsible for measuring renewable electricity production and issuing certificates representing the number of kilowatt hours on offer.*	*Electricity Generation*	*Renewables*
Market **Regulatory**	**Emissions Trading** **Mandates/ Standards**	The newly adopted act on emissions quotas for the electricity sector introduces a limit on CO_2 emissions from electricity production. Overall quotas are set at 23, 22, 21, and 20 million tons of CO_2 respectively for the years 2000, 2001, 2002, and 2003. Each power company will be allocated a specific emissions quota and will be subject to a fine of approximately US $5.90 per ton CO_2 for excess emissions. Unused quotas may be banked and applied the following year. The quotas will be renegotiated in 2001, when Denmark expects that companies will be able to trade quotas internationally, either within the Nordic or Baltic regions or at the EU level.	Electricity Generation	Electricity
Regulatory	**Mandates/ Standards**	The Energy Directorate in Denmark has given approval to the building of the biggest off-shore wind farm in the world. The farm will have a total capacity of 40 MW (2 MW for each windmill). The windmills will start to produce power in October 2000 at a price of Euro 0.049/kWh.	Electricity Generation	Renewables (Wind)

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	**Labelling**	In 1999, the government announced that from 15 April 2000, an energy label will be required on the windscreen of all new passenger cars in all salesrooms in Denmark. The car labelling is anticipated to help reach the targets for sustainable development. The main objective to be achieved by the label is to make consumers aware of their fuel efficiency and to influence their purchasing decisions — thus increasing fuel efficiency and reducing average CO_2 emissions of new cars.	Travel (Cars)	Fossil Fuels (Oil)

EU

Instrument	Classification	Policy Description	Sector	Energy
Regulatory **Policy Processes**	**Labelling** **Consultations**	The European Union Council of Ministers adopted a common position on a revised system for the award of the European ecological label, formalising the political agreement secured at a previous Environmental Council meeting. Established in 1992 the scheme is voluntary and applies to articles meeting certain criteria defined by the EC product category and for limited periods through a regulation. The revised system provides, in particular, for the creation by the Commission of European Eco-label Office made of up of competent bodies designated by Member States, a Consultative Forum of interested parties, the extension of the Eco-label to services, service providers and retailers, and the dissemination of detailed information to consumers.	All	N/A
Regulatory	**Labelling**	New legislation in the EU will require most household electric lamps sold in the EU to carry a label showing their energy efficiency rating from the beginning of 2001. The implementing legislation updates a mandatory EU labelling scheme for household appliances established in 1992. The labelling requirement will cover household incandescent, fluorescent, and most halogen lights, including those marketed for non0household use. Certain types of lights are excluded, including low-voltage halogens and reflectors, bulbs for use with batteries, and very high-powered lamps. Under the scheme, equipment is rated for its energy efficiency on a scale of A to G. The sales packaging of the new lamps will have to bear a label showing which energy efficiency class a lamp belongs in, its current output in lumens, wattage, and average rated life in hours. Mail order catalogues will have to carry the same information.	Residential	Electricity
Regulatory	**Labelling**	Beginning in 2001, new passenger cars sold in the European Union will be required to carry a label on fuel economy and carbon dioxide emissions. Directive 1999/94/EC, which became effective on January 18, 2000 is aimed at influencing both manufacturers and consumers.	Travel (Cars)	Fossil Fuels (Oil)
Regulatory	***Labelling***	*The EU is to adopt the US administration's voluntary "Energy Star" energy-efficiency label for use on office equipment and will share in setting the scheme's future standards according to a 1999 agreement with Washington. Although the label applies to many types of appliances, at this point, the EU will only use it for office equipment personal computers, fax machines, computer scanners, copiers, and printers. The current EU eco-labeling system will continue to coexist in spite of the adoption of the Energy Star.*	*Residential (Appliances)*	*Electricity*

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	**Labelling** **Mandates/ Standards**	The EU established criteria for awarding the European Union's Eco-label to laptop computers with decision 1999/698/EC. The current criteria aim to reduce the energy use of these products, to encourage the reuse and recycling of their components, and finally to reduce the use of hazardous substances involved in manufacturing laptop computers. They require manufactures to produce portable computers with a maximum "sleep mode" power consumption of 5 watts and a maximum "off mode" power use of 3 watts. Manufacturers are also required to offer 3 year guarantees on their products (valid from the date of delivery to the consumer), make products that are modular in design and have easy access to the components, and take back laptops at the end of their useful lives "free of charge" or take back components that have been replaced. These criteria are scheduled to be revised in two years to adapt the energy requirements to technological innovation and market developments.	Industry	Electricity
Regulatory	***Mandates/ Standards***	*The Commission issued a working paper on the "Campaign for Take-off" as part of the European strategy to reach the objective of 12% of primary energy supply coming from renewable energies in the EU in 2010. The campaign will focus on 7 sectors with indicative targets as follows :* *– 1,000,000 PV systems* *– 15 million m2 solar collectors* *– 10,000 MW of wind turbine generators* *– 10,000 MWth of combined heat and power biomass installations* *– 1,000,000 dwellings heated by biomass* *– 1,000 MW of biogas installations* *– 5 million tonnes of liquid biofuels* *The campaign for Take-off will be supported through the Alterner-II programme. It is estimated that 75-80% of the capital required to achieve the goals put forth in the paper would have to come from private sources, leaving an estimated 7 billion euros to be publicly funded.*	*Electricity Generation*	*Renewables*
Regulatory	***Mandates/ Standards***	*The "Euronew Initiative" would make it obligatory for EU members to promote renewables — to invest money for research, to help small enterprises in meeting their energy needs by renewable sources, and to invest money for those who produce electricity by renewables. This initiative would help implement the target set for increasing the share of energy produced from renewable sources from 6% to 12% by 2010.*	*Electricity Generation* *Industry*	*Renewables*
Regulatory	***Mandates/ Standards***	*The European Commission published plans to make the monitoring of CO_2 emissions from new cars compulsory from 2001. Under the proposal, member states will have to collect data on average CO_2 emissions from all newly registered cars according to fuel type, manufacturer, and engine capacity.*	*Travel (Cars, Trucks)* *Freight (Other Freight)*	*Fossil Fuels (Oil)*

EU (continued)

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	***Mandates/ Standards***	*Part of a new expected EU directive concentrating on renewable energies is to include elements related to the feeding of electricity generated by CHP back into grids. It will not, however, include CHP directly and there are no plans for a separate directive to be issued on co-generation.*	*Electricity Generation*	*Renewables*
Regulatory	***Mandates/ Standards***	*In a preliminary vote, the assembly approved proposals from the European Commission for a two-stage sequence of reductions in maximum allowable power consumption in strip lighting, leading eventually to a 10 percent reduction in total EU electricity consumption of fluorescent lighting (Commission document COM [1999]296, published in the Official Journal of the European Communities, No. C 274, September 28, 1999). In granting its approval, Parliament proposed that a first round of limits be imposed after the draft directive was adopted, and that a second round would follow 4 years after enactment. The Parliament and the Commission differ on elements of a third phase of limits.*	*Residential Industry*	*Electricity*
Regulatory	***Mandates/ Standards***	*The European Commission announced its intention to put forward a draft proposal for a directive on the promotion of electricity from renewable energy sources in the internal electricity market (subsequently postponed). The aim would be to draw around 22% of total power consumption in the EU from renewable energy sources by 2010, from around 14% in 1999. The proposal would be part of an effort to reach the indicative target of 12% of total primary energy in the EU coming from renewable energy sources in 2010 put forth by the Commission's White Paper in 1997 and backed by the Council in 1998.*	*Electricity Generation*	*Renewables*
Regulatory	***Mandates/ Standards***	*"Energy Efficiency in the EU — Towards a Strategy for the Rational Use of Energy" [COM 98(246)] is an action plan requested by the Council in Resolution on EE that is scheduled to be presented in 1999. It includes a target of 1% annual improvement in energy efficiency above the "business as usual" scenario.*	*All*	*All*
Regulatory	***Mandates/ Standards***	*The European Parliament has approved new rules to limit emissions from trucks and buses, paving the way for a final European Union accord before the end of 2000. The rules set mandatory limits on emissions of carbon monoxide, hydrocarbons, nitrogen oxides, and particulate and smoke from diesel engines used in trucks and buses. Restrictions will also apply to vehicles using natural gas or liquid petroleum gas (LPG). These rules may have spill-over effects on CO_2 emissions.*	*Travel (Bus) Freight*	*Fossil Fuels (Oil, Gas LPG, diesel)*

EU (continued)

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	**Voluntary Agreements**	In October, 1999, the EU accepted a voluntary pledge by Japanese and Korean car makers to cut pollution from exhaust fumes gradually over the next 10 years — an agreement equivalent to the voluntary scheme agreed to in 1998 by the Association of European Automobile Manufacturers. Under the plan, Japanese and Korean car manufacturers will cut average fuel consumption to about 6 litres per 100 kilometres by 2009 (down from the current average of 7.7 litres per 100 kilometres) and to cut the amount of CO_2 in the exhaust fumes from 180 grams per kilometre to 140 grams per kilometre.	Travel (Cars)	Fossil Fuels (Oil)
Regulatory	***Voluntary Agreements***	*Six major cities have launched a Europe-wide project aimed at increasing demand for low-emission and no-emission vehicles to the point where mass production will be economically viable. Cities signing up to the ALTER — Alternative Traffic in Towns — project will allow only vehicles that meet zero or near-zero emissions standards into certain sensitive urban districts from a target date, possibly 2001. They will also replace their public transport and service vehicles with low or no-emission models. The cities currently included are Athens, Barcelona, Florence, Lisbon, Oxford, and Stockholm; however, all 1,400 European cities with a population of 100,000 or more will be invited to participate in the scheme at a convention to be held in Florence in October 1999.*	*Travel (Cars, Trucks) Freight (Other Freight)*	*Fossil Fuel Renewable Electricity*
R&D	***Funding***	*The EU announced that it will co-finance one natural gas plant in the Czech Republic. Located in the Czech town of Susice, the project will install miles of gas lines and refit three of the city's boilers so that they burn natural gas instead of coal. EU Cross-Border Co-operation funds will contribute $330,000 to the project, whose total cost is $486,000.*	*Electricity Generation*	*Fossil Fuels (Gas)*
Policy Processes	**Study**	A 1999 communication entitled, "Communication on Transport and CO_2: Developing a Community Approach", notes four broad categories of action that will be crucial to reducing emissions from the transport sector: improving the fuel economy of passenger cars; including the external costs of transport in prices charged; revitalising railways; and better integrating the various modes of passenger freight transport. It also notes that specific measures already proposed to address the transport area include improving transport logistics, promoting public transport, encouraging freight transport by sea and inland waterways, improving air traffic management, making greater use of road pricing, and possible internal moves to end aviation kerosene's direct exemption from tax.	Travel Freight	Fossil Fuels (Oil)
Policy Processes	***Outreach***	*A total of nine Member states launched plans for a European car-free day to be held on September 22, 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 the use of public transport. Participants include France, Italy, Portugal, Belgium, Sweden, Finland, Netherlands, Denmark, and Luxembourg.*	*Travel (Cars)*	*Fossil Fuels (Oil)*

EU (continued)

Instrument	Classification	Policy Description	Sector	Energy
Policy Process	***Study***	*The transport commissioner issued a strategy paper on air transport suggesting that EU may propose unilateral environmental charges on air transport by 2001 if no international action is taken in this area. The strategy also considers emissions trading and carbon offsets as possible means for curbing the climate impact of air transport. The strategy paper notes that while voluntary commitments to cut CO_2 emissions are worth looking, they would need to set quantified targets well beyond business-as-usual improvements.*	*Travel (Inland Air)*	*Fossil Fuels*
Fiscal	***Tax***			
Policy Process	***Study***	*The "Ecofin" Council (economy/finance) held discussions on a framework for energy taxation to improve the functioning of the Internal Market and to achieve environmental objectives. A compromise proposal drawn up by the Presidency proposed a number of transitional periods for some Member States, exemptions or reductions in the level of taxation of certain products, including the possibility of zero rates. The framework covered both energy products which are not yet covered by Community Excise legislation: natural gas, coal, lignite, electricity, as well as energy products which are already covered by Community legislation: motor fuels and heating fuels. No resolution was reached on the proposal.*	*All*	*All*
Fiscal	***Tax***			

Finland

Instrument	Classification	Policy Description	Sector	Energy
Fiscal **Regulatory**	**Subsidy** **Mandates/ Standards**	The Finnish Ministry of Trade and Industry has issued in November a comprehensive programme to increase the use of renewable energy by 50% compared to 1995 levels by 2010. Grants for renewable energy use account for 200 million Finnish marks (33 million Euro) and subsidies in energy taxation reach a total of 300 million marks (50 million Euro) annually. The cornerstone of the programme is to enhance use of biomass, which accounts for 90% of the proposed increase. Installations using thermal pumps cover 4% of the planned extra capacity and both wind farms and hydropower plants each account for 3% of the target. The ministry is also expecting solar cell technology to fulfil 0.5% of the future increase.	Electricity Generation	Renewables (Biomass, Wind, Hydro)
Regulatory	***Regulatory Reform***	*In 1999, the Finnish Government issued a new statute (scheduled to take effect in March 2000) which withdraws or heavily amends 24 existing law requiring emissions cuts. Binding regulations relating to the actual limits of six "greenhouse gases" are to be published later as Council of State Decisions.*	*All*	*N/A*
Regulatory **Fiscal**	**Mandates/ Standards** **Subsidy**	An international Conference on Energy Audits was arranged in Turku on October 10-12. Energy Auditing was highlighted as one of the most cost-effective measures to improve energy efficiency in industry and other sectors. In Finland, the Energy Audit programme is subsidised by the MTI. Energy audits are subsidised by 40-50 per cent in the industry and commercial and municipal sector. More than 15% of industrial, commercial and public buildings have been audited from 1992 to 1999.	Industry Buildings	All
R&D	**Funding**	The National Technology Agency (TEKES) and the Technical Research Centre of Finland (VTT) developed a programme that will allow them to more efficiently utilise existing knowledge and technology. The Programme was designed after extensive consultations with the representatives of the Ministry of the Environment and the Ministry of Trade and Industry as well as from the energy sector and industry. It aims to gather information on current measures and technologies for use in strategic decision-making and vision building by enterprises, in setting targets for national strategies and in setting goals for decisions to be made nationally and internationally. The programme will be carried out between 1999 and 2002 and has been guaranteed funding of FIM 15 million over 3 years.	Technology Industry	All
Policy Processes	**Consultations**	On 22 April, 1999, the Government appointed a Ministerial Working Group to follow the Kyoto Process and to focus on: 1) the discussion and approval of the national climate programme for presentation to the government; 2) harmonisation of Finland's positions and the national plan on issues to be considered in the Cabinet Committee on European Union Affairs; 3) discussion of national positions and targets concerning the Kyoto Mechanisms.	N/A	N/A

Instrument	Classification	Policy Description	Sector	Energy
Policy Processes	**Study**	The Ministry of Trade and Industry appointed two scientists to investigate the role of peat in Finland's GHG balances. (Peat is a considerable source of energy in Finland; however, the implications on the environment resulting from the use of peat as an energy source are not clearly defined.) The study is expected to be completed in May, 2000.	Electricity Generation	Renewables (Peat)

France

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	**Tax**	A reduction has been made in the taxation gap between diesel and unleaded gasoline in the transport sector. In 1998, the taxation gap was 1,43 F/l; it was reduced to 1,36 F/l in 1999 and to 1,29 F/l for 2000.	Travel (Cars, Trucks) Freight (Other Freight)	Fossil Fuels (Oil)
Fiscal	***Tax***	*For 2001, there has been a proposal to extend the general tax on "polluting activities" to cover intermediary energy consumption (a revenue neutral tax to be offset with lower employers social security tax). The government is examining the possibility to apply the tax with amounts starting at roughly 150-200 FRF/ton of carbon and eventually increasing to 500 FRF/ton of carbon by 2010. This tax might generate reductions on the scale of 6.7 MtC at the end of 2008 to 2012 period.*	*Manufacturing Industry*	*Fossil Fuels Electricity*
Fiscal	***Tax***	*New ways to calculate the engine size of vehicles have been defined to establish the parameters of the differential tax.*	*Travel (Cars, Trucks)*	*Fossil Fuels (Oil)*
Fiscal	**Tax Credit**	A rule has been established to require the restitution of heating fees in collective buildings when the amount is over 40 F TTC/m^2.	Buildings	N/A
Fiscal	**Tax Credit**	The exceptional 12-month amortisation for energy saving materials under the 1999 Law of Finance was extended until 31 December 2002.	All (except households)	N/A
Fiscal	**Tax Credit**	The government decided to lower the VAT by 15 percentage points (from 20.6% to 5.5%) for remodelling or home improvement steps on housing units over two years old. This measure begins on 15 September 1999 and ends on 31 December 2002. It will take the place of the previous tax reduction allowing for large expenditures other than moves.	Buildings Residential	N/A
Fiscal	**Tax Exemption**	Exemptions may be granted for all or a portion of the differential tax on alternative vehicles fuelled by electricity, natural gas or LPG.	Travel (Cars)	Electricity Fossil Fuels Natural Gas LPG
Fiscal	***Tax Exemption***	*The Finance Law for 2000 was revised to include the exemption of the so-called internal tax on natural gas, refinery gas, and low-sulfur heavy fuel used in co-generation facilities until December 2003. This exemption was to establish fiscal neutrality in comparison with primary energy used for the production of nuclear, carbon and hydro-based electricity.*	*Electricity Generation*	*Fossil Fuels (Gas, Oil, HFO)*
Market	***Under Development***	*France's Paris Bourse plans to set up an electricity trading market, initially involving spot contracts and possibly derivatives at a later stage. The system could be up and running by the end of 2000.*	*Electricity Generation*	All
Regulatory	**Mandates/ Standards**	Two decrees were recently revised to increase energy efficiency. One imposes minimal thermal efficiency standards for boilers in service when their power production is between 400 kWh and 50 MWh. The second requires periodic inspection of boilers with a capacity greater than 1MW.	Industry Residential	Fossil Fuels (Gas,Oil) Solid Fuel

France (continued)

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	**Mandates/ Standards**	New conditions enabling EDF to purchase electricity produced from renewable energy were approved. Contracts are according to the following types: hydraulic, cogeneration, waste incineration and photovoltaic networks.	Electricity Generation	Renewables
Regulatory	**Mandates/ Standards**	A decree on 5 May 1999 introduced a simplified procedure to facilitate the classification of district heating using renewable energy or cogeneration instead of district cooling "Classification" will allow local authorities to obligate new buildings in specified zones to be connected to the district heating.	Electricity Generation Community Use	CHP Renewables
Regulatory	***Mandates/ Standards***	*Under the Biogas Programme, EDF will launch a call for offers to furnish a capacity of 10 MW of electricity from biogas. The objective is expected to rise to 50 MW by 2002.*	*Electricity Generation*	*Biogas*
Regulatory	***Mandates***	*In the framework of the "Eole 2005" programme, 21 new wind farm projects have been selected by Electricité de France, totalling 200 MW of new capacity, bringing the total of wind capacity on the grid to 325 MW. The government has required Electricité de France to launch a new bid for an additional capacity of 100 MW.*	*Electricity Generation*	*Wind*
Regulatory	***Mandates/ Standards***	*The Secretary of State for Industry demanded that the Association Française de normalisation (AFNOR) establish norms for energy-consuming appliances. These are expected to reduce energy consumption (even when appliances are on stand-by mode).*	*Residential Appliances*	*Electricity Fossil Fuels*
Regulatory	***Mandates/ Standards***	*A strengthened system of rules is expected to be adopted during the year 2000 to cover the residential and the tertiary sectors (construction of new buildings). The new rules are expected to include obligations to limit the consumption of energy used by lighting and air conditioning.*	*Buildings (Lighting, Air conditioning)*	*Fossil Fuels*
Regulatory	***Mandates/ Standards***	*A rule to communicate a normalised estimation of annual fees for energy consumption from the sale or renting of apartments or offices will soon be adopted. Its principal goal will be to inform the future occupant of the energy consumption.*	*Residential Buildings*	*All*
Regulatory	***Mandates/ Standards***	*A rule is being framed to require the owners of residential or office buildings to install mechanisms permitting individual units to choose their preferred type of energy. This will avoid imposing a definitive mode of heating on the building.*	*Residential Buildings*	*All*

France (continued)

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	**Voluntary Agreement**	French utility and waste management company Vivendi and state-owned utility Electricite de France signed an agreement to develop renewable energy from landfill methane. The "biogas project" operating during much of 1999 is centred near the town of Plessis Gassot, home to France's largest municipal waste landfill. Vivendi, which operates the landfill, has invested FRF 200 million in the infrastructure capable of capturing methane gas produced at the site and burning it to produce 10 megawatts of electricity. The electricity production plant was built by Vivendi subsidiary Dalkia. EDG has agreed to buy all installed capacity at the facility for the coming 12 years at the guaranteed price of 31 centimes per kilowatt hour — or about FF 31 million ($5 million) per year. A second facility at the same site will go online by the end of the year. ADEME estimates that the two biogas electricity-producing facilities will remove or prevent emission of the equivalent of 6.5 million tons of CO_2 over the next 12 years.	Electricity Generation	Biogas
Regulatory	***Voluntary Agreements***	*French government and industry leaders pledged to promote the use of natural gas in personal and public transport vehicles as a clean-fuel alternative to other petroleum products. The new, wide-range co-operation agreement aims to dramatically increase the use of natural gas for vehicles (NGV) by 2005, focusing particularly on public transport and government owned utility vehicles. It is expected to provide an immediate boost to NGV use — in fact, at least 800 NGV powered buses should be rolling by the end of 2001.*	*Travel (Bus, Trucks)*	*Fossil Fuels (Gas)*
R&D	**Funding**	In 1999, ADEME recorded a sizeable increase in its budget for energy efficiency and renewable energy with an additional 500 million francs. A share of this fund is to go to energy-saving diagnoses in industry and collective residential heating, and Helios 2006, a plan for individual solar water heaters and solar energy for collective heating.	Residential/ Manufacturing Industry	Renewables
R&D	**Incentives**	In the overseas departments (DOM), a programme launched in 1996 led to the subsidised installation of 18,500 solar-powered water heaters at the end of 1999 — of a total target of 20,000 for the end of 2000. In 1999, approval was given to ADEME to liase with willing regions for a new programme, HELIOS 2006, which was designed to support the development of solar-powered hot water heaters under a budget of 30MF/year. The first phase of this programme, specific to individual solar-powered hot water heaters, consisted of a system of attributing the best locations to place the appliances in France.	Residential (Water Heating)	Renewables (Solar)

France (continued)

Instrument	Classification	Policy Description	Sector	Energy
R&D	**Technology Development**	An electricity consumption reduction programme in government buildings was experimentally introduced in a building occupied by the Secretary of State for Industry. This programme is anticipated to yield a 10% reduction in electricity use.	Buildings	Electricity
R&D	***Technology Development***	*Nine countries (including Argentina, Brazil, Canada, France, Japan, the Republic of Korea, the United Kingdom, and the United States) have agreed to pursue the development of so-called Generation IV nuclear power plants. These countries noted that energy demand will increase significantly in the next 50 years and that nuclear power still holds important advantages in terms of air pollution and energy supply. The next step will be assigning a technical group consisting of government representatives to discuss the technological issues involved and make recommendations about multilateral co-operation.*	*Electricity Generation Technology*	*Nuclear*
Policy Processes	**Advice/Aid in Implementation**	At the beginning of 1999, the government opened the Fonds Régionaux aux Conseils (FRAC) to perform energy audits for small and large industry and to advise them on investments that would aid in energy efficiency. Alongside of this programme, the Energy Efficiency and Environment Agency (ADEME) also put in place a complementary measure to advise those enterprises not eligible for FRAC.	Manufacturing Industry	Electricity
Policy Processes	**Advice/Aid in Implementation**	To complement a plan for wood energy and local development, a plan was launched in 1999 for a new programme to place an energy value on wood waste and forest residues. The programme consists of two parts: advice for installations of combustion greater than 100 kW and a second part consisting of financial/ investment advice.	Electricity Generation	Renewables (Wood)
Policy Processes **Fiscal**	**Advice/Aid in Implementation** **Subsidy**	A study on energy consumption of government buildings identified opportunities for energy savings. The managers of the least efficient buildings are being encouraged to enact the appropriate energy reduction strategies.	Buildings	Electricity

Germany

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	**Subsidy**	Solar power is the main beneficiary of a revision of Germany's controversial electricity "feed-in" law proposed by the German government, adopted by Parliament in 1999 and scheduled to take effect in March, 2000. Designed to support the development of renewable energy, the existing law ensures guaranteed prices to producers of electricity from renewable sources. The revised law aims to double the share of renewables in electricity generation (currently at around 5%) by 2010 and sets fixed subsidy rates for specific energy sources rather than linking rates to retail prices. For solar electricity, the initial rate would be DM.99 (US $.51) per kWh — up from around DM .17 ($.09) at present — although the draft calls for a review of this provision once solar energy takes off. The rate for biomass would rise as well, though not as dramatically. Geothermal energy and methane would also be covered for the first time.	Electricity Generation	Renewables (Solar Biomass Geothermal/ Ocean)
Fiscal	**Subsidy**	The "100,000 Roofs Solar Power Programme" has been set for the period 1999 to 2005. A total of DM 1.1 billion is being provided by the Federal Government to support the installation of solar photovoltaic equipment through low-interest loans.	Residential Buildings	Renewables (Solar)
Fiscal	***Subsidy***	*Germany's draft Renewable Energy Law maintains the levels of financial support that have stimulated the wind energy business and looks to do the same for photovoltaics by increasing the guaranteed price for solar energy by almost 6 times. The new law applies to power generated wholly through wind, solar, or geothermal sources, as well as from hydro, landfill, sewage or mine gas plant of 5MW or below and from biomass sources of 20 MW or lower. The proposed price for power from hydro, landfill gas, mine gas or sewage gas is to be at least 15 Pf/kWh. The price for energy generated from biomass ranges between 14 and 17.5 Pf/kWh. Electricity generated from wind will be priced at 17.8 Pf/kWh for the first 5 years. The rate guaranteed for solar energy is 99 Pf/kWh, which will be reduced slowly over time.*	*Electricity Generation*	*Renewables All renewables*
Fiscal	**Subsidy**	In September 1999, the Federal Government introduced a newly designed promotion programme aimed at supporting renewable energy. The programme is to run until 2003. A total budget of DM 1 billion supports, within certain limits, the installation of thermal solar collectors and grants or low-interest loans for energy conservation measures in buildings.	Buildings	Renewables (Solar)

Germany (continued)

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	**Tax /Tax Exemptions**	In April 1999, Germany implemented the first step of its ecological tax reform, which includes higher taxes on energy in an attempt to reduce fossil fuel consumption. The taxes amount to increases of Pf6/liter for diesel and gasoline, Pf4/liter for heating oil, Pf0.32/kWh, and a new tax on electricity and for natural gas of Pf2/kWh. Next steps, approved by Parliament, resulted in further increases of gasoline and diesel prices by Pf0.6/litre and by Pf0.5/kWh for electricity per year over the period 2000 to 2003. Among the exemptions applying to the tax, the manufacturing industry pays only 20 per cent of the tax on electricity, heating oil and gas. Energy-intensive industries can also get reimbursed for any payment of the tax above 120 per cent of the savings they achieve through lower employers' social contributions. Oil and gas for power generation in industry are not taxed.	All	Fossil Fuels (Oil)
Market	***Under Development***	*Under proposals developed in 1999, internet spot market trading in electricity is to be launched in the summer of 2000 in Germany. The Frankfurt-based European Energy Exchange will be backed by the country's biggest electricity suppliers and customers. The country has been split into two transmission trading zones with DM 2.50 per megawatt charge for moving power between the northern and southern regions. The new structure will simplify physical trading of electricity and allow customers and suppliers to manage risks more efficiently. It plans to start trading power futures and derivatives in the fourth quarter of this year.*	*Electricity Generation*	*Electricity*
Regulatory	**Labelling**	In December 1999, a new ordinance on energy consumption labelling for domestic bulbs and dishwashers came into force.	Residential	Electricity
Regulatory	***Mandates/ Standards***	*Germany is considering several measures to cut energy consumption in private households, including proposals by the government to impose stricter construction regulations and tax breaks for modernization of older buildings. Other measures include education programmes and labelling for appliances energy efficiency, as well as an agreement with the electronics industry to cut down on electricity losses through appliances on standby.*	*Residential Buildings Industry*	*Electricity*
Fiscal	***Taxes***			
Regulatory	***Mandates/ Standards***	*Germany is considering policies to reduce transport emissions by 20 million tons by 2005, to be reached through the speed limit and air traffic levy as well as investments in public transportation and more efficient cars.*	*Transport (all)*	*Fossil Fuel (Oil)*
Fiscal	***Taxes***			
Regulatory	***Mandates/ Standards***	*In industries and energy generation, Germany is considering measures to realize reduction potentials of at least 20 million tons through mandates on combined heat and power generation. Other measures proposed are financial support for renewable energy sources and energy use analyses in industrial plants.*	*Industry*	*Fossil Fuel (all)*
Fiscal	***Subsidies***		*Electricity*	*Renewables*

Germany (continued)

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	***Mandates/ Standards***	*Germany is considering several measures to cut energy consumption in private households, including imposing stricter construction regulations and tax breaks for modernization of older buildings. Other measures include education programmes and labelling for appliances´ energy efficiency, as well as an agreement with the electronics industry to cut down on electricity losses through appliances on standby.*	*Residential Buildings*	*All*
Fiscal	***Subsidy***			
Policy Processes	**Study**	The German business community's voluntary agreement to reduce emissions of CO_2 and energy consumption by 20% by 2005 has achieved significant results, according to a report issued in June 1999 by the RWI (a German institute of economic research). The "Monitoring Report" indicated that Germany's manufacturers have reduced their emissions of carbon dioxide by 45 million tonnes since 1990 (a cut of 27%) and that the figure for electricity generating companies is 30 million tonnes (a cut of 17%).	Manufacturing Industry Electricity Generation	All
Regulatory	**Voluntary Agreement**			

Greece

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	**Subsidy**	As of 1999, approximately 80-90% of the transformers in conventional power plants had been replaced, achieving a 70 GWh annual energy saving. Funding had been provided through a 1995 law. In addition, efficiency improvements in lignite stations (enhancement of the operation of cooling towers, installation of new lignite mills etc.) are in progress.	Electricity Generation	Fossil Fuels Electricity
Fiscal	**Subsidy**	A number of large infrastructure projects (highways, bridges etc.) in the transport sector are currently under construction. The completion of these projects will imply a significant decrease of transportation distance and it is expected that this will lead to a decrease of fossil fuel consumption.	Travel	Fossil Fuels (Oil)
Fiscal	**Subsidy**	The provision of 300 CNG buses, as well as the construction of a central refuelling station in Athens has been financed. The programme is in progress and the first buses will enter to the bus network of Athens on September 2000.	Travel	Fossil Fuels Natural Gas
Fiscal	**Subsidy**	The Operational Plan for Energy (OPE), established within the framework of the 2nd Community Support Framework, provided capital cost subsidies for the promotion of renewable energies and energy conservation. Up to 1999, 125 projects concerning the exploitation of renewable energies were approved (130 MW wind, 72 MW small-hydro, 46 MWh biomass district heating, 42 MW CHP with biomass, 5 MWh rest biomass projects, 42 solar central active systems, 8 projects for PV systems and 5 projects for passive solar systems). In addition, approximately 300 projects for energy conservation and substitution of fossil fuels and electricity by natural gas in the industrial and tertiary sector were approved. By the completion of OPE, a 4.3% and 2.2% energy saving in the industrial and tertiary sector respectively is expected.	Electricity Generation Industry	Renewables Fossil Fuels Electricity
Fiscal	**Subsidy**	A new subway system linking Athens' most populated areas was inaugurated in 1999. Described as one of the largest transportation projects ever carried out in Greece, the 13-km, 14-station underground route is an extension of the existing subway system.	Travel (Cars, Subway)	N/A
Fiscal	**Tax**	According to a new law (2682/99), a differentiation of the registration tax on vehicles (cars, trucks, motorcycles) according to their motor horsepower and their anti-pollution specifications is being provided. Electric cars or hybrid cars with motors satisfying the specifications of the EC Directive 94/12 or more recent directives are exempted from the tax.	Travel (Cars, Trucks)	Fossil Fuels Electricity
Regulatory	***Mandates/ Standards***	*Greece has put in place the necessary directives for streamlining the procedures for renewable energy penetration and is in the process of financing its new comprehensive national plan for domestic actions to reduce its expected emissions by almost 25 million TOE of CO_2 by the end of the first commitment period.*	*Electricity Generation*	*Renewables*

Greece (continued)

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	***Regulatory Reform***	*The Greek Parliament voted on 6th December 1999 a new law liberalizing the electricity market. Law 2773/99 came into effect on 22 December 1999. The right for eligible customers to choose their supplier becomes effective on 19 February 2001, at the end of the 2 extra years period given to Greece by European Commission Directive 96/92. An Energy Regulatory Authority (ERA) is to be created (in 2000) which will have competence on electricity, natural Gas and other energy sectors. Furthermore a new company, the Independent Transmission System Operator is to be established by end of June 2000, with responsibility for system management and dispatching generating units.*	*Electricity Generation*	*Electricity*
R&D	**Study**	Several studies and pilot applications regarding the exploitation of renewable energies have been carried out by the Centre for Renewable Energy Sources (CRES), which is the official coordinating body for the promotion of renewable energies in Greece.	All	Renewables
R&D	**Study**	A pilot project for the use of biofuels in transport is in progress. The project is financed within the framework of the ALTENER programme. Up to now, bio-diesel is imported from abroad (Austria), while it is exempted from the taxation on fossil fuels. Furthermore, the Ministry for Transport awarded recently a feasibility study concerning the production and use of biofuels in Greece.	Travel	Biofuels
R&D	***Advice/Aid in Implementation***	*A study on the possible measures for the limitation of greenhouse gases emissions in the energy sector has been awarded by the Ministry for Development to the National Observatory of Athens and is about to be completed. The study aims at the identification and evaluation of possible mitigation measures in the energy sector, taking into account cost issues, organizational barriers and requirements etc. This evaluation will aid significantly to the formulation of the national action plan for the reduction of greenhouse gas emissions for the first commitment period (2008-2012), according to the provisions of the Kyoto Protocol and the national commitments undertaken within this framework.*	*Industry* (Energy)	*All*
Policy Processes	**Infrastructure Management**	An effort aiming at the promotion of public transportation means and a subsequent discouragement of the use of private cars is in progress. Within this framework, new bus-lines / re-design of existing lines in the centre of large towns is in progress, combined with the provision and use of mini-buses etc. Furthermore, restrictions for the use of private cars in areas with high traffic are foreseen. The competent body for public transportation in Athens (OASA) is formulating a strategic operational plan for the further promotion of public transport, comprising separate sub-plans for the organisations responsible for the networks of buses, trolleys and subway.	Travel	Fossil Fuels (Oil)

Hungary

Instrument	Classification	Policy Description	Sector	Energy
Regulatory **Fiscal**	**Regulatory Reform** **Subsidy**	In October 1999, the Hungarian Government approved an Energy Saving Strategy and Action Plan which modifies the National Efficiency Programme (establishing the legal, institutional and financial background for energy efficiency and renewables) of 1994-95. The new Action Plan, covering the 10 years until 2010, sets up energy savings and efficiency objectives and contains funding provisions (grants from the central governments or from foreign sources). The action plan is to be reviewed every two years.	All	All
R&D	***Funding***	*The Hungarian Government has decided to allocate from the State Budget 1 billion Ft/year (4 million USD/year) in 2000 and 2001 and 5 billion Ft/year (20 million USD/year) from 2002 to 2010 to support energy efficiency and renewables.*	*All*	*Renewables*
Policy Processes	**Advice/Aid in Implementation**	The Hungarian Government established a new National Energy Efficiency and Information Agency based on the existing Energy Centre.	All	All

Ireland

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	***Subsidy***	*The Irish National Development Plan 2000-2006 will include 37 million pounds for infrastructure improvements, small-scale renewable energy projects and CHP plants; and 20 million pounds for energy efficient housing and public sector buildings.*	*Residential Community-Use Electricity Generation*	*Electricity Renewables CHP*
Fiscal	***Subsidy***	*The Irish National Greenhouse Gas Abatement Strategy is to be published by the end of 1999 and, inter alia, is expected to include subsidies for small scale renewable energy projects, CHP plants, and energy efficient housing and public sector buildings.*	*All*	*Renewables CHP*
Fiscal	**Tax**	A progressive carbon tax approved in December 1998 and beginning in 1999 will be fully phased in by 2005. This new tax applies to all energy products; the existing tax structure on other fuels will be retained.	All	N/A
Fiscal	***Tax***	*A Green Paper on Sustainable Energy published by the Department of Public Enterprise in 1999 proposed the introduction of a carbon or energy tax scheme along with a tradable permit system to provide an incentive for industry to reduce emissions. One possibility discussed in the paper consisted of using revenue generated from a carbon tax or permit scheme to fund grants for energy audits and investments in energy equipment. The entire text of the paper is available at www.adnet.*	*All*	*All*
R&D	***Funding***	*The Irish National Development Plan 2000-2006 will include provisions for Energy Centre activities as well programmes and measures related to the implementation of the Kyoto Protocol, including a 40 million pound budget for research and development.*	*All*	*All*
Policy Processes	**Consultations**	In April 1999, the Irish government announced the establishment of a national institution to promote consultation and dialogue on sustainable development. One of its three key mandates is to make recommendations on climate change and how Ireland can meet its Kyoto commitments.	N/A	N/A
Policy Processes	**Advice/Aid in Implementation Outreach**	"Energy Awareness Week" is an annual programme which aims to highlight the link between sensible energy use, sustainability, and GHG reductions, thereby persuading consumers to think about energy efficiency. The Irish Energy Centre is also available to help companies organise their own events, providing Energy Awareness leaflets and a Staff Special Offer Campaign for Self Audit Firms.	All	N/A
Policy Processes	**Study**	The Irish Energy Centre is participating in a pilot benchmarking programme that began in September 1999 to test benchmarking approaches, associated data collection, and reporting. Other participants include Austria and Norway. Initially, the programme targets only firms in the brewery, bakery and dairy industries. The pilot programme will be expanded in 2000 to include all players in the three sectors, and then gradually introduce other sectors and countries. Current information on this project can be found at: www.eva.wsr.ac.at/english/ideen2.htm.	Other Industry (Brewery, Bakery, Dairy)	N/A

Italy

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	***Subsidy***	*A proposed new policy aims to change conventional fossil fuel heating systems through subsidies for modern biomass (using wood base pellets) for heating and to co-fire biomass with coal and other fuels for big boilers.*	*Electricity Generation*	*Renewables (Biomass) Fossil Fuels*
Fiscal	**Tax**	A progressive carbon tax approved in December 1998 will be inaugurated in 1999 and fully phased in by 2005. This new tax applies to all energy products; the existing tax structure on other fuels will be retained.	All	All
Fiscal	***Subsidy***	*The Transport Ministry has been assigned a total of 4.5 trillion lire to fund the purchase of new, more efficient public buses and mass rapid transit.*	*Travel (Bus, Rail)*	*Fossil Fuels (Oil)*
Regulatory	***Mandates/ Standards***	*Italy's public sector has been mandated to raise the share of electric, hybrid, and natural-gas fuelled vehicles it purchases to 50% of the total new vehicle procurement over the next 5 years. The decree covers state-owned service companies, such as utilities and postal and telecommunications services, as well as national and regional government bodies and towns and cities with a population above 25,000. Given the size and replacement of their fleets, the environment ministry calculates that by 2003, the measure would put some 60,000 "clean" vehicles on Italy's roads.*	*Travel (Cars)*	*Electricity Fossil Fuels Gas*
Regulatory	**Voluntary Agreements**	In December, 1998, industry organisations, environmental NGOs, and other groups in Italy concluded an agreement with the government scheduled to begin in 1999, under which they agree to: curb CO_2 emissions; improve energy efficiency in the industrial, energy, and transport sectors; and promote the use of renewable energy. This pact is intended to serve as a framework for specific voluntary agreements with individual signatories, such as Montedison agreement involving 20 specific projects to be carried out by the company's energy and chemicals division by 2003. The projects include measures to promote energy efficiency and the use of renewable energy in Montedison's plants as well as plans for the development of products such as biofuel made from recycled vegetable oil, zinc-based batteries for electric cars, and a laundry detergent designed to be used at low temperatures.	Manufacturing Industry Transport	N/A
Regulatory	**Voluntary Agreement**	Italy´s ENEL signed an agreement with the ministry of the environment to cut greenhouse gas emissions, an accord which will require an investment of 8 to 10 trillion lire ($ 3.8-4.8 billion) by 2006. The announcement was made during the presentation of Enel´s 1999 Report on the Environment. According to the agreement, emissions of carbon dioxide will be reduced by 20 percent from 1990 levels as part of a programme which will involve all Enel´s plants increasing production efficiency and investing in renewable resources.	Electricity Generation	Renewables

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	***Voluntary Agreements***	*Pilot projects for car sharing are under way in the Italian cities of Palermo and Venice. According to the ENEA, other Italian cities have been identified to begin experimenting with the service next year — including Milan, Rome, Genoa, Bologna, Turin, and Naples. Under this model, cars are made available in public locations to subscribers in a service similar to but cheaper than a rental car. A contribution to the environment will come from the fact that cars used in the car-sharing programme will pollute less than other vehicles on the road. Venice and Palermo are both using electric autos in their fleet.*	*Travel (Cars)*	*Electricity Fossil Fuels (Oil)*
Regulatory	***Mandates/ Standards***	*A decree enacted by Italy's environment and industry ministries requires Italian energy producers and importers to ensure that 2% of all energy supplied to the national market comes from renewable sources as of 2002. Suppliers that have no clean electricity sources can use energy from other companies by buying "green certificates", which will be valid for 8 years and will be sold by renewable firms. Certificate prices will be market led.*	*Electricity Generation*	*Renewables*
Market	***Green Certificates***			
Policy Processes	**Consultations**	In 1999, a group of 40 businesses formed the Kyoto Club, a voluntary association of Italian industry which will work toward reducing greenhouse gas emissions as well as on developing voluntary agreements that could be complement the system of incentives that the government hopes to negotiate in the near future. The Club, which is expected to work closely with the Italian environment ministry, includes a range of small factories and large industrial manufacturers.	Manufacturing Industry	N/A
Regulatory	**Voluntary Agreements**			

Japan

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	***Subsidy***	*Subsidies are to be provided for the introduction of clean-energy vehicles and low-emission vehicles. The target for the introduction of clean-energy vehicles and low-emission vehicles in fiscal 2010 is 3.65 million vehicles.*	*Travel Freight*	*Fossil Fuels (Oil) Renewables*
Fiscal	**Tax** **Subsidy**	The "Telework" initiative allows work to be done away from the office using information and communications technology so as to reduce energy used for commuting. Construction of "telework" centres was subsidised, wide area information/ communications network model design projects were implemented, and a tax system to promote "telework" was introduced.	Travel Industry	Fossil Fuels (Oil)
Fiscal	**Tax**	Tax revisions in fiscal 1999 included an expansion of special tax measures relating to the automobile acquisition tax and the creation of special taxation criteria for high fuel efficiency vehicles (i.e., low fuel consumption vehicles) and lower special tax rates on low emission vehicles.	Travel (Cars)	Fossil Fuels (Oil)
Fiscal	***Tax***	*The Tokyo municipal government has come up with suggestions for implementing its "road pricing" scheme to reduce auto emissions. The city plans to place tolls on all incoming traffic except public transportation and is now considering ways in which to do this.*	*Travel (Cars, Trucks)*	*Fossil Fuels (Oil)*
Regulatory	**Labelling**	For structures other than houses, the "Environment and Energy Friendly Building Mark" system indicates the level of energy conservation performance above a certain standard. This programme was initiated in March 1999.	Buildings	All
Regulatory	**Labelling** **Mandates/ Standards**	By setting forth common rules to establish the description of energy "performance" for homes, the Law Concerning Promotion of Quality Assurance for Houses was passed in June 1999. The law includes the establishment of a housing performance description system to enable comparison by consumers, etc. As a next step, appropriate execution of the housing performance description system will be carried out based on that law.	Residential	All
Regulatory	**Mandates/ Standards**	Energy efficiency standards for housing and buildings were revised and strengthened (aiming for about a 20% reduction in energy consumption for heating and cooling of housing, and about 10% for buildings). A review of insulation standards of building materials was conducted. Next steps include, as necessary, providing guidance and advice on the rational use of energy, and encouragement of compliance with the standards.	Residential Community-Use Buildings	All

Japan (continued)

Instrument	Classification	Policy Description	Sector	Energy
Regulatory **Policy Processes**	**Mandates/ Standards** **Outreach**	In October 1998, the Law Concerning the Promotion of the Measures to Cope with Global Warming was enacted. In April 1999, that law went into force, and a Cabinet Decision based on the law defined the guidelines concerning the basic measures that should be taken by every sector of the society (including the central government, local governments, businesses and citizens). Furthermore, in July 1999, the National Centre for the Promotion of Activities to Cope with Global Warming was designated. The government will promote comprehensive measures to prevent global warming, including the establishment of action plans on the government's activities.	All	All
Regulatory	**Voluntary Agreements**	Reviews of voluntary action plans already made by industries to save energy and curtail releases of CO_2 and CFC substitutes have been carried out to ensure their effectiveness. These reviews encompassed sectors including manufacturing, energy, distribution, telecommunications, broadcasting and food. Transportation, construction, real estate and housing industries have also prepared voluntary action plans, and follow-up reviews of these sectors will be conducted.	All	All
Regulatory	**Voluntary Agreement**	"Eco Up Office Plan" in Tokyo supports two types of offices´ voluntary activities to reduce the burden on the environment. Offices either: assess their environmental burden and register the measures they take and their quantitative objectives in reducing CO_2 emissions (type 1), or register three or more emissions-reducing measures they pledge to take (type 2). Participants receive registration certificates and stickers and their names and measures are posted on the Internet.	Residential Commercial	Fossil Fuels
R&D	**Technology Development**	Development work commenced on high-efficiency lighting that uses light emitting diodes. The new technology is expected to be 50% more efficient than fluorescent lighting.	Residential Buildings Technology	Electricity
R&D	**Technology Development**	Research and development of technologies to reduce standby energy consumption of household and office appliances was started.	Residential/ Commercial Technology (Appliances)	Electricity
R&D	**Technology Development**	In order to improve the current 13% conversion efficiency of photovoltaics, technological development was conducted for super-efficient photovoltaic power generation. On the utilisation technology of supercritical fluids, research and development was conducted at the fundamental level. In addition, technological development was promoted for new steel production processes, next-generation coke production technology, and research and development was promoted for ultra-steel, high-temperature materials, and production technology for coal gas for fuel cells, etc. For the next step, efforts will be made to achieve 30% or greater conversion efficiency in super high-efficiency solar cells.	Electricity Generation Technology Manufacturing Industry	Renewables

Japan (continued)

Instrument	Classification	Policy Description	Sector	Energy
R&D	**Technology Development**	Through the Climate Technology Initiatives (CTI), international co-operation was carried out in order to develop and diffuse technologies to deal with global warming. In the future, in addition to the development of technology diffusion programmes in different regions, such as Asia, Eastern Europe, Central and South America, and Africa, exchanges of R&D will be sought with those countries in the area of technology development.	Technology	All
R&D	***Technology Development***	*Nine countries (including Argentina, Brazil, Canada, France, Japan, the Republic of Korea, the United Kingdom, and the United States) have agreed to pursue the development of so-called Generation IV nuclear power plants. These countries noted that energy demand will increase significantly in the next 50 years and that nuclear power still holds important advantages in terms of air pollution and energy supply. The next step will be assigning a technical group consisting of government representatives to discuss the technological issues involved and make recommendations about multilateral co-operation.*	*Electricity Generation Technology*	*Nuclear*
Policy Processes	**Outreach**	In order to build understanding and to obtain co-operation of the public for nuclear power plant construction, various measures were implemented to provide correct knowledge and precise information, including the organising of "The Round-Table Conferences on Nuclear Policy".	Electricity Generation	Nuclear
Policy Processes	**Studies**	Kawasaki has undertaken detailed studies on the status of commuter traffic and freight transportation in order to establish and test a system of Transportation Demand Management (TDM) which is effective and easy to implement. TDM seeks to solve environmental problems caused by vehicle traffic, involving the cooperation of local government, commercial enterprises and their employees	Travel Freight	Fossil Fuels (Oil)

Luxembourg

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	*Subsidy*	*At present, big car manufacturers develop and market cars whose consumption of fuels is very low. To encourage consumers to acquire vehicles with reduced consumption, a grand-ducal regulation is being prepared to subsidise cars consuming less than 3 liters per 100 km.*	*Travel*	*Fossil Fuels (Oil)*
Fiscal *Policy Processes*	*Subsidy* *Consultations*	*To encourage the installation of low energy homes (Niedrigenergiehäuser, with heating energy is reduced from 25 to 30 % at a level between 30 and 70 kWh / m²a) and passive houses (Passivhaus with annual energy consumption from heating reduced to less than 15 kWh / m²a), the following measures will be taken:* *1) Promulgation of a Grand-Ducal Regulation concerning subsidies to be granted to households for the purification of existing buildings within the framework of a "carnet de l´habitat".* *2) Institution of a system of diagnosis determining the energy consumption of a building.* *3) Adaptation and application of "ökologischer Leitfaden für den Bau und die Renovierung von öffentlichen Gebäuden" with the aim of decreasing energy intensity in State buildings.*	*Residential Buildings*	*Electricity*
Fiscal **Policy Processes**	**Tax** **Study**	A study of royalties and national taxes with ecological implications was initiated in 1999 by the Ministry of the Environment.	All	All
Fiscal	**Tax**	A National Plan on Sustainable Development was adopted in 1998 and entered into force in 1999; it included a plan to establish taxes on vehicles based on fuel consumption and emissions in order to provide an incentive for the purchase of less polluting vehicles.	Travel (Cars)	Fossil Fuels (Oil)
Fiscal	**Tax**	An energy tax compatible with EU regulations was introduced in the 1998 National Plan on Sustainable Development; it entered into force in 1999.	All	All
Fiscal	*Tax*	*It has been proposed to increase the degree of differentiation in the price of fuels by means of excises or with VAT, with the intent to promote biofuels (biodiesel not subjected to excise taxes), natural gas and LPG.*	*All*	*Fossil Fuels*
Fiscal	*Tax relief* *Subsidies*	*A levy is foreseen in the law reorganizing the market for electricity. Following the example of the "Danish model", compensation is to be provided to companies willing to submit themselves to an ecological or energy audit and give evidence of efforts in energy savings. A part of the tax would be used to subsidise programmes of rational use or energy savings.*	*Electricity Generation*	*All*

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	**Regulatory Reform**	A new law reorganizing the electricity market provides for individuals to acquire energy from renewable and sustainable resources. It also provides the Minister the authority to oppose electrical supply contracts if the energy is generated from installations which are not technically sophisticated or which require the exploitation of a resource in a way that constitutes a direct or indirect danger for people and goods.	Electricity Generation	All
R&D **Regulatory**	**Technology Development** **Mandates/ Standards**	A law passed on June 10, 1999 requires listed establishments to determine how they might reduce energy consumption through best available technologies (BAT) which do not result in excessive costs. To assist companies in the identification of these technologies, the Ministry of the Environment assigned the Centre of Resources of Technologies for the Environment (CRTE) the mission to inform, to advise and to encourage firms.	All	N/A
Policy Processes	**Advice/Aid in Implementation**	The law of July 6, 1999 concerning the creation of a national network of bicycle paths will be implemented after a coherent concept is established at the national level. The Law will promote the use of the bicycle as the alternate means of locomotion to the motorcar inside urban conglomerations.	Travel	N/A
Policy Processes	***Outreach***	*The government is proposing to adopt an energy-efficiency awareness campaign targeting households. While many producers currently offer and label energy-efficient electric household appliances, efforts will be made to encourage consumers to purchase these appliances. Additionally, consumers will be instructed to switch off electronic equipment not in use, reducing the consumption of electrical energy by around 10 % of "stand — by" levels.*	*Residential*	*Electricity*
Policy Processes ***R&D***	***Advice/Aid in Implementation*** ***Funding***	*The energy balance of the state and municipal buildings is to be examined in a more detailed way and measures necessary to encourage the use of renewable energy are to be developed for these buildings. To this end, the P.E.E.C. programme will be adapted to include the financing of projects promoting sustainable development at the local and regional levels as well as to increase the support given to municipalities. Additional reforms include economic planning for district heating networks to be linked to public buildings and private homes. An energy accounting system will also be established.*	*Buildings*	*Electricity* *Renewables*

Netherlands

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	**Subsidy** **Tax Exemption**	Firms in the Dutch asphalt, ceramics, and steel industry are eligible for subsidies from the energy-savings promotion energy agency Novem. They would also be eligible for forms of taxation waived for those companies and sectors subscribing to multi-annual emissions reduction agreements.	Industry	Fossil Fuels Electricity
Fiscal	***Subsidy***	*A 1999 White Paper proposes to provide subsidies for purchases of energy-efficient equipment including more efficient cars.*	*Travel (Cars)*	*Fossil Fuels (Oil)*
Fiscal	**Tax**	The Dutch government decided to apply an annual indexing (to inflation) to all energy taxes and excise duties from 1 January 1999.	All	All
Fiscal	**Tax**	A tax on CO_2 emissions of fuel used for the generation of energy was introduced in 1999. This tax, the BSB, discriminates between the three kinds of fuel in use and is the highest for coal.	Electricity Generation	Fossil Fuels
Fiscal	***Tax*** ***Tax Credit*** ***Subsidy***	*In a policy decision taken in 1999, the Dutch government decided to double the Regulatory Energy Tax and Environmental Tax on Fuels over 3 years (from 3.4 billion guilders per year to 6.8 billion guilders in 2001). In practice, however, the increase is applied only to the Regulatory Energy Tax and not to the Environmental Tax on fuels. The tax burden of the increase will be shared by households (68%) and industries (32%). About 85% of the resulting revenue will be used to lower direct taxes paid by households and industries. The remaining 15% will be used for fiscal instruments to promote energy efficiency. Under the programme, 300 million guilders per year will fund both premiums for households on investments in energy-efficient appliances such as refrigerators, washing machines, and investments in insulation such as double-glazing and roof insulation and also free advice on the best instruments to reduce energy consumption. For industries, 200 million guilders will be used mainly for tax credits for investments in energy saving equipment.*	*Residential* *Industry* *Manufacturing*	*All*
Fiscal	***Tax*** ***Tax Credit***	*The contribution of "green" taxes to the total tax income increased to 14 percent in 1999 from 12 percent in 1994. Further tax revision measures will entail adaptation and increase of existing taxes, as well as the introduction of new fiscal measures. The government wants to spend the incomes from environmental taxes on reducing income taxes and on introducing fiscal environmental incentives, such as a differentiated tax on cars and motorcycles in favour of cleaner and more efficient vehicles. In 2000, the Dutch government will also be evaluating additional ways of greening the tax system, with a goal of finishing these revisions in 2001.*	*All*	*All*

Instrument	Classification	Policy Description	Sector	Energy
Market	**Emissions Trading**	The Dutch government agreed to help fund a biomass heating project in the Czech Republic in an attempt to further develop the concept of international emissions trading and joint implementation. Under the terms of the agreement, a new biomass heating grid and boiler plant will be built in the Czech town of Hostetin (a small residential area comprising fewer than 1,000 inhabitants). The two governments have committed to sharing equally all credits for emission reductions during the period 2008-2012. Construction on the grid began in July, 1999 and the plant is expected to by operational by March 2000. The cost of the project was about $850,000 — the Dutch government paid for the boiler and some related equipment, while the Czech government will pay for the grid and piping works.	Electricity Generation	Renewables (Biomass)
Market	***Green Certificates***	*A system of green certificates, developed in 1999, is being introduced for renewable energy and will come into force on 1 January 2001.*	*Electricity Generation*	*Renewables*
Market	***Under Development***	*The Dutch White Paper on Climate Policy, which was issued in June 1999, calls for half of the Dutch 50 mt "gap" to be reached through the use of Joint Implementation, the Clean Development Mechanism and Emissions Trading.*	*All*	*All*
Process	***Study***			
Market	**Under Development**	The Dutch government in 1999 signed a joint implementation agreement with Romania. The Netherlands will provide 2 million guilders for two projects in the town of Targu Mures — energy-saving measures for a drinking water plant and a wastewater treatment plant. After 2000, CO_2 reductions achieved by the projects can be credited against the Dutch national target.	*Industry*	*Electricity*
Regulatory	**Under Development**	A new Energy Performance Standard (EPN) is outlined in the Building Act of 1999. The requirements for residential properties have been set so that 1,200 m3 of natural gas will be the maximum allowed each year for heating, hot water, and cooking. The EPN requirement will be strengthened from 1 January 2000.	Residential	N/A
Regulatory	**Mandates/ Standards**	In January 1999, the Dutch decree on the Removal of Electric and Electronic Appliances recently became effective for large appliances such as freezers, washing machines, and computers. Retailers and municipal authorities are now required to also collect small discarded appliances such as mixers, irons, electric garden tools and toys to reprocess them.	Residential Commercial (Appliances)	Electricity

Netherlands (continued)

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	**Mandates/ Standards**	In a law promulgated in 1999, coal fired plants are to be required to have CO_2 emissions no greater than those of equivalently sized gas-fuelled plants by 2008.	Electricity Generation	Fossil Fuels (Coal)
Regulatory	**Mandates/ Standards**	The energy conservation target was recently raised to 2% under the 1999 Energy Conservation Action Programme and the renewable energy target is being maintained (5% by 2010, 10% by 2020).	Electricity Generation Industry	Electricity Renewables
Regulatory ***Fiscal***	***Mandates/ Standards*** ***Subsidy***	*In 1998, the Dutch Cabinet presented the Energy Conservation White Paper (EBN), which summarised the opportunities for intensifying energy conservation for the Parliament. This led, in May 1999, to the Government presenting the "Energy Conservation Action Programme 1999-2002. This action programme is a more concrete elaboration of the EBN and describes the contribution to energy conservation that the Cabinet expects from the various sectors of the public and target groups from the 1999-2002 as well as the government instruments that will be deployed during this period. According to the Action Programme, the Cabinet plans to allocate a budget of f690million in 1999 rising to around f910 million in 2002. Energy conservation policy will be based primarily on voluntary agreements and self-regulation by the target groups, supported by financial and fiscal incentives for efficiency investments; however, a limited number of key instruments are also expected to be used.*	*All*	*N/A*
Regulatory ***Fiscal***	***Mandates/ Standards*** ***Taxes***	*Plans were made for the Dutch government to review the strategy outlined in the White Paper on Climate Policy (issued June 1999) in both 2002 and 2005; if policies are ineffective, additional measures (such as increased energy and motor fuel taxes) are to be considered.*	*All*	*N/A*
Regulatory ***Policy Processes***	***Mandates/ Standards*** ***Advice/AId in implementation***	*Energy conservation policy on freight transport in 1999 will focus mainly on the external logistics of loaders and on physical planning. Driving behaviour will also be addressed with in-company training and education. The National Traffic and Transport Plan, which will be published in early 2000 will discuss this in more detail.*	*Freight*	*Fossil Fuels (Oil)*
Regulatory	**Voluntary Agreements**	In 1999, a series of voluntary agreements were contracted with banks, insurance companies, airlines and Schiphol Airport. Whenever possible and relevant, new VAs will include additional conditions on logistics, transport management and the use of renewable energy.	Travel (Inland Air) Freight Industry	Fossil Fuels Renewables

Instrument	Classification	Policy Description	Sector	Energy
Regulatory **Fiscal**	**Voluntary Agreements** **Tax exemption**	A benchmarking agreement was reached in 1999 between the Ministry of Economic Affairs, Ministry of Environment, Federation of Netherlands Industry (VNO-NCW) and five sector organisations, including the Association of Dutch Chemical Industry (VNCI), the Association of Dutch Paper and Cardboard Manufacturers (VNP), the Dutch Electricity Generating Board (SEP), and the bodies representing the metallurgical industry and refineries. The covenant requires member companies to systematically improve their energy efficiency rate per unit of product and to monitor their energy use more scrupulously, companies acting under the covenants may offset some taxes. Its scope is significant — member companies of the five sector organisations that have an annual energy use greater than 0.5 petajoules are expected to join the covenant, meaning that it will eventually apply to 80 percent of Dutch industrial energy use.	Manufacturing Electricity Generation Industry (Paper & Pulp)	All
R&D	**Funding** **Technology Development**	Under a programme announced in 1999, energy-intensive companies (companies that consume more than 0.5 PJ per settlement) can apply for funding from the SPIRIT (breakthrough technologies for industrial energy and conservation) and the BTS (joint projects between companies and research institutes). These are multi-annual programmes to stimulate the development and market acceptance of new technologies.	Manufacturing Industry Technology	All
R&D	**Funding**	The Energy Conservation Action Programme of 1999 features extra support for CHP through adjustments in the VAMIL and continuation and expansion of the EIA.	Electricity Generation Industry	Fossil Fuels
Regulatory	***Mandates/ Standards***	*In 1999, the Dutch government approved the construction of a huge wind farm in the North Sea to supply about 100,000 households with power. The farm will be located 8 km off the city of Egmond aan Zee and will include 50 to 70 windmills on a total area of 16 square km. The farm is expected to be up and running by 2003.*	*Electricity Generation*	*Renewables (Wind)*
Policy Processes	**Study**	A 1999 market survey indicates that the potential demand for renewable energy among private consumers and businesses is considerable: roughly 40% of businesses and households not currently buying any renewable energy would like to do so. Steps are being taken to continue the development in demand through marketing by power companies as well as to alleviate the problems on the supply side.	Electricity Generation	Renewables
Policy Processes	***Advice/Aid in Implementation***	*An Energy Performance Advice (EPA) for existing residential properties is in preparation. Recommendations for improvement will be added based on an energy scan showing measures that can be taken, resulting energy savings, and costs. In 2002, the EPA and the results achieved will be evaluated to provide information on Dutch buildings.*	*Residential Buildings*	*Electricity Fossil Fuels*

New Zealand

Instrument	Classification	Policy Description	Sector	Energy
Market	***Under Development***	*The New Zealand Government "Policy Options Statement" presents the Government's preferred policies for meeting Kyoto Protocol commitments, favouring a domestic emissions trading regime fully interfacing with an international emissions trading system.*	*All*	*All*
Policy Processes	**Consultations**	New Zealand's Ministry for the Environment released a discussion paper on the design of a domestic emissions trading regime for the country. "Technical Design Issues for a Domestic Emissions Trading Regime for Greenhouse gases" looks specifically at the questions that would have to be resolved in setting up an emissions trading system in New Zealand, including the unit of trade, allocation of certificates, and the sort of market used for trading, administrative issues, and transition considerations.	All	All
Market	**Under Development**			

Norway

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	**Tax** **Tax Exemption**	Beginning 1 January, 1999, a CO_2 tax of NOK 100 per tonne of CO_2 emissions was applied to mineral oils used in air traffic, domestic shipping and supply ships and offshore petroleum installations. Major industrial sectors and gas used in the transport sector are still exempt from the CO_2 tax.	Travel Freight Industry	Fossil Fuels (Oil)
Fiscal	***Tax*** ***Subsidy***	*In March 1999, the Norwegian Government submitted a White Paper on Energy Policy which included a proposal to increase electricity taxation and to provide approximately NOK 5 billion in investment support over 10 years for new renewable energy.*	*All*	*Electricity* *Renewables*
Fiscal	**Tax** **Tax Exemption**	In order to reduce methane emissions, a tax on final disposal of waste, with tax rebates for energy utilisation, was introduced in 1999. The tax rates are the following: landfills (NOK 300 per tonne); incinerators (NOK 75 per tonne as a basic charge and an additional charge of NOK 0-225 per tonne depending on the degree of energy recovery).	Electricity Generation Industry	Electricity
Fiscal	***Tax*** ***Subsidy***	*The Norwegian Parliament has increased the tax on electricity consumption by 0,025 NOK per kWh as part of the minority government's proposed 2000 budget. At the same time, a tax on oil will be raised 0,19 NOK per litre to avoid a switch from electricity to heating oil (although the wood-processing industry has a waver for the increase). Some (200 million NOK) of the 1,9 billion NOK raised from the increased tax revenues will be used to support energy efficiency and renewable energy.*	*Residential* *Commercial* *Industry*	*Electricity* *Renewables*
Market	***Emissions Trading***	*Norway is to finance a project for the reduction of CO_2 emissions in Slovakia, hoping that future refinement of the Kyoto Protocol will allow the reduction to be credited toward Norway's commitment. Environment ministers from each country recently signed the agreement, which calls for Norway to contribute NOK 1.2 million to modernise two district heating systems in Slovakia through the replacement of coal and natural gas with bioenergy. While the net reduction in CO_2 emissions is expected to be only 50,000 metric tons over 30 years, both ministers expressed hope for expanded co-operation on these matters in years to come. The agreement with Slovakia comes in addition to similar Norwegian agreements with Poland, Mexico, Burkina Faso, Costa Rica and China. Norway is in the process of negotiating other such agreements with Romania, India, the Baltic States and Russia.*	*Electricity Generation (District Heating)* *Residential/ Commercial*	*Fossil Fuels (Coal, Gas)*

Instrument	Classification	Policy Description	Sector	Energy
Market	***Under Development***	*The Norwegian Parliament voted down a government proposal to expand Norway's CO_2 tax system to reduce GHG emissions, opting instead for introducing a national system of tradable emissions quotas for industry. The government will now have to set up a working group to define the details of the quota system within a number of parameters established by parliament. The scheme should cover all six GHGs targeted by the Kyoto Protocol and at least include the metal, petrochemical, and cement industries as well as oil refineries and oil and gas terminals. Quotas will be distributed at no charge on the basis of 1990 emissions levels to sources exempted from CO_2 tax, with the stipulation that these companies achieve a cut of 30% below 1990 levels within the Kyoto "budget period" of 2008-2012. Companies finding themselves unable to cut their emissions can buy quotas from others, but there will be restrictions on the right to sell quotas when a company closes down. New emitters will have to buy quotas or legitimise their emissions through flexible mechanisms in the Kyoto Protocol.*	*Industry Electricity Generation Manufacturing*	*All*
Market	***Under Development***	*The government appointed a committee representing government, industry, and NGOs to elaborate a trading scheme based on the guidelines from the Parliament. The committee recommended that Norway replace its existing CO_2 tax scheme with a system of tradable GHG emissions quotas covering some 90% of the country's total 1997 emissions. Only emissions that cannot "with reasonable certainty and at acceptable cost" be assigned to a specific polluter — such as methane and nitrous oxide emissions from agriculture — would be excluded. Participation would become mandatory from 2008, the first year of the Kyoto Protocol five-year "budget period." The majority in the committee recommended the government sell the quotas in the market. A minority recommended a combined allocation system, with some quotas being sold and some allocated free of charge based on grand-fathering. The report of the committee has been subject to a public hearing. The government plans to present a proposal to the Parliament in 2001.*	*Electricity Generation Manufacturing Industry*	*All*
Policy Processes	***Consultations***			
Regulatory	**Mandates/ Standards**	GHG emissions come within the scope of the Pollution Control Act. Questions related to environmental issues including GHG emissions are also managed under several other acts, including the Petroleum Act and the Energy Act. GHG emissions from major point sources (including major energy-related emissions) are subject to licensing requirements and are treated individually. Use of other instruments (such as the CO_2 tax, voluntary agreements, and possible future regulations systems (i.e., national trading scheme) will be taken into account when licenses are designed.	All	Fossil Fuels (Oil)

Instrument	Classification	Policy Description	Sector	Energy
R&D	**Technology Development**	Norwegian state-owned energy firm Statoil and Canada's Methanex Corp. sealed a five-year collaboration to introduce methanol as an alternative and environmentally-friendly fuel for vehicles. The companies said they planned to establish a European pilot programme by 2002 to demonstrate how methanol, which is made from natural gas, can be used to power fuel cells. The programme will include all aspects of supply, distribution, and marketing of the methanol.	Travel (Cars, Trucks) Freight	Fossil Fuels Methanol Natural Gas
R&D	***Resource Research***	*The government will invest 5.0 billion NOK over the next 10 years in renewable energy sources such as wind, bio-fuel and heat pumps.*	*Electricity Generation Technology*	*Renewables*
R&D	***Technology Development***	*Plans are being developed to introduce gas-fired power plants in Norway. The government will, in co-operation with the industry, establish a programme for capture and sequestration of CO_2.*	*Electricity Generation*	*Fossil Fuel (Gas)*

Portugal

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	**Subsidy**	Plurianual funding of the Investment Plan of the Central Administration for transport infrastructure includes a series of new rail infrastructure projects to improve supply of public transportation, to keep pace with mobility growth and to provide opportunities for moving towards a better-balanced intermodal transport system.	Travel Freight	Fossil Fuels Electricity
Fiscal	**Tax**	The establishment of a differential excise treatment of LPG and Natural Gas as compared to petrol and diesel for road vehicles provides an incentive for the penetration of low carbon fuels for transportation.	Travel Freight	Fossil Fuels
Fiscal	**Tax Exemption**	State Budget 2000, developed in 1999, introduces a 40% reduction of the tax on the purchase of vehicles when they use exclusively LPG or natural gas or when they are driven by electricity or any renewable energy source, providing an incentive for the penetration of low carbon fuels.	Travel	Fossil Fuels Electricity
Fiscal	**Tax Exemption**	State Budget 2000, developed in 1999, authorises the Government to set a reduction of the tax on the purchase of vehicles when a new private car is purchased in exchange for an old car more than ten years old, with the purpose of speeding up the renewal of the car fleet.	Travel (Cars)	Fossil Fuels
Fiscal	**Tax Exemption**	New budget provisions allow purchasers of renewable energy equipment such as solar panels for residential use to benefit from a reduced VAT of 5%. Investment costs in renewable end-use technology are also deductible from the income tax with a limit to the deduction set at 50 000 PTE in State Budget 2000. Beginning in October 1999, investors in equipment using solar energy are entitled to claim a depreciation rate of 25% (previously set at 7.14%).	Residential Commercial	Renewables (Solar)
Fiscal	***Under Development***	*A new programme providing incentives to the development of economic activities under the Community Support Framework (POE) is under preparation. Under this programme new regulations for providing incentives to projects of energy efficiency and diversification will be developed.*	*All*	*All*
Regulatory	**Mandates/ Standards**	During 1999, 41 of the 60 submitted energy audit reports for energy efficiency in industrial plants were evaluated by the DGE — corresponding to energy savings of 33 ktoe.	Industry	Electricity
Regulatory	***Mandates/ Standards***	*A revision of the Regulations on the Characteristics of the Thermal Behaviour of Buildings is in preparation to strengthen the energy standards. The Government is also preparing specific legislation for a voluntary classification of new buildings according to their energy performance. A study started in 1999 to define the type of certification to be attributed to buildings and to establish standards for the tests and methodologies to assess energy efficiency in buildings. The Government has decided that public buildings should have an energy audit. Funds from the POE are granted for the construction and retrofitting of non-residential buildings under the condition that their energy efficiency is 30% higher than required by the current thermal regulations.*	*Buildings*	*Electricity* *Fossil Fuels*

Portugal (continued)

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	**Voluntary Agreements**	The Government has implemented measures to encourage the development of more efficient or carbon free electricity production, including cogeneration, small hydroelectric production and generation using other renewable energy sources. The formula for payments of capacity and energy supplied to the grid by new cogenerators was set in 1999. Monthly payments are a function of performance of the undertaking and of criteria for availability; an environment premium is added if thermal efficiency of the plant is at least equal to the most efficient combined-cycle. As with efficient electricity generation, the legislation approved for the payments of electricity from renewables is based on a market value associated to the environmental benefits (avoided carbon) obtained from renewable based electricity.	Electricity Generation Industry	Electricity Fossil Fuels Renewables
R&D	**Technology Development**	Public investment in transport has increased in the Lisbon metropolitan area (which accounts for roughly 20% of the Portuguese population). Additionally, the underground system doubled its length in 1999, improving links with both the railway and bus networks. In Porto, a metropolitan railway system is scheduled to start operating by 2001.	Travel (Rail, Bus)	Fossil Fuels (Oil)
Fiscal	**Subsidy**			
Policy Processes	**Study**	Portugal has undertaken a study to improve the estimates of GHG emissions since 1990. The report is expected to be available in mid-2000.	All	All

Spain

Instrument	Classification	Policy Description	Sector	Energy
Market **Regulatory**	**Green Certificates** **Mandates/ Standards**	"Special regime": Generators with an installed capacity of less than 50 MW using cogeneration systems or renewable resources (biomass, wind, mini-hydroelectric or photovoltaic solar) systems, or any type of biofuel or non-renewable waste have the right to sell the electricity they generate or their surpluses to the grid at a pre-set price, the value of which is the market price plus a premium according to the type of plant. The premiums are established and decreased on a yearly basis in order to keep the competitiveness of the market in every area.	Electricity Generation	Renewables Cogeneration Biofuel Wind Minihydro
Market	***Under Development***	*In 1999, there will be a review of support schemes for renewable electricity generation and the government will look more closely into market-based support schemes, such as green certificates.*	*Electricity Generation*	*Renewables*
Regulatory ***Policy Processes***	***Labelling*** ***Mandates/ Standards*** ***Consultation***	*In 1999, the central government undertook a campaign to persuade Spain's 17 regional governments to require, by 2002, that newly-built housing in Spain be energy efficient and could certifiably reduce CO_2 emissions. The regional governments have jurisdiction over the housing norms, and the central government is suggesting that the housing certification be done by a building developer, using computer programmes that would help specify energy-efficient standards for the structure. The qualification would be on a scale of 6 to 10.*	*Residential Buildings*	*Electricity*
Regulatory	**Mandates/ Standards**	The Renewable Energy Promotion Plan was approved on 31 December, 1999 and aims to fill at least 12% of Spain's total energy demand with energy generated from renewable sources by 2010.	Electricity Generation	Renewables
R&D	**Funding** **Technology**	In 1999, the Spanish government approved the National Plan on Scientific Research and Technology Development and Innovation, which will be effective from 2000-2003. Priorities include: more efficient and less polluting energy systems (with a special focus on renewables and fuel cells); more economic and efficient energy transmission, sorting, distribution, and use; and alternative systems for propulsion as well as new fuels for the transport sector, with special attention to the reduction of carbon dioxide emissions.	Technology Travel Other Industry	Renewables Electricity

Sweden

Instrument	Classification	Policy Description	Sector	Energy
Market	**Emissions Trading**	To date, Sweden has financed 66 Activities Implemented Jointly (AIJ) projects in the Baltic States, of which 51 have been approved. These 51 projects resulted in a total reduction of 814,036 tons of CO_2 since the start. During 1999, the projects resulted in reductions of 201,954 tons of CO_2.	Electricity Generation Residential Buildings	N/A
Market	**Under Development**	Sweden has joined four other countries and private Sector partners in participating in the world Bank's recently announced Prototype Carbon Fund. The Fund will enable countries to learn through experience how the CDM and JI mechanisms of the Kyoto Protocol could benefit both developed and developing countries.	All	All
Market	***Under Development***	*The Government Commission on the Use of Flexible Mechanisms in Sweden has presented an interim report, including the possibility of introducing a system of Swedish emissions trading before the Kyoto Protocol is ratified. The proposed system would auction emission permits. A summary in English will be available.*	*N/A*	*N/A*
R&D	***Funding***	*SEK 500 m from the Treasury will be used over the next six years to develop technology for environmentally sustainable cars, in co-operation with Swedish car manufacturers.*	*Technology Travel Manufacturing*	*Fossil Fuels (Oil)*

Switzerland

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	**Tax**	In October 1999, Parliament approved a law on the reduction of CO_2 emissions which provides for the Federal Council to introduce a CO_2 tax if the national target cannot be achieved with the measures already planned or by voluntary efforts. Such a tax could not be introduced before 2004. Its maximum rate is set at 210 Swiss francs per tonne of CO_2 (corresponding to just under 0.5 Swiss francs per litre of gasoline). Revenues from such a tax would be returned to the public and to businesses; exemptions would be granted to companies formally agreeing to restrict CO_2 emissions.	All	N/A
Fiscal	***Tax***	*A tax on trucks over 3.5 tonnes will be implemented in 2007. This tax is related to distance and weight and is intended to internalise the cost of freight transport. The maximum charge is set at 0.02 CHF per tonne-km in 2007, and can increase to 0.03 CHF in the future. The tax will raise 7.5 billion CHF and will be used for investments in rail infrastructure and one third will go to the cantons. (October 1999 Law)*	*Travel Freight*	*Fossil Fuels*
Fiscal	***Tax*** ***Subsidy***	*The two Swiss parliamentary chambers have agreed to a tax of 0.3 centimes per kWh for non-renewable fuels like petroleum, gas, coal, and uranium. The tax will raise about CHF 450 million a year and the revenues will be used to promote renewable energies (especially solar), energy efficiency measures in buildings, and hydroelectric power.*	*All*	*Fossil Fuels* *Nuclear*
Fiscal	***Tax***	*The two Swiss parliamentary chambers have agreed to an energy levy as part of the financial reform with ecological incentives. The levy is on non-renewable fuels like petroleum, gas, coal, and uranium, and is of a maximum of 2.0 centimes per kWh. The tax will raise about SFR 2 - 3 billion a year and the revenues will be used to lower the compulsory supplementary wage costs.*	*All*	*Fossil Fuels, Nuclear*
Regulatory	**Labelling** **Standards/ Mandates**	Cities may choose from a wide selection of measures affecting energy consumption. If a subsequent audit reveals that a specific threshold of effective policies or measures is met, a label is awarded. Standards for renewal of the label are upgraded/tightened over time to maintain the momentum for improvements. Specific goals include an energy reduction of 7460 TJ pa heating oil savings, 3780 TJ pa electricity savings.	All	All
Regulatory	**Labelling**	The Energy 2000 label is awarded to promote the use of energy efficient appliances. Additionally, firms are encouraged to adopt "energy audit" methods, which pinpoint areas where firms can significantly reduce energy-related costs. Specific goals include a heating oil savings of 180 TJ pa and an electricity savings of 1600 TJ pa.	Residential Industry (Appliances)	Electricity
Regulatory	**Mandates/ Standards**	In October 1999, Parliament approved a law on the reduction of CO_2 emissions, requiring emissions of CO_2 to be reduced by 10 per cent compared to the 1990 level by 2010. Separate targets have been set for fuels: a reduction of 15 per cent for heating oils and 8 per cent for motor fuels.	All	Fossil Fuels

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	**Mandates/ Standards**	Energy management in hospitals is being improved through operational optimisation in existing buildings, efforts to interest management in renovation for further energy savings, and energy efficiency standards in new buildings. Specific goals include a heating oil savings of 1440 TJ pa and an electricity savings of 290 TJ pa.	Residential Commercial	Electricity
Regulatory	**Voluntary Agreements**	The goals of the energy law are to ensure a safe energy supply that is environmentally compatible and economically feasible, to contribute to the rational and efficient use of energy, and to encourage the use of domestic and renewable energy sources. The law calls for cooperation with the private sector and gives priority to voluntary measures over regulations.	All	All
R&D	**Technology Development**	The Energy 2000 Action Programme contains a number of measures to promote biomass, ambient heat, and solar energy in collaboration with networks (such as the Swiss Association for the Promotion of Heat Pumps) in these fields. "Acceleration Measures" are also being taken to improve the market of the renewables section's products. Specific goals for the renewables section include increasing heating from renewables of 3000 GWH (10800 TJ pa), and increase in electricity from renewables of 300 GWH (1080 TJ pa).	Manufacturing Industry Electricity Generation	Renewables (Biomass Solar)
Policy Processes	**Advice/Aid in Implementation**	Eco-driving courses are given in which professional drivers are taught to use high gears. Driving instructors, garage owners and fleet operators employ and promote a gentler method of driving which means fuel savings up to 15%, as well as fewer accidents and greater protection of the environment.	Travel Freight	Fossil Fuels (Oil)
Policy Processes	**Advice/Aid in Implementation**	Mobility Car Sharing Switzerland offers participants the shared use of 900 vehicles at 600 locations in 300 towns. Specific energy reduction goals include total savings of 3200 TJ pa, and motor fuel savings of 2%. 1630 TJ pa have been economised since 1998.	Travel	Fossil Fuels (Oil)
Policy Processes **Regulatory**	**Advice/Aid in Implementation** **Voluntary Agreement**	Energy Model Switzerland helps working groups composed of company representatives to establish mutually agreed upon goals for reducing the amount of energy consumed, annual reports on the status of projects and the exchange of know-how, and individual measures to achieve the objectives. Specific goals include 5900 TJ pa of fossil fuel savings, 1110 TJ pa electricity savings, 1600 TJ pa of increased heating from renewables (part of fossil fuel savings).	All	Electricity Renewables Fossil Fuels

Turkey

Instrument	Classification	Policy Description	Sector	Energy
Policy Processes	**Study**	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. Options covering increasing energy efficiency, improving technologies, inter-fuel substitution, expanding the electricity trade, improving fuel quality, and a variety of regulatory measures are also being examined.	All	All
Policy Processes	**Strategic Planning**	The 8th Five Year Development Plan has recently been finalised. Comprehensive subgroups on Environment Policy and Climate Change have also been established.	All	All

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	**Tax**	The Chancellor of the Exchequer announced the end of the "fuel escalator" which was previously introduced to increase fuel prices by six percent in real terms per year. From 2000 on, the increase in transport fuel tax will be decided annually, albeit at a lower rate than 6%. The revenues will be earmarked for projects to improve roads and public transport.	Travel Freight	Fossil Fuel (Oil)
Fiscal	***Tax*** ***Tax Exemption***	*In its 1999 budget, the UK government introduced a programme of measures to reduce GHG emissions by 1.5 million tonnes, which included a climate change levy. This levy, scheduled to be implemented in April 2001, is designed to be revenue neutral (revenues from the levy would be offset by a 0.3 percent reduction in employer social security contributions). It is to be applied to natural gas, coal, and electricity used by business, agriculture, and the public sector; but not to electricity producers or to the transport sector. In the last proposal, after revisions, the levy would amount to 0.43 pence per kilowatt hour on electricity consumption, 0.15 pence per kilowatt hour on coal and gas, 0.07 pence per kilowatt hour of liquefied petroleum gas. Energy-intensive companies could see reductions in the levy based on negotiated targets for improving energy efficiency. Recent decisions have modified the levy slightly: the cost to industry has been reduced to 1.0 billion pounds (from 1.75 billion pounds). Furthermore, the "greenest" energy producers will be exempted: renewable energy, such as solar, wind, and power; as well as combined heat and power plants. (Together, these currently represent less than 3 per cent of UK power generation). In addition, 150 million pounds from the tax revenues will be allocated to energy saving investments, against 50 million previously agreed. The new tax is anticipated to reduce emissions by 2 million tonnes of carbon.*	*All*	*Fossil Fuels (Oil, Gas, Coal) Renewables*
Fiscal	***Tax***	*A new "greener" tax was announced for company cars. From 6 April 2000, tax on such vehicles will be linked with the vehicle's exhaust emissions. The new tax system is expected to eliminate up to one million tonnes of carbon emission by the end of the decade and will do away with the present system whereby drivers are taxed more heavily if they use their vehicles less. The charge will be based on a percentage of that price, graduated according to the car's carbon dioxide emissions measured in grams per kilometre. Cars emitting carbon dioxide at or below a specified level will be taxed on 15% of the car's price. The qualifying level of emissions will be 165 g/km for 2002-03 and will gradually be reduced over the first few years to reflect anticipated improvements in the fuel efficiency of the new car.*	*Travel (Cars)*	*Fossil Fuels (Oil)*
Fiscal	***Tax***	*From March 2001 Vehicle Excise Duty (VED) for new cars will be graduated. Cars will be placed into one of four VED rate bands according to their CO_2 emissions, with the tax in each band being £10-20 higher than the band below it. Within each band there will also be a supplement for diesel cars — to reflect their higher local pollutant emissions — and a discount for cars using cleaner fuels and technology. The reform will be revenue-neutral.*	*Travel (Cars)*	*Fossil Fuels (Oil, Diesel)*

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	***Tax***	*The company car tax is to be reformed from April 2002. From this date, the tax charge will be based on a percentage of the car's price graduated according to the level of the car's CO_2 emissions. The charge will build up from 15% of the car's price, for cars emitting 165gCO_2/km, in 1% steps for every additional 5gCO_2/km over this level. The maximum charge will be 35% of the car's price. The reform will be revenue neutral.*	*Travel (Cars)*	*Fossil fuel (Oil)*
Market	***Green certificates***	*The UK Minister for Energy and Competitiveness in Europe announced a target of 10% renewable energy sources in electricity supply by 2010. The system should allow trading in green electricity so as to encourage most cost-effective renewable energy sources.*	*Electricity generation*	*Renewables*
Regulatory	***Mandates/ Standards***			
Market	***Under Development***	*Britain will have a national emissions trading scheme by April 2001 and the government is considering allowing the scheme to offset the proposed climate change levy. The current plan calls for an Emission Trading Authority to oversee the following three categories of participating companies: 1.) the "absolute sector" of firms that have agreed to annual emissions limits with the government; 2.) the "unit sector" of firms that have accepted emission targets expressed in tonnes per unit of output; and 3.) the "project sector" of firms with specific emission-cutting projects. Those in the absolute sector would get tradable permits to cover their annual emissions. Those in the unit sector would be allocated permits on a performance basis, allowed to trade among themselves, but not to automatically sell to the absolute sector, as this may inflate the sector's overall objective. Those in the project sector would receive credits for the reduction of greenhouse gases and the credits could be sold on the open market. All groups of firms would have the option to agree to targets for all six greenhouse gases covered under the Kyoto Protocol or for just carbon dioxide.*	*All*	*All*
Regulatory	***Mandates/ Standards***	*By 2002, all 173 cars in the Government's fleet are to run on environmentally friendly fuels. Currently, just 31 use natural or liquid petroleum gas.*	*Travel (Cars)*	*Fossil Fuels (Oil, LPG, Gas)*
Regulatory	***Mandates/ Standards***	*The UK says it will cut its GHG emissions by almost twice as much as it is committed to do under an international agreement, according to a recent draft blueprint open for consultation until 2 June. A final programme will emerge later in the year. The document promises to reduce emissions of CO_2 by 20% from 1990 levels by 2010 and to increase the production of electricity from renewable sources to 10% by 2010.*	*All*	*Renewables*
Policy Processes	***Study***			

Instrument	Classification	Policy Description	Sector	Energy
Policy Processes	**Study Consultations**	A new consultation paper from the government Task Force on Curbing Business Energy Use indicates that the UK will need a combination of regulation, voluntary agreements and economic instruments to achieve GHG emissions cuts of the scale required by the Kyoto Protocol. The paper seeks "the widest range of opinion" on the practicality and potential cost-effectiveness of different scenarios involving various emissions trading schemes, some form of tax on energy use, or a mix of both instruments, possibly applied differently in different sectors. The paper also discusses pilot programmes, the need for compatibility with international emissions trading programmes, the question of how to determine baselines for businesses or sectors covered, and the degree to which a trading scheme might put an "unintentional constraint" on growth.	All	All
Policy Processes	**Study**	A transport white paper entitled, "A New Deal for Transport — Better for Everyone" outlines plans for reform in the transport sector, including electronic tolls, taxes on workplace parking, and initiatives aimed at reducing fuel consumption. Proceeds from these new income streams will be used within local transport plans to enhance traffic management and greatly improve public transport policies.	Travel Freight	Fossil Fuels (Oil)

US

Instrument	Classification	Policy Description	Sector	Energy
Fiscal	**Subsidy**	Congressional legislators agreed to extend the tax credit that expired on June 30, 1999 for electricity produced from wind and other renewable power sources. It is estimated to reduce the cost of wind power by between 1.3 cents and 2.0 cents per kilowatt-hour.	Electricity Generation	Renewables (Wind)
Fiscal	***Tax Credit***	*A package of biomass tax credits is proposed for the Fiscal Year 2000 Budget, allowing an extension of five years to the current tax credit of 1.5 cents per kilowatt hour for electricity produced from biomass. In addition, the proposal expands the types of biomass eligible for the credit to include certain forest-related, agricultural, and other resources. Finally, the package includes a 1.0 cent per kilowatt hour tax credit for electricity produced by co-firing biomass in coal plants.*	*Electricity Generation Industry*	*Renewables (Biomass) Fossil Fuels (Coal)*
Fiscal	***Tax Credit***	*A bill introduced in the Senate (S. 1777) would provide tax incentives for voluntary reductions of greenhouse gases. The bill would extend on a permanent basis the tax credit for research and development involving climate change. According*	*Technology*	*All*
R&D	***Incentives***	*to a bill summary, for research to qualify for the credit, it must have as one of its purposes the reducing or sequestering of greenhouse gases and been reported to Department of Energy under section 1605(b) of the Energy Policy Act of 1992.*		
Fiscal	***Tax Credit***	*Maine is preparing to become the first State in the nation to promote the sale of environmentally cleaner cars. A bill*	*Travel (Cars)*	*Fossil Fuels (Oil)*
Regulatory	***Labelling***	*introduced in the legislature in January, 2000 would offer tax rebates of up to $3,000 for those who buy "green." The programme calls for affixing a blue, white, and green decal labelled "Cleaner Cars for Maine" on the windows of some 65 qualifying models now on the lots of the state's 167 car dealerships. To be eligible for the sticker, vehicles must get at least 30 mpg and conform to California's air emission regulations — the most stringent in the nation.*		
Market	***Under Development***	*A recent DOE study revealed that a national emissions trading system could provide substantial incentives for achieving US reduction commitments. The study assessed the impacts of*	*All*	*N/A*
Policy Processes	***Study***	*implementing a national emissions trading system for carbon, with assumed permit prices of either $25 or $50 per ton of carbon. In the energy supply sector, the study finds that the permit trading system is the most important policy because it will promote the use of low-carbon fuels. With the assumed permit prices, replacement of some coal-fired generation with natural gas becomes cost-competitive. Such a trading system "could also lead to substantial growth in the use of wind-power, co-firing of coal plants with biomass, increases in the efficiency of existing plants, and expansion of hydropower." Total reductions from this sector could be between 50 and 135 MtC annually, at permit process of $25 and $50 per ton.*		

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	**Mandates/ Standards**	In June 1999, President Clinton issued Executive Order 13123 requiring each Federal agency to improve energy efficiency by 35% percent below 1985 levels by 2010 in its buildings and by 25% (relative to 1990) in its laboratories. This will reduce annual GHG emissions by 2.4 million tonnes of carbon equivalent with savings of more than $750 million a year. The President further required each federal agency to cut greenhouse gas emissions by 30 percent relative to 1990 levels by 2010.	Buildings	Fossil Fuels Electricity
Regulatory	***Mandates/ Standards***	*"Wind Powering America", an initiative by the U.S. Department of Energy, seeks to supply 5 percent of U.S. electricity through wind technologies by 2020, which would avoid emissions of 35 million tonnes of carbon. Mid-term programme goals include doubling the number of states with more than 20 megawatts of wind capacity to 16 by 2005 and tripling that number to 24 by 2010.*	*Electricity Generation*	*Renewables (Wind)*
Regulatory	**Mandates/ Standards**	Federal energy efficiency standards for equipment and appliances, such as heating and cooling equipment, water heaters, lighting, refrigerators, clothes washers and dryers, and cooking equipment were introduced and will avoid cumulative emissions of more than 225 million tonnes of carbon by 2010.	Residential (Appliances)	Electricity
Regulatory	***Mandates/ Standards***	*The US. Environmental Protection Agency has announced a strategy to significantly reduce emissions from on-highway heavy-duty vehicles (vehicles with a gross vehicle weight rating greater than 8,500 pounds) including diesel and gasoline engines used in large commercial trucks, large versions of full-size pickup trucks, passenger vans, and the largest sport utility vehicles. Vehicles weighing up to 8,500 pounds would be covered under the tailpipe emission standards that EPA proposed in May, commonly known as Tier 2 standards. The first phase of the strategy to reduce emissions from heavy-duty trucks would take effect starting with the 2004 model year. The second phase could take effect as early as 2007.*	*Travel (Cars, Trucks)*	*Fossil Fuels (Oil)*
Regulatory	***Mandates/ Standards***	*The Renewable Portfolio Standard (RPS) included in the Comprehensive Electricity Competition Act (CECA) would guarantee that a minimum level of additional renewables generation is developed in the U.S. All electricity sellers would be required to cover a percentage of their sales with generation from non-hydroelectric renewable technologies — such as wind, solar, geothermal, or biomass generation. The level of the RPS would initially be set close to the current level of qualified renewable generation in the US and would rise to 7.5% of electricity sales by 2010. The RPS requirement would be implemented through a system of tradable renewable electricity credits (RECs). Retail electricity sellers could meet the requirement by generating renewable electricity themselves or by purchasing RECs from other generators.*	*Electricity Generation*	*Renewables Electricity*
Market	***Under Development***			

Instrument	Classification	Policy Description	Sector	Energy
Regulatory	***Mandates/ Standards***	*Legislation introduced in the Senate on October 25 would give the U.S. Department of Energy the responsibility for coordinating federal activities regarding climate change, including scientific research. The DOE would be required to report to Congress annually on numerous scientific activities and the actions taken by other U.N. Member nations as well as consult with seven other federal agencies on the economic implications of climate change policy alternatives.*	*All*	*N/A*
Regulatory	***Regulatory Reform***	*The Comprehensive Electricity Restructuring Act has been broadened to facilitate retail competition, requiring states to implement retail choice by 2003 and also mandating a labelling scheme to properly inform consumers. A public benefits fund of up to $3 billion would also be established to fund low-income assistance, consumer education, energy efficiency programmes, and development and demonstration of emerging technologies. It also contains a number if proposals promoting investments in energy efficiency, renewable energy, distributed power, and combined CHP technologies. These include tax credits for CHP, changes in depreciation schedules, and removal of regulatory barriers. The Administration's plan is expected to reduce carbon emissions from the electric sector by 40 to 50 million metric tons by 2010.*	*Electricity Generation*	*Electricity Renewables*
Fiscal	***Subsidy Tax Credit***			
Regulatory Policy Processes	***Mandates/ Standards Consultations***	*The Department of Energy proposed new energy-efficiency standards for central air conditioning today in an effort to prevent power outrages on hot days. The standards, which could increase efficiency by as much as 30 percent, are scheduled to take effect in December, 2000. In the meantime, the DOE is asking for comments and calling for industry, energy-efficiency advocates, and environmentalists to collaborate on the final proposals.*	*Electricity Generation*	*Electricity*
Regulatory	***Mandates/ Standards***	*The Department of Energy has published a document entitled "Energy for the New Millenium," which contains a five year business plan for photovoltaic (PV) technology as well as outlined long-range strategies and goals through the year 2020. To achieve the goals of the programme, the U.S. industry must maintain an annual production growth of 25 percent and must ship seven gigawatts of solar panels this year, of which almost half would need to be used in domestic installations. Total costs including operation and maintenance to the end user of the solar technologies must drop $3 per watt by 2010 and $1.50 by 2020. By 2030, module efficiency must reach 25 percent and system costs must drop to $1 per watt. The DOE plan includes funding for research and development of thin films, high-performance devices, silicon materials, characterisation techniques, and other innovative concepts.*	*Electricity Generation Technology*	*Renewables (Solar)*
R&D	***Funding***			
Regulatory	***Voluntary Agreements***	*The U.S. Environmental Protection Agency's agenda for 2000 includes reducing U.S. GHG emissions by more than 50 million metric ton carbon equivalents through the use of voluntary partnerships.*	*All*	*All*

Instrument	Classification	Policy Description	Sector	Energy
R&D	**Funding**	In April, 1999, the US announced a $1.5 million dollar grant for 10 international projects that promote energy efficiency in Russia, the Ukraine, and several Latin America nations.	All Technology	All
R&D	**Funding**	The US DOE provided a $425,000 grant to the New Mexico State Energy Office which will be used to fund the following four projects: construct a natural gas vehicle fuelling station in the city of Las Cruces; procure natural gas buses for the Albuquerque Clean Cities Programme; develop an alternative fuels market for Albuquerque; and help Rebuild America partnerships in Albuquerque, Santa Fe, and Taos implement community-wise building improvements for schools, government buildings and businesses. The New Mexico assistance was part of nearly $17 million in grants under the State Energy Programme Special Projects Initiatives.	Travel Residential Industry Technology Buildings	Fossil Fuels (Oil, Gas)
R&D	**Funding**	The DOE selected 8 applicants to receive $1.8 million for the development of photovoltaic (9PV), wind and hybrid PV/wind systems on Native American-owned lands. Awardees will collaborate with the U.S. renewable power industry, the Energy Department's national laboratories, the utility industry and academic institutions when developing their proposals.	Electricity Generation Technology	Renewables
R&D	**Funding**	Under the $100 million energy programme, the U.S. Export-Import Bank, working with the China Development Bank, and the U.S. DOE will provide loans for China to buy and apply U.S. Air pollution control, energy efficiency, and renewable energy technologies in China, according to officials familiar with the memorandum of understanding on the programme, which was signed March 29 in Beijing and formalised April 9 in the United States. The goal of the programme is to develop rural energy projects that include use of solar, wind, and biomass technologies, the officials said. Under the agreement, the U.S. would assist the Chinese in the development of renewable energy sources, disaster response, and coastal management.	Electricity Generation Technology	Renewables (Solar, Wind, Biomass)
R&D	***Funding***	*The President's 2000 budget proposes significant increases to energy efficiency and renewable energy technologies. This includes an investment package of nearly $1.4 billion to research, develop, and deploy clean energy technologies. The programme would augment existing initiatives such as the Bioenergy Initiative to develop advanced bioenergy technologies: $13 million in financial assistance to promote the growth of the biomass industry was announced under this initiative established by the President in August this year.*	*Technology*	*Renewables (Biomass)*
R&D	***Funding***	*Part of an initiative announced in August, 1999 is to triple the use of bio-based products and bio-energy in the US by 2010. Under the budget proposals, the Agriculture department will receive $194m to develop new biomass crops and the Department of Energy will receive $49m.*	*Electricity Generation*	*Renewables (Biomass)*

Instrument	Classification	Policy Description	Sector	Energy
R&D	***Incentives***	*New York City Transit has ordered 125 buses equipped with a hybrid electric drive system using Lockheed Martin technology. The buses will be delivered in early 2001 and will be equipped with the HybriDrive propulsion system. HybriDrive propels the bus with an AC motor powered by a diesel generator and batteries that are recharged continually as the bus is driven. That allows the use of a smaller engine than a conventional bus. Also, the smaller engine operates at a nearly constant speed, so it is more fuel-efficient than a standard bus and produces a fraction of the emissions.*	*Travel (Bus)*	*Fossil Fuels (Oil)*
R&D	**Technology Development**	In August, 1999, Executive Order 13134 accelerated the development of bio-based industries, which set a goal of tripling U.S. use of bioenergy and bioproducts by 2010. This would reduce annual greenhouse gas emissions by an amount equal to as much as 100 million metric tonnes of carbon. Additionally, this order establishes a permanent council consisting of the Secretaries of Energy and Agriculture, the Environmental Protection Agency Administrator, the Director of the National Science Foundation, and other agency heads to develop a detailed research programme to be presented as part of the annual Federal budget. This council is also responsible for reviewing major agency regulations, incentives, and programmes to ensure that they are effective in promoting the use of bioproducts and bioenergy.	Electricity Generation Technology	Renewables (Biomass)
R&D	**Technology Development Funding**	The DOE and USDA provide funding for the development, testing, and demonstration of high-yield, low-cost biomass feedstock; processes for co-firing biomass with coal to produce electricity; advanced technologies for biomass gasification using paper industry by-products; and continued work on producing alternative fuels, such as cellulosic ethanol, from biomass. The DOE, the USDA, and other federal agencies also have plans to launch a national partnership to develop advanced, integrated biomass technologies.	Electricity Generation Industry	Renewables (Biomass, Ethanol)
R&D	**Incentives**	18 Federal agencies — from the departments of Agriculture, Interior, and Transportation to the Smithsonian Institution and the U.S. Postal Service — recently received a combined $1.5 million in DOE funding for over 100 cost-effective renewable energy projects at government sites. The technologies include more than 50 new or renovated solar water heating systems, large and small photovoltaic systems, PV-powered lights, wind power, and "solar walls" that preheat outside air for interior heating.	Electricity Generation Industry	Renewables

Instrument	Classification	Policy Description	Sector	Energy
R&D	**Incentives**	Launched by the U.S. DOE in August, 1999, the Brightfields initiative is aimed at using former industrial sites contaminated with toxic waste for producing pollution-free solar energy. Chicago was the first city to use this approach. At the municipal level, officials persuaded the Spire Corporation to manufacture solar panels at one of the city's brownfields, creating over 100 new jobs. A solar energy system will also be installed, both to supply some of the company's electricity needs and to serve as a demonstration and educational site. In addition, the city and Commonwealth Edison committed $8 million over the next five years to purchase and install solar energy systems at other Brownfields sites, schools, office buildings, and municipal and commercial properties along transportation routes.	Electricity Generation	Renewables (Solar)
R&D	***Technology Development Funding***	*The Clinton administration announced that it will propose $2.4 billion in fiscal year 2001 funding to combat global climate change. The $2.4 billion represents an increase of over 40 percent from climate change programme funding in the current fiscal year — including accelerated efforts to develop clean energy sources as well as a new Clean Air Partnership Fund to increase state and local efforts to reduce GHGs and air pollution. The Clinton administration is also proposing more than $1.7 billion for "global climate change research," amounting total fiscal 2001 package of over $4 billion.*	*All*	*N/A*
R&D	***Technology Development***	*DOE is developing new industrial combined heat and power (CHP) systems to capture the thermal heat that otherwise would be wasted. CHP systems are expected to be 15 percent more energy efficient and 80 percent cleaner than conventional power systems and cut electricity costs by 10 percent. In addition, EPA and DOE are working to eliminate barriers to the rapid dissemination of combined heat and power technology.*	*Electricity Generation Technology*	*Electricity*
R&D	***Study*** ***Technology Development***	*A strong national programme for research and development will deliver a profile of technologies in the next three decades along with continued economic growth for the US, according to a report authored by the directors of 11 US energy laboratories. "Technology Opportunities to Reduce US Greenhouse Gas Emissions" describes several dozen technology pathways with significant potential to reduce CO_2 emissions, as well as when such technologies are expected to become available. The report does not prioritise the pathways' potential for commercialisation of R&D funding, calling instead for a general increase in funding or for basic and applied research. According to the authors, each of the next three decades will feature a distinct range of emerging GHG reduction technologies. By 2010, advances in energy-efficiency technologies could deliver substantial near-term carbon-reducing impacts by decreasing the energy intensity of the US economy.*	*All*	*All*

Instrument	Classification	Policy Description	Sector	Energy
R&D	***Study*** ***Technology Development***	*The "Comprehensive National Energy Strategy" released in April, 1999 suggests that for the US to achieve energy-related goals while protecting the environment, the country should continue to invest in the development and deployment of technologies achieved through basic scientific and engineering advances. The report calls for the demonstration of high-efficiency coal and natural gas power systems by 2010, improved capacity for nuclear power, and broader efforts to encourage industry to reduce its energy use voluntarily. The strategy is designed to serve as a blueprint for co-ordinating the Clinton administration's energy-related programmes and suggests that for the US to meet its Kyoto target of reducing its GHG emissions to 7% below 1990 levels by 2008-2012, the government must blend market-oriented strategies with structured government involvement.*	*All*	*All*
R&D	***Technology Development***	*Nine countries (including Argentina, Brazil, Canada, France, Japan, the Republic of Korea, the United Kingdom, and the United States) have agreed to pursue the development of so-called Generation IV nuclear power plants. These countries noted that energy demand will increase significantly in the next 50 years and that nuclear power still holds important advantages in terms of air pollution and energy supply. The next step will be assigning a technical group consisting of government representatives to discuss the technological issues involved and make recommendations about multilateral co-operation.*	*Electricity Generation Technology*	*Nuclear*
Policy Processes	**Technology Development** **Advice/Aid in Implementation**	The Technology Co-operation Agreement Pilot Project (TCAPP) is an interagency effort that establishes a model for implementing technology transfer under the UNFCCC. TCAPP helps developing and transition countries attract investment in clean energy technologies that meet existing development priorities. Through TCAPP, the U.S. Government has established partnerships between governments, firms, and the donor community. Participating countries include Brazil, China, Egypt, Kazakhstan, Korea, Mexico, and the Philippines. TCAPP is also assisting 14 countries in the Southern African Development Community with a regional technology co-operation needs assessment initiated by the OECD/IEA and the Climate Technology Initiative.	All	All
Policy Processes	***Consultations*** ***Study***	*Full implementation of new technologies for air traffic control could result in aviation fuel savings of 6% in North America and comparable savings elsewhere, according to a recent study by the US Federal Aviation Administration. Modernisation of the Communications, Navigation, Surveillance/Air Traffic Management (CNS/ATM) systems (which involve and evolving combination of ground and airborne technologies and flight procedures) has been under discussion for some time; however, calls for taxes on aviation fuel to offset growing emissions from this sector are providing an incentive for change.*	*Travel (Inland Air) Technology*	*Fossil Fuels*

Instrument	Classification	Policy Description	Sector	Energy
Policy Processes	**Study**	The US EPA issued a report summarising the key trends related to the fuel economy of light vehicles sold in the United States for model years 1975 through 1999. "Light vehicles" include those that the EPA and the Department of Transport classify as cars or light-duty trucks (sport utility vehicles, minivans, and pickup trucks with less than 8,500 pounds gross vehicle weight ratings). The report finds that fuel economy is declining and truck market share is increasing, with fuel economy being traded for vehicle weight and performance.	Travel (Cars, Trucks)	Fossil Fuels (Oil)
Policy Processes	**Study**	A report from the US Department of Energy's Lawrence Berkeley Laboratory entitled "Miscellaneous Electricity Use in the US Residential Sector" suggests that if present trends continue, miscellaneous electricity use (resulting from the use of small appliances and electrical gadgets) will account for nearly all of the growth in US electricity consumption over the next 15 years. Without policies to reduce miscellaneous energy use, scientists project that this category of use will grow 50% by 2010, requiring an additional 115 TWh of electricity and accounting for additional emissions of 36 MtC annually.	Residential (Appliances)	Electricity

Annex

Directory of Relevant National Web Sites

The following table contains useful addresses for energy and environment related agencies within national governments. Many of these sites post up-to-date information on new policies and measures enacted or proposed within countries.

Australia

Agency/Authority	Internet Address
Australian Bureau of Agriculture and Resource Economics	http://www.abare.gov.au/
Australian Greenhouse Office	http://www.greenhouse.gov.au
Environment Australia	http://kaos.erin.gov.au/
Department of Foreign Affairs, Investment, and Trade	http://www.dfat.gov.au/environment/climate/
Australian Geological Survey Organization	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 Energy Agency	http://www.eva.wsr.ac.at/english/
Federal Environment Agency	http://www.ubavie.gv.at/
Ministry of Science and Transport	http://www.bmwf.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

Canada

Agency/Authority	Internet Address
Office of Energy Efficiency	http://oee.nrcan.gc.ca/new_programs_e.htm
Programme of Energy Research and Development	http://www.nrcan.gc.ca/es/new/perd.htm
National Climate Change Website	http://climatechange.gc.ca Type in "*Canada's perspective on Climate Change*"
Climate Change Voluntary Challenge and Registry	http://www.vcr-mvr.ca/
Environment Canada	http://www.ec.gc.ca/
CDM and JI Office	http://www.dfait-maeci.gc.ca/cdm-ji
Canadian Links	http://climatechange.gc.ca/english/html/links.html

Czech Republic

Agency/Authority	Internet Address
Czech Power Company	http://www.cez.cz/

Denmark

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

Finland

Agency/Authority	Internet Address
Finnish Energy Industry	http://www.energia.fi/eindex.html
Electricity Market Authority	http://www.sahkomarkkinakeskus.fi/
Ministry of Trade and Industry	http://www.vn.fi/ktm/index.html
Finnish Environment Institute (FEI)	http://www.vyh.fi/eng/fei/fei.html
Environmental Administration	http://www.vyh.fi/eng/

France

Agency/Authority	Internet Address
Ministere de l´Amenagement du Territoire et de l'Environnement	http://www.environnement.gouv.fr/
ADEME	http://www.ademe.fr/
Ministere de l'Industrie	http://www.ensmp.fr/industrie/
Electricite de France	http://www.edf.fr/html/fr/index.html

Germany

Agency/Authority	Internet Address
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 Decentralization	http://www.ypes.gr/
Ministry of Labour and Social Affairs	http://www.labor-ministry.gr/
Institute of Nuclear Technology — Radiation Protection	http://jupiter.int-rpnet.ariadne-t.gr/header.html
Ministry For Development	http://www.ypan.gr

Ireland

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

Italy

Agency/Authority	Internet Address
National Agency for the New Technologies, Energy, and the Environment	http://www.sede.enea.it/

Japan

Agency/Authority	Internet Address
Environment Agency	http://www.eic.or.jp/eanet/en/index.html
Ministry of International Trade and Industry (MITI)	http://www.miti.go.jp/index-e.html
International Cooperation Agency	http://www.jica.go.jp/Index.html
Economic Planning Agency	http://www.epa.go.jp/e-e/menu.html
Ministry of Agriculture, Forestry and Fisheries	http://www.maff.go.jp/eindex.html
Ministry of Postal Telecommunications	http://www.mpt.go.jp/index-e.html
Ministry of Construction	http://www.moc.go.jp/eng/eng/index.html
Ministry of Foreign Affairs	http://www.mofa.go.jp/
Ministry of Finance	http://www.mof.go.jp/english/index.htm
Ministry of Transport	http://www.motnet.go.jp/mthome.htm
National Institute for Environmental Issues	http://www.nies.go.jp/index.html
Science and Technology Agency	http://www.sta.go.jp/index-e.html
Japan Federation of Economic Organizations (“Keidanren“)	http://www.keidanren.or.jp/index.html
Central Research Institute of Electric Power Industry	http://criepi.denken.or.jp/
Federation of Electric Power Industries	http://www.fepc.or.jp/
Institute of Energy and Economics of Japan	http://eneken.ieej.or.jp/e_index.html
ANRE	http://www.enecho.go.jp/english/index.html
Asia Pacific Energy Research Centre	http://ns.ieej.or.jp/aperc/

Netherlands

Agency/Authority	Internet Address
Ministry of Housing, Spatial Planning, and the Environment	http://www.minvrom.nl/environment/climate_policy/f.htm?41901007.htm
Energy Research Agency	http://www.ecn.nl/main.html

New Zealand

Agency/Authority	Internet Address
Ministry of Commerce — Energy Resources and Safety	http://www.moc.govt.nz/ers/index.html
Ministry of the Environment	http://www.mfe.govt.nz/

Norway

Agency/Authority	Internet Address
Institute for Energy Technology	http://www.ife.no/
Ministry of the Environment	http://www.odin.dep.no/md/eng/index.html
Norwegian Pollution Control Authority	http://www.sft.no/eindex.asp

Portugal

Agency/Authority	Internet Address
Direcco Geral de Ambiente	http://www.dga.min-amb.pt/arvore.html
National Laboratory for Civil Engineering	http://www-ext.lnec.pt/index.phtml

Spain

Agency/Authority	Internet Address
The Ministry on Energy	http://www.min.es/minas.htm
Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas, Ciemat. Ministerio de Ciencia y Tecnología (CIEMAT)	http://www.ciemat.es
Instituto para la diversificacion y Ahorra de la Energia (IDAE)	http://www.idae.es
Comisión Nacional de la Energía	http://www.cne.es
The Nuclear Link	http://www.nuclearlink.com/

Sweden

Agency/Authority	Internet Address
Swedish National Energy Administration	http://www.stem.se
Swedish Environmental Protection Agency	http://www.environ.se:8084/

UK

Agency/Authority	Internet Address
Department of the Environment, Transport, and the Regions	http://www.detr.gov.uk/
Department of Trade and Industry, Energy Section	http://www.dti.gov.uk/energy/index.htm
Environment Agency	http://www.environment-agency.gov.uk/

US

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

UNFCCC

Agency/Authority	Internet Address
Table of National Communications	http://www.unfccc.de/resource/natcom/nctable.html
Country information plus link to national websites	http://www.unfccc.de/resource/country/index.html
Reviews of National Communications	http://www.unfccc.de/resource/idr.html
COP5 Ministerial Statements	http://193.159.251.11/cop5/pages/statements.phtml

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