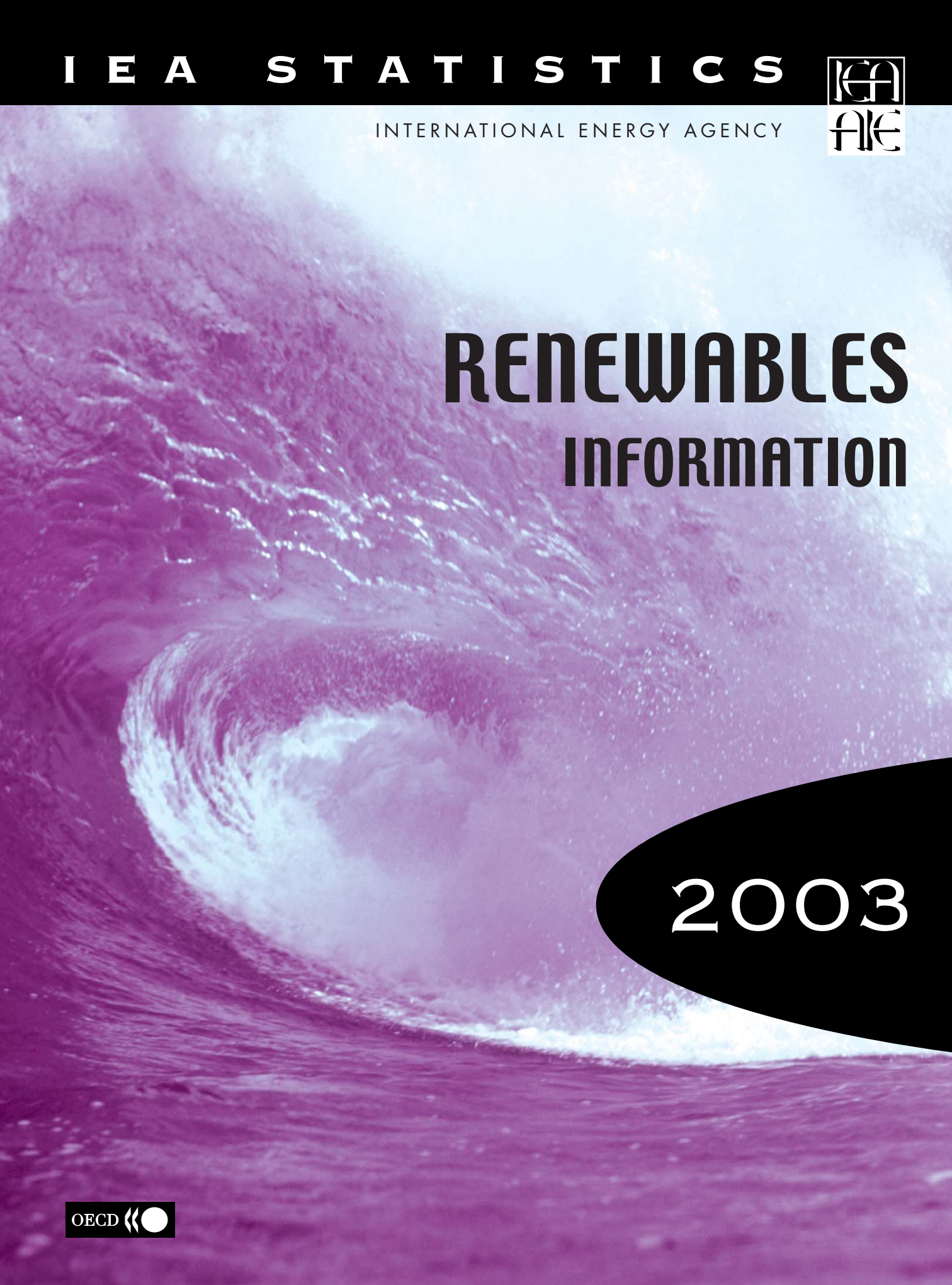
IEA STATISTICS

INTERNATIONAL ENERGY AGENCY



RENEWABLES INFORMATION

2003

OECD

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Units and Technical Abbreviations

Mega	:	= M = 10^6
Giga	:	= G = 10^9
Tera	:	= T = 10^{12}
Peta	:	= P = 10^{15}
GW	:	Gigawatt
GWh	:	Gigawatt hour
1 GWh	:	= 3.6 Terajoules
MW	:	Megawatt (electric)
MWh	:	Megawatt hour
kW	:	kilowatt
kWh	:	kilowatt hour
t	:	metric ton = tonne
..	:	not available
e	:	estimated data
c	:	confidential data
x	:	not applicable
RES	:	Renewable Energy Sources
1 toe	:	tonne of oil equivalent = 41.868 GJ = 10^7 kCal
TJ	:	Terajoule (10^{12} joules)
TPES	:	Total Primary Energy Supply

INTRODUCTION

The IEA *Renewables Information 2003* is the second edition of a new publication that is produced annually to provide reliable statistics on renewable energy. It follows the inaugural publication in winter 2002. It is a comprehensive volume of basic statistics compiled by the IEA on electricity and heat production, supply and final consumption, and installed capacity of renewables and waste sources.

The second edition of *Renewables Information* contains, in addition to OECD data, selected statistical information on non-OECD countries. It also includes a country survey on renewables in Russia, which is a "work in progress" study of IEA's Non-Member Countries Divison (NMC). Another addition for OECD countries is the inclusion of estimates for last year (i.e. 2002) that are the latest renewables data available.

National and international bodies use a variety of definitions for renewable energy. The Renewable Energy Working Party (REWP) of the International Energy Agency set down the following broad definition:

"Renewable Energy is energy that is derived from natural processes that are replenished constantly. In its various forms, it derives directly or indirectly from the sun, or from heat generated deep within the earth. Included in the definition is energy generated from solar, wind, biomass, geothermal, hydropower and ocean resources, and biofuels and hydrogen derived from renewable resources."

However, other agencies suggest different definitions, and may include or exclude specific renewables technologies, based on their particular situation. For example, large hydro, geothermal and municipal or industrial waste are sometimes not included in the definition of renewables, while peat is sometimes included. At the same time, some studies do not include non-commercial biomass in developing countries, while others do. For the purposes of this study, the statistics collected include large (and small) hydro and geothermal, but not peat. Non-commercial biomass is included in our definition, but data are not always complete, thus introducing potential inaccuracy. Municipal solid waste is included only if it is biodegradable, or renewable, while both non-renewable municipal solid waste and industrial waste are excluded.

The OECD data shown in this publication are primarily based on information provided to IEA's Energy Statistics Division (ESD) in the *Annual Renewables and Waste Questionnaire*. This questionnaire is completed by the national administrations of the OECD Member countries and provides statistics for electricity and heat production, primary supply, transformation sector, end-use consumption and installed capacity for electricity generation from renewable sources. The *Annual Renewables and Waste Questionnaire* was implemented in August 2000 and is a joint questionnaire between the IEA, Eurostat, the statistical body of the EU, and the Statistical Division of the Economic Commission for Europe of the United Nations.

The non-OECD data were collected by the non-member section of ESD, which receives their data either from the *Annual Renewable and Waste Questionnaire* for some countries and from secondary sources for the other countries.

The collection of the data presents national governments with some unique challenges. Renewable energy systems tend to be smaller than conventional systems, and harder to track. Operators tend to be more diverse and a much larger population. Many systems are connected to the grid at the distribution level, rather than the transmission level, and so do not require interconnection permits. National governments are now seeking to improve data collection

methods to reflect the particular nature of renewable energies. In general, the dispersion of renewables and waste production, specifically that of the off-grid production (such as domestic solar collectors and/or small wind turbines), creates transparency and measurement problems. Thus, the nature and structure of the renewable energy market impedes data quality and reliability when compared to that of the traditional fossil fuels, which are mainly produced in grid-connected plants.

In order to improve the quality of renewables and waste statistics and to ensure data compatibility, the IEA initiated a project in 2002 to compare and harmonise historical IEA data with those of national administrations and/or Eurostat, where applicable. Due to the unavailability or inaccuracy of renewables and waste statistics before 1990, emphasis was put on the reconciliation of data after 1990. Thus, 1990 is the first year reported in this publication. However, minor discrepancies between the different data-collecting bodies remain in the early years of our analysis because renewable energy classification systems were not well established and co-ordination between the member countries was poorly developed. Where possible, these discrepancies have been resolved and the following pages incorporate the results of the reconciliation process. Differences from national or Eurostat statistics are retained where different definitions of renewable energy are applied or where IEA data are more accurate.

Country notes and individual country data should be consulted when using regional aggregates. IEA analysis suggests that data are more accurate for electricity and heat production, and electricity generation capacity, than for supply and final consumption of renewable and waste energy.

A complete set of the data representing all years from 1990 to 2002 can be downloaded without charge from the Statistics section of the IEA website http://www.iea.org (Renewables Database).

This publication includes data for the Slovak Republic, which joined the OECD on 14 December 2000. There may be some breaks in the series until the national administration has reviewed and finalised the time series currently in the IEA databases.

The OECD currently has 30 Member countries. Energy data for all Member countries are presented in this publication and included in all OECD totals or regional aggregates.

The IEA has 26 member countries; Iceland, Mexico, Poland and the Slovak Republic are members of the OECD but not of the IEA.

Footnotes on individual tables and the notes in *Principles and Definitions* provide more information on Secretariat estimates and IEA statistical methods and procedures. All units are metric, unless specified.

All tables are available on the Internet through the IEA web site (http://www.iea.org).

Further information on reporting methodologies is also available on the IEA web site.

Energy data on the OECD are collected by the team in the Energy Statistics Division (ESD) of the IEA Secretariat, headed by Mr. Jean-Yves Garnier. OECD renewables and waste statistics in ESD are the responsibility of Ms. Christine Kellner. Mr. Lawrence Metzroth has overall editorial responsibility for this publication. Secretarial support from Mrs. Sharon Michel and Ms. Susan Stolarow is also gratefully acknowledged.

Also in the IEA Secretariat, thanks are due to Ms. Elena Douraeva (IEA Non Member Countries Division) and Mr. Rick Sellers (IEA Renewables Energy Unit) for their contribution to the publication and their useful suggestions and comments.

Thanks are also due to Mr. Nikolas Roubanis, in Eurostat, for his contribution to the data on European Union member countries.

This is the second publication of *Renewables Information*, and it is provided free of charge to reach an audience as wide as possible. The IEA Energy Statistics Division recognises this second edition still as an ongoing effort to refine sometimes inconsistent and preliminary data, and evolving definitions and methodology into the same world standard statistics reports that are issued by the division on other energy forms. In that spirit, enquiries, comments and suggestions are welcome and should be addressed to:

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PART I

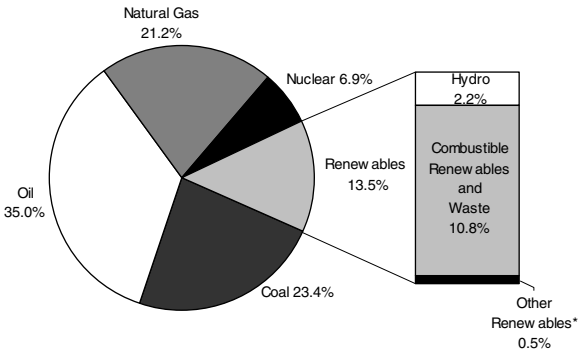
RENEWABLES IN GLOBAL ENERGY SUPPLY

DEVELOPMENT OF RENEWABLE AND WASTE SOURCES IN THE WORLD

An IEA Fact Sheet

In 2001, world Total Primary Energy Supply (TPES) was 10 038 Mtoe, of which 13.5%, or 1 352 Mtoe, was produced from renewable energy sources. This compares to a share of 35.0% for oil, 23.4% for coal, 21.2% for natural gas and 6.9% for nuclear energy. By IEA definition, renewable energy sources include combustible renewables and waste (solid biomass, charcoal, renewable municipal solid waste, gas from biomass and liquid biomass), hydro, solar, wind and tide energy. Non-renewable waste sources (non-renewable industrial waste or non-renewable municipal solid waste) are not included in renewables.

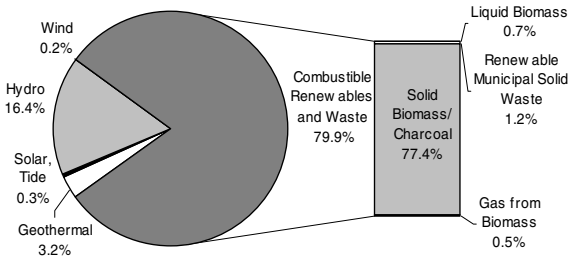
Figure 1: 2001 Fuel Shares in World Total Primary Energy Supply



*Other Renewables: Geothermal, Wind, Solar, Tide.
Totals in graphs might not add up due to rounding.

Due to its frequent non-commercial use in developing countries, solid biomass is by far the largest renewable energy source, representing 10.4% of world TPES, or 77.4% of global renewables supply. The second largest source is hydropower, which provides 2.2% of world TPES, or 16.4% of renewables. Geothermal is the third largest renewables source and is much smaller, representing less than 0.5% of world TPES, or 3.2% of renewables supply in the world. The contribution of "new" renewables (solar, wind and tide) to energy supply is still very marginal, representing less than 0.1% of world TPES, or 0.5% of renewables supply.

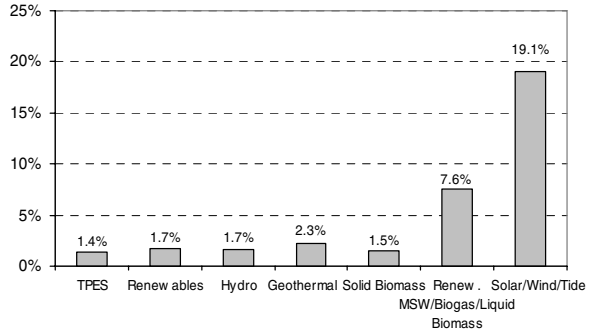
Figure 2: 2001 Products' Shares in World Renewable Energy Supply



Since 1990, renewable energy sources have grown at an average annual rate of 1.7%, which is slightly higher than the growth rate of world TPES of 1.4% per annum. Growth has been especially high for the "new" renewables, which grew at an average annual rate of 19.1%. However, due to their very low base in 1990, production remains small. OECD accounts for most of the production and growth of "new" renewables. The growth of solid biomass, which represents the largest contributor of renewable energy in the world, has experienced the slowest growth among the renewable energy sources. Its growth rate of 1.5% per annum was roughly equal to that of world TPES. Solid biomass experienced

similar growth rates in OECD and non-OECD regions (1.8% and 1.5%, respectively), though non-OECD regions produce the bulk of solid biomass. The second highest growth rate was experienced by non-solid biomass combustible renewables and waste, such as renewable municipal solid waste, biogas and liquid biomass. This segment grew on average at 7.6% annually since 1990. Hydro, the second largest renewable energy source in the world, has been growing at 1.7% per annum. Most of the growth in hydropower has taken place in the non-OECD regions, where a growth rate of 2.9% annually between 1990 and 2001 was achieved. This compares to an average annual growth rate of only 0.4% in OECD. Growth was especially strong in Asian countries, such as China and Vietnam, and in Latin American countries, such as Brazil, Argentina and Paraguay.

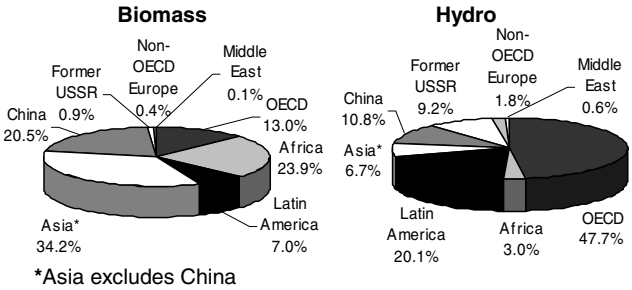
Figure 3: Annual Growth Rates of World Renewables Supply from 1990 to 2001



At present, OECD and non-OECD regions produce roughly equal amounts of hydro electricity (see chart below). However, while many pending projects suggest that hydropower will increase in non-OECD regions, not much further growth is expected in OECD, where most hydro potential was realised in the past decades. With the completion of the Three Gorges Dam, China by itself will add some 18 200 MW of capacity by 2009, which represents a 1-2% increase of world hydropower production.

The bulk of solid biomass (87%) is produced and consumed in non-OECD regions, where developing countries, situated mainly in South Asia and sub-Saharan Africa, use non-commercial biomass for residential cooking and heating. Africa, which consumed about 5.1% of world TPES in 2001, produced 23.9% of the world's solid biomass supply. However, the share of non-OECD regions in solid biomass consumption is expected to decrease in the future as developing countries slowly shift from traditional biomass to modern forms of energy.

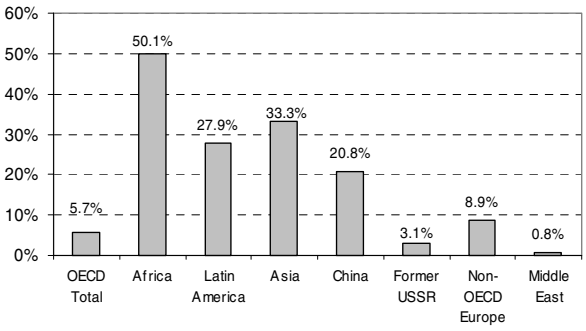
Figure 4: 2001 Regional Shares in Renewables Supply



*Asia excludes China

Because of their heavy non-commercial biomass use, non-OECD regions emerge as the main renewables users, accounting for 77.5% of world total renewables supply. OECD, on the other hand, supplies only 22.5% of world renewables, while consuming 53.1% of world TPES. Consequently, OECD has a renewable share of only 5.7%, while this share is 22.3% for non-OECD regions, and as high as 50.1% for regions like Africa. However, when looking at "new" renewables, OECD accounts for most of the production, producing 85.9% of wind, solar and tide energy in 2001.

Figure 5: 2001 Renewables Supply Shares in the World Regions



While in OECD countries, more than half of renewable primary energy supply is used in the transformation sector to generate electricity, on a global level, the bulk of renewables is consumed in the residential, commercial and public services sectors. Again, this is a consequence of the wide-spread biomass use in the residential sector of developing countries. In fact, only 21.2% of renewables are used for electricity production worldwide, while 59.2% are used in the residential, commercial and public sectors.

Figure 6: 2001 World Sectorial Consumption of Renewables

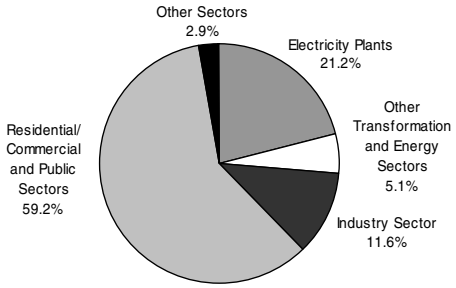
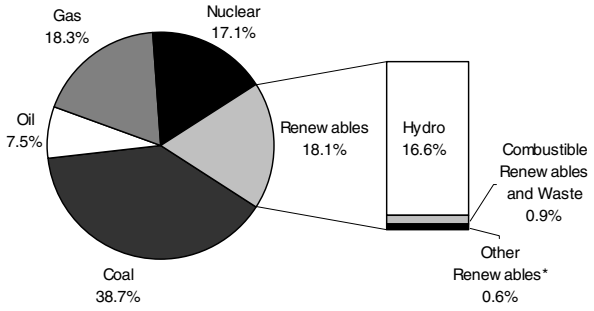


Figure 7: Fuel Shares in World Electricity Production in 2001



*Other Renewables: Geothermal, Wind, Solar, Tide.

Despite this fact, renewables are the third largest contributor to global electricity production. They accounted for 18.1% of world generation in 2001, after coal (38.7%) and only slightly behind gas (18.3%), but ahead of nuclear (17.1%) and oil (7.5%). In the transformation sector, hydro supplies the vast majority of renewable energy, generating 16.6% of world electricity, and 91.7% of total renewable electricity. Combustible renewables and waste, including solid biomass, play a minor role in electricity generation, supplying less than 1% of world electricity. Although growing rapidly, geothermal, solar and wind still accounted for only 0.6% of world electricity production in 2001.

Renewable electricity generation grew on average 1.9% per annum worldwide, which was slower than total electricity generation, at 2.5%. While in 1990, 19.3% of global electricity was produced from renewable sources, this share fell to 18.1% in 2001. This decrease is mainly the result of slow growth of renewables, and in particular of hydro, in OECD countries, which produce approximately half of global renewable electricity (50.7%). Renewable electricity grew at only 0.8% in OECD, while it grew at 3.1% in non-OECD regions. While in non-OECD regions, renewable electricity has been able to keep pace with the growth of its total electricity generation (3.2% vs. 3.1%), in OECD, growth of renewables was much lower than total electricity generation growth (2.1% vs. 0.8%). In general, electricity growth tends to be higher in non-OECD regions because they include the developing economies in Africa and Asia. Population growth is much higher in developing countries than in OECD countries, and as income increases, people switch from fuelwood and charcoal to kerosene and LPG for cooking, and start to have access to electricity through rural electrification programmes. As a consequence, future electricity growth, as well as renewable electricity growth, is expected to be higher in non-OECD countries than in OECD countries.

Table 1: Selected Renewables Indicators by Country for 2001

	TPES	Of which Renewables	Share of Renewables in TPES	Share of the Main Fuel Categories in Total Renewables (%)		
				Hydro	Geothermal, Solar, Wind, Tide	Combustible Renewables and Waste
	Mtoe	Mtoe	(%)			
Africa	**514.3**	**257.5**	**50.1**	**2.6**	**0.2**	**97.2**
Latin America	**449.9**	**125.3**	**27.9**	**35.4**	**1.5**	**63.0**
Asia	**1152.2**	**384.1**	**33.3**	**3.9**	**3.0**	**93.1**
China	**1155.6**	**239.8**	**20.8**	**9.9**	**0.0**	**90.1**
Non-OECD Europe	**99.2**	**8.8**	**8.9**	**46.5**	**0.7**	**52.8**
Former USSR	**944.6**	**29.6**	**3.1**	**69.0**	**0.3**	**30.7**
Middle East	**389.6**	**3.1**	**0.8**	**44.0**	**22.3**	**33.7**
OECD	**5332.8**	**303.7**	**5.7**	**34.8**	**11.6**	**53.6**
World	**10038.3**	**1351.9**	**13.5**	**16.4**	**3.7**	**79.9**
Albania	1.7	0.4	25.5	70.0	0.4	29.5
Algeria	29.4	0.1	0.3	7.2	0.0	92.8
Angola	8.5	5.9	69.7	1.5	0.0	98.5
Argentina	57.6	6.2	10.8	51.3	0.1	48.6
Armenia	2.3	0.1	3.7	98.8	0.0	1.2
Australia	115.6	6.6	5.7	21.5	1.9	76.5
Austria	30.7	6.6	21.5	54.4	1.6	44.0
Azerbaijan	11.6	0.1	1.0	96.2	0.0	3.8
Bahrain	6.5	0.0	0.0	0.0	0.0	0.0
Bangladesh	20.4	7.8	38.3	1.1	0.0	98.9
Belarus	24.4	0.9	3.7	0.3	0.0	99.7
Belgium	59.0	0.6	1.0	6.3	1.0	92.8
Benin	2.0	1.4	71.2	0.0	0.0	100.0
Bolivia	4.3	0.9	21.1	20.7	0.0	79.3
Bosnia and Herzegovina	4.4	0.6	14.2	70.5	0.0	29.5
Brazil	185.1	66.4	35.9	34.7	0.0	65.3
Brunei	2.2	0.0	0.9	0.0	0.0	100.0
Bulgaria	19.5	0.7	3.6	21.6	0.0	78.4
Cameroon	6.4	5.4	83.7	5.5	0.0	94.5
Canada	248.2	39.1	15.8	73.2	0.1	26.7
Chile	23.8	6.1	25.6	30.7	0.0	69.3
People's Rep. of China	1139.4	239.8	21.0	10.0	0.0	90.0
Chinese Taipei	89.0	0.8	0.9	98.4	0.0	1.6
Colombia	29.2	8.0	27.2	34.3	0.0	65.7
Congo	0.9	0.6	68.0	4.6	0.0	95.4
Dem. Rep. of Congo	15.0	14.5	96.3	3.4	0.0	96.6
Costa Rica	3.5	1.7	49.8	28.1	49.8	22.1
Cote d'Ivoire	6.5	4.5	69.0	3.5	0.0	96.5
Croatia	7.9	0.8	10.5	64.7	0.0	35.3
Cuba	13.7	3.3	24.4	0.2	0.0	99.8
Cyprus	2.5	0.0	1.8	0.0	78.5	21.5
Czech Republic	41.4	0.6	1.5	28.1	0.0	71.9
Denmark	19.8	2.1	10.4	0.1	18.6	81.3
Dominican Republic	7.8	1.5	19.0	3.2	0.0	96.8
Ecuador	8.7	1.3	15.3	45.5	0.0	54.5
Egypt	48.0	2.5	5.3	47.7	0.0	52.3
El Salvador	4.3	2.3	54.7	4.3	35.6	60.1
Eritrea	0.8	0.5	68.9	0.0	0.0	100.0
Estonia	4.7	0.5	11.5	0.1	0.0	99.9

Table 1: Selected Renewables Indicators by Country for 2001 (cont.)

	TPES	Of which Renewables	Share of Renewables in TPES	Share of the Main Fuel Categories in Total Renewables (%)		
				Hydro	Geothermal, Solar, Wind, Tide	Combustible Renewables and Waste
	Mtoe	Mtoe	(%)			
Ethiopia	19.2	18.0	93.9	0.9	0.0	99.1
Finland	33.8	7.6	22.4	15.0	0.1	84.9
France	265.6	18.6	7.0	34.5	1.2	64.3
Gabon	1.7	1.0	60.1	7.4	0.0	92.6
Georgia	3.3	2.0	61.2	23.5	0.5	76.0
Germany	351.1	9.2	2.6	19.2	11.7	69.1
Ghana	8.2	6.0	73.3	9.5	0.0	90.5
Gibraltar	0.2	0.0	0.0	0.0	0.0	0.0
Greece	28.7	1.3	4.6	13.7	12.7	73.6
Guatemala	7.3	4.1	55.6	4.1	0.0	95.9
Haiti	2.1	1.5	73.8	1.6	0.0	98.4
Honduras	3.2	1.5	47.4	13.3	0.0	86.7
Hong Kong (China)	16.3	0.0	0.3	0.0	0.0	100.0
Hungary	25.3	0.4	1.6	3.9	1.8	94.3
Iceland	3.4	2.5	72.9	23.1	76.9	0.1
India	531.5	211.4	39.8	3.0	0.1	96.9
Indonesia	152.3	51.5	33.8	1.8	5.0	93.2
Islamic Rep. of Iran	120.0	1.2	1.0	35.7	0.0	64.3
Iraq	28.5	0.1	0.3	66.9	0.0	33.1
Ireland	15.0	0.3	1.7	19.7	11.1	69.2
Israel	21.2	0.6	3.0	0.1	98.5	1.4
Italy	172.0	9.6	5.6	41.8	34.3	24.0
Jamaica	4.0	0.5	12.1	2.0	0.0	98.0
Japan	520.7	15.9	3.0	45.6	23.4	31.0
Jordan	5.1	0.1	1.4	5.1	90.4	4.5
Kazakhstan	40.3	0.8	1.9	90.5	0.0	9.5
Kenya	15.4	12.6	82.2	1.6	3.3	95.1
Korea	194.8	2.2	1.1	16.4	2.1	81.5
DPR of Korea	20.4	1.9	9.4	47.4	0.0	52.6
Kuwait	16.4	0.0	0.0	0.0	0.0	0.0
Kyrgyzstan	2.2	1.1	48.0	99.7	0.0	0.3
Latvia	4.3	1.5	34.9	16.2	0.0	83.8
Lebanon	5.4	0.2	3.0	17.6	4.3	78.0
Libya	16.0	0.1	0.9	0.0	0.0	100.0
Lithuania	8.0	0.7	8.5	4.1	0.0	95.9
Luxembourg	3.8	0.1	1.6	19.1	4.0	76.9
FYR of Macedonia	2.6	0.2	8.6	23.9	10.2	65.9
Malaysia	51.6	3.0	5.8	20.2	0.0	79.8
Malta	0.7	0.0	0.0	0.0	0.0	0.0
Mexico	152.3	15.5	10.2	15.8	31.3	52.9
Rep. of Moldova	3.1	0.1	2.1	9.6	0.0	90.4
Morocco	11.0	0.5	4.9	14.0	3.3	82.7
Mozambique (incl. exports)	7.7	7.5	98.1	10.0	0.0	90.0
Myanmar	12.2	9.6	78.7	1.6	0.0	98.4
Namibia	1.2	0.3	25.4	40.0	0.0	60.0
Nepal	8.4	7.3	87.1	2.2	0.0	97.8
Netherlands	77.2	1.1	1.4	0.9	7.6	91.4
Netherlands Antilles	1.4	0.0	0.0	0.0	0.0	0.0

Table 1: Selected Renewables Indicators by Country for 2001 (cont.)

	TPES	Of which Renewables	Share of Renewables in TPES	Share of the Main Fuel Categories in Total Renewables (%)		
				Hydro	Geothermal, Solar, Wind, Tide	Combustible Renewables and Waste
	Mtoe	Mtoe	(%)			
New Zealand	18.3	5.0	27.5	36.7	46.8	16.5
Nicaragua	2.8	1.5	55.2	1.1	11.5	87.4
Nigeria	95.4	74.6	78.1	0.8	0.0	99.2
Norway	26.6	11.8	44.5	87.5	0.0	12.4
Oman	10.0	0.0	0.0	0.0	0.0	0.0
Pakistan	64.5	25.7	39.8	6.3	0.0	93.7
Panama	3.2	0.7	21.3	31.7	0.0	68.3
Paraguay (incl. exports)	3.8	6.1	161.8	64.1	0.0	35.9
Peru	12.1	3.8	31.6	39.6	1.4	59.0
Philippines	42.2	19.3	45.9	3.2	46.4	50.4
Poland	90.6	4.1	4.5	4.9	0.1	95.0
Portugal	24.7	3.4	13.7	35.5	3.9	60.6
Qatar	15.9	0.0	0.0	0.0	0.0	100.0
Romania	36.8	3.4	9.3	37.5	0.2	62.3
Russia	629.7	18.8	3.0	79.5	0.4	20.1
Saudi Arabia	110.6	0.0	0.0	0.0	0.0	100.0
Senegal	3.2	1.8	55.5	0.0	0.0	100.0
Serbia and Montenegro	16.1	1.8	11.2	55.4	0.0	44.6
Singapore	29.2	0.0	0.0	0.0	0.0	0.0
Slovak Republic	18.7	0.7	3.9	58.4	1.2	40.4
Slovenia	6.8	0.7	10.7	44.6	0.0	55.4
South Africa	107.7	12.7	11.8	1.4	0.0	98.6
Spain	127.4	8.2	6.5	42.8	7.8	49.4
Sri Lanka	7.9	4.5	56.3	6.0	0.0	94.0
Sudan	13.5	11.0	81.1	1.0	0.0	99.0
Sweden	51.1	15.0	29.4	45.3	0.3	54.4
Switzerland	28.0	4.7	16.7	75.8	2.9	21.3
Syria	14.0	0.9	6.2	99.4	0.0	0.6
Tajikistan	3.0	1.2	39.8	100.0	0.0	0.0
United Rep. of Tanzania	13.9	13.0	93.1	1.7	0.0	98.3
Thailand	75.5	13.5	17.8	4.0	0.0	96.0
Togo	1.4	1.1	74.3	0.0	0.0	100.0
Trinidad and Tobago	8.7	0.0	0.3	0.0	0.0	100.0
Tunisia	8.2	1.3	15.3	0.4	0.2	99.4
Turkey	72.5	9.4	12.9	22.1	10.6	67.4
Turkmenistan	15.3	0.0	0.0	100.0	0.0	0.0
Ukraine	141.6	1.3	0.9	79.7	0.1	20.2
United Arab Emirates	32.6	0.0	0.1	0.0	0.0	100.0
United Kingdom	235.2	2.5	1.1	13.7	3.8	82.4
United States	2281.4	99.1	4.3	17.5	14.9	67.6
Uruguay	2.7	1.2	44.8	65.3	0.0	34.7
Uzbekistan	50.6	0.5	1.0	100.0	0.0	0.0
Venezuela	54.9	5.7	10.5	90.6	0.0	9.4
Vietnam	39.4	24.5	62.2	6.4	0.0	93.6
Yemen	3.6	0.1	2.2	0.0	0.0	100.0
Former Yugoslavia	37.8	4.2	11.1	55.9	0.5	43.5
Zambia	6.4	5.9	92.3	11.8	0.0	88.2
Zimbabwe	9.9	5.9	60.0	4.3	0.0	95.7

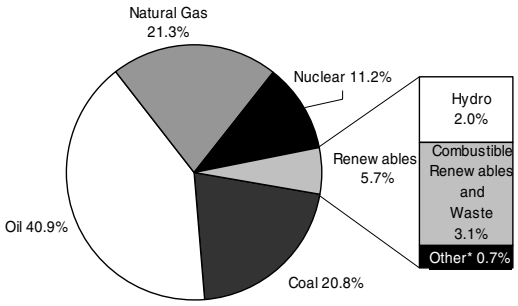
DEVELOPMENT OF RENEWABLE AND WASTE SOURCES IN OECD COUNTRIES

Primary Energy Supply

Summary

In OECD countries, primary energy supply from renewable sources increased from 264.1 Mtoe to 303.7 Mtoe between 1990 and 2001, yielding an average annual growth of 1.3%. In 2001, renewable sources contributed 5.7% of total primary energy supply (TPES) in the OECD. This share has decreased from 5.9% in 1990. However, the majority of this decline can be attributed to a low global precipitation level in 2001, and the resulting decrease in hydro electricity generation. In the year 2000, renewable primary energy provided 5.9% of TPES (312.3 Mtoe), which is equal to the level of 1990. Thus, in general growth of renewable energy sources has been able to keep up with growth of TPES and traditional energy sources in the OECD.

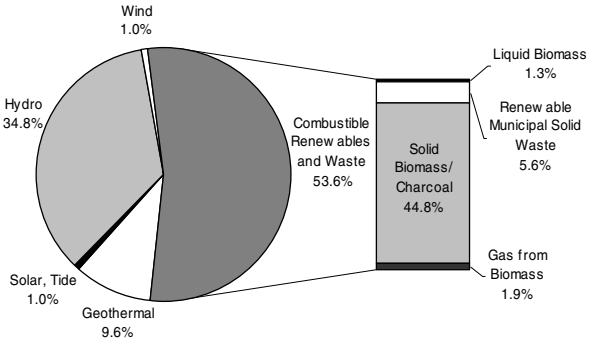
Figure 1: 2001 Fuel Shares in OECD Total Primary Energy Supply



*Other: Geothermal, Wind, Solar, Tide.
Totals in graphs might not add up due to rounding.

The largest proportion of renewable primary energy supply in the OECD comes from combustible renewables and waste. They represent 53.6% of renewables supply. Solid biomass, including wood, wood wastes and other solid wastes, represents the largest contributor to renewables supply, with a 44.8% share. The second largest renewable source is hydropower, providing 34.8% of renewable primary energy. With a 9.6% share, geothermal energy is the third largest renewable source.

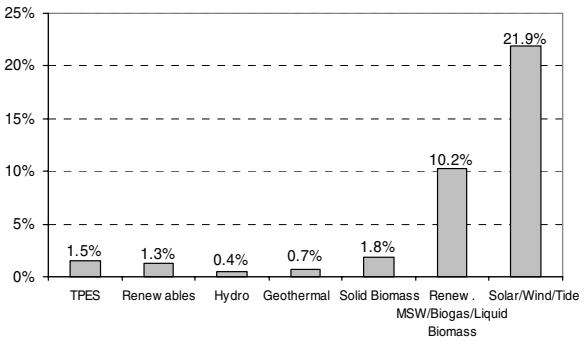
Figure 2: 2001 Products' Shares in OECD Renewable Energy Supply



While solid biomass, hydro and geothermal combined represent around 90% of total primary renewable energy supply in the OECD, growth rates have been lowest for these products in the last decade. Solid biomass, hydro and geothermal energy grew at only 1.8%, 0.4% and 0.7% per annum, respectively. This compares to an average annual growth rate of 1.5% of TPES over the same time period. Most notable is the slow growth of hydropower, where the growth rate is significantly below the growth rate of TPES. Because hydroelectric capacity is mature in

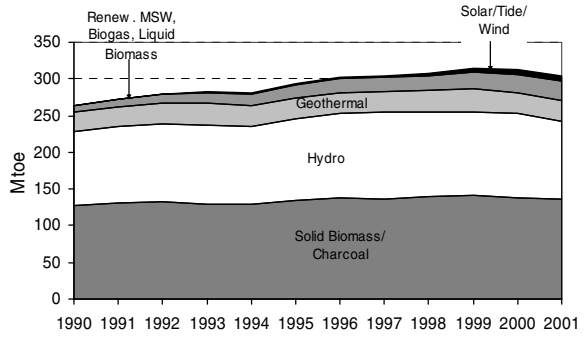
most OECD member states, it is increasingly difficult to locate suitable, environmentally acceptable sites to expand this energy form. Little new growth is projected for this sector in the future. Combustible renewables and waste excluding solid biomass (renewable municipal solid waste, gas from biomass and liquid biomass) have been growing much more rapidly than solid biomass, with an average annual growth rate of 10.2%. The highest growth in the renewable energy segment is for liquid biomass, solar and wind, which have been growing at 84.4%, 27.5% and 21.9% per annum respectively since 1990. Growth for these products was especially high in the late 1990s and early 2000s.

Figure 3: Annual Growth Rates of OECD Renewables Supply from 1990 to 2001



However, despite their high growth rates, the contribution of these renewable products to total energy supply is still very minor. Indeed, wind, solar, tide, gas from biomass, renewable municipal solid waste and liquid biomass combined made up less than 1% of total primary energy supply and only around 10% of renewable primary energy supply in 2001. Nevertheless, it should be noted that this share increased from approximately 4% of total renewables in 1990.

Figure 4: OECD Renewable Primary Energy Supply, by Product



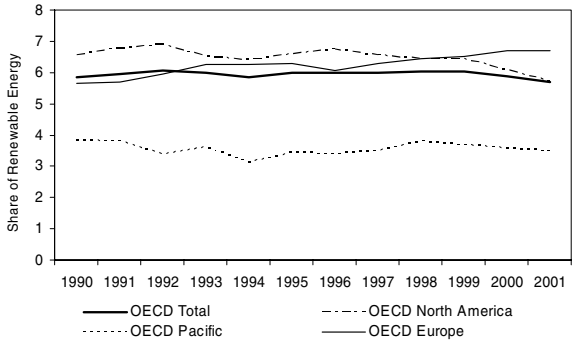
The largest producer of **solid biomass** is the United States, providing 38.9% of the total solid biomass supply in the OECD. This share declined from over 45% in the early 1990s. Other major solid biomass producers include Canada, France, Mexico and Sweden. The largest **hydropower** producer is Canada, followed by the United States and Norway. These three countries combined supply more than 50% of total hydropower in the OECD. The main producer of **geothermal** energy is the United States, with a share of 44.2% in 2001. Other big producers are Mexico, Italy, Japan and New Zealand. Nearly one-half (48.2%) of renewable **municipal solid waste** is produced in the United States, with other big suppliers being France, Korea and Japan. The United States is also the main producer of **liquid biomass** (81%) and **gas from biomass** (48.5% of OECD production). Other substantial producers of biogas are the United Kingdom and Germany. Along with the United States, Germany and France produce liquid biomass on a large scale. **Solar thermal** energy is mainly concentrated in the United States, Japan and Turkey while **solar photovoltaic** production takes place predominantly in Germany, Korea, Mexico and Spain. Large **windpower** producing countries are Germany, Spain, the United States and Denmark.

The largest OECD producer of renewable energy is the United States, contributing 32.6% of renewable energy supply. The United States is followed by Canada, which provides 12.9% of renewable production in the OECD. The two countries are also the largest producers of energy from hydro and solid biomass. The United States and Canada produce 4.4% and 15.6% respectively of their total primary energy supply from renewable sources. This compares to an OECD-wide share of 5.7%. Countries with the highest share of renewables in their total energy supply in 2001 were Iceland (72.9%), Norway (45.0%), Sweden (29.1%) and New Zealand (27.5%).

Among the different OECD regions, OECD Europe has the highest share of primary energy supply from renewable sources, with 6.7%. It is also the only OECD area that has experienced an increase (from 5.7%) of its renewables share since 1990. Both OECD North America and OECD Pacific experienced a decline of the share of renewable primary

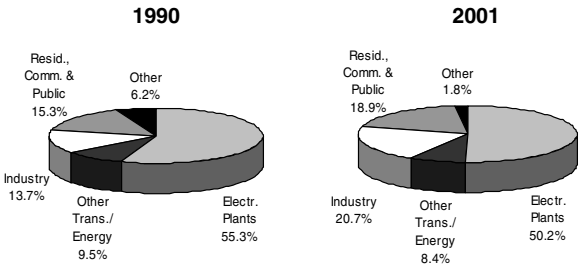
energy supply from 6.5% to 5.7% and from 3.8% to 3.5%, respectively. The increase of the renewables share in OECD Europe is the result of the implementation of strong supporting policies for renewable energy--especially in the countries of the European Union--in the late 1990s and early 2000s.

Figure 5: OECD Regional Shares in Renewable Energy Supply



Although renewable primary energy supply as such has been able to keep pace with the growth of traditional fuels, the share of renewable energy in the electricity transformation sector has not. In 1990, 55.3% of renewable energy was used for electricity generation, but this share had decreased to 50.2% in 2001--although total electricity generation in the OECD grew at a rate of 2.1% annually. The majority of the growth of renewable energy has taken place in the final consumption sectors, such as the residential, commercial and industry sectors. In 2001, almost half of renewable primary energy was used for purposes other than generating electricity. This trend is underpinned by the strong presence of solid biomass, which is traditionally used in the final consumption sector, as well as the lacklustre growth of hydropower, which is used for electricity generation.

Figure 6. OECD Sectorial Consumption of Renewables

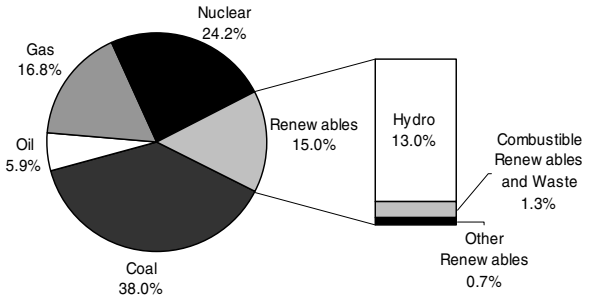


Electricity Production

Summary

Between 1990 and 2001, OECD gross electricity production from renewable products increased from 1 306 TWh to 1 424 TWh. In 2001, 15% of total electricity was generated from renewable sources, most of which comes from hydro plants.

Figure 7: Renewables Shares in OECD Electricity Production in 2001



Since 1990, renewable electricity generation has been growing at an average annual rate of 0.8%, which is significantly lower than the rate of 2.1% for total electricity generation. To some extent, the low growth rate of renewable electricity is affected by the plunge of hydropower output in 2001 due to abnormally low global precipitation. Nevertheless, over time renewable electricity production has not been able to keep pace with the growth of total electricity production. In 1990, 17.3% of total electricity was produced from renewable sources, but this share had decreased to 15% in 2001 (or 15.7% in 2000). Most of this decrease is due to the stagnant growth in the hydropower segment. While hydro electricity generated 15.5% of total OECD electricity in 1990, this share decreased to 13% in 2001 (or 13.7% in 2000). Hydropower has reached its capacity limit in most OECD countries. As a result, hydroelectric capacity expansion has been more or less stagnant for the past decade. Also, hydropower is dependent on climatic conditions, and lower precipitation levels in some major hydropower producing countries, like the United States and Japan, has caused a decline of the total OECD hydroelectric production in the late 1990s and early 2000s.

Figure 8: OECD Electricity Production from 1990 to 2001, by Product

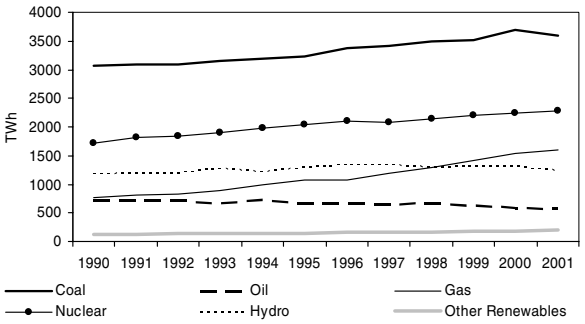
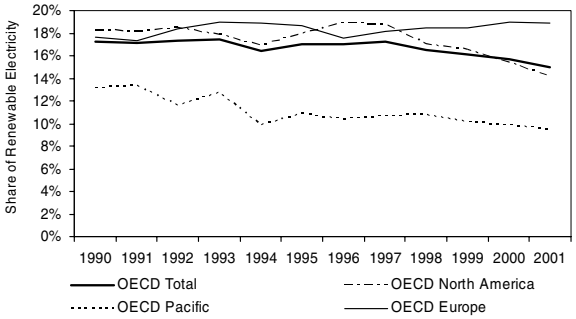


Figure 9: OECD Regional Shares in Renewable Electricity Production from 1990 to 2001



Decline of the share of renewable electricity was especially pronounced in the emerging economies of the OECD, such as Korea, Mexico and Turkey. These countries have experienced an extremely high growth of electricity consumption in the past decade, and generation has sometimes more than doubled since 1990. Due to low capacity installation costs and resource unavailability (e.g. hydro), rising demand is generally met by increasing electricity production from traditional fossil fuels rather than renewable sources. For example, Turkey, which has always had a high share of renewable energy because of its large hydropower production, increased its total electricity generation from 57.5 TWh to 122.7 TWh between 1990 and 2001. Over the same time period, renewable electricity production increased from 23.2 TWh to 24.3 TWh, causing the share of renewables in total electricity to fall from 40.4% to 19.8%.

Although very small, the share of renewable electricity (excluding hydropower) grew from 1.8% in 1990 to 2.1% in 2001. The increase is mainly due to OECD Europe, where implementation of strong renewables stimulation policies by the European Union member countries encouraged the growth of non-hydro renewable production. Policy instruments like feed-in tariffs and tax incentives make electricity generation with renewable sources competitive in many countries today. Thus, OECD Europe has been the only region experiencing a positive growth of its renewable electricity contribution to total electricity supply. It managed to increase its share from 17.7% to 18.9% between 1990 and 2001, while OECD North America and OECD Pacific, as well as total OECD, experienced decreases in their renewables share.

As a consequence of its high growth rate, OECD Europe supplied 43.2% of total OECD renewable electricity production in 2001, up from 35.6% in 1990. On the other hand, both OECD North America and OECD Pacific decreased their share from 53.0% to 46.4% and from 11.5% to 10.4% of OECD production, respectively.

A more detailed analysis of the individual renewable and waste products and their development in the electricity market follows.

Hydro[1]

As mentioned above, hydropower has reached its potential capacity limit in most OECD countries. Between 1990 and 2001, electricity generated from hydro plants (excluding generation from pumped storage plants) increased from 1 173.1 TWh to 1 229.1 TWh in the OECD, yielding an average annual increase of 0.6%. However, while in 1990, still 89.9% of electricity produced from renewable sources came from hydro plants, this share decreased to 86.3% in 2001 due to the rapid growth of electricity generation from other renewable sources. In 2001, the largest hydropower generating countries were Canada (333.0 TWh), the United States (201.2 TWh) and Norway (120.4 TWh). Other big hydropower producers are Japan, Sweden and France.

1. Please note that hydro, solid biomass, geothermal and wind electricity generation is expressed in TWh due to its magnitude. The unit used for electricity generation from all other renewable products is GWh.

Solid Biomass[1]

Electricity generation from solid biomass grew from 59.5 TWh to 79.6 TWh between 1990 and 2001, yielding a 2.7% average annual growth. As the second largest renewable electricity source after hydropower, solid biomass accounted for 5.6% of renewable electricity generation in 2001. This share is up from 4.6% in 1990. 52.3% of electricity from solid biomass is generated in the United States (41.6 TWh), where it makes up 14.6% of the country's renewable electricity production. The second largest producer of electricity from solid biomass is Finland (8.2 TWh), where it represents 37.8% of renewable electricity supply. Other big producers are Japan and Canada. Solid biomass electricity is produced in most OECD Member countries.

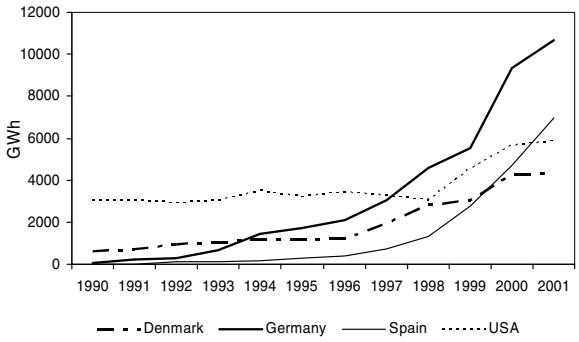
Geothermal[1]

Similar to hydropower, geothermal electricity production has not experienced significant growth between 1990 and 2001. It grew at an average annual rate of 1.2%, increasing from 28.7 TWh to 32 .7 TWh. Geothermal electricity is the third largest contributor to renewable electricity production. Although OECD North America remains the largest geothermal electricity producer, with a 60.8% share in 2001, generation declined by 0.5% per annum in this region. The decrease of geothermal electricity generation in OECD North America is due to a decline of production in the United States, which is the largest producer, generating 43.8% of OECD production in 2001. In the United States, production was 14.3 TWh in 2001 (down from 16.0 TWh in 1990). The second largest producer is Mexico, reporting 5.6 TWh in 2001. With an output of 4.5 TWh, Italy represents the third largest producer in total OECD and the largest producer in OECD Europe. Other major producers are Japan and New Zealand. The highest growth rate of geothermal electricity generation was achieved in Iceland, where production increased by 15.4% annually from 0.3 TWh to 1.5 TWh between 1990 and 2001. For the OECD as a whole, lacklustre growth is projected for the next few years because there are few development schemes in countries with geothermal potential.

Wind[1]

In 2001, wind mills produced 2.4% of renewable electricity in the OECD. For the first time in 2001, more electricity was generated from wind than from renewable municipal solid waste, making windpower the fourth largest renewable electricity source in the OECD. Between 1990 and 2001, windpower increased from 3.8 TWh to 34.0 TWh, achieving an average annual growth rate of 21.9%. This represents the second largest growth rate after solar photovoltaics. Most of the growth occurred in the European Union, where wind energy is heavily subsidised by the national governments. As a consequence, wind grew at 38.1% per annum in the European Union. Growth in absolute terms was largest in Germany, Spain and Denmark. They now produce 10.7 TWh, 7.0 TWh and 4.3 TWh, respectively. With 5.8 TWh, the United States remains one of the largest producers that has installed most of its capacity before 1990 and has not added as much production in recent years as some European countries.

Figure 10: Wind Electricity Production in Four Main Producing OECD Countries



Renewable Municipal Solid Waste

Renewable municipal solid waste represented 2.3% of renewable electricity generation in 2001.

However, it should be noted at this point that data on non-renewable and renewable municipal solid waste have been collected as distinct products only since 1999. Before this, all municipal solid waste is classified as renewable (unless revisions were submitted by individual countries). After 1999, data are often estimates rather than observations because the energy classification systems of many countries do

not permit the exact separation of renewable and non-renewable municipal solid waste. IEA analysis suggests that a major part of the production reported under renewable municipal solid waste in fact belongs in non-renewable municipal solid waste.

In 2001, 33 379 GWh of electricity were produced from renewable solid waste in the OECD. By far the largest producer of electricity from renewable municipal solid waste is the United States, generating 16 818 GWh, or 50.4% of OECD production. The second largest producer is Japan, with a production of 5 338 GWh. With 2 044 GWh, Germany represents the third largest producer. The remaining electricity production from renewable municipal solid waste is spread among smaller producers in OECD Europe. Denmark and Italy experienced the highest growth rates, increasing their production from 47 GWh to 1 068 GWh (at 32.8% per annum) and from 71 GWh to 1 258 GWh (at 29.9% per annum) respectively between 1990 and 2001.

Gas from Biomass[2]

Please note that complete biogas statistics are not available until 1992. Electricity production from biogas grew from an estimated 5 000 GWh in 1990 to 13 617 GWh in 2001. While in the early 1990's, nearly the entire amount of biogas electricity was produced in the United States, the largest proportion of this production has moved to OECD Europe, which contributes 58.1% of biogas electricity today. Most production takes place in the member countries of the European Union. The largest producer in the European Union is the United Kingdom, which provided 2 870 GWh of biogas electricity in 2001. While the United States, with 4 860 GWh, remains the largest individual producer, its growth of 5.4% per annum since 1992 has been much slower than that of many European Union countries. Germany has an average annual growth rate of 22.7% (reaching 1 986 GWh in 2001), Italy of 55.3% (684 GWh) and France of 19.8% (601 GWh) since 1992. Most of the growth in the biogas segment has taken place in the late 1990s and early 2000s, and continued strong growth is expected for the near future.

2. Due to unavailability of data, all growth rates in this paragraph were calculated taking 1992 as the base year instead of 1990.

Solar Photovoltaics

Since solar photovoltaics output is very difficult to capture due to its frequent off-grid use, this information should be used with caution. Information on solar collectors' surface provides more reliable statistics on this product, especially for the European Union countries (see Table 2 "Net Generating Capacity of Renewable and Waste Products" in Part II for regional OECD aggregates or specific countries).

Among all renewable products, solar photovoltaics experienced the highest growth rate. While being small in absolute terms, it increased from 16 GWh in 1990 to 339 GWh in 2001, achieving a 32% annual growth rate. Growth was strongest in the European Union countries. Germany, with its high feed-in tariffs for solar photovoltaic electricity generation, achieved 57.7%, the highest average annual growth rate (increasing production from 1 GWh in 1990 to 150 GWh in 2001). Outside the European Union, Korea experienced strong growth, raising its production from 15 GWh in 1991 (1990 data are not available) to 75 GWh in 2001.

Solar Thermal

Solar thermal electricity production decreased from 664 GWh in 1990 to 559 GWh in 2001. However, the decrease of production is due to a misclassification in the US data, which included electricity production from natural gas that took place at solar plants for many years. Revised time series are expected in the next edition. Production takes place almost exclusively in the United States, where 526 GWh were generated in 2001 (94.1% of OECD total). Besides the United States, Australia and Canada have small output of solar thermal electricity (30 GWh and 3 GWh, respectively).

Tide/Wave/Ocean

644 GWh of electricity were generated from tide, wave or ocean motion in 2001. An average annual growth rate of 0.7% from 1990 to 2001 indicates that not much growth is taking place in this segment. The main producer of electricity production from water motion is France, generating 543 GWh in 2001 (with a plant capturing electricity from tidal movements). The second, much smaller, contributor is Canada, producing 101 GWh.

Non-Renewable Municipal Solid Waste and Industrial Waste

Industrial waste and non-renewable municipal solid waste represent a controversial issue in the renewable energy context. While some of the OECD member countries accept these products as renewable energy sources and include them in their national statistics, many countries exclude them on the grounds that they are not biodegradable. Based on IEA (and European Union) methodology, industrial waste and non-renewable municipal solid waste are excluded from the definition of renewable energy sources. However, these data are collected from OECD Member countries and included in this publication in order to account for the full range of statistics collected in the *Annual Renewables and Waste Questionnaire*. As mentioned under *Renewable Municipal Solid Waste,* a division into renewable and non-renewable municipal solid waste exists only from 1999 and is often based on estimates. Similarly, in some countries, industrial waste statistics are not the same quality as those for other products, because renewables and waste data collection systems were not in place in many countries in the early 1990's.

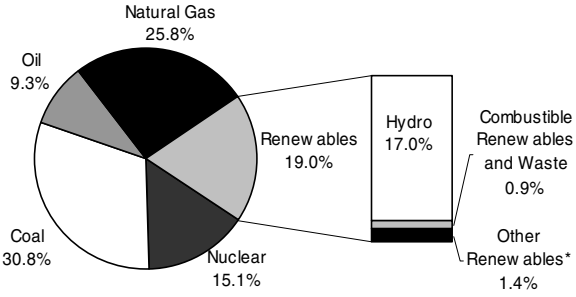
The data strongly suggest that both industrial waste and non-renewable solid waste have experienced an increase between 1990 and 2001. In 2001, industrial waste and non-renewable municipal solid waste generated 1.5% of the OECD renewable electricity (for this calculation, production from non-renewable waste is exceptionally included in the definition of renewable electricity). Most of the 16 416 GWh of industrial waste electricity production takes place in two countries. The largest provider is the United States with 7 294 GWh (44.4% of total), followed by Germany with 6 626 GWh (40.4% of total).

In 2001, 4 846 GWh of electricity were generated from non-renewable municipal solid waste. The largest producers are Germany and the Netherlands, supplying 1 673 GWh and 1 166 GWh, respectively. Other larger producers are Switzerland, the United Kingdom and Belgium. It should be noted that this information might be distorted because many countries (including the largest municipal solid waste producers, the United States and Japan) do not report renewable and non-renewable municipal solid wastes separately.

Installed Generating Capacity

In 2001, OECD countries reported 388.1 GW of installed capacity fuelled by renewable sources (excluding hydro pumped storage and industrial waste, but including non-renewable municipal solid waste capacity). Approximately 19% of total OECD capacity was based on renewable energy sources.

Figure 11: OECD Electrical Capacity 2001



*Other Renewables: Geothermal, Wind, Solar, Tide.

333.4 GW of plants were hydroelectric (excluding pumped storage), 21.6 GW wind, 13.9 GW solid biomass, 6.7 GW municipal solid waste, 5.4 GW geothermal, 2.8 GW gas from biomass, 1.0 GW solar photovoltaics, 0.4 GW solar thermal, and 0.3 GW tide, wave, and ocean power. 2.6 GW of capacity was reported as non-specified combustible renewables and wastes. 1.3 GW of plants were fired by industrial waste. Pumped storage capacity represented 85.8 GW. As the developments of production for the different renewable energy sources in *Electricity Production* suggest, growth of capacity has been strongest in the wind and solar power sectors.

OPPORTUNITIES FOR RENEWABLE ENERGY IN RUSSIA

This is a summary of *Opportunities for Renewable Energy in Russia*, a report to be published shortly by the IEA. A draft of the current version of the report is available for downloading at http://www.iea.org/techno/renew/re-nmc.pdf. The report details Russia's enormous and diverse renewable energy potential and characterizes the barriers to, and opportunities for harnessing it. The report indicates that high value market applications for renewable energy technologies can yield economic returns with small initial investments, and also offers some suggestions for policies and measures that could contribute toward building a supportive market environment for renewable energy technologies. Finally, it describes economic, social and environmental benefits that renewable energy can yield in specific Russian conditions.

Renewable Energy Resources and Potential

Russia has substantial and diverse renewable energy resources—wind, geothermal, hydro, biomass, and solar. Practically all regions have at least one or two forms of renewable energy that are commercially exploitable, while some regions are rich in all forms of renewable energy resources. The volume of renewable energy with economic potential corresponds to about 30% of the country's actual total primary energy supply (TPES), while the technical potential is estimated to be more than 5 times greater than TPES. Russian experts estimate that the amount of renewable energy that is economically recoverable is more than 270 million tonnes of coal equivalent (Mtce)[3], including 115.0 Mtce of geothermal energy, 65.2 mtce of small hydropower, 35.0 mtce of biomass, 12.5 mtce of solar, 10.0 mtce of wind, and 36.0 mtce of low potential heat.

It should be noted that these estimates of renewable energy potential have not been updated since the late 1990s, and do not consider the evolution of the economic situation in Russia. According to the new *Energy Strategy of Russia*, adopted in May 2003, the economic potential of renewables has grown significantly in recent years because the prices for fossil fuels have increased while the cost of renewable energy technologies has dropped.[4]

Renewables in the Russian Energy Market

Russia currently uses very little of its huge renewable energy potential. In 2000, only 3% of its total primary energy supply (TPES) was based on renewable energy, of which two-thirds was hydro and one-third all other forms. According to official Russian statistics, renewable energy (without large hydro) accounted for 0.5 % of total electricity generation in

3. Bezrukikh, P.P., Arbuzov, J.D., Borisov, G.A., Vissarionov, V.I., Evdokimov, V.M., Malinin, N.K., Ogorodov, N.V., Puzakov, V.N., Sidorenko G.I. and Shpak, A.A. (2002), *Resources and Efficiency of the Use of Renewable Sources of Energy in Russia*, SPb, Nauka.

4. Ministry of Fuel and Energy, *Energy Strategy of Russia until 2020*, Moscow, Approved 22 May 2003

2000 and 2001.[5] There are no statistical accounts for heat production from renewable sources. Russian experts estimate that heat based on renewables[6] amounts to about 4 % of the total heat in Russia.

Russia's energy mix is dominated by natural gas, which accounts for 52 % of TPES, and 42% of electricity generation inputs. The Russian domestic energy market is distorted by state-controlled prices that are kept artificially low. The input price for gas, which represents the lion's share of TPES and of electricity generation fuel input, is kept artificially low. Electricity and heat tariffs are also state-controlled, and often kept below the level of real costs. When the cost of using renewable energy is compared with the distorted cost of conventional energy market, it is not surprising that renewable energy is often not competitive.

Over the last decade, significant steps in an ongoing privatization and de-monopolization process have taken place in the Russian energy sector. A key element of these reforms is the introduction of cost-based pricing. In particular, major progress has been made in the electricity sector reform process with the adoption of a package of laws in April-May 2003. Work on secondary implementation legislation is currently underway and expected to be finalized by end-2003.

Reform in other energy markets is also underway, though its pace differs from sector to sector, but the ultimate aim is for prices of respective traditional energy sources to reflect their cost of supply in the near future. Then, as the existing energy infrastructure expands, comparisons among different fuel sources and technologies will favor those renewable energy technologies that are currently competitive in many market applications

Potential Markets for Renewable Energy Technologies

Currently in Russia there is significant "low-hanging fruit"—*i.e.* applications where renewable energy sources have a competitive advantage over conventional energy sources if the conventional sources are priced at delivered cost. The combination of Russia's rich renewable energy resources and modern, existing renewable energy (RE) technologies suggest that investment in renewable energy in Russia could generate large economic benefits.

Grid-Connected Electricity Supply

Globally, markets for grid-connected renewables, particularly wind, geothermal, small hydro and bio fuels, are growing rapidly due to investments in OECD and other countries. As a result of economies of scale, technology improvements and more efficient production techniques, costs have declined to a point where in many locations (of which Russia has many) these systems are cost-competitive with conventional energy technologies.

Although Russia as a nation is an energy exporter, most Russian regions produce less energy than they need, so they have to import it from the few energy-rich regions such as Western Siberia. Some of Russia's fossil-fuel-deficient regions face frequent disruptions in fuel supplies due to rugged weather and transportation conditions. Given long distances between regions, transportation costs can dramatically increase the total cost of fuel. Indeed, some remote territories such as Kamchatka, Republic Tyva and Republic Altai spend more than half of their budgets on fuel.[7]

Many regions have locally-available renewable energy resources. Their exploitation is commercially attractive since current traditional energy supplies are expensive and unreliable. Geothermal plants are commercially viable in Kamchatka, the Kuril Islands, and the North Caucasus. Large-scale wind projects can compete in coastal areas of the Russian Far East, in the steppes along the Volga River, and in the North Caucuses. Small hydro development is attractive in the North Caucuses, the Urals and in Eastern Siberia. Large-scale use of biomass for energy purposes is cost-effective in many Russian regions, especially in the north-western part of Russia, where the pulp and paper industry is well-developed.

5. Interview with P.P. Bezrukikh, head of the Department of Technological Progress, Russian Ministry of Fuel and Energy, 11 March 2003

6. Including biomass and wastes, low potential heat (heat pumps), solar thermal

7. Bezrukikh, P. "Non-Traditional Renewable Energy Sources", Analytical Report

Off-Grid Electricity Supply

Off-grid systems have proven to be very cost-effective in many OECD and developing countries because electricity suppliers can avoid the (often high) cost of extending transmission and distribution systems. Because of the sheer size of Russia, wind or hybrid wind-diesel systems, biomass-fired steam boilers with turbine-generators, and small hydro power stations are cost-competitive, or nearly so, with traditional fossil fuel technologies in remote areas depending on local conditions and the level of subsidies to conventional energy.

In Russia, about 10 million people are not connected to electricity grid, and are currently served by stand-alone generation systems using either diesel fuel or gasoline.[8] Nearly half of these diesel and gasoline systems are reported to be no longer operating because of fuel delivery problems and/or high fuel costs[9]. Remote northern and Far Eastern areas get their fuel by rail or road and sometimes by helicopter. These supplies are unreliable and expensive. Currently, the cost of transporting these fuels (when it can be sustained) is not borne by the users of these systems. Removing energy subsidies would provide the joint benefit of making renewable energy a viable alternative, as well as improving reliability by switching to locally available energy rather than depending upon distant suppliers and a strained transport system.

Another potential market for renewable energy off-grid systems is Russian *dachas* (summer country houses). Sixteen million families and ten million individuals have a small plot of land, and 22 million families have their own country house with private land, where they grow vegetables and fruit for personal use or for sale.[10] According to one estimate, 5 million individual farms and vegetable growers are not connected to an electricity grid.[11] Many other dachas have unreliable and expensive power supply.

Heat and Hot Water Supply

Because of the subsidisation of input fuel costs and end user prices, the use of energy for heating is extremely inefficient in Russia. There has been little incentive to focus on either energy efficiency or fuel choice. Liberalisation of energy prices will inevitably change this situation. Experience in North American and Europe shows that a number of currently available renewable energy technologies are cost-effective in heating and hot water applications. These technologies can be also effectively used in Russia. Direct use of geothermal energy for space heating, hot water production, warming of greenhouses, crop drying, etc. is commercially viable in Kamchatka, the North Caucasus and other regions with large geothermal resources. Conversion of coal- or oil-fired, district heating boilers to burn biomass fuels (especially wood wastes) is another cost-effective application, especially in cases where Russian consumers face unsubsidized heavy fuel oil and coal prices. Small and medium-sized boilers have already been converted to biomass use in Estonia, Latvia, Lithuania and some regions of Russia.[12] Simple payback time for these conversions has been around 3-5 years, and positive financial returns have been demonstrated. [13] The most favorable regions for this market are Leningrad, Karelia, Vologda, Novgorod, Maritime and Khabarovsk.

Solar collectors can improve the efficiency of heat supply either as stand-alone systems, or when combined with heat-only boilers. Today Russian district heating systems with heat-only boilers account for some 52% of total heat generation. These centralized boiler plants operate to produce heat and hot water in winter, and only hot water in summer. Solar hot water collectors could replace the existing traditional source of hot water and allow the district-heating boilers to be shut down in the summer months. In other months, solar collectors could be used to heat boiler feed water, or as an additional heat source, thereby reducing the boiler's load and fuel consumption. If relative costs of the "hybrid" systems included the fuel savings and the reduction

8. Bezrukikh, P. "Non-Traditional Renewable Energy Sources", Analytical Report; Martinot, E., "Renewable Energy in Russia: Markets, Development and Technology Transfer", Renewable and Sustainable Energy Reviews, 1999, p. 53.

9. Martinot, E., "Renewable Energy in Russia: Markets, Development and Technology Transfer", Renewable and Sustainable Energy Reviews, 1999, p. 53.

10. Strebkov, D., "Trends In Russian Agriculture and Rural Energy", Intersolar Centre.

11. Karabanov S. "the Prospects for Photovoltaic Development in Russia", Renewable Energy Report, 2001, UNESCO pp 88-89.

12. See http://www.grida.no/climate/ipcc/tectran/346.htm for a detailed review of the Swedish Government's programme for biomass boiler conversions in the Baltic States.

13. Martinot, E., "Renewable Energy in Russia: Markets, Development and Technology Transfer", Renewable and Sustainable Energy Reviews, 1999, p. 54.

in operating and maintenance costs, these systems could be cost-competitive with conventional boilers in many areas.

Most rural settlements in Russia have no centralized heat supply, so some 12.6 million houses are heated by burning wood, peat or coal.[14] Families spend a significant part of their income and/or their time to provide fuel for winter. In-door burning of wood is often inefficient and harmful to human health and the environment. These rural areas represent a vast potential market for modern technologies for small-scale (individual) heat and hot water production from biomass (agricultural and municipal wastes and wood), and also for individual solar collectors.

Competitive Industrial Markets

In certain industrial applications in OECD countries, renewable energy technologies (PV, small wind turbines, etc.) have proven to be more cost-effective than conventional energy sources in many instances. The number of such application is growing and includes: marine/river navigation aids, cathodic protection of pipelines and well heads, power for offshore oil and gas platforms, power for telecommunications, and many other applications. It should be noted, that along with providing lower costs at the respective sites, these industrial applications also provide a base of consumers so that RE technology suppliers can produce at higher volume and profitably expand into wider markets. The same dynamics will appear in Russia if industrial sector decision makers are aware of these cost-effective options.

Renewable Energy R&D and Manufacturing

Today, Russia's RE technologies (except for large capacity wind turbines) are comparable to foreign technologies in function and in scientific and technical characteristics. But, without ready markets, a commercial industry has been slow to develop. The cost of Russian technologies is on average 30% to 50% lower than that of western analogues,[15] but the quality and reliability of most Russian RE equipment is typically lower. Most Russian technologies could best be described at the stage of R&D or demonstration, while similar Western technologies are already more or less commercialised. The Russian renewables industry needs encouragement by the government in the form of national goals and legislation, and partnership with the international industry, to kick-start a viable domestic market. If Russia were to develop a viable domestic market for renewable energy technologies, based on its already considerable technical and scientific experience, it could eventually compete in the international arena.

Facilitating a Renewable Energy Market

Just like other sectors of the economy, the renewable energy sector faces major barriers to investment, including lack of transparency; competition from subsidized conventional energy sources; and a weak financial industry. The lack of a specific national RE strategy, of adequate legislation and regulatory framework further constrains the development of renewable energy markets. Improving the overall investment climate, by continuing the economic, financial, legal, regulatory and fiscal reforms, is therefore vital. It is also important to maintain and extend the reforms to the energy sector and to eliminate subsidies for conventional energy sources.[16]

In addition to broad economic reforms, Russian policy makers could also introduce specific measures to enhance the development of renewable energy. This will not necessarily require substantial financial support because there are practical low-cost and often competitive measures that would stimulate investment in renewable energy technologies and could lead to considerable economic returns. In the short term, Russian policy makers could concentrate on measures that would enhance the use of RE systems that already have competitive advantages in specific applications. As Russian businesses become experienced with installation and maintenance on a large scale, new markets for these technologies will open up, creating even more competitive opportunities.

14. Strebkov, D. "Energy Use of Biomass", Intersolar Centre (in Russian).

15. Bezrukikh, P. "Non-Traditional Renewable Energy Sources", Analytical Report, Russian Ministry of Fuel and Energy, http://www.mte.gov.ru/ntp/energo/analit_doc.htm

16. For a more detailed discussion of the reform process in Russa see IEA/OECD 2002, Russia Energy Survey

Each renewable energy technology will require specific measures to facilitate its market deployment, but a number of general actions are suggested here that could enable the development of a market for RE technologies.

The typical pattern that countries have followed to develop a renewable energy market is to implement a strategy in three main steps: adopt a renewable energy strategy (identify *goals*); adopt relevant laws (set up the *market structure*); and specify implementation mechanisms (establish *market rules*). It is possible, however, to introduce some actions of each next step before the full implementation of the preceding one.

Russia has made the first important steps toward the recognition of the importance of renewable energy sources. The Federal program "Energy Efficient Economy in 2002-2005 and up to 2010" adopted in November 2001, contains a section "Effective Energy Supply of Regions, including Northern Territories, on the basis of Non-traditional Renewable Energy Sources and Local Fuels." The national energy strategy[17], adopted by the Russian government in May 2003, states the strategic goals of the development of renewable energy and local fuels (wood and peat) are to:

- reduce use of non-renewable energy sources;
- reduce negative environmental impact of the energy sector;
- stabilize energy supply in decentralized and isolated regions;
- reduce the expense of fuel transported over long distances.

National goals can be quantified in the form of Renewable Energy Targets (RETs) that set a minimum percentage of energy or electricity supply in a given country (or region) from renewables. For example, the European Union's Renewable Energy Directive[18] sets the target to achieve 22,1% of electricity produced from renewable energy and 12% of renewables in gross national energy consumption by 2010. The Russian energy strategy does not articulate official targets for renewable energy development, but it states that it is possible to put into operation 1000 MW of power generation capacity and 1200 MW of heat capacity based on renewables by 2010, if the necessary governmental support is ensured. It is not precise, however, about how the governmental will support renewables. Building on experience in other countries, Russia could also establish a national renewable energy targets and outline a strategy (or an action plan) to achieve these targets. Conversely, Russia could eschew a national target, and focus on setting real energy prices, and then establishing a set of incentives and other market mechanisms to encourage renewables' contribution to the goals of the 2001 national energy strategy.

The new Russian energy strategy underlines the necessity of adopting a federal law on renewables. Indeed, a national renewable energy law would translate a national strategy into a structure of roles and authorities. The next step in the RE strategy implementation would be bringing into practice the national strategy on the territorial, regional and local levels. This will require adequate regulatory and institutional rules authorized under the national renewable energy policy. Regulations and provisions can either enforce the mechanisms outlined in the national law, or introduce specific regional/local initiatives in accordance with the national strategy.

National policies as well as regulations can be of different nature depending on their purpose: to create legal and institutional framework for renewable energy project implementation, to help the RE industry, or to stimulate or assist consumers of RE systems. Some regional and local activities can be aimed at direct support of concrete renewable energy projects. This report suggests, based on international experience, a number of policies and measures that could contribute toward building a market for renewable energy technologies: e.g. renewable energy portfolio standards, broad information dissemination, fiscal incentives (reduced VAT, accelerated depreciation, investment tax credits, etc.), direct project support and others.

17. Energy Strategy of Russia up to 2020 (in Russian), http://www.mte.gov.ru/docs/32/103.html

18. Directive 2001/77/EC on the promotion of electricity from renewable energy sources in the internal electricity market, adopted by the Council of Ministers and the European Parliament in September 2001.

Renewable Energy in Russia: the Economic, Social and Environmental Context

Security of Energy Supply

The Russian energy sector, with its aging capacity and deteriorating equipment, faces the challenge of meeting rapidly growing domestic energy demand. Renewable energy can contribute to meeting this challenge, particularly in regions with a deficit of traditional energy sources. Additionally, renewables can play a role in providing power and heat to distributed consumers. In many isolated settlements renewables are the most economic, and sometimes even the only option of providing electricity and heat services to consumers.

Energy Exports

In Russia, energy exports are the major source of hard-currency income and budget revenues. Russia would like to further increase its oil and gas output and sales to enhance economic growth. At the same time, however, one of the government's objectives is to reduce the economy's dependence on energy exports by diversifying its base of industries. Increasing the share of renewable energy would stimulate the development of Russian renewable energy industry, thus contributing to meeting and the goal of diversifying Russian industry. In the medium to long term, "green exports" could become a reality, thus contributing to the goal of diversifying Russia's exports. Russia is located nearby many energy-hungry neighbours who are also searching for ways to improve their environment and their energy security. If Russia could establish a commercial market for renewable energy, Russian renewables-based electricity could fire homes and industry not only in Russia, but also in Europe and Asia in the future.

Social and Environmental Benefits

Renewable energy has significant environmental and social benefits over conventional energy sources. In Russia, increasing the use of renewable energy could reduce unemployment, improve living conditions, and provide needed support for rural areas and for Northern and Eastern territories. Replacing conventional energy sources with "green" renewable energy technologies could also reduce the rate of environmental degradation and improve the health and well-being of the population.

PART II

OECD RENEWABLES AND WASTE

GRAPHS AND DATA

PRINCIPLES AND DEFINITIONS

I. General Notes

This publication is the second edition of *Renewables Information*. The inaugural edition was published in December 2002.

Even though data quality has improved since the last edition due to the IEA's continuous efforts to increase quality of renewables statistics, it is important to highlight once again that the published time series often have breaks due to lack of information (especially in the early years of the series). Difficulties remain in the collection process of renewables statistics from some OECD member countries.

For example, one of the problems continues to be the breakdown between renewable municipal solid waste and non-renewable municipal solid waste, which is available for most countries only since 1999. Before 1999, the IEA did not ask for this distinction and thus data were rarely collected separately. The breakdown into the two sub-products is nonetheless important because most countries include the renewable (biodegradable) part of municipal solid waste in their renewables definition, while they exclude the other part. Furthermore, the non-renewable component is counted when calculating CO_2-emissions. Increased attention to the separate renewable and non-renewable collection of municipal solid waste and to recycling also makes it difficult to estimate the breakdown throughout the time series since the relative percentage can vary significantly from one year to the next.

Another problem remains the data collection from off-grid systems that work independently or are connected to a local distribution system. These systems are frequently omitted in national statistics due to difficulties in capturing these data. This plays a major role in the solar energy sector, where production and capacity are likely to be much higher than indicated in this publication.

Special attention should also be given to the percentage of renewables over TPES in countries where net exports of electricity are large, and in particular if they represent a significant percentage of TPES (for example, see Paraguay in Table 1 of "Development of Renewables and Waste Sources in the World", Part I). In these cases, the high net exports of electricity can heavily influence the percentage of renewables TPES, especially if the electricity exported has been produced mostly from renewable sources (e.g. from hydro).

According to IEA definitions, the renewable products are: hydro (with no differentiation of large, medium or small), geothermal, solar photovoltaics, solar thermal, tide, wave, ocean, wind, solid biomass, gases from biomass, liquid biofuels, and renewable municipal solid waste. Total renewables does not include industrial waste, non-renewable municipal solid waste, non-specified combustible renewables and waste, waste heat, net heat 'created' due to heat pumps, and the amount of electricity generated with hydro pumped storage.

Electricity from fuel cells using hydrogen from renewable sources as well as non-renewables fuel cells is not included in this publication due to lack of reliable information.

The lack of reliability of statistics prevents forming a complete picture of renewable energy consumption in the different sectors (i.e. industry, transport, commercial/public and residential sectors).

The evolution of new technologies exploiting renewable sources is also not covered here. These will be some of the important features for future improvements of IEA's renewables publications.

II. Structure of the Book

Renewables Information 2003 contains detailed statistical information on renewable and waste products for the 30 member countries of the OECD and for regional aggregates (OECD Total, IEA Total, OECD North America, IEA North America, OECD Europe, IEA Europe, OECD/IEA Pacific and European Union). Additionally, it contains selected statistical information on Non-OECD countries.

The tables of regional aggregates are presented before the country tables, which are set out in alphabetical order.

The book consists of:

Part I

- an analysis of renewables and waste development in the world and in OECD countries (including selected graphs and a table with renewables indicators by country)

Part II

- three summary tables showing percentage of renewables TPES and in electricity generation for all OECD countries (both including and excluding hydro from the total renewables),
- one summary table showing the respective contribution of the different renewables products to total renewables supply for all OECD countries for the year 2001,
- a set of graphs showing the electricity production by type of renewable source for each OECD country,
- a set of five tables for each OECD member country and for each of the eight regional aggregates.

The list of the five tables is described below. It should be noted that Table 4, Gross Heat Production, is not available for all countries.

Table 1: Energy Supply, GDP and Population

Table 2: Net Generating Capacity of Renewables and Waste Products

Table 3: Gross Electricity Generation from Renewable Sources

Table 4: Gross Heat Production from Renewable Sources

Table 5: Primary Energy Supply, Transformation and Final Consumption of Renewable Products

Table 1 provides a full set of main indicators for each OECD aggregate and Member country such as TPES, percentage of renewables, GDP, population, electricity generation and the share of electricity produced from renewables products.

Table 2 shows a comprehensive status of net electrical capacity by type of fuel, as well as solar collectors' surface.

Table 3 and Table 4 present respectively gross electricity and heat production from each of the renewable and waste sources as well as the breakdown according to the type of plant (electricity only, CHP or heat only plants).

In Table 5, a short balance for different products is shown. These products are: geothermal, solar thermal, industrial waste, renewable and non-renewable municipal solid waste, solid biomass, gas from biomass and liquid biofuels. Due to the lack of reliable statistics for some of the sub-sectors, the balance consists only of the following five flows: production, net imports, miscellaneous to balance, transformation sector and final energy consumption. In the case of geothermal, if transformation inputs are not submitted by the national administrations, they are estimated based on a 10%-efficiency for electricity generation and a 50%-efficiency for heat generation. Solar PV and thermal transformation inputs into electricity and heat production are estimated at a 100%-efficiency (based on the IEA methodology that the first energy form downstream in the production energy is considered the primary supply).

III. Notes on Energy Sources

A. Capacity

Net Maximum Capacity at Peak Period

The IEA has adopted UNIPEDE definitions 2.1.3.5 and 2.2.5.1 for Net Maximum Capacity at Peak Period.

Net maximum capacity is defined as the sum of net maximum capacities of all stations taken individually at a given period of operation. It is the maximum power assumed to be solely active power that

can be supplied, continuously, with all plants running, at the point of outlet to the network. It is assumed that all equipment is in full working order, that the power produced can be disposed of without any restrictions and that optimum conditions prevail as regards primary sources (i.e. flow and head in the case of hydro plants; grades and quantity of fuel in hand and water supply, temperature and purity, in the case of combustible fuel-fired plants and assuming that the output and method of production in CHP plants are those which lend to maximum electricity production). The period of operation assumed for present purposes is continuous running: in practice 15 hours or more per day.

The capacity is *net* in the sense that it is the output capacity measured at the station busbars, i.e. after deducting the power consumed by station auxiliaries and losses in station transformers.

B. Electricity and Heat

Gross Electricity Production

Gross electricity production is measured at the terminals of all alternator sets in a station; it therefore includes the energy taken by station auxiliaries and losses in transformers that are considered integral parts of the station.

Hydro stations' production includes production from pumped storage plants unless stated differently.

Fuel consumption in combustible fuel-fired power plants are split into three types of plants (electricity, CHP and heat). These are defined as follows:

Types of Plants

Electricity Plants refers to plants, which are designed to produce electricity only.

Combined Heat and Power Plants (CHP) refers to plants, which are *designed* to produce both heat and electricity simultaneously. UNIPEDE refers to these as co-generation power stations. Where possible, fuel inputs and electricity/heat outputs are reported on a unit basis rather than on a plant basis.

Heat Plants refers to plants, which are designed to produce heat only.

Heat delivered from CHP or Heat plants may be used for process or space heating purposes in any sector of economic activity including the residential sector.

It should be noted that the reporting of data on fuel use and electricity and heat production according to plant type is normally conducted at the level of the *plant,* assuming that if a plant comprises at least one CHP *unit* then the entire plant is considered a CHP plant.

Gross Heat Production

Data collected on heat has been expanded to obtain more disaggregated data on inputs and outputs of 'combined heat and power plants' and on 'heat only plants'. Data on heat become available in different years for different countries and thus aggregated country data should be used with caution.

C. Supply, Transformation and Consumption

Primary Production

Production is the production of primary energy, i.e. combustible renewables and wastes, geothermal or solar thermal. Production is calculated after removal of impurities.

Net Imports

Net imports are the sum of total imports minus total exports.

Miscellaneous to Balance

Miscellaneous to balance includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Transformation Sector

The transformation sector comprises the conversion of primary forms of energy to secondary forms as well as further transformation processes.

Final Energy Consumption

Total final consumption (TFC) is the sum of consumption by the different end-use sectors (industry, transport and other).

D. Products

Hydro

Hydro refers to potential and kinetic energy of water converted into electricity in hydroelectric plants. Hydro includes output from pumped storage plants.

Geothermal

Energy available as heat emitted from within the earth's crust, usually in the form of hot water or steam. It is used for electricity generation, heat production for sale to third parties or directly as heat in its primary form.

Electricity Output: For electricity generation, unless the actual efficiency of the geothermal process is known, the quantity of geothermal energy input for electricity generation is inferred from the electricity production at geothermal plants assuming an average thermal efficiency of 10%.

Heat Sold: For heat produced and sold to a third party, unless the actual efficiency of the geothermal process is known, the quantity of geothermal energy input for heat production is inferred from the heat production at geothermal plants assuming an average thermal efficiency of 50%.

Final Energy Consumption: Directly used as heat for district heating, agriculture or greenhouses.

Solar Photovoltaics (PV)

Solar radiation exploited for electricity generation by photovoltaic cells.

Note: Passive solar energy for direct heating, cooling or lighting of dwellings or other buildings is not included.

Solar Thermal

Solar radiation exploited for hot water production and/or electricity generation by flat plate collectors or solar thermal-electric plants.

Note: Passive solar energy for direct heating, cooling or lighting of dwellings or other buildings is not included.

Tide

Mechanical energy derived from tidal movement or wave motion and exploited for electricity generation.

Wind

Kinetic energy of wind exploited for electricity generation in wind turbines.

Industrial Waste

Industrial waste consists of solid, liquid or gaseous products (e.g. tyres) combusted directly, usually in specialised plants, to produce heat and/or power and that are not reported in the category solid biomass.

Renewable Municipal Waste

Renewable municipal solid waste consists of the biodegradable part of municipal waste products that are combusted directly to produce heat and/or power and comprises waste produced by the residential, commercial and public services sectors that are collected by local authorities for disposal in a central location. Hospital waste is included in this category.

Non-Renewable Municipal Waste

Non-renewable municipal solid waste consists of the non-biodegradable part of municipal waste products that are combusted directly to produce heat and/or power and comprises waste produced by the residential, commercial and public services sectors that are collected by local authorities for disposal in a central location. Hospital waste is included in this category.

Solid Biomass

Biomass is defined as any plant matter used directly as fuel or converted into other forms before combustion. Included are wood, vegetal waste (including wood waste and crops used for energy production), animal materials/wastes, sulphite lyes, also known as "black liquor" (an alkaline spent liquor from the digesters in the production of sulphate or soda pulp during the manufacture of paper where the energy content derives from the lignin removed from the wood pulp) and other solid biomass.

Charcoal produced is also included here. Since charcoal is a secondary product, its treatment is slightly different than that of the other primary biomass. Production of charcoal (an output in the transformation process) is offset by the inputs of primary biomass into the charcoal production process. The losses from this process are included in the transformation sector. Other supply (e.g. trade and stock changes) as well as consumption are aggregated directly with the primary biomass. In some countries, only primary biomass is reported.

Gas from Biomass

Biogas is derived principally from the anaerobic fermentation of biomass and solid wastes and com-

busted to produce heat and/or power. Included in this category are landfill gas and sludge gas (sewage gas and gas from animal slurries) and other biogas.

Liquid Biomass

Liquid biomass includes bio-additives such as bio-ethanol, biodiesel, biomethanol, biodimethyl-ether and biooil.

Non-Specified Combustible Renewables and Waste

Non-specified combustible renewables and waste is associated with one or more of the following four products: industrial waste, municipal waste, solid biomass or biogas.

Energy sources are reported as non-specified when national administrations are not able to break down the data into the different products (especially in earlier years of the time series), or when data are confidential.

IV. Country Notes

Data for all countries and years shown in this publication have been subject to revisions during a reconciliation process of IEA data with Eurostat and/or national publications in 2002.

Australia

Data refer to the fiscal year, July 2000 to June 2001 for 2001.

Biogas production at sewage treatment plants is unavailable.

Inputs of solid biomass to CHP plants are estimated by the Secretariat until 1999.

Prior to 1995, electricity production from biogas existed but was not reported.

Austria

In the 2003 edition, data have been revised by the Austrian Administration for all years shown in the publication.

Only gross maximum electrical capacity is available.

Belgium

No electricity production from solar is reported.

Some electricity production from CHP plants is included in electricity plants.

Canada

Only gross maximum electrical capacity is available.

For autoproducer plants generating electricity with process steam produced from combustible renewables and waste, the energy required to produce the initial steam is not taken into account by the Canadian Administration and as a result, the efficiencies are overstated.

Czech Republic

Data from 1993 onwards have been officially submitted by the Czech Administration. This may lead to breaks in series between 1992 and 1993.

In 1999 and 2000, the Czech electricity market was restructured and various big enterprises were divided, sold and merged. This causes breaks in series for these years.

Data for municipal solid waste and liquid biomass become available in 1999.

Solid biomass inputs to public electricity plants and to public CHP plants include industrial waste and biogas for 1995 and 1996.

Combustible renewables data are available as of 1992.

Denmark

Fish oil used in heat plants is included with solid biomass.

Finland

A new survey system and a reclassification of the data lead to breaks in series for most products and sectors between 1999 and 2000.

Data for biogas and industrial waste are available from 1996.

Heat output form autoproducer CHP plants become available in 1996.

Prior to 1992, outputs from the use of combustible renewables and waste to generate electricity and/or

heat were included in coal and cannot be reported individually here.

Before 1993, all wood electricity production is allocated to CHP plants.

France

For certain products, data include the French overseas territories because the French Administration is note able to differentiate between metropolitan and overseas production.

Germany

The German Administration submitted an incomplete annual questionnaire on renewables and waste for the year 2001. As a consequence, the Secretariat estimated the missing data based on statistics published by the Federal Environment Ministry and data submitted in the Electricity Questionnaire. Where estimation was impossible due to lack of information, the data from the previous year was used.

Electricity production in electricity plants includes production from CHP plants.

All heat production has been included in CHP plants.

Electricity generating capacity data for unified Germany is not available prior to 1991. This leads to a break in series between 1991 and 1992.

The GDP figures prior to 1991 have been based on conversions made by the German Institute for Economic Research (*Deutsches Institut für Wirtschaftsforschung*) and the former Statistical Office of the GDR (*Statistisches Amt der DDR*). These conversions are calculations which are highly dependant on specific hypotheses and do not necessarily reflect economic realities.

Greece

No heat production of solar heat is reported although it exists.

New information on solid biomass end-use is available from 1996 and leads to breaks in series between 1995 and 1996.

Data on industrial waste are available from 1992.

Hungary

Solar thermal direct use is available from 2001.

Data on industrial waste becomes available in 2001.

Geothermal direct use is available from 1999.

Data on municipal waste are available from 1998.

Iceland

In 1998, 60 MW of generating capacity was installed in the geothermal CHP plant at *Nesjavellier*. Since the plant was inoperable for four months, production of geothermal heat decreased compared to 1997. The extra electricity capacity caused electricity production from geothermal to almost double over the same period.

Heat production from municipal wastes is available from 1993.

Electricity production from geothermal sources in CHP plants is available from 1992.

Ireland

Although heat pumps are installed in Ireland, no heat production or consumption data are officially submitted to the IEA.

From 1993 to 1995, end-use consumption of gas from biomass is included in the transformation sector.

Data on solid biomass are available from 1992 and biogas from 1993.

Japan

For 2000 and 2001, some of the data for Japan are estimated by the IEA Secretariat to ensure time series consistency with the new Japanese energy balance methodology. Therefore, some of the data are different from those that are published by the Japanese Government. A full revised time series for 1990 to 2001, based on the original data published by the Japanese Government will be published in next year's edition. As a consequence of the new methodology, geothermal direct use is no longer reported.

For 2002 preliminary data, electricity produced from combustible renewables and waste is equal to 2001 revised data submitted by the Japanese Administration.

In some instances, data refer to the fiscal year (2001 refers to the period April 2001 to March 2001).

CHP electricity production is included in electricity only plants.

Production of electricity from solar PV is heavily understated due to data unavailability.

Heat production from geothermal and solar thermal sources in Japan is not reported by the Japanese Administration.

Direct use of geothermal and solar thermal becomes available in 1994 and 1998, respectively.

Until 1997, the electricity produced using TRT technology (Top pressure Recovery Turbines) was included with electricity generated from solid biomass. Now it is included with electricity generated from coal gases and as a consequence is no longer reflected in the data for recent years.

A change in methodology leads to a break in series between 1997 and 1998.

Korea

Most data on renewable energy sources have been estimated by the Secretariat using information provided by the Korean Administration.

Heat data are available starting in 1991.

Pumped storage in electricity plants is available from 1991.

Luxembourg

Most of the hydro production shown for Luxembourg is from the Vianden pumped storage plant and is exported directly to Germany.

Data on solid biomass are available from 1992.

Mexico

Data on electricity production from solid biomass and gas from biomass are available from 1998.

Direct use of solar thermal and electricity production from solar PV is available from 1998.

Starting in 1998, CRE (Comisión Reguladora de Energia) has published new data for electricity generation by autoproducers. This may lead to breaks in the time series between 1997 and 1998.

Netherlands

All electricity produced from combustible renewables and waste is included in CHP plants.

A new survey leads to breaks in series in the end-use consumption for solid biomass and biogas between 1998 and 1999.

New Zealand

Prior to 1994, data refer to fiscal year (April to March).

Poland

Because the Polish energy classification system is not yet well established, high statistical variations occur in certain consumption sectors.

Data for gases from biomass refer only to the gas from fermentation of biomass.

Data on direct use of geothermal and data on liquid biofuels become available in 2000 and 2001, respectively.

Before 2000, industrial wastes were used interchangeably with light fuel oil in some plants, which might result in breaks in the time series.

Some changes in the data collection process lead to breaks in series between 1996 and 1997.

The Polish Administration adopted new methodologies to estimate the production of heat sold in heat plants (1993) and in CHP plants (1995). This causes breaks in series between 1992 and 1993 and 1994 and 1995 for heat production and fuel inputs in these plants

Due to changes in data availability, there is a large increase in solid biomass between 1992 and 1993.

Portugal

Data on municipal wastes are available from 1999.

Slovak Republic

Industrial waste, municipal solid waste, biogas and liquid biofuels data become available in 2001. Before 2001, industrial waste and municipal solid waste inputs are included in the transformation sector of solid biomass.

Solid biomass supply and consumption data for 2000 are estimated by the Secretariat.

Until 2000, electricity statistics have been estimated by the Secretariat. From 1993, IEA estimates are

based on direct submissions from the Statistical Office of the Slovak Republic and the Power Research Institute (EGU) of Bratislava. This may lead to breaks in series between 1992 and 1993.

Spain

Data on direct use of solar and geothermal heat are available from 1994.

Sweden

Heat production from solid biomass in auto CHP plants includes waste heat.

Transformation data for industrial waste are not available prior to 1998.

Data for biogas begin in 1992. Before, it is included with solid biomass.

Heat produced for sale in heat pumps is reported from 1992.

Switzerland

Geothermal direct use is overstated as it refers to heat production by geothermal heat pumps, which include inputs from electricity and/or gas in the transformation process.

Before 1998, only net imports are reported for solid biomass.

Electricity production from pumped storage by autoproducers is available from 1996.

Turkey

The Turkish Administration surveys renewables and wastes used for power and heat intermittently. Due to this fact, some breaks may appear in the combustible renewables and waste series.

Data on geothermal was revised for all years in the 2003-edition based on information provided by the Turkish Administration.

Data for the transformation sector are estimated for industrial waste, municipal solid waste and biogas for the years 1998 to 2001.

In 1995, the Turkish Administration reclassified autoproducer plants by type and source to be consistent with IEA definitions. This causes breaks between 1994 and 1995 for electricity production.

United Kingdom

In the 2003, data were revised for all years by the British Administration.

Heat output is available from 1999.

United States

The US introduced a new methodology for data from 2000. From 2000, independent power producers are included in public producers, leading to breaks in series between 1999 and 2000. Additionally, because the US administration cannot distinguish between heat sold by autoproducers and heat used in the final consumption sector, all heat produced by autoproducers is included in final consumption from 2000 on. Revisions for the year 1999 are expected for the next edition.

Solar thermal electricity production was overstated for the years prior to 2000 because it included electricity production from natural gas occurring in solar thermal power plants.

Data on liquid biomass become available in 1993.

Data on industrial waste and gas from biomass is available as of 1992. Before, they are included in non-specified renewables and waste (only non-specified electricity production is shown in this publication).

Heat production from solid biomass becomes available in 1991.

V. Geographical Coverage

Denmark excludes Greenland and the Danish Faroes, except prior to 1990, where data on oil for Greenland were included with the Danish statistics. The Administration is planning to revise the series back to 1974 to exclude these amounts.

France includes Monaco and excludes overseas departments (Martinique, Guadeloupe, French Polynesia and Réunion).

Germany includes the new federal states of Germany from 1970 onwards.

Italy includes San Marino and the Vatican.

Japan includes Okinawa.

The **Netherlands** excludes Surinam and the Netherlands Antilles.

Portugal includes the Azores and Madeira.

Spain includes the Canary Islands.

United States includes Puerto Rico, Guam, the Virgin Islands and the Hawaiian Free Trade Zone.

The **European Union (EU)** includes Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom.

The **International Energy Agency (IEA)** includes Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Korea, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States.

The **Organisation for Economic Co-Operation and Development (OECD)** includes Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, *Iceland*, Ireland, Italy, Japan, Korea, Luxembourg, *Mexico*, the Netherlands, New Zealand, Norway, *Poland*, Portugal, the *Slovak Republic*, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States.

OECD North America includes Canada, *Mexico,* and the United States.

OECD Pacific includes Australia, Japan, Korea and New Zealand.

OECD Europe includes Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, *Iceland*, Ireland, Italy, Luxembourg, the Netherlands, Norway, *Poland*, Portugal, the *Slovak Republic*, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

IEA and IEA regional totals include only IEA Member countries; non-IEA Members are shown in italics above.

VI. Conversions

General Conversion Factors for Energy

To:	**TJ**	**Gcal**	**Mtoe**	**MBtu**	**GWh**
From:	multiply by:				
TJ	1	238.8	2.388×10^{-5}	947.8	0.2778
Gcal	4.1868×10^{-3}	1	10^{-7}	3.968	1.163×10^{-3}
Mtoe	4.1868×10^{4}	10^{7}	1	3.968×10^{7}	11630
MBtu	1.0551×10^{-3}	0.252	2.52×10^{-8}	1	2.931×10^{-4}
GWh	3.6	860	8.6×10^{-5}	3412	1

Conversion Factors for Mass

To:	**kg**	**T**	**lt**	**st**	**lb**
From:	multiply by:				
kilogramme (kg)	1	0.001	9.84×10^{-4}	1.102×10^{-3}	2.2046
tonne (t)	1000	1	0.984	1.1023	2204.6
long ton (lt)	1016	1.016	1	1.120	2240.0
short ton (st)	907.2	0.9072	0.893	1	2000.0
pound (lb)	0.454	4.54×10^{-4}	4.46×10^{-4}	5.0×10^{-4}	1

Conversion Factors for Volume

To:	**gal U.S.**	**gal U.K.**	**bbl**	**ft^3**	**l**	**m^3**
From:	multiply by:					
U.S. gallon (gal)	1	0.8327	0.02381	0.1337	3.785	0.0038
U.K. gallon (gal)	1.201	1	0.02859	0.1605	4.546	0.0045
Barrel (bbl)	42.0	34.97	1	5.615	159.0	0.159
Cubic foot (ft^3)	7.48	6.229	0.1781	1	28.3	0.0283
Litre (l)	0.2642	0.220	0.0063	0.0353	1	0.001
Cubic metre (m^3)	264.2	220.0	6.289	35.3147	1000.0	1

Decimal Prefixes

10^{1}	deca (da)	10^{-1}	deci (d)
10^{2}	hecto (h)	10^{-2}	centi (c)
10^{3}	kilo (k)	10^{-3}	milli (m)
10^{6}	mega (M)	10^{-6}	micro (μ)
10^{9}	giga (G)	10^{-9}	nano (n)
10^{12}	tera (T)	10^{-12}	pico (p)
10^{15}	peta (P)	10^{-15}	femto (f)
10^{18}	exa (E)	10^{-18}	atto (a)

CONTRIBUTION OF RENEWABLE ENERGY SOURCES TO TPES* (%), BY COUNTRY

	1990	1995	1997	1998	1999	2000	2001	Average annual percent change 90-01
OECD Total	5.9	6.0	6.0	6.0	6.0	5.9	5.7	-0.2
OECD North America	6.5	6.6	6.6	6.4	6.4	6.1	5.7	-1.2
OECD/IEA Pacific	3.8	3.4	3.5	3.8	3.7	3.6	3.5	-0.8
OECD Europe	5.7	6.3	6.3	6.4	6.5	6.7	6.7	1.5
IEA Total	5.8	5.9	5.9	5.9	5.9	5.7	5.6	-0.4
IEA North America	6.3	6.3	6.3	6.2	6.2	5.8	5.5	-1.2
IEA Europe	5.9	6.4	6.4	6.5	6.6	6.7	6.7	1.1
European Union	4.8	5.2	5.4	5.5	5.5	5.7	5.8	1.6
Australia	5.8	5.9	6.3	6.0	5.9	5.8	5.7	-0.2
Austria	19.9	21.3	20.6	20.3	21.9	22.0	21.5	0.7
Belgium	1.3	1.3	1.2	1.2	1.3	1.0	1.0	-2.1
Canada	16.1	16.5	16.5	16.2	16.6	16.5	15.6	-0.3
Czech Republic	0.3	1.4	1.5	1.5	1.8	1.3	1.5	17.2
Denmark	6.6	7.1	7.6	8.1	8.9	9.9	10.4	4.1
Finland	19.5	21.2	20.8	22.2	22.4	24.4	23.0	1.5
France	6.8	7.2	6.7	6.5	6.8	6.6	6.8	0.1
Germany	1.6	1.9	2.2	2.4	2.3	2.6	2.6	4.3
Greece	5.0	5.5	5.4	5.1	5.3	5.0	4.6	-0.7
Hungary	1.4	2.1	1.7	1.6	1.6	1.8	1.6	1.3
Iceland	64.5	67.2	66.5	67.2	70.9	71.1	72.9	1.1
Ireland	1.6	2.0	1.6	2.0	1.8	1.8	1.7	0.8
Italy	4.3	4.9	5.5	5.6	6.0	5.4	5.7	2.6
Japan	3.1	2.9	3.1	3.4	3.3	3.2	3.1	-0.2
Korea	0.6	0.6	0.8	1.0	1.0	1.1	1.1	5.9
Luxembourg	1.0	1.6	1.6	1.8	1.5	1.8	1.8	5.9
Mexico	11.1	11.4	10.6	10.3	10.5	10.6	10.2	-0.8
Netherlands	1.0	1.0	1.1	1.2	1.3	1.4	1.4	3.3
New Zealand	35.1	30.5	26.1	28.3	29.0	28.6	27.5	-2.2
Norway	50.1	47.4	44.0	44.4	44.3	48.5	45.0	-1.0
Poland	1.6	3.9	3.7	4.0	4.0	4.2	4.5	9.9
Portugal	15.7	13.1	14.7	13.4	10.9	12.8	13.7	-1.2
Slovak Republic	1.6	2.8	2.5	2.6	2.6	2.8	3.8	8.5
Spain	6.8	5.4	6.2	6.1	5.2	5.7	6.5	-0.5
Sweden	25.1	26.2	27.7	27.7	27.8	32.4	29.1	1.3
Switzerland	13.1	15.6	14.5	14.5	16.2	15.6	16.2	2.0
Turkey	18.2	17.4	15.9	16.0	15.1	13.2	13.0	-3.0
United Kingdom	0.5	0.8	0.9	0.9	1.0	1.1	1.1	7.4
United States	5.2	5.2	5.2	5.1	5.1	4.6	4.4	-1.6

*Renewable sources include hydro, geothermal, solar thermal, solar pv, tide, wind, renewable municipal solid waste, solid biomass and biogas.

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

SHARE OF ELECTRICITY PRODUCTION FROM RENEWABLE SOURCES* (%), BY COUNTRY

	1990	1995	1997	1998	1999	2000	2001	Average annual percent change 90-01
OECD Total	17.3	17.0	17.2	16.5	16.1	15.7	15.0	-1.3
OECD North America	18.3	17.9	18.8	17.0	16.5	15.4	14.2	-2.3
OECD/IEA Pacific	13.1	10.9	10.7	10.8	10.1	9.8	9.4	-2.9
OECD Europe	17.7	18.7	18.1	18.5	18.4	19.0	18.9	0.6
IEA Total	17.4	17.2	17.4	16.6	16.2	15.8	15.1	-1.3
IEA North America	18.1	17.8	18.8	17.0	16.3	15.2	14.1	-2.3
IEA Europe	18.5	19.4	18.8	19.1	19.0	19.7	19.5	0.5
European Union	13.1	14.0	14.0	14.3	14.2	14.9	15.5	1.5
Australia	9.6	9.6	9.8	8.7	8.8	8.6	8.3	-1.3
Austria	66.2	70.5	67.8	69.4	71.4	72.3	70.1	0.5
Belgium	1.1	1.3	1.1	1.3	1.4	1.2	1.4	2.1
Canada	62.4	61.0	62.2	60.3	61.0	60.5	57.9	-0.7
Czech Republic	2.3	4.0	3.4	3.1	3.7	3.1	3.5	3.7
Denmark	3.2	5.5	7.1	10.1	12.0	16.3	16.4	16.0
Finland	28.6	30.9	29.1	34.8	30.5	33.3	29.1	0.2
France	13.3	15.4	13.4	12.9	14.6	13.3	14.4	0.7
Germany	3.7	5.1	4.5	4.8	5.2	6.3	6.2	4.7
Greece	5.1	8.6	9.1	8.2	9.6	7.8	5.5	0.7
Hungary	0.7	0.8	0.9	0.7	0.8	0.8	0.9	1.3
Iceland	99.9	99.8	99.9	99.9	99.9	99.9	100.0	0.0
Ireland	4.9	4.1	4.1	5.6	5.2	5.0	4.2	-1.5
Italy	16.4	17.5	18.8	18.4	19.9	18.9	20.1	1.9
Japan	12.0	10.1	10.7	10.7	10.0	9.8	9.7	-1.9
Korea	6.0	1.7	1.4	2.2	1.9	1.7	1.6	-11.4
Luxembourg	16.7	29.0	32.5	46.7	43.0	46.9	44.0	9.2
Mexico	23.3	21.8	18.2	16.8	20.3	19.3	16.5	-3.1
Netherlands	1.1	1.6	2.2	2.5	2.7	3.2	3.5	10.6
New Zealand	80.5	84.4	71.7	72.7	71.4	71.6	63.4	-2.1
Norway	99.8	99.7	99.6	99.6	99.6	99.7	99.6	-0.0
Poland	1.1	1.4	1.5	1.8	1.7	1.6	1.9	5.3
Portugal	34.7	28.3	41.7	36.4	20.3	30.3	34.6	-0.0
Slovak Republic	8.0	18.8	16.6	17.0	16.3	15.2	15.9	6.4
Spain	17.2	14.9	19.8	19.3	13.5	16.3	21.9	2.2
Sweden	51.0	47.6	48.3	49.2	48.2	57.2	51.3	0.1
Switzerland	55.2	57.4	56.3	55.3	59.6	57.2	59.8	0.7
Turkey	40.4	41.6	38.9	38.3	30.0	24.9	19.8	-6.3
United Kingdom	1.8	2.1	2.0	2.4	2.6	2.6	2.5	2.9
United States	11.4	11.0	12.0	10.6	9.7	8.4	7.4	-3.9

*Renewable sources include hydro, geothermal, solar thermal, solar pv, tide, wind, renewable municipal solid waste, solid biomass and biogas.

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

SHARE OF ELECTRICITY PRODUCTION FROM RENEWABLE SOURCES, EXCLUDING HYDRO* (%), BY COUNTRY

	1990	1995	1997	1998	1999	2000	2001	Average annual percent change 90-01
OECD Total	1.8	1.7	1.8	1.8	1.9	2.0	2.1	1.5
OECD North America	2.5	2.1	2.0	2.0	2.1	2.1	2.1	-1.6
OECD/IEA Pacific	1.4	1.5	1.6	1.6	1.6	1.4	1.4	-0.2
OECD Europe	0.8	1.2	1.4	1.7	1.8	2.1	2.3	10.0
IEA Total	1.7	1.7	1.8	1.8	1.9	1.9	2.1	1.5
IEA North America	2.4	2.0	2.0	1.9	2.0	2.0	2.1	-1.5
IEA Europe	0.9	1.2	1.5	1.7	1.8	2.2	2.4	9.8
European Union	0.9	1.4	1.7	1.9	2.0	2.4	2.7	9.9
Australia	0.4	0.4	0.6	0.6	0.5	0.6	0.7	6.0
Austria	2.3	3.3	2.9	2.9	3.1	2.8	3.1	2.8
Belgium	0.7	0.8	0.7	0.8	1.0	0.7	0.8	1.2
Canada	0.8	1.0	1.1	1.2	1.3	1.3	1.3	4.5
Czech Republic	-	0.7	0.8	0.9	1.1	0.7	0.7	-
Denmark	3.1	5.4	7.1	10.0	11.9	16.3	16.3	16.3
Finland	8.6	10.5	11.4	13.3	12.1	12.3	11.4	2.6
France	0.5	0.6	0.7	0.7	0.7	0.7	0.8	3.4
Germany	0.6	1.0	1.3	1.7	1.7	2.5	2.7	15.3
Greece	0.0	0.1	0.1	0.2	0.3	0.8	1.6	66.6
Hungary	0.1	0.3	0.2	0.3	0.3	0.3	0.3	10.2
Iceland	6.7	5.8	6.7	10.4	15.8	17.2	18.1	9.5
Ireland	-	0.1	0.7	1.2	1.3	1.4	1.7	-
Italy	1.6	1.6	1.9	2.2	2.4	2.5	2.9	5.9
Japan	1.6	1.8	1.9	1.8	1.9	1.5	1.6	0.1
Korea	-	0.1	0.2	0.2	0.2	0.2	0.1	-
Luxembourg	5.4	10.9	12.1	15.3	19.3	19.2	17.3	11.1
Mexico	4.2	3.7	3.1	3.3	3.2	3.1	2.9	-3.2
Netherlands	1.0	1.5	2.1	2.3	2.6	3.0	3.3	11.5
New Zealand	8.1	7.2	7.3	8.1	9.1	9.2	9.7	1.6
Norway	0.2	0.3	0.2	0.3	0.3	0.2	0.3	2.8
Poland	0.0	0.0	0.1	0.2	0.1	0.2	0.3	20.5
Portugal	2.5	3.2	3.3	3.0	3.4	4.2	4.2	5.1
Slovak Republic	-	-	-	-	-	-	0.5	-
Spain	0.4	0.9	1.4	1.7	2.4	3.0	4.4	23.6
Sweden	1.3	1.7	2.0	2.0	2.0	3.2	2.4	5.8
Switzerland	0.7	0.9	1.1	1.1	1.2	1.4	1.2	5.6
Turkey	0.1	0.4	0.4	0.3	0.2	0.2	0.2	4.8
United Kingdom	0.2	0.6	0.8	1.0	1.2	1.3	1.4	20.3
United States	2.7	2.2	2.1	2.0	2.1	2.1	2.2	-1.9

*Renewable sources include hydro, geothermal, solar thermal, solar pv, tide, wind, renewable municipal solid waste, solid biomass and biogas.

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

PRIMARY ENERGY SUPPLY FROM DIFFERENT RENEWABLE SOURCES IN 2001, BY COUNTRY (toe)

	Hydro	Wind	Solar/ Tide	Geo-thermal	Ren. CRW[1]	Non-Ren. CRW[2]	Total*
OECD Total	105705.6 e	2928.1	3172.2 e	29132.1	162714.8 e	10614.4 e	303652.8 e
OECD North America	48393.8	527.5	1469.2	17672.7	85683.9	4183.3	153747.2
OECD/IEA Pacific	10852.2	52.5	898.7 e	5289.0	12533.4	1391.8 e	29625.7 e
OECD Europe	46459.6 e	2348.1	804.3 e	6170.4	64497.6 e	5039.3 e	120280.0 e
IEA Total	102065.7 e	2925.9	3118.0 e	22450.5	150350.4 e	10085.8	280910.6 e
IEA North America	45943.3	526.5	1415.1	12886.9	77485.9	4183.3	138257.7
IEA Europe	45270.3 e	2346.9	804.3 e	4274.6	60331.1 e	4510.7	113027.3 e
European Union	29104.5	2338.7	490.1 e	3465.8	50720.0	3561.7	86119.1 e
Australia	1411.8	17.8	107.8 e	-	5016.2	140.4	6553.6 e
Austria	3597.7	14.8	66.9	22.6	2907.8	273.1	6609.8
Belgium	37.9	3.2	1.3	1.4	562.1 e	383.4 e	606.0 e
Canada	28640.9	24.3	8.9	-	10459.9	-	39134.0
Czech Republic	176.6	-	-	-	450.9	239.0	627.5
Denmark	2.5	369.7	8.2	3.4	1668.6	146.1	2052.4
Finland	1135.6	6.0	0.2	-	6431.6	213.6	7573.5
France	6403.0	10.8	72.3	139.0	11952.0	-	18577.0
Germany	1758.8	920.2	141.8	9.7	6330.1 e	1866.2 e	9160.7 e
Greece	180.3	65.0	100.3	2.3	970.2	38.5	1318.1
Hungary	16.0	0.1	1.4	5.8	387.4	10.5	410.7
Iceland	565.7	-	-	1884.1	1.3	-	2451.2
Ireland	51.3	28.7	0.1	0.2	180.3	-	260.6
Italy	4025.7	101.4	12.4 e	3187.6	2309.9 e	143.8 e	9637.0 e
Japan	7238.3	21.7	747.2 e	2950.4	4917.7	317.8	15875.3 e
Korea	357.0	1.2	43.6 e	-	1769.2	587.3 e	2171.0
Luxembourg	11.4	2.2	0.1	-	46.1	-	59.9
Mexico	2450.6	1.0	54.2	4785.8	8197.9	-	15489.5
Netherlands	10.1	71.0	10.8	-	978.2 e	276.5	1070.0
New Zealand	1845.1	11.8	-	2338.6	830.3	346.3	5025.8
Norway	10355.9 e	2.5	-	-	1472.8	13.0	-11831.1 e
Poland	199.9	1.2	-	2.9	3871.6	469.3	4075.5
Portugal	1206.9	22.0	19.1	91.2	2056.7 e	-	3396.0 e
Slovak Republic	423.7	-	-	8.7	293.5	59.2	726.0
Spain	3527.8	599.3	37.2	7.7	4074.4 e	..	8246.4 e
Sweden	6806.5	41.4	6.0	-	8160.1	27.1	-15013.9
Switzerland	3552.5	0.3	25.8	107.4	998.7 e	673.3	4684.8 e
Turkey	2064.9	5.3	286.9	695.6	6301.5 e	13.2 e	9354.1 e
United Kingdom	348.8	83.0	13.4	0.8	2091.9	193.4	2537.9
United States	17302.3	502.2	1406.1	12886.9	67026.0	4183.3	99123.6

[1] Renewable combustible renewables and waste (CRW) include solid biomass, liquid biomass, renewable municipal waste and biogas.

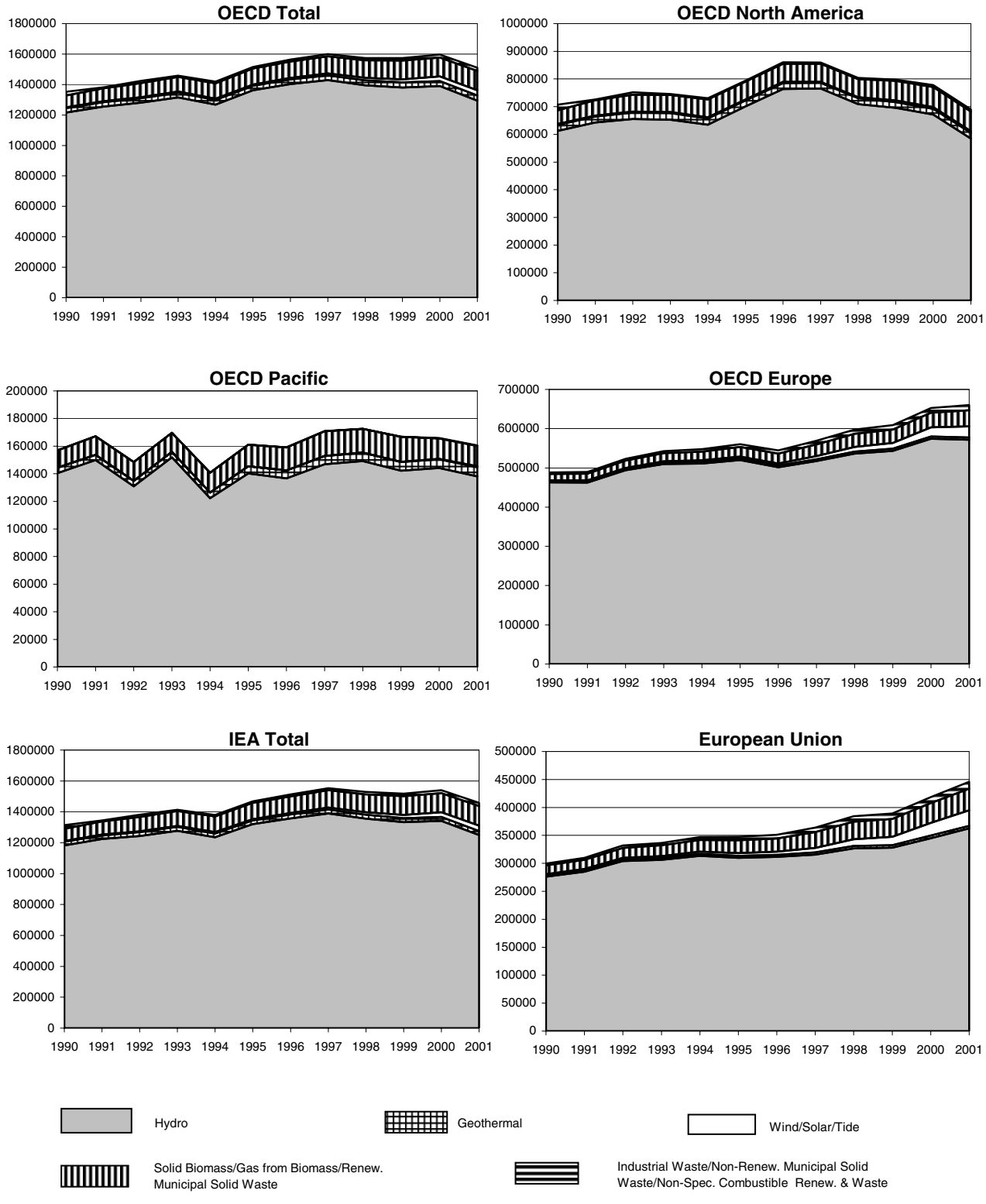
[2] Non-Renewable combustible renewables and waste (CRW) include industrial waste and non-renewable municipal solid waste.

* Total does not include non-renewable biomass .

Source: IEA Country Submissions (2002).

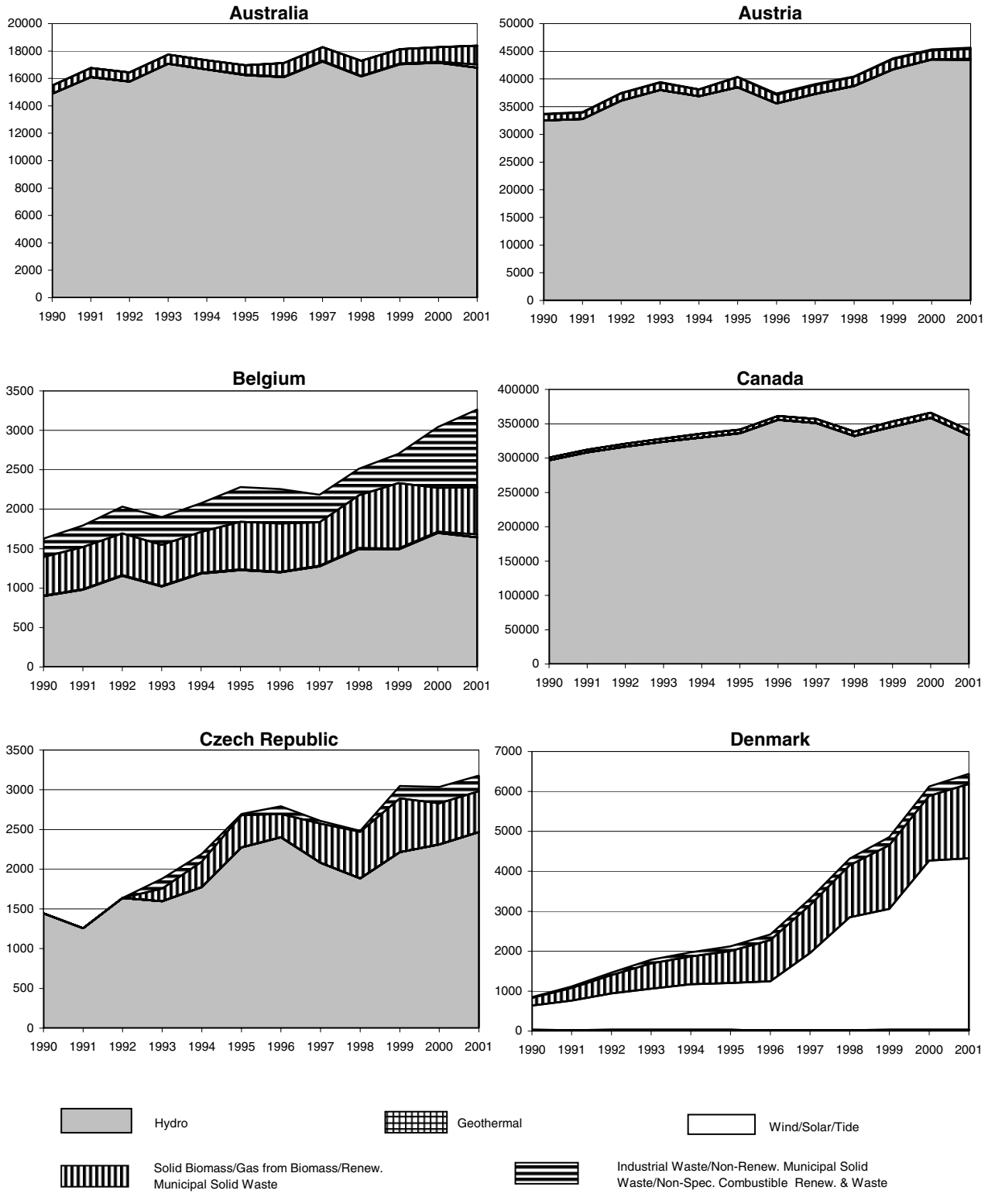
Notes: Please refer to notes in Principles and Definitions for data coverage.

Electricity Production by Renewable Energy Source (GWh)



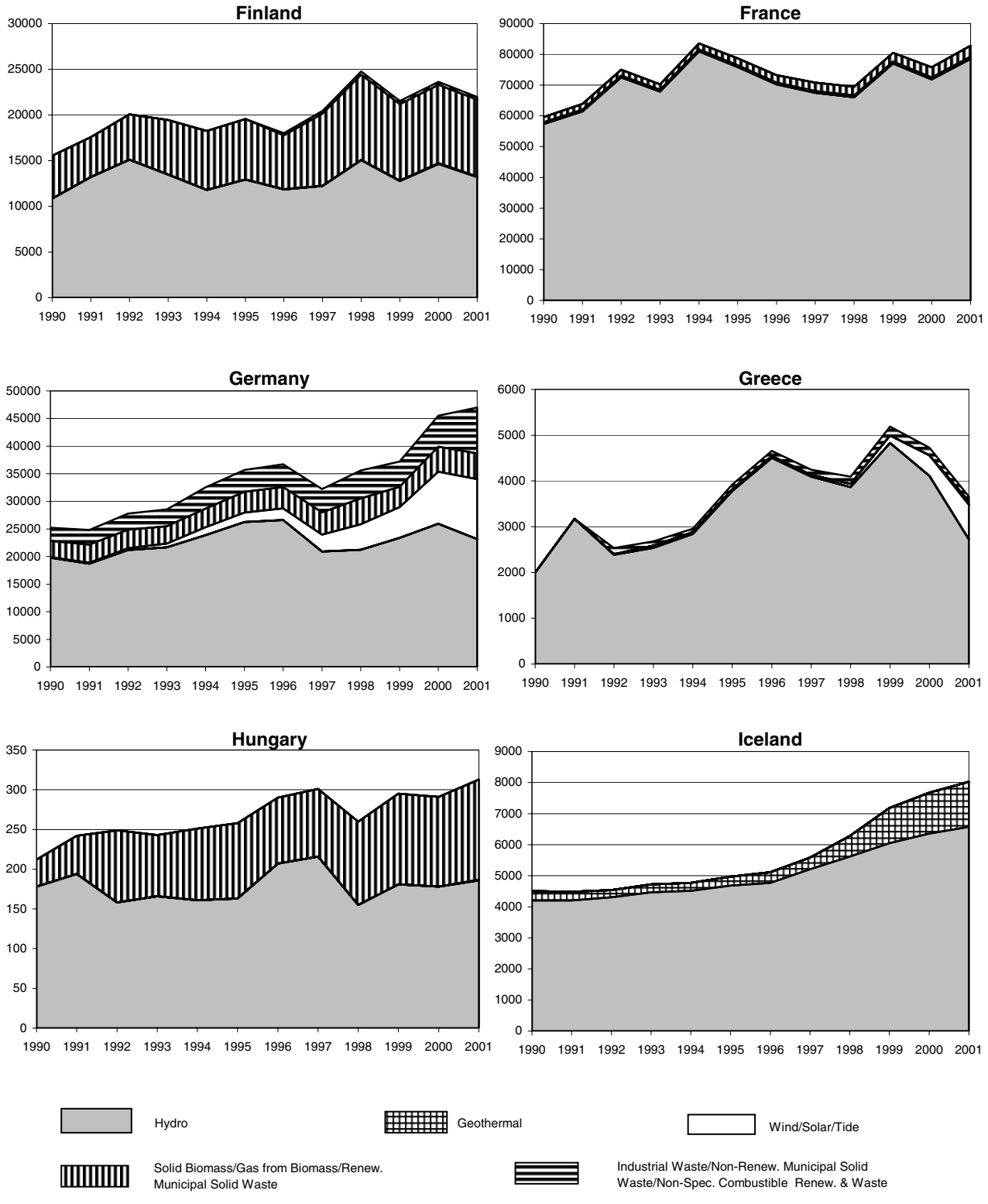
Source: IEA/OECD Renewables Statistics.

Electricity Production by Renewable Energy Source (GWh)



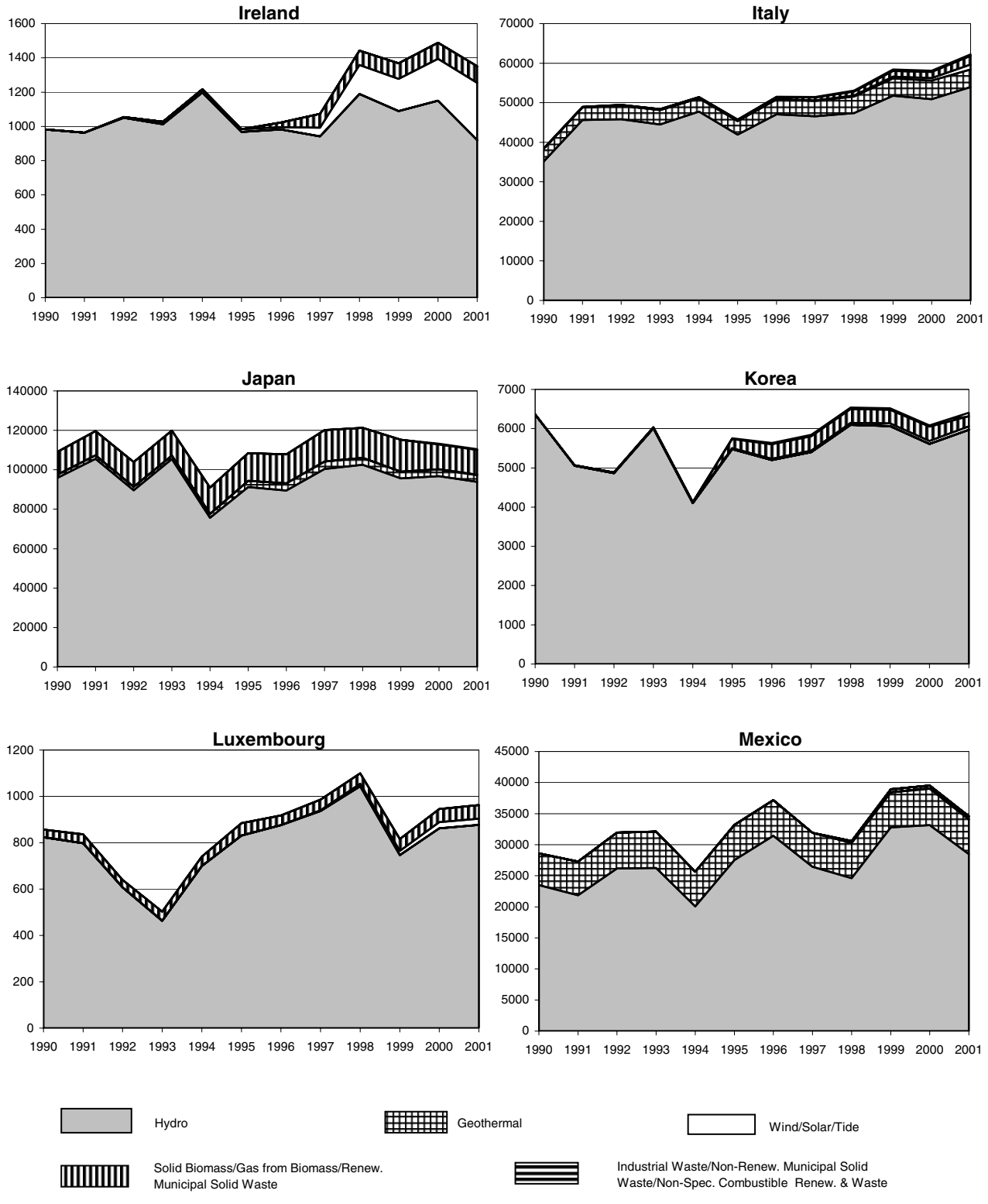
Source: IEA/OECD Renewables Statistics.

Electricity Production by Renewable Energy Source (GWh)



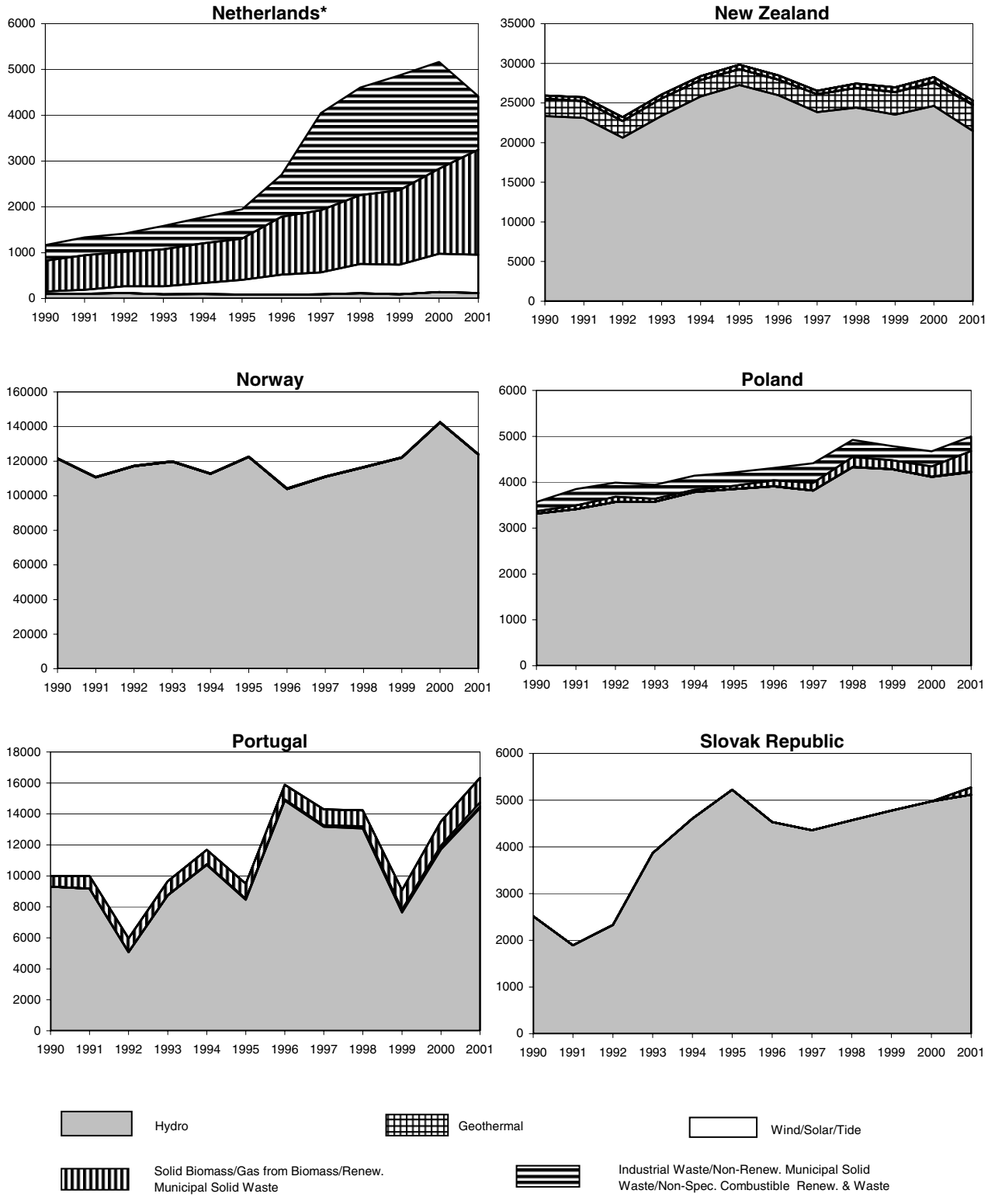
Source: IEA/OECD Renewables Statistics.

Electricity Production by Renewable Energy Source (GWh)



Source: IEA/OECD Renewables Statistics.

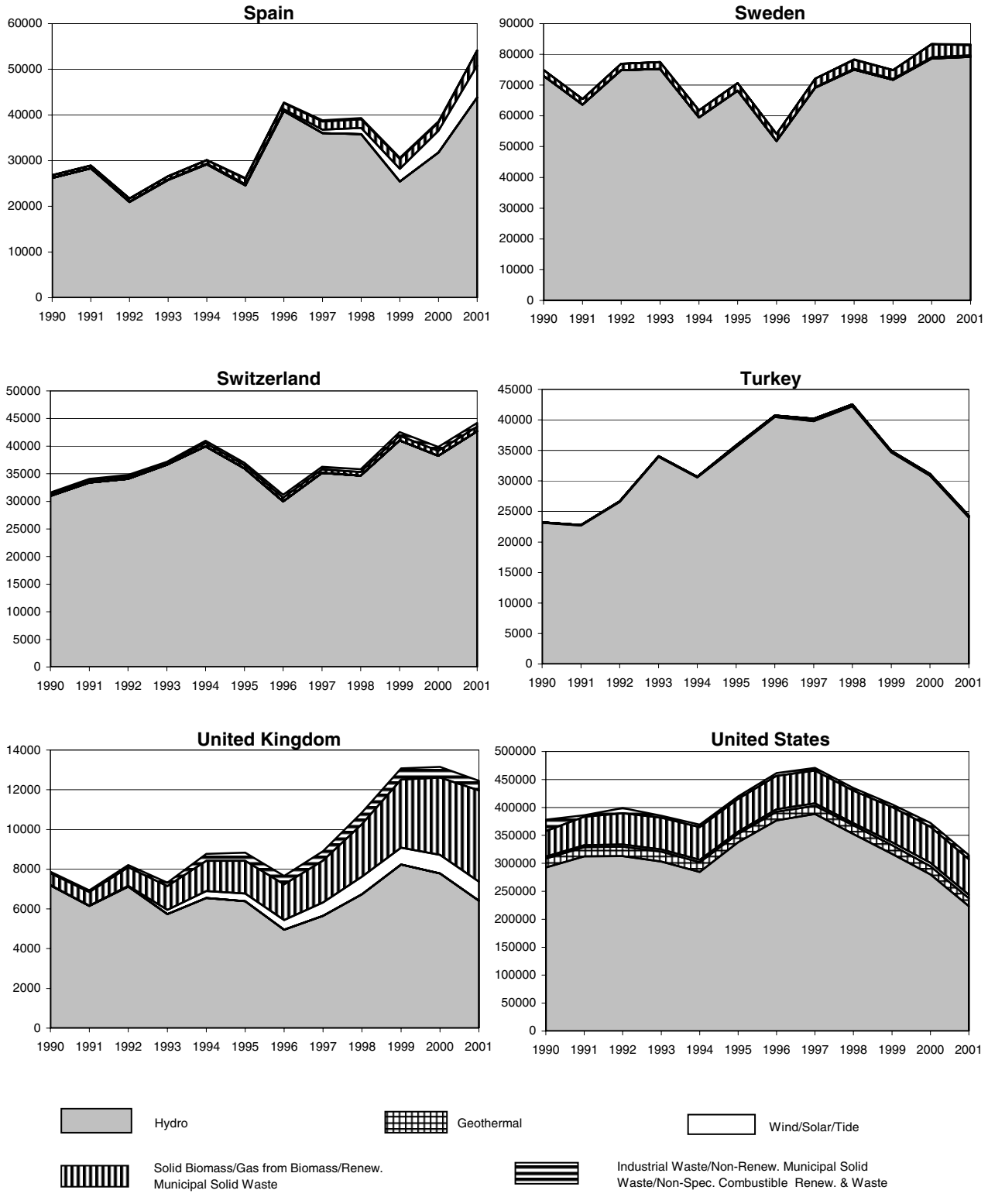
Electricity Production by Renewable Energy Source (GWh)



Source: IEA/OECD Renewables Statistics.

*Data on industrial waste are unavailable for Netherlands for 2001.

Electricity Production by Renewable Energy Source (GWh)



Source: IEA/OECD Renewables Statistics.

OECD Total

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	4516.68	4883.96	5117.20	5213.80	5316.33	5332.81	5321.00	1.5
of which: Renewables (Mtoe) [1]	*264.10 e*	*292.72 e*	*307.85 e*	*314.20 e*	*312.27 e*	*303.65 e*	*298.36 e*	*1.3*
Renewables/TPES(%)	*5.9*	*6.0*	*6.0*	*6.0*	*5.9*	*5.7*	*5.6*	*-0.2*
GDP (1995 bil. US$)	21752.91	23916.80	25992.60	26762.25	27702.28	27880.92	28240.34	2.3
TPES/GDP[2]	0.21	0.20	0.20	0.19	0.19	0.19	0.19	-0.7
TPES/GDP (1973 = 100)	74	72	70	69	68	68	67	-0.7
Population (millions)	1043.12	1085.78	1108.49	1115.88	1122.51	1138.52	1143.57 e	0.8
TPES/population[3]	4.33	4.50	4.62	4.67	4.74	4.68	4.65 e	0.7
Total Electricity Generation (TWh)[4]	7558.4	8483.6	9070.1	9285.8	9597.3	9490.5	9657.7	2.1
of which: Renewables (TWh) [1]	*1305.53 e*	*1446.20 e*	*1493.98 e*	*1493.55 e*	*1505.69 e*	*1424.08 e*	*1413.77 e*	*0.8*
Renew./Total Elec.(%) [1]	*17.3*	*17.0*	*16.5*	*16.1*	*15.7*	*15.0*	*14.6*	*-1.3*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**393359 e**	**436053 e**	**446394 e**	**456549 e**	**465299 e**	**475113 e**	**..**	**1.7**
Hydro	369129	404959	409903	413520 e	416887 e	419166 e	..	1.2
of which: Pumped Storage	..	81227	84554 e	84230 e	84899 e	85801 e	..	..
Geothermal	4463	5049	5255	5432	5448	5443	..	1.8
Solar Photovoltaic	..	..	..	560 e	764 e	1034	..	..
Solar Thermal	348	349	375	425	397 e	397 e	..	1.2
Tide, Wave, Ocean	260	260	260 e	260 e	260 e	260 e	..	-
Wind	2386	4237	8006 e	11405 e	15471 e	21630 e	..	22.2
Industrial Waste	..	..	..	1188	1222	1256	..	..
Municipal Solid Waste	..	..	..	5790 e	6505 e	6696 e	..	..
Solid Biomass	..	..	..	13641 e	13066 e	13874 e	..	..
Gas from Biomass	..	..	..	1616	2547	2770 e	..	..
Comb. Renewables Non-Specified	..	..	..	2712 e	2732 e	2587 e	..	..
Solar Collectors Surface (1000 m^2)	..	..	..	..	..	..	..	..

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

OECD Total

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

								Average annual percent change
	1990	1995	1998	1999	2000	2001	2002E	90-01
Total Electricity	**..**	**1515791 e**	**1574478 e**	**1573383 e**	**1596747 e**	**1510704 e**	**1505202 e**	**..**
Hydro	1216428	1361583	1394885 e	1380716	1389753	1294494 e	1272039 e	0.6
of which: Pumped Storage	43280	58631	64868	64041 e	71411 e	65359 e	69677 e	3.8
Geothermal	28693	29645	32040	33018	32975	32737	31631 e	1.2
Solar Photovoltaics	16	75 e	155 e	166 e	216 e	339 e	382 e	32.0
Solar Thermal	664	850	920 e	903 e	559	559 e	453 e	-1.6
Tide, Wave, Ocean	597	601	622	612	603	644	856	0.7
Wind	3844	7353 e	14442 e	19130 e	28538	34048	46656 e	21.9
Industrial Waste	..	9290	13080 e	11329 e	14622	16416	16660 e	..
Municipal Solid Waste Renew.	..	24946 e	31032 e	31445 e	31873 e	33379 e	32435 e	..
Municipal Solid Waste Non-Renew.	..	1671 e	2548 e	4467 e	5020 e	4846 e	5094 e	..
Solid Biomass	59479 e	73671 e	75840 e	81881 e	80187	79625 e	84581 e	2.7
Gas from Biomass	..	6106 e	8914 e	9716	12401	13617 e	14415 e	..
Comb. Renewables Non-Specified	20494 e	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	**..**	***1459146 e***	***1513253 e***	***1505377 e***	***1525269 e***	***1439466 e***	**..**	**..**
Hydro	1216428	1361583	1394885 e	1380716	1389753	1294494 e	..	0.6
of which: Pumped Storage	43280	58631	64868	64041 e	71411 e	65359 e	..	3.8
Geothermal	28693	29484	31759	32328	32085	31753	..	0.9
Solar Photovoltaics	16	75 e	155 e	166 e	216 e	339 e	..	32.0
Solar Thermal	664	850	920 e	903 e	559	559 e	..	-1.6
Tide, Wave, Ocean	597	601	622	612	603	644	..	0.7
Wind	3844	7353 e	14442 e	19130 e	28538	34048	..	21.9
Industrial Waste	..	4914	6159 e	4599 e	6100	8358	..	..
Municipal Solid Waste Renew.	..	20412	24604	23826	24627	25550	..	..
Municipal Solid Waste Non-Renew.	..	412	543	2118	2561	2597	..	..
Solid Biomass	25029 e	28689	31957	33306 e	30511	30321 e	..	1.8
Gas from Biomass	..	4773 e	7207 e	7673	9716	10803 e	..	..
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	**..**	***56645 e***	***61225 e***	***68006 e***	***71478 e***	***71238 e***	**..**	**..**
Geothermal	-	161	281	690	890	984	..	-
Industrial Waste	..	4376	6921 e	6730 e	8522	8058	..	..
Municipal Solid Waste Renew.	..	4534 e	6428 e	7619 e	7246 e	7829 e	..	..
Municipal Solid Waste Non-Renew.	..	1259 e	2005 e	2349 e	2459 e	2249 e	..	..
Solid Biomass	34450 e	44982 e	43883 e	48575 e	49676	49304	..	3.3
Gas from Biomass	..	1333	1707	2043	2685	2814	..	..
Comb. Renewables Non-Specified	20494 e	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

OECD Total

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

								Average annual percent change
	1990	1995	1998	1999	2000	2001	2002E	90-01
Total Heat	**..**	**264028 e**	**368342 e**	**392490 e**	**368616 e**	**397040 e**	**416258 e**	**..**
Geothermal	..	7500	6295	8272	7805	7842	8027	..
Solar Thermal	..	6	16	23	24	28	34	..
Industrial Waste	..	9784 e	18434 e	22928 e	22693 e	27169	27812 e	..
Municipal Solid Waste Renew.	..	109969 e	135572 e	128983 e	145434 e	150637 e	165145 e	..
Municipal Solid Waste Non-Renev	..	11908 e	16901 e	29103 e	27895 e	32922 e	33975 e	..
Solid Biomass	..	101226	163299 e	174685 e	133377 e	149735 e	147721 e	..
Gas from Biomass	..	4478 e	5993 e	6178 e	8744	9250 e	9528 e	..
Waste Heat and Heat Pumps	..	19157 e	21832 e	22318 e	22644 e	19457 e	24016 e	..
of which:								
CHP Plants	**..**	***154545 e***	***226581 e***	***235369 e***	***202041 e***	***216399 e***	**..**	**..**
Geothermal	..	7103	5885	7556	6967	6829	..	..
Solar Thermal	..	-	-	-	-	-	-	..
Industrial Waste	..	4356	7291	11484 e	5865	6163	..	..
Municipal Solid Waste Renew.	..	71565 e	81198 e	70048 e	79553 e	83088 e	..	..
Municipal Solid Waste Non-Renev	..	9246 e	13705 e	25561 e	23783 e	25908 e	..	..
Solid Biomass	..	56514	111082	113270	76037 e	83476 e	..	..
Gas from Biomass	..	3281	4532	4415	6514	6743	..	..
Waste Heat and Heat Pumps	..	2480	2888	3035	3322	4192	..	..
Heat Only Plants	**..**	***109484 e***	***141761 e***	***157122 e***	***166576 e***	***180642 e***	**..**	**..**
Geothermal	..	397	410	716	838	1013	..	..
Solar Thermal	..	6	16	23	24	28	..	..
Industrial Waste	..	5428 e	11143 e	11444 e	16828 e	21006	..	..
Municipal Solid Waste Renew.	..	38404 e	54374 e	58935 e	65881 e	67549 e	..	..
Municipal Solid Waste Non-Renev	..	2662 e	3196 e	3542 e	4112 e	7014 e	..	..
Solid Biomass	..	44712	52217 e	61415 e	57340 e	66259 e	..	..
Gas from Biomass	..	1197 e	1461 e	1763 e	2230	2507 e	..	..
Waste Heat and Heat Pumps	..	16678 e	18944 e	19284 e	19323 e	15266 e	..	..

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

OECD Total

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01*
Geothermal								
Production	1128553 e	1169110 e	1247288 e	1280407	1217789	1219938	1200888 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-7713	-8850	-9142	-9135	-9387	-9231	-9200	..
Transformation Sector	1040998	1064966	1133928	1160834	1104660	1101102	1070026 e	..
Final Energy Consumption	79842	95294 e	104218	110438	103742	109605	121662 e	..
Solar Thermal								
Indigenous Production	12771	24256	69801 e	131389 e	131222 e	129300 e	128368 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	2397	3067	3329 e	3274 e	2036	2040 e	1665 e	..
Final Energy Consumption	10374	21189	66472 e	128115 e	129186 e	127260	126703 e	..
Industrial Waste								
Production	87845 e	252489 e	270882 e	276247 e	346542 e	350135 e	343675 e	..
Net Imports [1]	-	-	-	-	-	-7	-5	..
Miscellaneous to Balance [2]	-5222	-2690	-589	-247	-258	-490	-10	..
Transformation Sector	32575 e	185361 e	207499 e	201901 e	174328 e	176479 e	..	..
Final Energy Consumption	50048 e	64438 e	62794 e	74099 e	171956 e	173159 e	..	..
Municipal Solid Waste - Renewables								
Production	349375 e	528428 e	611748 e	636368 e	690547 e	707047 e	687684 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-68	-2938	-7097	-9754	-71	-	-	..
Transformation Sector	347716 e	523720 e	599724 e	591876 e	583242 e	601717 e	..	..
Final Energy Consumption	1591	1770	4927	34738	107234	105330	..	..
Municipal Solid Waste - Non-Renewables								
Production	18971	31721 e	42803 e	77208 e	85915 e	94312 e	107035 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-9	-19	-1	-	..
Transformation Sector	18212	30809 e	42380 e	76534 e	84141 e	91342 e	..	..
Final Energy Consumption	759	912	423	665	1755	2969	..	..
Solid Biomass								
Production	4672347 e	5577397 e	5838708 e	5930185 e	5781698 e	5685113 e	5470842 e	..
Net Imports [1]	5295 e	14809	18469	19887	25582	13065	13545 e	..
Miscellaneous to Balance [2]	8635	-836	1488	150	-770	-148	-25	..
Transformation Sector	1113862 e	1621602 e	1719675 e	1929664 e	973114 e	965378 e	..	..
Final Energy Consumption	3572415 e	3969768 e	4138990 e	4020558 e	4833396 e	4732652 e	..	..
Gas from Biomass								
Production	32441 e	101365 e	134676 e	213868 e	232170 e	247839 e	287080 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-24	649	-737	-46	-40	-42	-	..
Transformation Sector	16954 e	86220 e	115489 e	127688 e	155218 e	167600 e	..	..
Final Energy Consumption	15463	15794	18450 e	86134 e	76912	80197	..	..
Liquid Biofuels (1000 tonnes)								
Production	7	4300	4594	4929	5304	5856	7399 e	..
Net Imports [1]	-	49	17	17	9	6	8	..
Miscellaneous to Balance [2]	-	34	-7	-96	-	-36	-6	..
Transformation Sector	-	1140	1476	1730	1923	2132	..	..
Final Energy Consumption	7	3243	3128	3120	3390	3694	..	..

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

*Growth rates have not been calculated for aggregates due to unavailability of data for some countries which causes breaks in series.

OECD North America

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	2260.69	2452.98	2567.25	2642.13	2705.37	2681.87	2678.16	1.6
of which: Renewables (Mtoe) [1]	*147.86 e*	*161.86*	*165.03*	*170.00*	*163.94*	*153.75*	*152.43 e*	*0.4*
Renewables/TPES(%)	*6.5*	*6.6*	*6.4*	*6.4*	*6.1*	*5.7*	*5.7*	*-1.2*
GDP (1995 bil. US$)	7320.15	8206.23	9264.62	9655.08	10035.11	10067.04	10304.70	2.9
TPES/GDP[2]	0.31	0.30	0.28	0.27	0.27	0.27	0.26	-1.3
TPES/GDP (1973 = 100)	71	68	63	63	62	61	59	-1.3
Population (millions)	358.93	382.59	396.48	401.08	403.57	416.10	419.65 e	1.4
TPES/population[3]	6.30	6.41	6.48	6.59	6.70	6.45	6.38 e	0.2
Total Electricity Generation (TWh)[4]	3786.2	4270.8	4547.8	4660.7	4835.3	4661.3	4728.9	1.9
of which: Renewables (TWh) [1]	*691.40 e*	*766.42*	*773.14 e*	*768.82*	*743.98*	*660.43*	*689.03 e*	*-0.4*
Renew./Total Elec.(%) [1]	*18.3*	*17.9*	*17.0*	*16.5*	*15.4*	*14.2*	*14.6*	*-2.3*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**..**	**191313 e**	**192725 e**	**194775 e**	**194429 e**	**196254 e**	**..**	**..**
Hydro	159621	174139	175218	175816 e	175922 e	175944 e	..	0.9
of which: Pumped Storage	..	21564	19075 e	19122 e	19699 e	19699 e	..	..
Geothermal	3369	3721	3667	3751	3648	3631	..	0.7
Solar Photovoltaic	..	..	..	175	196	236	..	..
Solar Thermal	340	335	362	412	384 e	384 e	..	1.1
Tide, Wave, Ocean	20	20	20 e	20 e	20 e	20 e	..	-
Wind	1912	1755	1724 e	2332 e	2458 e	4143 e	..	7.3
Industrial Waste	..	..	..	739	638	638	..	..
Municipal Solid Waste	..	..	..	2579	2627	2628	..	..
Solid Biomass	..	..	..	7185	6421	6510	..	..
Gas from Biomass	..	..	..	628	888	893	..	..
Comb. Renewables Non-Specified	..	..	..	1138 e	1227 e	1227 e	..	..
Solar Collectors Surface (1000 m^2)	..	..	..	..	..	..	..	..

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

OECD North America

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**..**	**794535**	**804191 e**	**797707**	**778038**	**689875**	**720434 e**	**..**
Hydro	612727	701418	709175	695411	671477	584875	614338 e	-0.4
of which: Pumped Storage	15919	23851	26096	23991	26893	22156	22758 e	3.1
Geothermal	21136	20610	21026	21061	20522	19895	19622 e	-0.5
Solar Photovoltaics	..	4	29	31	32	34	33 e	..
Solar Thermal	663	827	890	873	529	529	423 e	-2.0
Tide, Wave, Ocean	26	33	32	32	37	101	316	13.1
Wind	3066	3261	3091	4747	5921	6134	9082 e	6.5
Industrial Waste	..	4268	4952 e	4897	7170	7294	8647 e	..
Municipal Solid Waste Renew.	10613 e	14773	16021	16547	16727	16818	15220 e	4.3
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	38590 e	46052	44828	50018	50384	49328	47558 e	2.3
Gas from Biomass	..	3289	4147	4090	5239	4867	5195 e	..
Comb. Renewables Non-Specified	20494 e	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	**..**	***757455***	***770071 e***	***758245***	***736190***	***648307***	**..**	**..**
Hydro	612727	701418	709175	695411	671477	584875	..	-0.4
of which: Pumped Storage	15919	23851	26096	23991	26893	22156	..	3.1
Geothermal	21136	20610	21026	21061	20522	19895	..	-0.5
Solar Photovoltaics	..	4	29	31	32	34	..	..
Solar Thermal	663	827	890	873	529	529	..	-2.0
Tide, Wave, Ocean	26	33	32	32	37	101	..	13.1
Wind	3066	3261	3091	4747	5921	6134	..	6.5
Industrial Waste	..	440	425 e	659	923	711	..	..
Municipal Solid Waste Renew.	9693 e	13432	14072	14023	14525	14674	..	3.8
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	13560 e	14352	17571	18008	18310	17847	..	2.5
Gas from Biomass	..	3078	3760	3400	3914	3507	..	..
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	**..**	***37080***	***34120 e***	***39462***	***41848***	***41568***	**..**	**..**
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	..	3828	4527 e	4238	6247	6583	..	..
Municipal Solid Waste Renew.	920 e	1341	1949	2524	2202	2144	..	8.0
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	25030 e	31700	27257	32010	32074	31481	..	2.1
Gas from Biomass	..	211	387	690	1325	1360	..	..
Comb. Renewables Non-Specified	20494 e	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

OECD North America

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**..**	**28539**	**68905**	**52842**	**27118**	**28619**	**27836 e**	**..**
Geothermal	..	-	-	-	-	-	-	..
Solar Thermal	..	-	-	-	-	-	-	..
Industrial Waste	..	1993	4609	5756	187	187	192 e	..
Municipal Solid Waste Renew.	..	7270	9703	5208	15251	14489	13795 e	..
Municipal Solid Waste Non-Renev	..	-	-	-	-	-	-	..
Solid Biomass	..	19276	54243	41805	9489	11662	11226 e	..
Gas from Biomass	..	-	350	73	2191	2281	2623 e	..
Waste Heat and Heat Pumps	..	-	-	-	-	-	-	..
of which:								
CHP Plants	***..***	***28539***	***68905***	***52842***	***27118***	***28619***	***..***	***..***
Geothermal	..	-	-	-	-	-	-	..
Solar Thermal	..	-	-	-	-	-	-	..
Industrial Waste	..	1993	4609	5756	187	187	..	..
Municipal Solid Waste Renew.	..	7270	9703	5208	15251	14489	..	..
Municipal Solid Waste Non-Renev	..	-	-	-	-	-	-	..
Solid Biomass	..	19276	54243	41805	9489	11662	..	..
Gas from Biomass	..	-	350	73	2191	2281	..	..
Waste Heat and Heat Pumps	..	-	-	-	-	-	-	..
Heat Only Plants	***..***	***-***	***-***	***-***	***-***	***-***	***-***	***..***
Geothermal	..	-	-	-	-	-	-	..
Solar Thermal	..	-	-	-	-	-	-	..
Industrial Waste	..	-	-	-	-	-	-	..
Municipal Solid Waste Renew.	..	-	-	-	-	-	-	..
Municipal Solid Waste Non-Renev	..	-	-	-	-	-	-	..
Solid Biomass	..	-	-	-	-	-	-	..
Gas from Biomass	..	-	-	-	-	-	-	..
Waste Heat and Heat Pumps	..	-	-	-	-	-	-	..

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

OECD North America

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01*
Geothermal								
Production	774965	758960	775401	778559	760527	740064	731444 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	760896	741960	756936	758196	738792	716220	706392 e	..
Final Energy Consumption	14069	17000	18465	20363	21735	23844	25052 e	..
Solar Thermal								
Indigenous Production	2387	2978	4475	67878	64007	61039	59120 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	2387	2978	3205	3143	1904	1904	1523 e	..
Final Energy Consumption	-	-	1270	64735	62103	59135	57597 e	..
Industrial Waste								
Production	-	128432	111828	128803	172192	175180	156730	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	-	125190	107368	114360	69406	71069	..	..
Final Energy Consumption	-	3242	4460 e	14443	102786	104111	..	..
Municipal Solid Waste - Renewables								
Production	173829 e	270237	286702	313018	342979	340503	297929	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	173829 e	270237	286702	284717	257429	256778	..	..
Final Energy Consumption	-	-	-	28301	85550	83725	..	..
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	-	-	-	-	-	-	-	..
Final Energy Consumption	-	-	-	-	-	-	-	..
Solid Biomass								
Production	2471443 e	3137047	3210343	3284925	3107907	2997924	2812528 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	893041 e	1302595	1349565	1522887	564869	553718	..	..
Final Energy Consumption	1578402	1834452	1860778 e	1762038	2543038	2444206	..	..
Gas from Biomass								
Production	-	42788	49777	121490	124223	120464	149867	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	-	42788	49777	54296	63417	58842	..	..
Final Energy Consumption	-	-	-	67194	60806	61622	..	..
Liquid Biofuels (1000 tonnes)								
Production	-	4063	4160	4409	4498	4747	6160	..
Net Imports [1]	-	49	8	11	-	-	-	..
Miscellaneous to Balance [2]	-	34	-7	-98	-	-	-	..
Transformation Sector	-	1140	1476	1730	1923	2132	..	..
Final Energy Consumption	-	3006	2685	2592	2575	2615	..	..

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

*Growth rates have not been calculated for aggregates due to unavailability of data for some countries which causes breaks in series.

OECD/IEA Pacific

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	630.65	753.15	794.83	819.18	843.22	849.43	853.77	2.7
of which: Renewables (Mtoe) [1]	*24.12 e*	*25.69 e*	*30.10 e*	*30.04 e*	*30.31 e*	*29.63 e*	*28.97 e*	*1.9*
Renewables/TPES(%)	*3.8*	*3.4*	*3.8*	*3.7*	*3.6*	*3.5*	*3.4*	*-0.8*
GDP (1995 bil. US$)	5647.51	6214.55	6514.04	6626.70	6820.20	6826.06	6842.80	1.7
TPES/GDP[2]	0.11	0.12	0.12	0.12	0.12	0.12	0.12	1.0
TPES/GDP (1973 = 100)	80	87	88	89	89	89	90	1.0
Population (millions)	186.95	192.51	195.40	196.16	197.04	197.87	198.51 e	0.5
TPES/population[3]	3.37	3.91	4.07	4.18	4.28	4.29	4.30 e	2.2
Total Electricity Generation (TWh)[4]	1142.7	1370.3	1486.1	1533.7	1567.5	1571.5	1652.4	2.9
of which: Renewables (TWh) [1]	*149.58*	*148.82 e*	*160.30 e*	*155.41 e*	*153.98 e*	*148.23 e*	*143.99 e*	*-0.1*
Renew./Total Elec.(%) [1]	*13.1*	*10.9*	*10.8*	*10.1*	*9.8*	*9.4*	*8.7*	*-2.9*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**55103 e**	**63589 e**	**65041 e**	**66794 e**	**68431 e**	**69997 e**	**..**	**2.2**
Hydro	52170	59394	61163	62007	62335	63253	..	1.8
of which: Pumped Storage	18005	24385	26995	27395	27395	28095 e	..	4.1
Geothermal	531	779	871	896	1006	1005	..	6.0
Solar Photovoltaic	1	58 e	159 e	238 e	363 e	491	..	75.6
Solar Thermal	8	14	13	13	13	13 e	..	4.5
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	8	59	130 e	160	294	..	-
Industrial Waste	-	-	-	249	249	249	..	-
Municipal Solid Waste	-	490	841	850	1322	1502	..	-
Solid Biomass	-	-	80	1966 e	2023	2173 e	..	-
Gas from Biomass	-	-	-	23	481	481 e	..	-
Comb. Renewables Non-Specified	2393 e	2846 e	1855 e	422	479	536 e	..	x
Solar Collectors Surface (1000 m^2)	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

OECD/IEA Pacific

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**..**	**161010 e**	**172581 e**	**166873 e**	**165844 e**	**160505 e**	**156471 e**	**..**
Hydro	140416	140192	149237 e	142216	144195	138085	132589	-0.2
of which: Pumped Storage	..	12170	12244	11428	11524	11897	12073	..
Geothermal	3951	5181	6002	6257	6269	6689	5716	4.9
Solar Photovoltaics	..	27 e	45 e	53 e	63 e	76 e	76 e	..
Solar Thermal	1	23	30 e	30 e	30	30 e	30	36.2
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	10 e	40 e	120 e	302	610	795 e	-
Industrial Waste	-	-	-	-	305	289	337 e	-
Municipal Solid Waste Renew.	..	3291 e	5329 e	5629 e	5067 e	5592 e	5549 e	..
Municipal Solid Waste Non-Renew.	..	19 e	34 e	34 e	35 e	88 e	73 e	..
Solid Biomass	..	12033 e	11289 e	12033 e	9088	8211	10295 e	..
Gas from Biomass	..	234	575	501	490	835	1011	..
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	**..**	***159642 e***	***170984 e***	***165245 e***	***164210 e***	***159086 e***	**..**	**..**
Hydro	140416	140192	149237 e	142216	144195	138085	..	-0.2
of which: Pumped Storage	..	12170	12244	11428	11524	11897	..	..
Geothermal	3951	5127	5945	6201	6228	6635	..	4.8
Solar Photovoltaics	..	27 e	45 e	53 e	63 e	76 e	..	..
Solar Thermal	1	23	30 e	30 e	30	30 e	..	36.2
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	10 e	40 e	120 e	302	610	..	-
Industrial Waste	-	-	-	-	305	289	..	-
Municipal Solid Waste Renew.	..	3060	4972	5281	4706	5338	..	..
Municipal Solid Waste Non-Renew.	..	-	-	-	-	-	-	..
Solid Biomass	..	11027	10210	10888	7925	7223	..	..
Gas from Biomass	..	176	505	456	456	800	..	..
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	**..**	***1368 e***	***1597 e***	***1628 e***	***1634 e***	***1419 e***	**..**	**..**
Geothermal	-	54	57	56	41	54	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	..	231 e	357 e	348 e	361 e	254 e	..	..
Municipal Solid Waste Non-Renew.	..	19 e	34 e	34 e	35 e	88 e	..	..
Solid Biomass	..	1006 e	1079 e	1145 e	1163	988	..	..
Gas from Biomass	..	58	70	45	34	35	..	..
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

OECD/IEA Pacific

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

								Average annual percent change
	1990	1995	1998	1999	2000	2001	2002E	90-01
Total Heat	**..**	**25966 e**	**51386 e**	**57471 e**	**67713 e**	**76643 e**	**92032 e**	**..**
Geothermal	..	-	-	-	-	-	-	..
Solar Thermal	..	-	-	-	-	-	-	..
Industrial Waste	..	4407 e	9207 e	10311 e	11776 e	15406	16171 e	..
Municipal Solid Waste Renew.	..	17341 e	34828 e	39202 e	47194 e	49933 e	63452 e	..
Municipal Solid Waste Non-Renev	..	457 e	1051 e	1255 e	1444 e	4084 e	5189 e	..
Solid Biomass	..	-	1740 e	1955 e	2210 e	2075 e	2075 e	..
Gas from Biomass	..	663 e	901 e	903 e	1298	1354 e	1354 e	..
Waste Heat and Heat Pumps	..	3098 e	3659 e	3845 e	3791 e	3791 e	3791 e	..
of which:								
CHP Plants	**..**	***936 e***	***1659 e***	***1702 e***	***2906 e***	***3882 e***	**..**	**..**
Geothermal	..	-	-	-	-	-	-	..
Solar Thermal	..	-	-	-	-	-	-	..
Industrial Waste	..	-	-	-	-	-	-	..
Municipal Solid Waste Renew.	..	723 e	1281 e	1314 e	2243 e	2884 e	..	..
Municipal Solid Waste Non-Renev	..	213 e	378 e	388 e	663 e	998 e	..	..
Solid Biomass	..	-	-	-	-	-	-	..
Gas from Biomass	..	-	-	-	-	-	-	..
Waste Heat and Heat Pumps	..	-	-	-	-	-	-	..
Heat Only Plants	**..**	***25030 e***	***49727 e***	***55769 e***	***64807 e***	***72761 e***	**..**	**..**
Geothermal	..	-	-	-	-	-	-	..
Solar Thermal	..	-	-	-	-	-	-	..
Industrial Waste	..	4407 e	9207 e	10311 e	11776 e	15406	..	..
Municipal Solid Waste Renew.	..	16618 e	33547 e	37888 e	44951 e	47049 e	..	..
Municipal Solid Waste Non-Renev	..	244 e	673 e	867 e	781 e	3086 e	..	..
Solid Biomass	..	-	1740 e	1955 e	2210 e	2075 e	..	..
Gas from Biomass	..	663 e	901 e	903 e	1298	1354 e	..	..
Waste Heat and Heat Pumps	..	3098 e	3659 e	3845 e	3791 e	3791 e	..	..

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

OECD/IEA Pacific

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	159623	196219 e	216322	222320	210950	221483	201743 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-5987	-5987	-5987	-6000	-6000	-6000	-6000	..
Transformation Sector	142236	168872	187104	192252	191124	202368	176238 e	..
Final Energy Consumption	11400	21360 e	23231	24068	13826	13115	19505 e	..
Solar Thermal								
Indigenous Production	3525	4416	42147 e	38780 e	39658	37358 e	36102 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	4	83	108 e	108 e	108	108 e	108 e	..
Final Energy Consumption	3521	4333	42039	38672	39550	37250	35994 e	..
Industrial Waste								
Production	11037 e	17549 e	30905 e	34505 e	51118	51624	52755 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	-	5686 e	11561 e	12875 e	18138	21129	..	..
Final Energy Consumption	11037	11863	19344	21630	32980	30495	..	..
Municipal Solid Waste - Renewables								
Production	14614	46480 e	87924 e	95810 e	104721	113305	126339 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-1	-	-	-	-	-	..
Transformation Sector	14614	46479 e	87924 e	95810 e	104721	113305	..	..
Final Energy Consumption	-	-	-	-	-	-	-	..
Municipal Solid Waste - Non-Renewables								
Production	-	1121 e	2197 e	2452 e	2901	6659 e	17010	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	-	1121 e	2197 e	2452 e	2901	6659 e	..	..
Final Energy Consumption	-	-	-	-	-	-	-	..
Solid Biomass								
Production	351761 e	364100 e	412759 e	420858 e	426172	399232	396306 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-382	-	-	-	..
Transformation Sector	94557 e	98960 e	118062 e	119249 e	114376	104618	..	..
Final Energy Consumption	257204 e	265140 e	294697 e	301227 e	311796 e	294614	..	..
Gas from Biomass								
Production	947	3422 e	7843 e	8446 e	8687 e	12311	14737 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	720	39	-40	-28	-30	-	..
Transformation Sector	905	4101 e	7820 e	8266 e	8509 e	12101	..	..
Final Energy Consumption	42	41	62	140	150	180	..	..
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	35	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	-	-	-	-	-	-	-	..
Final Energy Consumption	-	-	-	-	-	-	-	..

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

*Growth rates have not been calculated for aggregates due to unavailability of data for some countries which causes breaks in series.

OECD Europe

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	1625.34	1677.83	1755.13	1752.49	1767.74	1801.51	1789.06	0.9
of which: Renewables (Mtoe) [1]	*92.12 e*	*105.17 e*	*112.72 e*	*114.16 e*	*118.02 e*	*120.28 e*	*116.96 e*	*2.5*
Renewables/TPES(%)	*5.7*	*6.3*	*6.4*	*6.5*	*6.7*	*6.7*	*6.5*	*1.5*
GDP (1995 bil. US$)	8785.25	9496.01	10213.94	10480.48	10846.97	10987.81	11092.84	2.1
TPES/GDP[2]	0.19	0.18	0.17	0.17	0.16	0.16	0.16	-1.1
TPES/GDP (1973 = 100)	79	75	73	71	69	70	68	-1.1
Population (millions)	497.23	510.68	516.61	518.64	521.90	524.55	525.41 e	0.5
TPES/population[3]	3.27	3.29	3.40	3.38	3.39	3.43	3.41 e	0.5
Total Electricity Generation (TWh)[4]	2629.5	2842.5	3036.3	3091.4	3194.5	3257.7	3276.4	2.0
of which: Renewables (TWh) [1]	*464.56 e*	*530.96 e*	*560.54 e*	*569.32 e*	*607.74 e*	*615.43 e*	*580.75 e*	*2.6*
Renew./Total Elec.(%) [1]	*17.7*	*18.7*	*18.5*	*18.4*	*19.0*	*18.9*	*17.7*	*0.6*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**163255**	**181151 e**	**188628 e**	**194980 e**	**202439 e**	**208862 e**	**..**	**2.3**
Hydro	157338	171426	173522	175697 e	178630 e	179969 e	..	1.2
of which: Pumped Storage	25906	35278	38484 e	37713 e	37805 e	38007	..	3.5
Geothermal	563	549	717	785	794	807	..	3.3
Solar Photovoltaic	8	63	120	147	205	307	..	39.3
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	240	240	240	240	240	240	..	-
Wind	474	2474	6223	8943	12853	17193	..	38.6
Industrial Waste	-	-	-	200	335	369	..	-
Municipal Solid Waste	993	1647	2156 e	2361 e	2556 e	2566 e	..	9.0
Solid Biomass	2922	3452 e	3894	4490 e	4622 e	5191 e	..	5.4
Gas from Biomass	383	458	712	965	1178	1396 e	..	12.5
Comb. Renewables Non-Specified	334	842	1044	1152	1026	824	..	8.6
Solar Collectors Surface (1000 m^2)	4059	7579	10229	10458 e	11676 e	13038	..	11.2

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

OECD Europe

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

								Average annual percent change
	1990	1995	1998	1999	2000	2001	2002E	90-01
Total Electricity	**..**	**560246 e**	**597706 e**	**608803 e**	**652865**	**660324 e**	**628297 e**	**..**
Hydro	463285	519973	536473	543089	574081	571534 e	525112	1.9
of which: Pumped Storage	20099	22610	26528	28622 e	32994 e	31306 e	34846	4.1
Geothermal	3606	3854	5012	5700	6184	6153	6293	5.0
Solar Photovoltaics	13	44	81	82 e	121 e	229 e	273 e	29.8
Solar Thermal	-	-	-	-	-	-	- e	-
Tide, Wave, Ocean	571	568	590	580	566	543	540	-0.5
Wind	778	4082	11311	14263	22315	27304	36779	38.2
Industrial Waste	..	5022	8128 e	6432 e	7147	8833	7676 e	..
Municipal Solid Waste Renew.	..	6882	9682	9269	10079	10969	11666 e	..
Municipal Solid Waste Non-Renew.	..	1652	2514	4433	4985	4758	5021 e	..
Solid Biomass	10452 e	15586	19723	19830 e	20715	22086 e	26728 e	7.0
Gas from Biomass	..	2583 e	4192 e	5125	6672	7915 e	8209 e	..
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	**..**	***542049 e***	***572198 e***	***581887 e***	***624869***	***632073 e***	**..**	**..**
Hydro	463285	519973	536473	543089	574081	571534 e	..	1.9
of which: Pumped Storage	20099	22610	26528	28622 e	32994 e	31306 e	..	4.1
Geothermal	3606	3747	4788	5066	5335	5223	..	3.4
Solar Photovoltaics	13	44	81	82 e	121 e	229 e	..	29.8
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	571	568	590	580	566	543	..	-0.5
Wind	778	4082	11311	14263	22315	27304	..	38.2
Industrial Waste	..	4474	5734 e	3940 e	4872	7358	..	..
Municipal Solid Waste Renew.	..	3920	5560	4522	5396	5538	..	..
Municipal Solid Waste Non-Renew.	..	412	543	2118	2561	2597	..	..
Solid Biomass	1962 e	3310	4176	4410 e	4276	5251 e	..	9.4
Gas from Biomass	..	1519 e	2942 e	3817	5346	6496 e	..	..
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	**..**	***18197***	***25508***	***26916 e***	***27996***	***28251***	**..**	**..**
Geothermal	-	107	224	634	849	930	..	-
Industrial Waste	..	548	2394	2492 e	2275	1475	..	..
Municipal Solid Waste Renew.	..	2962	4122	4747	4683	5431	..	..
Municipal Solid Waste Non-Renew.	..	1240	1971	2315	2424	2161	..	..
Solid Biomass	8490 e	12276	15547	15420 e	16439	16835	..	6.4
Gas from Biomass	..	1064	1250	1308	1326	1419	..	..
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

OECD Europe

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

								Average annual percent change
	1990	1995	1998	1999	2000	2001	2002E	90-01
Total Heat	**..**	**209523 e**	**248051**	**282177 e**	**273785 e**	**291778 e**	**296390 e**	**..**
Geothermal	..	7500	6295	8272	7805	7842	8027	..
Solar Thermal	..	6	16	23	24	28	34	..
Industrial Waste	..	3384	4618	6861 e	10730	11576	11449 e	..
Municipal Solid Waste Renew.	..	85358 e	91041	84573 e	82989	86215 e	87898 e	..
Municipal Solid Waste Non-Renev	..	11451 e	15850	27848	26451	28838 e	28786 e	..
Solid Biomass	..	81950	107316	130925	121678 e	135998 e	134420 e	..
Gas from Biomass	..	3815	4742	5202	5255	5615	5551 e	..
Waste Heat and Heat Pumps	..	16059	18173	18473	18853	15666	20225	..
of which:								
CHP Plants	***..***	***125070 e***	***156017***	***180825 e***	***172017 e***	***183898 e***	***..***	***..***
Geothermal	..	7103	5885	7556	6967	6829	..	..
Solar Thermal	..	-	-	-	-	-	-	..
Industrial Waste	..	2363	2682	5728 e	5678	5976	..	..
Municipal Solid Waste Renew.	..	63572 e	70214	63526	62059	65715 e	..	..
Municipal Solid Waste Non-Renev	..	9033 e	13327	25173	23120	24910 e	..	..
Solid Biomass	..	37238	56839	71465	66548 e	71814 e	..	..
Gas from Biomass	..	3281	4182	4342	4323	4462	..	..
Waste Heat and Heat Pumps	..	2480	2888	3035	3322	4192	..	..
Heat Only Plants	***..***	***84454***	***92034***	***101353 e***	***101769***	***107881***	***..***	***..***
Geothermal	..	397	410	716	838	1013	..	..
Solar Thermal	..	6	16	23	24	28	..	..
Industrial Waste	..	1021	1936	1133 e	5052	5600	..	..
Municipal Solid Waste Renew.	..	21786	20827	21047 e	20930	20500	..	..
Municipal Solid Waste Non-Renev	..	2418	2523	2675	3331	3928	..	..
Solid Biomass	..	44712	50477	59460	55130	64184	..	..
Gas from Biomass	..	534	560	860	932	1153	..	..
Waste Heat and Heat Pumps	..	13580	15285	15439	15532	11475	..	..

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

OECD Europe

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01*
Geothermal								
Production	193965 e	213931 e	255565 e	279528	246312	258391	267701 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-1726	-2863	-3155	-3135	-3387	-3231	-3200	..
Transformation Sector	137866	154134	189888	210386	174744	182514	187396 e	..
Final Energy Consumption	54373	56934	62522	66007	68181	72646	77105 e	..
Solar Thermal								
Indigenous Production	6859	16862	23179	24731 e	27557 e	30903	33146 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	6	6	16	23	24	28	34 e	..
Final Energy Consumption	6853	16856	23163 e	24708 e	27533 e	30875	33112 e	..
Industrial Waste								
Production	76808 e	106508 e	128149 e	112939 e	123232 e	123331 e	134190 e	..
Net Imports [1]	-	-	-	-	-	-7	-5	..
Miscellaneous to Balance [2]	-5222	-2690	-589	-247	-258	-490	-10	..
Transformation Sector	32575 e	54485 e	88570 e	74666 e	86784 e	84281 e	..	..
Final Energy Consumption	39011 e	49333 e	38990 e	38026 e	36190 e	38553 e	..	..
Municipal Solid Waste - Renewables								
Production	160932 e	211711 e	237122 e	227540 e	242847 e	253239 e	263416 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-68	-2937	-7097	-9754	-71	-	-	..
Transformation Sector	159273 e	207004 e	225098 e	211349 e	221092 e	231634 e	..	..
Final Energy Consumption	1591	1770	4927	6437	21684	21605	..	..
Municipal Solid Waste - Non-Renewables								
Production	18971	30600	40606	74756	83014 e	87653 e	90025 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-9	-19	-1	-	..
Transformation Sector	18212	29688	40183	74082	81240 e	84683 e	..	..
Final Energy Consumption	759	912	423	665	1755	2969	..	..
Solid Biomass								
Production	1849143 e	2076250 e	2215606 e	2224402 e	2247619 e	2287957 e	2262008 e	..
Net Imports [1]	5295 e	14809	18469	19887	25582	13065	13545 e	..
Miscellaneous to Balance [2]	8635	-836	1488	532	-770	-148	-25	..
Transformation Sector	126264 e	220047 e	252048 e	287528 e	293869 e	307042 e	..	..
Final Energy Consumption	1736809 e	1870176 e	1983515 e	1957293 e	1978562 e	1993832 e	..	..
Gas from Biomass								
Production	31494 e	55155 e	77056 e	83932 e	99260 e	115064 e	122476 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-24	-71	-776	-6	-12	-12	-	..
Transformation Sector	16049 e	39331 e	57892 e	65126 e	83292 e	96657 e	..	..
Final Energy Consumption	15421	15753	18388 e	18800 e	15956	18395	..	..
Liquid Biofuels (1000 tonnes)								
Production	7	237	434	520	806	1109	1204 e	..
Net Imports [1]	-	-	9	6	9	6	8	..
Miscellaneous to Balance [2]	-	-	-	2	-	-36	-6	..
Transformation Sector	-	-	-	-	-	-	-	..
Final Energy Consumption	7	237	443	528	815	1079	..	..

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

*Growth rates have not been calculated for aggregates due to unavailability of data for some countries which causes breaks in series.

IEA Total

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	4269.21	4631.30	4851.76	4949.89	5054.95	5067.89	5059.38	1.6
of which: Renewables (Mtoe) [1]	*247.05 e*	*271.67 e*	*286.49 e*	*292.02 e*	*289.66 e*	*280.91 e*	*276.93 e*	*1.2*
Renewables/TPES(%)	*5.8*	*5.9*	*5.9*	*5.9*	*5.7*	*5.6*	*5.5*	*-0.4*
GDP (1995 bil. US$)	21346.57	23477.53	25473.98	26224.72	27134.25	27311.31	27662.40	2.3
TPES/GDP[2]	0.20	0.20	0.19	0.19	0.19	0.19	0.18	-0.7
TPES/GDP (1973 = 100)	73	72	69	69	68	68	67	-0.7
Population (millions)	918.19	951.40	968.48	973.97	980.80	995.10	998.42 e	0.7
TPES/population[3]	4.65	4.87	5.01	5.08	5.15	5.09	5.07 e	0.8
Total Electricity Generation (TWh)[4]	7273.3	8163.1	8716.1	8918.9	9211.7	9097.3	9259.8	2.1
of which: Renewables (TWh) [1]	*1269.08 e*	*1401.19 e*	*1450.29 e*	*1440.58 e*	*1451.55 e*	*1373.59 e*	*1366.39 e*	*0.7*
Renew./Total Elec.(%) [1]	*17.4*	*17.2*	*16.6*	*16.2*	*15.8*	*15.1*	*14.8*	*-1.3*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**382000 e**	**420727 e**	**430033 e**	**440064 e**	**448639 e**	**457874 e**	**..**	**1.7**
Hydro	358516	390439	394653	398273 e	401586 e	403325 e	..	1.1
of which: Pumped Storage	42892	79126	82453 e	82129 e	82798 e	83519 e	..	6.2
Geothermal	3717	4245	4365	4510	4421	4403	..	1.6
Solar Photovoltaic	..	..	..	547 e	751 e	1020	..	..
Solar Thermal	348	349	375	425	397 e	397 e	..	1.2
Tide, Wave, Ocean	260	260	260 e	260 e	260 e	260 e	..	-
Wind	2386	4235	8001 e	11399 e	15464 e	21608 e	..	22.2
Industrial Waste	..	..	..	1186	1219	1252	..	..
Municipal Solid Waste	..	..	..	5790 e	6505 e	6696 e	..	..
Solid Biomass	..	..	..	13361 e	12774 e	13582 e	..	..
Gas from Biomass	..	..	..	1601	2530	2749 e	..	..
Comb. Renewables Non-Specified	..	..	..	2712 e	2732 e	2582 e	..	..
Solar Collectors Surface (1000 m^2)	..	..	..	..	..	..	..	..

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

IEA Total

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

								Average annual percent change
	1990	1995	1998	1999	2000	2001	2002E	90-01
Total Electricity	**..**	**1468177 e**	**1528098 e**	**1517680 e**	**1539902 e**	**1457794 e**	**1455410 e**	**..**
Hydro	1182918	1320296	1355745 e	1332829	1341173	1250085 e	1230741 e	0.5
of which: Pumped Storage	40749	56321	62550	61612 e	69041 e	63274 e	67589 e	4.1
Geothermal	23269	23686	25728	26259	25751	25719	24800 e	0.9
Solar Photovoltaics	16	75 e	129 e	138 e	187 e	308 e	351 e	30.8
Solar Thermal	664	850	920 e	903 e	559	559 e	453 e	-1.6
Tide, Wave, Ocean	597	601	622	612	603	644	856	0.7
Wind	3844	7346 e	14427 e	19115 e	28520	34022	46584 e	21.9
Industrial Waste	..	8996	12706 e	11018 e	14291	16087	16335 e	..
Municipal Solid Waste Renew.	..	24946 e	31032 e	31445 e	31873 e	33379 e	32435 e	..
Municipal Solid Waste Non-Renew.	..	1671 e	2548 e	4467 e	5020 e	4846 e	5094 e	..
Solid Biomass	59424 e	73617 e	75355 e	81212 e	79564	78578 e	83413 e	2.6
Gas from Biomass	..	6093 e	8886 e	9682	12361	13567 e	14348 e	..
Comb. Renewables Non-Specified	20494 e	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	**..**	***1411987 e***	***1467677 e***	***1450788 e***	***1469794 e***	***1388370 e***	**..**	**..**
Hydro	1182918	1320296	1355745 e	1332829	1341173	1250085 e	..	0.5
of which: Pumped Storage	40749	56321	62550	61612 e	69041 e	63274 e	..	4.1
Geothermal	23269	23632	25671	26203	25710	25665	..	0.9
Solar Photovoltaics	16	75 e	129 e	138 e	187 e	308 e	..	30.8
Solar Thermal	664	850	920 e	903 e	559	559 e	..	-1.6
Tide, Wave, Ocean	597	601	622	612	603	644	..	0.7
Wind	3844	7346 e	14427 e	19115 e	28520	34022	..	21.9
Industrial Waste	..	4914	6159 e	4599 e	6100	8358	..	..
Municipal Solid Waste Renew.	..	20412	24604	23826	24627	25550	..	..
Municipal Solid Waste Non-Renew.	..	412	543	2118	2561	2597	..	..
Solid Biomass	25029 e	28689	31678	32806 e	30078	29829 e	..	1.6
Gas from Biomass	..	4760 e	7179 e	7639	9676	10753 e	..	..
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	**..**	***56190 e***	***60421 e***	***66892 e***	***70108 e***	***69424 e***	**..**	**..**
Geothermal	-	54	57	56	41	54	..	-
Industrial Waste	..	4082	6547 e	6419 e	8191	7729	..	..
Municipal Solid Waste Renew.	..	4534 e	6428 e	7619 e	7246 e	7829 e	..	..
Municipal Solid Waste Non-Renew.	..	1259 e	2005 e	2349 e	2459 e	2249 e	..	..
Solid Biomass	34395 e	44928 e	43677 e	48406 e	49486	48749	..	3.2
Gas from Biomass	..	1333	1707	2043	2685	2814	..	..
Comb. Renewables Non-Specified	20494 e	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

IEA Total

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**..**	**254492 e**	**359154 e**	**381947 e**	**358575 e**	**384931 e**	**403812 e**	**..**
Geothermal	..	79	92	398	436	449	514	..
Solar Thermal	..	6	16	23	24	28	34	..
Industrial Waste	..	8458 e	17382 e	22191 e	21905 e	26120	26871 e	..
Municipal Solid Waste Renew.	..	109933 e	135536 e	128947 e	145389 e	150592 e	165089 e	..
Municipal Solid Waste Non-Renev	..	11908 e	16901 e	29103 e	27895 e	32556 e	33562 e	..
Solid Biomass	..	100479	161429 e	172828 e	131575 e	147561 e	145421 e	..
Gas from Biomass	..	4472 e	5966 e	6139 e	8707	9226 e	9498 e	..
Waste Heat and Heat Pumps	..	19157 e	21832 e	22318 e	22644 e	18399 e	22823 e	..
of which:								
CHP Plants	**..**	***145814 e***	***218418 e***	***225938 e***	***192973 e***	***207160 e***	**..**	**..**
Geothermal	..	-	-	-	-	-	-	..
Solar Thermal	..	-	-	-	-	-	-	..
Industrial Waste	..	3162	6480	11021 e	5111	5183	..	..
Municipal Solid Waste Renew.	..	71565 e	81198 e	70048 e	79553 e	83088 e	..	..
Municipal Solid Waste Non-Renev	..	9246 e	13705 e	25561 e	23783 e	25908 e	..	..
Solid Biomass	..	56080	109615	111858	74690 e	82046 e	..	..
Gas from Biomass	..	3281	4532	4415	6514	6743	..	..
Waste Heat and Heat Pumps	..	2480	2888	3035	3322	4192	..	..
Heat Only Plants	**..**	***108679 e***	***140736 e***	***156010 e***	***165603 e***	***177771 e***	**..**	**..**
Geothermal	..	79	92	398	436	449	..	..
Solar Thermal	..	6	16	23	24	28	..	..
Industrial Waste	..	5296 e	10902 e	11170 e	16794 e	20937	..	..
Municipal Solid Waste Renew.	..	38368 e	54338 e	58899 e	65836 e	67504 e	..	..
Municipal Solid Waste Non-Renev	..	2662 e	3196 e	3542 e	4112 e	6648 e	..	..
Solid Biomass	..	44399	51814 e	60970 e	56885 e	65515 e	..	..
Gas from Biomass	..	1191 e	1434 e	1724 e	2193	2483 e	..	..
Waste Heat and Heat Pumps	..	16678 e	18944 e	19284 e	19323 e	14207 e	..	..

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

IEA Total

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01*
Geothermal								
Production	900596 e	916386 e	987966 e	1008067	931629	940140	927127 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-5987	-5987	-5987	-6000	-6000	-6000	-6000	..
Transformation Sector	837770	835233	897423	913119	844952	850486	825576 e	..
Final Energy Consumption	56839	75166 e	84556	88948	80677	83654	95551 e	..
Solar Thermal								
Indigenous Production	12771	24256	68531 e	129967 e	129421 e	127144 e	126212 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	2397	3067	3329 e	3274 e	2036	2040 e	1665 e	..
Final Energy Consumption	10374	21189	65202 e	126693 e	127385 e	125104	124547 e	..
Industrial Waste								
Production	55534 e	217380 e	253356 e	258975 e	327776 e	329093 e	322877 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	27310 e	181483 e	203682 e	198811 e	171049 e	172873 e	..	..
Final Energy Consumption	28224 e	35897 e	49674 e	60164 e	156727 e	156220 e	..	..
Municipal Solid Waste - Renewables								
Production	349375 e	528383 e	611703 e	636323 e	690491 e	706991 e	687628 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-68	-2938	-7097	-9754	-71	-	-	..
Transformation Sector	347716 e	523675 e	599679 e	591831 e	583186 e	601661 e	..	..
Final Energy Consumption	1591	1770	4927	34738	107234	105330	..	..
Municipal Solid Waste - Non-Renewables								
Production	18971	31721 e	42803 e	77196 e	85851 e	93262 e	106104 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-9	-19	-	-	..
Transformation Sector	18212	30809 e	42380 e	76534 e	84141 e	90753 e	..	..
Final Energy Consumption	759	912	423	653	1691	2509	..	..
Solid Biomass								
Production	4298386 e	5089617 e	5340128 e	5440185 e	5290586 e	5170429 e	4993984 e	..
Net Imports [1]	5295 e	14809	18469	19887	25582	13096	13575 e	..
Miscellaneous to Balance [2]	8641	-837	150	407	-126	-126	-	..
Transformation Sector	1099291 e	1617187 e	1692707 e	1887227 e	931959 e	923721 e	..	..
Final Energy Consumption	3213031 e	3486402 e	3666040 e	3573252 e	4384083 e	4259678 e	..	..
Gas from Biomass								
Production	32048 e	100814 e	133408 e	212590 e	230702 e	245937 e	285379 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-24	650	-714	-24	-13	-30	-	..
Transformation Sector	16940 e	86095 e	114898 e	127115 e	154518 e	166820 e	..	..
Final Energy Consumption	15084	15369	17796 e	85451 e	76171	79087	..	..
Liquid Biofuels (1000 tonnes)								
Production	7	4300	4594	4929	5304	5809	7361 e	..
Net Imports [1]	-	49	17	17	9	8	8	..
Miscellaneous to Balance [2]	-	34	-7	-96	-	-	-	..
Transformation Sector	-	1140	1476	1730	1923	2132	..	..
Final Energy Consumption	7	3243	3128	3120	3390	3685	..	..

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

*Growth rates have not been calculated for aggregates due to unavailability of data for some countries which causes breaks in series.

IEA North America

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	2136.66	2320.26	2419.30	2492.22	2554.75	2529.60	2526.38	1.5
of which: Renewables (Mtoe) [1]	*134.12 e*	*146.80*	*149.84*	*154.22*	*147.93*	*138.26*	*138.27 e*	*0.3*
Renewables/TPES(%)	*6.3*	*6.3*	*6.2*	*6.2*	*5.8*	*5.5*	*5.5*	*-1.2*
GDP (1995 bil. US$)	7054.89	7920.07	8927.16	9305.40	9662.23	9695.19	9927.40	2.9
TPES/GDP[2]	0.30	0.29	0.27	0.27	0.26	0.26	0.25	-1.3
TPES/GDP (1973 = 100)	69	67	62	61	60	59	58	-1.3
Population (millions)	277.68	292.43	300.81	303.50	306.19	316.99	318.78 e	1.2
TPES/population[3]	7.69	7.93	8.04	8.21	8.34	7.98	7.93 e	0.3
Total Electricity Generation (TWh)[4]	3663.5	4118.2	4366.0	4468.4	4630.9	4451.7	4513.7	1.8
of which: Renewables (TWh) [1]	*662.80 e*	*733.21*	*742.53 e*	*729.86*	*704.46*	*625.82*	*658.17 e*	*-0.5*
Renew./Total Elec.(%) [1]	*18.1*	*17.8*	*17.0*	*16.3*	*15.2*	*14.1*	*14.6*	*-2.3*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**166421**	**181229 e**	**182058 e**	**184088 e**	**183624 e**	**185463 e**	**..**	**1.0**
Hydro	151741	164810	165515	166183 e	166288 e	166308 e	..	0.8
of which: Pumped Storage	186	21564	19075 e	19122 e	19699 e	19699 e	..	52.8
Geothermal	2669	2968	2917	3001	2793	2793	..	0.4
Solar Photovoltaic	..	..	..	162	183	222	..	..
Solar Thermal	340	335	362	412	384 e	384 e	..	1.1
Tide, Wave, Ocean	20	20	20 e	20 e	20 e	20 e	..	-
Wind	1912	1753	1721 e	2329 e	2455 e	4140 e	..	7.3
Industrial Waste	..	..	..	739	638	638	..	..
Municipal Solid Waste	..	..	..	2579	2627	2628	..	..
Solid Biomass	..	..	..	6905	6129	6218	..	..
Gas from Biomass	..	..	..	620	880	885	..	..
Comb. Renewables Non-Specified	..	..	..	1138 e	1227 e	1227 e	..	..
Solar Collectors Surface (1000 m^2)	..	..	..	..	..	..	..	..

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

IEA North America

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

								Average annual percent change
	1990	1995	1998	1999	2000	2001	2002E	90-01
Total Electricity	**..**	**761332**	**773578 e**	**758752**	**738520**	**655271**	**689578 e**	**..**
Hydro	589249	673890	684550	662629	638344	556380	589387 e	-0.5
of which: Pumped Storage	15919	23851	26096	23991	26893	22156	22758 e	3.1
Geothermal	16012	14941	15369	15438	14621	14328	14224 e	-1.0
Solar Photovoltaics	3	4	3	3	3	3	2 e	-
Solar Thermal	663	827	890	873	529	529	423 e	-2.0
Tide, Wave, Ocean	26	33	32	32	37	101	316	13.1
Wind	3066	3255	3080	4736	5908	6122	9070 e	6.5
Industrial Waste	..	4268	4952 e	4897	7170	7294	8647 e	..
Municipal Solid Waste Renew.	10613 e	14773	16021	16547	16727	16818	15220 e	4.3
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	38590 e	46052	44549	49518	49951	48836	47100 e	2.2
Gas from Biomass	..	3289	4132	4079	5230	4860	5189 e	..
Comb. Renewables Non-Specified	20494 e	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	**..**	***724252***	***739458 e***	***719290***	***696672***	***613703***	**..**	**..**
Hydro	589249	673890	684550	662629	638344	556380	..	-0.5
of which: Pumped Storage	15919	23851	26096	23991	26893	22156	..	3.1
Geothermal	16012	14941	15369	15438	14621	14328	..	-1.0
Solar Photovoltaics	3	4	3	3	3	3	..	-
Solar Thermal	663	827	890	873	529	529	..	-2.0
Tide, Wave, Ocean	26	33	32	32	37	101	..	13.1
Wind	3066	3255	3080	4736	5908	6122	..	6.5
Industrial Waste	..	440	425 e	659	923	711	..	..
Municipal Solid Waste Renew.	9693 e	13432	14072	14023	14525	14674	..	3.8
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	13560 e	14352	17292	17508	17877	17355	..	2.3
Gas from Biomass	..	3078	3745	3389	3905	3500	..	..
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	**..**	***37080***	***34120 e***	***39462***	***41848***	***41568***	**..**	**..**
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	..	3828	4527 e	4238	6247	6583	..	..
Municipal Solid Waste Renew.	920 e	1341	1949	2524	2202	2144	..	8.0
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	25030 e	31700	27257	32010	32074	31481	..	2.1
Gas from Biomass	..	211	387	690	1325	1360	..	..
Comb. Renewables Non-Specified	20494 e	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

IEA North America

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**..**	**28539**	**68905**	**52842**	**27118**	**28619**	**27836 e**	**..**
Geothermal	..	-	-	-	-	-	-	..
Solar Thermal	..	-	-	-	-	-	-	..
Industrial Waste	..	1993	4609	5756	187	187	192 e	..
Municipal Solid Waste Renew.	..	7270	9703	5208	15251	14489	13795 e	..
Municipal Solid Waste Non-Renev	..	-	-	-	-	-	-	..
Solid Biomass	..	19276	54243	41805	9489	11662	11226 e	..
Gas from Biomass	..	-	350	73	2191	2281	2623 e	..
Waste Heat and Heat Pumps	..	-	-	-	-	-	-	..
of which:								
CHP Plants	**..**	***28539***	***68905***	***52842***	***27118***	***28619***	**..**	**..**
Geothermal	..	-	-	-	-	-	-	..
Solar Thermal	..	-	-	-	-	-	-	..
Industrial Waste	..	1993	4609	5756	187	187	..	..
Municipal Solid Waste Renew.	..	7270	9703	5208	15251	14489	..	..
Municipal Solid Waste Non-Renev	..	-	-	-	-	-	-	..
Solid Biomass	..	19276	54243	41805	9489	11662	..	..
Gas from Biomass	..	-	350	73	2191	2281	..	..
Waste Heat and Heat Pumps	..	-	-	-	-	-	-	..
Heat Only Plants	**..**	**-**	**-**	**-**	**-**	**-**	**-**	**..**
Geothermal	..	-	-	-	-	-	-	..
Solar Thermal	..	-	-	-	-	-	-	..
Industrial Waste	..	-	-	-	-	-	-	..
Municipal Solid Waste Renew.	..	-	-	-	-	-	-	..
Municipal Solid Waste Non-Renev	..	-	-	-	-	-	-	..
Solid Biomass	..	-	-	-	-	-	-	..
Gas from Biomass	..	-	-	-	-	-	-	..
Waste Heat and Heat Pumps	..	-	-	-	-	-	-	..

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

IEA North America

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01*
Geothermal								
Production	590501	554876	571749	576131	548091	539652	537116 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	576432	537876	553284	555768	526356	515808	512064 e	..
Final Energy Consumption	14069	17000	18465	20363	21735	23844	25052 e	..
Solar Thermal								
Indigenous Production	2387	2978	3205	66456	62206	58883	56964 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	2387	2978	3205	3143	1904	1904	1523 e	..
Final Energy Consumption	-	-	-	63313	60302	56979	55441 e	..
Industrial Waste								
Production	-	128432	111828	128803	172192	175180	156730	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	-	125190	107368	114360	69406	71069	..	..
Final Energy Consumption	-	3242	4460 e	14443	102786	104111	..	..
Municipal Solid Waste - Renewables								
Production	173829 e	270237	286702	313018	342979	340503	297929	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	173829 e	270237	286702	284717	257429	256778	..	..
Final Energy Consumption	-	-	-	28301	85550	83725	..	..
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	-	-	-	-	-	-	-	..
Final Energy Consumption	-	-	-	-	-	-	-	..
Solid Biomass								
Production	2165090 e	2809406	2868200	2946445	2771449	2654831	2506558 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	893041 e	1302595	1329057	1486721	530972	518287	..	..
Final Energy Consumption	1272049	1506811	1539143 e	1459724	2240477	2136544	..	..
Gas from Biomass								
Production	-	42788	49390	121266	123966	120260	149643	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	-	42788	49390	54072	63160	58638	..	..
Final Energy Consumption	-	-	-	67194	60806	61622	..	..
Liquid Biofuels (1000 tonnes)								
Production	-	4063	4160	4409	4498	4747	6160	..
Net Imports [1]	-	49	8	11	-	-	-	..
Miscellaneous to Balance [2]	-	34	-7	-98	-	-	-	..
Transformation Sector	-	1140	1476	1730	1923	2132	..	..
Final Energy Consumption	-	3006	2685	2592	2575	2615	..	..

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

*Growth rates have not been calculated for aggregates due to unavailability of data for some countries which causes breaks in series.

IEA Europe

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	1501.89	1557.89	1637.64	1638.49	1656.98	1688.86	1679.23	1.1
of which: Renewables (Mtoe) [1]	*88.81 e*	*99.18 e*	*106.55 e*	*107.76 e*	*111.43 e*	*113.03 e*	*109.68 e*	*2.2*
Renewables/TPES(%)	*5.9*	*6.4*	*6.5*	*6.6*	*6.7*	*6.7*	*6.5*	*1.1*
GDP (1995 bil. US$)	8644.16	9342.91	10032.77	10292.62	10651.83	10790.06	10892.20	2.0
TPES/GDP[2]	0.17	0.17	0.16	0.16	0.16	0.16	0.15	-0.9
TPES/GDP (1973 = 100)	78	75	74	72	70	71	70	-0.9
Population (millions)	453.56	466.46	472.27	474.32	477.57	480.24	481.13 e	0.5
TPES/population[3]	3.31	3.34	3.47	3.45	3.47	3.52	3.49 e	0.5
Total Electricity Generation (TWh)[4]	2467.1	2674.5	2864.0	2916.7	3013.3	3074.1	3093.6	2.0
of which: Renewables (TWh) [1]	*456.70 e*	*519.16 e*	*547.46 e*	*555.31 e*	*593.11 e*	*599.54 e*	*564.23 e*	*2.5*
Renew./Total Elec.(%) [1]	*18.5*	*19.4*	*19.1*	*19.0*	*19.7*	*19.5*	*18.2*	*0.5*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**160476**	**175909 e**	**182934 e**	**189182 e**	**196584 e**	**202414 e**	**..**	**2.1**
Hydro	154605	166235	167975	170083 e	172963 e	173764 e	..	1.1
of which: Pumped Storage	24701	33177	36383	35612 e	35704 e	35725	..	3.4
Geothermal	517	498	577	613	622	605	..	1.4
Solar Photovoltaic	8	63	120	147	205	307	..	39.3
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	240	240	240	240	240	240	..	-
Wind	474	2474	6221	8940	12849	17174	..	38.6
Industrial Waste	-	-	-	198	332	365	..	-
Municipal Solid Waste	993	1647	2156 e	2361 e	2556 e	2566 e	..	9.0
Solid Biomass	2922	3452 e	3894	4490 e	4622 e	5191 e	..	5.4
Gas from Biomass	383	458	707	958	1169	1383 e	..	12.4
Comb. Renewables Non-Specified	334	842	1044	1152	1026	819	..	8.5
Solar Collectors Surface (1000 m^2)	4059	7579	10229	10458 e	11676 e	13038	..	11.2

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

IEA Europe

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

								Average annual percent change
	1990	1995	1998	1999	2000	2001	2002E	90-01
Total Electricity	**..**	**545835 e**	**581939 e**	**592055 e**	**635538**	**642018 e**	**609361 e**	**..**
Hydro	453253	506214	521958	527984	558634	555620 e	508765	1.9
of which: Pumped Storage	17568	20300	24210	26193 e	30624 e	29221 e	32758	4.7
Geothermal	3306	3564	4357	4564	4861	4702	4860	3.3
Solar Photovoltaics	13	44	81	82 e	121 e	229 e	273 e	29.8
Solar Thermal	-	-	-	-	-	-	- e	-
Tide, Wave, Ocean	571	568	590	580	566	543	540	-0.5
Wind	778	4081	11307	14259	22310	27290	36719	38.2
Industrial Waste	..	4728	7754 e	6121 e	6816	8504	7351	..
Municipal Solid Waste Renew.	..	6882	9682	9269	10079	10969	11666 e	..
Municipal Solid Waste Non-Renew.	..	1652	2514	4433	4985	4758	5021 e	..
Solid Biomass	10397 e	15532	19517	19661 e	20525	21531 e	26018 e	6.8
Gas from Biomass	..	2570 e	4179 e	5102	6641	7872 e	8148 e	..
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	**..**	***528093 e***	***557235 e***	***566253 e***	***608912***	***615581 e***	**..**	**..**
Hydro	453253	506214	521958	527984	558634	555620 e	..	1.9
of which: Pumped Storage	17568	20300	24210	26193 e	30624 e	29221 e	..	4.7
Geothermal	3306	3564	4357	4564	4861	4702	..	3.3
Solar Photovoltaics	13	44	81	82 e	121 e	229 e	..	29.8
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	571	568	590	580	566	543	..	-0.5
Wind	778	4081	11307	14259	22310	27290	..	38.2
Industrial Waste	..	4474	5734 e	3940 e	4872	7358	..	..
Municipal Solid Waste Renew.	..	3920	5560	4522	5396	5538	..	..
Municipal Solid Waste Non-Renew.	..	412	543	2118	2561	2597	..	..
Solid Biomass	1962 e	3310	4176	4410 e	4276	5251 e	..	9.4
Gas from Biomass	..	1506 e	2929 e	3794	5315	6453 e	..	..
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	**..**	***17742***	***24704***	***25802 e***	***26626***	***26437***	**..**	**..**
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	..	254	2020	2181 e	1944	1146	..	..
Municipal Solid Waste Renew.	..	2962	4122	4747	4683	5431	..	..
Municipal Solid Waste Non-Renew.	..	1240	1971	2315	2424	2161	..	..
Solid Biomass	8435 e	12222	15341	15251 e	16249	16280	..	6.2
Gas from Biomass	..	1064	1250	1308	1326	1419	..	..
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

IEA Europe

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**..**	**199987 e**	**238863**	**271634 e**	**263744 e**	**279669 e**	**283944 e**	**..**
Geothermal	..	79	92	398	436	449	514	..
Solar Thermal	..	6	16	23	24	28	34	..
Industrial Waste	..	2058	3566	6124 e	9942	10527	10508 e	..
Municipal Solid Waste Renew.	..	85322 e	91005	84537 e	82944	86170 e	87842 e	..
Municipal Solid Waste Non-Renev	..	11451 e	15850	27848	26451	28472 e	28373 e	..
Solid Biomass	..	81203	105446	129068	119876 e	133824 e	132120 e	..
Gas from Biomass	..	3809	4715	5163	5218	5591	5521 e	..
Waste Heat and Heat Pumps	..	16059	18173	18473	18853	14608	19032	..
of which:								
CHP Plants	***..***	***116339 e***	***147854***	***171394 e***	***162949 e***	***174659 e***	***..***	***..***
Geothermal	..	-	-	-	-	-	-	..
Solar Thermal	..	-	-	-	-	-	-	..
Industrial Waste	..	1169	1871	5265 e	4924	4996	..	..
Municipal Solid Waste Renew.	..	63572 e	70214	63526	62059	65715 e	..	..
Municipal Solid Waste Non-Renev	..	9033 e	13327	25173	23120	24910 e	..	..
Solid Biomass	..	36804	55372	70053	65201 e	70384 e	..	..
Gas from Biomass	..	3281	4182	4342	4323	4462	..	..
Waste Heat and Heat Pumps	..	2480	2888	3035	3322	4192	..	..
Heat Only Plants	***..***	***83649***	***91009***	***100241 e***	***100796***	***105010***	***..***	***..***
Geothermal	..	79	92	398	436	449	..	..
Solar Thermal	..	6	16	23	24	28	..	..
Industrial Waste	..	889	1695	859 e	5018	5531	..	..
Municipal Solid Waste Renew.	..	21750	20791	21011 e	20885	20455	..	..
Municipal Solid Waste Non-Renev	..	2418	2523	2675	3331	3562	..	..
Solid Biomass	..	44399	50074	59015	54675	63440	..	..
Gas from Biomass	..	528	533	821	895	1129	..	..
Waste Heat and Heat Pumps	..	13580	15285	15439	15532	10416	..	..

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

IEA Europe

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01*
Geothermal								
Production	150472 e	165291 e	199895 e	209616	172588	179005	188268 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	119102	128485	157035	165099	127472	132310	137274 e	..
Final Energy Consumption	31370	36806	42860	44517	45116	46695	50994 e	..
Solar Thermal								
Indigenous Production	6859	16862	23179	24731 e	27557 e	30903	33146 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	6	6	16	23	24	28	34 e	..
Final Energy Consumption	6853	16856	23163 e	24708 e	27533 e	30875	33112 e	..
Industrial Waste								
Production	44497 e	71399 e	110623 e	95667 e	104466 e	102289 e	113392 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	27310 e	50607 e	84753 e	71576 e	83505 e	80675 e	..	..
Final Energy Consumption	17187 e	20792 e	25870 e	24091 e	20961 e	21614 e	..	..
Municipal Solid Waste - Renewables								
Production	160932 e	211666 e	237077 e	227495 e	242791 e	253183 e	263360 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-68	-2937	-7097	-9754	-71	-	-	..
Transformation Sector	159273 e	206959 e	225053 e	211304 e	221036 e	231578 e	..	..
Final Energy Consumption	1591	1770	4927	6437	21684	21605	..	..
Municipal Solid Waste - Non-Renewables								
Production	18971	30600	40606	74744	82950 e	86603 e	89094 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-9	-19	-	-	..
Transformation Sector	18212	29688	40183	74082	81240 e	84094 e	..	..
Final Energy Consumption	759	912	423	653	1691	2509	..	..
Solid Biomass								
Production	1781535 e	1916111 e	2059169 e	2072882 e	2092965 e	2116366 e	2091120 e	..
Net Imports [1]	5295 e	14809	18469	19887	25582	13096	13575 e	..
Miscellaneous to Balance [2]	8641	-837	150	789	-126	-126	-	..
Transformation Sector	111693 e	215632 e	245588 e	281257 e	286611 e	300816 e	..	..
Final Energy Consumption	1683778 e	1714451 e	1832200 e	1812301 e	1831810 e	1828520 e	..	..
Gas from Biomass								
Production	31101 e	54604 e	76175 e	82878 e	98049 e	113366 e	120999 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-24	-70	-753	16	15	-	-	..
Transformation Sector	16035 e	39206 e	57688 e	64777 e	82849 e	96081 e	..	..
Final Energy Consumption	15042	15328	17734 e	18117 e	15215	17285	..	..
Liquid Biofuels (1000 tonnes)								
Production	7	237	434	520	806	1062	1166 e	..
Net Imports [1]	-	-	9	6	9	8	8	..
Miscellaneous to Balance [2]	-	-	-	2	-	-	-	..
Transformation Sector	-	-	-	-	-	-	-	..
Final Energy Consumption	7	237	443	528	815	1070	..	..

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

*Growth rates have not been calculated for aggregates due to unavailability of data for some countries which causes breaks in series.

European Union

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	1326.42	1380.29	1446.82	1450.49	1461.91	1495.04	1483.44	1.1
of which: Renewables (Mtoe) [1]	*63.88 e*	*71.68 e*	*78.90 e*	*79.56 e*	*82.77 e*	*86.12 e*	*82.15 e*	*2.8*
Renewables/TPES(%)	*4.8*	*5.2*	*5.5*	*5.5*	*5.7*	*5.8*	*5.6*	*1.6*
GDP (1995 bil. US$)	7963.09	8621.65	9239.92	9498.42	9824.70	9968.73	10058.40	2.1
TPES/GDP[2]	0.17	0.16	0.16	0.15	0.15	0.15	0.15	-0.9
TPES/GDP (1973 = 100)	77	74	72	70	69	69	68	-0.9
Population (millions)	365.68	372.76	375.38	376.37	377.95	379.44	379.72 e	0.3
TPES/population[3]	3.63	3.70	3.85	3.85	3.87	3.94	3.91 e	0.8
Total Electricity Generation (TWh)[4]	2142.3	2309.4	2473.4	2507.5	2574.7	2648.9	2656.7	1.9
of which: Renewables (TWh) [1]	*280.27 e*	*323.22 e*	*352.80 e*	*355.09 e*	*382.43 e*	*409.45*	*364.10 e*	*3.5*
Renew./Total Elec.(%) [1]	*13.1*	*14.0*	*14.3*	*14.2*	*14.9*	*15.5*	*13.7*	*1.5*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**114872**	**124259 e**	**130445**	**135663 e**	**141302 e**	**146580 e**	**..**	**2.2**
Hydro	109239	114983	115962	117162 e	118288 e	118543 e	..	0.7
of which: Pumped Storage	22179	30558	32946	32179 e	31574 e	31595	..	3.3
Geothermal	499	480	559	595	604	587	..	1.5
Solar Photovoltaic	6	50	103	128	184	284	..	42.0
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	240	240	240	240	240	240	..	-
Wind	474	2471	6205	8909	12813	17136	..	38.6
Industrial Waste	-	-	-	179	313	346	..	-
Municipal Solid Waste	845	1429	1888	2077 e	2270 e	2280 e	..	9.4
Solid Biomass	2922	3452 e	3894	4387 e	4514 e	5083 e	..	5.2
Gas from Biomass	380	449	697	945	1156	1370 e	..	12.4
Comb. Renewables Non-Specified	267	705	897	1041	920	711	..	9.3
Solar Collectors Surface (1000 m^2)	3456	6579	9032	9205 e	10373 e	11687	..	11.7

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

European Union

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**..**	**347413 e**	**384212 e**	**388967 e**	**418577**	**445898**	**402769 e**	**..**
Hydro	276118	309983	326773	328002	344771	362517	305435	2.5
of which: Pumped Storage	16144	18287	21670	24207 e	25323 e	24093	27338	3.7
Geothermal	3226	3478	4272	4483	4785	4612	4756	3.3
Solar Photovoltaics	12	39	73	73 e	110 e	217 e	259 e	30.1
Solar Thermal	-	-	-	-	-	-	- e	-
Tide, Wave, Ocean	571	568	590	580	566	543	540	-0.5
Wind	778	4071	11288	14209	22243	27194	36624	38.1
Industrial Waste	..	4712	7738 e	5917 e	6561	8263	7121	..
Municipal Solid Waste Renew.	..	6286	9012	8421	9192	10133	10740 e	..
Municipal Solid Waste Non-Renew.	..	1199	2002	3749	4263	4088	4209 e	..
Solid Biomass	10207 e	14734	18591	18741 e	19755	20785 e	25296 e	6.7
Gas from Biomass	..	2343 e	3873 e	4792	6331	7546 e	7789 e	..
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	**..**	***331458 e***	***361567 e***	***365717 e***	***394491***	***421819***	**..**	**..**
Hydro	276118	309983	326773	328002	344771	362517	..	2.5
of which: Pumped Storage	16144	18287	21670	24207 e	25323 e	24093	..	3.7
Geothermal	3226	3478	4272	4483	4785	4612	..	3.3
Solar Photovoltaics	12	39	73	73 e	110 e	217 e	..	30.1
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	571	568	590	580	566	543	..	-0.5
Wind	778	4071	11288	14209	22243	27194	..	38.1
Industrial Waste	..	4474	5734 e	3931 e	4859	7311	..	..
Municipal Solid Waste Renew.	..	3920	5560	4522	5396	5538	..	..
Municipal Solid Waste Non-Renew.	..	412	543	2118	2561	2597	..	..
Solid Biomass	1778 e	3018	3851	4039 e	3912	4868 e	..	9.6
Gas from Biomass	..	1495 e	2883 e	3760	5288	6422 e	..	..
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	**..**	***15955***	***22645***	***23250 e***	***24086***	***24079***	**..**	**..**
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	..	238	2004	1986 e	1702	952	..	..
Municipal Solid Waste Renew.	..	2366	3452	3899	3796	4595	..	..
Municipal Solid Waste Non-Renew.	..	787	1459	1631	1702	1491	..	..
Solid Biomass	8429 e	11716	14740	14702 e	15843	15917	..	5.9
Gas from Biomass	..	848	990	1032	1043	1124	..	..
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

European Union

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**..**	**180626 e**	**215716**	**241838 e**	**237737 e**	**251853 e**	**256078 e**	**..**
Geothermal	..	79	92	398	436	449	514	..
Solar Thermal	..	6	16	23	24	28	34	..
Industrial Waste	..	980	1910	1962 e	7002	7375	7301 e	..
Municipal Solid Waste Renew.	..	75227 e	80157	73520 e	72425	75180 e	77027 e	..
Municipal Solid Waste Non-Renev	..	5942	9614	19506	18963	20472 e	20312 e	..
Solid Biomass	..	79897	102794	124458	116425 e	129892 e	128125 e	..
Gas from Biomass	..	2504	3103	3673	3788	4054	3970 e	..
Waste Heat and Heat Pumps	..	15991	18030	18298	18674	14403	18795	..
of which:								
CHP Plants	***..***	***100336 e***	***128780***	***144933***	***140474 e***	***150996 e***	***..***	***..***
Geothermal	..	-	-	-	-	-	-	..
Solar Thermal	..	-	-	-	-	-	-	..
Industrial Waste	..	966	1565	1562	2632	2581	..	..
Municipal Solid Waste Renew.	..	55515 e	61466	54677	53642	56934 e	..	..
Municipal Solid Waste Non-Renev	..	3524	7091	16831	15632	16910 e	..	..
Solid Biomass	..	35865	53157	65921	62267 e	67310 e	..	..
Gas from Biomass	..	1986	2613	2907	2979	3069	..	..
Waste Heat and Heat Pumps	..	2480	2888	3035	3322	4192	..	..
Heat Only Plants	***..***	***80290***	***86935***	***96905 e***	***97263***	***100857***	***..***	***..***
Geothermal	..	79	92	398	436	449	..	..
Solar Thermal	..	6	16	23	24	28	..	..
Industrial Waste	..	14	345	400 e	4370	4794	..	..
Municipal Solid Waste Renew.	..	19712	18691	18843 e	18783	18246	..	..
Municipal Solid Waste Non-Renev	..	2418	2523	2675	3331	3562	..	..
Solid Biomass	..	44032	49637	58537	54158	62582	..	..
Gas from Biomass	..	518	490	766	809	985	..	..
Waste Heat and Heat Pumps	..	13511	15141	15263	15352	10211	..	..

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

European Union

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01*
Geothermal								
Production	129782 e	140656 e	168757 e	176801	139963	145136	149082 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	116222	125389	153975	162183	124736	129070	133530 e	..
Final Energy Consumption	13560	15267	14782	14618	15227	16066	15552 e	..
Solar Thermal								
Indigenous Production	5371	10230	13535	13931 e	15610 e	17791	18673 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	6	6	16	23	24	28	34 e	..
Final Energy Consumption	5365	10224	13519 e	13908 e	15586 e	17763	18639 e	..
Industrial Waste								
Production	37787 e	61637 e	98163 e	78270 e	86473 e	83809 e	94491 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	27310 e	49295 e	82613 e	64234 e	77285 e	74442 e	..	..
Final Energy Consumption	10477 e	12342 e	15550 e	14036 e	9188 e	9367 e	..	..
Municipal Solid Waste - Renewables								
Production	147184 e	191585 e	216069 e	204433 e	219279 e	228730 e	238828 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-68	-2937	-7097	-9754	-71	-	-	..
Transformation Sector	145525 e	186878 e	204045 e	188981 e	197722 e	207233 e	..	..
Final Energy Consumption	1591	1770	4927	5698	21486	21497	..	..
Municipal Solid Waste - Non-Renewables								
Production	10726	17493	26936	56787	63346 e	65342 e	67394 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-	-	-	-	-17	-	-	..
Transformation Sector	9967	16581	26513	56138	62640 e	64626 e	..	..
Final Energy Consumption	759	912	423	649	689	716	..	..
Solid Biomass								
Production	1406782 e	1519894 e	1663071 e	1678703 e	1719789 e	1746436 e	1737527 e	..
Net Imports [1]	5897	14429	18033	19363	25375	12511	12797 e	..
Miscellaneous to Balance [2]	9302	707	-	-	-126	-126	-	..
Transformation Sector	109985 e	197487 e	232980 e	265950 e	272504 e	286025 e	..	..
Final Energy Consumption	1311996 e	1337543 e	1448124 e	1432116 e	1472534 e	1472796 e	..	..
Gas from Biomass								
Production	29434	50343 e	70767 e	77395 e	92617 e	107790 e	115561 e	..
Net Imports [1]	-	-	-	-	-	-	-	..
Miscellaneous to Balance [2]	-24	-70	-753	16	15	-	-	..
Transformation Sector	14368 e	35596 e	53319 e	60454 e	78563 e	91582 e	..	..
Final Energy Consumption	15042	14677	16695 e	16957 e	14069	16208	..	..
Liquid Biofuels (1000 tonnes)								
Production	7	237	434	485	739	991	1096 e	..
Net Imports [1]	-	-	9	6	6	8	8	..
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	..
Transformation Sector	-	-	-	-	-	-	-	..
Final Energy Consumption	7	237	443	491	745	999	..	..

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

*Growth rates have not been calculated for aggregates due to unavailability of data for some countries which causes breaks in series.

Australia

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	87.54	94.38	103.90	107.50	109.78	115.63	122.68	2.6
of which: Renewables (Mtoe) [1]	*5.07*	*5.53*	*6.23 e*	*6.32 e*	*6.40 e*	*6.55 e*	*6.47*	*2.4*
Renewables/TPES(%)	*5.8*	*5.9*	*6.0*	*5.9*	*5.8*	*5.7*	*5.3*	*-0.2*
GDP (1995 bil. US$)	317.76	372.73	425.54	442.55	450.31	468.04	484.60	3.6
TPES/GDP[2]	0.28	0.25	0.24	0.24	0.24	0.25	0.25	-1.0
TPES/GDP (1973 = 100)	94	87	84	83	83	85	87	-1.0
Population (millions)	17.18	18.20	18.84	19.05	19.27	19.47	19.68 e	1.1
TPES/population[3]	5.10	5.19	5.52	5.64	5.70	5.94	6.23 e	1.4
Total Electricity Generation (TWh)[4]	154.3	173.0	195.6	203.0	207.4	216.9	222.8	3.1
of which: Renewables (TWh) [1]	*14.75*	*16.61 e*	*16.93 e*	*17.79 e*	*17.93*	*18.02 e*	*19.36*	*1.8*
Renew./Total Elec.(%) [1]	*9.6*	*9.6*	*8.7*	*8.8*	*8.6*	*8.3*	*8.7*	*-1.3*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**7388 e**	**7995**	**7530 e**	**8139 e**	**8684 e**	**8907 e**	**..**	**1.7**
Hydro	7381	7586	7491	7609	7669	7693	..	0.4
of which: Pumped Storage	-	500	1490	1490	1490	1490	..	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	13	23	25	29	34	..	-
Solar Thermal	7	13	13	13	13	13 e	..	5.8
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	2	3	10 e	33	76	..	-
Industrial Waste	-	-	-	150	150	150	..	-
Municipal Solid Waste	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	332	332	483	..	-
Gas from Biomass	-	-	-	-	458	458 e	..	-
Comb. Renewables Non-Specified	..	381	..	-	-	-	-	..
Solar Collectors Surface (1000 m^2)	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Australia

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**15480**	**16962 e**	**17281 e**	**18146 e**	**18287**	**18385 e**	**19729**	**1.6**
Hydro	14880	16239	16144 e	17036	17137	16786	16864	1.1
of which: Pumped Storage	732	354	350	360	360	370	370	-6.0
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	23	30 e	30 e	30	30 e	30	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	7	8	27 e	56	207	377	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	600	670 e	670 e	674 e	685	633	1541	0.5
Gas from Biomass	-	23	429	379	379	729	917	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***14880***	***16292***	***16611 e***	***17472 e***	***17602***	***17752 e***	***..***	***1.6***
Hydro	14880	16239	16144 e	17036	17137	16786	..	1.1
of which: Pumped Storage	732	354	350	360	360	370	..	-6.0
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	23	30 e	30 e	30	30 e	..	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	7	8	27 e	56	207	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	23	429	379	379	729	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***600***	***670 e***	***670 e***	***674 e***	***685***	***633***	***..***	***0.5***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	600	670 e	670 e	674 e	685	633	..	0.5
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Australia

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solar Thermal								
Indigenous Production	3405	3491	3793 e	3988 e	4090	4515 e	4779	2.6
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	83	108 e	108 e	108	108 e	108	-
Final Energy Consumption	3405	3408	3685	3880	3982	4407	4671	2.4
Industrial Waste								
Production	7767	7823	7414	7490	7490	5881	5352	-2.5
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	7767	7823	7414	7490	7490	5881	..	-2.5
Municipal Solid Waste - Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	158108	170313	195491	194762	197572	200729	195000	2.2
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	29683 e	24120 e	24120 e	24264 e	23310	23597	..	-2.1
Final Energy Consumption	128425 e	146193 e	171371 e	170498 e	174262 e	177132	..	3.0
Gas from Biomass								
Production	-	676	4579	5780 e	5780 e	9331	10544	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	676	4579	5780 e	5780 e	9331	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Austria

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	25.04	27.15	29.10	28.85	28.77	30.72	30.31	1.9
of which: Renewables (Mtoe) [1]	*5.00*	*5.83*	*5.90*	*6.34*	*6.36*	*6.61*	*6.26*	*2.6*
Renewables/TPES(%)	*19.9*	*21.3*	*20.3*	*21.9*	*22.0*	*21.5*	*20.7*	*0.7*
GDP (1995 bil. US$)	212.47	235.16	253.24	260.18	269.37	271.17	274.00	2.2
TPES/GDP[2]	0.12	0.12	0.11	0.11	0.11	0.11	0.11	-0.4
TPES/GDP (1973 = 100)	75	74	73	71	68	72	70	-0.4
Population (millions)	7.73	8.05	8.08	8.09	8.11	8.13	8.14 e	0.5
TPES/population[3]	3.24	3.37	3.60	3.56	3.55	3.78	3.72 e	1.4
Total Electricity Generation (TWh)[4]	49.3	55.2	55.9	59.3	60.2	62.4	60.3	2.2
of which: Renewables (TWh) [1]	*32.64*	*38.90*	*38.81*	*42.35*	*43.53*	*43.76*	*38.22 e*	*2.7*
Renew./Total Elec.(%) [1]	*66.2*	*70.5*	*69.4*	*71.4*	*72.3*	*70.1*	*63.4*	*0.5*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**11353**	**11856**	**12230**	**12486 e**	**12398**	**12404**	**..**	**0.8**
Hydro	10947	11304	11444	11648	11547	11550	..	0.5
of which: Pumped Storage	-	2975	3937	3568	3568	3568	..	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	1	3	4	5	7	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	1	27	35	54	69	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	6	6	9	12 e	12	12	..	6.5
Solid Biomass	400	544	747	787 e	780	766	..	6.1
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	434	1241	1876	2000 e	2100	2200	..	15.9

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Austria

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**33688**	**40385**	**40453**	**43749**	**45353**	**45639**	**40660**	**2.8**
Hydro	32507	38477	38716	41727	43498	43483	38109	2.7
of which: Pumped Storage	998	1410	1552	1234	1658	1649	2169	4.7
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	1	2	2	3	4	4	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	1	45	51	67	172	206	-
Industrial Waste	38	48	72	128	117	183	216	15.4
Municipal Solid Waste Renew.	..	14	13	25	32	29	34 e	..
Municipal Solid Waste Non-Renew.	17	25	24	42	52	48	57 e	9.9
Solid Biomass	1116	1767	1492	1690	1482	1528	1807	2.9
Gas from Biomass	-	52	89	84	102	192	227	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***33023***	***39219***	***39952***	***42828***	***44264***	***44403***	***..***	***2.7***
Hydro	32507	38477	38716	41727	43498	43483	..	2.7
of which: Pumped Storage	998	1410	1552	1234	1658	1649	..	4.7
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	1	2	2	3	4	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	1	45	51	67	172	..	-
Industrial Waste	-	-	30	86	89	30	..	-
Municipal Solid Waste Renew.	..	-	-	12	14	14	..	..
Municipal Solid Waste Non-Renew.	-	-	-	19	23	23	..	-
Solid Biomass	516	715	1096	889	510	531	..	0.3
Gas from Biomass	-	25	63	42	60	146	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***665***	***1166***	***501***	***921***	***1089***	***1236***	***..***	***5.8***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	38	48	42	42	28	153	..	13.5
Municipal Solid Waste Renew.	..	14	13	13	18	15	..	..
Municipal Solid Waste Non-Renew.	17	25	24	23	29	25	..	3.6
Solid Biomass	600	1052	396	801	972	997	..	4.7
Gas from Biomass	-	27	26	42	42	46	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Austria

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**4081**	**7701**	**8986**	**11286**	**11831**	**13828**	**15699**	**11.7**
Geothermal	-	32	38	344	378	378	429	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	749	966	548	644	642	579	657	-2.3
Municipal Solid Waste Renew.	733	1066	1278	1415	1793	2320	2634 e	11.0
Municipal Solid Waste Non-Renev	1195	1741	2084	2310	2934	3785	4297 e	11.0
Solid Biomass	1404	3699	4818	6368	5868	6540	7425	15.0
Gas from Biomass	-	197	220	205	216	226	257	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
of which:								
CHP Plants	***2677***	***3095***	***3306***	***3257***	***2842***	***4194***	***..***	***4.2***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	749	966	548	644	642	579	..	-2.3
Municipal Solid Waste Renew.	733	626	668	596	606	1092	..	3.7
Municipal Solid Waste Non-Renev	1195	1022	1090	973	989	1781	..	3.7
Solid Biomass	-	284	781	839	389	516	..	-
Gas from Biomass	-	197	219	205	216	226	..	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***1404***	***4606***	***5680***	***8029***	***8989***	***9634***	***..***	***19.1***
Geothermal	-	32	38	344	378	378	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	440	610	819	1187	1228	..	-
Municipal Solid Waste Non-Renev	-	719	994	1337	1945	2004	..	-
Solid Biomass	1404	3415	4037	5529	5479	6024	..	14.2
Gas from Biomass	-	-	1	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Austria

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	60	146	238	861	947	947	1075	28.5
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	64	76	688	756	756	858	-
Final Energy Consumption	60	82	162	173	191	191	217	11.1
Solar Thermal								
Indigenous Production	621	1493	2276	2430	2661	2785	3162	14.6
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	621	1493	2276	2430	2661	2785	3162	14.6
Industrial Waste								
Production	5801	5772	5644	5832	6392	6290	6605	0.7
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	2531	2168	2152	2032	2068	1855	..	-2.8
Final Energy Consumption	3270	3604	3492	3800	4324	4435	..	2.8
Municipal Solid Waste - Renewables								
Production	922	1396	1817	2207	2367	3154	3312	11.8
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	922	1396	1817	2207	2367	3154	..	11.8
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	1503	2276	2965	3601	3861	5147	5404	11.8
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	1503	2276	2965	3601	3861	5147	..	11.8
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	92606	105490	108078	114023	109659	117913	123809	2.2
Net Imports [1]	2054	928	-1226	-2044	-2067	-2261	-2374	-
Miscellaneous to Balance [2]	-545	189	-	-	-	-	-	x
Transformation Sector	7710	18131	18657	21435	18585	17740	..	7.9
Final Energy Consumption	86405	88476	88195	90544	89007	97912	..	1.1
Gas from Biomass								
Production	-	849	1269	1397	1479	2361	2479	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	800	1262	1365	1428	2305	..	-
Final Energy Consumption	-	49	7	32	51	56	..	-
Liquid Biofuels (1000 tonnes)								
Production	7	11	16	18	20	22	22	11.0
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	7	11	16	18	20	22	..	11.0

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Belgium

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	48.69	52.63	58.59	58.71	59.31	59.00	58.75	1.8
of which: Renewables (Mtoe) [1]	*0.65*	*0.68*	*0.72 e*	*0.74*	*0.56 e*	*0.61 e*	*0.63 e*	*-0.6*
Renewables/TPES(%)	*1.3*	*1.3*	*1.2*	*1.3*	*1.0*	*1.0*	*1.1*	*-2.1*
GDP (1995 bil. US$)	255.75	276.65	295.89	305.32	316.69	319.13	321.40	2.0
TPES/GDP[2]	0.19	0.19	0.20	0.19	0.19	0.18	0.18	-0.3
TPES/GDP (1973 = 100)	72	72	75	72	71	70	69	-0.3
Population (millions)	9.97	10.14	10.20	10.22	10.25	10.28	10.25 e	0.3
TPES/population[3]	4.88	5.19	5.74	5.74	5.79	5.74	5.73 e	1.5
Total Electricity Generation (TWh)[4]	70.3	73.5	82.1	83.4	82.8	78.6	80.9	1.0
of which: Renewables (TWh) [1]	*0.77*	*0.95*	*1.07 e*	*1.18*	*1.03*	*1.08*	*1.07 e*	*3.1*
Renew./Total Elec.(%) [1]	*1.1*	*1.3*	*1.3*	*1.4*	*1.2*	*1.4*	*1.3*	*2.1*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**1485**	**1569**	**1565**	**1539**	**1636**	**1664**	**..**	**1.0**
Hydro	1401	1403	1404	1410	1413	1421	..	0.1
of which: Pumped Storage	1307	1307	1307	1307	1310	1310	..	0.0
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	5	5	6	10	14	26	..	16.2
Industrial Waste	-	-	-	-	26	26	..	-
Municipal Solid Waste	-	-	-	72	97	101	..	-
Solid Biomass	-	-	-	38	47	62	..	-
Gas from Biomass	-	-	-	9	39	28	..	-
Comb. Renewables Non-Specified	79	161	155	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	34	36	36	38	41	44	..	2.4

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Belgium

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**1627**	**2281**	**2512 e**	**2703**	**3040**	**3264**	**3279**	**6.5**
Hydro	897	1230	1497	1489	1699	1644	1489	5.7
of which: Pumped Storage	631	892	1108	1148	1239	1203	1131	6.0
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	7	9	11	13	16	37	56	16.3
Industrial Waste	231	441	335 e	373	385	527	577	7.8
Municipal Solid Waste Renew.	350	467	516	554	306	297	325 e	-1.5
Municipal Solid Waste Non-Renew.	-	-	-	-	383	459	503 e	-
Solid Biomass	135	121	95	199	153	173	189	2.3
Gas from Biomass	7	13	58	75	98	127	140	30.1
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***1492***	***2160***	***2417 e***	***2504***	***2832***	***2993***	***..***	***6.5***
Hydro	897	1230	1497	1489	1699	1644	..	5.7
of which: Pumped Storage	631	892	1108	1148	1239	1203	..	6.0
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	7	9	11	13	16	37	..	16.3
Industrial Waste	231	441	335 e	373	376	470	..	6.7
Municipal Solid Waste Renew.	350	467	516	554	290	281	..	-2.0
Municipal Solid Waste Non-Renew.	-	-	-	-	367	443	..	-
Solid Biomass	-	-	-	-	-	17	..	-
Gas from Biomass	7	13	58	75	84	101	..	27.5
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***135***	***121***	***95***	***199***	***208***	***271***	***..***	***6.5***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	9	57	..	-
Municipal Solid Waste Renew.	-	-	-	-	16	16	..	-
Municipal Solid Waste Non-Renew.	-	-	-	-	16	16	..	-
Solid Biomass	135	121	95	199	153	156	..	1.3
Gas from Biomass	-	-	..	..	14	26	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Belgium

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**368**	**188**	**370**	**388 e**	**832**	**1644**	**1644 e**	**14.6**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	68	14	22	19 e	97	361	361 e	16.4
Municipal Solid Waste Renew.	300	174	321	321 e	347	619	619 e	6.8
Municipal Solid Waste Non-Renev	-	-	-	-	347	619	619 e	-
Solid Biomass	-	-	-	-	-	15	15 e	-
Gas from Biomass	-	-	27	48	41	30	30 e	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
of which:								
CHP Plants	***-***	***-***	***27***	***48***	***389***	***874***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	78	314	..	-
Municipal Solid Waste Renew.	-	-	-	-	135	265	..	-
Municipal Solid Waste Non-Renev	-	-	-	-	135	265	..	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	27	48	41	30	..	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***368***	***188***	***343***	***340 e***	***443***	***770***	***..***	***6.9***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	68	14	22	19 e	19	47	..	-3.3
Municipal Solid Waste Renew.	300	174	321	321 e	212	354	..	1.5
Municipal Solid Waste Non-Renev	-	-	-	-	212	354	..	-
Solid Biomass	-	-	-	-	-	15	..	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Belgium

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	43	53	53	54	53	60	64 e	3.1
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	43	53	53	54	53	60	64 e	3.1
Solar Thermal								
Indigenous Production	35	39	31	40	43	56	69 e	4.4
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	35	39	31	40	43	56	69 e	4.4
Industrial Waste								
Production	3314 e	5365 e	5033 e	5595 e	5705 e	7186 e	8230 e	7.3
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	3314 e	5365 e	5033 e	5595 e	5705 e	7186 e	..	7.3
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Renewables								
Production	11764	13544	13134	12738	5896 e	5987 e	6375 e	-6.0
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	11764	13544	13134	12738	5896 e	5987 e	..	-6.0
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	7633 e	8871 e	9446 e	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	7633 e	8871 e	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	14064	9719	11196	11122	10197	11456	11833 e	-1.8
Net Imports [1]	-	3575	3286	4550	4373	4233	4250 e	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	608 e	600	413	821	766	822	..	2.8
Final Energy Consumption	13456 e	12694	14069	14851	13804	14867	..	0.9
Gas from Biomass								
Production	269	461	947 e	1139	1207	1862	2327 e	19.2
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	146	173	638 e	925	1080	1441	..	23.1
Final Energy Consumption	123	288	309	214	127	421	..	11.8
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Canada

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	209.09	231.75	237.32	244.44	250.94	248.18	239.66	1.6
of which: Renewables (Mtoe) [1]	*33.66*	*38.64*	*38.71*	*40.89*	*42.00*	*39.13*	*37.76 e*	*1.4*
Renewables/TPES(%)	*16.1*	*16.5*	*16.2*	*16.6*	*16.5*	*15.6*	*15.7*	*-0.3*
GDP (1995 bil. US$)	534.39	581.67	641.26	676.30	707.13	717.39	741.40	2.7
TPES/GDP[2]	0.39	0.40	0.37	0.36	0.35	0.35	0.32	-1.1
TPES/GDP (1973 = 100)	78	79	73	72	70	69	64	-1.1
Population (millions)	27.70	29.35	30.25	30.50	30.77	31.08	31.31 e	1.1
TPES/population[3]	7.55	7.89	7.85	8.01	8.16	7.98	7.65 e	0.5
Total Electricity Generation (TWh)[4]	481.9	559.9	561.5	578.6	605.2	587.9	566.1	1.8
of which: Renewables (TWh) [1]	*300.59*	*341.48*	*338.49*	*353.25*	*365.91*	*340.63*	*326.29 e*	*1.1*
Renew./Total Elec.(%) [1]	*62.4*	*61.0*	*60.3*	*61.0*	*60.5*	*57.9*	*57.6*	*-0.7*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**60317**	**65787**	**68154 e**	**68365 e**	**68741 e**	**68743 e**	**..**	**1.2**
Hydro	59381	64750	66955	67121 e	67407 e	67407 e	..	1.2
of which: Pumped Storage	186	177	177 e	177 e	177 e	177 e	..	-0.4
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	2	5	6	7	9	..	-
Solar Thermal	1	2	2	2	2 e	2 e	..	6.5
Tide, Wave, Ocean	20	20	20 e	20 e	20 e	20 e	..	-
Wind	1	22	23 e	78 e	78 e	78 e	..	48.6
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	914	991	1149	1138 e	1227 e	1227 e	..	2.7
Solar Collectors Surface (1000 m^2)	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Canada

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**300703**	**341594**	**338602**	**353360**	**366021**	**340740**	**326405** e	**1.1**
Hydro	296848	336034	332001	345667	358358	333145	318777	1.1
of which: Pumped Storage	111	111	111	111	111	111	111	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	3	3	3	3	3	3	-
Tide, Wave, Ocean	26	33	32	32	37	101	316	13.1
Wind	-	59	62	203	258	282	334	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	3829	5465	6504	7455	7365	7209	6975 e	5.9
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***300703***	***341594***	***338602***	***353360***	***366021***	***340740***	***..***	***1.1***
Hydro	296848	336034	332001	345667	358358	333145	..	1.1
of which: Pumped Storage	111	111	111	111	111	111	..	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	3	3	3	3	3	..	-
Tide, Wave, Ocean	26	33	32	32	37	101	..	13.1
Wind	-	59	62	203	258	282	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	3829	5465	6504	7455	7365	7209	..	5.9
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Canada

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solar Thermal								
Indigenous Production	-	11	11	11	11	11	11	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	11	11	11	11	11	11	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Industrial Waste								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	340703	408164	425615	467048	467640	438020	431440 e	2.3
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	14727	20974	24133	28939	28591	27984	..	6.0
Final Energy Consumption	325976	387190	401482	438109	439049	410036	..	2.1
Gas from Biomass								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Czech Republic

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	47.40	41.04	41.05	38.24	40.38	41.40	41.32	-1.2
of which: Renewables (Mtoe) [1]	*0.12*	*0.59 e*	*0.64 e*	*0.68*	*0.55*	*0.63*	*0.65*	*15.9*
Renewables/TPES(%)	*0.3*	*1.4*	*1.5*	*1.8*	*1.3*	*1.5*	*1.6*	*17.2*
GDP (1995 bil. US$)	54.61	52.04	53.29	53.54	55.28	57.09	58.10	0.4
TPES/GDP[2]	0.87	0.79	0.77	0.71	0.73	0.73	0.71	-1.6
TPES/GDP (1973 = 100)	77	70	69	64	65	65	63	-1.6
Population (millions)	10.36	10.33	10.29	10.29	10.27	10.26	10.24 e	-0.1
TPES/population[3]	4.57	3.97	3.99	3.72	3.93	4.03	4.03 e	-1.1
Total Electricity Generation (TWh)[4]	62.6	60.6	64.6	64.2	72.9	74.2	76.0	1.6
of which: Renewables (TWh) [1]	*1.45*	*2.41*	*1.98*	*2.36*	*2.28*	*2.57*	*2.98*	*5.4*
Renew./Total Elec.(%) [1]	*2.3*	*4.0*	*3.1*	*3.7*	*3.1*	*3.5*	*3.9*	*3.7*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**..**	**1399**	**2033**	**2158**	**2098**	**2146**	**..**	**-**
Hydro	..	1399	2033	2153	2097	2145	..	-
of which: Pumped Storage	..	491	1145	1145	1145	1145	..	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	-	5	1	1	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	..	..	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Czech Republic

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**1445**	**2695**	**2482**	**3048**	**3036**	**3180**	**3527**	**7.4**
Hydro	1445	2274	1884	2215	2313	2467	2845	5.0
of which: Pumped Storage	-	272	488	535	555	413	353	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	-	1	-	-	2	-
Industrial Waste	-	16	11	149	201	195	186	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	7	5	4	4	-
Solid Biomass	-	302	428	528	382	381	364	-
Gas from Biomass	-	103	159	148	135	133	126	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***1445***	***2312***	***2011***	***2382***	***2488***	***2652***	***..***	***5.7***
Hydro	1445	2274	1884	2215	2313	2467	..	5.0
of which: Pumped Storage	-	272	488	535	555	413	..	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	-	1	-	-	-	-
Industrial Waste	-	-	-	9	13	14	..	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	27	81	125	135	141	..	-
Gas from Biomass	-	11	46	32	27	30	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***-***	***383***	***471***	***666***	***548***	***528***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	16	11	140	188	181	..	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	7	5	4	..	-
Solid Biomass	-	275	347	403	247	240	..	-
Gas from Biomass	-	92	113	116	108	103	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Czech Republic

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**-**	**2415**	**4204**	**10766 e**	**7740**	**8091**	**8155**	**-**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	928	1143	3750 e	2473	2606	2630	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	2150	1664	1726	1730	-
Solid Biomass	-	1090	2431	4391	3219	3362	3395	-
Gas from Biomass	-	397	630	475	384	397	400	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
of which:								
CHP Plants	***-***	***1539***	***3117***	***10424 e***	***7200***	***7541***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	203	306	3703 e	2292	2415	..	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	2150	1664	1726	..	-
Solid Biomass	-	939	2215	4132	2934	3074	..	-
Gas from Biomass	-	397	596	439	310	326	..	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***-***	***876***	***1087***	***342***	***540***	***550***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	725	837	47	181	191	..	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	151	216	259	285	288	..	-
Gas from Biomass	-	-	34	36	74	71	..	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Czech Republic

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solar Thermal								
Indigenous Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Industrial Waste								
Production	-	1162 e	1567 e	6325	5528	5592	6000	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	1162	1567	6270	5105	5135	..	-
Final Energy Consumption	-	-	-	55	423	457	..	-
Municipal Solid Waste - Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	3142	3704	4415	5000	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-9	-2	-	-	x
Transformation Sector	-	-	-	3129	2700	2622	..	-
Final Energy Consumption	-	-	-	4	1002	1793	..	-
Solid Biomass								
Production	-	16009 e	19785 e	19767	13372	15391	15000	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-87	-	-	-	x
Transformation Sector	-	3506	6785	9459	7974	7971	..	-
Final Energy Consumption	-	12503 e	13000 e	10221 e	5398	7420	..	-
Gas from Biomass								
Production	-	1417 e	1880	1733	1509	1557	1520	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	1417	1880	1629	1427	1441	..	-
Final Energy Consumption	-	-	-	104	82	116	..	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	35	67	71	70	-
Net Imports [1]	-	-	-	-	3	-	-	-
Miscellaneous to Balance [2]	-	-	-	2	-	-	-	x
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	37	70	71	..	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Denmark

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	17.61	20.13	20.79	19.98	19.40	19.78	19.52	1.1
of which: Renewables (Mtoe) [1]	*1.13*	*1.43*	*1.71*	*1.79*	*1.92*	*2.05*	*2.18*	*5.6*
Renewables/TPES(%)	*6.6*	*7.1*	*8.1*	*8.9*	*9.9*	*10.4*	*11.0*	*4.1*
GDP (1995 bil. US$)	163.49	180.24	194.96	199.46	205.49	207.45	210.60	2.2
TPES/GDP[2]	0.11	0.11	0.11	0.10	0.09	0.10	0.09	-1.1
TPES/GDP (1973 = 100)	70	72	69	65	61	62	60	-1.1
Population (millions)	5.14	5.22	5.30	5.32	5.34	5.36	5.37 e	0.4
TPES/population[3]	3.43	3.86	3.92	3.75	3.63	3.69	3.64 e	0.7
Total Electricity Generation (TWh)[4]	26.0	36.7	41.1	38.9	36.0	37.7	38.6	3.4
of which: Renewables (TWh) [1]	*0.83*	*2.00*	*4.15*	*4.66*	*5.89*	*6.19*	*7.17*	*20.0*
Renew./Total Elec.(%) [1]	*3.2*	*5.5*	*10.1*	*12.0*	*16.3*	*16.4*	*18.6*	*16.0*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**413**	**836**	**1682**	**2131**	**2788**	**2990**	**..**	**19.7**
Hydro	10	10	11	11	10	10	..	-
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	-	1	1	1	2	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	343	616	1443	1771	2418	2556	..	20.0
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	-	153	167	198	233	242	..	-
Solid Biomass	40	40	40	110	86	133	..	11.5
Gas from Biomass	20	17	20	40	40	47	..	8.1
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	57	144	230	246 e	246	271	..	15.2

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Denmark

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**848**	**2122**	**4317**	**4861**	**6126**	**6443**	**7428**	**20.2**
Hydro	28	30	27	31	29	29	32	0.3
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	610	1177	2820	3029	4242	4299	4877	19.4
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	47	475	703	867	1000	1068	1101	32.8
Municipal Solid Waste Non-Renew.	15	119	168	206	238	254	262	29.3
Solid Biomass	108	209	409	531	409	572	932	16.4
Gas from Biomass	40	112	190	197	208	221	224	16.8
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***638***	***1221***	***2848***	***3062***	***4274***	***4331***	***..***	***19.0***
Hydro	28	30	27	31	29	29	..	0.3
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	610	1177	2820	3029	4242	4299	..	19.4
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	9	-	-	-	-	-	-
Gas from Biomass	-	5	1	2	3	3	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***210***	***901***	***1469***	***1799***	***1852***	***2112***	***..***	***23.3***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	47	475	703	867	1000	1068	..	32.8
Municipal Solid Waste Non-Renew.	15	119	168	206	238	254	..	29.3
Solid Biomass	108	200	409	531	409	572	..	16.4
Gas from Biomass	40	107	189	195	205	218	..	16.7
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Denmark

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**19518**	**27913**	**32717**	**33208**	**34648**	**36850**	**33023**	**5.9**
Geothermal	48	47	54	54	58	71	85	3.6
Solar Thermal	6	6	16	23	24	28	34	15.0
Industrial Waste	-	-	-	-	-	-	4	-
Municipal Solid Waste Renew.	9040	12031	14087	14740	15660	16746	13885 e	5.8
Municipal Solid Waste Non-Renev	2924	3015	3353	3506	3726	3980	3300 e	2.8
Solid Biomass	7373	9647	11277	10682	10572	11574	11243	4.2
Gas from Biomass	127	466	772	840	902	966	845	20.3
Waste Heat and Heat Pumps	-	2701	3158	3363	3706	3485	3627	-
of which:								
CHP Plants	***882***	***8613***	***12551***	***14592***	***16848***	***18404***	***..***	***31.8***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	348	5252	7661	9110	10726	11680	..	37.6
Municipal Solid Waste Non-Renev	112	1316	1824	2168	2552	2776	..	33.9
Solid Biomass	319	1708	2431	2651	2879	3209	..	23.4
Gas from Biomass	103	337	635	663	691	739	..	19.6
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***18636***	***19300***	***20166***	***18616***	***17800***	***18446***	***..***	***-0.1***
Geothermal	48	47	54	54	58	71	..	3.6
Solar Thermal	6	6	16	23	24	28	..	15.0
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	8692	6779	6426	5630	4934	5066	..	-4.8
Municipal Solid Waste Non-Renev	2812	1699	1529	1338	1174	1204	..	-7.4
Solid Biomass	7054	7939	8846	8031	7693	8365	..	1.6
Gas from Biomass	24	129	137	177	211	227	..	22.7
Waste Heat and Heat Pumps	-	2701	3158	3363	3706	3485	..	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Denmark

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	96	94	108	108	116	142	170	3.6
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	96	94	108	108	116	142	170	3.6
Final Energy Consumption	-	-	-	-	-	-	-	-
Solar Thermal								
Indigenous Production	100	212	300	318	330	342	386	11.8
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	6	6	16	23	24	28	34	15.0
Final Energy Consumption	94	206	284	295	306	314	352	11.6
Industrial Waste								
Production	-	-	-	-	-	-	4	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Renewables								
Production	11690	18293	21458	23510	24510	25724	27452	7.4
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-71	-	-	x
Transformation Sector	10999	17274	20885	22320	23368	24661	..	7.6
Final Energy Consumption	691	1019	573	1190	1071	1063	..	4.0
Municipal Solid Waste - Non-Renewables								
Production	3781	4585	5106	5593	5832	6119	6523	4.5
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-17	-	-	x
Transformation Sector	3558	4329	4969	5310	5560	5867	..	4.7
Final Energy Consumption	223	256	137	283	255	252	..	1.1
Solid Biomass								
Production	32216	34890	36169	35990	35714	39386	41095	1.8
Net Imports [1]	-	233	807	1245	1520	1721	1721	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	9777	12272	15112	15649	14634	17028	..	5.2
Final Energy Consumption	22439	22851	21864	21586	22600	24079	..	0.6
Gas from Biomass								
Production	752	1809	2717	2641	2911	3045	2602	13.6
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-24	-51	-37	16	15	-	-	x
Transformation Sector	504	1456	2315	2258	2445	2548	..	15.9
Final Energy Consumption	224	302	365	399	481	497	..	7.5
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Finland

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	29.17	29.63	33.46	33.35	32.99	33.82	34.70	1.4
of which: Renewables (Mtoe) [1]	*5.50*	*6.13*	*7.26*	*7.26*	*7.80 e*	*7.57*	*7.39*	*3.0*
Renewables/TPES(%)	*19.5*	*21.2*	*22.2*	*22.4*	*24.4*	*23.0*	*21.9*	*1.5*
GDP (1995 bil. US$)	133.73	129.29	150.56	156.66	166.23	167.39	170.00	2.1
TPES/GDP[2]	0.22	0.23	0.22	0.21	0.20	0.20	0.20	-0.7
TPES/GDP (1973 = 100)	83	87	85	81	76	77	78	-0.7
Population (millions)	4.99	5.11	5.15	5.17	5.18	5.19	5.20 e	0.4
TPES/population[3]	5.85	5.80	6.49	6.46	6.37	6.52	6.68 e	1.0
Total Electricity Generation (TWh)[4]	54.4	63.2	70.2	69.5	70.0	74.5	75.2	2.9
of which: Renewables (TWh) [1]	*15.54*	*19.54*	*24.41*	*21.19*	*23.30*	*21.69*	*20.88*	*3.1*
Renew./Total Elec.(%) [1]	*28.6*	*30.9*	*34.8*	*30.5*	*33.3*	*29.1*	*27.8*	*0.2*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**3604**	**3930 e**	**4000**	**4121**	**4223**	**4437**	**..**	**1.9**
Hydro	2621	2777	2881	2881	2882	2895	..	0.9
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	1	2	2	3	3	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	6	17	38	38	39	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	-	-	-	-	-	-	-	-
Solid Biomass	983	1146 e	1100	1200	1300	1500	..	3.9
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	-	-	8	8	8 e	8	..	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Finland

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**15541**	**19544**	**24766**	**21525**	**23619**	**21962**	**21210**	**3.2**
Hydro	10859	12925	15051	12780	14660	13205	10792	1.8
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	11	23	49	78	70	63	-
Industrial Waste	-	-	359	333	324	276	329	-
Municipal Solid Waste Renew.	-	-	-	-	59	200	238	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	4682	6608	9303	8341	8476	8189	9762	5.2
Gas from Biomass	-	-	30	22	22	22	26	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***10859***	***13057***	***15138***	***12881***	***15203***	***14200***	***..***	***2.5***
Hydro	10859	12925	15051	12780	14660	13205	..	1.8
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	11	23	49	78	70	..	-
Industrial Waste	-	-	-	2	50	53	..	-
Municipal Solid Waste Renew.	-	-	-	-	2	42	..	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	121	64	50	413	830	..	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***4682***	***6487***	***9628***	***8644***	***8416***	***7762***	***..***	***4.7***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	359	331	274	223	..	-
Municipal Solid Waste Renew.	-	-	-	-	57	158	..	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	4682	6487	9239	8291	8063	7359	..	4.2
Gas from Biomass	-	-	30	22	22	22	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Finland

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**-**	**6593**	**20796**	**25878**	**22555**	**24111**	**23677**	**-**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	732	792	5755	6054	5901	-
Municipal Solid Waste Renew.	-	475	522	552	903	1251	1240	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	6118	19520	24471	15731	16642	16366	-
Gas from Biomass	-	-	18	62	165	149	155	-
Waste Heat and Heat Pumps	-	-	4	1	1	15	15	-
of which:								
CHP Plants	***-***	***2836***	***13879***	***18281***	***14390***	***14746***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	409	442	1423	1307	..	-
Municipal Solid Waste Renew.	-	-	-	-	319	831	..	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	2836	13452	17807	12628	12583	..	-
Gas from Biomass	-	-	18	32	20	25	..	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***-***	***3757***	***6917***	***7597***	***8165***	***9365***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	323	350	4332	4747	..	-
Municipal Solid Waste Renew.	-	475	522	552	584	420	..	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	3282	6068	6664	3103	4059	..	-
Gas from Biomass	-	-	-	30	145	124	..	-
Waste Heat and Heat Pumps	-	-	4	1	1	15	..	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Finland

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solar Thermal								
Indigenous Production	-	6	9	9	9 e	9	10	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	6	9	9	9 e	9	10	-
Industrial Waste								
Production	-	-	6847	5478 e	8660	8944	8900	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	2420	2714	7868	8084	..	-
Final Energy Consumption	-	-	4427	2764 e	792	860	..	-
Municipal Solid Waste - Renewables								
Production	784	487	610	613	1895	3222	3250	13.7
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	x
Transformation Sector	784	487	610	613	1340	2622	..	11.6
Final Energy Consumption	-	-	-	-	555	600	..	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	180437	209171	248244	256443	270997	265364	266340	3.6
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	9847	519	-	-	-	-	-	x
Transformation Sector	42843	44581	61639	66521	63138	64678	..	3.8
Final Energy Consumption	147441	165109	186605	189922	207859	200686	..	2.8
Gas from Biomass								
Production	-	-	690	764	751	745	750	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	x
Transformation Sector	-	-	350	168	293	308	..	-
Final Energy Consumption	-	-	340	596	458	437	..	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

France

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	227.11	240.79	254.37	254.97	257.40	265.57	266.31	1.4
of which: Renewables (Mtoe) [1]	*15.65*	*17.87*	*16.93*	*17.58 e*	*17.49*	*18.58*	*16.61*	*1.6*
Renewables/TPES(%)	*6.8*	*7.2*	*6.5*	*6.8*	*6.6*	*6.8*	*6.1*	*0.1*
GDP (1995 bil. US$)	1473.22	1553.13	1654.59	1707.76	1772.34	1804.85	1823.60	1.9
TPES/GDP[2]	0.15	0.16	0.15	0.15	0.15	0.15	0.15	-0.4
TPES/GDP (1973 = 100)	84	84	84	81	79	80	80	-0.4
Population (millions)	58.17	59.43	60.05	60.29	60.59	60.91	61.00 e	0.4
TPES/population[3]	3.90	4.05	4.24	4.23	4.25	4.36	4.37 e	1.0
Total Electricity Generation (TWh)[4]	416.8	490.9	507.1	519.3	535.8	546.0	554.4	2.5
of which: Renewables (TWh) [1]	*55.60*	*75.77*	*65.49*	*75.82*	*71.11*	*78.73*	*65.46*	*3.2*
Renew./Total Elec.(%) [1]	*13.3*	*15.4*	*12.9*	*14.6*	*13.3*	*14.4*	*11.8*	*0.7*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**24987**	**25489**	**25635**	**25661 e**	**25628**	**25638**	**..**	**0.2**
Hydro	24747	24987	25095	25115	25050	25033	..	0.1
of which: Pumped Storage	4293	4292	4303	4302	4302	4302	..	0.0
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	3	8	9	11	12	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	240	240	240	240	240	240	..	-
Wind	-	4	20	25	55	81	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	-	255	272	272 e	272 e	272 e	..	-
Solid Biomass	-	-	-	-	- e	- e	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	320	389	460	475	431	441	..	3.0

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

France

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**59598**	**78726**	**69445**	**80488**	**75792**	**82856**	**70703**	**3.0**
Hydro	57350	75922	66030	77021	71837	78579	66400	2.9
of which: Pumped Storage	4002	2961	3960	4672	4679	4125	5248	0.3
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	1	1	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	571	568	590	580	566	543	540	-0.5
Wind	-	9	40	49	76	125	294	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	443	728	1140	1140	1453	1505	1714	11.8
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	1116	1368	1500	1485	1510	1502	1405	2.7
Gas from Biomass	118	131	145	213	349	601	350	16.0
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***59598***	***78076***	***68520***	***79563***	***75073***	***82111***	***..***	***3.0***
Hydro	57350	75922	66030	77021	71837	78579	..	2.9
of which: Pumped Storage	4002	2961	3960	4672	4679	4125	..	0.3
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	1	1	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	571	568	590	580	566	543	..	-0.5
Wind	-	9	40	49	76	125	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	443	78	215	215	734	760	..	5.0
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	1116	1368	1500	1485	1510	1502	..	2.7
Gas from Biomass	118	131	145	213	349	601	..	16.0
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***-***	***650***	***925***	***925***	***719***	***745***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	650	925	925	719	745	..	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

France

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**20180**	**25587**	**26079**	**26094**	**25249**	**26467**	**26467 e**	**2.5**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	20012	24912	25372	25394	23994	25002	25002 e	2.0
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	168	675	707	700	1255	1465	1465 e	21.8
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
of which:								
CHP Plants	***-***	***17543***	***18548***	***18558***	***17816***	***18774***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	17543	18548	18558	17816	18774	..	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***20180***	***8044***	***7531***	***7536***	***7433***	***7693***	***..***	***-8.4***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	20012	7369	6824	6836	6178	6228	..	-10.1
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	168	675	707	700	1255	1465	..	21.8
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

France

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	4622	5522	4913	4696	5190	5819	4932	2.1
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	4622	5522	4913	4696	5190	5819	4932	2.1
Solar Thermal								
Indigenous Production	506	608	713	743	1055	1067	756	7.0
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	506	608	713	743	1055	1067	756	7.0
Industrial Waste								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Renewables								
Production	47974	68682	65334	65334	77608	79869	80901	4.7
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	47974	68682	61397	61397	65286	66804	..	3.1
Final Energy Consumption	-	-	3937	3937	12322	13065	..	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	403392	398041	397075	386608 e	386498	401646	362166	-0.0
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	5552	7241	8030	7167 e	8922	9095	..	4.6
Final Energy Consumption	397840	390800	389045	379441	377576	392551	..	-0.1
Gas from Biomass								
Production	4874	5494	6278	6607	7158	8182	12966	4.8
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	564 e	630 e	694 e	1023 e	4257	5532	..	23.1
Final Energy Consumption	4310	4864	5584	5584	2901	2650	..	-4.3
Liquid Biofuels (1000 tonnes)								
Production	-	191	318	337	389	389	387	-
Net Imports [1]	-	-	9	6	6	8	8	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	191	327	343	395	397	..	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Germany

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	356.22	342.26	349.11	341.60	343.43	351.09	343.10	-0.1
of which: Renewables (Mtoe) [1]	*5.83 e*	*6.51 e*	*8.31 e*	*7.97 e*	*8.95 e*	*9.16 e*	*9.92 e*	*4.2*
Renewables/TPES(%)	*1.6*	*1.9*	*2.4*	*2.3*	*2.6*	*2.6*	*2.9*	*4.3*
GDP (1995 bil. US$)	2221.56	2458.28	2560.77	2613.18	2687.83	2703.25	2708.00	1.8
TPES/GDP[2]	0.16	0.14	0.14	0.13	0.13	0.13	0.13	-1.9
TPES/GDP (1973 = 100)	72	62	61	59	57	58	57	-1.9
Population (millions)	79.36	81.66	82.03	82.09	82.19	82.34	81.92 e	0.3
TPES/population[3]	4.49	4.19	4.26	4.16	4.18	4.26	4.19 e	-0.5
Total Electricity Generation (TWh)[4]	547.6	532.6	552.4	550.3	567.1	579.8	580.0	0.5
of which: Renewables (TWh) [1]	*20.48*	*27.28 e*	*26.52 e*	*28.89 e*	*35.66 e*	*35.97*	*44.64 e*	*5.3*
Renew./Total Elec.(%) [1]	*3.7*	*5.1*	*4.8*	*5.2*	*6.3*	*6.2*	*7.7*	*4.7*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**7815**	**11342**	**13144**	**15023 e**	**17135 e**	**19822 e**	**..**	**8.8**
Hydro	6851	8876	8854	8853 e	8982 e	8982 e	..	2.5
of which: Pumped Storage	-	4528	5857	5469 e	4654 e	4654	..	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	2	18	54	70	114	195	..	51.6
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	48	1137	2672	4138	6095	8712	..	60.5
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	550	509	540	555	585	585 e	..	0.6
Solid Biomass	-	79	103	127	129	150	..	-
Gas from Biomass	229	229	229	287	345	487 e	..	7.1
Comb. Renewables Non-Specified	135	494	692	993	885	711	..	16.3
Solar Collectors Surface (1000 m^2)	350	1426	2535	2418	2890	3800	..	24.2

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Germany

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**25217**	**35665 e**	**35598 e**	**37211**	**45495**	**46993**	**54400**	**5.8**
Hydro	19791	26250	21234	23402	25962	23175	26000	1.4
of which: Pumped Storage	2365	4470	4018	3755 e	4230 e	2724	2800	1.3
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	1	7	35	30	60	150	200	57.7
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	71	1712	4593	5528	9352	10700	16500	57.8
Industrial Waste	2373	3915	5060	3000	3946	6626	5300	9.8
Municipal Solid Waste Renew.	2605	2696	3236	1913	2028	2044	2035 e	-2.2
Municipal Solid Waste Non-Renew.	-	-	-	1566	1660	1673	1665 e	-
Solid Biomass	129	496	677	823	804	639	700	15.7
Gas from Biomass	247	589 e	763 e	949	1683	1986 e	2000	20.9
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***25217***	***35665 e***	***35598 e***	***37211***	***45495***	***46993***	***..***	***5.8***
Hydro	19791	26250	21234	23402	25962	23175	..	1.4
of which: Pumped Storage	2365	4470	4018	3755 e	4230 e	2724	..	1.3
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	1	7	35	30	60	150	..	57.7
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	71	1712	4593	5528	9352	10700	..	57.8
Industrial Waste	2373	3915	5060	3000	3946	6626	..	9.8
Municipal Solid Waste Renew.	2605	2696	3236	1913	2028	2044	..	-2.2
Municipal Solid Waste Non-Renew.	-	-	-	1566	1660	1673	..	-
Solid Biomass	129	496	677	823	804	639	..	15.7
Gas from Biomass	247	589 e	763 e	949	1683	1986 e	..	20.9
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Germany

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

								Average annual percent change
	1990	**1995**	**1998**	**1999**	**2000**	**2001**	**2002E**	**90-01**
Total Heat	**19771**	**21224 e**	**20717**	**21814**	**17872 e**	**20002 e**	**20002 e**	**0.1**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	19771	20836 e	20075	11649	9511	10686 e	10686 e	-5.4
Municipal Solid Waste Non-Renev	-	-	-	9531	7727	8682 e	8682 e	-
Solid Biomass	-	388	642	634	634 e	634 e	634 e	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
of which:								
CHP Plants	***19771***	***21224 e***	***20717***	***21814***	***17872 e***	***20002 e***	***..***	***0.1***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	19771	20836 e	20075	11649	9511	10686 e	..	-5.4
Municipal Solid Waste Non-Renev	-	-	-	9531	7727	8682 e	..	-
Solid Biomass	-	388	642	634	634 e	634 e	..	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Germany

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	292 e	360 e	407 e	407	407	407	407	3.1
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	292	360	407	407	407	407	407	3.1
Solar Thermal								
Indigenous Production	455	1690	3339	3158	3807	5400	5716	25.2
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	455	1690	3339	3158	3807	5400	5716	25.2
Industrial Waste								
Production	20526 e	37719 e	53867 e	32727 e	43047 e	51148	57992 e	8.7
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	20526 e	37719 e	53867 e	32727 e	43047 e	51148	..	8.7
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Renewables								
Production	44835 e	47050 e	56060	33244	31360	33002 e	33673 e	-2.7
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	44835 e	47050 e	56060	33244	31360	33002 e	..	-2.7
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	27199	25658	27001 e	27549 e	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	27199	25658	27001 e	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	123259	124000	190372	187244	197101	190882 e	190697 e	4.1
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	4644 e	16172	16389	16346	14472	7282 e	..	4.2
Final Energy Consumption	118615 e	107828	173983	170898	182629 e	183600	..	4.1
Gas from Biomass								
Production	12231	13946	16529	15186 e	23341 e	27587 e	27587 e	7.7
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	6360	10656	11889	10353 e	18360 e	21666 e	..	11.8
Final Energy Consumption	5871	3290	4640	4833	4981	5921	..	0.1
Liquid Biofuels (1000 tonnes)								
Production	-	35	100	130	250	500	500 e	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	35	100	130	250	500	..	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Greece

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	22.18	23.48	26.39	26.62	27.82	28.70	29.46	2.4
of which: Renewables (Mtoe) [1]	*1.10*	*1.29*	*1.33*	*1.42*	*1.40*	*1.32*	*1.39*	*1.6*
Renewables/TPES(%)	*5.0*	*5.5*	*5.1*	*5.3*	*5.0*	*4.6*	*4.8*	*-0.7*
GDP (1995 bil. US$)	110.50	117.56	128.91	133.50	139.16	144.84	150.60	2.5
TPES/GDP[2]	0.20	0.20	0.20	0.20	0.20	0.20	0.20	-0.1
TPES/GDP (1973 = 100)	137	137	140	136	137	136	134	-0.1
Population (millions)	10.16	10.45	10.52	10.54	10.92	10.96	10.96 e	0.7
TPES/population[3]	2.18	2.25	2.51	2.53	2.55	2.62	2.69 e	1.7
Total Electricity Generation (TWh)[4]	34.8	41.3	46.2	49.4	53.4	53.1	50.1	3.9
of which: Renewables (TWh) [1]	*1.77*	*3.56*	*3.79*	*4.76*	*4.14*	*2.93*	*3.63*	*4.7*
Renew./Total Elec.(%) [1]	*5.1*	*8.6*	*8.2*	*9.6*	*7.8*	*5.5*	*7.3*	*0.7*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**2458**	**2600**	**2944**	**3116 e**	**3334 e**	**3368**	**..**	**2.9**
Hydro	2408	2523	2856	2959	3072	3076	..	2.3
of which: Pumped Storage	315	315	615	615	699	699	..	7.5
Geothermal	2	2	2	-	-	-	-	-
Solar Photovoltaic	-	-	-	-	-	1	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	1	27	38	109	226	270	..	66.4
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	1	21	..	-
Comb. Renewables Non-Specified	47	48	48	48	35	-	-	-
Solar Collectors Surface (1000 m^2)	1448	2101	2381	2440	2941	2992	..	6.8

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Greece

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**1999**	**3920**	**4096**	**5187**	**4725**	**3663**	**4398**	**5.7**
Hydro	1997	3782	3866	4829	4111	2725	3382	2.9
of which: Pumped Storage	228	253	149	237	418	628	663	9.6
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	2	34	70	162	451	756	834	71.5
Industrial Waste	-	103	160	195	163	103	103	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	1	-	-	-	-	-	-
Gas from Biomass	-	-	-	1	-	79	79	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***1999***	***3817***	***3936***	***4991***	***4562***	***3553***	***..***	***5.4***
Hydro	1997	3782	3866	4829	4111	2725	..	2.9
of which: Pumped Storage	228	253	149	237	418	628	..	9.6
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	2	34	70	162	451	756	..	71.5
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	1	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	72	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***-***	***103***	***160***	***196***	***163***	***110***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	103	160	195	163	103	..	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	1	-	7	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Greece

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	108	115	105	88	67	95	95	-1.2
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	108	115	105	88	67	95	95	-1.2
Solar Thermal								
Indigenous Production	2363	3442	3903	4045	4138	4201	4250	5.4
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	2363	3442	3903	4045	4138	4201	4250	5.4
Industrial Waste								
Production	-	1560	1997	2665	2662	1611	1611	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	1560	1997	2665	2662	1611	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	37384	37556	37960	38127	39547	39257	39257	0.4
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	24	-	-	-	-	-	-
Final Energy Consumption	37384	37532	37960	38127	39547	39257	..	0.4
Gas from Biomass								
Production	19	30	37	53	52	1371	1765	47.5
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	1 e	19	-	1300	..	-
Final Energy Consumption	19	30	36 e	34	52	71	..	12.7
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Hungary

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	28.47	25.58	25.31	25.25	24.93	25.34	25.14	-1.1
of which: Renewables (Mtoe) (1)	*0.39*	*0.54*	*0.40*	*0.40*	*0.43*	*0.41*	*0.43*	*0.4*
Renewables/TPES(%)	*1.4*	*2.1*	*1.6*	*1.6*	*1.8*	*1.6*	*1.7*	*1.3*
GDP (1995 bil. US$)	50.35	44.67	49.64	51.71	54.39	56.47	58.20	1.0
TPES/GDP(2)	0.57	0.57	0.51	0.49	0.46	0.45	0.43	-2.1
TPES/GDP (1973 = 100)	90	91	81	78	73	72	69	-2.1
Population (millions)	10.37	10.33	10.27	10.24	10.21	10.19	10.17 e	-0.2
TPES/population(3)	2.75	2.48	2.47	2.47	2.44	2.49	2.47 e	-0.9
Total Electricity Generation (TWh)(4)	28.4	34.0	37.2	37.8	35.2	36.4	36.1	2.3
of which: Renewables (TWh) (1)	*0.21*	*0.26*	*0.26*	*0.30*	*0.29*	*0.31*	*0.27*	*3.6*
Renew./Total Elec.(%) (1)	*0.7*	*0.8*	*0.7*	*0.8*	*0.8*	*0.9*	*0.8*	*1.3*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**48**	**48**	**72 e**	**73**	**73**	**73**	**..**	**3.9**
Hydro	48	48	48	48	48	48	..	-
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	-	-	24 e	24	24	24	..	-
Solid Biomass	-	-	-	1	1	1	..	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Hungary

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**212**	**258**	**260**	**295**	**291**	**313**	**272**	**3.6**
Hydro	178	163	155	181	178	186	195	0.4
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	-	-	-	1	1	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	34	95	105	111	110	112	59	11.4
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	3	3	3	3	-
Gas from Biomass	-	-	-	-	-	11	14	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***178***	***163***	***155***	***184***	***181***	***190***	***..***	***0.6***
Hydro	178	163	155	181	178	186	..	0.4
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	-	-	-	1	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	3	3	3	..	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***34***	***95***	***105***	***111***	***110***	***123***	***..***	***12.4***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	34	95	105	111	110	112	..	11.4
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	11	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Hungary

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**558**	**830**	**852**	**884**	**887**	**884**	**431**	**4.3**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	318	672	747	816	815	798	346	8.7
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	240	158	105	68	72	59	60	-12.0
Gas from Biomass	-	-	-	-	-	27	25	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
of which:								
CHP Plants	***318***	***672***	***747***	***816***	***815***	***825***	***..***	***9.1***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	318	672	747	816	815	798	..	8.7
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	27	..	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***240***	***158***	***105***	***68***	***72***	***59***	***..***	***-12.0***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	240	158	105	68	72	59	..	-12.0
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Hungary

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	-	-	-	184	194	243	310	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	184	194	243	310	-
Solar Thermal								
Indigenous Production	-	-	-	-	-	60	70	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	60	70	-
Industrial Waste								
Production	-	-	-	-	-	440	477	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	440	..	-
Municipal Solid Waste - Renewables								
Production	988	2170	2494	2466	2436	2597	1995	9.2
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	988	2170	2494	2466	2436	2597	..	9.2
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	16665	19859	13562	13608	14925	13539	14589	-1.9
Net Imports [1]	-1158	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-661	-2	150	-	-	-	-	x
Transformation Sector	636	223	150	108	133	139	..	-12.9
Final Energy Consumption	14210	19634	13562	13500	14792	13400	..	-0.5
Gas from Biomass								
Production	-	-	-	-	-	86	133	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	86	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Iceland

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	2.17	2.33	2.70	3.09	3.24	3.36	3.40	4.1
of which: Renewables (Mtoe) [1]	*1.40*	*1.57*	*1.81*	*2.19*	*2.31*	*2.45*	*2.48 e*	*5.2*
Renewables/TPES(%)	*64.5*	*67.2*	*67.2*	*70.9*	*71.1*	*72.9*	*73.0*	*1.1*
GDP (1995 bil. US$)	6.78	6.90	8.04	8.31	8.78	9.04	9.04	2.6
TPES/GDP[2]	0.32	0.34	0.34	0.37	0.37	0.37	0.38	1.4
TPES/GDP (1973 = 100)	93	98	97	108	107	108	109	1.4
Population (millions)	0.26	0.27	0.27	0.28	0.28	0.29	0.29 e	1.0
TPES/population[3]	8.52	8.72	9.85	11.15	11.54	11.80	11.83 e	3.0
Total Electricity Generation (TWh)[4]	4.5	5.0	6.3	7.2	7.7	8.0	8.4	5.4
of which: Renewables (TWh) [1]	*4.50*	*4.97*	*6.28*	*7.18*	*7.68*	*8.03*	*8.41*	*5.4*
Renew./Total Elec.(%) [1]	*99.9*	*99.8*	*99.9*	*99.9*	*99.9*	*100.0*	*99.9*	*0.0*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**802**	**935**	**1096**	**1188**	**1236**	**1311**	**..**	**4.6**
Hydro	756	884	956	1016	1064	1109	..	3.5
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	46	51	140	172	172	202	..	14.4
Solar Photovoltaic	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Iceland

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**4504**	**4972**	**6276**	**7183**	**7679**	**8029**	**8406**	**5.4**
Hydro	4204	4682	5621	6047	6356	6578	6973	4.2
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	300	290	655	1136	1323	1451	1433	15.4
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***4504***	***4865***	***6052***	***6549***	***6830***	***7099***	***..***	***4.2***
Hydro	4204	4682	5621	6047	6356	6578	..	4.2
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	300	183	431	502	474	521	..	5.1
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***-***	***107***	***224***	***634***	***849***	***930***	***..***	***-***
Geothermal	-	107	224	634	849	930	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Iceland

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**4819**	**7457**	**6239**	**7910**	**7414**	**7276**	**7286**	**3.8**
Geothermal	4819	7421	6203	7874	7369	7231	7230	3.8
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	36	36	36	45	45	56	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
of which:								
CHP Plants	***4247***	***7103***	***5885***	***7556***	***6967***	***6829***	***..***	***4.4***
Geothermal	4247	7103	5885	7556	6967	6829	..	4.4
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***572***	***354***	***354***	***354***	***447***	***447***	***..***	***-2.2***
Geothermal	572	318	318	318	402	402	..	-3.2
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	36	36	36	45	45	..	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Iceland

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	43493	48640	55670	69912	73600	78900	78556 e	5.6
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-1726	-2863	-3155	-3135	-3387	-3231	-3200	x
Transformation Sector	18764	25649	32853	45287	47272	49880	49556 e	9.3
Final Energy Consumption	23003	20128	19662	21490	22941	25789	25800 e	1.0
Solar Thermal								
Indigenous Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Industrial Waste								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Renewables								
Production	-	45	45	45	56	56	56	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	45	45	45	56	56	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Gas from Biomass								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Ireland

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	10.57	11.36	13.27	13.95	14.33	14.98	15.45	3.2
of which: Renewables (Mtoe) [1]	*0.17*	*0.22*	*0.26*	*0.26*	*0.26*	*0.26*	*0.29*	*4.1*
Renewables/TPES(%)	*1.6*	*2.0*	*2.0*	*1.8*	*1.8*	*1.7*	*1.9*	*0.8*
GDP (1995 bil. US$)	52.88	66.47	86.73	96.39	105.98	112.01	116.10	7.1
TPES/GDP[2]	0.20	0.17	0.15	0.14	0.14	0.13	0.13	-3.6
TPES/GDP (1973 = 100)	75	64	57	54	51	50	50	-3.6
Population (millions)	3.51	3.60	3.71	3.75	3.80	3.85	3.89 e	0.9
TPES/population[3]	3.02	3.15	3.57	3.71	3.77	3.89	3.97 e	2.3
Total Electricity Generation (TWh)[4]	14.2	17.6	20.9	21.8	23.7	24.6	24.3	5.1
of which: Renewables (TWh) [1]	*0.70*	*0.73 e*	*1.17*	*1.12*	*1.19*	*1.03*	*1.38*	*3.6*
Renew./Total Elec.(%) [1]	*4.9*	*4.1*	*5.6*	*5.2*	*5.0*	*4.2*	*5.7*	*-1.5*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**513**	**523**	**597**	**607**	**656**	**678**	**..**	**2.6**
Hydro	513	517	525	525	525	528	..	0.3
of which: Pumped Storage	290	290	292	292	292	292	..	0.1
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	6	60	67	116	135	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	12	15	15	15	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	2	2	5	5 e	5 e	5	..	8.7

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Ireland

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**983**	**984 e**	**1443**	**1368**	**1489**	**1351**	**1734**	**2.9**
Hydro	983	968	1189	1090	1150	920	1264	-0.6
of which: Pumped Storage	286	255	273	244	304	324	352	1.1
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	16	169	187	244	334	389	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	85	91	95	97	81	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***983***	***984 e***	***1443***	***1368***	***1489***	***1351***	***..***	***2.9***
Hydro	983	968	1189	1090	1150	920	..	-0.6
of which: Pumped Storage	286	255	273	244	304	324	..	1.1
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	16	169	187	244	334	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	85	91	95	97	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Ireland

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	2	2	2	7	7	7	41	12.1
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	2	2	2	7	7	7	41	12.1
Solar Thermal								
Indigenous Production	2	4	5	5	5	5	7	8.7
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	2	4	5	5	5	5	7	8.7
Industrial Waste								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	4416	6629	5478	5478	5695	6365	6365	3.4
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	4416	6629	5478	5478	5695	6365	..	3.4
Gas from Biomass								
Production	95	119	1455	1534	1168	1185	1185	25.8
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	1267	1348	988	1005	..	-
Final Energy Consumption	95	119	188	186	180	180	..	6.0
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Italy

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	152.55	160.87	167.40	170.51	171.70	172.00	169.10	1.1
of which: Renewables (Mtoe) [1]	*6.48 e*	*7.77 e*	*9.17 e*	*9.94 e*	*9.05 e*	*9.64 e*	*9.18 e*	*3.7*
Renewables/TPES(%)	*4.3*	*4.9*	*5.6*	*6.0*	*5.4*	*5.7*	*5.6*	*2.6*
GDP (1995 bil. US$)	1030.05	1097.21	1151.98	1170.33	1203.89	1225.27	1229.80	1.6
TPES/GDP[2]	0.15	0.15	0.15	0.15	0.14	0.14	0.14	-0.5
TPES/GDP (1973 = 100)	74	74	73	73	72	70	69	-0.5
Population (millions)	56.72	57.30	57.59	57.65	57.76	57.93	57.99 e	0.2
TPES/population[3]	2.69	2.81	2.91	2.96	2.97	2.97	2.92 e	0.9
Total Electricity Generation (TWh)[4]	213.2	237.4	253.7	259.3	269.9	271.9	276.1	2.2
of which: Renewables (TWh) [1]	*34.94*	*41.55*	*46.71*	*51.64 e*	*51.08*	*54.73*	*48.96*	*4.2*
Renew./Total Elec.(%) [1]	*16.4*	*17.5*	*18.4*	*19.9*	*18.9*	*20.1*	*17.7*	*1.9*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**19364**	**20520**	**21232**	**21944**	**22183 e**	**22611 e**	**..**	**1.4**
Hydro	18770	19844	20058	20444	20346	20434	..	0.8
of which: Pumped Storage	6188	6880	7000	7027	6957	6978	..	1.1
Geothermal	496	470	547	585	590	573	..	1.3
Solar Photovoltaic	4	16	18	18	19	20	..	15.8
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	3	22	164	229	363	664	..	63.4
Industrial Waste	-	-	-	179	287	320	..	-
Municipal Solid Waste	46	79	167	168	219	222	..	15.4
Solid Biomass	4	68	154	180	180 e	180 e	..	41.3
Gas from Biomass	41	21	124	141	179	198	..	15.4
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	10	180	240	240	240	240	..	33.5

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Italy

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**38408**	**45757**	**53054**	**58424 e**	**58093**	**62217**	**57024**	**4.5**
Hydro	35079	41907	47365	51777	50900	53926	48063	4.0
of which: Pumped Storage	3453	4125	6145	6412	6695	7115	7610	6.8
Geothermal	3222	3436	4214	4403	4705	4507	4660	3.1
Solar Photovoltaics	4	13	16	17 e	18 e	19 e	10 e	15.2
Solar Thermal	-	-	-	-	-	-	- e	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	2	9	231	403	563	1179	1391	78.6
Industrial Waste	16	87	200	370 e	316	372	450	33.1
Municipal Solid Waste Renew.	71	206	465	653	804	1258	1400	29.9
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	12	28	69	219 e	221	272 e	400	32.8
Gas from Biomass	2	71	494	582	566	684	650	70.0
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***38378***	***45568***	***52598***	***57597 e***	***57120***	***60691***	***..***	***4.3***
Hydro	35079	41907	47365	51777	50900	53926	..	4.0
of which: Pumped Storage	3453	4125	6145	6412	6695	7115	..	6.8
Geothermal	3222	3436	4214	4403	4705	4507	..	3.1
Solar Photovoltaics	4	13	16	17 e	18 e	19 e	..	15.2
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	2	9	231	403	563	1179	..	78.6
Industrial Waste	-	-	46	191 e	124	132	..	-
Municipal Solid Waste Renew.	71	155	260	235	267	313	..	14.4
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	13	12	30 e	19	20 e	..	-
Gas from Biomass	-	35	454	541	524	595	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***30***	***189***	***456***	***827 e***	***973***	***1526***	***..***	***42.9***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	16	87	154	179 e	192	240	..	27.9
Municipal Solid Waste Renew.	-	51	205	418	537	945	..	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	12	15	57	189 e	202	252	..	31.9
Gas from Biomass	2	36	40	41	42	89	..	41.2
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Italy

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	124392	132612	160620	167424	129901	133484	138446 e	0.6
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	115992	123696	151704	158508	120985	124393	129046 e	0.6
Final Energy Consumption	8400	8916	8916	8916	8916	9091	9400 e	0.7
Solar Thermal								
Indigenous Production	200	300	335	350	450	450	475 e	7.7
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	- e	-
Final Energy Consumption	200	300	335	350	450	450	475 e	7.7
Industrial Waste								
Production	6408 e	4187 e	4400 e	6270 e	5566 e	6022 e	8400	-0.6
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	586	712	1800	3670 e	2966 e	3422 e	..	17.4
Final Energy Consumption	5822 e	3475 e	2600 e	2600 e	2600 e	2600 e	..	-7.1
Municipal Solid Waste - Renewables								
Production	921	5200	11420	15672	13984 e	16634	17000	30.1
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-2839	-6987	-9754	-	-	-	x
Transformation Sector	921	2361	4433	5918 e	7184 e	10750	..	25.0
Final Energy Consumption	-	-	-	-	6800	5884	..	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	28163 e	40915 e	41329 e	46226 e	46444 e	63563 e	61000	7.7
Net Imports [1]	3843	9693	15166	15612	21549	8818	9200	7.8
Miscellaneous to Balance [2]	-	-1	-	-	-	-	-	x
Transformation Sector	1681 e	5155 e	5283 e	6814 e	4623 e	7518 e	..	14.6
Final Energy Consumption	30325 e	45452 e	51212 e	55024 e	63370	64863	..	7.2
Gas from Biomass								
Production	42	557	5926	6075	5396	6420	6500	58.0
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-653	-	-	-	-	x
Transformation Sector	42	557	5273	6075	5396	6420	..	58.0
Final Energy Consumption	-	-	-	-	-	-	-	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Japan

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	436.52	495.35	511.17	515.61	524.23	520.73	510.88	1.6
of which: Renewables (Mtoe) [1]	*13.57*	*14.48 e*	*17.47*	*16.87*	*16.66 e*	*15.88 e*	*15.09 e*	*1.4*
Renewables/TPES(%)	*3.1*	*2.9*	*3.4*	*3.3*	*3.2*	*3.1*	*3.0*	*-0.2*
GDP (1995 bil. US$)	4935.97	5291.75	5512.64	5549.53	5680.57	5647.68	5606.50	1.2
TPES/GDP[2]	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.4
TPES/GDP (1973 = 100)	72	76	75	75	75	75	74	0.4
Population (millions)	123.54	125.57	126.49	126.69	126.93	127.21	127.26 e	0.3
TPES/population[3]	3.53	3.94	4.04	4.07	4.13	4.09	4.01 e	1.3
Total Electricity Generation (TWh)[4]	850.8	980.8	1036.2	1057.0	1056.9	1033.2	1085.6	1.8
of which: Renewables (TWh) [1]	*102.51*	*99.38*	*111.23*	*106.07*	*103.34 e*	*100.41 e*	*93.81 e*	*-0.2*
Renew./Total Elec.(%) [1]	*12.0*	*10.1*	*10.7*	*10.0*	*9.8*	*9.7*	*8.6*	*-1.9*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**40494 e**	**46827 e**	**48225 e**	**49087 e**	**50202 e**	**50657 e**	**..**	**2.1**
Hydro	37830	43456	45382	45860	46324	46386	..	1.9
of which: Pumped Storage	17005	22285	23905	24305	24305	24305 e	..	3.3
Geothermal	270	504	533	533	533	533	..	6.4
Solar Photovoltaic	-	43 e	133 e	209 e	330 e	452	..	-
Solar Thermal	1	1	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	6	20	81	84	175	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	-	490	841	850	1322	1502	..	-
Solid Biomass	-	-	-	1554 e	1609	1609 e	..	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	2393 e	2327 e	1316 e	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Japan

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

								Average annual percent change
	1990	**1995**	**1998**	**1999**	**2000**	**2001**	**2002E**	**90-01**
Total Electricity	**109038**	**108478**	**121307**	**115235**	**113211 e**	**110407 e**	**103776 e**	**0.1**
Hydro	95835	91216	102587	95577	96817	93872	86200	-0.2
of which: Pumped Storage	6530	9098	10074	9161	9564	9706	9625	3.7
Geothermal	1741	3173	3531	3451	3348	3432	3221	6.4
Solar Photovoltaics	-	1	1	1	1 e	1 e	1 e	-
Solar Thermal	1	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	1	6	37	109	252	252 e	-
Industrial Waste	-	-	-	-	305	289	337 e	-
Municipal Solid Waste Renew.	1954	3060	4972	5281	4706	5338	5338 e	9.6
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	9507	11027	10210	10888	7925	7223	8427 e	-2.5
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***109038***	***108478***	***121307***	***115235***	***113211 e***	***110407 e***	***..***	***0.1***
Hydro	95835	91216	102587	95577	96817	93872	..	-0.2
of which: Pumped Storage	6530	9098	10074	9161	9564	9706	..	3.7
Geothermal	1741	3173	3531	3451	3348	3432	..	6.4
Solar Photovoltaics	-	1	1	1	1 e	1 e	..	-
Solar Thermal	1	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	1	6	37	109	252	..	-
Industrial Waste	-	-	-	-	305	289	..	-
Municipal Solid Waste Renew.	1954	3060	4972	5281	4706	5338	..	9.6
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	9507	11027	10210	10888	7925	7223	..	-2.5
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Japan

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**819 e**	**3098 e**	**4060 e**	**4265 e**	**3791 e**	**3791 e**	**3791 e**	**14.9**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	401	420	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	819 e	3098 e	3659 e	3845 e	3791 e	3791 e	3791 e	14.9
of which:								
CHP Plants	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***819 e***	***3098 e***	***4060 e***	***4265 e***	***3791 e***	***3791 e***	***..***	***14.9***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	401	420	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	819 e	3098 e	3659 e	3845 e	3791 e	3791 e	..	14.9

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Japan

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	62676	122058 e	137187	133994	120528	123552	115956 e	6.4
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	62676	114228	127116	124236	120528	123552	115956	6.4
Final Energy Consumption	-	7830 e	10071	9758	-	-	- e	-
Solar Thermal								
Indigenous Production	4	-	36514	33029	33823	31287	29867 e	125.9
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	4	-	-	-	-	-	- e	-
Final Energy Consumption	-	-	36514	33029	33823	31287	29867 e	-
Industrial Waste								
Production	-	-	414	433	13833	13309	13500 e	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	414	433	3418	3196	..	-
Final Energy Consumption	-	-	-	-	10415	10113	..	-
Municipal Solid Waste - Renewables								
Production	14614	22537	40985	43414	42354	48044	51355 e	11.4
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-1	-	-	-	-	-	x
Transformation Sector	14614	22536	40985	43414	42354	48044	..	11.4
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	169414	166146 e	183788	184477	186303	157858	157858 e	-0.6
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	61713	71679	85850 e	86608	82393	74040	..	1.7
Final Energy Consumption	107701	94467	97938	97869	103910	83818	..	-2.3
Gas from Biomass								
Production	-	-	-	-	28	30	32 e	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-28	-30	-	x
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Korea

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	92.58	147.85	163.12	178.78	191.16	194.78	201.84	7.0
of which: Renewables (Mtoe) [1]	*0.55*	*0.92 e*	*1.70 e*	*1.84 e*	*2.09 e*	*2.17 e*	*2.39 e*	*13.3*
Renewables/TPES(%)	*0.6*	*0.6*	*1.0*	*1.0*	*1.1*	*1.1*	*1.2*	*5.9*
GDP (1995 bil. US$)	341.55	489.26	511.77	567.52	620.45	639.24	677.90	5.9
TPES/GDP[2]	0.27	0.30	0.32	0.32	0.31	0.30	0.30	1.1
TPES/GDP (1973 = 100)	117	130	137	136	133	131	128	1.1
Population (millions)	42.87	45.09	46.29	46.62	47.01	47.34	47.68 e	0.9
TPES/population[3]	2.16	3.28	3.52	3.84	4.07	4.11	4.23 e	6.0
Total Electricity Generation (TWh)[4]	105.4	181.2	216.4	235.9	263.7	281.5	304.5	9.3
of which: Renewables (TWh) [1]	*6.36*	*3.02 e*	*4.68 e*	*4.58 e*	*4.45 e*	*4.49 e*	*3.53 e*	*-3.1*
Renew./Total Elec.(%) [1]	*6.0*	*1.7*	*2.2*	*1.9*	*1.7*	*1.6*	*1.2*	*-11.4*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**2341**	**3095**	**3556**	**3577**	**3639**	**4462 e**	**..**	**6.0**
Hydro	2340	3093	3131	3148	3149	3914	..	4.8
of which: Pumped Storage	1000	1600	1600	1600	1600	2300	..	7.9
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	1	2	3	4	4	5	..	15.8
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	-	3	7	7	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	422	422	479	536 e	..	-
Solar Collectors Surface (1000 m^2)	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Korea

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**6361**	**5755 e**	**6538 e**	**6517 e**	**6085 e**	**6403 e**	**5685 e**	**0.1**
Hydro	6361	5478	6099	6066	5610	5972	5311	-0.6
of which: Pumped Storage	-	2718	1820	1907	1600	1821	2078	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	26 e	44 e	52 e	62 e	75 e	75 e	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	1 e	4 e	17 e	17	14	15	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	231 e	357 e	348 e	361 e	254 e	211 e	-
Municipal Solid Waste Non-Renew.	-	19 e	34 e	34 e	35 e	88 e	73 e	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***6361***	***5505 e***	***6147 e***	***6135 e***	***5689 e***	***6061 e***	***..***	***-0.4***
Hydro	6361	5478	6099	6066	5610	5972	..	-0.6
of which: Pumped Storage	-	2718	1820	1907	1600	1821	..	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	26 e	44 e	52 e	62 e	75 e	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	1 e	4 e	17 e	17	14	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***-***	***250 e***	***391 e***	***382 e***	***396 e***	***342 e***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	231 e	357 e	348 e	361 e	254 e	..	-
Municipal Solid Waste Non-Renew.	-	19 e	34 e	34 e	35 e	88 e	..	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Korea

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**-**	**22868 e**	**47326 e**	**53206 e**	**63922 e**	**72852 e**	**88241 e**	**-**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	4407 e	8806 e	9891 e	11776 e	15406	16171 e	-
Municipal Solid Waste Renew.	-	17341 e	34828 e	39202 e	47194 e	49933 e	63452 e	-
Municipal Solid Waste Non-Renev	-	457 e	1051 e	1255 e	1444 e	4084 e	5189 e	-
Solid Biomass	-	-	1740 e	1955 e	2210 e	2075 e	2075 e	-
Gas from Biomass	-	663 e	901 e	903 e	1298	1354 e	1354 e	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
of which:								
CHP Plants	***-***	***936 e***	***1659 e***	***1702 e***	***2906 e***	***3882 e***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	723 e	1281 e	1314 e	2243 e	2884 e	..	-
Municipal Solid Waste Non-Renev	-	213 e	378 e	388 e	663 e	998 e	..	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***-***	***21932 e***	***45667 e***	***51504 e***	***61016 e***	***68970 e***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	4407 e	8806 e	9891 e	11776 e	15406	..	-
Municipal Solid Waste Renew.	-	16618 e	33547 e	37888 e	44951 e	47049 e	..	-
Municipal Solid Waste Non-Renev	-	244 e	673 e	867 e	781 e	3086 e	..	-
Solid Biomass	-	-	1740 e	1955 e	2210 e	2075 e	..	-
Gas from Biomass	-	663 e	901 e	903 e	1298	1354 e	..	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Korea

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	-	-	-	-	-	-	5	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	5	-
Solar Thermal								
Indigenous Production	116	925	1840	1763	1745	1556	1456 e	26.6
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	- e	-
Final Energy Consumption	116	925	1840	1763	1745	1556	1456 e	26.6
Industrial Waste								
Production	-	5686 e	11147 e	12442 e	14720	17933	18823	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	5686 e	11147 e	12442 e	14720	17933	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Renewables								
Production	-	23943 e	46939 e	52396 e	62367	65261	74984	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	23943 e	46939 e	52396 e	62367	65261	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	1121 e	2197 e	2452 e	2901	6659 e	17010	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	1121 e	2197 e	2452 e	2901	6659 e	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	-	2933 e	5751 e	6419 e	7224	7133	7858	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	2203 e	2459 e	2763	2594	..	-
Final Energy Consumption	-	2933 e	3548 e	3960 e	4461	4539	..	-
Gas from Biomass								
Production	-	856 e	1140 e	1136 e	1622	1693	2861	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	856 e	1140 e	1136 e	1622	1693	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	35	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Luxembourg

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	3.57	3.38	3.32	3.49	3.68	3.83	4.03	0.6
of which: Renewables (Mtoe) [1]	*0.03*	*0.05*	*0.05*	*0.04*	*0.06*	*0.06*	*0.06*	*6.2*
Renewables/TPES(%)	*1.0*	*1.6*	*1.8*	*1.5*	*1.8*	*1.8*	*1.5*	*5.9*
GDP (1995 bil. US$)	14.91	18.08	21.73	23.02	25.08	25.34	25.50	4.9
TPES/GDP[2]	0.24	0.19	0.15	0.15	0.15	0.15	0.16	-4.1
TPES/GDP (1973 = 100)	45	35	29	28	28	28	30	-4.1
Population (millions)	0.38	0.41	0.43	0.43	0.44	0.44	0.45 e	1.4
TPES/population[3]	9.37	8.24	7.78	8.06	8.39	8.66	9.00 e	-0.7
Total Electricity Generation (TWh)[4]	0.6	0.5	0.4	0.4	0.4	0.5	2.7	-2.0
of which: Renewables (TWh) [1]	*0.10*	*0.14*	*0.17*	*0.15*	*0.20*	*0.22*	*0.19*	*7.0*
Renew./Total Elec.(%) [1]	*16.7*	*29.0*	*46.7*	*43.0*	*46.9*	*44.0*	*7.0*	*9.2*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**1138**	**1146**	**1160**	**1157**	**1162**	**1164**	**..**	**0.2**
Hydro	1132	1140	1141	1139	1139	1140	..	0.1
of which: Pumped Storage	1100	1100	1100	1100	1100	1100	..	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	10	9	14	15	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	6	6	9	9	9	9	..	3.8
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	-	-	2	2	2	2	..	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Luxembourg

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**857**	**884**	**1100**	**816**	**945**	**963**	**1069**	**1.1**
Hydro	823	831	1044	747	862	877	979	0.6
of which: Pumped Storage	753	743	929	662	742	744	882	-0.1
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	1	1	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	11	18	27	26	27	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	34	53	45	50	52	51	52	3.8
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	1	4	8	10	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***857***	***884***	***1100***	***815***	***941***	***955***	***..***	***1.0***
Hydro	823	831	1044	747	862	877	..	0.6
of which: Pumped Storage	753	743	929	662	742	744	..	-0.1
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	1	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	11	18	27	26	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	34	53	45	50	52	51	..	3.8
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***-***	***-***	***-***	***1***	***4***	***8***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	1	4	8	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Luxembourg

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**-**	**-**	**-**	**6**	**6**	**42**	**48**	**-**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	6	6	42	48	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
of which:								
CHP Plants	**-**	**-**	**-**	***6***	***6***	***42***	**..**	**-**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	6	6	42	..	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Luxembourg

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solar Thermal								
Indigenous Production	-	-	-	2	2	2	2	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	2	2	2	2	-
Industrial Waste								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Renewables								
Production	1036	971	949	841	1151	1178	1118	1.2
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	1036	971	949	841	1151	1178	..	1.2
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	-	645	645	645	668	668	644	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	645	645	645	668	668	..	-
Gas from Biomass								
Production	-	19	63	12	23	84	95	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-19	-63	-	-	-	-	x
Transformation Sector	-	-	-	12	23	84	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Mexico

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	124.03	132.71	147.95	149.91	150.62	152.27	151.78	1.9
of which: Renewables (Mtoe) (1)	*13.74*	*15.07*	*15.19*	*15.78*	*16.01*	*15.49*	*14.15*	*1.1*
Renewables/TPES(%)	*11.1*	*11.4*	*10.3*	*10.5*	*10.6*	*10.2*	*9.3*	*-0.8*
GDP (1995 bil. US$)	265.26	286.17	337.45	349.68	372.89	371.86	377.30	3.1
TPES/GDP(2)	0.47	0.46	0.44	0.43	0.40	0.41	0.40	-1.2
TPES/GDP (1973 = 100)	122	121	114	111	105	106	105	-1.2
Population (millions)	81.25	90.16	95.68	97.59	97.38	99.11	100.87 e	1.8
TPES/population(3)	1.53	1.47	1.55	1.54	1.55	1.54	1.50 e	0.1
Total Electricity Generation (TWh)(4)	122.7	152.5	181.8	192.3	204.4	209.6	215.2	5.0
of which: Renewables (TWh) (1)	*28.60*	*33.20*	*30.61*	*38.96*	*39.52*	*34.60*	*30.86*	*1.7*
Renew./Total Elec.(%) (1)	*23.3*	*21.8*	*16.8*	*20.3*	*19.3*	*16.5*	*14.3*	*-3.1*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**8580**	**10084**	**10667**	**10687**	**10805**	**10791**	**..**	**2.1**
Hydro	7880	9329	9703	9633	9634	9636	..	1.8
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	700	753	750	750	855	838	..	1.6
Solar Photovoltaic	-	-	12	13	13	14	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	2	3	3	3	3	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	-	-	-	-	-	-	-	-
Solid Biomass	-	-	191	280	292	292	..	-
Gas from Biomass	-	-	8	8	8	8	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	-	-	293	328	373	448	..	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Mexico

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**28602**	**33203**	**30613**	**38955**	**39518**	**34604**	**30856**	**1.7**
Hydro	23478	27528	24625	32782	33133	28495	24951	1.8
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	5124	5669	5657	5623	5901	5567	5398	0.8
Solar Photovoltaics	-	-	26	28	29	31	31	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	6	11	11	13	12	12	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	279	500	433	492	458	-
Gas from Biomass	-	-	15	11	9	7	6	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***28602***	***33203***	***30613***	***38955***	***39518***	***34604***	***..***	***1.7***
Hydro	23478	27528	24625	32782	33133	28495	..	1.8
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	5124	5669	5657	5623	5901	5567	..	0.8
Solar Photovoltaics	-	-	26	28	29	31	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	6	11	11	13	12	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	279	500	433	492	..	-
Gas from Biomass	-	-	15	11	9	7	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Mexico

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	184464	204084	203652	202428	212436	200412	194328	0.8
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	184464	204084	203652	202428	212436	200412	194328	0.8
Final Energy Consumption	-	-	-	-	-	-	-	-
Solar Thermal								
Indigenous Production	-	-	1270	1422	1801	2156	2156	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	1270	1422	1801	2156	2156	-
Industrial Waste								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	306353	327641	342143	338480	336458	343093	305970	1.0
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	20508	36166	33897	35431	..	-
Final Energy Consumption	306353	327641	321635	302314	302561	307662	..	0.0
Gas from Biomass								
Production	-	-	387	224	257	204	224	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	387	224	257	204	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Netherlands

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	66.49	72.15	74.29	73.51	75.48	77.21	77.22	1.4
of which: Renewables (Mtoe) [1]	*0.65 e*	*0.70 e*	*0.91 e*	*0.96 e*	*1.03 e*	*1.07 e*	*1.12 e*	*4.7*
Renewables/TPES(%)	*1.0*	*1.0*	*1.2*	*1.3*	*1.4*	*1.4*	*1.5*	*3.3*
GDP (1995 bil. US$)	373.34	414.80	463.12	481.62	497.58	503.86	504.40	2.8
TPES/GDP[2]	0.18	0.17	0.16	0.15	0.15	0.15	0.15	-1.4
TPES/GDP (1973 = 100)	72	70	65	62	61	62	62	-1.4
Population (millions)	14.95	15.46	15.70	15.81	15.92	16.04	16.05 e	0.6
TPES/population[3]	4.45	4.67	4.73	4.65	4.74	4.81	4.81 e	0.7
Total Electricity Generation (TWh)[4]	71.9	81.0	91.2	86.9	89.6	93.7	96.3	2.4
of which: Renewables (TWh) [1]	*0.82*	*1.31*	*2.26*	*2.36*	*2.83*	*3.25*	*3.41 e*	*13.3*
Renew./Total Elec.(%) [1]	*1.1*	*1.6*	*2.5*	*2.7*	*3.2*	*3.5*	*3.5*	*10.6*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**233**	**485**	**799**	**851**	**917**	**953**	**..**	**13.7**
Hydro	36	37	37	37	38	38	..	0.5
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	2	6	10	13	21	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	48	257	361	409	442	480	..	23.3
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	149	189	395	395	424	414	..	9.7
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	75	152	231	258	309	358	..	15.3

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Netherlands

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**1167**	**1948**	**4605**	**4873**	**5165**	**4414**	**4580**	**12.9**
Hydro	95	88	112	90	142	117	124	1.9
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	2	4	5	8	14	16	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	56	317	640	645	829	825	900	27.7
Industrial Waste	-	-	1123	1132	935	..	..	..
Municipal Solid Waste Renew.	588	669	1133	1158	1176	1321	1323 e	7.6
Municipal Solid Waste Non-Renew.	345	643	1227	1377	1398	1166	1167 e	11.7
Solid Biomass	-	4	101	203	378	670	750	-
Gas from Biomass	83	225	265	263	299	301	300	12.4
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***151***	***407***	***756***	***740***	***979***	***956***	***..***	***18.3***
Hydro	95	88	112	90	142	117	..	1.9
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	2	4	5	8	14	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	56	317	640	645	829	825	..	27.7
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***1016***	***1541***	***3849***	***4133***	***4186***	***3458***	***..***	***11.8***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	1123	1132	935	..	-	..
Municipal Solid Waste Renew.	588	669	1133	1158	1176	1321	..	7.6
Municipal Solid Waste Non-Renew.	345	643	1227	1377	1398	1166	..	11.7
Solid Biomass	-	4	101	203	378	670	..	-
Gas from Biomass	83	225	265	263	299	301	..	12.4
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Netherlands

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**9650**	**9552**	**15362**	**15959**	**16053**	**15679**	**16520**	**4.5**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	1956	1235	3825	3600	3558	3857	3866 e	6.4
Municipal Solid Waste Non-Renev	1168	1186	4177	4159	4229	3406	3414 e	10.2
Solid Biomass	6060	6060	6060	6750	6850	6900	7720	1.2
Gas from Biomass	466	1071	1300	1450	1416	1516	1520	11.3
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
of which:								
CHP Plants	***3590***	***3492***	***9302***	***9209***	***9203***	***8779***	***..***	***8.5***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	1956	1235	3825	3600	3558	3857	..	6.4
Municipal Solid Waste Non-Renev	1168	1186	4177	4159	4229	3406	..	10.2
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	466	1071	1300	1450	1416	1516	..	11.3
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***6060***	***6060***	***6060***	***6750***	***6850***	***6900***	***..***	***1.2***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	6060	6060	6060	6750	6850	6900	..	1.2
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Netherlands

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solar Thermal								
Indigenous Production	70	159	261	292	347	400	600	17.2
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	70	159	261	292	347	400	600	17.2
Industrial Waste								
Production	-	-	10550	10635	8774	..	..	..
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	10550	10635	8774	..	-	..
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Renewables								
Production	6292	5898	11097	11662	11661	13107	13200	6.9
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	6292	5898	11097	11662	11661	13107	..	6.9
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	3695	5666	12021	13690	13856	11577	11500	10.9
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	3695	5666	12021	13690	13856	11577	..	10.9
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	17733 e	17013 e	18822 e	20507 e	21864 e	21112 e	23578 e	1.6
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	6733 e	6773 e	7642 e	9327 e	11192 e	13578 e	..	6.6
Final Energy Consumption	11000	10240	11180	11180	10672	7534	..	-3.4
Gas from Biomass								
Production	2505	4938	5119	5229	5536	6744	5600	9.4
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	1130	2881	3408	3633	4085	4195	..	12.7
Final Energy Consumption	1375	2057	1711	1596	1451	2549	..	5.8
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

New Zealand

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	14.02	15.57	16.63	17.29	18.05	18.29	18.38	2.5
of which: Renewables (Mtoe) [1]	*4.92 e*	*4.75 e*	*4.70 e*	*5.01*	*5.16*	*5.03*	*5.02 e*	*0.2*
Renewables/TPES(%)	*35.1*	*30.5*	*28.3*	*29.0*	*28.6*	*27.5*	*27.3*	*-2.2*
GDP (1995 bil. US$)	52.23	60.82	64.10	67.10	68.88	71.11	73.80	2.8
TPES/GDP[2]	0.27	0.26	0.26	0.26	0.26	0.26	0.25	-0.4
TPES/GDP (1973 = 100)	139	133	134	134	136	133	129	-0.4
Population (millions)	3.36	3.66	3.79	3.81	3.83	3.85	3.90 e	1.2
TPES/population[3]	4.17	4.26	4.39	4.54	4.71	4.75	4.72 e	1.2
Total Electricity Generation (TWh)[4]	32.3	35.3	37.8	37.8	39.5	39.9	39.5	2.0
of which: Renewables (TWh) [1]	*25.96*	*29.82*	*27.46*	*26.98*	*28.26*	*25.31*	*27.28*	*-0.2*
Renew./Total Elec.(%) [1]	*80.5*	*84.4*	*72.7*	*71.4*	*71.6*	*63.4*	*69.0*	*-2.1*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**4880**	**5672**	**5730**	**5991**	**5906**	**5971**	**..**	**1.9**
Hydro	4619	5259	5159	5390	5193	5260	..	1.2
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	261	275	338	363	473	472	..	5.5
Solar Photovoltaic	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	36	36	36	36	..	-
Industrial Waste	-	-	-	99	99	99	..	-
Municipal Solid Waste	-	-	-	-	-	-	-	-
Solid Biomass	-	-	80	80	82	81	..	-
Gas from Biomass	-	-	-	23	23	23	..	-
Comb. Renewables Non-Specified	-	138	117	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

New Zealand

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**25960**	**29815**	**27455**	**26975**	**28261**	**25310**	**27281**	**-0.2**
Hydro	23340	27259	24407	23537	24631	21455	24214	-0.8
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	2210	2008	2471	2806	2921	3257	2495	3.6
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	1	22	39	120	137	151	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	330	336	409	471	478	355	327	0.7
Gas from Biomass	80	211	146	122	111	106	94	2.6
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***25630***	***29367***	***26919***	***26403***	***27708***	***24866***	***..***	***-0.3***
Hydro	23340	27259	24407	23537	24631	21455	..	-0.8
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	2210	1954	2414	2750	2880	3203	..	3.4
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	1	22	39	120	137	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	80	153	76	77	77	71	..	-1.1
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***330***	***448***	***536***	***572***	***553***	***444***	***..***	***2.7***
Geothermal	-	54	57	56	41	54	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	330	336	409	471	478	355	..	0.7
Gas from Biomass	-	58	70	45	34	35	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

New Zealand

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	96947	74161	79135	88326	90422	97931	85782 e	0.1
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-5987	-5987	-5987	-6000	-6000	-6000	-6000	x
Transformation Sector	79560	54644	59988	68016	70596	78816	60282 e	-0.1
Final Energy Consumption	11400	13530	13160	14310	13826	13115	19500 e	1.3
Solar Thermal								
Indigenous Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Industrial Waste								
Production	3270 e	4040 e	11930 e	14140	15075	14501	15080	14.5
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	3270	4040	11930	14140	15075	14501	..	14.5
Municipal Solid Waste - Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	24239 e	24708 e	27729 e	35200	35073	33512	35590	3.0
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-382	-	-	-	x
Transformation Sector	3161	3161	5889	5918	5910	4387	..	3.0
Final Energy Consumption	21078 e	21547 e	21840 e	28900	29163	29125	..	3.0
Gas from Biomass								
Production	947	1890	2124	1530	1257	1257	1300	2.6
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	720	39	-40	-	-	-	x
Transformation Sector	905	2569 e	2101 e	1350	1107	1077	..	1.6
Final Energy Consumption	42	41	62	140	150	180	..	14.1
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Norway

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	21.49	23.85	25.53	26.84	25.79	26.61	27.71	2.0
of which: Renewables (Mtoe) [1]	*11.45*	*11.57*	*11.20*	*11.95*	*13.30*	*11.83 e*	*12.32*	*0.3*
Renewables/TPES(%)	*50.1*	*47.4*	*44.4*	*44.3*	*48.5*	*45.0*	*43.2*	*-1.0*
GDP (1995 bil. US$)	123.12	147.98	168.14	171.73	175.85	178.39	181.90	3.4
TPES/GDP[2]	0.17	0.16	0.15	0.16	0.15	0.15	0.15	-1.4
TPES/GDP (1973 = 100)	84	78	73	75	71	72	73	-1.4
Population (millions)	4.24	4.36	4.43	4.46	4.49	4.51	4.54 e	0.6
TPES/population[3]	5.07	5.47	5.76	6.02	5.74	5.90	6.11 e	1.4
Total Electricity Generation (TWh)[4]	121.6	122.1	116.1	122.3	139.6	121.3	130.1	-0.0
of which: Renewables (TWh) [1]	*121.39*	*121.67*	*115.70*	*121.78*	*139.23*	*120.74 e*	*126.71*	*-0.0*
Renew./Total Elec.(%) [1]	*99.8*	*99.7*	*99.6*	*99.6*	*99.7*	*99.6*	*97.4*	*-0.0*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**26951**	**28183**	**27780**	**28364**	**28286**	**28288**	**..**	**0.4**
Hydro	26884	28052	27645	28203	28126	28126	..	0.4
of which: Pumped Storage	1067	673	663	663	1360	1360	..	2.2
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	5	5	6	6	6	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	3	4	14	13	13	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	30	35	35	..	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	67	123	126	111	106	108	..	4.4
Solar Collectors Surface (1000 m^2)	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Norway

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**121624**	**122622**	**116587**	**122214**	**142582**	**124093 e**	**130064**	**0.2**
Hydro	121382	122299	116280	121887	142265	123767 e	129728	0.2
of which: Pumped Storage	237	956	886	433	3350	3350 e	3350	27.2
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	10	11	25	31	29	39	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	58	48	52	59	60	58	58	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	184	265	244	243	226	239	239	2.4
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***121566***	***122574***	***116535***	***122155***	***142522***	***124035 e***	***..***	***0.2***
Hydro	121382	122299	116280	121887	142265	123767 e	..	0.2
of which: Pumped Storage	237	956	886	433	3350	3350 e	..	27.2
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	10	11	25	31	29	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	184	265	244	243	226	239	..	2.4
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***58***	***48***	***52***	***59***	***60***	***58***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	58	48	52	59	60	58	..	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Norway

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**3700 e**	**4201**	**4646**	**4767**	**4697**	**5253**	**5569**	**3.2**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	150	513	412	467	546	577	-
Municipal Solid Waste Renew.	3596	3914	3865	4010	3879	3918	4138	0.8
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	73 e	58	116	151	160	511	540	19.4
Gas from Biomass	-	10	9	19	12	73	77	-
Waste Heat and Heat Pumps	31	69	143	175	179	205	237	18.8
of which:								
CHP Plants	***1421***	***1876***	***1765***	***1842***	***1777***	***1709***	***..***	***1.7***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	1421	1876	1765	1842	1777	1709	..	1.7
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***2279 e***	***2325***	***2881***	***2925***	***2920***	***3544***	***..***	***4.1***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	150	513	412	467	546	..	-
Municipal Solid Waste Renew.	2175	2038	2100	2168	2102	2209	..	0.1
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	73 e	58	116	151	160	511	..	19.4
Gas from Biomass	-	10	9	19	12	73	..	-
Waste Heat and Heat Pumps	31	69	143	175	179	205	..	18.8

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Norway

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solar Thermal								
Indigenous Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Industrial Waste								
Production	-	150	513	412	467	546	546	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	150	513	412	467	546	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Renewables								
Production	4515	4803	4844	5781	5176	5010	5837	1.0
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	4515	4803	4844	5042	4978	4902	..	0.8
Final Energy Consumption	-	-	-	739	198	108	..	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	38669	42043	47197	55805	50008	55073	52891	3.3
Net Imports [1]	-	90	246	434	207	545	778	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	1072 e	1442	1508	1497	1459	2056	..	6.1
Final Energy Consumption	37597	40691	45935	54742	48756	53562	..	3.3
Gas from Biomass								
Production	-	663	1049	1078	1078	1045	1045	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	12	10	22	14	84	..	-
Final Energy Consumption	-	651	1039	1056	1064	961	..	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Poland

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	99.85	99.87	97.45	93.55	90.05	90.57	87.51	-0.9
of which: Renewables (Mtoe) [1]	*1.58*	*3.92*	*3.92*	*3.75*	*3.80*	*4.08*	*4.06*	*9.0*
Renewables/TPES(%)	*1.6*	*3.9*	*4.0*	*4.0*	*4.2*	*4.5*	*4.6*	*9.9*
GDP (1995 bil. US$)	114.10	127.05	150.88	157.00	163.32	164.91	166.80	3.4
TPES/GDP[2]	0.88	0.79	0.65	0.60	0.55	0.55	0.52	-4.1
TPES/GDP (1973 = 100)	93	84	69	64	59	59	56	-4.1
Population (millions)	38.12	38.59	38.67	38.65	38.65	38.64	38.64 e	0.1
TPES/population[3]	2.62	2.59	2.52	2.42	2.33	2.34	2.27 e	-1.0
Total Electricity Generation (TWh)[4]	134.4	137.0	140.8	140.0	143.2	143.7	142.2	0.6
of which: Renewables (TWh) [1]	*1.47*	*1.96*	*2.53*	*2.35*	*2.33*	*2.78*	*2.72*	*6.0*
Renew./Total Elec.(%) [1]	*1.1*	*1.4*	*1.8*	*1.7*	*1.6*	*1.9*	*1.9*	*5.3*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**1977**	**2047**	**2181**	**2191**	**2199**	**2268**	**..**	**1.3**
Hydro	1977	2047	2174	2179	2183	2233	..	1.1
of which: Pumped Storage	1205	1366	1366	1366	1366	1366	..	1.1
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	2	3	4	19	..	-
Industrial Waste	-	-	-	2	3	4	..	-
Municipal Solid Waste	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	5	7	9	12	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Poland

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**3570**	**4213**	**4924**	**4789**	**4673**	**5000**	**4908**	**3.1**
Hydro	3313	3851	4327	4282	4116	4219	3898	2.2
of which: Pumped Storage	1896	1964	2018	2127	2010	1895	1873	-0.0
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	1	4	4	5	14	60	-
Industrial Waste	202	294	374	311	331	323	320	4.4
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	55	54	206	169	190	402	570	19.8
Gas from Biomass	-	13	13	23	31	42	60	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***3313***	***3865***	***4344***	***4309***	***4152***	***4275***	***..***	***2.3***
Hydro	3313	3851	4327	4282	4116	4219	..	2.2
of which: Pumped Storage	1896	1964	2018	2127	2010	1895	..	-0.0
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	1	4	4	5	14	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	13	13	23	31	42	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***257***	***348***	***580***	***480***	***521***	***725***	***..***	***9.9***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	202	294	374	311	331	323	..	4.4
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	55	54	206	169	190	402	..	19.8
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Poland

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**13926**	**2079**	**2949**	**2633**	**2627**	**2740**	**2800**	**-13.7**
Geothermal	-	-	-	-	-	-	100	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	2958	1326	1052	737	788	924	800	-10.0
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	10958	747	1870	1857	1802	1792	1870	-15.2
Gas from Biomass	10	6	27	39	37	24	30	8.3
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
of which:								
CHP Plants	***10986***	***1628***	***2278***	***1875***	***2101***	***2114***	***..***	***-13.9***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	2895	1194	811	463	754	899	..	-10.1
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	8091	434	1467	1412	1347	1215	..	-15.8
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***2940***	***451***	***671***	***758***	***526***	***626***	***..***	***-13.1***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	63	132	241	274	34	25	..	-8.1
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	2867	313	403	445	455	577	..	-13.6
Gas from Biomass	10	6	27	39	37	24	..	8.3
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Poland

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	-	-	-	-	124	120	463	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	200	-
Final Energy Consumption	-	-	-	-	124	120	263	-
Solar Thermal								
Indigenous Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Industrial Waste								
Production	32311	35109	17526	17272	18766	19632	19632	-4.4
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-5222	-2690	-589	-247	-258	-283	-	x
Transformation Sector	5265	3878	3817	3090	3279	3375	..	-4.0
Final Energy Consumption	21824	28541	13120	13935	15229	15974	..	-2.8
Municipal Solid Waste - Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	12	64	22	19	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-1	-	x
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	12	64	21	..	-
Solid Biomass								
Production	60643	156943	153351	148470	150485	160406	160406	9.2
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-6	-52	1405	-185	-298	-39	-	x
Transformation Sector	14571	1322	3673	3398	3461	4886	..	-9.5
Final Energy Consumption	46066	155569	151083	144887	146726	155481	..	11.7
Gas from Biomass								
Production	393	551	881	1054	1211	1477	1243	12.8
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-1	-23	-22	-27	-12	-	x
Transformation Sector	14	125	204	349	443	563	..	39.9
Final Energy Consumption	379	425	654	683	741	902	..	8.2
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	9	9	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	9	..	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Portugal

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	17.16	19.99	22.63	24.35	24.61	24.73	25.40	3.4
of which: Renewables (Mtoe) [1]	*2.69 e*	*2.60 e*	*3.03 e*	*2.66 e*	*3.13 e*	*3.40 e*	*2.88 e*	*2.1*
Renewables/TPES(%)	*15.7*	*13.1*	*13.4*	*10.9*	*12.8*	*13.7*	*11.4*	*-1.2*
GDP (1995 bil. US$)	98.55	107.24	120.68	124.85	129.27	131.40	131.90	2.7
TPES/GDP[2]	0.17	0.19	0.19	0.20	0.19	0.19	0.19	0.7
TPES/GDP (1973 = 100)	139	149	150	156	152	150	154	0.7
Population (millions)	9.90	9.92	9.97	9.99	10.01	10.06	10.07 e	0.1
TPES/population[3]	1.73	2.02	2.27	2.44	2.46	2.46	2.52 e	3.2
Total Electricity Generation (TWh)[4]	28.4	33.2	38.9	42.9	43.4	46.2	45.6	4.5
of which: Renewables (TWh) [1]	*9.85*	*9.39*	*14.15*	*8.73*	*13.13*	*16.00*	*9.83*	*4.5*
Renew./Total Elec.(%) [1]	*34.7*	*28.3*	*36.4*	*20.3*	*30.3*	*34.6*	*21.5*	*-0.0*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**3532**	**4630**	**4770**	**4893**	**4908**	**4979**	**..**	**3.2**
Hydro	3344	4409	4501	4527	4526	4560	..	2.9
of which: Pumped Storage	561	561	561	597	597	597	..	0.6
Geothermal	1	8	10	10	14	14	..	27.1
Solar Photovoltaic	-	-	1	1	1	1	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	1	8	48	57	83	125	..	55.1
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	-	-	-	64	64	64	..	-
Solid Biomass	180	203	207	233	219	214	..	1.6
Gas from Biomass	-	-	1	1	1	1	..	-
Comb. Renewables Non-Specified	6	2	2	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	150	200	223	230	238	246	..	4.6

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Portugal

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**9998**	**9501**	**14224**	**9073**	**13517**	**16337**	**10285**	**4.6**
Hydro	9303	8454	13054	7631	11715	14375	8225	4.0
of which: Pumped Storage	146	111	71	345	392	341	457	8.0
Geothermal	4	42	58	80	80	105	96	34.6
Solar Photovoltaics	1	1	1	1	1	1	1	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	1	16	89	123	168	256	343	65.6
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	157	514	511	520	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	689	987	1021	1080	1037	1086	1098	4.2
Gas from Biomass	-	1	1	1	2	3	2	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***9309***	***8513***	***13202***	***7995***	***12485***	***15269***	***..***	***4.6***
Hydro	9303	8454	13054	7631	11715	14375	..	4.0
of which: Pumped Storage	146	111	71	345	392	341	..	8.0
Geothermal	4	42	58	80	80	105	..	34.6
Solar Photovoltaics	1	1	1	1	1	1	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	1	16	89	123	168	256	..	65.6
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	157	514	511	..	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	3	7	21	..	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***689***	***988***	***1022***	***1078***	***1032***	***1068***	***..***	***4.1***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	689	987	1021	1077	1030	1065	..	4.0
Gas from Biomass	-	1	1	1	2	3	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Portugal

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	134	1577	2129	2921	2921	3821	3498	35.6
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	134	1535	2087	2879	2879	3779	3456	35.5
Final Energy Consumption	-	42	42	42	42	42	42	-
Solar Thermal								
Indigenous Production	458	617	712	749	770	796	822	5.2
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	458	617	712	749	770	796	822	5.2
Industrial Waste								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Renewables								
Production	-	-	-	2384	7295	7308	7466	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	2384	7295	7308	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	79073 e	76534 e	77120 e	78489 e	78615 e	78780 e	79558 e	-0.0
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	6253	6155	6501	7719	7551	7419	..	1.6
Final Energy Consumption	72820	70379	70619	70770	71064 e	71361 e	..	-0.2
Gas from Biomass								
Production	-	21 e	12	38	48	37	30	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	21 e	12	38	48	37	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Slovak Republic

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	21.43	17.74	17.34	17.36	17.47	18.72	18.93	-1.2
of which: Renewables (Mtoe) [1]	*0.33*	*0.50*	*0.44*	*0.46*	*0.49*	*0.73*	*0.74*	*7.5*
Renewables/TPES(%)	*1.6*	*2.8*	*2.6*	*2.6*	*2.8*	*3.8*	*3.9*	*8.5*
GDP (1995 bil. US$)	20.21	19.15	22.26	22.55	23.05	23.81	24.80	1.5
TPES/GDP[2]	1.06	0.93	0.78	0.77	0.76	0.79	0.76	-2.7
TPES/GDP (1973 = 100)	101	88	74	73	72	75	72	-2.7
Population (millions)	5.30	5.36	5.39	5.40	5.40	5.38	5.36 e	0.1
TPES/population[3]	4.04	3.31	3.22	3.22	3.23	3.48	3.53 e	-1.4
Total Electricity Generation (TWh)[4]	23.4	26.0	25.2	27.4	30.3	31.9	32.1	2.8
of which: Renewables (TWh) [1]	*1.88*	*4.88*	*4.27*	*4.47*	*4.62*	*5.08*	*5.40 e*	*9.5*
Renew./Total Elec.(%) [1]	*8.0*	*18.8*	*17.0*	*16.3*	*15.2*	*15.9*	*16.8*	*6.4*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**-**	**2260**	**2417**	**2419**	**2420**	**2869**	**..**	**-**
Hydro	-	2260	2417	2419	2420	2863	..	-
of which: Pumped Storage	-	735	735 e	735 e	735 e	916	..	-
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	1	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	5	..	-
Solar Collectors Surface (1000 m^2)	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Slovak Republic

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**2515**	**5226**	**4567**	**4776**	**4975**	**5277**	**5622 e**	**7.0**
Hydro	2515	5226	4567	4776	4975	5117	5476	6.7
of which: Pumped Storage	635	346	300	302	360	190	215	-10.4
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	6	5 e	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	153	140 e	-
Gas from Biomass	-	-	-	-	-	1	1 e	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***2515***	***5226***	***4567***	***4776***	***4975***	***5118***	***..***	***6.7***
Hydro	2515	5226	4567	4776	4975	5117	..	6.7
of which: Pumped Storage	635	346	300	302	360	190	..	-10.4
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	1	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***-***	***-***	***-***	***-***	***-***	***159***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	6	..	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	153	..	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Slovak Republic

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**-**	**-**	**-**	**-**	**-**	**2093**	**2359 e**	**-**
Geothermal	-	-	-	-	-	162	183	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	125	141 e	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	366	413 e	-
Solid Biomass	-	-	-	-	-	382	430 e	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	1058	1192	-
of which:								
CHP Plants	**-**	**-**	**-**	**-**	**-**	***296***	**..**	**-**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	81	..	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	215	..	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	**-**	**-**	**-**	**-**	**-**	***1797***	**..**	**-**
Geothermal	-	-	-	-	-	162	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	44	..	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	366	..	-
Solid Biomass	-	-	-	-	-	167	..	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	1058	..	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Slovak Republic

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	-	-	-	-	-	366	414	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	324	366	-
Final Energy Consumption	-	-	-	-	-	42	48	-
Solar Thermal								
Indigenous Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Industrial Waste								
Production	-	-	-	-	-	1410	1166	-
Net Imports [1]	-	-	-	-	-	-7	-5	-
Miscellaneous to Balance [2]	-	-	-	-	-	-207	-10	x
Transformation Sector	-	-	-	-	-	231	..	-
Final Energy Consumption	-	-	-	-	-	965	..	-
Municipal Solid Waste - Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	1028	912	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	589	..	-
Final Energy Consumption	-	-	-	-	-	439	..	-
Solid Biomass								
Production	6965	3196	3086	3050	4169	11185	10482	4.4
Net Imports [1]	-	-	-	-	-	-31	-30	-
Miscellaneous to Balance [2]	-	53	-67	-72	-346	17	-25	x
Transformation Sector	-	3093	2787	2873	3797	1340	..	-
Final Energy Consumption	6965	156	232	105	26	9831	..	3.2
Gas from Biomass								
Production	-	-	-	-	-	221	234	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	13	..	-
Final Energy Consumption	-	-	-	-	-	208	..	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	38	29	-
Net Imports [1]	-	-	-	-	-	-2	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-36	-6	x
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Spain

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	91.21	103.30	113.09	118.43	124.31	127.38	131.30	3.1
of which: Renewables (Mtoe) [1]	*6.23 e*	*5.60 e*	*6.88 e*	*6.13 e*	*7.03 e*	*8.25 e*	*7.18*	*2.6*
Renewables/TPES(%)	*6.8*	*5.4*	*6.1*	*5.2*	*5.7*	*6.5*	*5.5*	*-0.5*
GDP (1995 bil. US$)	542.10	584.19	649.57	676.84	705.15	724.01	737.20	2.7
TPES/GDP[2]	0.17	0.18	0.17	0.17	0.18	0.18	0.18	0.4
TPES/GDP (1973 = 100)	111	117	115	116	117	116	118	0.4
Population (millions)	38.86	39.22	39.45	39.63	39.93	40.27	40.49 e	0.3
TPES/population[3]	2.35	2.63	2.87	2.99	3.11	3.16	3.24 e	2.8
Total Electricity Generation (TWh)[4]	151.2	165.6	193.4	205.9	222.2	234.7	242.2	4.1
of which: Renewables (TWh) [1]	*26.06 e*	*24.60 e*	*37.28 e*	*27.81*	*36.14*	*51.31*	*35.70 e*	*6.4*
Renew./Total Elec.(%) [1]	*17.2*	*14.9*	*19.3*	*13.5*	*16.3*	*21.9*	*14.7*	*2.2*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**16380**	**17101**	**17695**	**18631**	**20540**	**21589**	**..**	**2.5**
Hydro	16231	16784	16632	16897	17960	18017	..	1.0
of which: Pumped Storage	4911	5095	5095	5095	5288	5288	..	0.7
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	7	7	9	12	16	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	7	115	834	1459	2274	3244	..	74.7
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	27	69	94	94	94	94	..	12.0
Solid Biomass	115	126	128	138	150	167	..	3.4
Gas from Biomass	-	-	-	34	50	51	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	281	319	341	362	403	455	..	4.5

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Spain

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**26876 e**	**26178 e**	**39339 e**	**30660**	**38650**	**54145**	**39049 e**	**6.6**
Hydro	26184	24569	35806	25437	31807	43858	26388	4.8
of which: Pumped Storage	770	1457	1801	2574	2237	2837	3349	12.6
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	6	15	15	17	18	24	24	13.4
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	14	270	1352	2744	4727	6969	8704	75.9
Industrial Waste	50 e	118	263	279	274	..	..	-
Municipal Solid Waste Renew.	160 e	391	746	918	667	633	566 e	13.3
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	462 e	668	996	1074	841	2331	2949 e	15.9
Gas from Biomass	-	147 e	161 e	191	316	330	418 e	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***26271 e***	***25203 e***	***38340 e***	***29490***	***37971***	***52336***	***..***	***6.5***
Hydro	26184	24569	35806	25437	31807	43858	..	4.8
of which: Pumped Storage	770	1457	1801	2574	2237	2837	..	12.6
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	6	15	15	17	18	24	..	13.4
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	14	270	1352	2744	4727	6969	..	75.9
Industrial Waste	50 e	118	263	279	274	..	-	-
Municipal Solid Waste Renew.	-	-	507	570	667	633	..	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	17 e	96	268	299	176	538	..	36.9
Gas from Biomass	-	135 e	129 e	144	302	314	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***605 e***	***975***	***999***	***1170***	***679***	***1809***	***..***	***10.5***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	160 e	391	239	348	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	445 e	572	728	775	665	1793	..	13.5
Gas from Biomass	-	12	32	47	14	16	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Spain

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**84 e**	**160**	**470**	**576**	**..**	**..**	**..**	**-**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	84 e	160	400	490	..	..	..	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	70	86	..	..	..	..
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
of which:								
CHP Plants	***84 e***	***160***	***470***	***576***	***..***	***..***	***-***	***-***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	84 e	160	400	490	..	..	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	70	86	..	..	-	..
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Spain

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	-	142	149	202	321	321	321	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	142	149	202	321	321	321	-
Solar Thermal								
Indigenous Production	-	1032	1057	1171	1303	1470	1663	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	1032	1057	1171	1303	1470	1663	-
Industrial Waste								
Production	853 e	5041 e	6570 e	6538 e	3134 e	..	..	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	353 e	1771 e	3170	3138	3134 e	..	-	-
Final Energy Consumption	500 e	3270 e	3400 e	3400 e	..	..	-	-
Municipal Solid Waste - Renewables								
Production	3393	7846	7809 e	8325 e	9605	9116	9116	9.4
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-68	-98	-110	-	-	-	-	x
Transformation Sector	3325	7748	7699 e	8325	9605	9116	..	9.6
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	165624 e	138183 e	148115	150957	151702 e	153703 e	163008	-0.7
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-126	-126	-	x
Transformation Sector	2345 e	3912 e	6742	8872	11882 e	13354 e	..	17.1
Final Energy Consumption	163279	134271	141373	142085	139694	140223	..	-1.4
Gas from Biomass								
Production	425	3155	3414	3765	5492	5624	7041	26.5
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	2265	2462 e	2845 e	4442	4573	..	-
Final Energy Consumption	425	890	952 e	920 e	1050	1051	..	8.6
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	80	80	187	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	80	80	..	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Sweden

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	46.67	50.00	50.73	50.42	47.50	51.05	50.31	0.8
of which: Renewables (Mtoe) [1]	*11.74*	*13.15*	*14.32 e*	*14.20 e*	*15.28*	*15.01*	*14.30*	*2.3*
Renewables/TPES(%)	*25.1*	*26.2*	*27.7*	*27.8*	*32.4*	*29.1*	*28.7*	*1.3*
GDP (1995 bil. US$)	240.29	248.42	267.16	279.39	291.56	293.95	300.40	1.8
TPES/GDP[2]	0.19	0.20	0.19	0.18	0.16	0.17	0.17	-1.0
TPES/GDP (1973 = 100)	85	88	83	79	71	76	73	-1.0
Population (millions)	8.56	8.83	8.85	8.86	8.87	8.90	8.93 e	0.4
TPES/population[3]	5.45	5.66	5.73	5.69	5.35	5.74	5.64 e	0.5
Total Electricity Generation (TWh)[4]	146.0	148.3	159.0	155.1	145.6	161.7	147.5	0.9
of which: Renewables (TWh) [1]	*74.37 e*	*70.63*	*78.20*	*74.82*	*83.28*	*82.97*	*72.02*	*1.0*
Renew./Total Elec.(%) [1]	*51.0*	*47.6*	*49.2*	*48.2*	*57.2*	*51.3*	*48.8*	*0.1*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**17569**	**17497**	**17840**	**18235**	**18322**	**18732**	**..**	**0.6**
Hydro	16331	16152	16260	16451	16525	16563	..	0.1
of which: Pumped Storage	427	427	91	19	19	19	..	-24.6
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	2	2	3	3	3	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	8	67	174	196	209	293	..	38.7
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	30	76	73	77	77	76	..	8.8
Solid Biomass	1200	1200	1331	1490	1490	1778	..	3.6
Gas from Biomass	-	-	-	18	18	19	..	-
Comb. Renewables Non-Specified	..	..	..	-	-	-	-	..
Solar Collectors Surface (1000 m^2)	90	135	181	185	207	229	..	8.9

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Sweden

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**74900 e**	**70683**	**78404**	**74953**	**83419**	**83196**	**72191**	**1.0**
Hydro	73033	68160	75040	71713	78619	79192	66680	0.7
of which: Pumped Storage	530	58	40	22	35	47	25	-19.8
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	1	1	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	6	99	317	358	457	481	560	49.0
Industrial Waste	-	-	166	107	101	176	146	-
Municipal Solid Waste Renew.	103 e	116	166	130	239	268	355	9.1
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	1758 e	2278	2694	2636	3971	3053	4429	5.1
Gas from Biomass	-	30	21	9	32	25	20	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***73039***	***68259***	***75357***	***72071***	***79076***	***79674***	***..***	***0.8***
Hydro	73033	68160	75040	71713	78619	79192	..	0.7
of which: Pumped Storage	530	58	40	22	35	47	..	-19.8
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	-	-	1	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	6	99	317	358	457	481	..	49.0
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***1861 e***	***2424***	***3047***	***2882***	***4343***	***3522***	***..***	***6.0***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	166	107	101	176	..	-
Municipal Solid Waste Renew.	103 e	116	166	130	239	268	..	9.1
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	1758 e	2278	2694	2636	3971	3053	..	5.1
Gas from Biomass	-	30	21	9	32	25	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Sweden

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

								Average annual percent change
	1990	1995	1998	1999	2000	2001	2002E	90-01
Total Heat	**24434 e**	**81708**	**90219**	**103478**	**105506**	**111030**	**116826**	**14.8**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	608	507	508	381	378	-
Municipal Solid Waste Renew.	12448 e	14338	14277	15359	16659	14699	19095	1.5
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	11986 e	53310	59700	71616	72330	83922	81085	19.4
Gas from Biomass	-	770	766	1062	1042	1125	1115	-
Waste Heat and Heat Pumps	..	13290	14868	14934	14967	10903	15153	..
of which:								
CHP Plants	***8518 e***	***43373***	***49980***	***58592***	***61108***	***65181***	***..***	***20.3***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	608	476	489	381	..	-
Municipal Solid Waste Renew.	4673 e	9863	10289	10674	10971	9749	..	6.9
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	3845 e	30649	35781	43904	45737	50368	..	26.3
Gas from Biomass	-	381	414	503	589	491	..	-
Waste Heat and Heat Pumps	..	2480	2888	3035	3322	4192	..	..
Heat Only Plants	***15916 e***	***38335***	***40239***	***44886***	***44398***	***45850***	***..***	***10.1***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	31	19	-	-	-
Municipal Solid Waste Renew.	7775 e	4475	3988	4685	5688	4950	..	-4.0
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	8141 e	22661	23919	27712	26593	33554	..	13.7
Gas from Biomass	-	389	352	559	453	634	..	-
Waste Heat and Heat Pumps	..	10810	11980	11899	11645	6712	..	..

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Sweden

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solar Thermal								
Indigenous Production	133	200	200	200 e	223	247	165	5.8
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	133	200	200 e	200 e	223	247	165	5.8
Industrial Waste								
Production	209	84	1624 e	1058	1061	1136	1200	16.6
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	1624 e	1058	1061	1136	..	-
Final Energy Consumption	209	84	-	-	-	-	-	-
Municipal Solid Waste - Renewables								
Production	14640	16536	16406	17621	20869	17581	22447	1.7
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	14640	16536	16406	17621	20869	17581	..	1.7
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	215730	284018	307461 e	313098	329971	319429	329339	3.6
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	21839	71786 e	81416 e	94138	101281	110286	..	15.9
Final Energy Consumption	193891	212232	226045	218960	228690	209143	..	0.7
Gas from Biomass								
Production	-	4140	4331	4279	4142	4701	4820	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	4140	4331	4279	4142	4701	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Switzerland

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	25.11	25.27	26.69	26.69	26.48	28.02	27.06	1.0
of which: Renewables (Mtoe) [1]	*3.30 e*	*4.03*	*3.93*	*4.46*	*4.23*	*4.68 e*	*4.12*	*3.2*
Renewables/TPES(%)	*13.1*	*15.6*	*14.5*	*16.2*	*15.6*	*16.2*	*15.0*	*2.0*
GDP (1995 bil. US$)	308.43	307.26	320.93	325.84	336.14	339.10	338.50	0.9
TPES/GDP[2]	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.1
TPES/GDP (1973 = 100)	102	103	104	102	98	103	100	0.1
Population (millions)	6.71	7.04	7.11	7.14	7.18	7.23	7.26 e	0.7
TPES/population[3]	3.74	3.59	3.75	3.74	3.69	3.87	3.73 e	0.3
Total Electricity Generation (TWh)[4]	54.6	62.3	61.7	68.5	66.0	70.5	65.3	2.4
of which: Renewables (TWh) [1]	*30.16*	*35.76*	*34.15*	*40.85*	*37.73*	*42.16*	*36.19 e*	*3.1*
Renew./Total Elec.(%) [1]	*55.2*	*57.4*	*55.3*	*59.6*	*57.2*	*59.8*	*55.4*	*0.7*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**11823**	**12125**	**12249**	**12265**	**13518**	**13522 e**	**..**	**1.2**
Hydro	11670	11890	11980	11980	13229	13229 e	..	1.1
of which: Pumped Storage	1455	1455	1629	1625	1625	1625	..	1.0
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	2	8	12	13	15	17	..	21.5
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	3	3	3	5	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	148	218	244	259	262	262	..	5.3
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	3	9	10	10	9	9	..	10.5
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	603	1000	1197	1253	1303	1351	..	7.6

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Switzerland

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**31620**	**36998**	**35825**	**42548**	**39846**	**44193**	**38719 e**	**3.1**
Hydro	30982	35954	34637	41022	38230	42673	36878	3.0
of which: Pumped Storage	1187	785	1166	1018	1396	1365	1717	1.3
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	1	5	8	9	11	12	14	25.3
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	3	3	3	4	5	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	276	453	513	678	717	666	809 e	8.3
Municipal Solid Waste Non-Renew.	275	453	512	677	717	666	808 e	8.4
Solid Biomass	6	9	13	13	14	14	13 e	8.0
Gas from Biomass	80	124	139	146	154	158	192 e	6.4
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***30983***	***35959***	***34648***	***41034***	***38244***	***42689***	***..***	***3.0***
Hydro	30982	35954	34637	41022	38230	42673	..	3.0
of which: Pumped Storage	1187	785	1166	1018	1396	1365	..	1.3
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	1	5	8	9	11	12	..	25.3
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	3	3	3	4	..	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***637***	***1039***	***1177***	***1514***	***1602***	***1504***	***..***	***8.1***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	276	453	513	678	717	666	..	8.3
Municipal Solid Waste Non-Renew.	275	453	512	677	717	666	..	8.4
Solid Biomass	6	9	13	13	14	14	..	8.0
Gas from Biomass	80	124	139	146	154	158	..	6.4
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Switzerland

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**9194 e**	**11916 e**	**13445**	**13379**	**12683**	**13588**	**13711 e**	**3.6**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	4229 e	5509 e	6236	6191	5825	6274	6331 e	3.7
Municipal Solid Waste Non-Renev	4229 e	5509 e	6236	6192	5824	6274	6331 e	3.7
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	736	898	973	996	1034	1040	1049 e	3.2
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
of which:								
CHP Plants	***9194 e***	***11916 e***	***13445***	***13379***	***12683***	***13588***	***..***	***3.6***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	4229 e	5509 e	6236	6191	5825	6274	..	3.7
Municipal Solid Waste Non-Renev	4229 e	5509 e	6236	6192	5824	6274	..	3.7
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	736	898	973	996	1034	1040	..	3.2
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Switzerland

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	2553	3251	3692	3828	3808	4499	4574	5.3
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	2553	3251	3692	3828	3808	4499	4574	5.3
Solar Thermal								
Indigenous Production	316	646	853	921	980	1038	1092	11.4
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	316	646	853	921	980	1038	1092	11.4
Industrial Waste								
Production	6710	8450	10320	10000	11350	11350	11350	4.9
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	6710	8450	10320	10000	11350	11350	..	4.9
Municipal Solid Waste - Renewables								
Production	8245	13108	13670	14815	15900	16846	16700	6.7
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	8245	13108	13670	14815	15900	16846	..	6.7
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	8245	13107	13670	14815	15900	16846	16700	6.7
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	8245	13107	13670	14815	15900	16846	..	6.7
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	17697 e	22443	23234	20560	21023	22293 e	21041	2.1
Net Imports [1]	556 e	290	190	90	-	40	-	-21.3
Miscellaneous to Balance [2]	-	-1542	-	876	-	-	-	x
Transformation Sector	-	1349 e	869	936 e	983	983 e	..	-
Final Energy Consumption	18253 e	19842	22555	20590	20040	21350	..	1.4
Gas from Biomass								
Production	1667 e	2181	2397	2504	2629	2641	2462	4.3
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	1667 e	2181	2397	2504 e	2629	2641	..	4.3
Final Energy Consumption	-	-	-	-	-	-	-	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

Turkey

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	53.00	61.86	72.23	70.98	77.49	72.46	74.55	2.9
of which: Renewables (Mtoe) [1]	*9.66*	*10.78*	*11.48 e*	*10.70 e*	*10.15 e*	*9.35 e*	*10.02 e*	*-0.3*
Renewables/TPES(%)	*18.2*	*17.4*	*16.0*	*15.1*	*13.2*	*13.0*	*13.5*	*-3.0*
GDP (1995 bil. US$)	144.57	169.32	200.85	191.39	205.47	190.29	197.10	2.5
TPES/GDP[2]	0.37	0.37	0.36	0.37	0.38	0.38	0.38	0.3
TPES/GDP (1973 = 100)	103	103	101	104	106	107	106	0.3
Population (millions)	56.20	61.65	64.79	65.82	67.46	68.61	69.20 e	1.8
TPES/population[3]	0.94	1.00	1.11	1.08	1.15	1.06	1.08 e	1.0
Total Electricity Generation (TWh)[4]	57.5	86.2	111.0	116.4	124.9	122.7	129.4	7.1
of which: Renewables (TWh) [1]	*23.23*	*35.85*	*42.57*	*34.93*	*31.15*	*24.30*	*33.97*	*0.4*
Renew./Total Elec.(%) [1]	*40.4*	*41.6*	*38.3*	*30.0*	*24.9*	*19.8*	*26.2*	*-6.3*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**6782**	**9895**	**10355**	**10659**	**11307**	**11805**	**..**	**5.2**
Hydro	6764	9863	10307	10537	11175	11673	..	5.1
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	18	18	18	18	18	18	..	-
Solar Photovoltaic	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	9	9	19	19	..	-
Industrial Waste	-	-	-	19	19	19	..	-
Municipal Solid Waste	-	-	-	1	-	-	-	-
Solid Biomass	-	-	-	72	72	72	..	-
Gas from Biomass	-	-	-	3	4	4	..	-
Comb. Renewables Non-Specified	-	14	21	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Turkey

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**23228**	**35849**	**42573**	**34983**	**31206**	**24341**	**34010**	**0.4**
Hydro	23148	35541	42229	34677	30877	24010	33684	0.3
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	80	86	85	81	76	90	104	1.1
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	5	21	33	62	48	-
Industrial Waste	-	-	5	55	54	46	44	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	222	241	133	145	109	103	-
Gas from Biomass	-	-	8	16	21	24	27	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***23228***	***35627***	***42319***	***34781***	***30986***	***24196***	***..***	***0.4***
Hydro	23148	35541	42229	34677	30877	24010	..	0.3
of which: Pumped Storage	-	-	-	-	-	-	-	-
Geothermal	80	86	85	81	76	90	..	1.1
Solar Photovoltaics	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	-	-	5	21	33	62	..	-
Industrial Waste	-	-	-	-	-	33	..	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	2	-	1	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***-***	***222***	***254***	***202***	***220***	***145***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	5	55	54	13	..	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	-	222	241	133	145	109	..	-
Gas from Biomass	-	-	8	14	21	23	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

Turkey

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	18137	21384	27446	28803	28623	29127	34302	4.4
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	2880	3096	3060	2916	2736	3240	3744	1.1
Final Energy Consumption	15257	18288	24386	25887	25887	25887	30558	4.9
Solar Thermal								
Indigenous Production	1172	5986	8791	9879	10967	12014	13311	23.6
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	1172	5986	8791	9879	10967	12014	13311	23.6
Industrial Waste								
Production	-	-	60 e	660 e	648 e	552 e	528 e	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	60 e	660 e	648 e	552 e	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	301722	295863	292320	284439	273848	263634	250072	-1.2
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	11625	3296	3307	3558	3642	..	-
Final Energy Consumption	301722	284238	289024	281132	270290	259992	..	-1.3
Gas from Biomass								
Production	-	-	82 e	168 e	216 e	247 e	278 e	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	82 e	168 e	216 e	247 e	..	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

United Kingdom

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	212.18	223.18	230.27	231.75	231.15	235.16	228.48	0.9
of which: Renewables (Mtoe) [1]	*1.03*	*1.84*	*2.12*	*2.28*	*2.44*	*2.54*	*2.76*	*8.6*
Renewables/TPES(%)	*0.5*	*0.8*	*0.9*	*1.0*	*1.1*	*1.1*	*1.2*	*7.4*
GDP (1995 bil. US$)	1040.25	1134.94	1240.05	1269.93	1309.07	1334.80	1354.90	2.3
TPES/GDP[2]	0.20	0.20	0.19	0.18	0.18	0.18	0.17	-1.3
TPES/GDP (1973 = 100)	69	67	63	62	60	60	57	-1.3
Population (millions)	57.29	57.96	58.35	58.54	58.66	58.79	59.03 e	0.2
TPES/population[3]	3.70	3.85	3.95	3.96	3.94	4.00	3.87 e	0.7
Total Electricity Generation (TWh)[4]	317.8	332.5	361.1	365.3	374.6	383.5	382.6	1.7
of which: Renewables (TWh) [1]	*5.81*	*6.87*	*8.65*	*9.62*	*9.92*	*9.61*	*11.55 e*	*4.7*
Renew./Total Elec.(%) [1]	*1.8*	*2.1*	*2.4*	*2.6*	*2.6*	*2.5*	*3.0*	*2.9*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**4028**	**4735**	**5152**	**5268**	**5472**	**5551**	**..**	**3.0**
Hydro	3897	4220	4263	4265	4273	4296	..	0.9
of which: Pumped Storage	2787	2788	2788	2788	2788	2788	..	0.0
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaic	-	-	1	1	2	3	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	10	200	331	357	412	427	..	40.7
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste	31	87	162	161	184	189	..	17.9
Solid Biomass	-	46	84	84	133	133	..	-
Gas from Biomass	90	182	311	400	468	503	..	16.9
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	205	254	283	298	312	396	..	6.2

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

United Kingdom

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**7876**	**8835**	**10856**	**13076**	**13149**	**12455**	**14759**	**4.3**
Hydro	7189	6390	6742	8238	7780	6412	7508	-1.0
of which: Pumped Storage	1982	1552	1624	2902	2694	2356	2652	1.6
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	1	1	2	2	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	9	391	877	850	946	965	1480	53.0
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	140	471	849	856	862	948	1077 e	19.0
Municipal Solid Waste Non-Renew.	83	412	583	558	532	488	555 e	17.5
Solid Biomass	-	199	234	460	473	770	875	-
Gas from Biomass	455	972	1571	2113	2555	2870	3262	18.2
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***7560***	***8425***	***10362***	***12601***	***12727***	***12003***	***..***	***4.3***
Hydro	7189	6390	6742	8238	7780	6412	..	-1.0
of which: Pumped Storage	1982	1552	1624	2902	2694	2356	..	1.6
Geothermal	-	-	-	-	-	-	-	-
Solar Photovoltaics	-	-	-	1	1	2	..	-
Solar Thermal	-	-	-	-	-	-	-	-
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	9	391	877	850	946	965	..	53.0
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	140	471	781	816	828	889	..	18.3
Municipal Solid Waste Non-Renew.	83	412	543	533	511	458	..	16.8
Solid Biomass	-	199	234	460	473	770	..	-
Gas from Biomass	139	562	1185	1703	2188	2507	..	30.1
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***316***	***410***	***494***	***475***	***422***	***452***	***..***	***3.3***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	68	40	34	59	..	-
Municipal Solid Waste Non-Renew.	-	-	40	25	21	30	..	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	316	410	386	410	367	363	..	1.3
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

United Kingdom

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**-**	**-**	**-**	**3151**	**3185**	**2200**	**2172**	**-**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	3151	3185	2200	2172	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
of which:								
CHP Plants	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	**-**	**-**	**-**	***3151***	***3185***	***2200***	**..**	**-**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	3151	3185	2200	..	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

United Kingdom

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	33	33	33	33	33	33	33	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	33	33	33	33	33	33	33	-
Solar Thermal								
Indigenous Production	428	428	394	419	467	561	590	2.5
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	428	428	394	419	467	561	590	2.5
Industrial Waste								
Production	676	1909	1631	1472	1472	1472	1549	7.3
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	676 e	1909 e	1631	1472	1472	1472	..	7.3
Municipal Solid Waste - Renewables								
Production	2933	5682	9975	10282	11078	12848	13518	14.4
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	2033	4931	9558	9711	10340	11963	..	17.5
Final Energy Consumption	900	751	417	571	738	885	..	-0.2
Municipal Solid Waste - Non-Renewables								
Production	1747	4966	6844	6704	6506	6627	6972	12.9
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	1211	4310	6558	6338	6072	6163	..	15.9
Final Energy Consumption	536	656	286	366	434	464	..	-1.3
Solid Biomass								
Production	12685	37090	35007	33746	35117	36912	38838	10.2
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	4685	5156	11141	15458	17225	..	-
Final Energy Consumption	12685	32405	29851	22605	19659	19687	..	4.1
Gas from Biomass								
Production	8222	14805	21980	28676	33913	37842	39814	14.9
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	5622	12017	19417	26113	31576	35467	..	18.2
Final Energy Consumption	2600	2788	2563	2563	2337	2375	..	-0.8
Liquid Biofuels (1000 tonnes)								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

United States

1. ENERGY SUPPLY, GDP, AND POPULATION

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
TPES (Mtoe)	1927.57	2088.52	2181.97	2247.79	2303.81	2281.41	2286.72	1.5
of which: Renewables (Mtoe) [1]	*100.46 e*	*108.15*	*111.12*	*113.33*	*105.92*	*99.12*	*100.51 e*	*-0.1*
Renewables/TPES(%)	*5.2*	*5.2*	*5.1*	*5.1*	*4.6*	*4.4*	*4.4*	*-1.6*
GDP (1995 bil. US$)	6520.50	7338.40	8285.90	8629.10	8955.10	8977.80	9186.00	2.9
TPES/GDP[2]	0.30	0.28	0.26	0.26	0.26	0.25	0.25	-1.4
TPES/GDP (1973 = 100)	68	66	61	60	59	59	57	-1.4
Population (millions)	249.98	263.07	270.56	273.00	275.42	285.91	287.47 e	1.2
TPES/population[3]	7.71	7.94	8.06	8.23	8.36	7.98	7.95 e	0.3
Total Electricity Generation (TWh)[4]	3181.5	3558.4	3804.5	3889.8	4025.7	3863.8	3947.7	1.8
of which: Renewables (TWh) [1]	*362.21 e*	*391.73*	*404.04 e*	*376.62*	*338.55*	*285.19*	*331.88 e*	*-2.1*
Renew./Total Elec.(%) [1]	*11.4*	*11.0*	*10.6*	*9.7*	*8.4*	*7.4*	*8.4*	*-3.9*

Source: IEA Country Submissions (2002), IEA/OECD *Energy Balances of OECD Countries* and OECD *Main Economic Indicators* .

(1) Renewables do not include industrial waste, non-renewable municipal solid waste and pumped storage production.
(2) In units of toe/1995 thousand US$.
(3) In units of toe/per capita.
(4) Electricity generation = gross production - amount of electricity produced in pumped storage plants.
(5) Electricity share generated from renewables over the total electricity production.

2. NET GENERATING CAPACITY OF RENEWABLE AND WASTE PRODUCTS (MW)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Capacity	**106104**	**115442 e**	**113904 e**	**115723**	**114883**	**116720**	**..**	**0.9**
Hydro	92360	100060	98560	99062	98881	98901	..	0.6
of which: Pumped Storage	-	21387	18898	18945	19522	19522	..	-
Geothermal	2669	2968	2917	3001	2793	2793	..	0.4
Solar Photovoltaic	-	67 e	100 e	156	176	213	..	-
Solar Thermal	339	333	360	410	382	382	..	1.1
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	1911	1731	1698	2251	2377	4062	..	7.1
Industrial Waste	-	-	-	739	638	638	..	-
Municipal Solid Waste	-	-	-	2579	2627	2628	..	-
Solid Biomass	-	-	-	6905	6129	6218	..	-
Gas from Biomass	-	-	-	620	880	885	..	-
Comb. Renewables Non-Specified	8825	10283	10269	-	-	-	-	-
Solar Collectors Surface (1000 m^2)	-	-	-	66813	63635	60129	..	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

United States

3. GROSS ELECTRICITY GENERATION FROM RENEWABLE SOURCES (GWh)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Electricity	**378013 e**	**419738**	**434976 e**	**405392**	**372499**	**314531**	**363173 e**	**-1.7**
Hydro	292401	337856	352549	316962	279986	223235	270610 e	-2.4
of which: Pumped Storage	15808	23740	25985	23880	26782	22045	22647 e	3.1
Geothermal	16012	14941	15369	15438	14621	14328	14224 e	-1.0
Solar Photovoltaics	3	4	3	3	3	3	2 e	-
Solar Thermal	663	824	887	870	526	526	420 e	-2.1
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	3066	3196	3018	4533	5650	5840	8736 e	6.0
Industrial Waste	-	4268	4952 e	4897	7170	7294	8647 e	-
Municipal Solid Waste Renew.	10613 e	14773	16021	16547	16727	16818	15220 e	4.3
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	34761 e	40587	38045	42063	42586	41627	40125 e	1.7
Gas from Biomass	-	3289	4132	4079	5230	4860	5189 e	-
Comb. Renewables Non-Specified	20494 e	-	-	-	-	-	-	-
of which:								
Electricity Only Plants	***331569 e***	***382658***	***400856 e***	***365930***	***330651***	***272963***	***..***	***-1.8***
Hydro	292401	337856	352549	316962	279986	223235	..	-2.4
of which: Pumped Storage	15808	23740	25985	23880	26782	22045	..	3.1
Geothermal	16012	14941	15369	15438	14621	14328	..	-1.0
Solar Photovoltaics	3	4	3	3	3	3	..	-
Solar Thermal	663	824	887	870	526	526	..	-2.1
Tide, Wave, Ocean	-	-	-	-	-	-	-	-
Wind	3066	3196	3018	4533	5650	5840	..	6.0
Industrial Waste	-	440	425 e	659	923	711	..	-
Municipal Solid Waste Renew.	9693 e	13432	14072	14023	14525	14674	..	3.8
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	9731 e	8887	10788	10053	10512	10146	..	0.4
Gas from Biomass	-	3078	3745	3389	3905	3500	..	-
Comb. Renewables Non-Specified	-	-	-	-	-	-	-	-
CHP Plants	***46444 e***	***37080***	***34120 e***	***39462***	***41848***	***41568***	***..***	***-1.0***
Geothermal	-	-	-	-	-	-	-	-
Industrial Waste	-	3828	4527 e	4238	6247	6583	..	-
Municipal Solid Waste Renew.	920 e	1341	1949	2524	2202	2144	..	8.0
Municipal Solid Waste Non-Renew.	-	-	-	-	-	-	-	-
Solid Biomass	25030 e	31700	27257	32010	32074	31481	..	2.1
Gas from Biomass	-	211	387	690	1325	1360	..	-
Comb. Renewables Non-Specified	20494 e	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

United States

4. GROSS HEAT PRODUCTION FROM RENEWABLE SOURCES (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Total Heat	**-**	**28539**	**68905**	**52842**	**27118**	**28619**	**27836 e**	**-**
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	1993	4609	5756	187	187	192 e	-
Municipal Solid Waste Renew.	-	7270	9703	5208	15251	14489	13795 e	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	19276	54243	41805	9489	11662	11226 e	-
Gas from Biomass	-	-	350	73	2191	2281	2623 e	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
of which:								
CHP Plants	***-***	***28539***	***68905***	***52842***	***27118***	***28619***	***..***	***-***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	1993	4609	5756	187	187	..	-
Municipal Solid Waste Renew.	-	7270	9703	5208	15251	14489	..	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	19276	54243	41805	9489	11662	..	-
Gas from Biomass	-	-	350	73	2191	2281	..	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-
Heat Only Plants	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
Geothermal	-	-	-	-	-	-	-	-
Solar Thermal	-	-	-	-	-	-	-	-
Industrial Waste	-	-	-	-	-	-	-	-
Municipal Solid Waste Renew.	-	-	-	-	-	-	-	-
Municipal Solid Waste Non-Renev	-	-	-	-	-	-	-	-
Solid Biomass	-	-	-	-	-	-	-	-
Gas from Biomass	-	-	-	-	-	-	-	-
Waste Heat and Heat Pumps	-	-	-	-	-	-	-	-

Source: IEA Country Submissions (2002).

Notes: Please refer to notes in Principles and Definitions for data coverage.

United States

5. PRIMARY ENERGY SUPPLY, TRANSFORMATION, AND FINAL CONSUMPTION OF RENEWABLE PRODUCTS (TJ)

	1990	1995	1998	1999	2000	2001	2002E	Average annual percent change 90-01
Geothermal								
Production	590501	554876	571749	576131	548091	539652	537116 e	-0.8
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	576432	537876	553284	555768	526356	515808	512064 e	-1.0
Final Energy Consumption	14069	17000	18465	20363	21735	23844	25052 e	4.9
Solar Thermal								
Indigenous Production	2387	2967	3194	66445	62195	58872	56953 e	33.8
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	2387	2967	3194	3132	1893	1893	1512 e	-2.1
Final Energy Consumption	-	-	-	63313	60302	56979	55441 e	-
Industrial Waste								
Production	-	128432	111828	128803	172192	175180	156730	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	x
Transformation Sector	-	125190	107368	114360	69406	71069	..	-
Final Energy Consumption	-	3242	4460 e	14443	102786	104111	..	-
Municipal Solid Waste - Renewables								
Production	173829 e	270237	286702	313018	342979	340503	297929	6.3
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	173829 e	270237	286702	284717	257429	256778	..	3.6
Final Energy Consumption	-	-	-	28301	85550	83725	..	-
Municipal Solid Waste - Non-Renewables								
Production	-	-	-	-	-	-	-	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	-	-	-	-	-	-	-
Final Energy Consumption	-	-	-	-	-	-	-	-
Solid Biomass								
Production	1824387 e	2401242	2442585	2479397	2303809	2216811	2075118	1.8
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	x
Transformation Sector	878314 e	1281621	1304924	1457782	502381	490303	..	-5.2
Final Energy Consumption	946073	1119621	1137661 e	1021615	1801428	1726508	..	5.6
Gas from Biomass								
Production	-	42788	49390	121266	123966	120260	149643	-
Net Imports [1]	-	-	-	-	-	-	-	-
Miscellaneous to Balance [2]	-	-	-	-	-	-	-	-
Transformation Sector	-	42788	49390	54072	63160	58638	..	-
Final Energy Consumption	-	-	-	67194	60806	61622	..	-
Liquid Biofuels (1000 tonnes)								
Production	-	4063	4160	4409	4498	4747	6160	-
Net Imports [1]	-	49	8	11	-	-	-	-
Miscellaneous to Balance [2]	-	34	-7	-98	-	-	-	x
Transformation Sector	-	1140	1476	1730	1923	2132	..	-
Final Energy Consumption	-	3006	2685	2592	2575	2615	..	-

(1) Net imports = total imports - total exports.
(2) Includes statistical difference, stock changes, energy consumed in the energy sector and distribution losses.

Source: IEA Country Submissions (2002).
Notes: Please refer to notes in Principles and Definitions for data coverage.

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