ENERGY IN EUROPE

Annual Energy Review

SPECIAL ISSUE

DECEMBER 1991

Commission of the European Communities Directorate General for Energy

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Annual Energy Review

prepared by:

J. Carvalho Neto

N. Deimezis

M. Lecloux

(Commission of the European Communities)

P. Karadeloglou

(National Technical University of Athens)

edited by:

R.A. Bailey

(Commission of the European Communities)

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For further information concerning articles or items in this issue please contact:

The Editor
Energy in Europe
DGXVII
Commission of the European Communities
200 rue de la Loi
B-1049 Brussels
Belgium

Telex: COMEU B 21877
Fax: Brussels 235.01.50

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Contents

[1] The former Federal Republic

INTRODUCTION

"Energy in Europe" is entering its 8th year of publication. As with events in the energy sector, it has developed reflecting the major events affecting this essential industry. At Community level policy emphasis has evolved from the energy objectives published in 1986 to the creation of the Internal Energy Market, redefining the relationship between energy and environment and with increasing emphasis on the role of technology. These internal Community developments have been accompanied by fundamental changes in the geopolitics of energy. Events in Eastern Europe and in the former Soviet Union have major implications for energy trends. Similarly, new initiatives in producer-consumer relations are underway.

These events have been reflected in Commission's policy initiatives. Progress has been made in the Council on the Internal Market with new legislation on price transparency and the liberalisation of transfrontier electricity and gas. The Commission will shortly publish its proposals on the next phase for gas and electricity liberalisation.

The European Energy Charter was signed in the Hague on the 17 of December 1991 between 45 countries, including the Community, convinced of the pressing need for closer cooperation in priority areas of the energy field.

On the technology front the Commission has launched the SAVE programme (Specific Actions for Vigorous Energy Efficiency) which comprises three major axes - legislative and administrative action, support programmes for Member States' own efficiency-promoting programmes, information exchange - all aimed at doing everything possible to enable the Community to achieve the crucial target of a 20% improvement in final energy demand intensioty by 1995. Within the THERMIE programme the major decision of the year was the extension of the OPET's network to Central and Eastern Europe and the area of the former USSR, as well as to the EFTA countries.

There has been a growing demand for more and more information, not only about energy in the Community but also on trends and developments in different regions of the world. The latest extension of coverage responds to this need for key information, attractively presented, and drawing on a comprehensive range of sources. Indeed we are grateful to those who throughout the world have been developing better data sources, and elsewhere in the text we acknowledge these in detail.

Clearly, given the volume of information available, we have sought to present those series which have immediate relevance to current issues. As these issues develop and change, the range of published data will reflect these shifts in policy debate.

The initial issue presents a broad overview of world, regional and Community trends. Traditional balance statements show developments over the decade 1980 to 1990. Leading indicators for energy, economic growth and carbon emissions add further insight into the important changes occurring in energy production and use.

We hope the reader will find this of use in his work and do let us know how the review can be improved in the coming years.

C. S. Maniatopoulos
Director General for Energy

Sources and Methods

This energy review has three parts. The first presents the energy situation for several world regions and, given the importance of oil, also includes a world oil balance in million barrels of oil per day (mbd). The second presents more detailed data on the European Community and its twelve Member States. The third part contains the Short-Term Energy Outlook (STEO) for the whole of the Community as usual.

The former German Democratic Republic is included in European Community data but only in the first part of the publication. For statistical reasons it has not yet been included in the detailed second and third parts.

The World was divided into **regions** comprising the following countries:

- European Community: Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain and the United Kingdom;
- EFTA: Austria, Finland, Iceland, Norway, Sweden and Switzerland;
- United States of America
- Japan
- Rest of OECD: Australia, Canada, New Zealand and Turkey;
- Eastern Europe: Albania, Bulgaria, Czechoslovakia, Hungary, Poland, Romania and Yugoslavia;
- Former USSR
- Mediterranean: Cyprus, Gibraltar and Malta;
- North Africa: Algeria, Egypt, Libya, Morocco and Tunisia;
- Other Africa: all other African countries not included elsewhere;
- Middle East: Bahrain, Israel, Iran, Iraq, Lebanon, Kuwait, Oman, Qatar, Saudi Arabia, Syria, United Arab Emirates and Yemen;
- China
- Other Asia: all other Asian countries not included elsewhere and the pacific islands;
- Latin America: All Central and South American countries.

Data cover the period from 1980 to 1989 and 1990 wherever provisional figures were available. The STEO covers the period from the third Quarter 1991 to the fourth Quarter of 1992.

The list of **data sources** are:

- All European Community and its Member States data were taken from the Statistical Office of the European Communities (SOEC), except for the economic indicators (GDP and population) of the former German Democratic Republic - in this case, estimates provided by the Commission's Directorate-General of Economic Affairs (DG II), by the United Nations (UN) and by PLANECON were used, as well as electricity capacity data from the EPIC data base created by ESAP;

  We call the reader's attention to the fact that data for the STEO are based on monthly statistics while all other data are based on annual balance sheets; the difference between monthly and annual series may sometimes be significant;

- Energy data for all other OECD Countries came from the International Energy Agency (IEA) energy balances; the respective macroeconomic and population data were taken from OECD, UN and IMF statistics;

- All energy data for non-OECD Countries, except Eastern Europe and the former USSR, came from the IEA energy balances; the respective macroeconomic and population data were taken from both UN and IMF statistics.

- All energy data for the Eastern European Countries and the former USSR came from the IEA energy balances with the exception of solid fuels data which were based on PLANECON statistics; the respective macroeconomic and population data were taken from the UN, IMF and PLANECON statistics;

- Difficulties in collecting data for non-OECD Countries lead us to advise a degree of caution as regards the data quality in these cases. Thus comparisons between series of absolute values should be regarded as purely indicative.

A few words on **methodology and definitions** are necessary.

Following the recent changes in the IEA's methodology, primary **hydro-electricity** production is considered in terms of net calorific value (1 GWh = 86 Mtoe) and **primary nuclear** production is calculated as fuel equivalent to produce the same amount of electricity in a power station with a thermal efficiency of 33%. Therefore, SOEC and IEA balance sheets are now almost compatible.

Biomass data for the OECD Countries (excluding Community Member States) correspond to what the IEA shows in its energy balances under "Other Solid Fuels". Data for all non-OECD Countries correspond to IEA's and UN data under the designation of "Vegetal Fuels". For the twelve Community Member States and according to current SOEC methodology, "Other Renewable Fuels" include only the quantities being used for power generation.

Primary heat (geothermal energy) is considered as being exclusively used for power generation. Heat shown in the final demand section is exclusively derived from other fuels (power generation and district heating). In the **World summary** energy balance, "Renewable" fuel for power generation includes primary heat, biomass and "other renewables" for the European Community.

In all tables in part I, **Gross energy consumption** corresponds to the total primary energy consumed including quantities delivered to marine bunkers. **Total Final Energy Consumption** (TFEC) does not include any quantities used for non-energy purposes.

More detailed definitions are shown in SOEC and IEA publications.

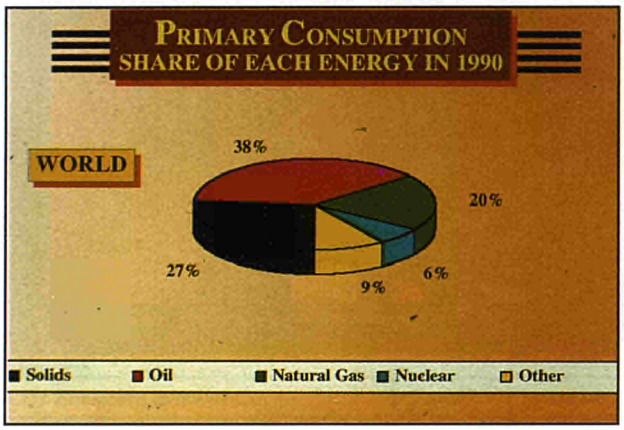
If a particular energy vector is not shown in the tables of parts I and II this means that the corresponding production and/or consumption does not take place.

CO2 emissions are given only on an indicative basis and were calculated using common emission factors across all countries. CO2 emissions resulting from bunker fuels were not included in the tables.

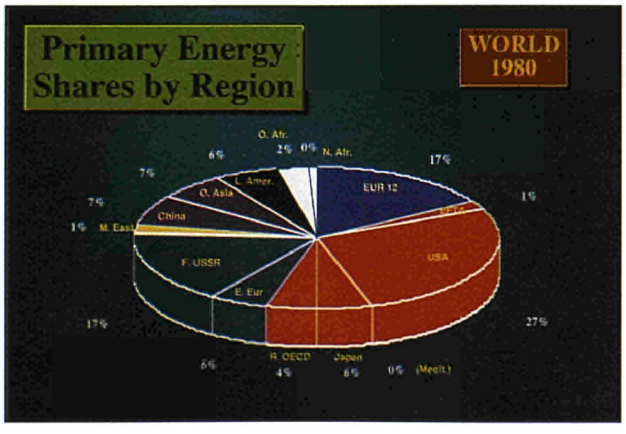
PART I

World

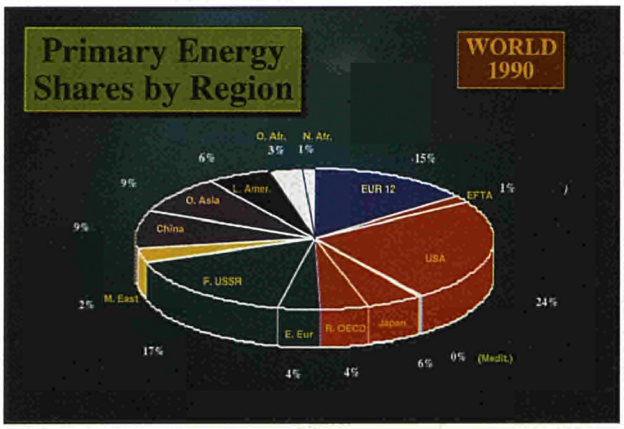
Total gross energy consumption in the whole world grew by 1.4% per year from 1980 to 1985 and by 2.8% from 1985 to 1989. Current estimates indicate a world energy demand growth of 0.7% in 1990. The evolution of growth rates of each primary fuel, however, is different. While solids, natural gas and other sources showed positive increases in the first half of the 1980's, oil showed an annual decrease of 1.4%. From 1980 to 1985, the fastest growing fuel was nuclear (15.7% per year), followed by primary heat[1] (10.7% per year), natural gas (2.9% per year) and solids (2.6% per year). From 1985 to 1989, while nuclear growth slackened to 6.7% per year, natural gas speeded up to 3.9% per year. Solids and oil showed annual increases of 2.2% and 2.5% respectively. The shares of each primary fuel in total energy demand are shown in the chart.



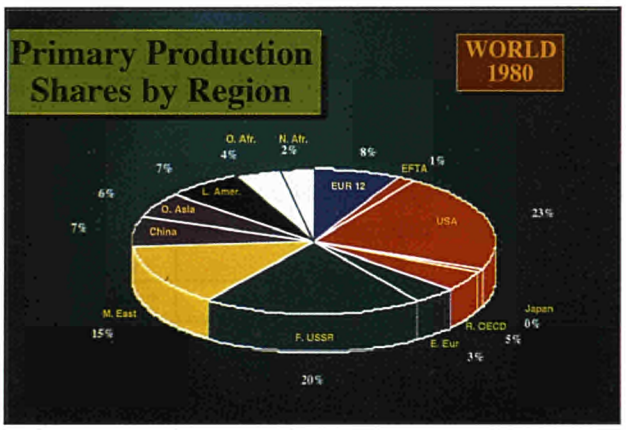
In 1990, the OECD accounted for 50% of total consumption (USA with 24% and the Community with 15%). The former USSR represents 17% of the total. The industrialised regions (OECD, former USSR and Eastern Europe) account for 71% of total energy consumption.

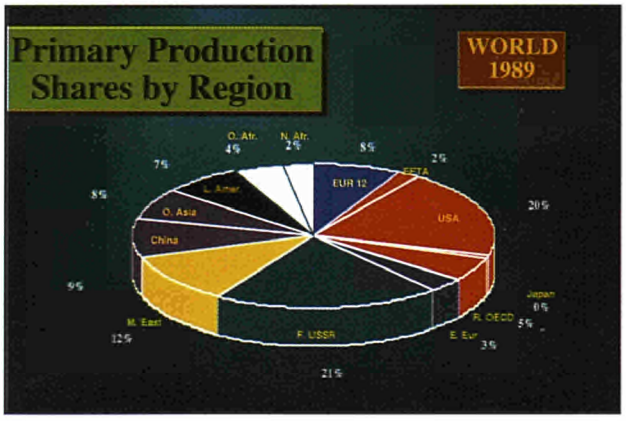


1. Geothermal



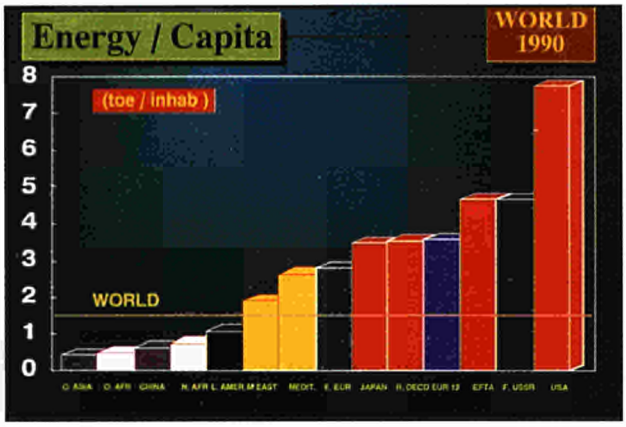
In terms of primary energy production and for 1989, the picture is different. The OECD represented 35% of total production (USA with 20% and the Community with 8%). The former USSR accounted for 21% of the total. Thus the industrialised regions account for 59% of total production. The Middle East represented 12% of the total.





The next chart shows a comparison across regions of energy consumption per capita in 1990. It is clear that the USA shows by far the highest consumption per capita. At the other extreme, all developing countries have a level which is significantly under the world average. The former USSR ranks second in actual level of consumption but this is due to very inefficient use of

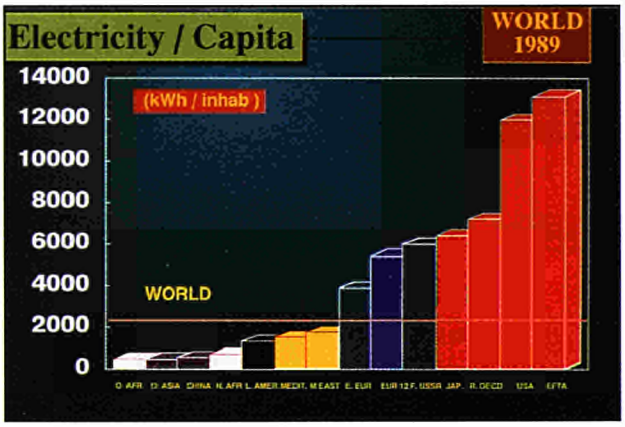
energy (very high intensity). The European Community comes together with Japan and the rest of the OECD with a consumption per capita which is slightly more than double that for the world as a whole.



Total energy intensity shows a downward trend since 1980. But it was between 1980 and 1985 that the world saw the fastest gains in energy intensity (1.3% per year). After 1985 and mainly due to the combination of economic recovery and the oil price fall, intensity gains slowed down to 0.7% per year. For 1990, estimates point to a drop in intensity of 1.1%.

Electricity generation has shown a steady increase for decades, and even an acceleration after 1985 (from 3.4% to 3.8% per year in the first and second halves of the 1980's respectively). In 1989 nuclear represented 22% (20% in 1980) of total generation while hydro accounted for 14% (10% in 1980). Solids were the main input for thermal electricity generation during the 1980s. In 1989solids accounted for 58% of total inputs (53% in 1980) followed by gas with 23% (17% in 1980), oil with 17% (27% in 1980) and the renewable sources as a whole with 2% (2% in 1980).

The next chart shows a comparison across regions of electricity consumption per capita. In the case of electricity consumption per capita the disparities among regions are even bigger than for energy per capita. In this case there is a clear break between the industrialised regions and the developing world. EFTA ranks first with 13098 kWh/inhabitant against "other Africa" with 444 kWh/inhabitant. The Community ranks sixth (after the former USSR) with a level which is about 71% higher than world average.



WORLD: SUMMARY ENERGY

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**6986.6**	**7401.1**	**7853.3**	**8292.1**	**—**	**1.2**	**2.9**	**—**
- solids	1800.0	2025.4	2126.7	2201.8	—	2.4	2.1	—
- oil	3149.3	2864.3	3006.8	3187.6	—	-1.9	2.7	—
- natural gas	1234.1	1425.6	1539.1	1657.9	—	2.9	3.8	—
- nuclear	186.7	386.3	449.0	500.0	—	15.7	6.7	—
- hydro	152.3	174.2	178.6	182.6	—	2.7	1.2	—
- heat	12.2	20.4	24.3	24.0	—	10.7	4.2	—
- other renewable	1.7	1.8	2.2	2.5	—	1.2	8.6	—
- biomass	450.4	503.2	526.7	535.6	—	2.2	1.6	—
Gross Consumption (1)	**6909.4**	**7421.8**	**7868.7**	**8295.9**	**8357.0**	**1.4**	**2.8**	**0.7**
- solids	1782.3	2027.8	2127.5	2213.0	2203.5	2.6	2.2	-0.4
- oil	3093.9	2889.3	3036.7	3185.5	3186.5	-1.4	2.5	0.0
- natural gas	1230.4	1418.8	1522.5	1652.5	1700.7	2.9	3.9	2.9
- other (2)	803.8	1086.6	1183.1	1246.0	1269.1	6.2	3.5	1.9
Electricity Generation in TWh	**8132.5**	**9330.5**	**10035.8**	**10767.2**	**—**	**2.8**	**3.6**	**—**
- nuclear	729.7	1522.0	1774.0	1981.7	—	15.7	6.7	—
- hydro	1781.2	2033.9	2084.7	2129.3	—	2.7	1.2	—
- thermal	5799.6	6272.0	6726.5	7294.7	—	1.6	3.8	—
Fuel Inputs for Thermal Power Generation	**1567.0**	**1713.4**	**1817.9**	**1953.5**	**—**	**1.8**	**3.3**	**—**
- solids	834.6	987.5	1056.1	1124.4	—	3.4	3.3	—
- oil	428.6	334.7	327.5	332.1	—	-4.8	-0.2	—
- gas	272.9	353.1	394.0	454.9	—	5.3	6.5	—
- renewable	30.9	38.1	40.4	42.1	—	4.2	2.6	—
Total Final Energy Demand	**4884.8**	**5168.0**	**5449.9**	**5674.7**	**—**	**1.1**	**2.4**	**—**
- solids	796.7	858.8	895.5	916.2	—	1.5	1.6	—
- oil	2141.3	2101.3	2215.1	2307.7	—	-0.4	2.4	—
- gas	807.3	875.4	924.9	974.4	—	1.6	2.7	—
- electricity	588.4	698.3	752.5	808.5	—	3.5	3.7	—
- heat	129.9	164.5	168.9	176.4	—	4.8	1.8	—
- biomass	421.4	469.8	493.1	491.6	—	2.2	1.1	—
CO2 Emissions in Mt of C	**4057.7**	**4367.8**	**4630.5**	**4845.7**	**—**	**1.5**	**2.6**	**—**
Indicators								
Population (Million)	4435.8	4843.0	5006.3	5180.8	5270.5	1.8	1.7	1.7
GDP (Index 1985 = 100)	87.2	100.0	106.5	114.8	116.8	2.8	3.5	1.8
Primary Consumption/GDP (toe/MECU)	488.9	458.0	455.8	446.1	441.3	-1.3	-0.7	-1.1
Primary Consumption/Capita (toe/inhab)	1.56	1.53	1.57	1.60	1.59	-0.3	1.1	-1.0
Electricity generated/Capita (kWh/inhab)	1833.4	1926.6	2004.6	2078.3	—	1.0	1.9	—
CO2 emissions/Capita (t/inhab)	0.9	0.90	0.92	0.94	—	-0.3	0.9	—

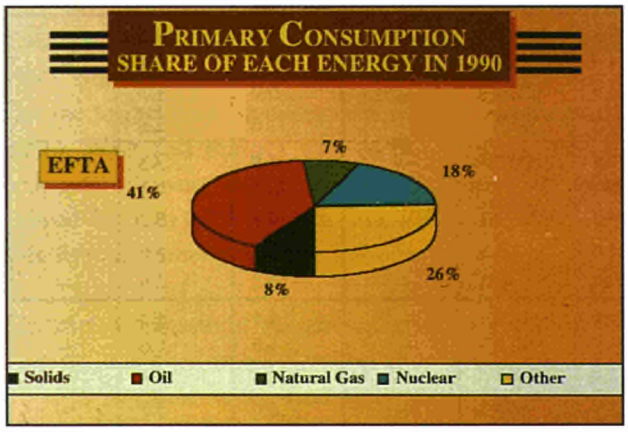
(1) Including bunkers.

(2) Includes nuclear, hydro and other renewable.

EFTA

This region of Europe with rather sparse population and high income per capita enjoys overall self-sufficiency in energy supply. However, this situation is merely an average and differences across countries are important. For instance, Norway with its net exports of oil, gas and hydro-based electricity contrasts with its neighbour Sweden, where the only significant indigenous energy source beside nuclear-generated electricity consists of hydro capacity.

Gross energy consumption has been increasing throughout the decade but the actual growth trend is slowing down. In fact, while growth in energy demand was 1.6% up to 1985, it was only 1.3% between 1985 and 1989 and only 1% in 1990. The shares of each primary fuel in total energy demand are shown in the chart.



As GDP growth has been higher than that of energy demand, this region presents a continuing downward trend in energy intensity. This indicator shows a decrease of 0.4% per year between 1980 and 1985 and of 1.4% from 1985 to 1989. This acceleration in the second half of the 1980's is the exception among industrialised countries where there was a general tailing-off of efficiency gains. In 1990 current estimates show a gain of only 0.7% compared to 1.3% in the European Community.

Electricity generation has been increasing but not steadily throughout the decade. In fact, it grew by 4.6% until 1985, by only 1.9% from 1985 to 1989 and only 1.5% in 1990. On average, hydro power represented 69% of total generation in 1980 and 63% in 1990. Nuclear-based electricity, which had an annual increase of 16% in the first half of the 1980's, slightly dropped by 0.4% in 1990 representing 26% of total electricity output. Thermal electricity generation (10% of total in 1989) is based on a diversified range of fuels. In 1989, solids, biomass, gas, oil and heat (geothermal) participated with 42%, 22%, 20%, 13% and 3% respectively.

EFTA: SUMMARY ENERGY BALANCE

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**93.4**	**127.2**	**144.9**	**174.5**	**178.3**	**6.4**	**8.2**	**2.2**
- solids	1.1	1.3	1.0	0.8	0.9	4.0	-11.5	11.4
- oil	26.5	40.7	52.0	78.2	85.5	8.9	17.7	9.3
- natural gas	24.3	24.3	26.6	28.8	25.3	0.0	4.3	-12.1
- nuclear	12.5	26.1	28.7	28.1	28.0	15.9	1.9	-0.4
- hydro	18.7	21.7	22.6	23.3	23.3	3.0	1.8	0.1
- heat	0.0	0.2	0.2	0.2	0.2	30.9	9.2	0.0
- biomass	10.3	12.9	13.8	15.1	15.0	4.6	3.9	-0.3
Net Imports	**41.6**	**14.0**	**2.3**	**-25.8**	**-25.4**	**-19.6**	**—**	**-1.6**
- solids	9.6	12.2	11.1	10.9	11.3	5.0	-2.7	3.7
- crude oil	28.6	4.5	-2.5	-29.9	-29.2	—	—	-2.3
- oil products	22.1	14.6	12.7	11.8	6.7	-8.0	-5.1	-43.6
- natural gas	-17.7	-16.7	-18.0	-17.8	-13.6	-1.2	1.7	-23.5
- electricity	-0.9	-0.7	-1.2	-1.0	-0.7	-6.5	9.9	-24.9
Gross Consumption (1)	**131.3**	**142.3**	**150.6**	**150.0**	**151.6**	**1.6**	**1.3**	**1.0**
- solids	11.1	13.1	12.7	11.7	12.5	3.3	-2.7	6.6
- oil	73.3	61.2	64.4	61.9	62.0	-3.6	0.3	0.3
- natural gas	6.4	7.6	8.8	11.1	11.3	3.5	9.9	2.0
- other (2)	41.4	61.3	66.2	66.5	66.7	8.2	2.1	0.2
Electricity Generation in TWh	**313.4**	**391.9**	**415.2**	**421.8**	**427.9**	**4.6**	**1.9**	**1.5**
- nuclear	49.3	103.2	113.4	111.1	110.6	15.9	1.9	-0.4
- hydro	216.9	252.1	262.7	270.4	270.8	3.0	1.8	0.1
- thermal	47.2	36.7	39.1	40.3	46.5	-4.9	2.4	15.4
Fuel Inputs for Thermal Power Generation	**11.1**	**10.1**	**10.6**	**9.8**	**—**	**-1.9**	**-0.6**	**—**
- solids	3.9	4.4	4.6	4.1	—	2.7	-1.9	—
- oil	4.8	2.0	1.9	1.3	—	-15.8	-10.7	—
- gas	1.2	1.5	1.7	2.0	—	4.8	7.2	—
- heat	0.0	0.2	0.2	0.2	0.2	30.9	9.2	0.0
- biomass	1.2	2.0	2.2	2.2	—	10.9	3.5	—
Total Final Energy Demand	**104.6**	**106.7**	**110.8**	**110.1**	**—**	**0.4**	**0.8**	**—**
- solids	6.1	7.2	6.2	6.0	—	3.4	-4.4	—
- oil	59.7	51.2	53.0	51.4	—	-3.0	0.1	—
- gas	4.0	4.6	4.8	5.5	—	2.6	5.0	—
- electricity	23.1	29.1	30.6	31.2	—	4.8	1.8	—
- heat	2.9	3.6	4.9	4.4	—	4.5	5.3	—
- biomass	8.9	11.0	11.3	11.6	—	4.3	1.3	—
CO2 Emissions in Mt of C	**79.2**	**75.2**	**76.6**	**74.9**	**—**	**-1.0**	**-0.1**	**—**
Indicators								
Population (Million)	31.3	31.7	31.9	32.2	32.5	0.2	0.4	0.8
GDP (Index 1985 = 100)	90.6	100.0	105.2	111.5	113.5	2.0	2.8	1.8
Primary Consumption/GDP (toe/MECU)	296.0	290.6	292.2	274.8	272.8	-0.4	-1.4	-0.7
Primary Consumption/Capita (toe/inhab)	4.19	4.49	4.72	4.66	4.67	1.4	0.9	0.2
Electricity generated/Capita (kWh/inhab)	9997.3	12375.8	13018.2	13098.4	13182.7	4.4	1.4	0.6
CO2 emissions/Capita (t/inhab	2.53	2.37	2.40	2.33	—	-1.2	-0.5	—

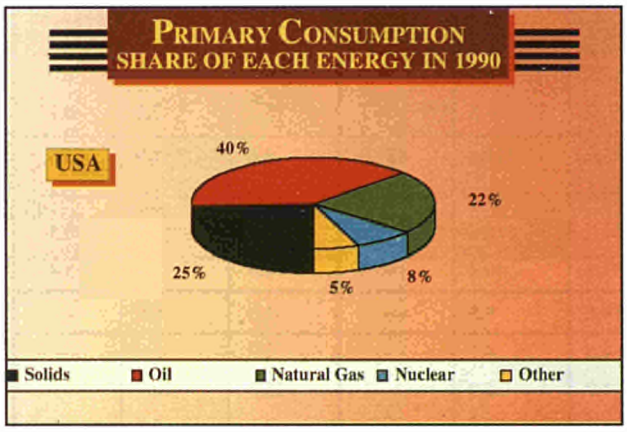
(1) Including bunkers.

(2) Includes nuclear, hydro and other renewable.

United States of America

Historically the US is the largest energy producer in the world, but in the 1980's never self-sufficient. Considering each of the primary fuels, the US is a net exporter (to the extent of about 11% of domestic production) only of solids. Net imports of oil grew between 1985 and 1989 at a rate of almost 14% per year in the case of crude oil and 4% for finished oil products. Estimates for 1990 show a drop in net import of oil mainly due to decreased economic activity in the second half of the year. Natural gas net imports (from Canada) have been growing at almost 10% in the second half of the 1980's (8% in 1990).

Total gross energy consumption shows a decrease of 0.4% per year from 1980 to 1985 followed by an increase of 2.3% per year until 1989. Estimates for 1990 again show a drop of 1.3%. The shares of each fuel in total primary energy consumption are shown in the chart.



Energy intensity shows significant improvements in the first half of the 1980's (3.2% per year) followed by lower but still positive rates. Indeed, the combination of the oil price fall in 1986 and of economic revival led to a slow-down in intensity improvement (only 1.1% between 1985 and 1989). In 1990, gains accelerated and intensity again dropped by 2.2%.

Electricity is the only energy vector which did not show any negative growth rates in the last decade. Total generation increased annually by 1.6% from 1980 to 1985 and by 3% between 1985 and 1989. Estimates for 1990 indicate a growth of only 0.3%. In 1989 hydro- and nuclear-generated electricity accounted for 13% and 21% respectively (11% for both sources in 1980). Nuclear output showed steady increases of about 9% per year. Thermal electricity is mainly based on solids which account for 77% of total fuel inputs into thermal power stations in 1989. Gas and oil rank second and third with 13% and 8% respectively. Biomass, which is not yet significant for power generation, shows very high growth rates (27% and 15% in the first and second halves of the 1980's respectively).

USA: SUMMARY ENERGY

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**1547.8**	**1564.9**	**1585.2**	**1603.1**	**1640.7**	**0.2**	**0.6**	**2.3**
- solids	447.9	465.9	489.1	512.0	544.3	0.8	2.4	6.3
- oil	491.4	507.3	475.5	436.7	425.7	0.6	-3.7	-2.5
- natural gas	454.6	385.9	388.2	405.2	408.8	-3.2	1.2	0.9
- nuclear	69.4	106.0	125.8	146.2	159.4	8.8	8.4	9.0
- hydro	24.0	24.4	21.7	23.0	23.2	0.4	-1.5	0.7
- heat	4.6	8.5	9.8	8.5	7.7	13.1	0.0	-9.6
- biomass	56.0	66.9	75.1	71.5	71.5	3.6	1.7	0.0
Net Imports	**301.9**	**197.2**	**285.9**	**340.2**	**344.6**	**-8.2**	**14.6**	**1.3**
- solids	-57.0	-57.3	-49.1	-61.2	-68.9	0.1	1.7	12.6
- crude oil	295.6	200.4	275.9	335.7	335.5	-7.5	13.8	0.0
- oil products	39.3	29.7	33.1	34.3	42.9	-5.5	3.7	25.3
- natural gas	21.8	20.9	21.9	30.5	35.2	-0.8	9.9	15.5
- electricity	2.2	3.5	4.0	0.9	-0.2	9.9	-28.1	—
Gross Consumption (1)	**1828.9**	**1789.2**	**1865.9**	**1962.3**	**1963.8**	**-0.4**	**2.3**	**0.1**
- solids	376.2	425.7	437.1	458.5	462.2	2.5	1.9	0.8
- oil	819.7	741.9	782.4	810.4	795.8	-2.0	2.2	-1.8
- natural gas	476.9	412.4	410.0	443.2	444.1	-2.9	1.8	0.2
- other (2)	153.9	205.8	232.4	249.2	261.9	6.0	4.9	5.1
Electricity Generation in TWh	**2427.3**	**2621.9**	**2732.5**	**2954.1**	**2961.8**	**1.6**	**3.0**	**0.3**
- nuclear	274.2	419.0	497.2	578.1	630.1	8.8	8.4	9.0
- hydro	278.8	284.0	252.2	267.7	269.6	0.4	-1.5	0.7
- thermal	1874.3	1918.9	1983.1	2108.3	2062.1	0.5	2.4	-2.2
Fuel Inputs for Thermal Power Generation	**442.9**	**458.8**	**472.1**	**496.4**	**—**	**0.7**	**2.0**	**—**
- solids	292.0	353.7	366.4	383.9	—	3.9	2.1	—
- oil	60.6	25.1	29.0	38.8	—	-16.1	11.5	—
- gas	85.6	71.2	66.5	64.5	—	-3.6	-2.4	—
- heat	4.6	8.5	9.8	8.5	7.7	13.1	0.0	-9.6
- biomass	0.1	0.4	0.4	0.6	—	26.6	15.0	—
Total Final Energy Demand	**1262.1**	**1225.1**	**1267.9**	**1338.1**	**—**	**-0.6**	**2.2**	**—**
- solids	67.7	64.8	62.3	65.1	—	-0.9	0.1	—
- oil	641.7	613.8	643.9	660.7	—	-0.9	1.9	—
- gas	322.7	284.9	281.0	319.1	—	-2.5	2.9	—
- electricity	174.2	193.8	204.4	220.4	—	2.2	3.3	—
- heat	0.0	1.4	1.7	1.9	—	-	8.1	—
- biomass	55.8	66.5	74.7	70.8	—	3.6	1.6	—
CO2 Emissions in Mt of C	**1299.8**	**1287.6**	**1330.6**	**1394.1**	**—**	**-0.2**	**2.0**	**—**
Indicators								
Population (Million)	227.8	238.5	242.8	247.4	250.0	0.9	0.9	1.1
GDP (Index 1985 = 100)	87.0	100.0	106.8	114.8	115.8	2.8	3.5	0.9
Primary Consumption/GDP (toe/MECU)	405.0	344.5	336.4	329.2	326.5	-3.2	-1.1	-0.8
Primary Consumption/Capita (toe/inhab)	8.03	7.50	7.68	7.93	7.86	-1.3	1.4	-1.0
Electricity generated/Capita (kWh/inhab)	10657.4	10994.8	11253.3	11943.2	11848.8	0.6	2.1	0.8
CO2 emissions/Capita (t/inhab)	5.71	5.40	5.48	5.64	—	-1.1	1.1	—

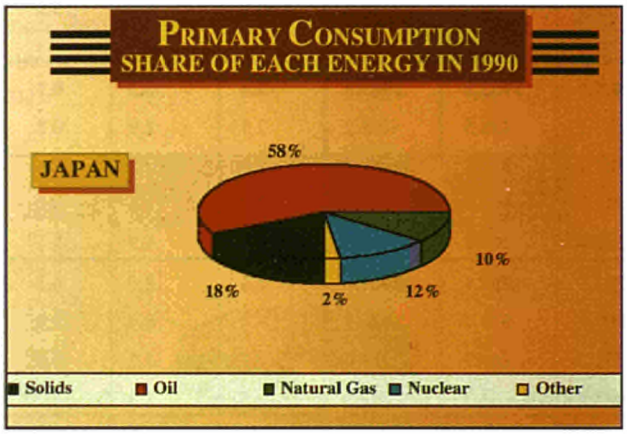
(1) Including bunkers.

(2) Includes nuclear, hydro and other renewable.

Japan

Japan is the fastest growing economy within the OECD region. Except for nuclear (only 12% of total gross energy consumption) Japan is almost entirely dependent on external sources of supply.

Gross energy consumption in the 1980's has increased by 0.5% per year until 1985 and by 2.8% from 1985 to 1989. Estimates for 1990 show an increase of around 4%. Natural gas and nuclear have been the fastest growing primary fuels (gas with 10.3% and 3.7% and nuclear with 14.1% and 3.5% in the first and second halves of the 1980's respectively). Since 1985, oil demand has been rising steadily at around 3.5% per year. The shares of each fuel in total primary energy consumption are shown in the chart.



In terms of energy intensity gains, Japan shows an unchanging trend into the 1980's. However, the rate of gains has decelerated since 1985. In fact, gains increased at 3.3% per year until 1985, they were only 1.5% per year until 1989 and estimates for 1990 show a gain of 1.3%. On the other hand, Japan shows a robust increase in total demand per capita after 1985 (2.3% per year until 1989 and almost 4% in 1990).

Electricity generation, in contrast to other indicators, showed an accelerating growth throughout the decade. From 3.6% per year increase between 1980 and 1985, it grew by 4.4% from 1985 to 1989 and estimates for 1990 point to an increase of some 5.6%. Nuclear accounted in 1989 for 24% of total generation while hydro only represented around 11%. Thermal electricity production is based on oil, gas and solids with 47%, 29% and 23% of total fuel inputs respectively. Oil for power generation showed an increase of 4.6% per year between 1985 and 1989 while gas and solids only show increases of 2.9% and 2.8% respectively.

JAPAN: SUMMARY ENERGY BALANCE

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**43.3**	**62.1**	**66.5**	**64.7**	**68.0**	**7.5**	**1.0**	**5.0**
- solids	10.9	9.6	7.5	5.8	5.5	-2.5	-12.0	-4.5
- oil	0.6	0.7	0.7	0.7	0.7	3.9	0.9	-1.6
- natural gas	1.9	2.0	1.9	1.8	1.8	0.3	-2.5	2.2
- nuclear	21.5	41.6	48.9	47.7	51.0	14.1	3.5	7.1
- hydro	7.6	7.0	6.2	7.7	7.7	-1.6	2.4	0.7
- heat	0.8	1.3	1.2	1.2	1.2	10.7	-2.0	1.3
Net Imports	**317.8**	**306.4**	**310.0**	**352.2**	**359.5**	**-0.7**	**3.5**	**2.1**
- solids	47.5	63.4	59.8	67.4	67.5	5.9	1.6	0.1
- crude oil	223.0	172.2	161.0	182.1	194.6	-5.0	1.4	6.9
- oil products	27.7	37.9	55.1	63.8	53.4	6.5	13.9	-16.2
- natural gas	19.5	33.0	34.1	38.8	44.0	11.0	4.2	13.3
Gross Inland Consumption (1)	**357.2**	**366.6**	**370.7**	**409.4**	**426.8**	**0.5**	**2.8**	**4.2**
- solids	59.6	73.0	66.8	73.2	73.9	4.1	0.1	0.9
- oil	246.2	208.8	211.3	239.1	247.3	-3.2	3.5	3.4
- natural gas	21.5	35.0	36.1	40.5	45.6	10.3	3.7	12.5
- other (2)	29.9	49.9	56.4	56.5	60.0	10.8	3.2	6.1
Electricity Generation in TWh	**572.5**	**665.2**	**710.9**	**791.2**	**835.5**	**3.0**	**4.4**	**5.6**
- nuclear	85.1	164.4	193.4	188.4	201.7	14.1	3.5	7.1
- hydro	88.3	81.2	72.7	89.2	89.9	-1.6	2.4	0.7
- thermal	399.1	419.6	444.8	513.5	543.9	1.0	5.2	5.9
Fuel Inputs for Thermal Power Generation	**87.2**	**87.6**	**87.8**	**101.0**	**—**	**0.1**	**3.6**	**—**
- solids	10.5	20.8	21.8	23.3	—	14.7	2.8	—
- oil	60.3	39.2	38.3	47.0	—	-8.3	4.6	—
- gas	15.6	26.3	26.5	29.5	—	11.0	2.9	—
- heat	0.8	1.3	1.2	1.2	1.2	10.7	-2.0	1.3
Total Final Energy Demand	**240.7**	**244.2**	**252.4**	**278.8**	**—**	**0.3**	**3.4**	**—**
- solids	36.7	37.0	33.9	37.8	—	0.2	0.5	—
- oil	150.1	144.2	151.4	165.9	—	-0.8	3.6	—
- gas	9.7	11.8	12.6	14.1	—	4.0	4.5	—
- electricity	44.1	51.0	54.3	60.8	—	2.9	4.5	—
- heat	0.1	0.1	0.2	0.2	—	6.2	5.7	—
CO2 Emissions in Mt of C	**244.6**	**241.5**	**245.1**	**273.4**	**—**	**-0.3**	**3.2**	**—**
Indicators								
Population (Million)	116.8	120.8	122.1	123.1	123.5	0.7	0.5	0.3
GDP (Index 1985 = 100)	82.5	100.0	107.0	118.6	125.3	3.9	4.4	5.6
Primary Consumption/GDP (toe/MECU)	249.0	211.0	199.4	198.6	196.0	-3.3	-1.5	-1.3
Primary Consumption/Capita (toe/inhab)	3.06	3.03	3.04	3.33	3.45	-0.2	2.3	3.9
Electricity generated/Capita (kWh/inhab)	4902.6	5505.2	5822.5	6425.9	6762.9	2.3	3.9	5.2
CO2 emissions/Capita (t/inhab)	2.09	2.00	2.01	2.22	—	-0.9	2.7	—

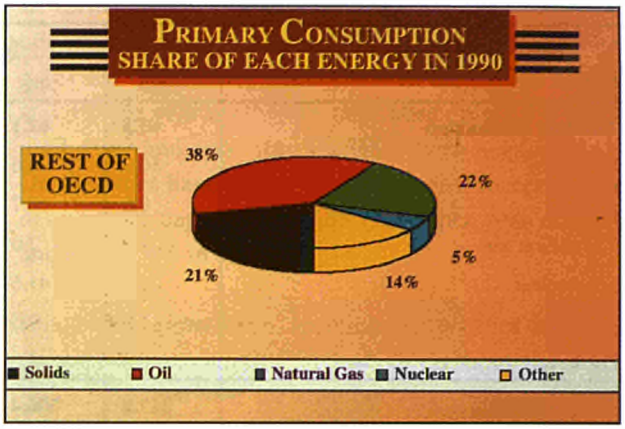
(1) Including bunkers.

(2) Includes nuclear, hydro and other renewable.

Rest of OECD

This "region" does not correspond to any geographical classification. Thus alongside Australia and New Zealand that do indeed belong to the same part of the world, we have Canada in North America and Turkey between Europe and the Middle East. This group of countries also present problems as regards the usability of averages, since respective economic situations vary considerably: this applies for instance particularly in the case of Turkey. Having said this, and looking at the overall supply situation, we see that the rest of the OECD has a surplus of production compared to total consumption. Only for oil is this "region" a net importer. In the case of solid fuels it is indeed one of the most important given that Australia is one of the biggest coal exporters in the world.

Gross energy consumption developments in the 1980's followed the same pattern as other industrialised countries. Total demand only increased slightly between 1980 and 1985 while it showed a 3.7% growth until 1989. Estimates for 1990 indicate a drop of 1.3%. But the picture is different if we look at each primary fuel in turn. The slow-down in energy demand growth in the first half of the 1980's reflects only a drop in oil consumption of 3.2% per year. In the first half of the decade solids, gas and other energy sources grew at 4% per year. From 1985 to 1989 demand for solids, gas and other fuels increased annually by 3.5%, 5.5% and 1.2% respectively. The shares of each fuel in total primary energy consumption are shown in the chart.



The energy intensity of the rest of the OECD decreased by 2.2% per year from 1980 to 1985. Between 1985 and 1989 the figures show no gains mainly due to increased intensity in Turkey offsetting gains in the other three countries. Estimates for 1990 indicate an overall gain of 3.1%.

Electricity generation increased by 4.5% yearly until 1985 and 3.2% yearly from then to 1989. For 1990 estimates show a drop in the order of 0.3%. In general total generation is heavily dependent on hydro (almost 50%) but this of course especially reflects the situation of Canada. Canada is also the only country in the grouping to use nuclear energy. As for fuel inputs into thermal power stations, solids, gas, oil, heat and biomass account for 76%, 13%, 8%, 2% and 1% of total inputs respectively. The average annual growth rates of gas (17.1%), heat (10.6%) and oil (9.4%) into power stations in the second half of the 1980's are also striking.

REST OF OECD: SUMMARY ENERGY BALANCE

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**315.1**	**397.1**	**430.3**	**456.8**	**470.8**	**4.7**	**3.6**	**3.0**
- solids	80.6	126.6	144.4	154.2	158.2	9.4	5.1	2.6
- oil	107.7	117.5	125.0	124.6	128.9	1.8	1.5	3.4
- natural gas	69.3	83.0	86.3	104.5	111.1	3.7	5.9	6.3
- nuclear	9.9	15.8	20.1	20.8	19.0	9.7	7.2	-8.7
- hydro	25.3	30.0	31.9	29.7	30.7	3.5	-0.3	3.5
- heat	1.0	1.0	1.1	1.5	1.8	-0.6	10.6	22.3
- biomass	21.3	23.2	21.5	21.5	21.1	1.8	-1.9	-2.1
Net Imports	**-10.6**	**-84.5**	**-82.0**	**-89.3**	**-96.1**	**51.6**	**-**	**7.7**
- solids	-27.7	-61.2	-66.6	-75.3	-77.2	17.1	5.4	2.5
- crude oil	36.2	3.8	11.6	15.9	18.8	-36.2	42.8	17.9
- oil products	1.2	-2.5	-0.9	-1.4	-5.5	—	—	278.8
- natural gas	-18.1	-21.3	-22.3	-27.7	-32.2	—	—	16.4
- electricity	-2.2	-3.3	-3.7	-0.8	-0.1	—	—	—
Gross Consumption (1)	**306.2**	**319.3**	**340.0**	**369.2**	**364.5**	**0.8**	**3.7**	**-1.3**
- solids	56.8	69.0	73.0	79.1	76.5	4.0	3.5	-3.2
- oil	142.6	121.0	132.2	139.9	137.8	-3.2	3.7	-1.5
- natural gas	51.6	62.6	64.0	77.5	77.6	4.0	5.5	0.2
- other (2)	57.5	70.0	74.6	73.5	72.6	4.0	1.2	-1.2
Electricity Generation in TWh	**514.0**	**640.2**	**700.8**	**727.3**	**725.0**	**4.5**	**3.2**	**-0.3**
- nuclear	39.2	62.4	79.6	82.3	75.1	9.7	7.2	-8.7
- hydro	294.4	349.1	370.5	345.1	357.2	3.5	-0.3	3.5
- thermal	180.5	228.8	250.7	299.9	292.7	4.9	7.0	-2.4
Fuel Inputs for Thermal Power Generation	**48.7**	**58.5**	**61.4**	**73.4**	**—**	**3.7**	**5.8**	**—**
- solids	37.5	48.0	50.0	56.1	—	5.1	4.0	—
- oil	5.8	4.0	4.3	5.7	—	-7.4	9.4	—
- gas	4.0	5.1	5.6	9.6	—	4.8	17.1	—
- heat	1.0	1.0	1.1	1.5	—	-0.6	10.6	—
- biomass	0.4	0.5	0.4	0.6	—	5.0	6.4	—
Total Final Energy Demand	**227.9**	**233.9**	**242.1**	**260.6**	**—**	**0.5**	**2.7**	**—**
- solids	15.1	16.6	17.7	18.2	—	1.9	2.2	—
- oil	117.1	103.0	108.7	117.2	—	-2.5	3.3	—
- gas	37.7	46.4	45.8	51.6	—	4.3	2.7	—
- electricity	36.1	44.3	48.0	52.1	—	4.2	4.1	—
- heat	1.0	0.8	0.8	0.6	—	-4.7	-7.9	—
- biomass	20.9	22.8	21.1	20.9	—	1.7	-2.1	—
CO2 Emissions in Mt of C	**209.7**	**217.4**	**224.0**	**245.6**	**—**	**0.7**	**3.1**	**—**
Indicators								
Population (Million)	86.2	94.5	97.7	101.3	103.1	1.9	1.7	1.8
GDP (Index 1985 = 100)	85.9	100.0	107.8	115.7	117.8	3.1	3.7	1.9
Primary Consumption/GDP (toe/MECU)	468.0	419.2	414.2	419.1	406.1	-2.2	0.0	-3.1
Primary Consumption/Capita (toe/inhab)	3.55	3.38	3.48	3.65	3.54	-1.0	1.9	-3.0
Electricity generated/Capita (kWh/inhab)	5963.4	6773.5	7171.7	7183.6	7034.9	2.6	1.5	-2.1
CO2 emissions/Capita (t/inhab)	2.43	2.30	2.29	2.43	—	-1.1	1.3	—

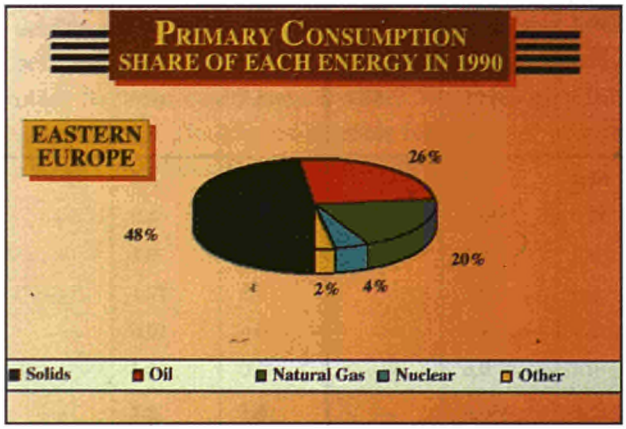
(1) Including bunkers.

(2) Includes nuclear, hydro and other renewable.

Eastern Europe

The energy and macroeconomic data for all countries of this region is sometimes unreliable. Therefore, preference should be given to the use of trends wherever possible rather of absolute values. As a whole this region produced 72% of its energy needs in 1989 (75% in 1980). The region as a whole is a net importer of oil and natural gas, mainly from the former USSR, but some of the countries are at various times net exporters of coal. In the second half of the decade net imports of oil and natural gas grew annually by 9.5% and 9.4% respectively.

Overall energy demand shows a slight increase (0.7%) in the first half of the decade and an even lower one (0.3% per year) from 1985 to 1990. Due to the profound social, economic and political changes of recent times, economic activity dropped significantly in 1990 resulting in a decrease in energy demand in the order of 10%. This drop was felt for all primary fuels except hydro. Nuclear output shows a drop of 15% while demand for solids, oil, and gas fell by 14%, 7.4% and 5.3% respectively. The shares of each fuel in total primary energy consumption are shown in the chart.



The energy intensity of this region is very high. Although it is still difficult to calculate a figure for GDP comparable to the same indicator in the OECD region, we see that intensity in 1990 was almost threefold that of the European Community (2.9 times bigger in 1980). However, the trend shows gains throughout the period: 1.2% from 1980 to 1985; 1.8% between 1985 and 1989; and an estimated 1.5% in 1990.

Electricity generation increased annually by 2.6% between 1980 and 1985 and by 2.1% per year until 1989. As a result of the economic crisis, electricity generation in 1990 is estimated to have been at a level 10% lower than in 1989. Nuclear and hydro account for 12.5% and 10.7% of total generation respectively. Solids are the main source of thermal electricity representing almost 73% of total inputs in 1989. Oil and gas account for 10% and 17% respectively.

EASTERN EUROPE: SUMMARY ENERGY BALANCE

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**273.5**	**289.0**	**291.5**	**275.5**	**242.3**	**1.1**	**-1.2**	**-12.1**
- solids	195.7	203.8	207.8	195.9	170.3	0.8	-1.0	-13.0
- oil	23.1	21.3	19.0	17.6	16.1	-1.6	-4.6	-8.5
- natural gas	43.5	46.5	42.5	37.7	32.0	1.3	-5.1	-15.1
- nuclear	2.8	9.2	13.1	15.0	15.1	27.1	13.0	0.3
- hydro	4.8	4.3	4.5	4.4	4.0	-2.1	0.3	-9.5
- heat	0.0	0.1	0.0	0.0	0.0	-	-	-
- biomass	3.6	3.9	4.7	4.9	4.8	1.8	5.9	-2.9
Net Imports	**91.0**	**87.0**	**100.1**	**106.8**	**100.8**	**-0.9**	**5.3**	**-5.6**
- solids	-8.2	-8.2	-5.0	-6.2	-7.4	0.0	-6.9	19.4
- crude oil	83.7	73.5	83.4	87.3	86.6	-2.6	4.4	-0.8
- oil products	-4.4	-4.2	-8.9	-11.4	-16.2	-0.9	28.4	41.5
- natural gas	18.9	24.3	28.5	34.8	36.3	5.1	9.4	4.3
- electricity	1.0	1.7	2.1	2.3	1.5	11.2	7.9	-35.4
Gross Consumption (1)	**364.3**	**377.9**	**391.9**	**382.9**	**344.1**	**0.7**	**0.3**	**-10.1**
- solids	188.0	197.9	203.4	190.6	163.9	1.0	-0.9	-14.0
- oil	102.1	90.3	93.2	93.5	86.6	-2.4	0.9	-7.4
- natural gas	62.1	70.5	71.0	72.1	68.3	2.6	0.6	-5.3
- other (2)	12.2	19.2	24.4	26.6	23.8	9.6	8.5	-10.5
Electricity Generation in TWh	**384.2**	**437.2**	**463.5**	**474.8**	**445.6**	**2.6**	**2.1**	**-6.2**
- nuclear	11.0	36.5	51.6	59.5	59.7	27.1	13.0	0.3
- hydro	55.8	50.2	52.5	50.8	46.0	-2.1	0.3	-9.5
- thermal	317.5	350.6	359.4	364.6	339.9	2.0	1.0	-6.8
Fuel Inputs for Thermal Power Generation	**111.1**	**125.9**	**120.1**	**128.2**	**—**	**2.5**	**0.4**	**—**
- solids	85.6	96.9	93.6	93.2	—	2.5	-1.0	—
- oil	15.6	16.3	17.3	13.2	—	0.9	-5.1	—
- gas	10.0	12.8	9.2	21.8	—	5.1	14.2	—
- heat	0.0	0.1	0.0	0.0	—	—	—	—
- biomass	0.1	0.1	0.0	0.4	—	-2.9	48.9	—
Total Final Energy Demand	**251.9**	**252.8**	**268.9**	**234.0**	**—**	**0.1**	**-1.9**	**—**
- solids	69.1	66.9	80.1	64.1	—	-0.6	-1.1	—
- oil	64.7	56.8	57.8	57.1	—	-2.6	0.1	—
- gas	48.8	52.1	57.0	34.6	—	1.3	-9.8	—
- electricity	26.4	30.3	32.9	33.4	—	2.9	2.5	—
- heat	39.8	43.2	37.2	40.8	—	1.6	-1.4	—
- biomass	3.1	3.4	3.9	4.0	—	1.8	3.8	—
CO2 Emissions in Mt of C	**274.8**	**282.7**	**296.2**	**268.9**	**—**	**0.6**	**-1.2**	**—**
Indicators								
Population (Million)	117.7	121.1	122.3	123.1	123.7	0.6	0.4	0.5
GDP (Index 1985 = 100)	90.7	100.0	106.9	109.0	99.5	2.0	2.2	-8.7
Primary Consumption/GDP (toe/MECU)	1048.6	986.5	957.1	916.7	902.8	-1.2	-1.8	-1.5
Primary Consumption/Capita (toe/inhab)	3.10	3.12	3.21	3.11	2.78	0.2	-0.1	-10.5
Electricity generated/Capita (kWh/inhab)	3266.0	3610.2	3791.5	3857.4	3603.43	2.0	1.7	-6.6
CO2 emissions/Capita (t/inhab)	2.34	2.33	2.42	2.18	—	0.0	-1.6	—

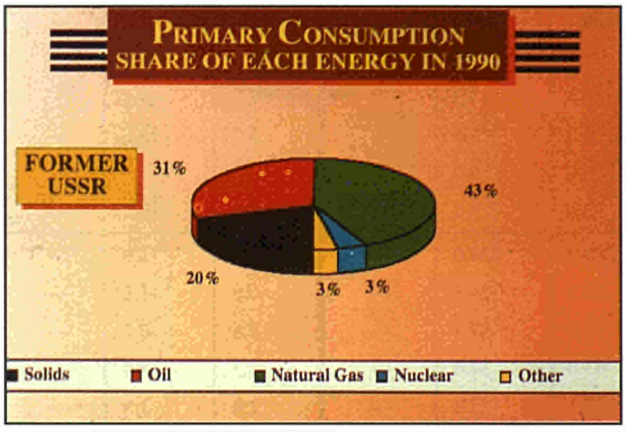
(1) Including bunkers.

(2) Includes nuclear, hydro and other renewable.

Former USSR

The former USSR is the second biggest energy producer in the world. For natural gas, however, it is by far the first producer and exporter. The Republics are self-sufficient in all primary fuels. Net exports of solids, oil and gas increased annually between 1985 and 1989 by 8.7%, 2.2% and 8.4% respectively. In 1990 there was a general decrease of net exports for all fuels except of natural gas which continued to rise (5.7%). As for Eastern Europe, the energy and macroeconomic data for these Republics is sometimes of doubtful quality, and again we have to recommend reference to trends rather than the absolute values for analysis purposes wherever possible. Moreover, with all the rapid changes in political, social and economic structures, data for 1990 are only estimates as statistics are at the moment very difficult to collect.

Total energy consumption grew steadily from 1980 to 1989: 2.2% per year from 1980 to 1985 and 2.0% per year until 1989. In 1990 and due to the serious economic and political crisis total energy demand fell by almost 2% compared to a drop in GDP of some 4%. Natural gas is the only fuel for which estimates show an increase in demand of 4.4% in 1990. Solids, oil and nuclear demand fell by 5%, 7% and 10% respectively. Natural gas accounts for a large share of total primary energy (43%) followed by oil (30%) and solids (20%) - see chart.



The energy intensity of the former USSR shows steady gains over the period. The gains were 0.8% per year from 1980 to 1985 and 0.6% per year until 1989. Due to the economic crisis already mentioned the energy intensity in 1990 had an increase of 2.1% bringing the level back to the pre-1989 value. In 1990 overall energy intensity was 4.4 times bigger of that of the European Community (3.9 times bigger in 1980).

Electricity is, aside from gas, the only energy vector that saw production continue to grow even in 1990 (0.3%). The average annual growth rates in the periods 1980 - 1985 and 1985 - 1989 were 3.6% and 2.8% respectively. Electricity production in the former USSR depends heavily on thermal power generation (75% in 1990), since hydro and nuclear account only for 14% and 11% respectively. Gas is the main input into power stations with 52% of the total. Solids and oil represent 32% and 16% of the total inputs for thermal-generated electricity.

FORMER USSR: SUMMARY ENERGY BALANCE

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**1353.2**	**1516.0**	**1631.8**	**1663.7**	**1618.1**	**2.3**	**2.4**	**-2.7**
- solids	320.9	306.3	320.8	308.7	293.3	-0.9	0.2	-5.0
- oil	606.2	598.2	627.1	610.0	570.3	-0.3	0.5	-6.5
- natural gas	359.6	520.1	587.9	643.8	659.3	7.7	5.5	2.4
- nuclear	19.0	43.5	49.3	55.4	50.0	18.0	6.2	-9.7
- hydro	18.1	20.5	20.6	21.1	20.4	2.4	0.7	-3.3
- biomass	29.4	27.4	26.2	24.8	24.8	-1.4	-2.5	0.0
Net Imports	**-215.1**	**-224.1**	**-270.1**	**-268.4**	**-262.7**	**0.8**	**4.6**	**-2.1**
- solids	-13.9	-13.4	-18.1	-18.7	-18.0	-0.8	8.7	-3.9
- crude oil	-116.1	-105.1	-123.2	-114.3	-108.2	-2.0	2.1	-5.3
- oil products	-40.9	-48.3	-57.5	-56.4	-53.4	3.4	3.9	-5.3
- natural gas	-42.6	-54.8	-68.4	-75.7	-80.0	5.2	8.4	5.7
- electricity	-1.6	-2.5	-3.0	-3.4	-3.1	8.6	8.0	-7.0
Gross Consumption (1)	**1129.7**	**1277.0**	**1351.4**	**1382.2**	**1355.4**	**2.5**	**2.0**	**-1.9**
- solids	306.9	290.4	303.6	290.0	275.3	-1.1	0.0	-5.1
- oil	441.9	436.8	442.4	439.5	408.7	-0.2	0.2	-7.0
- natural gas	315.9	460.9	512.3	554.8	579.3	7.8	4.7	4.4
- other (2)	64.9	88.9	93.0	97.9	95.2	6.5	2.4	-2.7
Electricity Generation in TWh	**1294.0**	**1544.0**	**1664.9**	**1722.0**	**1727.5**	**3.6**	**2.8**	**0.3**
- nuclear	75.2	172.1	194.7	219.0	197.9	18.0	6.2	-9.7
- hydro	211.0	238.1	239.2	244.8	236.8	2.4	0.7	-3.3
- thermal	1007.8	1133.8	1231.0	1258.2	1292.8	2.4	2.6	2.8
Fuel Inputs for Thermal Power Generation	**332.5**	**392.7**	**434.2**	**438.0**	**—**	**3.4**	**2.8**	**—**
- solids	128.3	124.4	142.5	139.8	—	-0.6	3.0	—
- oil	107.2	104.6	94.9	70.8	—	-0.5	-9.3	—
- gas	97.0	163.7	196.7	227.3	—	11.0	8.6	—
- biomass	13.4	11.0	9.2	10.2	—	-3.9	-1.9	—
Total Final Energy Demand	**800.9**	**864.6**	**903.2**	**929.1**	**—**	**1.5**	**1.8**	**—**
- solids	181.8	147.8	148.9	149.2	—	-4.1	0.2	—
- oil	267.6	273.1	276.4	280.1	—	0.4	0.6	—
- gas	181.7	227.9	249.1	265.9	—	4.6	3.9	—
- electricity	82.9	97.5	104.1	107.2	—	3.3	2.4	—
- heat	71.0	101.9	107.8	112.1	—	7.5	2.4	—
- biomass	16.0	16.4	17.0	14.6	—	0.5	-2.9	—
CO2 Emissions in Mt of C	**858.9**	**890.7**	**939.3**	**948.3**	**—**	**0.7**	**1.6**	**—**
Indicators								
Population (Million)	265.5	277.5	282.8	287.6	289.3	0.9	0.9	0.6
GDP (Index 1985 = 100)	85.0	100.0	103.4	110.8	106.4	3.3	2.6	-4.0
Primary Consumption/GDP (toe/MECU)	1409.7	1355.2	1386.5	1324.1	1352.5	-0.8	-0.6	2.1
Primary Consumption/Capita (toe/inhab)	4.25	4.60	4.78	4.81	4.68	1.6	1.1	-2.5
Electricity generated/Capita (kWh/inhab)	4873.1	5563.2	5886.6	5986.9	5970.48	2.7	1.9	-0.3
CO2 emissions/Capita (t/inhab)	3.23	3.21	3.32	3.30	—	-0.2	0.7	—

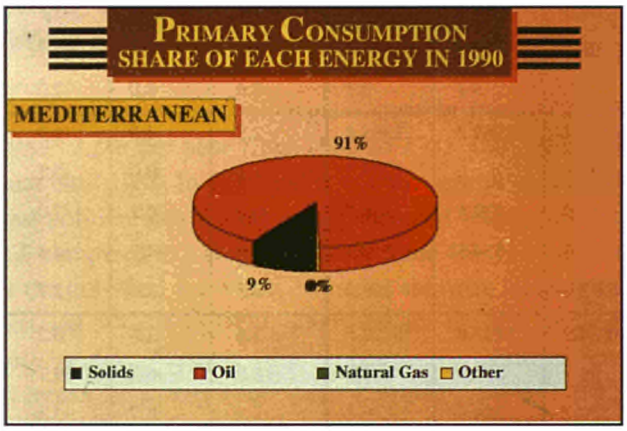
(1) Including bunkers.

(2) Includes nuclear, hydro and other renewable.

Mediterranean

This is a rather small region as it only comprises Cyprus, Gibraltar and Malta. The only domestic primary fuel produced is biomass which is used in the domestic/tertiary sector. This means that this region in practice relies entirely on imports.

Gross energy consumption grew steady over the last decade. From an average annual increase of 3.4% between 1980 and 1985, it accelerated to 9.6% per year until 1989. Estimates for 1990 indicate an increase in total energy consumption of 7.3%. Oil accounted for 91% of total energy demand in 1990. The shares of each fuel in total primary energy consumption are shown in the chart..



The energy intensity of this region, after a gradual decrease of 0.8% per year from 1980 to 1985, increased at a robust 3.3% per year between 1985 and 1989. For 1990, another unfavourable result is expected, intensity being estimated to have increased by 0.5%.

Electricity generation, entirely from thermal power stations, which increased by 5.9% per year between 1980 to 1985, accelerated its growth to 9% per year up to 1989. This thermal-generated electricity is derived entirely from oil and coal (79% and 21% of total inputs in 1989 respectively).

MEDITERRANEAN: SUMMARY ENERGY BALANCE

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**0.00**	**0.01**	**0.01**	**0.01**	—	**14.9**	**7.5**	—
- biomass	0.00	0.01	0.01	0.01	—	14.9	7.5	—
Net Imports	**1.57**	**1.71**	**2.28**	**2.68**	—	**1.7**	**-**	—
- solids	0.00	0.18	0.21	0.25	—	-	9.1	—
- crude oil	0.75	0.79	1.06	1.18	—	-	-	—
- oil products	0.82	0.74	1.01	1.25	—	-1.9	13.9	—
Gross Consumption (1)	**1.56**	**1.84**	**2.32**	**2.66**	**2.85**	**3.4**	**9.6**	**7.3**
- solids	0.00	0.16	0.21	0.25	0.25	-	11.0	0.0
- oil	1.56	1.67	2.11	2.40	2.60	1.5	9.5	8.0
- other (2)	0.00	0.01	0.01	0.01	0.01	14.9	7.5	10.0
Electricity Generation in TWh	**1.62**	**2.15**	**2.51**	**3.03**	—	**5.9**	**9.0**	—
- thermal	1.62	2.15	2.51	3.03	—	5.9	9.0	—
Fuel Inputs for Thermal Power Generation	**0.51**	**0.64**	**0.76**	**0.89**	—	**4.6**	**8.3**	—
- solids	0.00	0.12	0.11	0.19	—	-	12.0	—
- oil	0.51	0.53	0.65	0.70	—	0.5	7.4	—
Total Final Energy Demand	**0.94**	**0.98**	**1.23**	**1.37**	—	**1.0**	**8.7**	—
- solids	0.00	0.05	0.09	0.06	—	-	8.2	—
- oil	0.81	0.76	0.94	1.07	—	-1.2	8.8	—
- electricity	0.13	0.17	0.20	0.23	—	6.2	8.4	—
- biomass	0.00	0.01	0.01	0.01	—	14.9	7.5	—
CO2 Emissions in Mt of C	**1.12**	**1.27**	**1.57**	**1.77**	—	**2.6**	**8.7**	—
Indicators								
Population (Million)	1.0	1.0	1.1	1.1	1.1	1.2	0.7	0.9
GDP (Index 1985 = 100)	81.4	100.0	110.1	126.8	135.3	4.2	6.1	6.7
Primary Consumption/GDP (toe/MECU)	398.3	383.3	438.8	436.1	438.5	-0.8	3.3	0.5
Primary Consumption/Capita (toe/inhab)	1.59	1.77	2.21	2.49	2.64	2.2	8.8	6.3
Electricity generated/Capita (kWh/inhab)	1649.3	2068.4	2392.0	2836.3	—	4.6	8.2	—
CO2 emissions/Capita (t/inhab)	1.14	1.22	1.49	1.65	—	1.3	7.9	—

(1) Including bunkers.

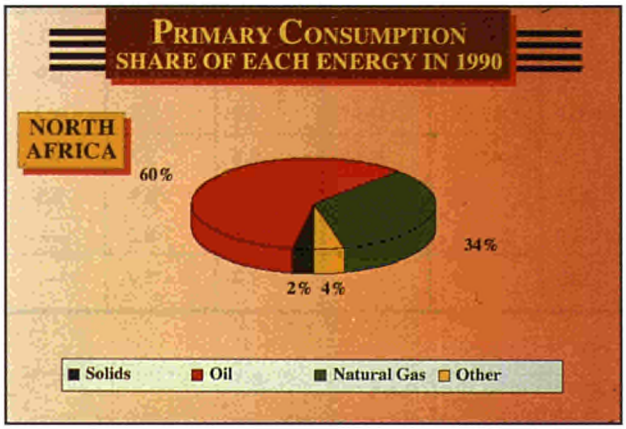
(2) Includes nuclear, hydro and other renewable.

North Africa

This region comprises Algeria, Egypt, Libya, Morocco and Tunisia. This is a relatively populous area but with a modest income per capita. Moreover, in recent times population has been increasing at a steady rate of 2.8% per year (cf. 0.3% per year in the European Community).

This region is more than self-sufficient in all primary fuels except solids. Oil and natural gas are the two primary fuels, being exported mainly to Europe. Net exports of oil and gas represented, in 1989, 69% and 47% respectively of total domestic production (84% and 43% respectively in 1980). But turning to oil, exports of crude have been diminishing: from 145 Mtoe in 1980 to 89 Mtoe in 1989. Conversely, exports of finished products passed from 8.3 Mtoe to 24 Mtoe in the same time period.

Gross energy consumption over the decade shows very high growth rates: 7.8% per year from 1980 to 1985; 5.9% between 1985 and 1989; and an estimated 3.3% in 1990. The fastest growing primary energy fuel is natural gas, with annual growth rates of 11.2% and 10.8% in the first and second halves of the 1980's (5.4% in 1990). The shares of each fuel in total primary energy consumption are shown in the chart.



The energy intensity of this region has been increasing steadily: 5.3% per year from 1980 to 1985; 4.5% between 1985 and 1989; and an estimated 1.2% in 1990. This evolution is typical of a region under development especially, as in this case, when this is accompanied by rapid population growth. While energy intensity in 1980 was only 72% as high as that of the Community, it was 31% higher in 1990. In terms of energy per capita, the region saw this indicator increase 47% from 1980 to 1990 (in the Community the corresponding increase was only of 3.8%).

Electricity generation increased at 10% per year until 1985 and at 5.3% per year since then. Electricity production in this region is heavily dependent on thermal power generation (90% in 1989), hydro accounting only for the remaining 10%. Although more solids are now used for power generation, oil and gas are the main two inputs into power stations with 54% and 43% of total inputs respectively.

NORTH AFRICA: SUMMARY ENERGY BALANCE

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**204.8**	**199.5**	**206.8**	**220.1**	**—**	**-0.5**	**2.5**	**—**
- solids	0.4	0.4	0.4	0.3	—	0.8	-10.2	—
- oil	182.2	156.5	158.5	163.4	—	-3.0	1.1	—
- natural gas	19.1	39.4	44.6	53.1	—	15.6	7.7	—
- hydro	1.0	0.9	0.9	0.7	—	-3.1	-5.9	—
- biomass	2.1	2.3	2.5	2.6	—	2.2	3.2	—
Net Imports	**-160.8**	**-131.7**	**-133.6**	**-135.4**	**—**	**-3.9**	**0.7**	**—**
- solids	0.9	1.6	2.2	2.4	—	12.7	10.6	—
- crude oil	-145.2	-92.3	-87.3	-88.9	—	-8.7	-0.9	—
- oil products	-8.3	-20.2	-24.5	-23.8	—	19.4	4.1	—
- natural gas	-8.2	-20.8	-24.0	-25.1	—	20.6	4.8	—
Gross Inland Consumption (1)	**46.1**	**67.2**	**73.1**	**84.4**	**87.1**	**7.8**	**5.9**	**3.3**
- solids	1.4	1.7	2.3	2.4	2.5	4.7	8.6	2.2
- oil	30.7	43.7	46.8	50.7	51.8	7.3	3.8	2.2
- natural gas	10.9	18.6	20.6	28.0	29.5	11.2	10.8	5.4
- other (2)	3.1	3.2	3.4	3.3	3.4	0.6	0.9	2.6
Electricity Generation in TWh	**39.1**	**63.0**	**70.1**	**77.6**	**—**	**10.0**	**5.3**	**—**
- hydro	11.6	9.9	10.1	7.8	—	-3.1	-5.9	—
- thermal	27.5	53.1	60.0	69.8	—	14.1	7.1	—
Fuel Inputs for Thermal Power Generation	**9.0**	**14.7**	**17.3**	**18.4**	**—**	**10.2**	**5.8**	**—**
- solids	0.4	0.3	0.7	0.6	—	-1.1	14.3	—
- oil	5.5	7.9	9.1	9.9	—	7.4	5.7	—
- gas	3.1	6.4	7.5	7.9	—	15.5	5.3	—
Total Final Energy Demand	**29.4**	**42.3**	**45.5**	**50.9**	**—**	**7.6**	**4.7**	**—**
- solids	0.9	1.3	1.4	1.5	—	6.6	4.0	—
- oil	20.8	28.2	29.6	31.6	—	6.3	2.8	—
- gas	2.8	6.0	6.9	9.6	—	16.4	12.6	—
- electricity	2.8	4.5	5.1	5.6	—	10.4	5.5	—
- biomass	2.1	2.3	2.5	2.6	—	2.2	3.2	—
CO2 Emissions in Mt of C	**29.6**	**42.7**	**46.9**	**51.2**	**—**	**7.5**	**4.7**	**—**
Indicators								
Population (Million)	90.4	100.9	106.5	112.7	115.9	2.2	2.8	2.8
GDP (Index 1985 = 100)	88.8	100.0	100.2	105.2	107.4	2.4	1.3	2.0
Primary Consumption/GDP (toe/MECU)	257.3	333.1	361.5	397.6	402.3	5.3	4.5	1.2
Primary Consumption/Capita (toe/inhab)	0.51	0.67	0.69	0.75	0.75	5.5	3.0	0.5
Electricity generated/Capita (kWh/inhab)	432.1	624.5	658.6	688.0	—	7.6	2.5	—
CO2 emissions/Capita (t/inhab)	0.33	0.42	0.44	0.45	—	5.2	1.8	—

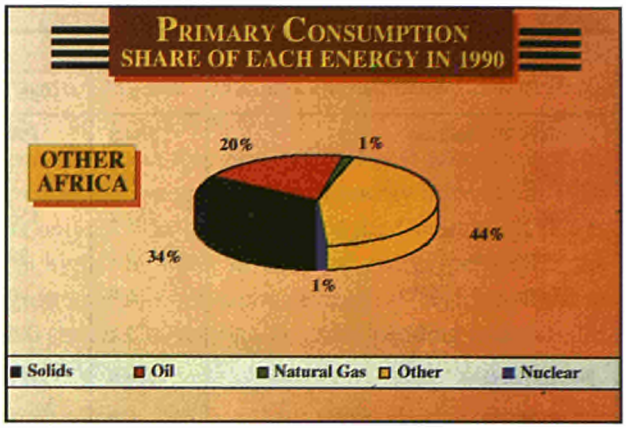
(1) Including bunkers.

(2) Includes nuclear, hydro and other renewable.

Other Africa

This is a very large region (it includes all other African countries not included elsewhere) with significant disparities among the different countries. Clearly, averages drawn from countries like Chad, Malawi and South Africa cannot be very meaningful. However very low incomes per capita continue to be a common factor among the great majority of the countries concerned and low rates of economic growth have been the rule in recent years: 0.1% per year between 1980 and 1985, 2.9% from 1985 to 1989, and 2.1% in 1990). In energy terms, however, this region is more than self-sufficient in all primary fuels. Solids (South Africa) and crude oil (Nigeria is the most important among a number of significant producers) are the two primary fuels being exported. Net exports of solids and oil represented, in 1989, 24% and 69% of the respective total domestic production (27% and 69% in 1980). Regarding oil, exports of crude have been increasing at 5.2% per year from 1985 to 1989, while they dropped annually by 2.3% until 1985. The region is a net importer of finished oil products. Although this region contains very large reserves of natural gas none is as yet exported.

Gross energy consumption kept increasing during the 1980's. The annual growth rates were 3.9% until 1985, 2.5% from 1985 and 1989, and estimates suggest a 2.3% increase in 1990. The shares of each fuel in total primary energy consumption are shown in the chart.



The energy intensity of this region, after increasing significantly at 3.8% per year until 1985, saw improvements until 1989 as the ratio dropped 0.3% annually. Although it is difficult to rely on the absolute level of intensity due to problems in calculating the GDP of this region, intensity in 1990 was probably more than double that of the European Community.

Electricity generation has been growing faster than total gross energy consumption. Production in 1989 came from: nuclear (5%) which showed a 20% annual increase from 1985 to 1989 - there was no nuclear capacity in 1980); hydro (20%); and thermal power. Solids are the main fuel for thermal electricity generation accounting for 89% of total inputs. Oil and gas account each for 5% of inputs.

OTHER AFRICA: SUMMARY ENERGY BALANCE

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**291.0**	**327.6**	**325.9**	**359.7**	**—**	**2.4**	**2.4**	**—**
- solids	71.7	104.5	107.5	105.3	—	7.8	0.2	—
- oil	127.9	114.8	110.0	139.8	—	-2.1	5.1	—
- natural gas	1.4	3.2	3.3	3.5	—	17.4	2.1	—
- nuclear	0.0	1.4	1.6	2.9	—	-	20.2	—
- hydro	4.6	4.0	4.0	4.0	—	-2.7	-0.3	—
- heat	0.0	0.0	0.3	0.3	—	-	-	—
- biomass	85.4	99.7	99.2	103.9	—	3.2	1.0	—
Net Imports	**-100.2**	**-102.3**	**-90.2**	**-114.6**	**—**	**0.4**	**2.9**	**—**
- solids	-19.4	-29.9	-27.7	-25.4	—	9.0	-4.0	—
- crude oil	-88.8	-79.1	-68.1	-96.8	—	-2.3	5.2	—
- oil products	8.0	6.6	5.7	7.7	—	-3.7	3.7	—
- electricity	0.0	0.0	-0.1	-0.1	—	-	-	—
Gross Inland Consumption (1)	**185.6**	**224.9**	**232.3**	**248.6**	**254.4**	**3.9**	**2.5**	**2.3**
- solids	51.3	72.8	78.5	84.4	86.2	7.3	3.8	2.2
- oil	42.9	43.7	45.5	49.6	50.7	0.4	3.2	2.2
- natural gas	1.4	3.2	3.3	3.5	3.7	17.4	2.1	5.4
- other (2)	90.0	105.2	105.1	111.0	113.8	3.2	1.4	2.5
Electricity Generation in TWh	**163.8**	**201.6**	**215.5**	**226.8**	**—**	**4.2**	**3.0**	**—**
- nuclear	0.0	5.5	6.4	11.4	—	-	20.2	—
- hydro	53.7	46.9	46.2	46.3	—	-2.7	-0.3	—
- thermal	110.1	149.2	162.9	169.1	—	6.3	3.2	—
Fuel Inputs for Thermal Power Generation	**30.3**	**40.2**	**43.2**	**52.0**	**—**	**5.8**	**6.7**	**—**
- solids	27.2	35.5	37.9	46.5	—	5.5	7.0	—
- oil	2.2	2.3	2.7	2.7	—	1.6	3.4	—
- gas	1.0	2.3	2.3	2.5	—	18.7	2.4	—
- heat	0.0	0.0	0.3	0.3	—	-	-	—
- biomass	0.0	0.1	0.1	0.1	—	-	1.0	—
Total Final Energy Demand	**146.9**	**168.0**	**169.9**	**171.9**	**—**	**2.7**	**0.6**	**—**
- solids	17.6	17.2	17.9	17.6	—	-0.4	0.5	—
- oil	31.5	35.4	36.0	40.1	—	2.4	3.2	—
- gas	0.4	0.6	0.7	0.6	—	8.6	-3.2	—
- electricity	12.1	14.4	15.6	16.5	—	3.6	3.4	—
- biomass	85.4	100.2	99.7	97.1	—	3.3	-0.8	—
CO2 Emissions in Mt of C	**168.9**	**198.0**	**201.4**	**211.2**	**—**	**3.2**	**1.6**	**—**
Indicators								
Population (Million)	390.2	454.8	482.9	510.8	523.9	3.1	2.9	2.6
GDP (Index 1985 = 100)	99.3	100.0	103.2	112.0	114.4	0.1	2.9	2.1
Primary Consumption/GDP (toe/MECU)	580.4	698.1	698.8	688.7	690.2	3.8	-0.3	0.2
Primary Consumption/Capita (toe/inhab)	0.48	0.49	0.48	0.49	0.49	0.8	-0.4	-0.2
Electricity generated/Capita (kWh/inhab)	419.7	443.2	446.2	444.0	—	1.1	0.0	—
CO2 emissions/Capita (t/inhab)	0.43	0.44	0.42	0.41	—	0.1	-1.3	—

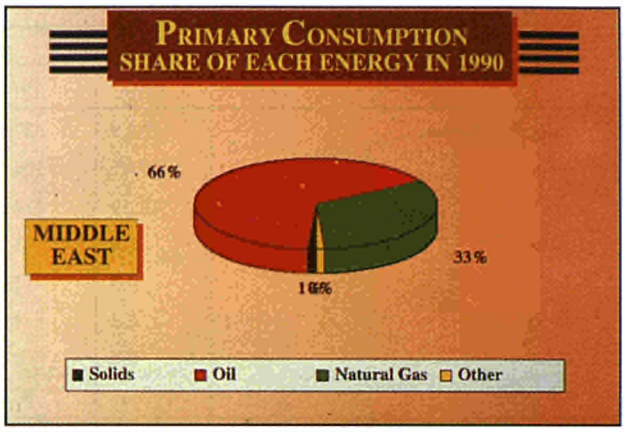
(1) Including bunkers.

(2) Includes nuclear, hydro and other renewable.

Middle East

The "Middle East", defined as Bahrain, Israel, Iran, Iraq, Lebanon, Kuwait, Oman, Qatar, Saudi Arabia, Syria, United Arab Emirates and Yemen, was chosen because of its importance in both geo-political and oil production/reserves terms. This region is the second biggest oil producer in the world and by far the largest crude oil exporter. It is naturally a self-sufficient region in overall energy terms with oil accounting for 91% of total energy production. Net exports of crude oil, which had dropped 15.5% per year between 1980 and 1985, increased annually by 13.5% until 1989. Net exports of finished oil products never ceased to rise since 1980 (8% annual increase between 1980 and 1985 and 11.2% per year until 1989). These increases naturally fell back after August 1990 due to the situation of crisis and subsequent war. Natural gas production is almost all consumed domestically (only 3.5% is exported). The region is however a net importer of solids which are used for power generation.

Gross energy consumption increased steadily in the 1980's. Growth rates were 7.8% and 4.9% per year in the first and second halves of the decade respectively. Estimates for 1990 indicate an increase of 5.3%. The fastest growing primary fuel is natural gas which saw production increase at more than 11% per year from 1980 to 1989. The shares of each fuel in total primary energy consumption are shown in the chart.



Other than in 1990, the energy intensity of this region has been increasing steadily (6.3% per year from 1980 to 1985 and 4.2% per year until 1989). Although intensity is only 23% higher than that of the Community (it was 33% lower in 1980) consumption per capita in this region is only 54% of the Community level.

Electricity generation, which increased at very high growth rates in the first half the 1980's (12.5%), has still been increasing at almost 7% annually since 1985. Hydro-generated electricity accounts only for 6% of total production and there is no nuclear-based electricity. In 1989, oil , gas and solids accounted for 50%, 46% and 4% of total inputs. However, oil use for electricity production has been declining since 1985, while gas use has increased annually by more than 10% (12.4% from 1985 to 1989) and solids by almost 5% in the second half of the 1980's (there was no solid inputs for power generation in 1980).

MIDDLE EAST: SUMMARY ENERGY BALANCE

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**994.4**	**604.4**	**739.5**	**923.3**	**—**	**-9.5**	**11.2**	**—**
- solids	0.6	0.8	0.8	0.4	—	6.8	-13.1	—
- oil	960.3	548.7	665.1	841.0	—	-10.6	11.3	—
- natural gas	31.9	53.1	71.8	79.9	—	10.7	10.7	—
- hydro	0.9	0.9	1.1	1.2	—	-0.4	8.1	—
- biomass	0.7	0.9	0.8	0.8	—	2.8	-0.4	—
Net Imports	**-862.6**	**-417.1**	**-524.6**	**-682.8**	**—**	**-13.5**	**13.1**	**—**
- solids	0.0	2.0	2.4	2.5	—	113.5	6.1	—
- crude oil	-816.7	-352.6	-443.4	-584.7	—	-15.5	13.5	—
- oil products	-43.6	-63.9	-81.0	-97.9	—	8.0	11.2	—
- natural gas	-2.4	-2.6	-2.5	-2.8	—	1.0	2.0	—
- electricity	0.0	0.0	-0.1	0.0	—	21.5	-0.7	—
Gross Inland Consumption (1)	**134.1**	**195.0**	**219.3**	**236.4**	**249.0**	**7.8**	**4.9**	**5.3**
- solids	0.6	2.7	3.1	2.9	3.0	35.0	2.3	3.8
- oil	102.3	140.0	145.1	154.4	162.6	6.5	2.5	5.3
- natural gas	29.5	50.6	69.3	77.1	81.3	11.4	11.1	5.4
- other (2)	1.6	1.7	1.8	2.0	2.1	0.9	4.2	2.8
Electricity Generation in TWh	**95.7**	**172.4**	**196.7**	**223.8**	**—**	**12.5**	**6.7**	**—**
- hydro	10.4	10.2	12.3	13.9	—	-0.4	8.1	—
- thermal	85.2	162.2	184.4	209.9	—	13.7	6.7	—
Fuel Inputs for Thermal Power Generation	**25.5**	**44.3**	**50.1**	**51.3**	**—**	**11.6**	**3.7**	**—**
- solids	0.0	1.8	2.1	2.2	—	-	4.7	—
- oil	16.4	27.6	26.6	25.4	—	10.9	-2.1	—
- gas	9.1	14.8	21.4	23.7	—	10.3	12.4	—
Total Final Energy Demand	**80.9**	**127.9**	**140.2**	**151.5**	**—**	**9.6**	**4.3**	**—**
- solids	0.6	0.8	1.0	0.7	—	6.9	-3.6	—
- oil	61.9	93.7	98.7	107.7	—	8.6	3.6	—
- gas	11.0	20.0	25.4	26.3	—	12.7	7.1	—
- electricity	6.7	12.6	14.3	16.0	—	13.5	6.2	—
- biomass	0.7	0.9	0.8	0.8	—	2.8	-0.5	—
CO2 Emissions in Mt of C	**80.5**	**128.5**	**140.0**	**148.5**	**—**	**9.8**	**3.7**	**—**
Indicators								
Population (Million)	91.4	111.6	119.1	127.5	129.9	4.1	3.4	1.8
GDP (Index 1985 = 100)	93.3	100.0	99.6	103.1	110.3	1.4	0.8	7.0
Primary Consumption/GDP (toe/MECU)	239.3	324.5	366.3	381.8	375.8	6.3	4.2	-1.6
Primary Consumption/Capita (toe/inhab)	1.47	1.75	1.84	1.85	1.92	3.5	1.5	3.4
Electricity generated/Capita (kWh/inhab)	1046.6	1544.2	1651.3	1755.6	—	8.1	3.3	—
CO2 emissions/Capita (t/inhab)	0.88	1.15	1.18	1.16	—	5.5	0.3	—

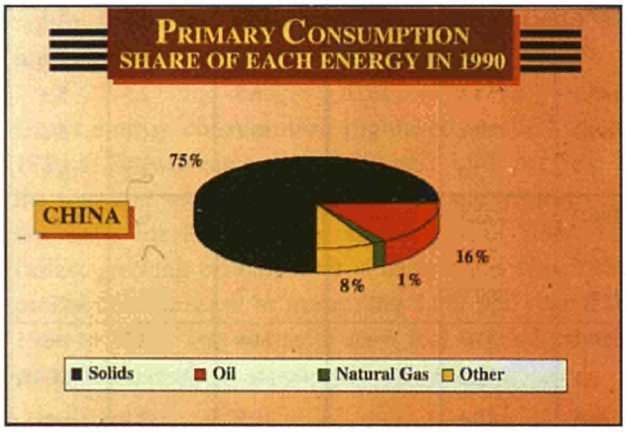
(1) Including bunkers.

(2) Includes nuclear, hydro and other renewable.

China

China is one of the largest countries in the world and has the world's highest population. It has been self-sufficient in its energy supply throughout the 1980s, but in particular since 1985. Crude oil is the main form of energy exported but presents a downward trend in the latest part of the period.

Solids (mainly hard coal) have been satisfying about 75% of total energy needs and oil about 20%. Natural gas demand is only some 3% of total demand and is domestically produced. The rest of the supply balance is met by biomass (vegetable and other fuels derived mainly from agricultural and human activities). Total primary energy demand has been growing around the 5% per year on average. However, it presents a slight downward trend in the late part of the 1980s.



In terms of final energy consumption, electricity presents the most rapid growth (10% per year between 1985 and 1989) followed by gas (8%). The third fastest growing energy vector is secondary heat with 6% per year in the second half of the period.

Although dynamic analysis of the Chinese energy situation in terms of intensity, given the difficulty of determining the Chinese GDP with reasonable accuracy, remains problematic, it can be shown for comparison purposes that China shows one of the highest intensities in the world, while it also presents one of the lowest indicators for consumption per capita. Intensity levels show a gain of about 16% per year between 1980 and 1985, followed by a significant slow-down in gains after 1985 (2.4 per year until 1989 and only 1.4% in 1990.

CHINA: SUMMARY ENERGY BALANCE

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**466.1**	**615.7**	**655.8**	**722.5**	**—**	**5.7**	**4.1**	**—**
- solids	303.9	427.4	454.7	516.5	—	7.1	4.8	—
- oil	107.9	127.1	136.6	140.1	—	3.3	2.5	—
- natural gas	12.0	10.8	11.6	12.3	—	-2.0	3.2	—
- hydro	5.0	7.9	8.6	10.2	—	9.7	6.6	—
- biomass	37.4	42.4	44.3	43.4	—	2.5	0.6	—
Net Imports	**-19.9**	**-38.5**	**-32.8**	**-32.9**	**—**	**14.2**	**-3.8**	**—**
- solids	-2.3	-2.9	-4.5	-8.1	—	4.8	29.3	—
- crude oil	-13.2	-30.3	-27.2	-25.6	—	18.1	-4.2	—
- oil products	-4.4	-5.4	-1.2	0.6	—	4.2	-	—
- electricity	0.0	0.1	0.1	0.1	—	-	-	—
Gross Inland Consumption (1)	**450.5**	**560.0**	**629.2**	**694.8**	**719.4**	**4.4**	**5.5**	**3.5**
- solids	306.6	404.8	457.7	513.1	536.9	5.7	6.1	4.6
- oil	89.5	93.9	106.9	115.7	114.6	1.0	5.3	-1.0
- natural gas	12.0	10.8	11.6	12.3	12.5	-2.0	3.2	2.3
- other (2)	42.4	50.4	53.0	53.8	55.4	3.5	1.6	3.0
Electricity Generation in TWh	**300.6**	**410.7**	**497.3**	**597.8**	**—**	**6.4**	**9.8**	**—**
- hydro	58.2	92.4	100.0	119.1	—	9.7	6.6	—
- thermal	242.4	318.3	397.3	478.6	—	5.6	10.7	—
Fuel Inputs for Thermal								
Power Generation	75.4	89.6	103.7	129.7	—	3.5	9.7	—
- solids	57.9	75.2	90.2	115.1	—	5.4	11.2	—
- oil	17.3	14.1	12.9	14.4	—	-4.0	0.5	—
- gas	0.2	0.3	0.6	0.3	—	11.7	-3.4	—
Total Final Energy Demand	**362.1**	**450.8**	**505.1**	**541.0**	**—**	**4.5**	**4.7**	**—**
- solids	230.5	299.2	333.2	359.7	—	5.4	4.7	—
- oil	58.7	62.2	72.8	72.7	—	1.2	4.0	—
- gas	6.8	7.9	8.8	10.7	—	3.2	7.9	—
- electricity	21.3	29.9	35.0	43.0	—	7.0	9.5	—
- heat	7.4	9.1	11.1	11.5	—	4.3	6.0	—
- biomass	37.4	42.4	44.3	43.4	—	2.5	0.6	—
CO2 Emissions in Mt of C	**418.2**	**516.8**	**580.0**	**636.5**	**—**	**4.3**	**5.3**	**—**
Indicators								
Population (Million)	987.1	1059.5	1089.6	1122.4	1139.4	1.4	1.5	1.5
GDP (Index 1985 = 100)	34.0	100.0	118.9	136.5	143.3	24.1	8.1	5.0
Primary Consumption/GDP (toe/MECU)	4218.1	1784.6	1686.2	1622.2	1599.7	-15.8	-2.4	-1.4
Primary Consumption/Capita (toe/inhab)	0.46	0.53	0.58	0.62	0.63	3.0	4.0	2.0
Electricity generated/Capita (kWh/inhab)	304.6	387.6	456.4	532.6	—	4.9	8.3	—
CO2 emissions/Capita (t/inhab)	0.42	0.49	0.53	0.57	—	2.9	3.8	—

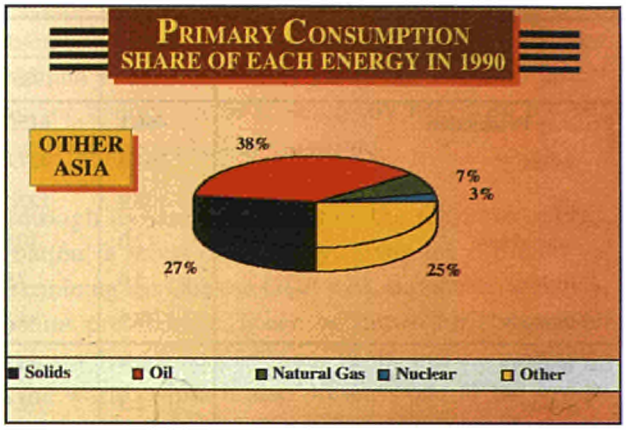
(1) Including bunkers.

(2) Includes nuclear, hydro and other renewable.

Other Asia

This is a complex region including all other Asian countries not included elsewhere and the pacific islands. To put the fast economic growers of southeast Asia (Korea, Hong Kong, Taiwan) together with significantly less developed countries such as Bangladesh makes precise analysis problematic. More detailed examination will show the reader the huge differences among countries in this region of the world. By way of illustration we can recall simply that this region of the world comprises about one third of world population but only about 9% of total energy demand. In terms of energy production, the region represents some 7% of the world total.

However, energy demand has been growing in the last decade at very robust rates, and since 1985 accelerated to 6% per year. In terms of energy supply the region depends on external supplies (some 14% for total energy) except for natural gas of which it is a net exporter. The shares of each fuel in total primary energy demand are shown in the chart.



Given a relatively low level of economic development combined with a significant acceleration in economic activity one could expect energy intensity to be have increased throughout the decade. On the contrary, energy intensity developments show gains of 1.5% per year from 1980 to 1985 and of 0.7% per year between 1985 and 1989. In 1990, current estimates show an increase of 0.7% in energy intensity.

OTHER ASIA: SUMMARY ENERGY BALANCE

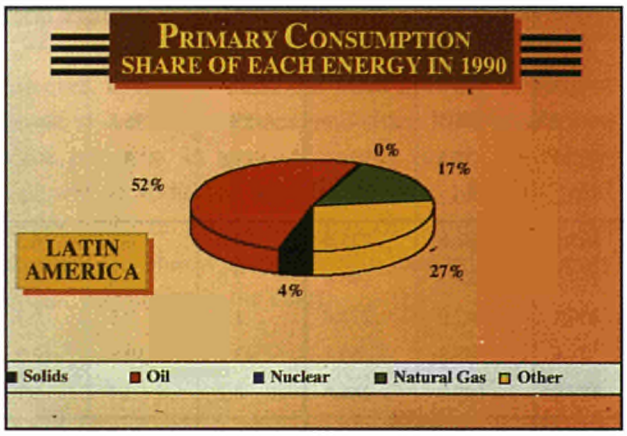
	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**400.3**	**493.2**	**540.8**	**590.7**	**—**	**4.3**	**4.6**	**—**
- solids	101.7	126.8	142.3	154.7	—	4.5	5.1	—
- oil	119.0	134.2	137.4	152.0	—	2.4	3.2	—
- natural gas	32.7	59.9	72.0	84.8	—	12.9	9.1	—
- nuclear	3.9	13.3	20.4	21.7	—	28.0	13.1	—
- hydro	8.7	11.8	12.4	14.2	—	6.1	4.8	—
- heat	1.8	4.4	4.1	4.7	—	19.9	1.7	—
- biomass	132.6	142.9	152.2	158.6	—	1.5	2.6	—
Net Imports	**44.9**	**41.4**	**72.2**	**97.0**	**—**	**-1.6**	**23.7**	**—**
- solids	9.6	25.5	30.7	36.2	—	21.6	9.2	—
- crude oil	36.3	45.0	67.4	84.9	—	4.4	17.2	—
- oil products	17.1	3.9	6.9	13.5	—	-25.7	36.8	—
- natural gas	-18.1	-32.7	-32.8	-37.4	—	12.6	3.4	—
- electricity	0.0	-0.1	-0.2	-0.2	—	-	-	—
Gross Consumption (1)	**439.5**	**535.9**	**603.5**	**681.8**	**725.0**	**4.0**	**6.2**	**6.3**
- solids	108.2	151.6	169.8	188.5	196.4	7.0	5.6	4.2
- oil	169.8	185.1	206.1	247.0	271.0	1.7	7.5	9.7
natural gas	14.6	27.2	38.6	47.3	53.1	13.2	14.9	12.2
- other (2)	146.9	172.1	188.9	199.0	204.5	3.2	3.7	2.7
Electricity Generation in TWh	**347.3**	**526.1**	**612.3**	**727.0**	**—**	**8.7**	**8.4**	**—**
- nuclear	15.3	52.4	80.7	85.8	—	28.0	13.1	—
- hydro	100.5	134.7	142.6	162.7	—	6.0	4.8	—
- thermal	231.6	339.0	389.0	478.5	—	7.9	9.0	—
Fuel Inputs for Thermal Power Generation	**66.2**	**94.6**	**109.5**	**130.5**	**—**	**7.4**	**8.4**	**—**
- solids	27.8	57.0	70.1	79.6	—	15.4	8.7	—
- oil	33.8	25.7	22.7	29.8	—	-5.3	3.8	—
- gas	2.8	7.5	12.7	16.4	—	21.6	21.7	—
- heat	1.8	4.4	4.1	4.7	—	19.9	1.7	—
- biomass	0.0	0.0	0.0	0.0	—	19.1	-12.6	—
Total Final Energy Demand	**346.2**	**408.4**	**446.5**	**502.9**	**—**	**3.4**	**5.3**	**—**
- solids	71.5	84.5	84.5	94.9	—	3.4	2.9	—
- oil	113.6	133.9	153.5	181.0	—	3.3	7.8	—
- gas	9.0	15.6	18.5	22.1	—	11.8	9.0	—
- electricity	24.3	36.2	41.8	50.2	—	8.3	8.5	—
- biomass	127.9	138.1	148.3	154.7	—	1.6	2.9	—
CO2 Emissions in Mt of C	**375.8**	**449.5**	**493.5**	**555.8**	**—**	**3.6**	**5.5**	**—**
Indicators								
Population (Million)	1335.1	1490.9	1548.3	1611.3	1648.1	2.2	2.0	2.3
GDP (Index 1985 = 100)	76.2	100.0	113.8	130.9	138.2	5.6	7.0	5.5
Primary Consumption/GDP (toe/MECU)	656.8	610.5	604.3	593.3	597.7	-1.5	-0.7	0.7
Primary Consumption/Capita (toe/inhab)	0.33	0.36	0.39	0.42	0.44	1.8	4.2	4.0
Electricity generated/Capita (kWh/inhab)	260.1	352.9	395.5	451.2	—	6.3	6.3	—
CO2 emissions/Capita (t/inhab)	0.28	0.30	0.32	0.34	—	1.4	3.4	—

(1) Including bunkers.

(2) Includes nuclear, hydro and other renewable.

Latin America

This region, which represents a very large part of the surface area of the world, only accounts for less than 10% of total world population. This part of the world is a net exporter of oil (crude and products) and practically self-sufficient for the other primary fuels. After 1985 energy demand increased annually by about 3% against an economic growth rate in the order of 2%. This indicates a loss in efficiency as energy intensity has been growing by almost 1% per year over the decade. Estimates for 1990 show an intensity increase of almost 4%.



Electricity generation has increased annually by almost 6%, or double the increase in total primary energy consumption. Electricity is mainly generated by Hydropower. The share of hydro-generated electricity has been slightly increasing over the decade from 61% in 1980 to 63% in 1989. Nuclear-based electricity shows a very significant growth in the first half of the 1980's (30.5% per year) but it has been dropping since then. Inputs for thermal power generation are mainly oil and gas (54% and 27% of total inputs in 1989) but solids and heat (geothermal) are showing steady increases in the order of 12% and 20% respectively.

LATIN AMERICA: SUMMARY ENERGY BALANCE

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**456.3**	**539.0**	**559.0**	**588.8**	—	**3.4**	**2.2**	—
- solids	8.0	13.6	16.9	21.7	—	11.1	12.3	—
- oil	303.8	346.3	349.2	364.6	—	2.7	1.3	—
- natural gas	52.1	66.7	70.0	74.7	—	5.1	2.9	—
- nuclear	0.6	2.3	1.9	1.9	—	30.5	-4.9	—
- hydro	19.0	27.0	29.9	32.5	—	7.3	4.7	—
- heat	1.1	2.3	4.8	5.0	—	15.7	20.6	—
- biomass	71.6	80.7	86.3	88.4	—	2.4	2.3	—
Net Imports	**-71.2**	**-118.3**	**-104.7**	**-114.5**	—	**10.7**	**-0.8**	—
- solids	5.8	5.3	2.9	0.6	—	-1.7	-42.3	—
- crude oil	-13.1	-81.3	-85.9	-88.9	—	44.0	2.3	—
- oil products	-61.3	-42.7	-21.9	-27.5	—	-7.0	-10.4	—
- natural gas	-2.5	0.3	0.3	0.6	—	-	-	—
- electricity	0.0	0.0	-0.1	0.6	—	-	-	—
Gross Consumption (1)	**383.0**	**418.8**	**452.0**	**472.4**	**486.5**	**1.8**	**3.1**	**3.0**
- solids	13.4	18.8	20.0	22.0	22.4	7.0	4.0	1.8
- oil	227.6	220.8	239.1	246.6	252.0	-0.6	2.8	2.2
- natural gas	49.5	66.8	70.1	75.3	80.1	6.2	3.0	6.3
- other (2)	92.4	112.4	122.8	128.5	132.1	4.0	3.4	2.8
Electricity Generation in TWh	**362.8**	**478.2**	**541.8**	**595.5**	—	**5.7**	**5.6**	—
- nuclear	2.4	9.1	7.6	7.5	—	30.5	-4.9	—
- hydro	221.3	314.1	348.2	378.0	—	7.3	4.7	—
- thermal	139.0	155.0	186.1	210.0	—	2.2	7.9	—
Fuel Inputs for Thermal Power Generation	**40.3**	**44.0**	**53.6**	**57.8**	—	**1.7**	**7.0**	—
- solids	2.3	3.7	4.7	5.9	—	10.4	12.2	—
- oil	27.2	25.6	30.8	31.1	—	-1.2	5.0	—
- gas	9.7	12.3	13.3	15.8	—	4.8	6.4	—
- heat	1.1	2.3	4.8	5.0	—	15.7	20.6	—
- biomass	1.8	2.0	1.6	1.4	—	1.2	-7.3	—
Total Final Energy Demand	**282.9**	**308.7**	**332.7**	**336.3**	—	**1.8**	**2.2**	—
- solids	8.7	12.5	13.1	13.3	—	7.5	1.6	—
- oil	158.7	159.7	171.9	177.1	—	0.1	2.6	—
- gas	25.9	35.9	39.4	38.7	—	6.8	1.9	—
- electricity	26.5	34.7	38.7	36.2	—	5.6	1.1	—
- biomass	63.1	65.8	69.5	70.9	—	0.8	1.9	—
CO2 Emissions in Mt of C	**261.2**	**277.5**	**300.4**	**308.9**	—	**1.2**	**2.7**	—
Indicators								
Population (Million)	360.7	401.6	419.0	437.8	446.6	2.2	2.2	2.0
GDP (Index 1985 = 100)	96.1	100.0	106.7	109.2	108.2	0.8	2.2	-0.9
Primary Consumption/GDP (toe/MECU)	419.8	441.0	446.1	455.6	473.4	1.0	0.8	3.9
Primary Consumption/Capita (toe/inhab)	1.06	1.04	1.08	1.08	1.09	-0.4	0.9	1.0
Electricity generated/Capita (kWh/inhab)	1005.8	1190.9	1293.0	1360.3	—	3.4	3.4	—
CO2 emissions/Capita (t/inhab)	0.72	0.69	0.72	0.71	—	-0.9	0.5	—

(1) Including bunkers.

(2) Includes nuclear, hydro and other renewable.

WORLD OIL SUPPLY AND DEMAND

	Mbd					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
DEMAND	**62.74**	**60.07**	**62.99**	**65.96**	**66.08**	**-0.9**	**1.9**	**0.2**
EUROPE 12	12.14	10.43	10.84	11.09	11.19	-3.0	1.4	0.9
EFTA	1.45	1.24	1.31	1.26	1.27	-3.1	0.5	0.8
USA	17.49	16.04	16.91	17.52	17.21	-1.7	1.4	-1.8
Japan	4.96	4.38	4.49	4.96	5.20	-2.5	3.5	4.8
Rest of OECD	2.96	2.58	2.76	3.00	3.01	-2.7	3.1	0.3
Total OECD	**39.00**	**34.67**	**36.31**	**37.83**	**37.88**	**-2.3**	**1.8**	**0.1**
Eastern Europe	1.94	1.79	1.82	1.90	1.70	-1.6	-1.0	-10.5
Former USSR	8.92	9.02	8.96	8.78	8.40	0.2	-1.4	-4.3
North Africa	0.60	0.85	0.92	0.97	1.00	7.2	3.3	3.0
Other Africa	0.87	0.95	0.97	1.09	1.10	1.8	3.0	1.0
Middle East	1.95	2.82	2.94	3.13	3.30	7.7	3.2	5.4
China	1.77	1.89	2.16	2.35	2.30	1.3	4.0	-2.1
Other Asia	3.24	3.60	4.05	4.87	5.30	2.1	8.0	8.8
Latin America	4.45	4.48	4.86	5.04	5.10	0.1	2.6	1.2
Total Non-OECD	**23.74**	**25.40**	**26.68**	**28.13**	**28.20**	**1.4**	**2.1**	**0.2**
SUPPLY	**64.10**	**59.21**	**62.31**	**65.91**	**66.89**	**-1.6**	**2.5**	**1.5**
EUROPE 12	2.44	3.14	3.12	2.45	2.42	5.2	-5.1	-1.2
EFTA	0.06	0.85	1.08	1.59	1.73	69.9	15.3	8.8
USA	10.21	10.64	10.01	9.22	8.99	0.8	-3.3	-2.5
Japan	0.01	0.01	0.02	0.02	0.02	0.0	14.9	0.0
Rest of OECD	2.29	2.49	2.58	2.62	2.76	1.7	2.1	5.3
Total OECD	**15.01**	**17.13**	**16.81**	**15.90**	**15.92**	**2.7**	**-1.5**	**0.1**
Eastern Europe	0.47	0.45	0.41	0.38	0.34	-0.9	-5.5	-10.5
Former USSR	12.12	12.00	12.61	12.27	11.53	-0.2	-0.8	-6.0
North Africa	3.66	3.21	3.27	3.38	3.71	-2.6	2.9	9.8
Other Africa	2.54	2.34	2.25	2.85	3.01	-1.6	5.2	5.6
Middle East	18.88	11.00	13.35	16.84	17.41	-10.2	9.6	3.4
China	2.12	2.51	2.69	2.76	2.77	3.4	2.0	0.4
Other Asia	2.38	2.74	2.85	3.08	3.20	2.9	3.2	3.9
Latin America	5.90	6.74	6.83	7.18	7.70	2.7	2.7	7.2
Total Non-OECD	**48.07**	**40.99**	**44.26**	**48.74**	**49.67**	**-3.1**	**3.9**	**1.9**
Memo items:								
OPEC crude	26.56	16.06	17.80	21.69	23.07	-9.6	7.5	6.4
OPEC NGL	1.00	1.50	1.78	2.04	2.00	8.4	5.9	-2.0
Total OPEC	**27.56**	**17.56**	**19.58**	**23.73**	**25.07**	**-8.6**	**7.4**	**5.6**
Total Non OPEC	35.52	40.56	41.49	40.91	40.52	2.7	0.0	-1.0
Processing Gains	**1.02**	**1.09**	**1.24**	**1.27**	**1.30**	**1.3**	**3.6**	**2.4**
Stock Changes etc.	**1.36**	**-0.86**	**-0.68**	**-0.05**	**0.81**			

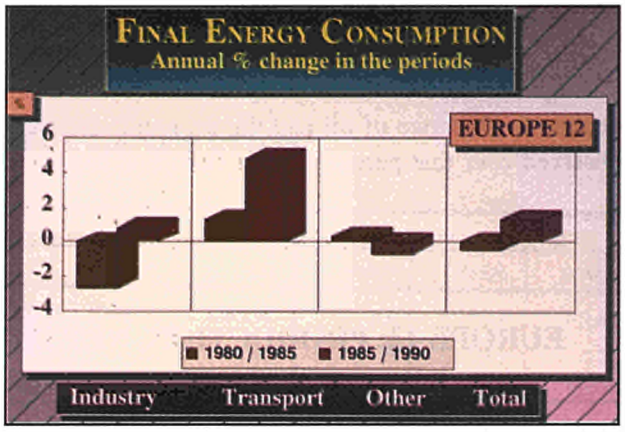
Note : EUROPE 12 Figures include German eastern states.

PART II

EUROPEAN COMMUNITY

Total final energy consumption in the European Community slowed in 1980-85 although annual GDP growth was around 1.5% on average and private consumption rose by 1.3%. In the second half of the decade recovery in European economies combined with the decline in the price of oil pushed total final consumption up by 1.3% per year while this rate was even higher in 1990, reaching 1.5%. The sectoral evolution of final energy consumption presents a different pattern.

Throughout the decade the transport sector showed steady increases of 1.3% (1980-85) and 4.8% per year (1985-90) while there was almost no growth in the domestic and tertiary sector. Industrial consumption declined. These low levels of consumption, when seen against steady economic activity, were achieved thanks to constantly improving energy efficiency in Europe. Energy intensity improvement (measured as the rate of gross inland consumption per unit of GDP) averaged 1.5% per year over the decade. The industrial sector improved most with decreases of 3.3% (80-85) and 2.0% per year (85-90). Some improvement in energy intensity was achieved in all Member States with the exception of Greece and Portugal.



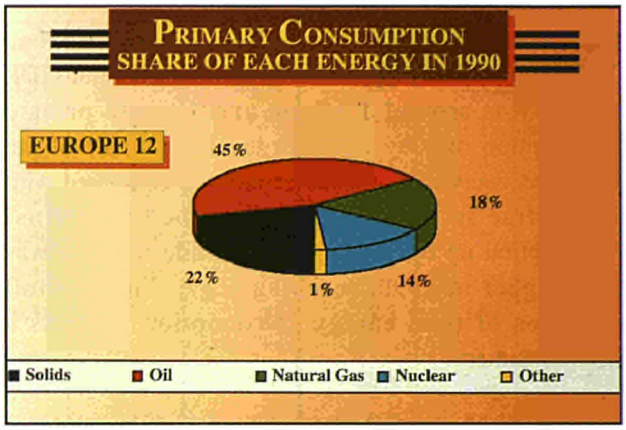
EUROPE 12: FINAL ENERGY CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Industry	**245.70**	**214.22**	**216.73**	**222.99**	**222.94**	**-2.7**	**0.8**	**0.0**
- solids	40.71	47.68	42.70	43.60	43.32	3.2	-1.9	-0.6
- oil	90.93	50.38	50.64	46.93	42.93	-11.1	-3.1	-8.5
- gas	63.66	63.11	67.69	72.38	76.02	-0.2	3.8	5.0
- electricity	49.20	50.77	52.91	57.45	58.02	0.6	2.7	1.0
- heat	1.20	2.29	2.79	2.64	2.65	13.8	3.0	0.4
Transport	**170.39**	**181.42**	**198.65**	**222.62**	**229.56**	**1.3**	**4.8**	**3.1**
- solids	0.20	0.17	0.14	0.04	0.06	-3.2	-18.8	50.0
- oil	167.38	178.24	195.39	219.37	225.98	1.3	4.9	3.0
- gas	0.26	0.24	0.24	0.21	0.21	-1.6	-2.6	0.0
- electricity	2.55	2.77	2.88	3.01	3.32	1.7	3.7	10.3
Other	**276.58**	**280.59**	**288.83**	**266.97**	**270.56**	**0.3**	**-0.7**	**1.3**
- solids	21.67	20.27	17.00	12.63	11.31	-1.3	-11.0	-10.5
- oil	124.93	108.35	105.73	89.11	88.93	-2.8	-3.9	-0.2
- gas	77.29	90.71	99.10	95.26	98.61	3.3	1.7	3.5
- electricity	49.99	59.20	64.54	67.80	70.00	3.4	3.4	3.2
- heat	2.70	2.07	2.45	2.17	1.72	-5.2	-3.6	-20.7
TOTAL	**692.67**	**676.23**	**704.20**	**712.58**	**723.07**	**-0.5**	**1.3**	**1.5**

Gross inland consumption requirements in the Community reached 1115 Mtoe in 1990 , up by 1.5% since 1989. The share of solids in gross inland consumption was 21%, and that of oil 45%; while that of natural gas and of other energy sources were 19% and 15% respectively. Almost 50% of gross inland consumption was imported in 1990. Important structural changes have occurred however over the last decade.

Nuclear energy production increased substantially over the decade. Total Community oil consumption fell by 3.7% on average from 1980 to 1985; this trend was however inverted between 1985 and 1990 with an average increase of 1.5% per year due to the sharp decline in the price of oil and the economic recovery observed over that period in most European countries.

Such a trend was observed in all Member States except Denmark where gross inland consumption declined.



EUROPE 12: PRODUCTION, NET IMPORTS, GROSS INLAND CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**482.11**	**592.26**	**603.48**	**578.88**	**575.98**	**4.2**	**-0.6**	**-0.5**
- solids	197.04	172.57	168.60	162.34	155.47	-2.6	-2.1	-4.2
of which lignite	34.36	35.63	32.40	34.30	34.07	0.7	-0.9	-0.7
- oil	92.88	150.92	150.67	118.64	116.54	10.2	-5.0	-1.8
- natural gas	129.27	127.12	129.01	125.27	129.76	-0.3	0.4	3.6
- nuclear	44.01	123.62	136.25	156.98	157.15	22.9	4.9	0.1
- geothermal	1.89	1.70	1.84	1.87	1.98	-2.1	3.1	5.9
- hydro	15.37	14.56	14.95	11.33	12.48	-1.1	-3.0	10.2
- other renewable	1.66	1.77	2.17	2.46	2.59	1.3	7.9	5.3
Net Imports	**599.85**	**456.54**	**491.09**	**552.22**	**572.95**	**-5.3**	**4.6**	**3.8**
- solids	52.36	62.39	60.57	66.69	77.61	3.6	4.5	16.4
of which hard coal	52.79	62.48	59.79	66.36	76.60	3.4	4.2	15.4
- crude oil	483.61	294.16	318.48	377.94	387.72	-9.5	5.7	2.6
- oil products	20.35	39.46	39.11	28.01	26.00	14.2	-8.0	-7.2
- natural gas	42.27	59.35	71.34	77.88	80.20	7.0	6.2	3.0
- electricity	1.26	1.19	1.59	1.70	1.43	-1.1	3.7	-15.9
Gross Inland Consumption (1)	**####**	**1028.98**	**1062.60**	**1098.46**	**1114.81**	**-0.1**	**1.6**	**1.5**
- solids	238.23	238.95	231.21	231.03	234.19	0.1	-0.4	1.4
- oil	559.42	462.49	476.58	491.65	497.31	-3.7	1.5	1.2
- natural gas	171.11	184.70	198.01	201.44	207.67	1.5	2.4	3.1
- other (2)	64.19	142.83	156.80	174.34	175.63	17.3	4.2	0.7

(1) excluding bunkers.

(2) includes nuclear, hydro and other renewable.

Final consumption of **electricity** steadily increased over the last ten years. The annual average rate of growth was 2.1% from 1980 to 1985 and 3.1% from 1985 to 1990. These growth rates are higher than those for final energy consumption (-0.5% and 1.3% respectively), showing ongoing market penetration of electricity. This trend is observed in all Member States.

Nuclear capacity increased from 34 TW in 1980 to 103 TW in 1990. This growth in capacity occurred essentially in Belgium, France, Germany, Spain and the United Kingdom. Nuclear production increased by 24% per year between 1980 and 1985; with the growth rate declining in the second half of the decade to just over 5% per year. Conventional thermal capacity remained constant at about 230 TW. The share of oil inputs into thermal generation declined steadily, compensated by increases in solids; gas inputs remained constant over the period.

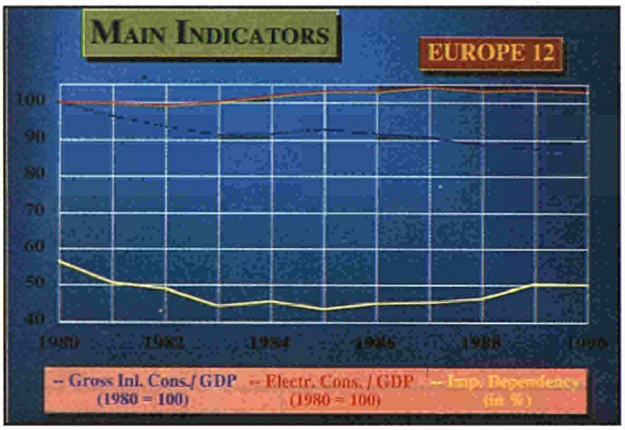
EUROPE 12: ELECTRICITY GENERATION

	Twh					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Total generation	**1403.40**	**1573.40**	**1659.27**	**1758.51**	**1803.99**	**2.3**	**2.8**	**2.6**
from pumping	8.04	14.11	12.35	14.50	14.60	11.9	0.7	0.7
Hydro (without pumping)	178.74	169.35	173.80	131.77	145.13	-1.1	-3.0	10.1
Derived	1216.62	1389.93	1473.13	1612.24	1644.27	2.7	3.4	2.0
Nuclear	166.09	484.58	538.13	626.30	627.36	23.9	5.3	0.2
Thermal conventional	1050.53	905.35	935.00	985.94	1016.91	-2.9	2.4	3.1
Net Imports	14.66	13.80	18.47	19.77	16.58	-1.2	3.7	-16.1
Gross Inland Consumption	1418.06	1587.20	1677.75	1778.27	1820.58	2.3	2.8	2.4
Own Consumption	82.60	106.25	108.57	119.49	121.92	5.2	2.8	2.0
Available Internal Market	1335.46	1480.94	1569.18	1658.79	1698.66	2.1	2.8	2.4
Distribution Losses	92.26	106.31	105.44	108.97	112.71	2.9	1.2	3.4
Energy Branch Consumption	60.20	63.70	64.48	58.43	58.87	1.1	-1.6	0.8
Final Consumption	1183.01	1310.93	1399.26	1491.40	1527.08	2.1	3.1	2.4
Power Generation Capacities(*) (Tw)								
Total	**331.08**	**381.38**	**398.94**	**411.07**	**411.68**	**2.9**	**1.5**	**0.1**
Nuclear	33.79	74.04	89.76	101.03	102.65	17.0	6.8	1.6
Conventional Thermal	233.21	235.00	233.73	232.22	230.74	0.2	-0.4	-0.6
Hydro (incl. pumping)	63.75	71.25	74.44	76.76	77.03	2.3	1.6	0.4
Other renewable	0.33	1.08	1.01	1.07	1.26	26.8	3.1	17.9
Inputs to conventional thermal power stations (MToe)								
Total	247.38	211.46	214.99	225.70	232.20	-3.1	1.9	2.9
Solids	140.60	140.37	146.34	147.58	152.76	0.0	1.7	3.5
- of which lignite	30.58	32.54	28.30	30.92	29.83	1.3	-1.7	-3.5
Oil	71.07	39.43	35.77	41.13	41.37	-11.1	1.0	0.6
Gas	32.16	28.19	28.87	32.67	33.49	-2.6	3.5	2.5
- of which natural gas	25.45	22.68	23.80	26.75	27.70	-2.3	4.1	3.6
Renewable	3.55	3.46	4.01	4.32	4.57	-0.5	5.7	5.8

(*) Excluding autoproducers.

The European Community improved its energy intensity in the eighties. The most significant improvement occurred in the industrial sector where energy intensity decreased by 3.3% and 2.0% in the first and second halves of the decade respectively. Reduction of intensities together with large-scale restructuring of the electricity sector reduced the European Community's import dependency from 56.5% in 1980 to 49.9% in 1990. However this indicator did not go down uninterruptedly over that period. It dropped from 56.5% in 1980 to 43.3% in 1985, but then assumed a rising trend and reached 49.9% in 1990. This evolution was observed in eight Member States excepting Denmark, France, Luxembourg and the United Kingdom.

Total emissions of CO2 were equal to 696 Mt of carbon in 1990, up by 1.7% compared to 1989, but down over the decade from 714 Mt in 1980. The bulk of this reduction occurred in the first half of the decade (annual reduction by 1.6% on average) as compared to 1.1% in 1985-1990. The average result for the Community is not reflected in all Member States. In Greece, Ireland and Portugal CO2 emissions increased throughout the period while in Denmark, Germany and France reductions took place.

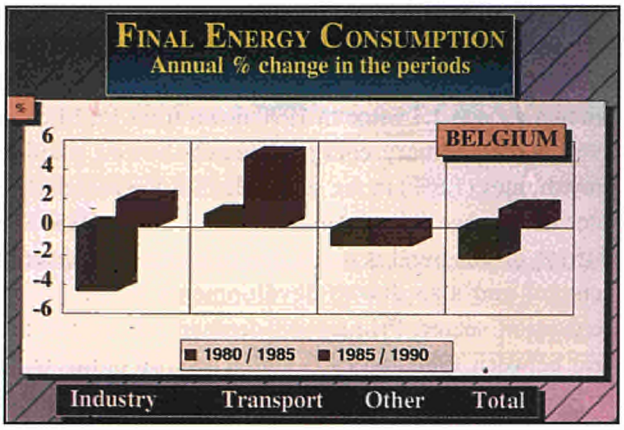


EUROPE 12: MAIN INDICATORS

						Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Population (millions)	**318.0**	**321.9**	**323.7**	**325.9**	**327.1**	**0.2**	**0.3**	**0.4**
GDP (Bil. ECU 85)	**3107.7**	**3345.1**	**3528.5**	**3787.2**	**3893.4**	**1.5**	**3.1**	**2.8**
Private Consumption (Bil. ECU 85)	**1938.0**	**2068.8**	**2236.6**	**2395.7**	**2467.1**	**1.3**	**3.6**	**3.0**
Industrial Production (85=100)	**96.8**	**100.0**	**104.4**	**113.0**	**115.0**	**0.7**	**2.8**	**1.**
GDP per capita (ECU 85/capita)	**9772.6**	**10391.7**	**10900.4**	**11620.7**	**11902.8**	**1.2**	**2.8**	**2.4**
Prim. Ener. Cons. per cap. (Kgoe/capita)	**3250**	**3200**	**3280**	**3280**	**3410**	**-0.3**	**1.3**	**4.0**
Import Dependency (%)	**56.5**	**43.3**	**45.0**	**50.3**	**49.9**	**-5.2**	**2.9**	**-0.7**
Oil Dependency (%)	**47.5**	**31.6**	**32.7**	**37.0**	**36.1**	**-7.8**	**2.7**	**-2.4**
Intensities								
- Gross Inland Cons./GDP (toe/MECU 85)	332.4	307.6	301.2	290.0	286.3	-1.5	-1.4	-1.3
- Final Cons./GDP (toe/MECU 85)	222.9	202.2	199.6	188.2	185.7	-1.9	-1.7	-1.3
- Industrial Cons./Ind. Production (85=100)	118.5	100.0	96.9	92.1	90.5	-3.3	-2.0	-1.8
- Electricity Cons./GDP (MWh/MECU 85)	380.7	391.9	396.6	393.8	392.2	0.6	0.0	-0.4
CO2 emissions (Mt of Carbon)	**714.08**	**659.78**	**675.86**	**684.24**	**695.54**	**-1.6**	**1.1**	**1.7**
of which								
- Power Generation	236.23	205.58	209.32	217.37	223.87	-2.7	1.7	3.0
- Industry	161.12	133.99	131.80	132.64	131.31	-3.6	-0.4	-1.0
- Transports	141.71	150.84	165.29	185.41	191.02	1.3	4.8	3.0
- Domestic-Tertiary	178.11	171.18	170.83	149.66	150.24	-0.8	-2.6	0.4
CO2 emissions per capita (t per capita)	**2.25**	**2.05**	**2.09**	**2.10**	**2.13**	**-1.8**	**0.7**	**1.3**

BELGIUM

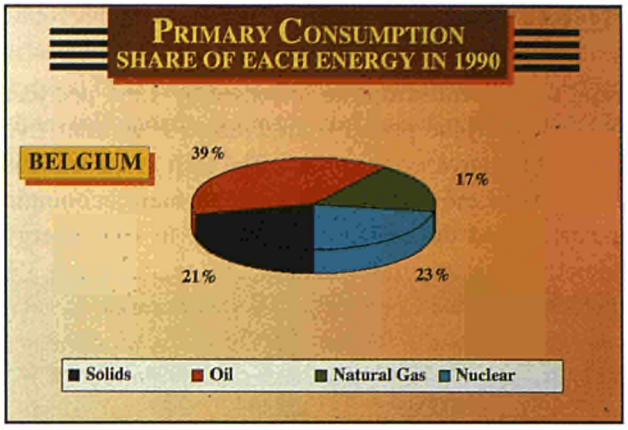
Final **energy consumption** increased by 1.3% per year on average in the period from 1985 to 1990 after five years of negative average rates. The shift in the trend is due to both the improvement of the main economic indicators and the easing of oil prices. In 1990 energy consumption amounted to 30.5 Mtoe, only a 0.3% increase compared to 1989. This low increase in total consumption results from a slowing in the growth rates in the transport sector (1.2% as against an average of 5% per year from 1985 to 1990), a decline in the domestic/tertiary sector (-2.7%) compensating for a similar increase in industry. This increase in industrial consumption reflected 5% growth in the index of industrial production. Finally, the persistence of good weather conditions partially explains the reduction in energy demand in the domestic and tertiary sector, particularly for gas (-8% in 1990).



BELGIUM: FINAL ENERGY CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Industry	**13.05**	**10.34**	**10.33**	**11.04**	**11.34**	**-4.5**	**1.9**	**2.7**
- solids	4.06	3.18	2.76	3.31	3.24	-4.8	0.4	-2.1
- oil	2.43	1.78	2.01	1.76	1.55	-6.0	-2.7	-11.9
- gas	4.12	2.98	3.04	3.23	3.73	-6.3	4.6	15.5
- electricity	2.07	2.21	2.33	2.55	2.63	1.3	3.5	3.1
- heat	0.36	0.19	0.19	0.19	0.19	-12.0	0.0	0.0
Transport	**5.80**	**6.06**	**6.81**	**7.61**	**7.70**	**0.9**	**4.9**	**1.2**
- oil	5.71	5.96	6.71	7.50	7.60	0.9	5.0	1.3
- electricity	0.08	0.10	0.11	0.11	0.11	4.6	1.9	0.0
Other	**13.13**	**12.27**	**12.95**	**11.80**	**11.48**	**-1.3**	**-1.3**	**-2.7**
- solids	1.09	1.16	0.88	0.56	0.55	1.3	-13.9	-1.8
- oil	6.78	5.24	5.90	5.21	5.14	-5.0	-0.4	-1.3
- gas	3.64	3.98	4.12	3.83	3.52	1.8	-2.4	-8.1
- electricity	1.59	1.85	2.03	2.16	2.25	3.1	4.0	4.2
- heat	0.04	0.03	0.03	0.03	0.03	-5.6	0.0	0.0
TOTAL	**31.98**	**28.68**	**30.10**	**30.45**	**30.53**	**-2.2**	**1.3**	**0.3**

Total demand for **primary energy** increased by 1.6% in 1990. Primary oil consumption decreased by 1.9% but was totally offset by a 5.9% increase for solids and 3.4% for natural gas. Hard coal production continued to fall sharply as a result of mine closures; primary hard coal production was 1.1 Mtoe in 1990 down from 1.6 Mtoe in 1989. Total primary energy demand showed positive growth rates (1.8%) in the second half of the past decade after an average fall of 1% per year in 1980-1985. The shifting of this trend is partly due to increased industrial demand and also due to developments in the power generation sector. Primary oil demand fell by 5% per year between 1980 and 1985 with a reversal of this trend to 1990 (1% per year on average). In 1990 a decline of 2% was recorded. Natural gas continued to increase from 1985 after a decline in the first half of the decade.



BELGIUM: PRODUCTION, NET IMPORTS, GROSS INLAND CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**7.92**	**13.27**	**13.70**	**12.24**	**12.07**	**10.9**	**-1.9**	**-1.4**
- solids	4.69	4.37	2.97	1.63	1.09	-1.4	-24.2	-33.1
- natural gas	0.03	0.03	0.02	0.01	0.01	0.0	-19.7	0.0
- nuclear	3.12	8.70	10.46	10.36	10.71	22.8	4.2	3.4
- hydro	0.02	0.02	0.04	0.03	0.02	0.0	0.0	-33.3
- other renewable	0.05	0.14	0.21	0.21	0.24	22.9	11.4	14.3
Net Imports	**41.25**	**32.06**	**34.83**	**38.69**	**39.55**	**-4.9**	**4.3**	**2.2**
- solids	6.91	5.57	5.39	7.90	9.49	-4.2	11.2	20.1
of which hard coal	6.45	5.52	5.44	7.89	9.46	-3.1	11.4	19.9
- crude oil	33.38	20.44	26.88	26.92	26.82	-9.3	5.6	-0.4
- oil products	-7.71	-1.23	-4.71	-4.07	-4.65	-30.7	30.5	14.3
- natural gas	8.89	7.29	7.45	8.16	8.22	-3.9	2.4	0.7
- electricity	-0.23	0.00	-0.18	-0.22	-0.32	-	-	-
Gross Inland Consumption (1)	**45.74**	**43.51**	**45.45**	**46.81**	**47.57**	**-1.0**	**1.8**	**1.6**
- solids	10.97	9.88	8.67	9.63	10.20	-2.1	0.6	5.9
- oil	22.89	17.43	18.95	18.79	18.44	-5.3	1.1	-1.9
- natural gas	8.91	7.33	7.31	8.02	8.29	-3.8	2.5	3.4
- other (2)	2.96	8.86	10.52	10.38	10.65	24.5	3.7	2.6

(1) excluding bunkers.

(2) includes nuclear, hydro and other renewable.

The growth rate of total electricity generation in 1990 accelerated to 5%, exceeding the average trends of 1.3% for the first and 4.3% per year for the second half of the decade. In 1990, some 60% of electricity was produced by nuclear power plants (24% in 1980). Most of this growth occurred in the first half of the decade (22.5% per year). Nuclear capacity increased from 1.67 TW in 1980 to 5.5 TW in 1985.

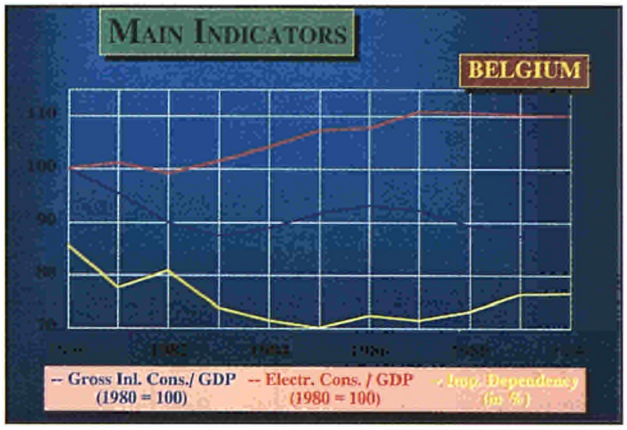
BELGIUM: ELECTRICITY GENERATION

	Twh					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Total generation	**53.64**	**57.32**	**63.37**	**67.48**	**70.85**	**1.3**	**4.3**	**5.0**
from pumping	0.56	1.08	1.05	0.68	0.65	14.0	-9.7	-5.0
Hydro (without pumping)	0.28	0.28	0.44	0.31	0.28	0.4	-0.4	-10.6
Derived	52.80	55.96	61.88	66.49	69.92	1.2	4.6	5.2
Nuclear	12.55	34.60	41.96	41.21	42.71	22.5	4.3	3.6
Thermal conventional	40.26	21.37	19.92	25.28	27.21	-11.9	5.0	7.6
Net Imports	-2.64	-0.05	-2.12	-2.55	-3.73	-	-	-
Gross Inland Consumption	51.01	57.28	61.25	64.93	67.12	2.3	3.2	3.4
Own Consumption	3.36	4.53	4.73	4.45	4.52	6.2	-0.1	1.5
Available Internal Market	47.65	52.74	56.52	60.48	62.61	2.1	3.5	3.5
Distribution Losses	2.75	3.03	3.24	3.26	3.50	1.9	2.9	7.3
Energy Branch Consumption	1.42	1.31	1.38	1.15	1.04	-1.6	-4.5	-9.9
Final Consumption	43.48	48.41	51.90	56.07	58.07	2.2	3.7	3.6
Power Generation Capacities(*) (Tw)								
Total	10.06	13.66	13.34	13.08	13.30	6.3	-0.5	1.7
Nuclear	1.67	5.50	5.50	5.50	5.50	26.9	0.0	0.0
Conventional Thermal	7.15	6.72	6.38	6.11	6.32	-1.2	-1.2	3.4
Hydro (incl. pumping)	1.24	1.40	1.40	1.41	1.41	2.5	0.1	0.0
Other renewable	0.00	0.05	0.06	0.06	0.07	-	9.2	18.6
Inputs to conventional thermal power stations (MToe)								
Total	9.42	5.15	4.86	5.95	6.42	-11.4	4.5	7.9
Solids	2.98	2.83	2.91	3.40	3.88	-1.0	6.5	14.1
Oil	4.07	0.95	0.56	0.41	0.32	-25.2	-19.6	-22.0
Gas	2.32	1.24	1.18	1.93	1.98	-11.8	9.8	2.6
- of which natural gas	1.59	0.57	0.60	1.30	1.32	-18.5	18.3	1.5
Renewable	0.05	0.14	0.21	0.21	0.24	22.9	11.4	14.3

(*) Excluding autoproducers.

The share of net imports in total primary consumption remained stable in 1990 compared to 1989 while net imports of crude oil continued to decline reaching 42.9% of total imports. Energy intensity improved considerably in Belgium in 1990. Primary and total final consumption per unit of GDP decreased by 2% and 3.3% respectively thus accelerating the trend of the decade. Moreover industrial energy consumption per unit of output continued to decline by 2.2%. In 1990, electricity intensity showed a decline for the first time in the decade.

After a fall of 4.5% per year between 1980 and 1985, CO2 emissions increased in the second half of the decade at a rate of 1.5% per year. The decrease in CO2 emissions during the first half of the eighties was the outcome of both the use of nuclear energy and of the prevailing economic recession.



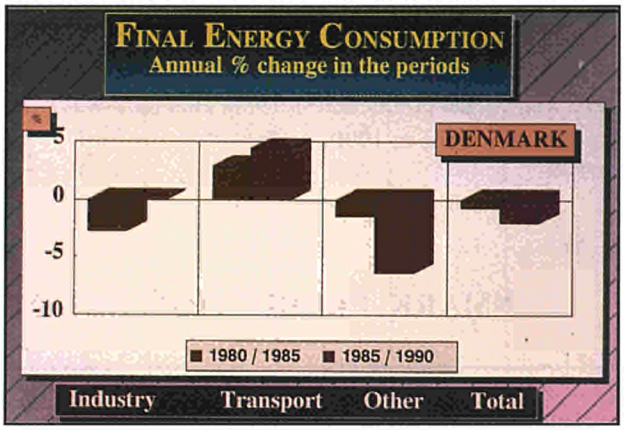
BELGIUM: MAIN INDICATORS

						Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Population (millions)	9.85	9.86	9.87	9.94	9.95	0.0	0.2	0.1
GDP (Bil. ECU 85)	101.5	105.5	109.4	118.9	123.3	0.8	3.2	3.7
Private Consumption (Bil. ECU 85)	68.0	69.1	72.9	77.7	80.8	0.3	3.2	3.9
Industrial Production (85=100)	96.0	100.0	103.0	112.7	118.4	0.8	3.4	5.1
GDP per capita (ECU 85/capita)	10309.0	10699.5	11085.2	11961.8	12391.9	0.7	3.0	3.6
Prim. Ener. Cons. per cap. (Kgoe/capita)	4640	4410	4600	4710	4780	-1.0	1.6	1.5
Import Dependency (%)	85.7	70.0	71.5	76.4	76.6	-4.0	1.8	0.3
Oil Dependency (%)	53.4	41.9	45.5	45.1	42.9	-4.7	0.5	-4.8
Intensities								
- Gross Inland Cons./GDP (toe/MECU 85)	450.4	412.4	415.4	393.7	385.8	-1.7	-1.3	-2.0
- Final Cons./GDP (toe/MECU 85)	314.9	271.8	275.1	256.1	247.6	-2.9	-1.8	-3.3
- Industrial Cons./Ind. Production (85=100)	131.4	100.0	96.9	94.7	92.6	-5.3	-1.5	-2.2
- Electricity Cons./GDP (MWh/MECU 85)	428.2	458.9	474.3	471.7	471.0	1.4	0.5	-0.1
CO2 emissions (Mt of Carbon)	**31.26**	**24.84**	**25.39**	**26.35**	**26.71**	**-4.5**	**1.5**	**1.3**
of which								
- Power Generation	8.17	4.77	4.58	5.45	5.95	-10.2	4.5	9.2
- Industry	9.05	6.82	6.60	7.11	7.17	-5.5	1.0	0.8
- Transports	4.82	5.03	5.66	6.33	6.42	0.8	5.0	1.4
- Domestic-Tertiary	9.22	8.22	8.55	7.46	7.17	-2.3	-2.7	-3.9
CO2 emissions per capita (t per capita)	**3.17**	**2.52**	**2.57**	**2.65**	**2.68**	**-4.5**	**1.3**	**1.2**

DENMARK

In 1990 the rate of growth in GDP reached 1.6%, that of private consumption 1.8%, which is higher than average growth rates observed in the period 1985 to 1990. Increased economic activity pushed up **final energy consumption** in both industry and the transport sector. The increase in the consumption of these two sectors was however offset by the reduction of energy consumption in the domestic and tertiary sectors and the final figure for total energy consumption shows it to be almost stationary. The reduction of the energy consumption in the domestic and tertiary sector followed its trend and declined further by 6% in 1989/90 both due to the good weather conditions and to increased energy efficiency in that sector. The rate of reduction in total energy consumption seems however to be flattening out after a long period of decline. The rate of reduction of total energy consumption was 0.7% in 1980-1985 and 2.0% on average in the second half of the period.

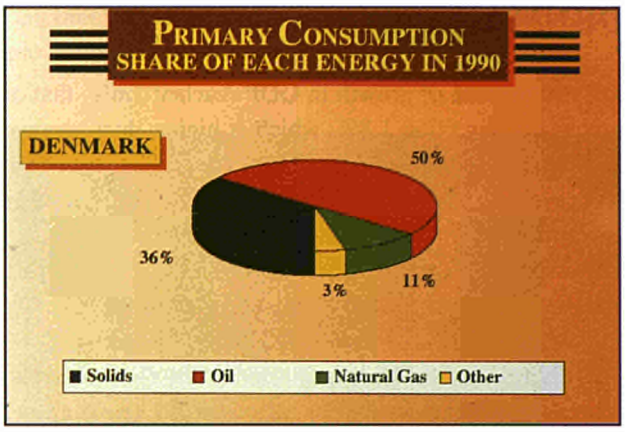
The main factors explaining this developments can be mainly attributed to significant improvement in energy efficiency.



DENMARK: FINAL ENERGY CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Industry	**2.98**	**2.60**	**2.56**	**2.45**	**2.60**	**-2.7**	**0.0**	**6.1**
- solids	0.39	0.29	0.35	0.28	0.25	-5.8	-2.9	-10.7
- oil	2.11	1.53	1.18	0.95	1.07	-6.2	-6.9	12.6
- gas	0.01	0.13	0.33	0.48	0.53	67.0	32.5	10.4
- electricity	0.48	0.65	0.70	0.74	0.76	6.3	3.2	2.7
Transport	**3.15**	**3.63**	**3.95**	**4.26**	**4.50**	**2.9**	**4.4**	**5.6**
- oil	3.14	3.62	3.94	4.24	4.48	2.9	4.4	5.7
- electricity	0.01	0.01	0.01	0.02	0.02	0.0	14.9	0.0
Other	**8.40**	**7.79**	**7.53**	**5.96**	**5.60**	**-1.5**	**-6.4**	**-6.0**
- solids	0.08	0.49	0.37	0.25	0.21	43.7	-15.6	-16.0
- oil	6.10	4.31	3.41	2.45	2.04	-6.7	-13.9	-16.7
- gas	0.10	0.37	0.84	0.90	0.98	29.9	21.5	8.9
- electricity	1.39	1.52	1.67	1.71	1.74	1.8	2.7	1.8
- heat	0.74	1.09	1.24	0.65	0.64	8.1	-10.1	-1.5
TOTAL	**14.53**	**14.02**	**14.04**	**12.67**	**12.70**	**-0.7**	**-2.0**	**0.2**

Total **primary consumption** increased in 1990 by 1.8% reflecting a 8.4% increase in fuel inputs into power generation. Indigenous energy production (almost exclusively oil and gas from North Sea fields) increased by 9.2% in 1990, reaching 8.9 Mtoe. While the growth rate of total primary production is below the trends observed in the past (18% per year in 1985-1990) the resulting net imports declined by 13% in 1990. Domestic oil production in 1980 represented 2% of total consumption; in 1990 this share grew to 71%. While there was no gas production in 1980, Denmark was a net exporter of 1 Mtoe in 1990.



DENMARK: PRODUCTION, NET IMPORTS, GROSS INLAND CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**0.30**	**3.90**	**6.80**	**8.12**	**8.87**	**67.0**	**17.9**	**9.2**
- oil	0.30	2.92	4.65	5.59	6.06	57.6	15.7	8.4
- natural gas	0.00	0.97	2.13	2.50	2.74	—	23.1	9.6
- hydro	0.00	0.01	0.02	0.04	0.06	—	43.1	50.0
Net Imports	**19.05**	**15.53**	**12.95**	**10.44**	**9.07**	**-4.0**	**-10.2**	**-13.1**
- solids	5.96	7.70	7.37	6.55	6.23	5.3	-4.1	-4.9
of which hard coal	5.90	7.63	7.32	6.52	6.21	5.3	-4.0	-4.8
- crude oil	6.30	4.03	3.14	2.97	2.03	-8.5	-12.8	-31.6
- oil products	6.90	4.16	2.90	0.93	1.13	-9.6	-22.9	21.5
- natural gas	0.00	-0.40	-0.66	-0.82	-0.93	—	-	—
- electricity	-0.11	0.04	0.21	0.81	0.61	—	72.4	-24.7
Gross Inland Consumption (1)	**18.91**	**18.65**	**18.98**	**16.82**	**17.12**	**-0.3**	**-1.7**	**1.8**
- solids	5.78	7.38	7.44	5.59	6.11	5.0	-3.7	9.3
- oil	13.23	10.66	10.00	8.89	8.55	-4.2	-4.3	-3.8
- natural gas	0.00	0.57	1.31	1.49	1.79	—	25.7	20.1
- other (2)	-0.10	0.05	0.23	0.85	0.68	—	68.5	-20.0

(1) excluding bunkers.

(2) includes nuclear, hydro and other renewable

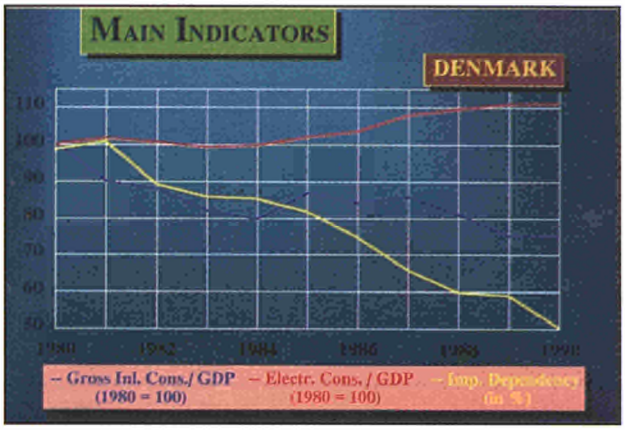
In 1990 total final consumption of electricity rose to 29.3 TWh, up by 1.8% compared to 1989. Most of the public electricity production is provided by coal-fired power plants. 27% of total electricity needs are imported from Norway and Sweden.

DENMARK: ELECTRICITY GENERATION

	Twh					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Total generation	**27.12**	**29.06**	**29.40**	**22.30**	**25.75**	**1.4**	**-2.4**	**15.5**
from pumping	0.01	0.01	0.01	0.01	0.01	0.0	19.1	100.0
Hydro (without pumping)	0.03	0.10	0.21	0.45	0.65	26.2	46.6	43.7
Derived	27.08	28.96	29.18	21.84	25.08	1.4	-2.8	14.9
Thermal conventional	27.08	28.96	29.18	21.84	25.08	1.4	-2.8	14.9
Net Imports	-1.24	0.46	2.41	9.47	7.05	-	72.6	-25.5
Gross Inland Consumption	25.88	29.52	31.81	31.76	32.79	2.7	2.1	3.3
Own Consumption	1.59	1.85	1.87	1.07	1.70	3.1	-1.8	59.3
Available Internal Market	24.29	27.67	29.94	30.69	31.10	2.6	2.4	1.3
Distribution Losses	2.16	2.10	2.05	1.69	1.56	-0.5	-5.8	-7.6
Energy Branch Consumption	0.27	0.22	0.23	0.24	0.26	-4.2	3.5	9.0
Final Consumption	21.86	25.35	27.66	28.77	29.28	3.0	2.9	1.8
Power Generation Capacities(*) (Tw)								
Total	**6.83**	**8.34**	**8.28**	**8.35**	**8.28**	**4.1**	**-0.1**	**-0.8**
Conventional Thermal	6.82	8.28	8.22	8.29	8.20	4.0	-0.2	-1.0
Hydro (incl. pumping)	0.01	0.01	0.01	0.01	0.01	0.0	0.0	0.0
Other renewable	0.01	0.05	0.05	0.06	0.07	52.3	6.0	23.
Inputs to conventional thermal power stations (MToe)								
Total	6.57	6.92	6.92	5.48	5.94	1.0	-3.0	8.4
Solids	5.39	6.49	6.56	4.99	5.55	3.8	-3.1	11.2
Oil	1.18	0.35	0.28	0.34	0.25	-21.6	-6.5	-26.5
Gas	0.00	0.08	0.08	0.15	0.14	-	11.8	-6.7
- of which natural gas	0.00	0.08	0.08	0.15	0.14	-	11.8	-6.7
Renewable	0.00	0.00	0.00	0.00	0.01	-	-	-

(*) Excluding autoproducers.

Danish energy intensity has decreased considerably over the decade. Total energy consumption remained almost constant during the eighties, leading to a decline in gross inland energy intensity with respect to GDP by 2.8% per year. However, in 1990 energy intensity increased by 0.2%. The reduction in final energy consumption during the eighties had a direct impact on CO2 emissions. Total emissions were reduced by 0.5% annually from 1980 to 1985, and then by as much as 3.1% between 1985 and 1990. In 1990 CO2 emissions increased by 3.6%.



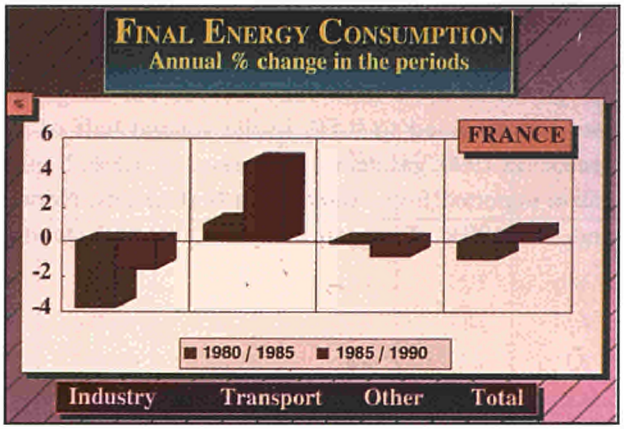
DENMARK: MAIN INDICATORS

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Population (millions)	5.12	5.11	5.13	5.13	5.14	0.0	0.1	0.2
GDP (Bil. ECU 85)	67.3	76.7	79.0	79.9	81.2	2.6	1.1	1.6
Private Consumption (Bil. ECU 85)	38.1	42.1	43.7	42.8	43.6	2.0	0.7	1.8
Industrial Production (85=100)	82.5	100.0	102.8	107.2	107.8	3.9	1.5	0.6
GDP per capita (ECU 85/capita)	13146.5	15010.6	15406.0	15584.2	15797.7	2.7	1.0	1.4
Prim. Ener. Cons. per cap. (Kgoe/capita)	3690	3650	3700	3280	3330	-0.2	-1.8	1.5
Import Dependency (%)	98.6	81.5	65.9	58.9	50.2	-3.7	-9.2	-14.8
Oil Dependency (%)	68.3	43.0	30.7	22.0	17.5	-8.9	-16.5	-20.6
Intensities								
- Gross Inland Cons./GDP (toe/MECU 85)	280.9	243.2	240.1	210.4	210.8	-2.8	-2.8	0.2
- Final Cons./GDP (toe/MECU 85)	215.9	182.7	177.7	158.4	156.4	-3.3	-3.1	-1.3
- Industrial Cons./Ind. Production (85=100)	139.3	100.0	96.0	88.0	93.1	-6.4	-1.4	5.7
- Electricity Cons./GDP (MWh/MECU 85)	324.8	330.5	350.0	359.8	360.6	0.3	1.8	0.2
CO2 emissions (Mt of Carbon)	16.93	16.45	16.05	13.62	14.12	-0.6	-3.0	3.6
of which								
- Power Generation	6.78	7.31	7.33	5.73	6.26	1.5	-3.0	9.2
- Industry	2.20	1.68	1.58	1.40	1.51	-5.2	-2.2	7.5
- Transports	2.65	3.06	3.33	3.58	3.78	2.9	4.3	5.6
- Domestic-Tertiary	5.30	4.41	3.82	2.91	2.57	-3.6	-10.2	-11.6
CO2 emissions per capita (t per capita)	3.31	3.22	3.13	2.66	2.75	-0.5	-3.1	3.4

FRANCE

Final energy consumption has been practically flat since 1987. In 1990 it only increased 0.1% over 1989. This growth rate is lower than that observed over the last five years and was achieved despite a relatively high GDP growth rate (2.8%). Industrial energy consumption fell by some 4% per year in the first half of the decade. This trend continued up to 1990 but at a slower rate. However, in 1990 notwithstanding an increase in industrial production of 1.3% energy demand dropped by 6.5%. This drop reflected a 6% decline in solids and a 27% in oil use. Energy consumption in the domestic/tertiary sector declined throughout the decade (some -0.8% over the period 1985 to 1990) but reversed this trend in 1990 with an increase of 1.5%. Nonetheless, energy consumption has stayed almost flat over the decade. Transport continued to grow, even in the first half of the decade when the growth rate averaged 1% per year. However, from 1985 transport energy demand has grown consistently averaging 4.5% per year.

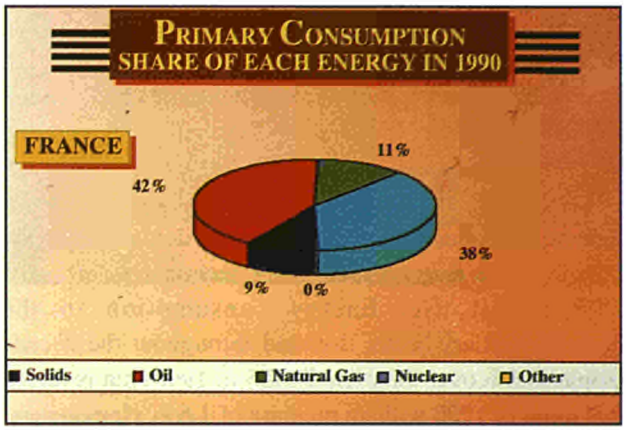
These features reflect the increased efficiency of the French economy mainly in the industrial sector. Energy intensity in that sector was reduced by 6.1% in 1990, a significantly higher rate than the European average.



FRANCE: FINAL ENERGY CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Industry	**44.93**	**36.97**	**35.66**	**36.46**	**34.10**	**-3.8**	**-1.6**	**-6.5**
- solids	7.92	8.58	7.44	7.84	7.37	1.6	-3.0	-6.0
- oil	18.77	9.65	9.43	8.37	6.13	-12.5	-8.7	-26.8
- gas	9.79	10.08	9.92	10.49	10.83	0.6	1.4	3.2
- electricity	8.45	8.66	8.88	9.75	9.78	0.5	2.5	0.3
Transport	**31.73**	**33.51**	**36.36**	**40.14**	**41.91**	**1.1**	**4.6**	**4.4**
- solids	0.01	0.01	0.00	0.00	0.00	0.0	-20.0	-
- oil	31.10	32.84	35.64	39.39	41.15	1.1	4.6	4.5
- gas	0.01	0.00	0.00	0.00	0.00	-20.0	-	-
- electricity	0.61	0.66	0.72	0.75	0.76	1.6	2.9	1.3
Other	**51.43**	**51.19**	**52.01**	**48.49**	**49.20**	**-0.1**	**-0.8**	**1.5**
- solids	3.52	2.83	2.27	1.55	1.69	-4.3	-9.8	9.0
- oil	28.86	23.31	22.21	19.41	19.10	-4.2	-3.9	-1.6
- gas	9.87	12.62	13.41	12.70	12.87	5.0	0.4	1.3
- electricity	9.19	12.44	14.12	14.83	15.55	6.2	4.6	4.9
TOTAL	**128.10**	**121.66**	**124.04**	**125.09**	**125.20**	**-1.0**	**0.6**	**0.1**

Gross inland consumption increased by 1.3% in 1990 reaching 212.6 Mtoe. The most significant development in the supply sector in France during the eighties was the substantial reduction of the share of oil due to substitution by nuclear power and natural gas. In France production of crude oil is very low compared to primary consumption; domestic production was 3.4 Mtoe and remained almost stable in 1985-1990. This figure should be compared with the total amount of oil consumed, which was 87.6 Mtoe, showing that demand is satisfied almost exclusively by imports. Natural gas consumption has grown by 2.4% from 1980 to 1985 but the growth rate has declined to 0.5% in the second half of the decade. In 1990, gas demand increased by 1.8%. Natural gas is imported from Algeria, the Netherlands, Norway and the USSR. Consumption of solids fell steadily during the last decade and this is mainly due to the substitution of hard coal-fired power plants by nuclear power stations.



FRANCE: PRODUCTION, NET IMPORTS, GROSS INLAND CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**43.96**	**81.31**	**90.23**	**95.74**	**97.54**	**13.1**	**3.7**	**1.9**
- solids	12.61	10.45	9.64	8.35	7.67	-3.7	-6.0	-8.1
of which lignite	0.85	0.62	0.81	0.87	0.89	-6.1	7.5	2.3
- oil	2.55	3.51	3.75	3.71	3.43	6.6	-0.5	-7.5
- natural gas	6.33	4.54	3.28	2.61	2.42	-6.4	-11.8	-7.3
- nuclear	16.33	57.27	67.24	76.76	79.13	28.5	6.7	3.1
- hydro	6.02	5.38	6.13	4.12	4.67	-2.2	-2.8	13.3
- other renewable	0.13	0.16	0.19	0.20	0.21	4.2	5.6	5.0
Net Imports	**149.12**	**111.98**	**113.85**	**115.74**	**119.99**	**-5.6**	**1.4**	**3.7**
- solids	20.06	12.56	8.97	11.02	13.01	-8.9	0.7	18.1
of which hard coal	18.44	11.31	8.31	10.16	12.41	-9.3	1.9	22.1
- crude oil	113.92	76.14	68.76	73.47	75.99	-7.7	0.0	3.4
- oil products	-1.27	5.10	16.10	12.66	10.55	-	15.6	-16.7
- natural gas	16.15	20.18	22.58	22.22	24.37	4.6	3.8	9.7
- electricity	0.27	-2.01	-2.55	-3.62	-3.93	-	-	-
Gross Inland Consumption (1)	**184.62**	**193.69**	**201.46**	**209.86**	**212.56**	**1.0**	**1.9**	**1.3**
- solids	31.15	24.41	18.94	20.17	20.00	-4.8	-3.9	-0.8
- oil	109.15	84.21	86.40	87.78	87.60	-5.1	0.8	-0.2
- natural gas	21.57	24.27	25.11	24.45	24.88	2.4	0.5	1.8
- other (2)	22.75	60.80	71.00	77.46	80.08	21.7	5.7	3.4

(1) excluding bunkers.

(2) includes nuclear, hydro and other renewable.

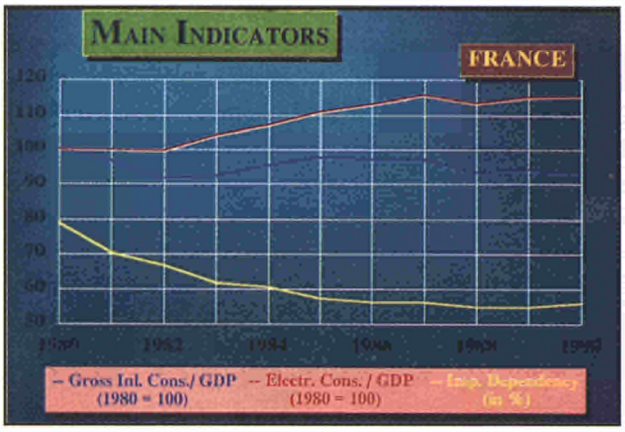
Final electricity consumption grew steadily at 3.6% per year for most of the decade. Demand in 1990 is reported to increase by 1.3%. Installed nuclear capacity increased by an annual average of 21.1% during 1980-1985 but this rate of growth slowed in the second half of the decade to 8.2%. At the same time conventional thermal capacity declined by 3.3% and 5.3% in the two successive periods. In 1990, 75% of total electricity was generated by nuclear power plants (24% in 1980). Total installed capacity increased by 5.9% and 3.4% over the five-year periods.

FRANCE: ELECTRICITY GENERATION

	Twh					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Total generation	**257,98**	**344.30**	**378.31**	**406.89**	**420.16**	**5.9**	**4.1**	**3.3**
from pumping	0.72	1.79	1.76	3.29	3.64	19.9	15.3	10.6
Hydro (without pumping)	69.99	62,53	71.23	47.93	54.35	-2.2	-2.8	13.4
Derived	187.26	279.98	305.32	355.67	362.16	8.4	5.3	1.8
Nuclear	61.24	224.06	265.47	303.88	314.02	29.6	7.0	3.3
Thermal conventional	126.02	55.93	39.85	51.79	48.14	-15.0	-3.0	-7.0
Net Imports	3.09	-23.35	-29.69	-42.15	-45.74	-	-	-
Gross Inland Consumption	261.07	320.94	348.62	364.74	374.40	4.2	3.1	2.7
Own Consumption	12.27	18.22	20.23	23.98	24.85	8.2	6.4	3.6
Available Internal Market	248.81	302.72	328.39	340.76	349.55	4.0	2.9	2.6
Distribution Losses	17.97	24.29	26.46	25.99	26.60	6.2	1.8	2.4
Energy Branch Consumption	18.67	25.56	26.12	20.22	19.66	6.5	-5.1	-2.8
Final Consumption	212.16	252.87	275.81	294.55	303.29	3.6	3.7	1.3
Power Generation Capacities(*) (Tw)								
Total	**62.87**	**83.86**	**92.94**	**96.22**	**98.93**	**5.9**	**3.4**	**0.7**
Nuclear	14.39	37.51	49.45	52.53	55.75	21.1	8.2	1.2
Conventional Thermal	29.03	24.56	19.44	19.13	18.74	-3.3	-5.3	-0.3
Hydro (incl. pumping)	19.44	21.79	24.06	24.56	24.26	2.3	2.2	0.4
Other renewable	0.00	0.00	0.00	0.00	0.19	-	-	-
Inputs to conventional thermal power stations (MToe)								
Total	27.90	12.47	9.15	11.61	10.76	-14.9	-2.9	-7.3
Solids	14.23	9.32	6.42	7.41	7.37	-8.1	-4.6	-0.5
- of which lignite	0.73	0.77	0.78	0.75	0.65	1.1	-3.3	-13.3
Oil	10.63	1.46	1.22	2.51	1.76	-32.8	3.8	-29.9
Gas	2.91	1.53	1.32	1.50	1.43	-12.1	-1.3	-4.7
- of which natural gas	1.32	0.51	0.34	0.41	0.44	-17.3	-2.9	7.3

(*) Excluding autoproducers.

Energy intensity improved substantially in France over the last decade. Final consumption per GDP unit was reduced by 2.5% and 2.2% in the 1980-1985 and 1985-1990 periods while the ratio of industrial consumption to production went down by 3.5% and 4.1%. These effects, combined with the substitution of conventional power by nuclear plants and the penetration of electricity, pushed France's import dependency down from 79.1% in 1980 to 55.8% in 1990. The improvement of energy intensity and the construction of nuclear power plants had a real influence on CO2 emissions. Total emissions were reduced by 4.7% per year in 1980-1985 and by 1.1% per year in 1985-1990. This reduction of total emissions was mainly achieved in power generation and in industry. In 1990, this trend is confirmed with a decline of 1.5%.

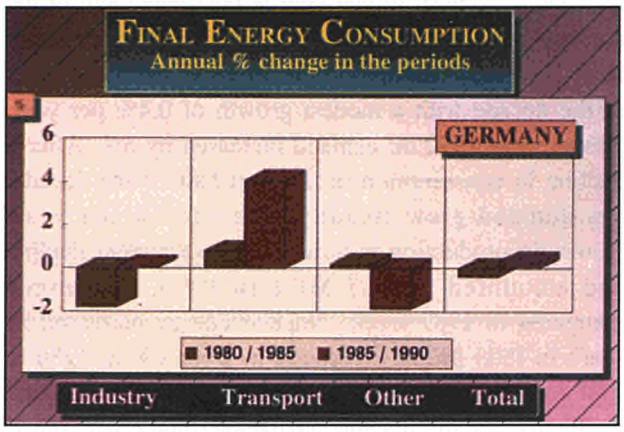


FRANCE: MAIN INDICATORS

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Population (millions)	**53.88**	**55.17**	**55.63**	**56.16**	**56.30**	**0.5**	**0.4**	**0.2**
GDP (Bil. ECU 85)	**641.6**	**691.7**	**722.3**	**775.4**	**797.1**	**1.5**	**2.9**	**2.8**
Private Consumption (Bil. ECU 85)	**386.8**	**422.5**	**449.4**	**476.4**	**491.1**	**1.8**	**3.1**	**3.1**
Industrial Production (85=100)	**101.8**	**100.0**	**102.8**	**112.0**	**113.5**	**-0.4**	**2.6**	**1.3**
GDP per capita (ECU 85/capita)	**11908.0**	**12537.7**	**12983.3**	**13807.3**	**14158.6**	**1.0**	**2.5**	**2.5**
Prim. Ener. Cons. per cap. (Kgoe/capita)	**3430**	**3510**	**3620**	**3740**	**3780**	**0.5**	**1.5**	**1.1**
Import Dependency (%)	**79.1**	**57.1**	**55.9**	**54.6**	**55.8**	**-6.3**	**-0.5**	**2.2**
Oil Dependency (%)	**59.8**	**41.4**	**41.7**	**40.6**	**40.2**	**-7.1**	**-0.6**	**-0.9**
Intensities								
- Gross Inland Cons./GDP (toe/MECU 85)	287.7	280.0	278.9	270.6	266.7	-0.5	-1.0	-1.5
- Final Cons./GDP (toe/MECU 85)	199.7	175.9	171.7	161.3	157.1	-2.5	-2.2	-2.6
- Industrial Cons./Ind. Production (85=100)	119.4	100.0	93.8	88.1	81.3	-3.5	-4.1	-7.7
- Electricity Cons./GDP (MWh/MECU 85)	330.7	365.6	381.9	379.9	380.5	2.0	0.8	0.2
CO2 emissions (Mt of Carbon)	**117.57**	**94.69**	**91.09**	**92.85**	**91.42**	**-4.2**	**-0.7**	**-1.5**
of which								
- Power Generation	26.24	12.38	8.96	11.23	10.52	-14.0	-3.2	-6.3
- Industry	30.61	23.79	22.27	22.19	19.99	-4.9	-3.4	-9.9
- Transports	26.28	27.74	30.10	33.26	34.74	1.1	4.6	4.5
- Domestic-Tertiary	34.45	30.78	29.76	26.17	26.16	-2.2	-3.2	0.0
CO2 emissions per capita (t per capita)	**2.18**	**1.72**	**1.64**	**1.65**	**1.62**	**-4.7**	**-1.1**	**-1.8**

GERMANY[1]

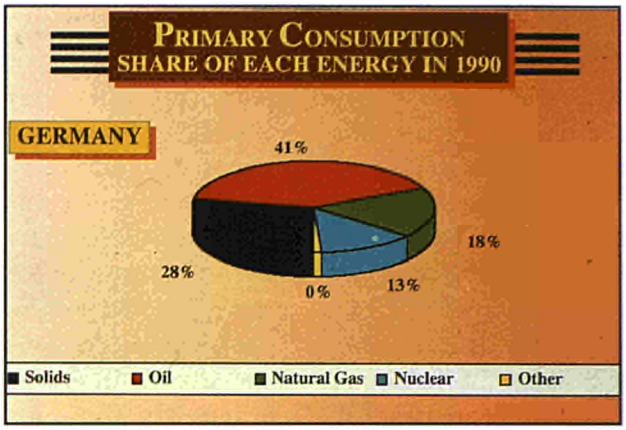
While GDP rose by 4.7% in Germany total **final energy consumption** increased by 2.8% in 1990. This growth rate is higher than its past trend. Indeed, final energy consumption remained almost stable over the decade despite relatively high rates of GDP growth (3% per year for 1985-1990). At a sectoral level, the 1990 increase was the outcome of a reduction of 1.3% in the industrial sector and an increase in the transport and domestic sectors by 5.5% and 4.7% respectively. An energy intensity decrease of 6.1% in industry allowed a reduction of total consumption although industrial production itself grew by 5.2%. Energy consumption in the transport sector grew by 5.5% reaching 51.6 Mtoe in 1990 and this trend mirrors the high growth rates for private consumption.



GERMANY: FINAL ENERGY CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Industry	**65.77**	**60.04**	**60.27**	**61.27**	**60.49**	**-1.8**	**0.1**	**-1.3**
- solids	13.40	15.30	12.91	13.98	14.23	2.7	-1.4	1.8
- oil	18.33	9.05	9.28	7.78	7.32	-13.2	-4.2	-5.9
- gas	19.65	19.72	21.19	22.11	21.54	0.1	1.8	-2.6
- electricity	13.59	14.16	14.59	15.68	15.69	0.8	2.1	0.1
- heat	0.80	1.81	2.29	1.72	1.72	17.7	-1.0	0.0
Transport	**40.47**	**42.16**	**46.06**	**48.92**	**51.62**	**0.8**	**4.1**	**5.5**
- solids	0.12	0.15	0.14	0.03	0.06	4.6	-16.7	100.0
- oil	39.44	41.05	44.98	47.94	50.58	0.8	4.3	5.5
- electricity	0.92	0.96	0.94	0.95	0.97	0.9	0.2	2.1
Other	**74.95**	**75.78**	**77.82**	**65.91**	**68.99**	**0.2**	**-1.9**	**4.7**
- solids	5.72	4.35	3.41	1.97	1.88	-5.3	-15.4	-4.6
- oil	40.16	37.65	37.38	28.13	29.77	-1.3	-4.6	5.8
- gas	14.48	17.91	20.13	18.57	20.16	4.3	2.4	8.6
- electricity	12.97	14.94	15.72	15.74	16.12	2.9	1.5	2.4
- heat	1.62	0.94	1.18	1.50	1.06	-10.3	2.4	-29.3
TOTAL	**181.19**	**177.98**	**184.15**	**176.10**	**181.10**	**-0.4**	**0.3**	**2.8**

Total primary energy consumption remained almost stable over the last decade. The consumption of solids declined by almost 2% per year in the second half of the decade. Oil consumption, having fallen 4.5% per year from 1980 to 1985, reversed its trend in the second half of the decade with a modest growth of 0.4% per year. However, in 1990 oil demand increased by 5%. After a decline in consumption in the first half of the decade, gas demand grew steadily by some 3% per year. Domestic production is however in permanent decline and amounted to 11.7 Mtoe in 1990, unchanged compared to 1989 levels. Nuclear energy increased its share in total primary production from 9% in 1980 to 27% in 1990. German hard coal and lignite production declined over the decade. While German hard coal is expensive to extract, lignite production is competitive and used almost exclusively for electricity generation.



GERMANY: PRODUCTION, NET IMPORTS, GROSS INLAND CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**121.53**	**133.39**	**127.68**	**128.59**	**126.45**	**1.9**	**-1.1**	**-1.7**
- solids	88.69	82.98	75.76	72.70	71.93	-1.3	-2.8	-1.1
of which lignite	26.50	24.12	21.04	21.79	21.61	-1.9	-2.2	-0.8
- oil	4.97	4.32	4.78	4.96	4.18	-2.8	-0.7	-15.7
- natural gas	14.35	12.55	12.80	11.74	11.74	-2.6	-1.3	0.0
- nuclear	11.06	31.33	31.89	36.71	36.16	23.2	2.9	-1.5
- hydro	1.49	1.34	1.59	1.42	1.37	-2.1	0.4	-3.5
- other renewable	0.97	0.87	1.23	1.05	1.08	-2.2	4.4	2.9
Net Imports	**165.04**	**134.61**	**144.50**	**137.12**	**146.76**	**-4.0**	**1.7**	**7.0**
- solids	-5.34	-1.45	0.67	-1.32	2.34	-	-	-
of which hard coal	-1.92	0.67	1.17	0.22	2.84	-	33.5	1190.9
- crude oil	108.21	64.47	63.98	66.69	72.47	-9.8	2.4	8.7
- oil products	31.10	41.76	46.48	36.13	35.32	6.1	-3.3	-2.2
- natural gas	30.58	29.61	33.05	35.61	36.73	-0.6	4.4	3.1
- electricity	0.50	0.21	0.33	0.02	-0.09	-15.9	-	-
Gross Inland Consumption (1)	**278.33**	**266.00**	**266.58**	**266.48**	**272.78**	**-0.9**	**0.5**	**2.4**
- solids	82.70	82.34	74.97	74.93	75.19	-0.1	-1.8	0.3
- oil	136.92	108.67	111.09	105.58	110.79	-4.5	0.4	4.9
- natural gas	44.69	41.23	45.48	46.77	48.27	-1.6	3.2	3.2
- other (2)	14.02	33.75	35.03	39.20	38.52	19.2	2.7	-1.7

(1) excluding bunkers.

(2) includes nuclear, hydro and other renewable.

Total electricity consumption increased by 1.2% in 1990 (1.8% on average over the decade). In 1990, almost 1/3 of electricity generation is produced by nuclear power plants (12% in 1980). Installed capacity was unchanged in 1990 for the first time after a decade of constant growth. Capacity of nuclear power plants reached 22.4 TW, from 8.6 TW at the beginning of the decade. Hard coal and lignite remain the first ranking energy source for electricity generation. Oil use for power generation in 1990 was half that of 1980.

GERMANY: ELECTRICITY GENERATION

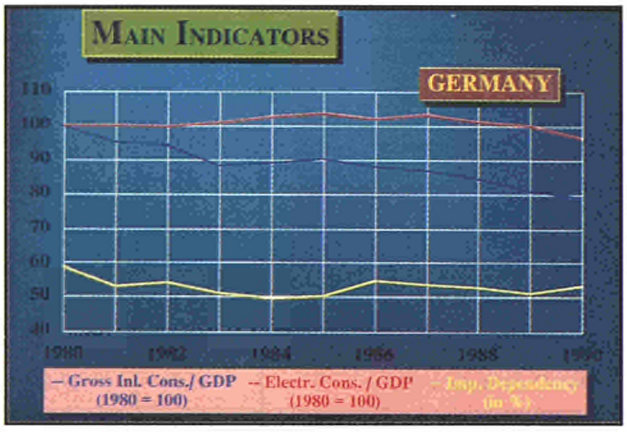
	Twh					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Total generation	**368.77**	**408.71**	**418.26**	**440.89**	**449.49**	**2.1**	**1.9**	**2.0**
from pumping	1.35	2.15	2.22	2.70	2.54	9.8	3.4	-5.9
Hydro (without pumping)	17.37	15.53	18.44	16.52	15.91	-2.2	0.5	-3.7
Derived	350.06	391.02	397.60	421.67	431.05	2.2	2.0	2.2
Nuclear	43.69	125.88	130.49	149.36	147.13	23.6	3.2	-1.5
Thermal conventional	306.37	265.14	267.11	272.31	283.92	-2.8	1.4	4.3
Net Imports	5.76	2.50	3.80	0.17	-1.02	-15.4	-	-
Gross Inland Consumption	374.53	411.21	422.06	441.06	448.47	1.9	1.8	1.7
Own Consumption	23.09	27.18	28.34	32.89	33.80	3.3	4.5	2.8
Available Internal Market	351.44	384.03	393.72	408.18	414.67	1.8	1.5	1.6
Distribution Losses	14.52	16.47	13.23	14.60	16.48	2.5	0.0	12.8
Energy Branch Consumption	17.46	17.99	17.08	17.14	17.07	0.6	-1.0	-0.4
Final Consumption	319.47	349.57	363.41	376.43	381.12	1.8	1.7	1.2
Power Generation Capacities(*) (Tw)								
Total	**72.16**	**83.83**	**86.93**	**90.61**	**90.52**	**3.0**	**1.5**	**-0.1**
Nuclear	8.62	16.11	18.95	22.42	22.42	13.3	6.8	0.0
Conventional Thermal	56.88	60.84	61.25	61.43	61.34	1.4	0.2	-0.1
Hydro (incl. pumping)	6.34	6.56	6.57	6.58	6.58	0.7	0.1	0.0
Other renewable	0.32	0.33	0.17	0.19	0.19	0.6	-10.9	0.0
Inputs to conventional thermal power stations (MToe)								
Total	72.61	62.64	62.50	63.54	64.88	-2.9	0.7	2.1
Solids	49.93	51.63	50.08	49.74	50.79	0.7	-0.3	2.1
- of which lignite	23.15	21.21	18.47	19.53	18.57	-1.7	-2.6	-4.9
Oil	5.64	2.62	3.27	2.74	2.72	-14.2	0.8	-0.7
Gas	16.07	7.53	7.92	10.02	10.29	-14.1	6.4	2.7
- of which natural gas	13.36	5.72	6.40	8.22	8.45	-15.6	8.1	2.8
Renewable	0.97	0.87	1.23	1.05	1.08	-2.2	4.4	2.9

(*) Excluding autoproducers.

The German economy has steadily decreased its energy intensity in the last decade. This improvement was achieved partly by structural changes in the economy in the past years. Economic activity shifted towards the tertiary sector while energy-intensive sectors declined. Intensities (measured as energy consumption per unit of GDP) fell by almost 2.5% per year during the 1985-1990 period. Increased energy efficiency had a positive impact on import dependency which was reduced by 3.1% in the first half of the decade. This downward trend slowed however in the second half of the decade, due to declining oil prices and increased consumption. The boosting of economic activity influenced final energy consumption significantly in 1990 and caused Germany's import dependency to rise by 4.5%. In 1990 53.4% of gross inland consumption was imported .

The high rates of energy consumption in the last year pushed up total CO2 emissions by as much as 2.1%, reflecting largely developments in the domestic/tertiary and transport sectors. The high rate of increase in 1990 constitutes a reversal of the hitherto downward trend of the past decade. Low rates of consumption and the use of nuclear energy limited total CO2 emissions, which fell by 1.3% per year from 1980 to 1985.

The corresponding emissions in power generation and in industry declined by 1.9% and 2.9% per year respectively. However transport emissions grew just under 1% per year to 1985 but then increased over 4% per year for the remaining of the decade, peaking at 5.6% in 1990. Industry for the latter period declined by 0.8% per year but power generation showed an increase in emissions of 0.4% per year, peaking at 2.1% in 1990. The domestic/tertiary sector reports an unusually high increase in 1990 of 6%. This compares with an average decrease of 3.5% per year between 1985 and 1990.



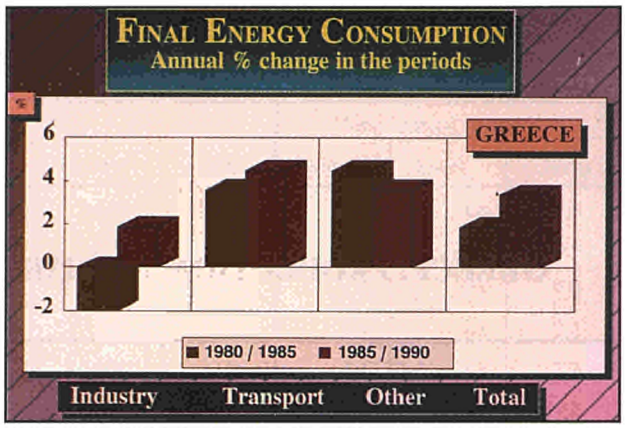
GERMANY: MAIN INDICATORS

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Population (millions)	**61.57**	**61.02**	**61.20**	**62.10**	**62.70**	**-0.2**	**0.5**	**1.0**
GDP (Bil. ECU 85)	**776.3**	**822.2**	**855.6**	**916.3**	**959.3**	**1.2**	**3.1**	**4.7**
Private Consumption (Bil. ECU 85)	**501.5**	**519.7**	**554.2**	**577.3**	**602.1**	**0.7**	**3.0**	**4.3**
Industrial Production (85=100)	**96.1**	**100.0**	**102.7**	**112.1**	**117.9**	**0.8**	**3.3**	**5.2**
GDP per capita (ECU 85/capita)	**12607.7**	**13474.4**	**13981.1**	**14754.5**	**15300.1**	**1.3**	**2.6**	**3.7**
Prim. Ener. Cons. per cap. (Kgoe/capita)	**4520**	**4360**	**4360**	**4290**	**4350**	**-0.7**	**0.0**	**1.4**
Import Dependency (%)	**58.7**	**50.1**	**53.6**	**51.1**	**53.4**	**-3.1**	**1.3**	**4.5**
Oil Dependency (%)	**49.5**	**39.5**	**41.0**	**38.3**	**39.2**	**-4.4**	**-0.1**	**2.4**
Intensities								
- Gross Inland Cons./GDP (toe/MECU 85)	358.6	323.5	311.6	290.8	284.3	-2.0	-2.5	-2.2
- Final Cons./GDP (toe/MECU 85)	233.4	216.5	215.2	192.2	188.8	-1.5	-2.7	-1.8
- Industrial Cons./Ind. Production (85=100)	114.0	100.0	97.7	91.0	85.5	-2.6	-3.1	-6.1
- Electricity Cons./GDP (MWh/MECU 85)	411.6	425.2	424.7	410.8	397.3	0.7	-1.3	-3.3
CO2 emissions (Mt of Carbon)	**194.77**	**182.70**	**184.30**	**177.13**	**182.54**	**-1.3**	**0.0**	**3.1**
of which								
- Power Generation	69.63	63.33	62.86	63.19	64.51	-1.9	0.4	2.1
- Industry	42.41	36.65	35.22	35.70	35.21	-2.9	-0.8	-1.4
- Transports	33.43	34.83	38.13	40.52	42.78	0.8	4.2	5.6
- Domestic-Tertiary	49.30	47.89	48.09	37.73	40.04	-0.6	-3.5	6.1
CO2 emissions per capita (t per capita)	**3.16**	**2.99**	**3.01**	**2.85**	**2.91**	**-1.1**	**-0.6**	**2.1**

GREECE

While GDP growth was stagnant in 1990 compared with the preceding year, **final energy consumption** increased by 2.8%. This growth rate was mostly observed in the transport sector (8.2% increase) which represents some 42% of total final energy consumption. Energy consumption decreased however in the industrial sector by 1.8% following implementation of a rigourous stabilization program. The same reason applies to the domestic and tertiary sectors where consumption only increased 0.8%.

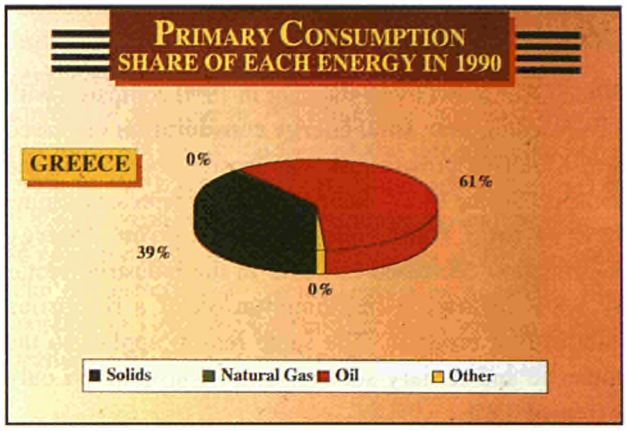
Total final energy consumption growth showed a clear acceleration in the second half of the decade. The annual rate of growth was 3.4% from 1985 to 1990 compared to 1.9% in 1980-1985. These high growth rates were observed despite the relative stagnation of overall economic activity. This picture is partly due to the fact that energy efficiency gains in Greece remain at low levels. Gross inland consumption per GDP unit was 453.6 toe/1985 Mecu in 1990 (having risen by 2.7% annually between 1985 and 1990) compared to the Community average of 286.3.



GREECE: FINAL ENERGY CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Industry	**3.94**	**3.57**	**3.73**	**3.99**	**3.92**	**-2.0**	**1.9**	**-1.8**
- solids	0.48	1.21	1.10	1.11	1.19	20.3	-0.3	7.2
- oil	2.57	1.41	1.71	1.82	1.68	-11.3	3.6	-7.7
- gas	0.00	0.01	0.01	0.01	0.00	-	-20.0	-100.0
- electricity	0.90	0.95	0.92	1.05	1.04	1.1	1.8	-1.0
Transport	**3.93**	**4.68**	**4.83**	**5.38**	**5.82**	**3.6**	**4.5**	**8.2**
- oil	3.92	4.67	4.83	5.37	5.80	3.6	4.4	8.0
- electricity	0.00	0.00	0.00	0.01	0.01	-	-	0.0
Other	**2.70**	**3.36**	**3.64**	**3.98**	**4.01**	**4.5**	**3.6**	**0.8**
- solids	0.04	0.05	0.04	0.04	0.04	4.6	-4.4	0.0
- oil	1.85	2.21	2.36	2.58	2.57	3.6	3.1	-0.4
- gas	0.00	0.00	0.01	0.01	0.00	-	-	-100.0
- electricity	0.81	1.10	1.23	1.35	1.40	6.3	4.9	3.7
TOTAL	**10.57**	**11.61**	**12.21**	**13.36**	**13.74**	**1.9**	**3.4**	**2.8**

The whole of **primary consumption** in Greece is covered by lignite and oil while the use of gas is almost non-existent. The production of lignite, which is an important energy resource in Greece, increased by 1.3% reaching 7.21 Mtoe in 1990 and is used almost exclusively for electricity generation. Greece has no indigenous production of hard coal which is consequently all imported. Greece does however produce a little crude oil - a mere 0.83 Mtoe in 1990 representing approximately 10% of total primary production.



GREECE: PRODUCTION, NET IMPORTS, GROSS INLAND CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**3.15**	**6.47**	**7.56**	**8.35**	**8.34**	**15.5**	**5.2**	**-0.1**
- solids	2.83	4.84	5.97	7.12	7.21	11.3	8.3	1.3
of which lignite	2.83	4.84	5.97	7.12	7.21	11.3	8.3	1.3
- oil	0.00	1.32	1.24	0.93	0.83	-	-8.9	-10.8
- natural gas	0.00	0.07	0.11	0.14	0.14	-	14.9	0.0
- hydro	0.29	0.24	0.24	0.16	0.15	-3.7	-9.0	-6.3
- other renewable	0.03	0.00	0.00	0.00	0.00	-20.0	-	-
Net Imports	**13.55**	**11.81**	**12.64**	**14.25**	**15.38**	**-2.7**	**5.4**	**7.9**
- solids	0.40	1.23	1.11	0.78	0.99	25.2	-4.2	26.9
of which hard coal	0.37	1.19	1.07	0.75	0.97	26.3	-4.0	29.3
- crude oil	14.46	10.54	14.99	14.32	14.72	-6.1	6.9	2.8
- oil products	-1.35	-0.02	-3.51	-0.88	-0.39	-	-	-
- electricity	0.05	0.06	0.05	0.03	0.06	3.7	0.0	100.0
Gross Inland Consumption (1)	**15.10**	**17.47**	**18.14**	**21.26**	**21.42**	**3.0**	**4.2**	**0.8**
- solids	3.16	6.08	6.79	7.97	8.21	14.0	6.2	3.0
- oil	11.57	11.02	10.94	12.96	12.86	-1.0	3.1	-0.8
- natural gas	0.00	0.07	0.11	0.14	0.14	-	14.9	0.0
- other (2)	0.37	0.30	0.29	0.20	0.21	-4.1	-6.9	5.0

(1) excluding bunkers.

(2) includes nuclear, hydro and other renewable.

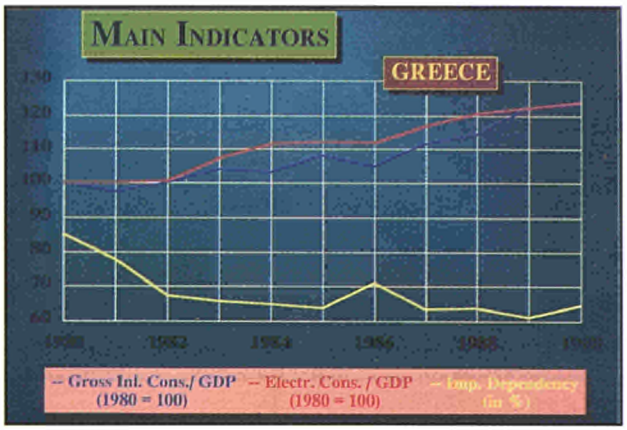
Total electricity consumption increased by 1.7% in 1990. The growth rate over the decade averaged 3.6% per year showing a steady market penetration. The bulk of electricity generation uses lignite (significant reserves of lignite have recently been discovered) as input and oil remains the second energy source for power generation. In Greece there are no nuclear power plants, and as already mentioned gas remains insignificant.

GREECE: ELECTRICITY GENERATION

	Twh					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Total generation	**22.65**	**27.74**	**30.27**	**34.46**	**35.00**	**4.1**	**4.8**	**1.6**
from pumping	0.01	0.01	0.19	0.25	0.23	0.0	115.8	-7.5
Hydro (without pumping)	3.40	2.80	2.78	1.90	1.77	-3.8	-8.8	-7.0
Derived	19.24	24.93	27.30	32.30	33.00	5.3	5.8	2.2
Thermal conventional	19.24	24.93	27.30	32.30	33.00	5.3	5.8	2.2
Net Imports	0.62	0.74	0.62	0.39	0.71	3.7	-0.8	81.3
Gross Inland Consumption	23.27	28.48	30.89	34.85	35.71	4.1	4.6	2.5
Own Consumption	1.37	2.00	2.68	3.19	3.18	8.0	9.7	-0.4
Available Internal Market	21.90	26.48	28.21	31.65	32.53	3.9	4.2	2.8
Distribution Losses	1.60	1.99	2.29	2.51	2.86	4.5	7.5	14.0
Energy Branch Consumption	0.41	0.66	0.89	1.14	1.21	9.9	12.8	5.3
Final Consumption	19.90	23.83	25.02	28.00	28.47	3.7	3.6	1.7
Power Generation Capacities(*) (Tw)								
Total	**5.29**	**6.46**	**7.58**	**8.68**	**8.68**	**4.1**	**6.1**	**0.0**
Conventional Thermal	3.88	4.43	5.45	6.17	6.17	2.7	6.9	0.0
Hydro (incl. pumping)	1.42	2.03	2.13	2.51	2.51	7.5	4.3	0.0
Inputs to conventional thermal power stations (MToe)								
Total	4.65	6.44	7.19	8.43	8.72	6.7	6.2	3.4
Solids	2.52	4.81	5.65	6.81	6.89	13.8	7.5	1.2
- of which lignite	2.52	4.62	5.54	6.81	6.89	12.9	8.3	1.2
Oil	2.10	1.64	1.53	1.60	1.80	-4.8	1.9	12.5
Gas	0.00	0.00	0.01	0.02	0.03	-	-	50.0
- of which natural gas	0.00	0.00	0.01	0.02	0.03	-	-	50.0
Renewable	0.03	0.00	0.00	0.00	0.00	-20.0	-	-
Excluding autoproducers. Renewable	0.13	0.16	0.19	0.20	0.21	4.2	5.6	5.0

(*) Excluding autoproducers.

The share of net imports in total primary consumption increased in 1990 by 5.2% which pushed up Greece's dependency on imports to 64.2%. Oil dependency fell to 59.9% in 1990 from 82.3% in 1980, but has nevertheless been increasing in recent years. Total CO2 emissions increased by 3.2% in 1990, slightly below the trend observed during the decade (4.5% on average). This steady increase is due to the use of lignite in power generation and to the strong growth in transportation emissions. In 1990, transport emissions increased by 8%, or double the average reported for the decade.

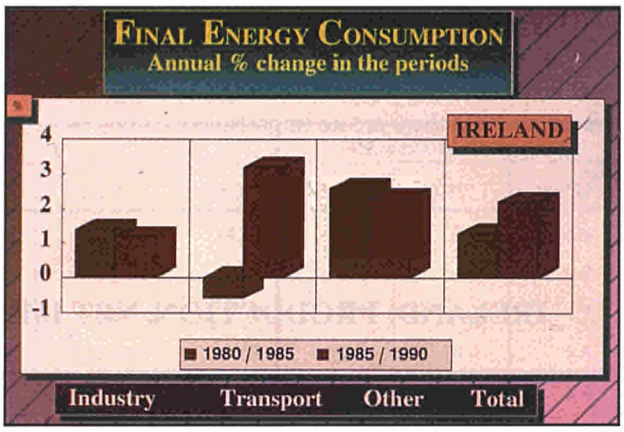


GREECE: MAIN INDICATORS

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Population (millions)	**9.64**	**9.93**	**9.99**	**10.03**	**10.05**	**0.6**	**0.2**	**0.2**
GDP (Bil. ECU 85)	**40.9**	**43.7**	**44.1**	**47.2**	**47.2**	**1.4**	**1.6**	**0.1**
Private Consumption (Bil. ECU 85)	**25.5**	**28.6**	**29.0**	**31.2**	**31.8**	**2.5**	**2.3**	**2.1**
Industrial Production (85=100)	**93.2**	**100.0**	**98.1**	**105.3**	**103.3**	**1.5**	**0.7**	**-1.9**
GDP per capita (ECU 85/capita)	**4239.3**	**4398.0**	**4411.2**	**4702.7**	**4698.0**	**0.7**	**1.4**	**-0.1**
Prim. Ener. Cons. per cap. (Kgoe/capita)	**1570**	**1760**	**1820**	**2120**	**2130**	**2.4**	**4.2**	**0.5**
Import Dependency (%)	**85.1**	**63.6**	**63.4**	**61.0**	**64.2**	**-5.1**	**0.2**	**5.2**
Oil Dependency (%)	**82.3**	**56.6**	**57.6**	**57.6**	**59.9**	**-6.2**	**1.1**	**4.0**
Intensities								
- Gross Inland Cons./GDP (toe/MECU 85)	369.4	400.1	411.6	450.7	453.6	1.7	2.7	0.6
- Final Cons./GDP (toe/MECU 85)	258.6	265.8	277.0	283.1	291.0	0.6	1.9	2.8
- Industrial Cons./Ind. Production (85=100)	118.4	100.0	106.4	106.0	106.1	-3.1	1.2	0.0
- Electricity Cons./GDP (MWh/MECU 85)	486.8	545.6	567.8	593.6	602.9	2.4	2.1	1.6
CO2 emissions (Mt of Carbon)	**12.10**	**14.89**	**16.11**	**18.17**	**18.75**	**4.2**	**4.7**	**3.2**
of which								
- Power Generation	4.51	6.54	7.36	8.67	8.93	7.7	6.4	3.0
- Industry	2.68	2.49	2.62	2.74	2.70	-1.4	1.6	-1.4
- Transports	3.31	3.95	4.08	4.53	4.90	3.6	4.4	8.1
- Domestic-Tertiary	1.60	1.92	2.05	2.23	2.22	3.7	3.0	-0.6
CO2 emissions per capita (t per capita)	**1.26**	**1.50**	**1.61**	**1.81**	**1.87**	**3.6**	**4.5**	**3.0**

IRELAND

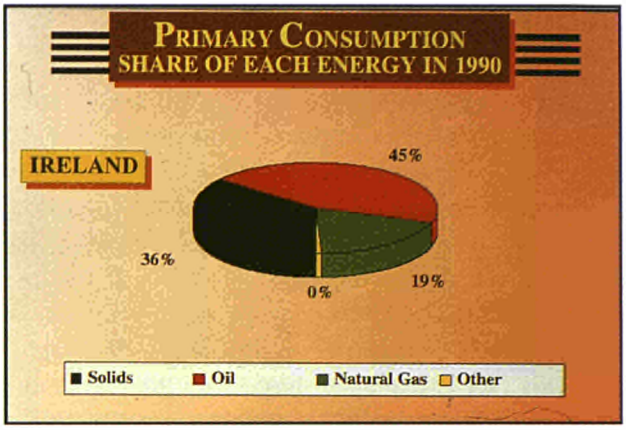
Final energy demand increased by 0.4% in 1990 reaching 6.8 Mtoe. Growth rates in the different sectors of the economy were however different. Final energy consumption in industry remained stable, increased by 3.7% in the transport sector, and declined by 1.6% in the domestic and tertiary sectors. The reduction of the energy consumption in the domestic and tertiary sectors was achieved despite a rise in private consumption of 3%. This fact is explained largely by the favourable weather conditions in 1990. Stable consumption of the industrial sector can be attributed entirely to the decline of energy intensity in that sector; the ratio of industrial energy consumption to industrial production went down by 4.3%. Although total energy intensity declined constantly over the last decade, total energy consumption continued to grow; increasing by 1.3% per year from 1980 to 1985 and by 2.2% per year from 1985 to 1990. The higher growth rates in the second half of the decade can be attributed to economic activity (the average rate of growth in Ireland's GDP was 3.8%) and to the low oil price levels.



IRELAND: FINAL ENERGY CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Industry	1.62	1.74	1.81	1.85	1.85	1.4	1.2	0.0
- solids	0.10	0.25	0.27	0.34	0.30	20.1	3.7	-11.8
- oil	1.23	0.95	0.93	0.79	0.82	-5.0	-2.9	3.8
- gas	0.02	0.22	0.27	0.34	0.34	61.5	9.1	0.0
- electricity	0.28	0.31	0.34	0.37	0.39	2.1	4.7	5.4
Transport	**1.74**	**1.69**	**1.70**	**1.91**	**1.98**	**-0.6**	**3.2**	**3.7**
- oil	1.74	1.69	1.70	1.91	1.98	-0.6	3.2	3.7
Other	2.37	2.69	3.10	3.06	3.01	2.6	2.3	-1.6
- solids	0.95	1.50	1.58	1.42	1.28	9.6	-3.1	-9.9
- oil	0.90	0.60	0.84	0.89	0.90	-7.8	8.4	1.1
- gas	0.05	0.06	0.11	0.15	0.19	3.7	25.9	26.7
- electricity	0.46	0.53	0.57	0.60	0.63	2.9	3.5	5.0
TOTAL	**5.73**	**6.12**	**6.61**	**6.81**	**6.84**	**1.3**	**2.2**	**0.4**

Primary energy consumption increased by 3.8% in 1990, a growth rate which is higher that observed over the last five years. Domestic production is limited to peat and natural gas. Ireland is the second ranking country in the world for the production of peat after the former USSR. More than half of total production is consumed in power plants and the remainder is consumed in the domestic sector. Primary consumption of natural gas increased by 21.3% per year during 1980-1985 but declined between 1985 and 1990 by 0.5% per year. Ireland has only one natural gas field in current production and there are no imports.



IRELAND: PRODUCTION, NET IMPORTS, GROSS INLAND CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**1.65**	**2.78**	**3.09**	**3.30**	**3.30**	**11.0**	**3.5**	**0.0**
- solids	0.84	0.77	1.67	1.37	1.35	-1.7	11.9	-1.5
of which lignite(*)	0.81	0.74	1.65	1.35	1.33	-1.8	12.4	-1.5
- natural gas	0.74	1.94	1.35	1.87	1.89	21.3	-0.5	1.1
- hydro	0.07	0.07	0.06	0.06	0.06	0.0	-3.0	0.0
Net Imports	**6.54**	**5.33**	**6.38**	**6.31**	**6.94**	**-4.0**	**5.4**	**10.0**
- solids	0.79	1.27	1.93	2.21	2.18	10.0	11.4	-1.4
of which hard coal	0.79	1.26	1.92	2.20	2.18	9.8	11.6	-0.9
- crude oil	2.04	1.25	1.49	1.61	1.94	-9.3	9.2	20.5
- oil products	3.70	2.81	2.97	2.50	2.83	-5.4	0.1	13.2
Gross Inland Consumption (1)	**8.11**	**8.77**	**9.39**	**9.47**	**9.83**	**1.6**	**2.3**	**3.8**
- solids	1.68	2.59	3.57	3.60	3.50	9.0	6.2	-2.8
- oil	5.62	4.16	4.40	3.94	4.38	-5.8	1.0	11.2
- natural gas	0.74	1.95	1.35	1.87	1.89	21.4	-0.6	1.1
- other (2)	0.07	0.07	0.06	0.06	0.06	0.0	-3.0	0.0

(1) excluding bunkers.

(2) includes nuclear, hydro and other renewable.

(*) following SOEC definition Irish peat is considered as lignite.

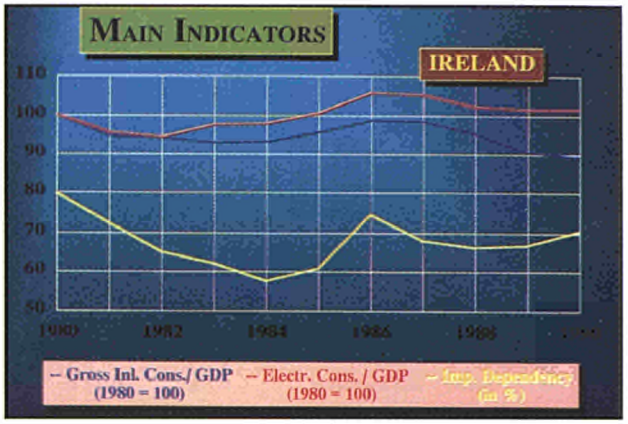
Growth in **electricity** demand was around 4.0% in the second half of the 1980s. Total electricity generation was 14.5 TWh in 1990 which is up by 4.9% compared to 1989. In Ireland there are no nuclear power plants and over 90% of all electricity is produced by conventional thermal power stations. The use of peat for power generation has remained constant throughout most of the decade and represents 22% of total inputs for thermal generation. The use of hard coal has increased for electricity generation and it represents over 1 Mtoe in 1990. The increase in the share of solids was achieved to the detriment of oil and gas whose respective share reduced from 21% and 48% in 1985 to 11% and 27% in 1990.

IRELAND: ELECTRICITY GENERATION

	Twh					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Total generation	**10.88**	**12.09**	**13.06**	**13.83**	**14.52**	**2.1**	**3.7**	**4.9**
from pumping	0.32	0.35	0.43	0.31	0.28	1.8	-4.3	-9.0
Hydro (without pumping)	0.84	0.83	0.69	0.69	0.70	-0.1	-3.4	1.7
Derived	9.73	10.91	11.95	12.84	13.53	2.3	4.4	5.4
Thermal conventional	9.73	10.91	11.95	12.84	13.53	2.3	4.4	5.4
Net Imports	0.00	0.00	0.00	0.00	0.00	-	-	-
Gross Inland Consumption	10.88	12.09	13.06	13.83	14.52	2.1	3.7	4.9
Own Consumption	1.10	1.15	1.40	1.25	1.27	0.9	2.0	1.9
Available Internal Market	9.78	10.93	11.67	12.58	13.24	2.3	3.9	5.2
Distribution Losses	1.09	1.06	0.98	1.20	1.27	-0.5	3.6	5.6
Energy Branch Consumption	0.09	0.11	0.11	0.12	0.11	4.0	-0.1	-2.3
Final Consumption	8.59	9.76	10.58	11.27	11.86	2.6	4.0	5.3
Power Generation Capacities(*) (Tw)								
Total	**2.92**	**3.25**	**3.78**	**3.71**	**3.71**	**2.2**	**2.7**	**0.0**
Conventional Thermal	2.41	2.74	3.27	3.19	3.20	2.6	3.1	0.0
Hydro (incl. pumping)	0.51	0.51	0.51	0.51	0.51	0.0	0.0	0.0
Other renewable	0.00	0.00	0.00	0.00	0.00	-	-	-3.5
Inputs to conventional thermal power stations (MToe)								
Total	2.43	2.63	2.84	2.91	3.12	1.6	3.5	7.2
Solids	0.63	0.82	1.69	1.84	1.94	5.4	18.8	5.4
- of which lignite	0.61	0.77	0.60	0.57	0.69	4.8	-2.2	21.1
Oil	1.41	0.54	0.63	0.18	0.34	-17.5	-8.8	88.9
Gas	0.38	1.27	0.52	0.90	0.84	27.3	-7.9	-6.7
- of which natural gas	0.38	1.27	0.52	0.90	0.84	27.3	-7.9	-6.7

(*) Excluding autoproducers.

The recovery of the Irish economy and higher consumption in the second half of the last decade have increased the import dependency of the Irish economy although efforts to reduce energy intensity have been made especially in industry. Total emissions of CO2 increased annually by 3.1% on average from 1985 to 1990. The contributions of the power generation and the domestic/tertiary sectors to total CO2 emissions are quite substantial.

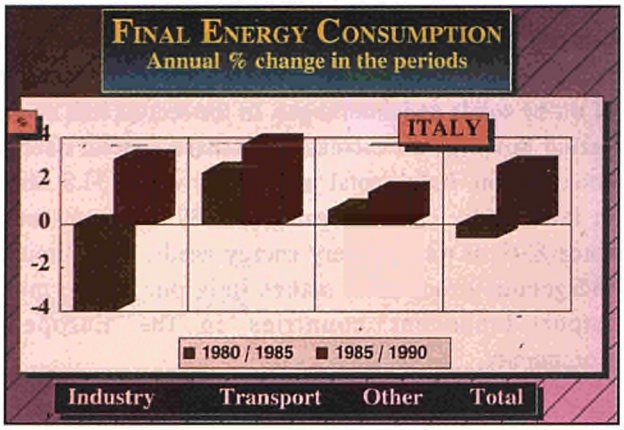


IRELAND: MAIN INDICATORS

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Population (millions)	**3.40**	**3.54**	**3.54**	**3.52**	**3.50**	**0.8**	**-0.2**	**-0.6**
GDP (Bil. ECU 85)	**21.9**	**24.7**	**25.7**	**28.3**	**29.8**	**2.4**	**3.8**	**5.2**
Private Consumption (Bil. ECU 85)	**14.6**	**14.7**	**15.3**	**16.5**	**17.0**	**0.1**	**3.0**	**3.0**
Industrial Production (85=100)	**78.0**	**100.0**	**111.2**	**137.4**	**143.8**	**5.1**	**7.5**	**4.7**
GDP per capita (ECU 85/capita)	**6451.2**	**6987.9**	**7266.7**	**8037.2**	**8503.4**	**1.6**	**4.0**	**5.8**
Prim. Ener. Cons. per cap. (Kgoe/capita)	**2390**	**2480**	**2650**	**2690**	**2810**	**0.7**	**2.5**	**4.5**
Import Dependency (%)	**79.9**	**60.6**	**67.9**	**66.5**	**70.5**	**-5.4**	**3.1**	**5.9**
Oil Dependency (%)	**70.1**	**46.2**	**47.4**	**43.3**	**48.4**	**-8.0**	**0.9**	**11.7**
Intensities								
- Gross Inland Cons./GDP (toe/MECU 85)	369.8	354.4	364.9	334.8	330.4	-0.8	-1.4	-1.3
- Final Cons./GDP (toe/MECU 85)	261.2	247.4	256.8	240.9	229.7	-1.1	-1.5	-4.6
- Industrial Cons./Ind. Production (85=100)	119.7	100.0	93.6	77.6	74.2	-3.5	-5.8	-4.3
- Electricity Cons./GDP (MWh/MECU 85)	391.8	394.4	411.3	398.3	398.5	0.1	0.2	0.1
CO2 emissions (Mt of Carbon)	**6.55**	**6.94**	**7.82**	**7.93**	**8.07**	**1.2**	**3.1**	**1.8**
of which								
- Power Generation	2.11	2.14	2.67	2.69	2.91	0.3	6.3	7.9
- Industry	1.15	1.22	1.25	1.25	1.24	1.1	0.4	-1.3
- Transports	1.47	1.43	1.43	1.61	1.67	-0.5	3.2	3.8
- Domestic-Tertiary	1.82	2.15	2.47	2.37	2.25	3.5	0.9	-5.0
CO2 emissions per capita (t per capita)	**1.93**	**1.96**	**2.21**	**2.25**	**2.31**	**0.4**	**3.3**	**2.3**

ITALY

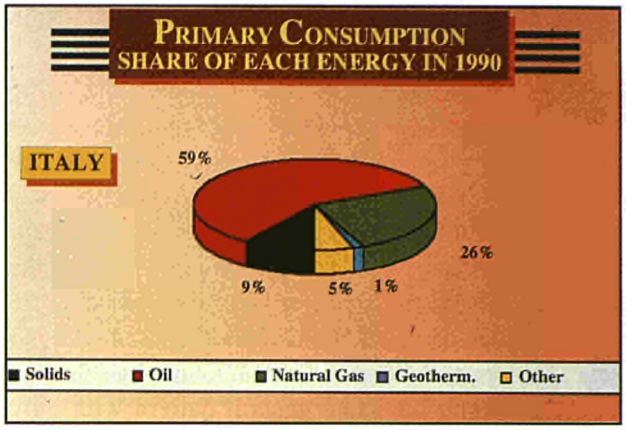
Overall economic activity in 1990 slowed down slightly (2.0%) compared to the 1985-1990 average which was 3.0%. The growth rate of total **final energy consumption** (0.9%) was also lower than that observed in the second half of the decade (2.7% per year). Indeed, final energy demand recovered in the second half of the decade following the sharp fall in oil prices after an average annual decrease of 0.6% per year from 1980 to 1985. The sectoral trends of consumption over the last decade followed the same general pattern with only slight exceptions. Energy consumption by industry went down in the first half thus reducing industrial energy intensity by 3.4% per year. In the second half of the decade this annual reduction fell to 0.3%.



ITALY: FINAL ENERGY CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Industry	**38.07**	**31.01**	**33.55**	**35.79**	**35.99**	**-4.0**	**3.0**	**0.6**
- solids	3.71	4.89	4.36	3.94	4.24	5.7	-2.8	7.6
- oil	15.97	8.94	9.15	9.14	8.49	-11.0	-1.0	-7.1
- gas	10.31	9.20	11.54	13.31	13.72	-2.3	8.3	3.1
- electricity	8.08	7.99	8.50	9.39	9.54	-0.2	3.6	1.6
Transport	**24.61**	**27.75**	**29.67**	**32.68**	**33.35**	**2.4**	**3.7**	**2.1**
- oil	23.97	27.09	28.98	31.99	32.66	2.5	3.8	2.1
- gas	0.25	0.24	0.24	0.21	0.21	-0.8	-2.6	0.0
- electricity	0.39	0.42	0.45	0.47	0.48	1.5	2.7	2.1
Other	**33.84**	**35.09**	**37.02**	**37.74**	**37.81**	**0.7**	**1.5**	**0.2**
- solids	0.36	0.23	0.17	0.11	0.10	-8.6	-15.3	-9.1
- oil	19.31	16.55	16.43	14.66	13.55	-3.0	-3.9	-7.6
- gas	8.90	11.78	13.16	15.04	15.76	5.8	6.0	4.8
- electricity	5.27	6.53	7.26	7.93	8.40	4.4	5.2	5.9
TOTAL	**96.52**	**93.86**	**100.24**	**106.20**	**107.14**	**-0.6**	**2.7**	**0.9**

Total **primary energy consumption** rose by 1.1% in 1990. In Italy primary energy consumption in 1980-1985 fell by 0.3% per year on average but increased by 2.7% per year in the second half of the decade. The energy pattern in the first half of the 1980's shows substitution of oil by solids and natural gas. In the second half of the period however oil increased its share in total energy consumption. Italy's total net imports were 131.8 Mtoe in 1990, up by 1.1% compared to 1989 and represented some 87% of total primary energy needs. Thus limited indigenous production makes Italy one of the most import-dependent countries in the European Community.



ITALY: PRODUCTION, NET IMPORTS, GROSS INLAND CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**19.17**	**21.70**	**22.96**	**23.61**	**23.94**	**2.5**	**2.0**	**1.4**
- solids	0.31	0.33	0.29	0.32	0.34	1.3	0.6	6.3
of which lignite	0.31	0.33	0.28	0.29	0.30	1.3	-1.9	3.4
- oil	1.99	2.39	4.03	4.60	4.70	3.7	14.5	2.2
- natural gas	10.26	11.54	13.22	13.75	14.03	2.4	4.0	2.0
- nuclear	0.67	1.98	0.05	0.00	0.00	24.2	-	-
- geothermal	1.89	1.70	1.84	1.87	1.98	-2.1	3.1	5.9
- hydro	3.89	3.53	3.40	2.93	2.72	-1.9	-5.1	-7.2
- other renewable	0.16	0.22	0.13	0.14	0.17	6.6	-5.0	21.4
Net Imports	**119.41**	**114.06**	**123.65**	**130.45**	**131.84**	**-0.9**	**2.9**	**1.1**
- solids	11.36	14.77	14.47	13.96	13.77	5.4	-1.4	-1.4
of which hard coal	11.76	14.98	14.48	14.10	13.83	5.0	-1.6	-1.9
- crude oil	92.93	73.40	78.60	80.78	84.18	-4.6	2.8	4.2
- oil products	2.83	7.82	9.44	9.36	5.60	22.5	-6.5	-40.2
- natural gas	11.77	16.04	19.14	23.45	25.31	6.4	9.6	7.9
- electricity	0.52	2.04	1.99	2.90	2.98	31.4	7.9	2.8
Gross Inland Consumption (1)	**134.24**	**132.31**	**140.66**	**149.50**	**151.20**	**-0.3**	**2.7**	**1.1**
- solids	11.52	15.16	14.79	13.70	14.62	5.6	-0.7	6.7
- oil	92.87	80.48	86.41	91.05	89.71	-2.8	2.2	-1.5
- natural gas	22.73	27.20	32.06	36.90	39.02	3.7	7.5	5.7
- other (2)	7.13	9.47	7.41	7.84	7.85	5.8	-3.7	0.1

(1) excluding bunkers.

(2) includes nuclear, hydro and other renewable.

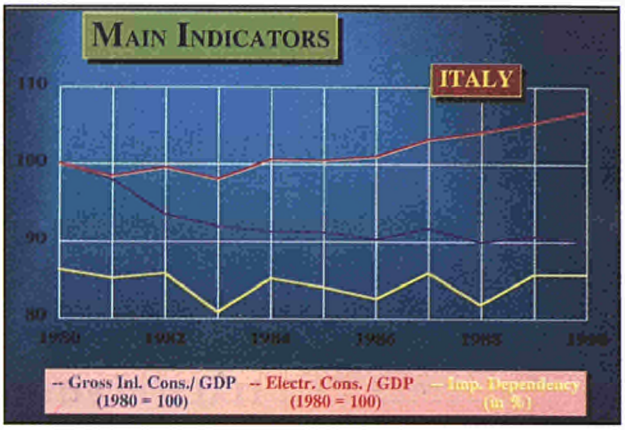
Total **electricity generation** was 216.9 TWh in 1990 , up by 2.9% compared to 1989. As in all European countries electricity penetration has increased and the rate of electricity consumption per unit of GDP increased by 0.1% and 1.3% in the first and second halves of the last decade respectively. With the suspension of nuclear production in 1989, electricity generation depends on thermal output by 65% of which 75% is produced by oil and gas. However, construction of new power plants has not matched electricity demand. Installed capacity increased only by 0.5% on average over the last five years while demand grew by 4.3% per year, obliging Italy to import a large share (16% in 1990) of the electricity consumed.

ITALY: ELECTRICITY GENERATION

	Twh					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Total generation	**185.74**	**185.74**	**201.37**	**210.75**	**216.89**	**0.0**	**3.1**	**2.9**
from pumping	2.29	3.54	3.12	3.46	3.50	9.0	-0.2	0.9
Hydro (without pumping)	45.24	41.09	39.50	34.05	31.62	-1.9	-5.1	-7.2
Derived	138.21	141.12	158.76	173.23	181.78	0.4	5.2	4.9
Nuclear	2.21	7.02	0.17	0.00	0.00	26.0	-20.0	-
Thermal conventional	136.00	134.10	158.58	173.24	181.78	-0.3	6.3	4.9
Net Imports	6.08	23.67	23.14	33.72	34.65	31.2	7.9	2.8
Gross Inland Consumption	191.82	209.41	224.52	244.48	251.55	1.8	3.7	2.9
Own Consumption	12.65	14.91	15.21	16.30	17.03	3.4	2.7	4.5
Available Internal Market	179.18	194.50	209.31	228.18	234.52	1.7	3.8	2.8
Distribution Losses	15.89	17.46	17.20	17.39	16.42	1.9	-1.2	-5.6
Energy Branch Consumption	3.57	3.39	3.67	3.85	3.98	-1.0	3.3	3.6
Final Consumption	159.72	173.65	188.44	206.94	214.12	1.7	4.3	3.5
Power Generation Capacities(*) (Tw)								
Total	**46.08**	**52.25**	**53.53**	**54.61**	**53.62**	**2.5**	**0.5**	**-1.8**
Nuclear	1.11	1.27	1.27	1.12	0.00	2.7	-20.0	-100.0
Conventional Thermal	29.15	33.64	34.66	35.63	35.30	2.9	1.0	-0.9
Hydro (incl. pumping)	15.82	16.92	17.09	17.33	17.79	1.4	1.0	2.7
Other renewable	0.00	0.43	0.50	0.53	0.53	-	4.4	0.0
Inputs to conventional thermal power stations (MToe)								
Total	30.51	29.91	34.89	37.76	39.66	-0.4	5.8	5.0
Solids	3.28	5.92	6.66	6.17	7.08	12.5	3.6	14.7
- of which lignite	0.32	0.32	0.28	0.29	0.29	0.0	-1.9	0.0
Oil	22.47	16.15	19.13	21.69	21.53	-6.4	5.9	-0.7
Gas	2.72	5.92	7.13	7.89	8.90	16.8	8.5	12.8
- of which natural gas	1.96	5.18	6.50	7.09	8.08	21.5	9.3	14.0
Renewable	2.04	1.92	1.97	2.01	2.15	-1.2	2.3	7.0

(*) Excluding autoproducers.

Import dependency stabilised over the past decade, remaining at a high level. The share of imports in gross inland consumption was 86.3% in 1980 and fell by only 0.6 points to 85.7% in 1990. More progress has been made as regards oil dependency which fell from 69.2% in 1980 to 58.4% in 1990. Reduced energy consumption in 1980-1985 brought down total CO2 emissions by 0.8% on average each year. This trend was inverted in the second half of the decade to give an average annual increase of 3%. Sectors contributing to this increase were power generation and transport.

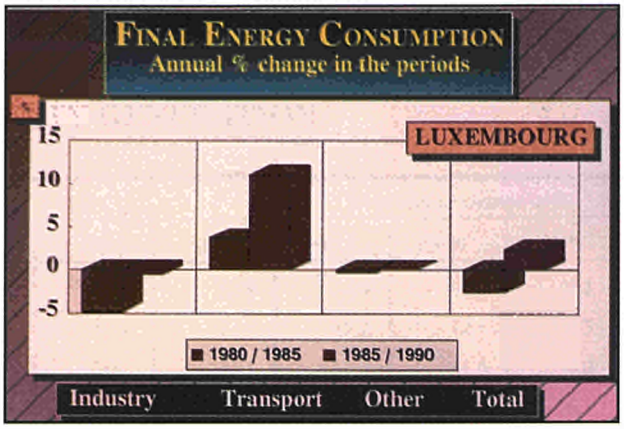


ITALY: MAIN INDICATORS

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Population (millions)	**56.43**	**57.14**	**57.35**	**57.54**	**57.58**	**0.3**	**0.2**	**0.1**
GDP (Bil. ECU 85)	**518.4**	**561.3**	**593.0**	**637.2**	**650.0**	**1.6**	**3.0**	**2.0**
Private Consumption (Bil. ECU 85)	**316.9**	**345.0**	**377.0**	**410.3**	**421.1**	**1.7**	**4.1**	**2.6**
Industrial Production (85=100)	**103.2**	**100.0**	**106.8**	**118.6**	**117.8**	**-0.6**	**3.3**	**-0.7**
GDP per capita (ECU 85/capita)	**9185.7**	**9823.2**	**10340.9**	**11074.6**	**11288.2**	**1.4**	**2.8**	**1.9**
Prim. Ener. Cons. per cap. (Kgoe/capita)	**2380**	**2320**	**2450**	**2600**	**2630**	**-0.5**	**2.5**	**1.2**
Import Dependency (%)	**86.3**	**84.1**	**85.9**	**85.7**	**85.7**	**-0.5**	**0.4**	**0.0**
Oil Dependency (%)	**69.2**	**59.9**	**61.2**	**59.2**	**58.4**	**-2.9**	**-0.5**	**-1.4**
Intensities								
- Gross Inland Cons./GDP (toe/MECU 85)	259.0	235.7	237.2	234.6	232.6	-1.9	-0.3	-0.8
- Final Cons./GDP (toe/MECU 85)	186.2	167.2	169.0	166.7	164.8	-2.1	-0.3	-1.1
- Industrial Cons./Ind. Production (85=100)	118.9	100.0	101.3	97.3	98.5	-3.4	-0.3	1.2
- Electricity Cons./GDP (MWh/MECU 85)	308.1	309.4	317.8	324.6	329.4	0.1	1.3	1.5
CO2 emissions (Mt of Carbon)	**91.22**	**87.46**	**94.86**	**99.83**	**101.46**	**-0.8**	**3.0**	**1.6**
of which								
- Power Generation	24.39	24.01	27.99	30.13	31.64	-0.3	5.7	5.0
- Industry	24.05	18.67	19.78	20.46	20.48	-4.9	1.9	0.1
- Transports	20.40	23.03	24.63	27.15	27.71	2.5	3.8	2.1
- Domestic-Tertiary	22.38	21.75	22.46	22.10	21.62	-0.6	-0.1	-2.2
CO2 emissions per capita (t per capita)	**1.62**	**1.53**	**1.65**	**1.74**	**1.76**	**-1.1**	**2.9**	**1.6**

LUXEMBOURG

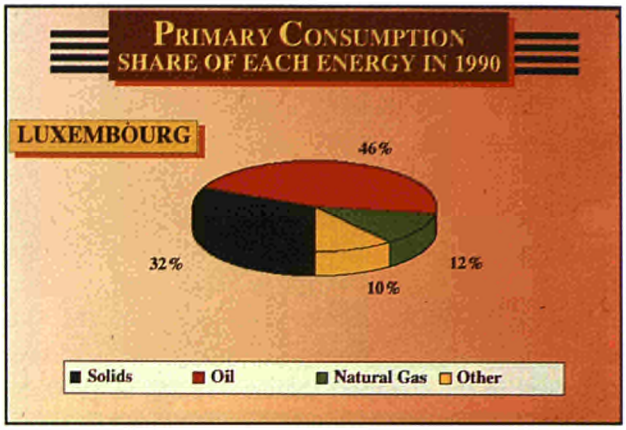
Total **final energy demand** increased by 3.8% in 1990. This growth rate is higher than the last five years' average (2.3%). Total final demand however fell by 2.6% per year during the period 1980-1985. In the second half of the decade, the combination of economic recovery and the fall in the level of energy prices increased the growth rate to 2.3% per year. The most striking increase in consumption during the decade was observed in the transport sector: +18.8% in 1990, but most of this demand should be attributed to transit traffic.



LUXEMBOURG: FINAL ENERGY CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Industry	**2.28**	**1.77**	**1.55**	**1.76**	**1.72**	**-4.9**	**-0.6**	**-2.3**
- solids	1.32	0.97	0.70	0.76	0.74	-6.0	-5.3	-2.6
- oil	0.17	0.13	0.25	0.31	0.27	-5.2	15.7	-12.9
- gas	0.59	0.46	0.38	0.47	0.48	-4.9	0.9	2.1
- electricity	0.21	0.22	0.22	0.23	0.23	0.9	0.9	0.0
Transport	**0.50**	**0.60**	**0.71**	**0.85**	**1.01**	**3.7**	**11.0**	**18.8**
- oil	0.49	0.60	0.70	0.84	1.00	4.1	10.8	19.0
Other	**0.59**	**0.58**	**0.61**	**0.59**	**0.58**	**-0.3**	**0.0**	**-1.7**
- solids	0.02	0.02	0.01	0.01	0.01	0.0	-12.9	0.0
- oil	0.37	0.30	0.32	0.30	0.31	-4.1	0.7	3.3
- gas	0.10	0.15	0.16	0.16	0.14	8.4	-1.4	-12.5
- electricity	0.09	0.11	0.11	0.12	0.13	4.1	3.4	8.3
TOTAL	**3.37**	**2.95**	**2.87**	**3.19**	**3.31**	**-2.6**	**2.3**	**3.8**

Indigenous primary production covers less than 1% of total primary energy consumption. The share of imports in total gross inland consumption is 99.4% and remained stable during the decade.



LUXEMBOURG: PRODUCTION, NET IMPORTS, GROSS INLAND CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**0.02**	**0.03**	**0.03**	**0.04**	**0.03**	**8.4**	**0.0**	**-25.0**
- hydro	0.01	0.01	0.01	0.01	0.01	0.0	0.0	0.0
- other renewable	0.01	0.03	0.03	0.03	0.03	24.6	0.0	0.0
Net Imports	**3.61**	**3.10**	**3.02**	**3.34**	**3.51**	**-3.0**	**2.5**	**5.1**
- solids	1.84	1.42	1.05	1.14	1.12	-5.1	-4.6	-1.8
of which hard coal	0.25	0.14	0.14	0.13	0.14	-10.9	0.0	7.7
- oil products	1.10	1.07	1.32	1.46	1.62	-0.6	8.6	11.0
- natural gas	0.42	0.30	0.34	0.41	0.43	-6.5	7.5	4.9
- electricity	0.24	0.30	0.31	0.33	0.34	4.6	2.5	3.0
Gross Inland Consumption (1)	**3.63**	**3.11**	**3.03**	**3.39**	**3.54**	**-3.0**	**2.6**	**4.4**
- solids	1.84	1.42	1.05	1.15	1.12	-5.1	-4.6	-2.6
- oil	1.10	1.06	1.30	1.47	1.61	-0.7	8.7	9.5
- natural gas	0.42	0.30	0.34	0.41	0.43	-6.5	7.5	4.9
- other (2)	0.27	0.34	0.34	0.37	0.37	4.7	1.7	0.0

(1) excluding bunkers.

(2) includes nuclear, hydro and other renewable.

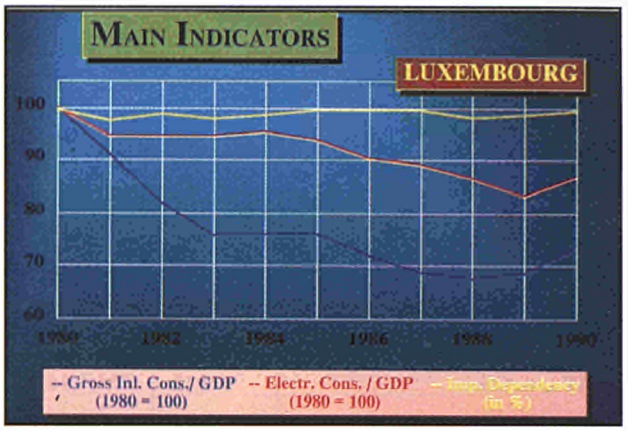
Electricity consumption increased steadily throughout the decade at 1.5% per year average. This growth is driven by the domestic/tertiary sector (3.7% per year) while industrial demand has grown by 1% per year.

LUXEMBOURG: ELECTRICITY GENERATION

	Twh					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Total generation	**1.12**	**0.94**	**1.04**	**1.38**	**1.38**	**-3.4**	**8.0**	**-0.1**
from pumping	0.19	0.42	0.45	0.75	0.75	17.2	12.1	0.5
Hydro (without pumping)	0.10	0.08	0.10	0.07	0.07	-4.4	-1.6	0.0
Derived	0.83	0.44	0.48	0.56	0.56	-11.9	4.9	-0.8
Thermal conventional	0.83	0.44	0.49	0.56	0.56	-11.9	4.9	-0.9
Net Imports	2.84	3.54	3.55	3.82	3.91	4.5	2.0	2.2
Gross Inland Consumption	3.96	4.48	4.59	5.20	5.29	2.5	3.4	1.6
Own Consumption	0.35	0.63	0.66	1.04	1.11	12.5	12.0	7.1
Available Internal Market	3.61	3.85	3.93	4.17	4.18	1.3	1.7	0.3
Distribution Losses	0.03	0.03	0.03	0.05	0.05	-1.3	9.9	-6.8
Energy Branch Consumption	0.01	0.03	0.02	0.06	0.00	26.9	-20.0	-100.0
Final Consumption	3.57	3.79	3.88	4.06	4.13	1.2	1.7	1.7
Power Generation Capacities(*) (Tw)								
Total	**1.11**	**1.11**	**1.11**	**1.11**	**1.11**	**0.0**	**0.0**	**0.0**
Hydro (incl. pumping)	1.11	1.11	1.11	1.11	1.11	0.0	0.0	0.0
Inputs to conventional thermal power stations (MToe)								
Total	0.26	0.15	0.16	0.19	0.20	-10.4	5.9	5.3
Solids	0.01	0.01	0.00	0.00	0.00	0.0	-20.0	-
- of which lignite	0.00	0.00	0.00	0.00	0.00	-	-	-
Oil	0.02	0.00	0.01	0.01	0.01	-20.0	-	0.0
Gas	0.21	0.10	0.13	0.15	0.16	-13.8	-	6.7
- of which natural gas	0.07	0.00	0.02	0.02	0.01	-20.0	-	-50.0
Renewable	0.01	0.03	0.03	0.03	0.03	24.6	0.0	0.0

(*) Excluding autoproducers.

Energy intensities in Luxembourg were significantly lowered over the last decade. This was not the case however for total CO2 emissions which ,after a reduction of 3.7% per year in 1980-1985, increased by an average of 2% annually in the second half of the decade, and by as much as 3.6% in 1990.

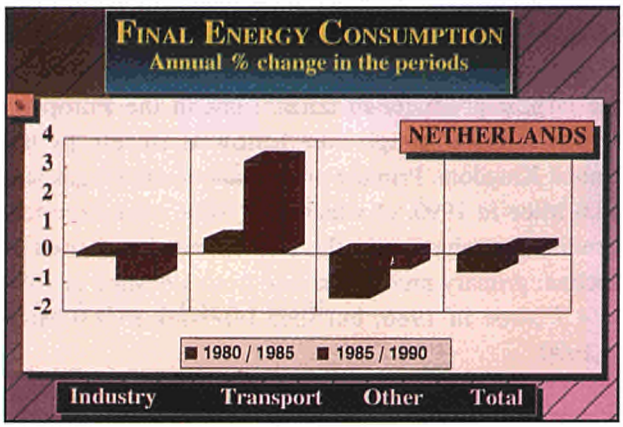


LUXEMBOURG: MAIN INDICATORS

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Population (millions)	**0.37**	**0.37**	**0.37**	**0.38**	**0.38**	**0.0**	**0.5**	**0.0**
GDP (Bil. ECU 85)	**4.0**	**4.6**	**4.9**	**5.5**	**5.7**	**2.5**	**4.6**	**3.7**
Private Consumption (Bil. ECU 85)	**2.5**	**2.7**	**2.9**	**3.1**	**3.2**	**1.2**	**3.8**	**3.2**
Industrial Production (85=100)	**82.3**	**100.0**	**101.2**	**118.6**	**118.0**	**4.0**	**3.4**	**-0.5**
GDP per capita (ECU 85/capita)	**10910.8**	**12351.4**	**13318.9**	**14513.2**	**15050.0**	**2.5**	**4.0**	**3.7**
Prim. Ener. Cons. per cap. (Kgoe/capita)	**9800**	**8410**	**8190**	**8920**	**9310**	**-3.0**	**2.1**	**4.4**
Import Dependency (%)	**99.6**	**99.6**	**99.6**	**98.7**	**99.4**	**0.0**	**0.0**	**0.7**
Oil Dependency (%)	**30.3**	**34.5**	**43.6**	**43.1**	**45.8**	**2.6**	**5.8**	**6.2**
Intensities								
- Gross Inland Cons./GDP (toe/MECU 85)	898.2	681.0	615.3	614.3	618.3	-5.4	-1.9	0.6
- Final Cons./GDP (toe/MECU 85)	834.5	646.0	582.4	579.2	577.9	-5.0	-2.2	-0.2
- Industrial Cons./Ind. Production (85=100)	156.8	100.0	86.6	83.8	82.2	-8.6	-3.9	-1.9
- Electricity Cons./GDP (MWh/MECU 85)	884.3	829.5	788.1	735.8	721.8	-1.3	-2.7	-1.9
CO2 emissions (Mt of Carbon)	**2.92**	**2.42**	**2.30**	**2.58**	**2.68**	**-3.7**	**2.0**	**3.6**
of which								
- Power Generation	0.18	0.11	0.12	0.14	0.14	-9.3	5.1	3.5
- Industry	1.93	1.44	1.21	1.37	1.33	-5.7	-1.5	-3.1
- Transports	0.41	0.50	0.59	0.71	0.85	3.9	11.0	18.5
- Domestic-Tertiary	0.40	0.38	0.39	0.36	0.36	-1.5	-0.8	-0.5
CO2 emissions per capita (t per capita)	**7.90**	**6.55**	**6.23**	**6.80**	**7.04**	**-3.7**	**1.5**	**3.6**

NETHERLANDS

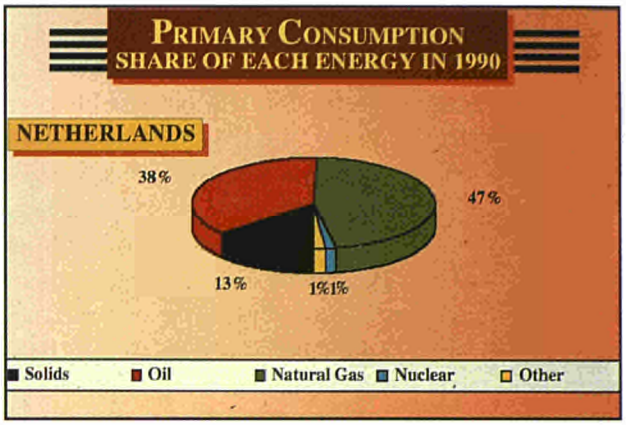
Total **final energy consumption** was quite stable over the past decade; declining by 0.6% on average from 1980 to 1985, but this trend was reversed to a very slight (0.2%) annual increase from 1985 to 1990. These negative or very low positive growth rates resulted from the reduction of energy consumption in industry and in the domestic/tertiary sector. Transport recorded an average growth rate of 3.2% per year from 1985 to 1990 but in 1990 there was a substantial decrease of 11.4%. Gas plays an important role in meeting final demand (50% of total in 1990).



NETHERLANDS: FINAL ENERGY CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Industry	**13.85**	**13.80**	**13.33**	**12.14**	**13.19**	**-0.1**	**-0.9**	**8.6**
- solids	1.04	1.99	1.73	1.43	1.67	13.9	-3.4	16.8
- oil	3.04	1.77	2.44	0.97	1.37	-10.3	-5.0	41.2
- gas	7.30	7.37	6.34	6.70	7.03	0.2	-0.9	4.9
- electricity	2.43	2.43	2.54	2.78	2.86	0.0	3.3	2.9
- heat	0.04	0.25	0.28	0.26	0.27	44.3	1.6	3.8
Transport	**8.58**	**8.80**	**9.30**	**11.65**	**10.32**	**0.5**	**3.2**	**-11.4**
- oil	8.50	8.71	9.20	11.54	10.21	0.5	3.2	-11.5
- electricity	0.08	0.10	0.10	0.10	0.11	4.6	1.9	10.0
Other	**21.22**	**19.72**	**20.52**	**18.87**	**19.21**	**-1.5**	**-0.5**	**1.8**
- solids	0.07	0.04	0.02	0.01	0.03	-10.6	-5.6	200.0
- oil	2.74	1.72	1.64	1.70	1.62	-8.9	-1.2	-4.7
- gas	15.82	15.20	15.89	13.97	14.21	-0.8	-1.3	1.7
- electricity	2.42	2.76	2.96	3.18	3.35	2.7	4.0	5.3
- heat	0.18	0.00	0.00	0.00	0.00	-20.0	-	-
TOTAL	**43.65**	**42.32**	**43.15**	**42.66**	**42.72**	**-0.6**	**0.2**	**0.1**

Total **primary energy consumption** increased by 2.2% in 1990, and this represents the highest growth rate in the decade. Solids increased their share in total primary energy from 6% in 1980 to 14% in 1990 while the share of oil decreased from 44.8% to 37%. The Netherlands is the largest producer of natural gas in the European Community, although now followed closely by the United Kingdom. Primary production of natural gas was 54.6 Mtoe in 1990, of which 23.8 Mtoe were exported. Crude oil production in the Netherlands has started to decline: primary production rose from 1.6 Mtoe in 1980 to 4.7 Mtoe in 1986, but then fell back to 4.0 Mtoe in 1990.



NETHERLANDS: PRODUCTION, NET IMPORTS, GROSS INLAND CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**69.64**	**64.75**	**61.88**	**59.29**	**59.75**	**-1.4**	**-1.6**	**0.8**
- solids	0.00	0.07	0.00	0.00	0.00	-	-20.0	-
- oil	1.58	4.10	4.71	3.87	4.04	21.0	-0.3	4.4
- natural gas	66.67	59.52	56.13	54.22	54.61	-2.2	-1.7	0.7
- nuclear	1.07	0.98	0.90	1.01	0.88	-1.7	-2.1	-12.9
- hydro	0.00	0.00	0.00	0.01	0.02	-	-	100.0
- other renewable	0.32	0.08	0.14	0.20	0.20	-24.2	20.1	0.0
Net Imports	**5.30**	**4.40**	**11.38**	**16.22**	**17.51**	**-3.7**	**31.8**	**8.0**
- solids	4.06	6.60	7.08	8.22	9.49	10.2	7.5	15.5
of which hard coal	3.99	6.84	7.38	8.47	9.77	11.4	7.4	15.3
- crude oil	50.22	38.69	47.73	50.55	48.11	-5.1	4.5	-4.8
- oil products	-12.70	-14.12	-21.23	-19.96	-17.08	-	-	-
- natural gas	-36.25	-27.21	-22.50	-23.02	-23.80	-	-	-
- electricity	-0.03	0.44	0.31	0.42	0.79	-	12.4	88.1
Gross Inland Consumption (1)	**65.02**	**61.21**	**65.27**	**64.93**	**66.35**	**-1.2**	**1.6**	**2.2**
- solids	4.09	6.59	6.84	8.16	9.07	10.0	6.6	11.2
- oil	29.14	20.80	23.47	23.92	24.58	-6.5	3.4	2.8
- natural gas	30.42	32.32	33.61	31.21	30.81	1.2	-1.0	-1.3
- other (2)	1.37	1.50	1.35	1.63	1.89	1.8	4.7	16.0

(1) excluding bunkers.

(2) includes nuclear, hydro and other renewable.

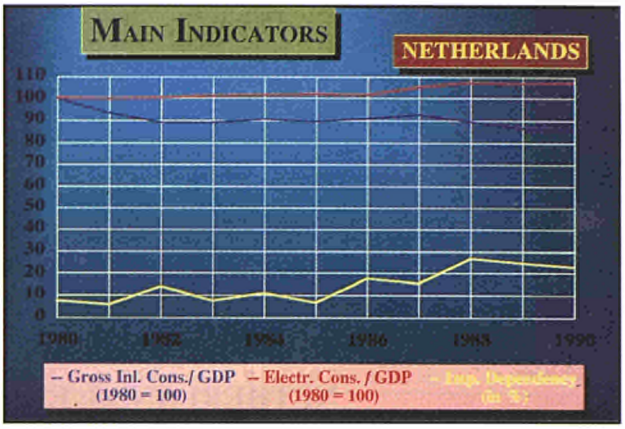
Total final consumption of **electricity** showed high growth rates during the past decade. The average rate was 1.4% per year in the first and 3.7% per year in the second half of the decade respectively. In 1990, consumption grew by 4.1%. In 1990 gas represented 54% of total inputs into thermal generation. In 1990, thermal electricity was produced from gas (54%), solids (40%) and oil (5%). This is a different picture from 1980 when gas, solids and oil represented 46%, 11% and 41% respectively. This is the result of a policy of replacing oil by solids in the power generation sector. Existing nuclear capacity is small and there has been no construction of nuclear stations during the decade.

NETHERLANDS: ELECTRICITY GENERATION

	Twh					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Total generation	**64.81**	**62.95**	**68.42**	**73.05**	**71.87**	**-0.6**	**2.7**	**-1.6**
from pumping	0.01	0.02	0.01	0.01	0.01	12.9	-25.6	-61.5
Hydro (without pumping)	0.00	0.00	0.00	0.06	0.17	-	125.3	190.0
Derived	64.79	62.92	68.40	72.98	71.69	-0.6	2.6	-1.8
Nuclear	4.20	3.90	3.56	4.02	3.50	-1.5	-2.1	-12.9
Thermal conventional	60.60	59.02	64.85	68.96	68.19	-0.5	2.9	-1.1
Net Imports	-0.31	5.13	3.63	4.92	9.21	-	12.4	87.1
Gross Inland Consumption	64.50	68.06	72.05	77.97	81.07	1.1	3.6	4.0
Own Consumption	2.77	2.39	2.29	2.47	2.49	-2.9	0.8	1.0
Available Internal Market	61.73	65.67	69.76	75.51	78.58	1.2	3.7	4.1
Distribution Losses	2.88	2.61	2.78	2.88	3.06	-1.9	3.2	6.3
Energy Branch Consumption	1.54	1.63	1.84	2.04	2.02	1.1	4.5	-0.6
Final Consumption	57.31	61.43	65.14	70.59	73.50	1.4	3.7	4.1
Power Generation Capacities(*) (Tw)								
Total	17.30	14.38	15.31	16.03	15.45	-3.6	1.4	-3.6
Nuclear	0.50	0.51	0.51	0.51	0.51	0.3	0.0	-0.1
Conventional Thermal	16.80	13.65	14.57	15.28	14.70	-4.1	1.5	-3.7
Hydro (incl. pumping)	0.00	0.00	0.00	0.02	0.04	-	81.9	62.7
Other renewable	0.00	0.22	0.22	0.22	0.20	-	-2.0	-9.5
Inputs to conventional thermal power stations (MToe)								
Total	12.86	12.42	13.73	14.44	14.25	-0.7	2.8	-1.3
Solids	1.36	3.17	3.87	4.91	5.70	18.4	12.5	16.1
- of which lignite	0.00	0.00	0.00	0.00	0.00	-	-	-
Oil	5.24	0.60	0.76	0.75	0.70	-35.2	3.1	-6.7
Gas	5.94	8.57	8.96	8.59	7.65	7.6	-2.2	-10.9
- of which natural gas	5.59	8.05	8.45	7.94	7.11	7.6	-2.5	-10.5
Renewable	0.32	0.08	0.14	0.20	0.20	-24.2	20.1	0.0

(*) Excluding autoproducers.

Large natural gas exports make the Netherlands one of the least dependent countries in the European Community. Import dependency was only 7.1% in 1980 but in fact tripled to reach 22.7% in 1990. The main reason for this development was a reduction in natural gas exports and increased imports of crude oil. In the field of energy intensity the results achieved in the Netherlands are higher than the Community average. CO2 emissions remained stable over the decade. In the last five years however there was a 1.1% per year increase reflecting the growing emissions related to power generation and transport, but which were offset by decreases in industry and the domestic/tertiary sector.

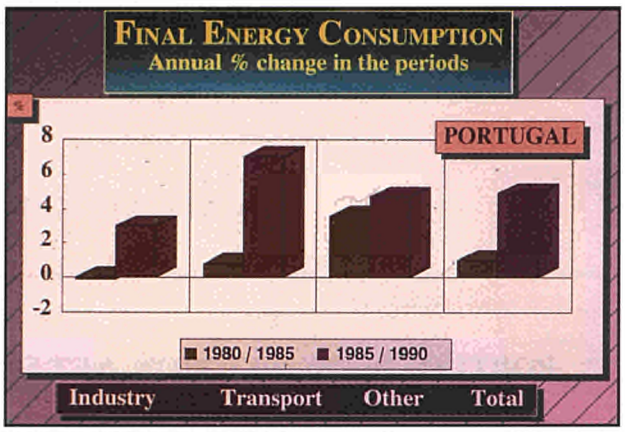


NETHERLANDS: MAIN INDICATORS

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Population (millions)	**14.15**	**14.49**	**14.67**	**14.85**	**14.89**	**0.5**	**0.5**	**0.3**
GDP (Bil. ECU 85)	**158.5**	**166.5**	**171.2**	**182.8**	**188.9**	**1.0**	**2.5**	**3.3**
Private Consumption (Bil. ECU 85)	**98.3**	**98.7**	**105.8**	**109.2**	**113.2**	**0.1**	**2.8**	**3.7**
Industrial Production (85=100)	**93.8**	**100.0**	**101.1**	**106.4**	**109.3**	**1.3**	**1.8**	**2.7**
GDP per capita (ECU 85/capita)	**11203.3**	**11493.4**	**11670.2**	**12312.4**	**12684.5**	**0.5**	**2.0**	**3.0**
Prim. Ener. Cons. per cap. (Kgoe/capita)	**4600**	**4220**	**4450**	**4370**	**4460**	**-1.7**	**1.1**	**2.1**
Import Dependency (%)	**7.1**	**6.3**	**15.2**	**21.6**	**22.7**	**-2.5**	**29.2**	**5.2**
Oil Dependency (%)	**50.5**	**35.2**	**35.5**	**40.7**	**40.2**	**-7.0**	**2.7**	**-1.2**
Intensities								
- Gross Inland Cons./GDP (toe/MECU 85)	410.2	367.6	381.2	355.1	351.3	-2.2	-0.9	-1.1
- Final Cons./GDP (toe/MECU 85)	275.3	254.1	252.0	233.3	226.2	-1.6	-2.3	-3.1
- Industrial Cons./Ind. Production (85=100)	106.9	99.9	95.5	82.6	87.4	-1.3	-2.6	5.8
- Electricity Cons./GDP (MWh/MECU 85)	361.5	368.9	380.5	386.1	389.2	0.4	1.1	0.8
CO2 emissions (Mt of Carbon)	**38.03**	**36.36**	**37.97**	**38.35**	**38.34**	**-0.9**	**1.1**	**0.0**
of which								
- Power Generation	10.02	9.47	10.67	11.59	11.81	-1.1	4.5	1.9
- Industry	8.35	8.33	7.97	6.63	7.44	0.0	-2.2	12.2
- Transports	7.17	7.35	7.77	9.75	8.62	0.5	3.2	-11.6
- Domestic-Tertiary	12.49	11.20	11.57	10.38	10.47	-2.2	-1.3	0.9
CO2 emissions per capita (t per capita)	**2.69**	**2.51**	**2.59**	**2.58**	**2.57**	**-1.4**	**0.5**	**-0.3**

PORTUGAL

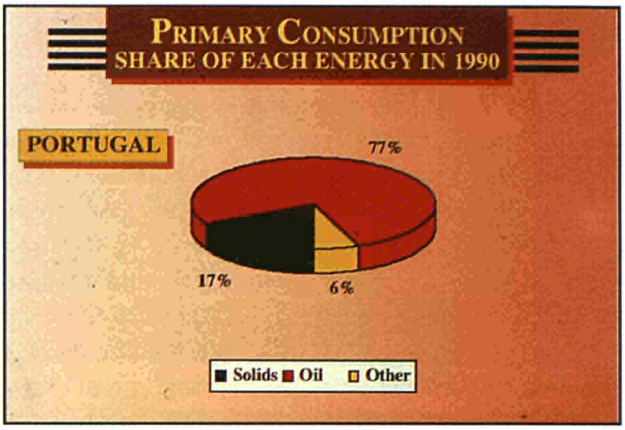
Total **final energy consumption** rose sharply in the late eighties. The mean annual increase was only 1.0% from 1980 to 1985 when the Portuguese economic activity was low, but brisk economic recovery during the second half of the decade brought this figure up to 4.9% per year. In fact, average annual GDP and private consumption growth from 1985 to 1990 were 4.5% and 5.1% per year respectively, while industrial production increased by 6.2% per year over the same period (8.9% in 1990). The sectoral results do not differ substantially from the figure for total consumption. Consumption by industry thus increased by 3.0% per year from 1985 to 1990 (7.2% in 1990) and intensity was improved by 3.1%per year (1.6% improvement in 1990). Final consumption in the transport and domestic/tertiary sectors increased by 7% and 4.7% per year in the second half of the decade respectively (6.3% and 4.8% respectively in 1990).



PORTUGAL: FINAL ENERGY CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Industry	**3.12**	**3.10**	**3.03**	**3.35**	**3.59**	**-0.1**	**3.0**	**7.2**
- solids	0.22	0.42	0.57	0.65	0.66	13.8	9.5	1.5
- oil	2.16	1.83	1.50	1.68	1.80	-3.3	-0.3	7.1
- gas	0.04	0.05	0.04	0.05	0.05	4.6	0.0	0.0
- electricity	0.71	0.78	0.90	0.95	1.05	1.9	6.1	10.5
- heat	0.00	0.03	0.03	0.03	0.03	-	0.0	0.0
Transport	**2.55**	**2.66**	**3.04**	**3.51**	**3.73**	**0.8**	**7.0**	**6.3**
- oil	2.53	2.64	3.02	3.48	3.71	0.9	7.0	6.6
- electricity	0.02	0.02	0.02	0.03	0.03	0.0	8.4	0.0
Other	**1.45**	**1.73**	**1.91**	**2.08**	**2.18**	**3.6**	**4.7**	**4.8**
- solids	0.00	0.01	0.00	0.00	0.00	-	-20.0	-
- oil	0.89	0.98	1.11	1.11	1.18	1.9	3.8	6.3
- gas	0.05	0.05	0.05	0.05	0.05	0.0	0.0	0.0
- electricity	0.51	0.70	0.75	0.91	0.95	6.5	6.3	4.4
TOTAL	**7.12**	**7.49**	**7.98**	**8.93**	**9.51**	**1.0**	**4.9**	**6.5**

There is almost no **primary production** of commercial energy in Portugal. Almost 96% of gross inland consumption is imported, most of which is accounted for by crude oil and to a lesser extent solids. Total primary consumption is satisfied by the use of solids (17% of total demand in 1990), and oil (77% of total demand): and the remaining 6% is covered by renewable energy sources (hydro).



PORTUGAL: PRODUCTION, NET IMPORTS, GROSS INLAND CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**0.76**	**1.12**	**1.04**	**0.72**	**1.01**	**8.1**	**-2.0**	**40.3**
- solids	0.07	0.10	0.11	0.11	0.11	7.4	1.9	0.0
- hydro	0.69	0.93	0.79	0.50	0.79	6.2	-3.2	58.0
- other renewable	0.00	0.10	0.14	0.11	0.12	-	3.7	9.1
Net Imports	**9.88**	**9.64**	**11.52**	**14.46**	**15.20**	**-0.5**	**9.5**	**5.1**
- solids	0.35	0.94	1.66	2.17	2.83	21.8	24.7	30.4
of which hard coal	0.28	0.83	1.65	2.12	2.82	24.3	27.7	33.0
- crude oil	8.23	7.19	8.02	10.31	11.36	-2.7	9.6	10.2
- oil products	1.15	1.32	1.58	1.87	1.01	2.8	-5.2	-46.0
- electricity	0.16	0.19	0.26	0.10	0.00	3.5	-20.0	-100.0
Gross Inland Consumption (1)	**9.55**	**10.30**	**11.64**	**14.73**	**15.16**	**1.5**	**8.0**	**2.9**
- solids	0.44	0.66	1.68	2.41	2.64	8.4	32.0	9.5
- oil	8.26	8.42	8.77	11.61	11.61	0.4	6.6	0.0
- other (2)	0.85	1.22	1.19	0.71	0.91	7.5	-5.7	28.2

(1) excluding bunkers.

(2) includes nuclear, hydro and other renewable.

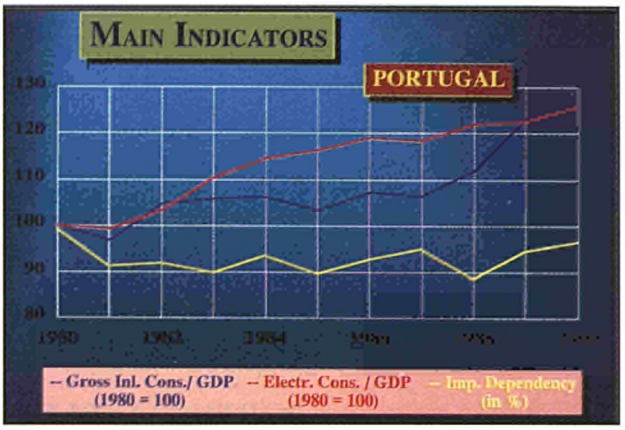
Electricity continued its penetration in Portugal during the past decade. Total final consumption of electricity reached 23.65 TWh in 1990, or 6.9% higher than in 1989. Electricity in Portugal is generated by hydro with 32% in 1990 and conventional thermal power stations with 68% (53% and 47% in 1980 respectively). Solids used for power generation increased significantly in the 1985 to 1990 period accounting for 48% of total fuel inputs in 1990. However, oil still ranks first with 48% in 1990. The increase in installed capacity by 3.5% and 3.9% per year respectively over the two successive half-decades brought total imports down to a mere 0.04 TWh in 1990.

PORTUGAL: ELECTRICITY GENERATION

	Twh					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Total generation	**15.26**	**19.11**	**20.14**	**25.81**	**28.50**	**4.6**	**8.3**	**10.4**
from pumping	0.06	0.09	0.03	0.27	0.15	9.2	10.2	-44.7
Hydro (without pumping)	8.01	10.76	9.16	5.81	9.15	6.1	-3.2	57.5
Derived	7.19	8.26	10.95	19.72	19.20	2.8	18.4	-2.7
Thermal conventional	7.19	8.26	10.95	19.72	19.20	2.8	18.4	-2.7
Net Imports	1.83	2.25	3.02	1.17	0.04	4.2	-56.5	-97.0
Gross Inland Consumption	17.09	21.35	23.16	26.97	28.54	4.6	6.0	5.8
Own Consumption	0.62	0.80	0.86	1.57	1.43	5.3	12.2	-9.3
Available Internal Market	16.47	20.55	22.30	25.40	27.11	4.5	5.7	6.7
Distribution Losses	1.87	2.81	2.52	2.97	3.16	8.5	2.4	6.6
Energy Branch Consumption	0.27	0.34	0.35	0.41	0.40	5.4	3.1	-2.1
Final Consumption	14.34	17.40	19.43	22.02	23.55	3.9	6.2	6.9
Power Generation Capacities(*) (Tw)								
Total	**4.44**	**5.26**	**5.92**	**6.43**	**6.39**	**3.5**	**3.9**	**-0.7**
Conventional Thermal	1.92	2.46	3.04	3.34	3.29	5.0	6.0	-1.3
Hydro (incl. pumping)	2.52	2.81	2.88	3.09	3.09	2.2	2.0	0.0
Inputs to conventional thermal power stations (MToe)								
Total	1.51	1.84	2.50	4.38	4.26	4.0	18.3	-2.7
Solids	0.09	0.22	1.13	1.66	2.03	19.6	56.0	22.3
- of which lignite	0.00	0.00	0.00	0.00	0.00	-	-	-
Oil	1.40	1.51	1.20	2.58	2.10	1.5	6.8	-18.6
Gas	0.03	0.02	0.02	0.02	0.02	-7.8	0.0	0.0
Renewable	0.00	0.10	0.14	0.11	0.12	-	3.7	9.1

(*) Excluding autoproducers.

Scant primary energy resources do not allow Portugal to reduce import dependency. Restructuring of the energy system however did reduce oil dependency from 94% in 1980 to 78.5% in 1990. Energy intensity has shown no sign of improvement other than in the industrial sector. The rate of gross inland consumption per GDP unit increased by 0.6% and 3.3% per year in the first and second halves of the decade respectively. Finally, CO2 emissions reflected growth in energy consumption in an almost linear fashion. Low positive rates for total emissions in the first half-decade (1.4% per year) were followed by an average annual rate of 9.3% per year in 1985-90, the largest increase (20.3% per year) coming from the power generation sector.

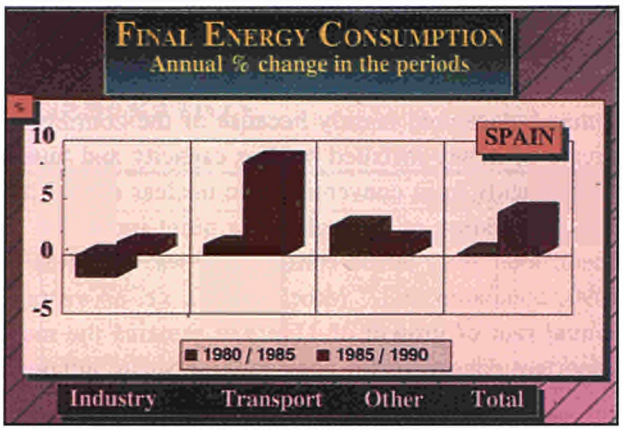


PORTUGAL: MAIN INDICATORS

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Population (millions)	**9.77**	**10.16**	**10.25**	**10.32**	**10.34**	**0.8**	**0.4**	**0.2**
GDP (Bil. ECU 85)	**25.9**	**27.1**	**29.7**	**32.5**	**33.8**	**0.9**	**4.5**	**4.0**
Private Consumption (Bil. ECU 85)	**18.1**	**18.4**	**20.4**	**22.5**	**23.6**	**0.3**	**5.1**	**4.9**
Industrial Production (85=100)	**84.5**	**100.0**	**112.0**	**124.1**	**135.2**	**3.4**	**6.2**	**8.9**
GDP per capita (ECU 85/capita)	**2649.5**	**2662.9**	**2893.2**	**3147.5**	**3267.0**	**0.1**	**4.2**	**3.8**
Prim. Ener. Cons. per cap. (Kgoe/capita)	**980**	**1010**	**1140**	**1430**	**1470**	**0.6**	**7.8**	**2.8**
Import Dependency (%)	**99.1**	**89.6**	**94.9**	**94.6**	**96.4**	**-2.0**	**1.5**	**2.0**
Oil Dependency (%)	**94.0**	**79.1**	**79.1**	**79.7**	**78.5**	**-3.4**	**-0.2**	**-1.6**
Intensities								
- Gross Inland Cons./GDP (toe/MECU 85)	368.8	380.6	392.5	453.3	448.7	0.6	3.3	-1.0
- Final Cons./GDP (toe/MECU 85)	275.2	276.9	269.0	275.0	281.4	0.1	0.3	2.3
- Industrial Cons./Ind. Production (85=100)	119.1	100.0	87.2	87.1	85.6	-3.4	-3.1	-1.6
- Electricity Cons./GDP (MWh/MECU 85)	553.9	643.0	655.2	678.0	697.0	3.0	1.6	2.8
CO2 emissions (Mt of Carbon)	**6.30**	**6.73**	**7.80**	**10.15**	**10.51**	**1.4**	**9.3**	**3.6**
of which								
- Power Generation	1.29	1.62	2.39	4.10	4.08	4.7	20.3	-0.4
- Industry	2.08	2.02	1.89	2.14	2.26	-0.6	2.3	6.0
- Transports	2.13	2.23	2.55	2.94	3.13	0.8	7.1	6.5
- Domestic-Tertiary	0.79	0.86	0.97	0.97	1.03	1.9	3.6	6.2
CO2 emissions per capita (t per capita)	**0.64**	**0.66**	**0.76**	**0.98**	**1.02**	**0.6**	**8.9**	**3.4**

SPAIN

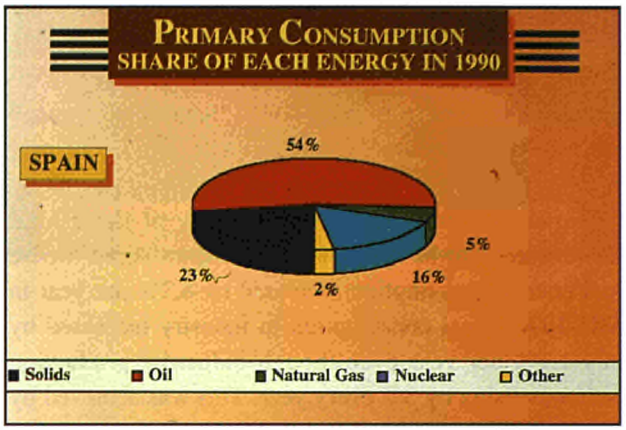
One of the main features of the Spanish economy in the second half of the decade was the high growth rates in economic activity. Average GDP growth was 4.5% per year, one of the highest in the Community. The same applies to private consumption which increased by 4.8% per year on average in 1985-1990. Total **final energy consumption** also showed high growth rates, increasing by 3.8% per year on average from 1985 to 1990 and by 4.1% per year in 1990. Responsibility of these high growth rates can be found in the transport sector where final energy consumption increased by 8.2% per year in 1985-1990. Final consumption in industry increased by only 1.1% per year even though industrial production itself was rising by 3% every year. This was achieved by steadily increasing efficiency: energy consumption per unit of production decreased by an annual average of 2.5% during the first half, and 1.8% during the second half of the decade respectively.



SPAIN: FINAL ENERGY CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Industry	**18.73**	**17.03**	**16.91**	**17.68**	**18.02**	**-1.9**	**1.1**	**1.9**
- solids	2.21	3.78	3.27	2.86	3.00	11.3	-4.5	4.9
- oil	10.75	6.37	6.13	5.73	5.54	-9.9	-2.8	-3.3
- gas	1.13	2.00	2.51	3.68	4.04	12.1	15.1	9.8
- electricity	4.64	4.87	4.99	5.41	5.44	1.0	2.2	0.6
Transport	**14.38**	**15.06**	**17.02**	**21.40**	**22.33**	**0.9**	**8.2**	**4.3**
- solids	0.02	0.01	0.00	0.00	0.00	-12.9	-20.0	-
- oil	14.19	14.81	16.76	21.11	22.01	0.9	8.2	4.3
- electricity	0.16	0.24	0.26	0.29	0.32	8.4	5.9	10.3
Other	**10.21**	**11.58**	**11.64**	**11.59**	**12.36**	**2.6**	**1.3**	**6.6**
- solids	0.29	0.46	0.35	0.38	0.47	9.7	0.4	23.7
- oil	6.54	6.84	6.53	5.61	6.05	0.9	-2.4	7.8
- gas	0.46	0.55	0.63	0.77	0.86	3.6	9.4	11.7
- electricity	2.92	3.73	4.13	4.83	4.99	5.0	6.0	3.3
TOTAL	**43.31**	**43.66**	**45.57**	**50.66**	**52.72**	**0.2**	**3.8**	**4.1**

Gross inland consumption increased by 2.8% in 1990 reaching 85.7 Mtoe compared to 83.4 Mtoe in 1989. 66% of total primary energy demand was covered by imports whereas the balance of 34% was satisfied by domestic production which accounted for 29.8 Mtoe in 1990. Solids are the most important indigenous energy resource in Spain after nuclear power. Hard coal production remained stable in 1990 while lignite production fell by 5.2%. Over the last decade hard coal demand slackened mainly because of the coming on stream of newly-installed nuclear capacity and thus a general shift from conventional to nuclear electricity. The penetration of natural gas is quite important in Spain; total gross inland consumption was 4.8 Mtoe in 1990, compared to 1.7 Mtoe in 1980, i.e. an average annual rate of growth of 11%. Oil remains the most important energy vector consumed in Spain, although indigenous production is insignificant at only 0.8 Mtoe while imports amounted to 45.5 Mtoe in 1990.



SPAIN: PRODUCTION, NET IMPORTS, GROSS INLAND CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**17.93**	**26.84**	**27.11**	**30.40**	**29.76**	**8.4**	**2.1**	**-2.1**
- solids	12.26	13.94	11.67	11.81	11.72	2.6	-3.4	-0.8
of which lignite	3.06	4.99	2.64	2.88	2.73	10.3	-11.4	-5.2
- oil	1.79	2.44	1.63	1.04	0.79	6.4	-20.2	-24.0
- natural gas	0.00	0.23	0.64	1.37	1.27	-	40.7	-7.3
- nuclear	1.34	7.38	10.74	14.41	13.70	40.7	13.2	-4.9
- hydro	2.54	2.69	2.34	1.66	2.18	1.2	-4.1	31.3
- other renewable	0.00	0.16	0.10	0.12	0.09	-	-10.9	-25.0
Net Imports	**54.38**	**45.92**	**48.98**	**57.20**	**59.85**	**-3.3**	**5.4**	**4.6**
- solids	4.21	5.23	5.38	6.46	7.04	4.4	6.1	9.0
of which hard coal	3.96	5.03	5.27	6.34	6.80	4.9	6.2	7.3
- crude oil	46.87	43.72	45.30	51.31	53.25	-1.4	4.0	3.8
- oil products	1.71	-5.07	-3.54	-3.48	-4.09	-	-	-
- natural gas	1.71	2.14	1.97	3.06	3.69	4.6	11.5	20.6
- electricity	-0.12	-0.09	-0.13	-0.16	-0.04	-	-	-
Gross Inland Consumption (1)	**69.82**	**70.27**	**73.10**	**83.41**	**85.73**	**0.1**	**4.1**	**2.8**
- solids	15.02	19.68	17.57	18.76	19.29	5.6	-0.4	2.8
- oil	49.29	38.10	39.87	44.19	45.53	-5.0	3.6	3.0
- natural gas	1.74	2.35	2.62	4.44	4.97	6.2	16.2	11.9
- other (2)	3.76	10.13	13.04	16.03	15.94	21.9	9.5	-0.6

(1) excluding bunkers.

(2) includes nuclear, hydro and other renewable.

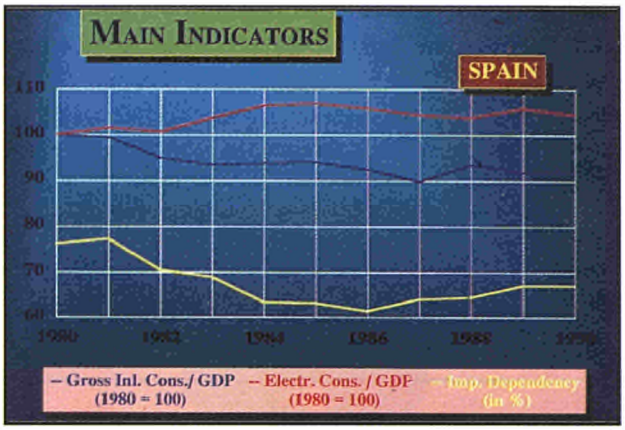
Total **electricity generation** increased by 1.9% in 1990 reaching 150.6 TWh. Nuclear represented 36% of total generation, while hydro (17%) and thermal (47%) accounted for the rest. Solids account for 80% of total inputs into thermal generation in 1990. During the decade there was a major shift from oil which accounted for 13% of total inputs in 1990 (45% in 1980). Installed nuclear capacity increased significantly in the early eighties, showing a clear slow-down in recent years.

SPAIN: ELECTRICITY GENERATION

	Twh					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Total generation	**110,48**	**127.36**	**133.18**	**147.84**	**150.62**	**2.9**	**3.4**	**1.9**
from pumping	1.28	1.79	0.81	0.73	0.80	6.9	-15.0	9.3
Hydro (without pumping)	29.54	31.26	27.22	19.35	25.38	1.1	-4.1	31.2
Derived	79.66	94.31	105.15	127.77	124.44	3.4	5.7	-2.6
Nuclear	5.19	28.04	41.25	56.11	54.27	40.2	14.1	-3.3
Thermal conventional	74.48	66.27	63.90	71.65	70.17	-2.3	1.2	-2.1
Net Imports	-1.38	-1.07	-1.53	-1.82	-0.42	-	-	-
Gross Inland Consumption	109.10	126.29	131.64	146.02	150.20	3.0	3.5	2.9
Own Consumption	7.13	8.87	7.53	8.43	8.36	4.5	-1.2	-0.9
Available Internal Market	101.97	117.42	124.12	137.59	141.84	2.9	3.9	3.1
Distribution Losses	9.96	11.84	12.10	12.19	13.83	3.5	3.2	13.5
Energy Branch Consumption	2.26	2.78	2.96	2.98	3.10	4.2	2.2	3.9
Final Consumption	89.74	102.80	109.06	122.42	124.92	2.8	4.0	2.0
Power Generation Capacities(*) (Tw)								
Total	**28.42**	**38.50**	**40.06**	**42.16**	**41.66**	**6.3**	**1.6**	**-1.2**
Nuclear	1.07	5.57	6.51	7.50	7.03	39.1	4.8	-6.3
Conventional Thermal	14.45	18.90	18.95	19.12	19.01	5.5	0.1	-0.6
Hydro (incl. pumping)	12.90	14.03	14.59	15.53	15.63	1.7	2.2	0.6
Inputs to conventional thermal power stations (MToe)								
Total	19.62	15.88	14.75	16.98	16.42	-4.1	0.7	-3.3
Solids	10.04	13.01	12.43	13.99	13.67	5.3	1.0	-2.3
- of which lignite	3.25	4.86	2.64	2.98	2.74	8.4	-10.8	-8.1
Oil	8.75	1.97	1.67	2.30	2.17	-25.8	2.0	-5.7
Gas	0.82	0.73	0.56	0.56	0.49	-2.3	-7.7	-12.5
- of which natural gas	0.63	0.55	0.36	0.37	0.27	-2.7	-13.3	-27.0
Renewable	0.00	0.16	0.10	0.12	0.09	-	-10.9	-25.0

(*) Excluding autoproducers.

Spain has improved its energy intensity over the last decade more markedly than other Southern European countries. The most spectacular result was attained in the industrial sector where energy intensity was reduced by 2.5% and 1.8% per year in the two successive half-decades. The combined effects of improved intensity and the construction of nuclear power plants reduced the import dependency of the country in the first half of the decade, but this trend was inverted in recent years due to increased energy consumption. A direct result of higher consumption was also the rise in the general level of CO2 emissions, up by 2.5% per year from 1985 to 1990 (1.9% in 1990).

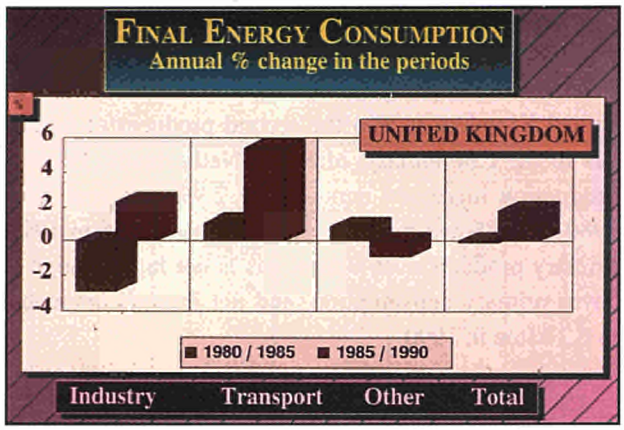


SPAIN: MAIN INDICATORS

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Population (millions)	**37.39**	**38.51**	**38.70**	**38.81**	**38.93**	**0.6**	**0.2**	**0.3**
GDP (Bil. ECU 85)	**203.9**	**218.3**	**237.9**	**262.4**	**272.1**	**1.4**	**4.5**	**3.7**
Private Consumption (Bil. ECU 85)	**137.3**	**140.0**	**154.2**	**170.4**	**176.7**	**0.4**	**4.8**	**3.7**
Industrial Production (85=100)	**96.7**	**100.0**	**107.8**	**116.1**	**116.1**	**0.7**	**3.0**	**0.0**
GDP per capita (ECU 85/capita)	**5454.3**	**5669.5**	**6147.5**	**6761.8**	**6990.4**	**0.8**	**4.3**	**3.4**
Prim. Ener. Cons. per cap. (Kgoe/capita)	**1870**	**1820**	**1890**	**2150**	**2200**	**-0.5**	**3.9**	**2.3**
Import Dependency (%)	**76.1**	**63.0**	**63.8**	**66.1**	**66.8**	**-3.7**	**1.2**	**1.2**
Oil Dependency (%)	**68.0**	**53.0**	**54.4**	**55.3**	**54.9**	**-4.9**	**0.7**	**-0.6**
Intensities								
- Gross Inland Cons./GDP (toe/MECU 85)	342.4	321.8	307.3	317.9	315.0	-1.2	-0.4	-0.9
- Final Cons./GDP (toe/MECU 85)	212.4	200.0	191.6	193.0	193.7	-1.2	-0.6	0.3
- Industrial Cons./Ind. Production (85=100)	113.8	100.0	92.1	89.4	91.2	-2.5	-1.8	2.0
- Electricity Cons./GDP (MWh/MECU 85)	440.1	470.9	458.4	466.5	459.0	1.4	-0.5	-1.6
CO2 emissions (Mt of Carbon)	**48.99**	**46.11**	**45.94**	**51.16**	**52.13**	**-1.2**	**2.5**	**1.9**
of which								
- Power Generation	18.69	16.27	15.20	17.44	16.90	-2.7	0.8	-3.1
- Industry	12.17	10.71	10.29	10.25	10.48	-2.5	-0.4	2.2
- Transports	12.01	12.52	14.16	17.82	18.59	0.8	8.2	4.3
- Domestic-Tertiary	6.13	6.61	6.30	5.63	6.16	1.5	-1.4	9.3
CO2 emissions per capita (t per capita)	**1.31**	**1.20**	**1.19**	**1.32**	**1.34**	**-1.8**	**2.3**	**1.6**

UNITED KINGDOM

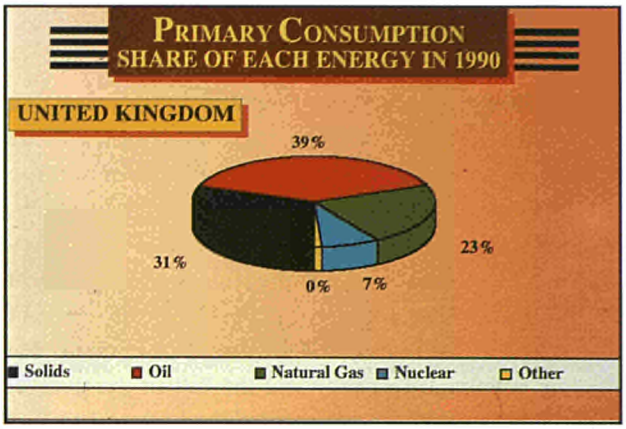
Total **final energy consumption** slackened in the first half of the decade. Negative growth rates can be attributed not only to the slow-down in economic activity but also to the reduction in energy intensity. While the average annual rate of GDP growth in 1980-1985 was 1.9%, energy consumption was stagnant at -0.1%; at the same time final consumption per unit of GDP was decreasing by 2.0% per year. The combination of some economic recovery and the fall in the general level of energy prices reversed the trend and turned growth rates positive in the second half of the decade. The average annual GDP growth rate was 3.2% during that period with total final energy consumption increasing by 1.8% per year. The biggest increase was in the transport sector where final consumption increased by 5.4% each year. These growth rates slowed however in 1990, when economic activity (GDP) rose by only 0.6% and some signs of increased energy intensity appeared.



UNITED KINGDOM: FINAL ENERGY CONSUMPTION

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Industry	**37.35**	**32.25**	**33.99**	**35.21**	**36.13**	**-2.9**	**2.3**	**2.6**
- solids	5.87	6.82	7.26	7.10	6.43	3.0	-1.2	-9.4
- oil	13.40	6.98	6.61	7.62	6.90	-12.2	-0.2	-9.4
- gas	10.71	10.88	12.11	11.50	13.73	0.3	4.8	19.4
- electricity	7.38	7.57	8.01	8.55	8.63	0.5	2.7	0.9
- heat	0.00	0.00	0.00	0.44	0.45	-	-	2.3
Transport	**32.96**	**34.82**	**39.20**	**44.33**	**45.31**	**1.1**	**5.4**	**2.2**
- solids	0.04	0.00	0.00	0.00	0.00	-20.0	-	-
- oil	32.66	34.56	38.93	44.06	44.81	1.1	5.3	1.7
- electricity	0.26	0.25	0.26	0.27	0.50	-0.8	14.9	85.2
Other	**56.28**	**58.81**	**60.07**	**56.92**	**56.14**	**0.9**	**-0.9**	**-1.4**
- solids	9.52	9.13	7.88	6.31	5.05	-0.8	-11.2	-20.0
- oil	10.43	8.65	7.60	7.08	6.71	-3.7	-5.0	-5.2
- gas	23.81	28.03	30.60	29.10	29.87	3.3	1.3	2.6
- electricity	12.38	12.99	13.99	14.43	14.50	1.0	2.2	0.5
- heat	0.13	0.01	0.00	0.00	0.00	-40.1	-20.0	-
TOTAL	**126.59**	**125.88**	**133.26**	**136.46**	**137.57**	**-0.1**	**1.8**	**0.8**

A large degree of diversification characterizes **primary energy production** in the United Kingdom. The production of crude oil from 79.7 Mtoe in 1980 reached its peak of 129.9 Mtoe in 1985 but declined to 92.5 Mtoe by 1990. The United Kingdom remains however a net exporter of crude oil. Coal is the second most important source of primary energy in the United Kingdom. Primary production was 74.7 Mtoe in 1980 but has declined over the last decade, by 6.0% per year in the first and 0.2% per year during the second half. The United Kingdom is also the second producer of natural gas in the Community, after the Netherlands. Primary production increased annually by 2.9% per year from 1980 to 1985 and by 2.8% per year from 1985 to 1990. Primary production of natural gas is not high enough to cover primary consumption, and net imports amounted to 6.2 Mtoe in 1990.



UNITED KINGDOM: PRODUCTION, NET IMPORTS, GROSS INLAND

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**196.07**	**236.70**	**241.40**	**208.47**	**204.92**	**3.8**	**-2.8**	**-1.7**
- solids	74.73	54.74	60.86	58.92	54.06	-6.0	-0.2	-8.2
- oil	79.70	129.91	125.89	93.96	92.50	10.3	-6.6	-1.6
- natural gas	30.89	35.72	39.32	37.07	40.92	2.9	2.8	10.4
- nuclear	10.41	15.98	14.98	17.73	16.57	8.9	0.7	-6.5
- hydro	0.34	0.35	0.35	0.40	0.44	0.6	4.7	10.0
- other renewable	0.00	0.00	0.00	0.40	0.44	-	-	10.0
Net Imports	**12.72**	**-31.90**	**-32.61**	**7.99**	**7.35**	**-**	**-**	**-8.0**
- solids	1.77	6.58	5.51	7.59	9.12	30.0	6.7	20.2
of which hard coal	2.52	7.09	5.65	7.54	9.18	23.0	5.3	21.8
- crude oil	7.04	-45.72	-40.40	-0.99	-3.13	-	-	-
- oil products	-5.09	-4.15	-8.68	-8.50	-5.86	-4.0	-	-
- natural gas	9.00	11.39	9.97	8.80	6.18	4.8	-11.5	-29.8
- electricity	0.00	0.00	1.00	1.09	1.03	-	-	-5.5
Gross Inland Consumption (1)	**199.90**	**203.69**	**208.90**	**211.82**	**211.56**	**0.4**	**0.8**	**-0.1**
- solids	69.88	62.77	68.91	64.96	64.23	-2.1	0.5	-1.1
- oil	79.38	77.48	74.95	81.49	81.65	-0.5	1.1	0.2
- natural gas	39.89	47.11	48.70	45.76	47.20	3.4	0.0	3.1
- other (2)	10.75	16.33	16.33	19.61	18.47	8.7	2.5	-5.8

(1) excluding bunkers.

(2) includes nuclear, hydro and other renewable.

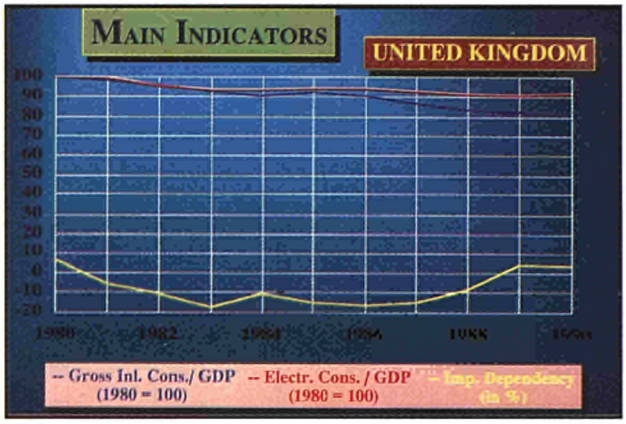
Final electricity demand increased on average by 0.8% per year in 1980-1985 and 2.6% in 1985-1990, thus increasing its penetration. In the United Kingdom **electricity** is generated by both nuclear and conventional power stations. The United Kingdom increased its installed nuclear capacity in the second half of the past decade at a rate of 8.6% per year on average. Total installed nuclear capacity was 6.4 TW in 1980 and reached 11.55 TW by 1990.

UNITED KINGDOM: ELECTRICITY GENERATION

	Twh					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Total generation	**284.94**	**298.09**	**302.45**	**313.83**	**318.98**	**0.9**	**1.4**	**1.6**
from pumping	1.24	2.88	2.26	2.00	2.04	18.4	-6.7	1.9
Hydro (without pumping)	3.93	4.09	4.04	4.63	5.08	0.8	4.4	9.8
Derived	279.76	291.11	296.15	307.20	311.86	0.8	1.4	1.5
Nuclear	37.02	61.08	55.23	71.72	65.73	10.5	1.5	-8.3
Thermal conventional	242.75	230.03	240.93	235.48	246.13	-1.1	1.4	4.5
Net Imports	0.00	0.00	11.63	12.63	11.94	-20.0	-	-5.4
Gross Inland Consumption	284.94	298.09	314.09	326.46	330.92	0.9	2.1	1.4
Own Consumption	20.44	23.66	22.76	24.00	22.18	3.0	-1.3	-7.6
Available Internal Market	264.50	274.43	291.33	302.46	308.74	0.7	2.4	2.1
Distribution Losses	21.53	22.63	22.57	20.23	23.93	1.0	1.1	18.3
Energy Branch Consumption	10.16	9.78	9.91	11.89	10.03	-0.8	0.5	-15.7
Final Consumption	232.80	242.02	258.85	270.34	274.78	0.8	2.6	1.6
Power Generation Capacities(*) (Tw)								
Total	**73.61**	**70.46**	**70.16**	**70.08**	**70.02**	**-0.9**	**-0.1**	**-0.1**
Nuclear	6.42	7.57	7.57	11.45	11.45	3.4	8.6	0.0
Conventional Thermal	64.73	58.79	58.50	54.54	54.48	-1.9	-1.5	-0.1
Hydro (incl. pumping)	2.45	4.10	4.10	4.10	4.10	10.8	0.0	0.0
Inputs to conventional thermal power stations (MToe)								
Total	59.03	55.00	55.50	54.02	57.56	-1.4	0.9	6.6
Solids	50.14	42.15	48.93	46.67	47.88	-3.4	2.6	2.6
- of which lignite	0.00	0.00	0.00	0.00	0.00	-	-	-
Oil	8.14	11.65	5.51	6.02	7.68	7.4	-8.0	27.6
Gas	0.76	1.20	1.05	0.92	1.57	9.6	5.5	70.7
- of which natural gas	0.55	0.75	0.52	0.35	1.01	6.4	6.1	188.6
Renewable	0.00	0.00	0.00	0.40	0.44	-	-	10.0

(*) Excluding autoproducers.

The United Kingdom is the only country of the European Community which was a net energy exporter during the eighties. Import dependency was 6.3% in 1980 but became self-sufficient to the tune of 115.5% at the peak (1985) of primary crude oil production. Since 1989 import dependency has been increasing, and in 1990 imports again represented 3.4% of gross inland consumption. As already illustrated however, the United Kingdom is the only country in the European Community with a negative oil dependency, in other words (more than) self-sufficient as regards this energy source. Emissions of CO2 in the United Kingdom increased by 1.0% annually in 1985-1990 the comparable rate having been 1.1% over the preceding five years. This left the emissions level almost unchanged by the end of the decade. In the last decade, the contribution to CO2 emissions of the power generating sector dropped as a result of the construction of nuclear power plants, while that of the transport sector increased significantly.



UNITED KINGDOM: MAIN INDICATORS

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Population (millions)	**56.33**	**56.62**	**56.93**	**57.21**	**57.33**	**0.1**	**0.2**	**0.2**
GDP (Bil. ECU 85)	**547.5**	**602.8**	**655.6**	**700.7**	**704.9**	**1.9**	**3.2**	**0.6**
Private Consumption (Bil. ECU 85)	**330.3**	**367.5**	**411.6**	**458.3**	**462.9**	**2.2**	**4.7**	**1.0**
Industrial Production (85=100)	**95.6**	**100.0**	**105.7**	**109.9**	**109.2**	**0.9**	**1.8**	**-0.6**
GDP per capita (ECU 85/capita)	**9719.1**	**10646.7**	**11515.1**	**12248.6**	**12296.3**	**1.8**	**2.9**	**0.4**
Prim. Ener. Cons. per cap. (Kgoe/capita)	**3550**	**3600**	**3670**	**3700**	**3690**	**0.3**	**0.5**	**-0.3**
Import Dependency (%)	**6.3**	**-15.5**	**-15.5**	**3.7**	**3.4**	**-**	**-**	**-8.0**
Oil Dependency (%)	**1.0**	**-24.2**	**-23.3**	**-4.4**	**-4.2**	**-**	**-29.5**	**-5.2**
Intensities								
- Gross Inland Cons./GDP (toe/MECU 85)	365.1	337.9	318.7	302.3	300.1	-1.5	-2.3	-0.7
- Final Cons./GDP (toe/MECU 85)	231.2	208.8	203.3	194.7	195.2	-2.0	-1.3	0.2
- Industrial Cons./Ind. Production (85=100)	121.2	100.0	99.7	99.4	102.6	-3.8	0.5	3.3
- Electricity Cons./GDP (MWh/MECU 85)	425.2	401.5	394.9	385.8	389.8	-1.1	-0.6	1.0
CO2 emissions (Mt of Carbon)	**147.44**	**140.17**	**146.22**	**146.11**	**148.82**	**-1.0**	**1.2**	**1.8**
of which								
- Power Generation	61.14	55.82	57.81	56.17	59.31	-1.8	1.2	5.6
- Industry	24.45	20.16	21.11	21.40	21.49	-3.8	1.3	0.4
- Transports	27.62	29.19	32.88	37.21	37.84	1.1	5.3	1.7
- Domestic-Tertiary	34.24	35.01	34.42	31.34	30.17	0.4	-2.9	-3.7
CO2 emissions per capita (t per capita)	**2.62**	**2.48**	**2.57**	**2.55**	**2.60**	**-1.1**	**1.0**	**1.6**

In the next two tables summary energy balances are given for the former German Democratic Republic and the "New" European Community.

FORMER G.D.R.: SUMMARY ENERGY BALANCE

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**65,3**	**73.1**	**71.8**	**69.6**	**57.0**	**2.3**	**-4.9**	**-18.2**
- coal	59.6	65.8	65.0	63.3	53.4	2.0	-4.1	-15.6
- oil	0.1	0.1	0.0	0.0	0.1	2.3	-3.0	17.4
- natural gas	2.3	3.6	3.5	2.7	1.8	8.9	-12.6	-33.1
- nuclear	3.1	3.5	3.0	3.3	1.4	2.3	-16.3	-56.6
- hydro	0.1	0.1	0.1	0.1	0.1	0.9	-1.1	4.6
Net Imports	**24.9**	**18.3**	**22.4**	**20.7**	**18.4**	**-6.0**	**0.2**	**-10.9**
- coal	4.4	2.1	3.1	1.6	0.8	-13.6	-17.1	-47.3
- crude oil	20.2	18.9	19.5	19.6	15.8	-1.3	-3.6	-19.3
- oil products	-4.6	-7.6	-6.6	-6.4	-3.7	10.6	-13.3	-42.3
- electricity	0.1	0.0	1.0	0.2	0.5	-18.1	61.6	105.4
Gross Consumption (1)	**90.3**	**90.2**	**94.3**	**90.4**	**79.3**	**0.0**	**-2.6**	**-12.3**
- coal	64.0	67.2	68.3	65.2	57.3	1.0	-3.1	-12.1
- oil	15.9	11.2	12.8	13.1	13.1	-6.8	3.1	-0.6
- natural gas	7.0	8.0	8.9	8.4	6.8	2.8	-3.4	-19.0
- other (2)	3.4	3.7	4.3	3.8	2.1	2.1	-10.5	-43.0
Electricity Generation in TWh	**100.5**	**115.5**	**115.9**	**120.5**	**103.6**	**2.8**	**-2.1**	**-14.0**
- hydro	1.7	1.7	1.7	1.6	1.6	0.9	-1.1	4.6
- nuclear	1.1	1.2	1.0	1.1	0.5	2.3	-16.3	-56.6
- thermal	97.8	112.6	113.1	117.8	101.5	2.9	-2.1	-13.8
Fuel Inputs for Thermal Power Generation	**22.4**	**26.3**	**26.7**	**27.5**	**20.0**	**3.3**	**-5.4**	**-27.5**
- coal	20.6	25.1	24.9	26.1	18.7	4.1	-5.7	-28.5
- oil	0.3	0.4	0.6	0.4	0.3	5.7	-2.1	-8.4
- gas	1.5	0.8	1.1	1.0	0.9	-11.1	1.8	-9.0
Total Final Energy Demand	**54.7**	**57.6**	**59.5**	**55.6**	**53.9**	**1.0**	**-1.3**	**-3.1**
- coal	27.8	34.7	35.3	31.7	32.6	4.5	-1.2	3.1
- oil	11.3	8.3	8.8	8.6	9.0	-5.8	1.6	4.9
- gas	5.5	7.4	7.9	7.6	5.7	6.1	-5.1	-24.6
- electricity	6.3	7.1	7.5	7.6	6.4	2.5	-2.2	-16.1
- heat	3.8	0.1	0.1	0.1	0.1	-55.9	6.8	-13.2
CO2 Emissions in Mt of C	**66.2**	**76.8**	**78.3**	**75.1**	**67.2**	**3.0**	**-2.6**	**-10.5**
Indicators								
Population (Million)	16.7	16.6	16.6	16.6	16.7	-0.1	0.0	0.2
GDP (Index 1985 = 100)	91.0	100.0	103.2	105.6	85.6	1.9	1.4	-18.9
Primary Consumption/GDP (toe/ECU)	1201.6	1092.4	1106.3	1036.8	1121.5	-1.9	0.5	8.2
Primary Consumption/Capita (toe/inhab)	5.40	5.42	5.67	5.43	4.75	0.1	-2.6	-12.5
Electricity generated/Capita (kWh/inhab)	6001.8	6941.9	6972.6	7242.6	6217.2	3.0	-2.2	-14.2
CO2 emissions/Capita (t/inhab)	3.95	4.61	4.71	4.51	4.03	3.1	-2.7	-10.6

(1) Including bunkers.

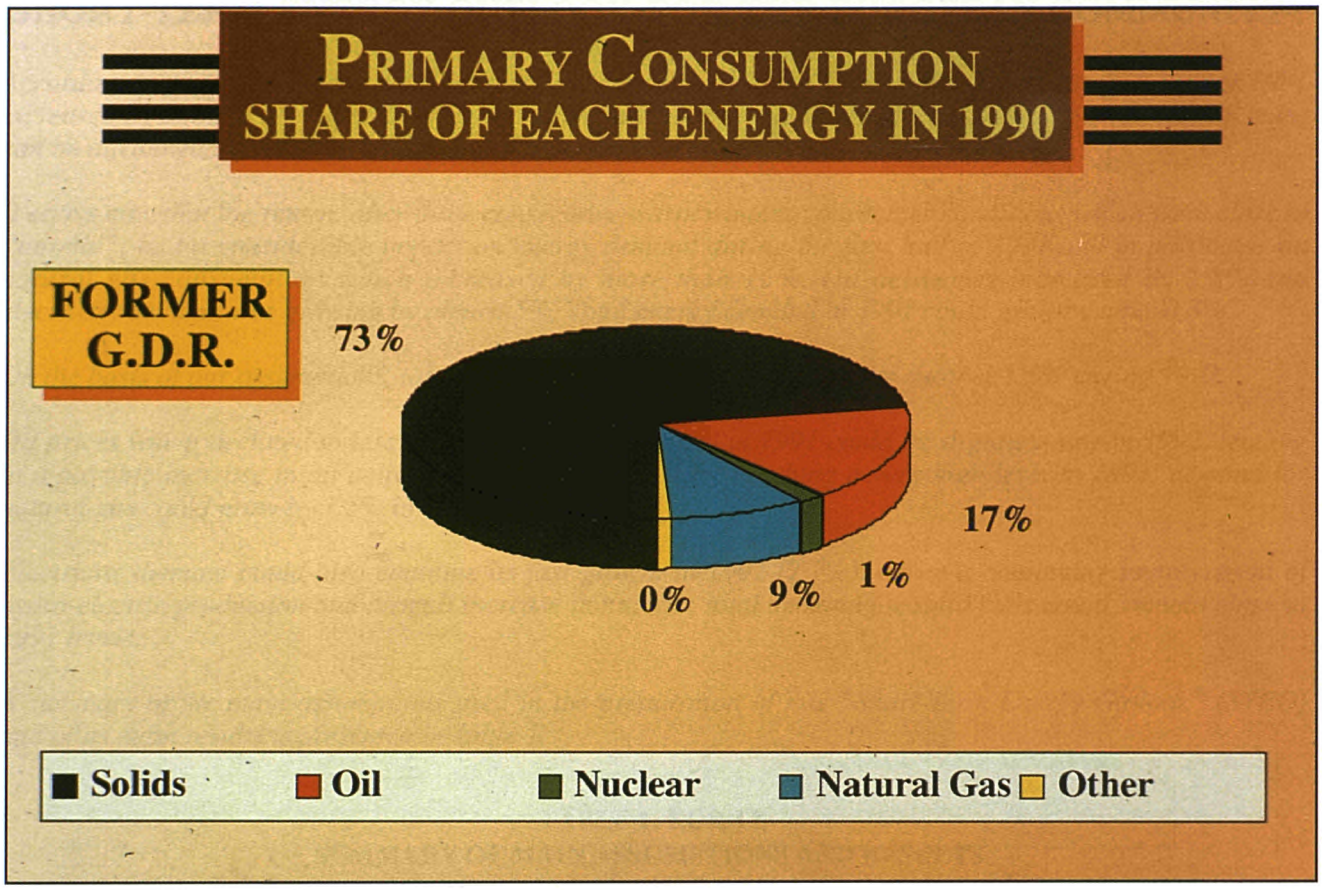
(2) Includes nuclear, hydro and other renewable.

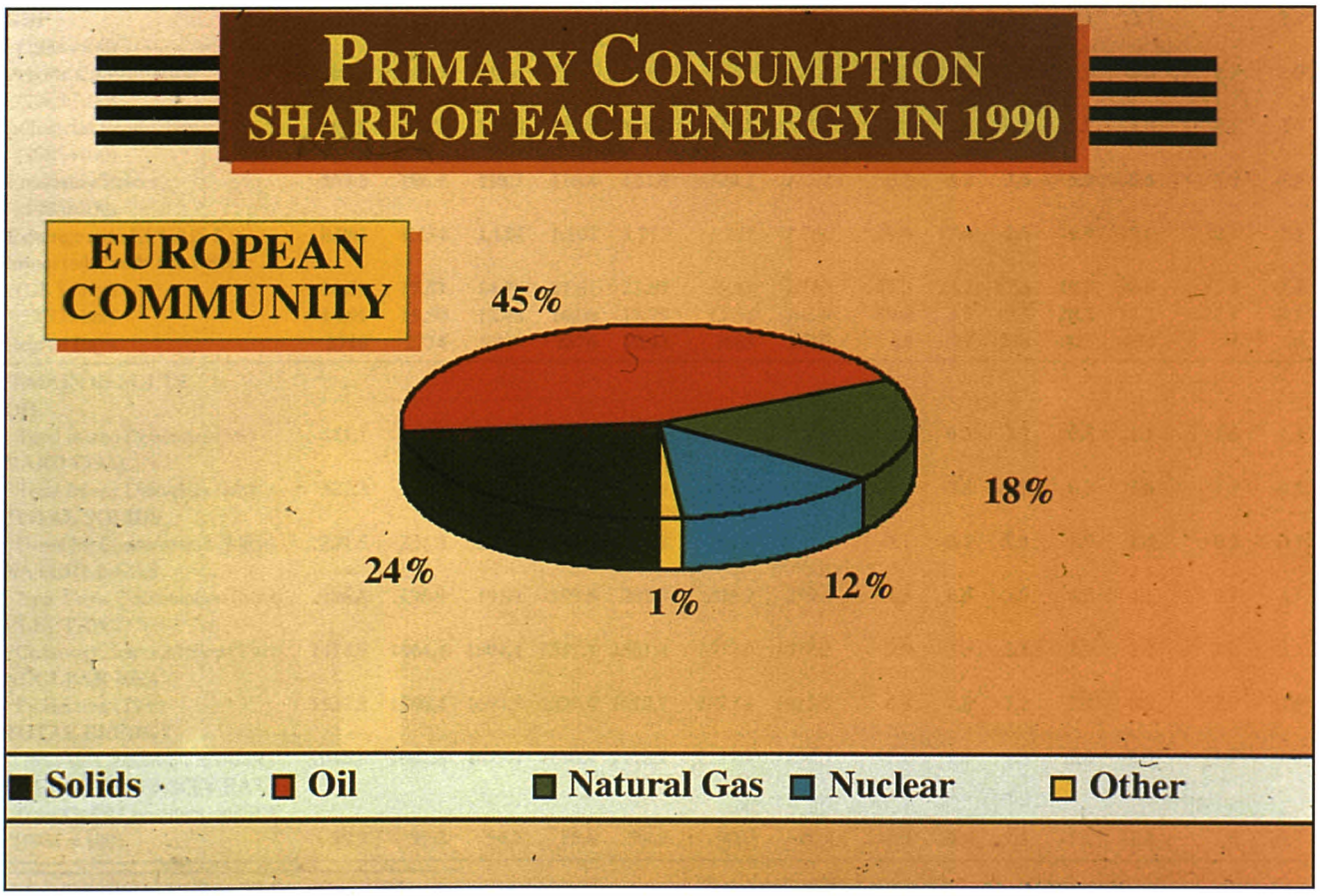
"NEW" EUROPEAN COMMUNITY: SUMMARY ENERGY BALANCE"

	Million toe					Mean annual change in %		
	1980	1985	1987	1989	1990	80/85	85/89	89/90
Primary Production	**547.4**	**665.4**	**675.3**	**648.5**	**633.0**	**4.0**	**-1.0**	**-2.4**
- solids	256.7	238.4	233.6	225.7	208.9	-1.5	-2.6	-7.4
- oil	92.9	151.0	150.7	118.7	116.6	10.2	-5.0	-1.8
- natural gas	131.6	130.7	132.5	128.0	131.6	-0.1	0.1	2.8
- nuclear	47.1	127.1	139.3	160.3	158.6	22.0	4.5	-1.0
- hydro	15.5	14.7	15.1	11.5	12.6	-1.1	-3.0	10.1
- heat	1.9	1.8	1.9	2.0	2.1	-1.4	3.3	5.1
- other renewable	1.7	1.8	2.2	2.5	2.6	1.2	8.0	5.6
Net Imports	**624.8**	**474.8**	**513.5**	**572.9**	**591.4**	**-5.3**	**4.5**	**3.2**
- solids	56.8	64.5	63.6	68.3	78.4	2.6	4.0	14.9
- crude oil	503.8	313.1	338.0	397.5	403.5	-9.1	5.2	1.5
- oil products	15.8	31.9	32.5	21.6	22.3	15.1	-6.9	3.3
- natural gas	47.1	64.1	76.8	83.6	85.2	6.4	5.9	1.9
- electricity	1.4	1.2	2.6	1.9	1.9	-2.3	9.3	-1.0
Gross Consumption (1)	**1151.5**	**1145.9**	**1186.6**	**1218.9**	**1226.6**	**-0.1**	**1.4**	**0.6**
- solids	302.2	306.2	299.5	296.2	291.5	0.3	-1.0	-1.6
- oil	603.6	500.4	519.1	534.8	542.9	-3.7	1.6	1.5
- natural gas	178.1	192.7	206.9	209.8	214.4	1.6	2.2	2.2
- other (2)	67.5	146.6	161.1	178.1	177.8	16.8	3.9	-0.2
Electricity Generation in TWh	**1316.2**	**1175.8**	**1211.8**	**1224.4**	**1258.7**	**-2.2**	**1.4**	**2.8**
- nuclear	178.0	497.3	549.3	638.6	632.7	22.8	4.9	-0.9
- hydro	180.4	171.1	175.5	133.3	146.8	-1.1	-3.0	10.1
- thermal	1135.8	1004.7	1036.2	1091.1	1112.0	-2.4	2.1	1.9
Fuel Inputs for Thermal Power Generation	**269.7**	**237.8**	**241.8**	**253.3**	**252.2**	**-2.5**	**1.2**	**-0.4**
- solids	161.2	165.5	171.3	173.7	171.5	0.5	0.7	-1.3
- oil	71.4	39.8	36.4	41.5	41.7	-11.0	0.9	0.5
- gas	33.7	29.0	30.0	33.7	34.4	-2.9	3.5	2.2
- renewable	3.5	3.5	4.1	4.4	4.7	-0.1	5.7	5.4
Total Final Energy Demand	**747.3**	**733.8**	**763.7**	**768.2**	**777.0**	**-0.4**	**1.1**	**1.1**
- solids	90.4	102.8	95.1	87.9	87.3	2.6	-3.2	-0.7
- oil	394.5	345.3	360.6	364.0	366.9	-2.6	1.2	0.8
- gas	146.7	161.5	174.9	175.4	180.6	1.9	2.3	2.9
- electricity	108.0	119.9	127.8	135.9	137.7	2.1	2.8	1.3
- heat	7.7	4.4	5.3	4.9	4.5	-10.5	0.2	-9.4
CO2 Emissions in Mt of C	**780.3**	**736.6**	**754.2**	**759.3**	**762.8**	**-1.1**	**0.7**	**0.5**
Indicators								
Population (Million)	334.6	338.6	340.3	342.6	343.7	0.2	0.3	0.3
GDP (Index 1985 = 100)	92.9	100.0	105.4	113.0	115.6	1.5	3.0	2.3
Primary Consumption/GDP (toe/MECU)	361.8	334.3	328.4	314.6	309.4	-1.6	-1.5	-1.6
Primary Consumption/Capita (toe/inhab)	3.44	3.38	3.49	3.56	3.57	-0.3	1.1	0.3
Electricity generated/Capita (kWh/inhab)	3933.2	3472.8	3561.3	3573.7	3662.18	-2.5	1.1	2.5
CO2 emissions/Capita (t/inhab)	2.33	2.18	2.22	2.22	2.22	-1.4	0.4	0.1

(1) Including bunkers.

(2) Includes nuclear, hydro and other renewable.


PRIMARY CONSUMPTION
SHARE OF EACH ENERGY IN 1990
FORMER G.D.R.
73%
17%
0%
9%
1%
Solids
Oil
Nuclear
Natural Gas
Other


PRIMARY CONSUMPTION
SHARE OF EACH ENERGY IN 1990
EUROPEAN COMMUNITY
45%
18%
24%
1%
12%
Solids
Oil
Natural Gas
Nuclear
Other

PART III

SHORT-TERM ENERGY OUTLOOK FOR THE EUROPEAN COMMUNITY[1]

According to provisional data, total primary energy demand in the Community during the first half of 1991 increased by about 5.5%, in spite of slower economic growth and the Gulf war. A large part of this increase can be attributed to weather conditions.

It seems now that the return, after three consecutive warm winters, to weather conditions which were close to "normal", had a considerable impact on energy demand during the first half of 1991 and in particular on natural gas consumption which increased by more than 15%. Oil deliveries increased by 2.8% and electricity demand was growing by almost 5%. Total energy demand in 1991 could grow by almost 3%.

On the basis of our assumptions, total primary consumption could grow by another 1.5% during 1992.

Oil prices which declined to less than 20 dollars per barrel in 1991 could be slightly lower in 1992, leading to a possible increase in oil deliveries of about 1.3%. After reaching a very high level in 1991, demand for natural gas could grow by 1.5% in 1992.

Electricity demand could also continue its fast growth in 1992 (2.7%). Given a continuing improvement of hydro-electric production and a small increase in nuclear, total demand for solid fuels could remain close to 1991 levels.

A summary of the main assumptions used in the preparation of this "Short Term Energy Outlook" (STEO) and of its main results is presented in Table 1.

TABLE 1: EUR-12
SUMMARY OF MAIN ASSUMPTIONS AND RESULTS

(Last revision: 17 December 1991)

								Annual percentage change						
	1986	1987	1988	1989	1990	*1991*	*1992*	1986	1987	1988	1989	1990	*1991*	*1992*
I.MAIN ASSUMPTIONS														
GDP (1985=100)	102.8	105.5	109.7	113.1	116.2	*117.7*	*120.3*	2.8	2.6	3.9	3.1	2.7	*1.3*	*2.2*
Private Consumption (1985=100)	104.3	108.2	112.4	115.6	119.1	*121.1*	*123.5*	4.3	3.7	3.9	2.8	3.0	*1.7*	*2.0*
Industrial Production (1985=100)	102.2	104.1	108.6	112.6	114.6	*115.1*	*118.0*	2.4	1.9	4.2	3.7	1.8	*0.4*	*2.6*
Consumer Prices (1985=100)	103.5	106.9	110.7	116.4	123.0	*129.2*	*135.1*	3.5	3.2	3.6	5.2	5.6	*5.0*	*4.5*
Exhange rate ECU/US $	0.983	1.154	1.184	1.102	1.273	*1.242*	*1.260*	29.0	17.4	2.5	-6.9	15.6	*-2.5*	*1.5*
Imported Crude Oil Price														
(US $ / bbl)	14.51	17.87	14.78	17.61	22.89	*19.43*	*18.00*	-47.3	23.2	-17.3	19.2	30.0	*-15.1*	*-7.4*
(ECU / bbl)	14.91	15.50	12.48	16.00	17.79	*15.64*	*14.29*	-59.0	3.9	-19.5	28.2	11.2	*-12.1*	*-8.7*
Degree Days	2710	2774	2409	2376	2243	*2683*	*2697*	13	77	-288	-321	-454	*-14*	*0*
II.MAIN RESULTS														
OIL														
Total Inland Deliveries (Mt)	441.1	442.3	451.9	454.0	459.0	*466.1*	*472.4*	2.8	0.3	2.2	0.5	1.1	*1.6*	*1.3*
HARD COAL														
Total Inland Deliveries (Mt)	327.3	319.0	310.4	312.7	317.8	*322.0*	*320.3*	-0.1	-2.5	-2.7	0.7	1.6	*1.3*	*-0.5*
TOTAL SOLIDS														
Gross Inl.Consumption (Mtoe)	231.5	231.3	226.8	231.1	234.2	*234.8*	*236.1*	-3.1	-0.1	-1.9	1.9	1.4	*0.2*	*0.5*
NATURAL GAS														
App. Gross Consumption (Mtoe)	186.8	198.9	191.1	199.8	207.9	*226.9*	*230.3*	1.3	6.5	-3.9	4.5	4.1	*9.1*	*1.5*
ELECTRICITY														
Consumpt. Intern.Market (Twh)	1414.9	1464.4	1504.1	1547.1	1581.4	*1632.6*	*1677.2*	2.9	3.5	2.7	2.9	2.2	*3.2*	*2.7*
NUCLEAR HEAT														
Production (Twh)	1537.5	1580.4	1694.9	1829.0	1819.7	*1873.1*	*1925.0*	6.8	2.8	7.2	7.9	-0.5	*2.9*	*2.8*
TOTAL ENERGY														
Gross Inl.Consumption (Mtoe)	1043.6	1062.8	1077.1	1098.7	1115.1	*1147.9*	*1164.5*	1.4	1.8	1.3	2.0	1.5	*2.9*	*1.4*
ENERGY INTENSITY RATIO														
Total Gr.Inl.Consumption/GDP (1984 = 100)	99.9	99.2	96.7	95.6	94.5	*96.0*	*95.3*	-1.3	-0.8	-2.5	-1.1	-1.2	*1.6*	*-0.7*

1 Manuscript completed on 23 December 1991

ENERGY IN THE FIRST HALF OF 1991

According to the SOEC monthly data, energy consumption during the first six months of 1991 grew by 5.5%. Given that on average the weather was close to normal, while 1990 was an exceptionally warm year, the estimated weather corrected growth is about 2%.

It should be noted, however, that exist serious statistical uncertainties concerning 1991 data due to the difficulty of splitting certain German data into their two components. As is explained in the introductory notice to this publication, this STEO, for statistical reasons, covers only the Western part of Germany (see comments in Box A).

Box A

GERMAN STATISTICS

Starting from January 1991, monthly data for Germany as published by the Statistical Office of the European Community (SOEC) cover the whole of unified Germany.

However, for the moment there are no historical monthly time series available for the Eastern part of Germany, and historical annual data on energy are still under revision. Moreover there are still major statistical problems concerning the National Accounts, and it is not yet possible to present reliable historical quarterly data for the new German State.

For this reason all data and forecasts presented in the present "Short Term Energy Outlook" refer still to the Federal Republic of Germany prior to German unification.

A new statistical database, using concepts and definitions comparable to those of the other Community members is now in preparation. German data in the "Short Term Energy Outlook" will be updated as and when they become available, on a monthly or quarterly basis, by the SOEC.

Meanwhile, it is necessary to split German data for 1991 into their two components. Information available to the SOEC has made it possible to make this distinction for the majority of variables. However, information on trade remains uncertain, while no reliable data are available for a split of the production and consumption of natural gas. For this reason some uncertainty remains concerning global Community figures, starting from the first quarter of 1991.

The first table presents some estimates of the main energy variables for East Germany and shows the considerable decline of energy production and consumption in 1990 and the first half of 1991.

EAST GERMANY - MAIN ENERGY STATISTICS

East Germany	Units	1987	1988	1989	1990	1 Q 1990	2 Q 1990	3 Q 1990	4 Q 1990	1 Q 1991	2 Q 1991
1. Production Lignite	TMt	308745	310314	301021	249261	65250	59980	60368	63663	55217	36237
	%		0.5%	-3.0%	-17.2%					-15.4%	-39.6%
2. Production Natural Gas	Ttoe	3518	3193	2731	1826	516	418	408	484	591	428
	%		-9.2%	-14.5%	-33.1%					14.5%	2.4%
3. Imports Hard Coal	TMt	6674	5795	4570	2702	1005	794	448	455	642	832
	%		-13.2%	-21.1%	-40.9%					-36.1%	4.8%
3. Imports Crude Oil	TMt	19894	19592	19990	16133	3255	5580	3502	3796	3467	3090
	%		-1.5%	2.0%	-19.3%					6.5%	-44.6%
4. Imports Natural Gas	Ttoe	5435	5474	5740	5026	1455	1452	1372	747	1092	817
	%		0.7%	4.9%	-12.4%					-24.9%	-43.7%
5. Exports Oil Products	TMt	6662	6581	6471	5550	2000	1800	1500	250	86	36
	%		-1.2%	-1.7%	-14.2%					-95.7%	-98.0%
6. Electricity Generation	GWh	114180	118325	118971	105380	28675	24305	23450	28950	22863	18464
	%		3.6%	0.5%	-11.4%					-20.3%	-24.0%
of which: Nuclear	GWh	11210	11738	12281	5309	n.a.	n.a.	n.a.	n.a.	0	0
	%		4.7%	4.6%	-56.8%						
7. Final Oil Consumption	TMt	11579	11432	10537	10955	2820	3160	2335	2640	3814	4057
	%		-1.3%	-7.8%	4.0%					35.2%	28.4%
8. Total Energy Production	Ttoe	71678	71800	69519	56850	15024	13796	13870	14160	11431	7599
			0.2%	-3.2%	-18.2%					-23.9%	-44.9%
9. Gross Inland Consumption	Ttoe	93563	90910	89675	78698	20393	20714	18780	18811	17223	13416
	%		-2.8%	-1.4%	-12.2%					-15.5%	-35.2%
10. Final Consumption	Ttoe	64580	62334	60475	57255	15468	14528	13296	13963	12287	9818
	%		-3.5%	-3.0%	-5.3%					-20.6%	-32.4%

The second table, covering primary consumption, shows the data published by the SOEC, our estimates for East Germany, and the resulting data for Europe-12, according to the STEO definitions.

The reader can also consult the table on East Germany in the second part of this publication.

Box A (continued)

EUROPE 12 AND EAST GERMANY: PRIMARY ENERGY DEMAND (Mtoe)

SOEC: Apparent primary energy consumption

	1 q 90	2 q 90	1 H 90	1 q 91	2 q 91	1 H 91	1 q 91	2 q 9	1 H 91
	Mtoe	Mtoe	Mtoe	Mtoe	Mtoe	Mtoe	%	%	%
EUROPE-12 - SOEC									
1. Hard Coal	52.535	45.970	98.505	53.913	48.403	102.316	2.6%	5.3%	3.9%
2. Patent Fuels	-0.024	-0.032	-0.056	-0.024	-0.023	-0.047			
3. Coke	0.048	-0.114	-0.066	-0.261	0.289	0.028			
4. Lignite	8.245	8.422	16.667	19.319	15.750	35.069	134.3%	87.0%	110.4%
5. Lignite Briquettes	0.041	0.037	0.078	-0.117	-0.026	-0.143			
TOTAL SOLIDS	60.845	54.283	115.128	72.830	64.393	137.223	19.7%	18.6%	19.2%
6. Oil	124.726	119.794	244.520	131.785	126.616	258.401	5.7%	5.7%	5.7%
7. Natural Gas	67.721	40.684	108.405	77.555	50.706	128.261	14.5%	24.6%	18.3%
8. Nuclear	40.712	36.847	77.559	44.800	36.517	81.317	10.0%	-0.9%	4.8%
9. Primary Electricity	3.562	3.805	7.367	3.915	4.120	8.035			
10. Other	0.978	0.978	1.956	1.002	1.002	2.004			
TOTAL	298.553	256.399	554.952	331.897	283.364	615.261	11.2%	10.5%	10.9%

SIRENE, 12/12/91; Note: Data for January 1991 have been corrected by 2.004 Mtoe for existing East German Stocks (Lignite: 0.413, Crude Oil: 0.398, Oil Prod: 1.193)

Gross Inland Consumption, STEO Definitions (1) (2)

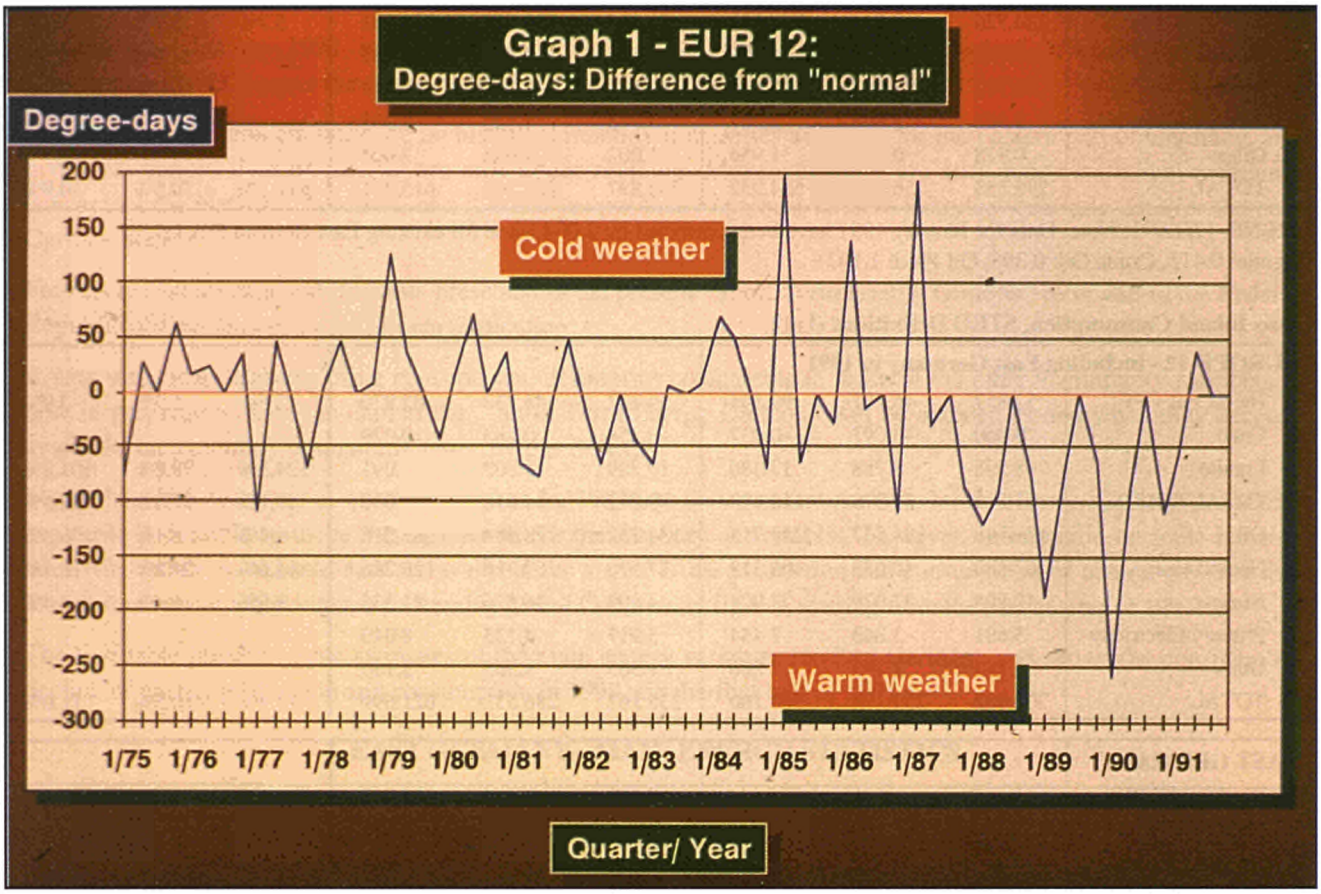
EUROPE-12 - including East Germany in 1991									
1. Hard Coal + PF	52.857	46.287	99.144	54.237	48.733	102.970	2.6%	5.3%	3.9%
2. Coke	0.060	-0.097	-0.037	-0.254	0.283	0.029			
3. Lignite	8.598	8.788	17.386	19.289	15.802	35.091	124.3%	79.8%	101.8%
TOTAL SOLIDS	61.515	54.978	116.493	73.272	64.818	138.090	19.1%	17.9%	18.5%
4. Oil	126.148	121.567	247.715	134.232	128.984	263.216	6.4%	6.1%	6.3%
5. Natural Gas	67.680	40.638	108.318	77.570	50.716	128.286	14.6%	24.8%	18.4%
6. Nuclear	40.895	37.029	77.924	44.809	36.526	81.335	9.6%	-1.4%	4.4%
7. Primary Electricity	3.601	3.843	7.444	3.917	4.123	8.040			
8. Other	1.143	1.143	2.286	1.365	1.365	2.730			
TOTAL	300.982	259.198	560.180	335.167	286.532	621.699	11.4%	10.5%	11.0%
EAST GERMANY									
1. Hard Coal + PF				0.419	0.543	0.962			
2. Coke				0.054	0.022	0.076			
3. Lignite				10.648	7.013	17.661			
TOTAL SOLIDS				11.121	7.578	18.699			
4. Oil				4.293	4.466	8.759			
5. Natural Gas				1.683	1.245	2.928			
6. Nuclear				0.000	0.000	0.000			
7. Primary Electricity				-0.026	-0.023	-0.049			
8. Other				0.150	0.150	0.300			
TOTAL				17.223	13.416	30.639			
EUROPE-12 - excluding East Germany									
1. Hard Coal + PF	52.857	46.287	99.144	53.818	48.190	102.008	1.8%	4.1%	2.9%
2. Coke	0.060	-0.097	-0.037	-0.308	0.261	-0.047			
3. Lignite	8.598	8.788	17.386	8.641	8.789	17.430	0.5%	0.0%	0.3%
TOTAL SOLIDS	61.515	54.978	116.493	62.151	57.240	119.391	1.0%	4.1%	2.5%
4. Oil	126.148	121.567	247.715	129.939	124.518	254.457	3.0%	2.4%	2.7%
5. Natural Gas	67.680	40.638	108.318	75.887	49.471	125.358	12.1%	21.7%	15.7%
6. Nuclear	40.895	37.029	77.924	44.809	36.526	81.335	9.6%	-1.4%	4.4%
7. Primary Electricity	3.601	3.843	7.444	3.943	4.146	8.089			
8. Other	1.143	1.143	2.286	1.215	1.215	2.430			
TOTAL	300.982	259.198	560.180	317.944	273.116	591.060	5.6%	5.4%	5.5%

Note 1: 1990: Includes adjustments for annual figures.

Note 2: 1991: Includes quarterly adjustments (.35 Mtoe for hard coal, 0.75 Mtoe for oil), plus 1.0 Mtoe for oil in East Germany.

As has been discussed in our previous STEO, exceptional weather conditions over the last three years (1988, 1989, 1990, see Graph 1) have seriously distorted the seasonality of the European energy market, as well as resulting in a substantial energy saving.

The return in 1991 to weather conditions that were very close to "normal" reversed this situation, leading to an exceptional growth of energy demand during the first half of the year. By using our "ERASME" model we have estimated that weather is responsible for about 3.5% of the demand growth of 5.5% (for a more detailed analysis of the weather impact see Box B). The remaining 2% is, however, much higher than the estimated GDP growth during the same period (about 1.2%, see Table 2). In other words, other factors were also influencing energy demand. First of all, it seems, now that 1990 data are fully available, that weather corrected energy intensity gains in the Community are slowing down. In addition, it seems that German unification had a considerable impact on energy demand in West Germany. Some additional specific reasons have also influenced oil demand in the first half of this year (see later).



Box B

AN ESTIMATION OF THE WEATHER IMPACT ON COMMUNITY ENERGY CONSUMPTION

In our STEO published in August 1990 we estimated the impact of the exceptionally warm weather which prevailed in 1988 and 1989. Since these conditions persisted in 1990 and the return to normal weather conditions in 1991 had a significant impact on energy consumption, we considered it necessary to update this analysis and present some weather-corrected figures for the period 1990 to 1992.

The estimates presented in this Box were made using the "ERASME" model and are purely indicative. They show however that in 1991 the weather impact could be quantified at something in the order of 26 Mtoe which is about 2.4% of the Community's total primary energy consumption.

If: RC : Real Consumption; WCC : Weather- corrected Consumption; WF : Weather Factor; and WI : Weather Impact;

then: $RC_t = WCC_t + WF_t$ => $WF_t = RC_t - WCC_t$

and $WI_t = WF_t - WF_{t-1}$

The observed growth rate can be decomposed as follows:

$$\frac{\Delta (RC)_t}{RC_{t-1}} = \frac{(WCC + WF)_t - (WCC + WF)_{t-1}}{RC_{t-1}} \quad \text{or} \quad \frac{\Delta (RC)_t}{RC_{t-1}} = \frac{\Delta (WCC)_t}{RC_{t-1}} + \frac{WI_t}{RC_{t-1}}$$

The following table shows the weather impact for 1990, 1991 and 1992. As it can be seen, weather corrected energy intensity gains in 1990 amounted only to 0.5%. According to our forecast they could turn out at 0.7% in 1991 and 0.9% in 1992.

Box B (continued)

THE IMPACT OF WEATHER CONDITIONS

	1989	1990 (1)	1991 (2)	1992 (2)
Observed Figures - in Mtoe (RC)				
TOTAL Gross Inland Consumption	1098.70	1115.06	1147.89	1164.48
1. Solids	231.08	234.25	234.79	236.06
2. Oil	491.76	497.42	505.42	511.54
3. Natural gas	201.49	207.72	226.95	230.32
4. Other	174.37	175.67	180.73	186.56
Electricity Final Demand	128.29	131.35	135.41	139.08
Observed Growth Rates - in %				
TOTAL Gross Inland Consumption		1.49%	2.94%	1.45%
1. Solids		1.37%	0.23%	0.54%
2. Oil		1.15%	1.61%	1.21%
3. Natural gas		3.09%	9.26%	1.48%
4. Other		0.75%	2.88%	3.23%
Electricity Final Demand		2.39%	3.09%	2.71%
Degree-Days, Difference from normal	-321	-454	-14	0
Weather Corrected Figures - in Mtoe (WCC)				
TOTAL Gross Inland Consumption	1117.96	1143.30	1149.77	1164.48
1. Solids	236.27	241.78	235.11	236.06
2. Oil	494.78	501.73	505.74	511.54
3. Natural gas	212.48	224.04	228.18	230.32
4. Other	174.43	175.75	180.74	186.56
Electricity Final Demand	130.41	134.45	135.55	139.08
Weather Factor - in Mtoe (WF)				
TOTAL Gross Inland Consumption	-19.26	-28.24	-1.88	0.00
1. Solids	-5.19	-7.53	-0.32	0.00
2. Oil	-3.02	-4.31	-0.32	0.00
3. Natural gas	-10.99	-16.32	-1.23	0.00
4. Other	-0.06	-0.08	-0.01	0.00
Electricity Final Demand	-2.12	-3.10	-0.14	0.00
Weather Impact - in Mtoe (WI)				
TOTAL Gross Inland Consumption		-8.98	26.36	1.88
1. Solids		-2.34	7.21	0.32
2. Oil		-1.29	3.99	0.32
3. Natural gas		-5.33	15.09	1.23
4. Other		-0.02	0.07	0.01
Electricity Final Demand		-0.98	2.96	0.14
Weather Impact - in % of previous year (WI/RCt-1)				
TOTAL Gross Inland Consumption		-0.82%	2.36%	0.16%
1. Solids		-1.01%	3.08%	0.14%
2. Oil		-0.26%	0.80%	0.06%
3. Natural gas		-2.65%	7.26%	0.54%
4. Other		-0.01%	0.04%	0.01%
Electricity Final Demand		-0.76%	2.25%	0.10%
Weather Corrected Growth Rates - in % of previous year ((WCCt-WCCt-1)/RCt-1)				
TOTAL Gross Inland Consumption		2.31%	0.58%	1.28%
1. Solids		2.38%	-2.85%	0.40%
2. Oil		1.41%	0.81%	1.15%
3. Natural gas		5.74%	1.99%	0.94%
4. Other		0.76%	2.84%	3.22%
Electricity Final Demand		3.15%	0.84%	2.61%
GDP (1985=100)	113.1	116.2	117.7	120.3
GDP growth rates		2.7%	1.3%	2.2%
Iintensity (real, 1989=100)	100.0	98.8	100.4	99.6
Intensity gains in %		-1.2%	1.6%	-0.7%
Intensity (weather corrected)	100.0	99.5	98.8	97.9
Intensity gains in %		-0.5%	-0.7%	-0.9%

(1) Provisional
(2) Forecast

In any case, it seems now that demand for all types of energy increased considerably in the first part of 1991. Inspite of the Gulf war, oil deliveries increased by more than 6 million tonnes (2.7%) primarily as a result of the strong demand for heating oil (estimated at about 13%).

Due mainly to weather conditions, demand for natural gas expanded by an impressive 15.7% (more than 26% in Belgium, more than 16% in Italy and the Netherlands, 15% in Spain, etc). It is becoming now more and more clear that natural gas is rapidly penetrating the European energy market, bringing about important structural changes.

Electricity demand also increased by 4.9%. At the same time, production of nuclear heat increased by 4.8%. Hydro-electric production, which was very low in 1989 and started recovering in 1990 (10.1%), increased by another 16% in the first six months of 1991, while conventional thermal generation increased by 3.8% resulting in an increase of 2.5% for total solid fuels consumption.

WORKING ASSUMPTIONS FOR THE SECOND HALF OF 1991 AND 1992

Macroeconomic assumptions are based on the latest forecasts by the Commission's Directorate-General for Economic Affairs (DG II, November 1991). A GDP growth of 1.3% in 1991 and 2.2% in 1992 is assumed. The average crude oil price is assumed to be 19.4 USD/bbl in 1991 and 18 USD/bbl in 1992. "Normal" weather conditions are assumed after November 1991.

Table 2 presents the main working assumptions underlying the 1991 and 1992 forecasts.

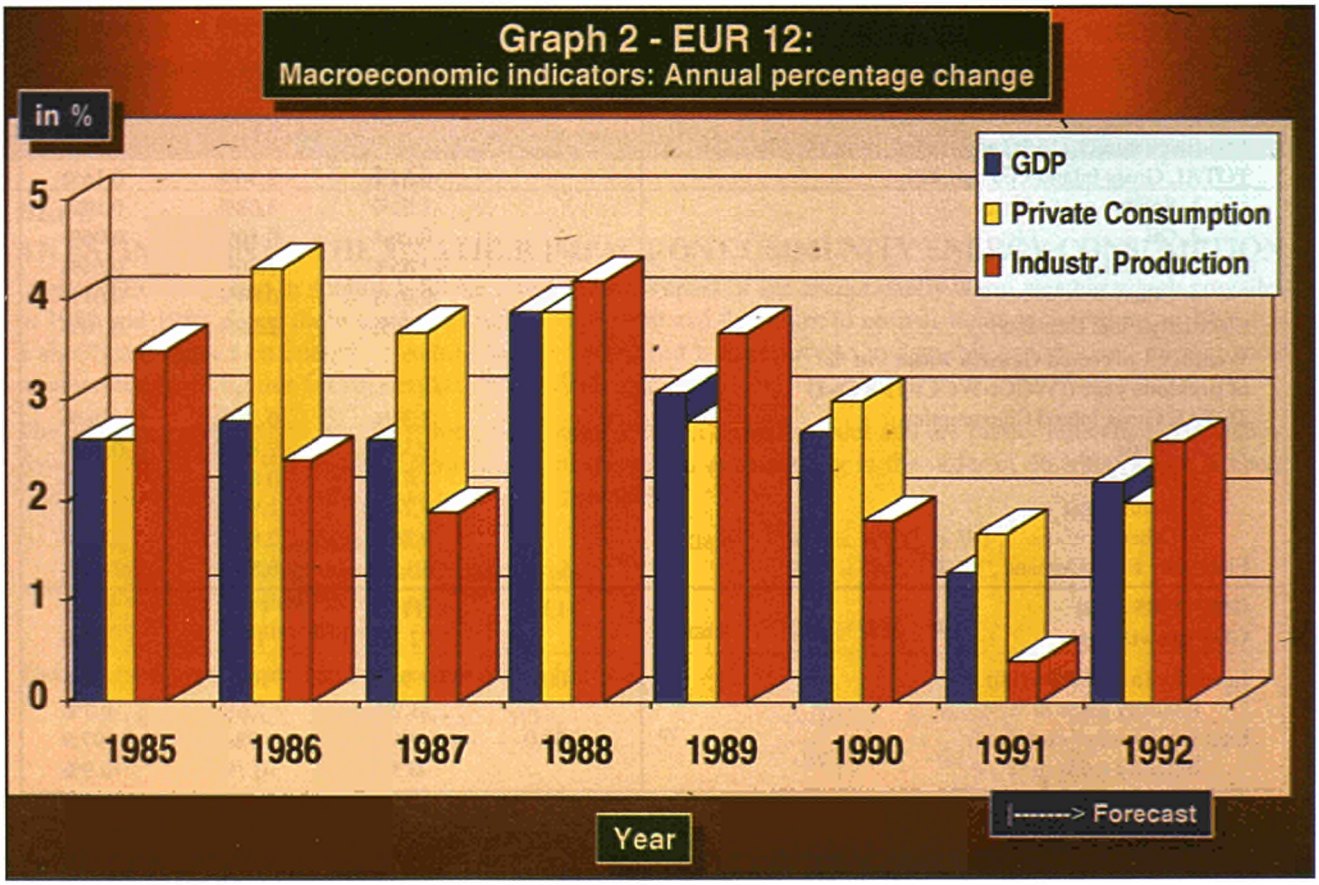
Based on the Commission's latest economic forecasts (published in November 1991), an average GDP growth for EUR-12 (excluding East Germany) of 1.3% in 1991 is now assumed (against 1.8% in our previous issue). This is considerably lower than the 3.1% and 2.7% recorded in 1989 and 1990 respectively. The rate of growth in private consumption is expected to be around 1.7% (Graph 2).

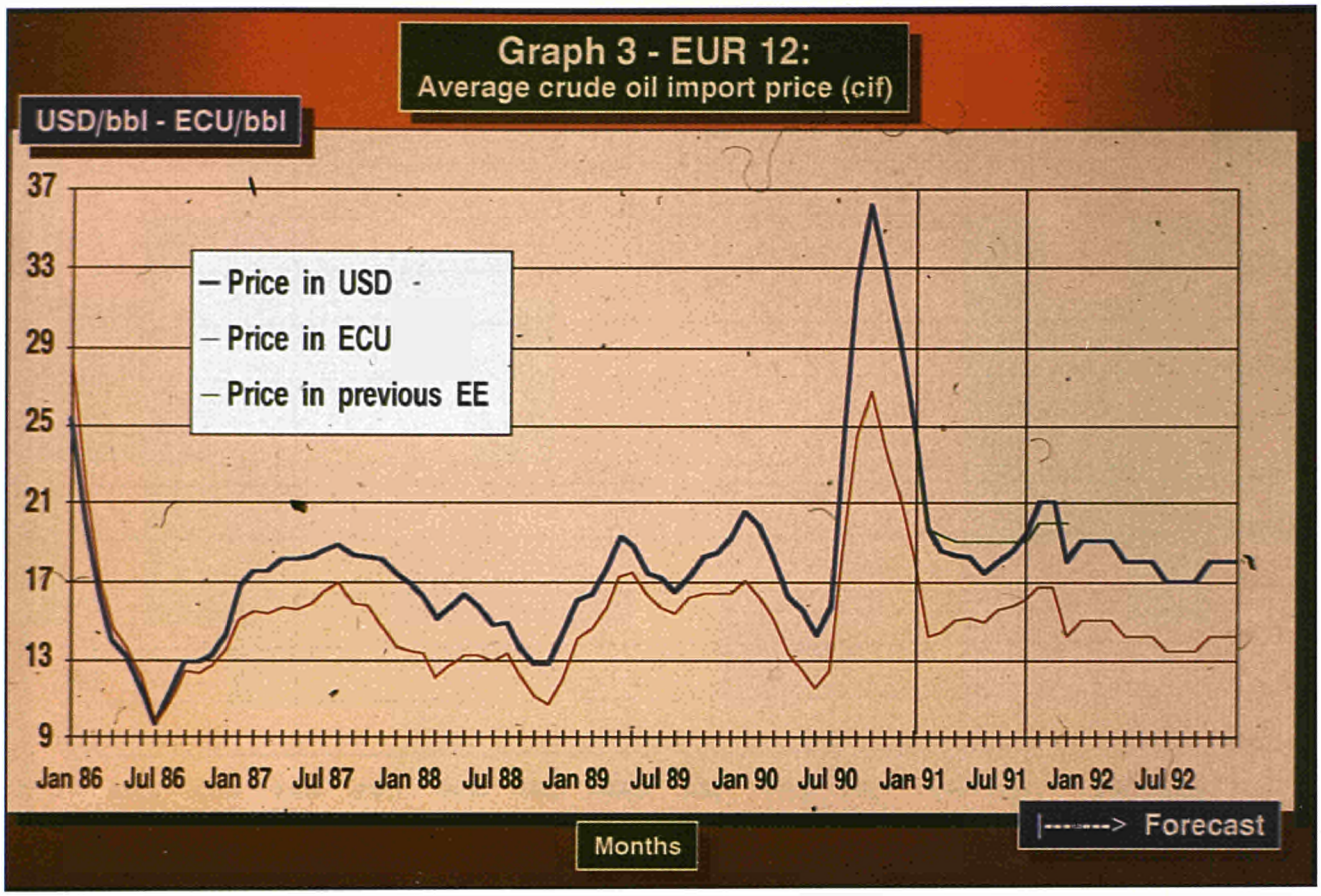
A slight recovery is assumed for 1992 with GDP growing by 2.2% and private consumption by 2.0%.

Inflation in 1991 could be around 5% declining to about 4.5% in 1992. As usual, the assumption is made that the USD/ECU nominal exchange rate will remain constant throughout the forecasting period (at 1.26 USD/ECU). An average oil price of 19.4 USD/bbl is assumed for 1991, declining to 18 USD/bbl in 1992 (see next section and Graph 3).

Finally, it is assumed that "normal" weather conditions will prevail after November 1991.

The forecasts are, as usual, based on the results of the "ERASME" model but they also incorporate, as far as possible, other information from different sources (DG XVII, Member States, energy experts etc).





ENERGY PRICES

The oil price

Crude oil prices which declined steadily between the beginning of the Gulf war and June 1991, started to rise slowly in July. However by the end of 1991 they again started on a slow decline. In 1992 they could remain at a level of around 18 USD/bbl.

The average 1991 import price for the European Community could be finally around 19.4 USD/bbl, a 15% decrease over 1990.

Given the current supply situation there is probably only a small risk of any serious price increase in 1992. The main uncertainty comes of course from the former USSR. However, it seems that a decline in production is followed by a decline in consumption, while exports continue to flow. With an anticipated slow increase of world demand, and slowly increasing Kuwaiti production, the trend could be towards somewhat lower prices, even if Iraq continues to remain absent from the world market.

Given this situation, the working assumptions are made that average import prices will remain at 19 USD/bbl during the first quarter of 1992, that they will be at 18 USD/bbl in the second quarter and 17 USD/bbl in the third quarter and that they will return to 18 USD/bbl during the last quarter, leading to an average annual import price of 18 USD/bbl, or 7.4% less than in 1991.

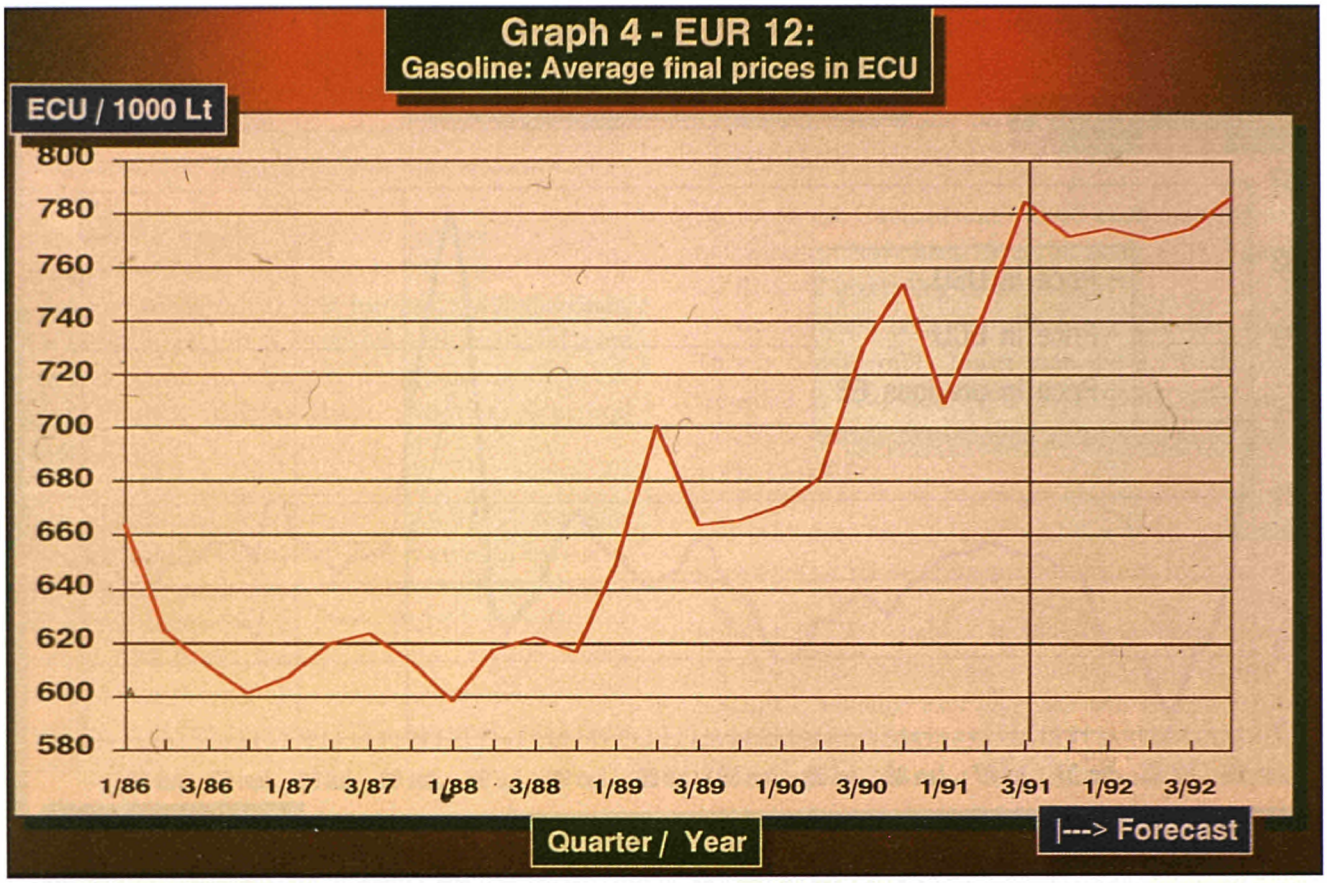
Final energy prices

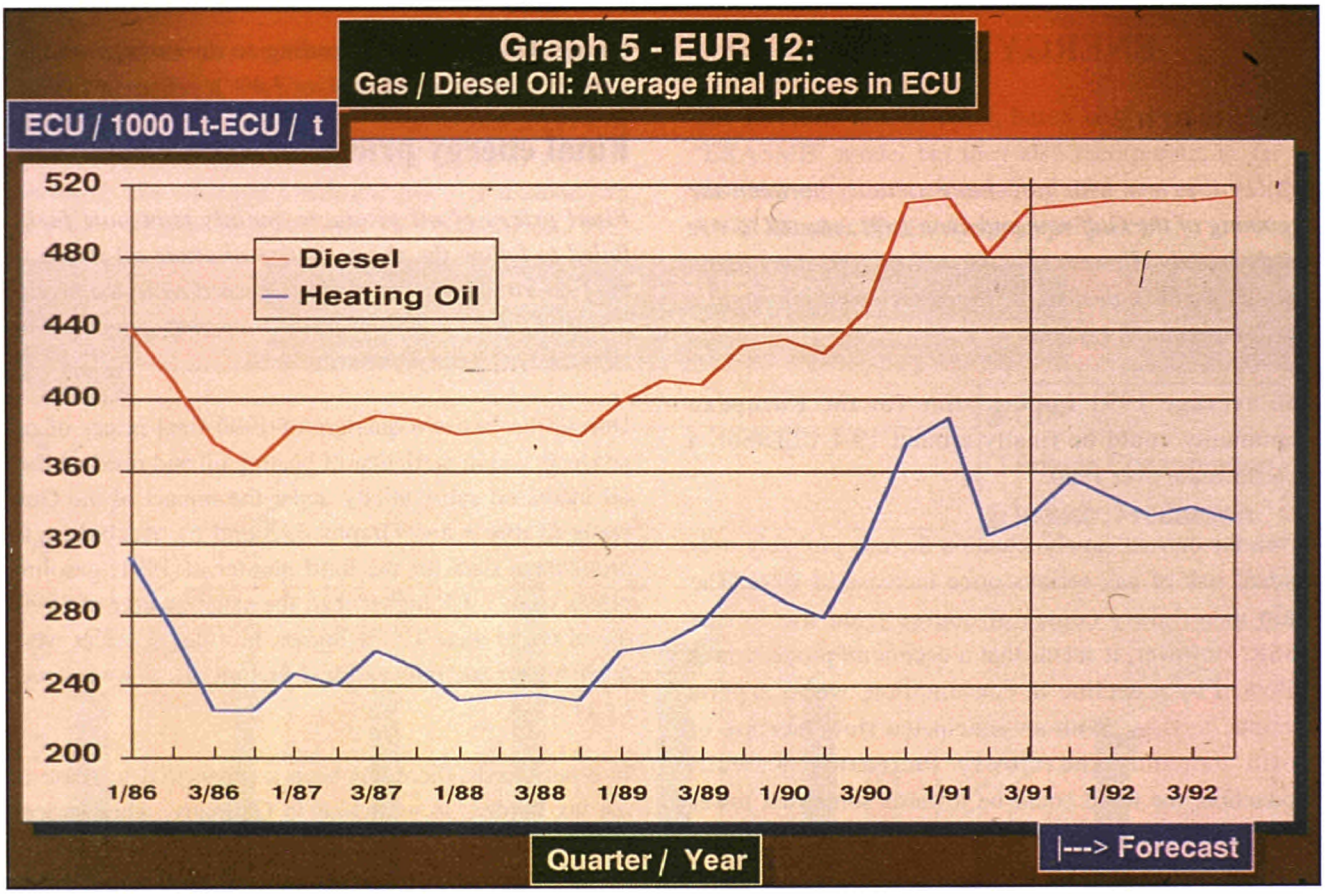
Final prices of oil products, mainly transport fuels, failed to follow the sharp decline of crude oil prices in the first three quarters of 1991. According to the profile assumed for the imported crude price, they could decline slightly during the first part of 1992.

During the last two quarters of 1990 final prices of oil products and in particular of heating oil and residual fuel oil increased substantially under the impact of the Gulf crisis (Table 3 and Graphs 4, 5 and 6). According to provisional data for the third quarter of 1991, gasoline prices were 7.4% higher than the same quarter of 1990, diesel prices were 12.7% higher, heating oil prices were 4.1% higher and only residual fuel oil prices were lower by 11.8%.

In other words, there has been a substantial increase in the tax burden, in particular in Germany, where prices increased during the third quarter due to an increase of excise taxes on 1 July 1991. As an example, gasoline prices increased by 20% in the third quarter of 1991.

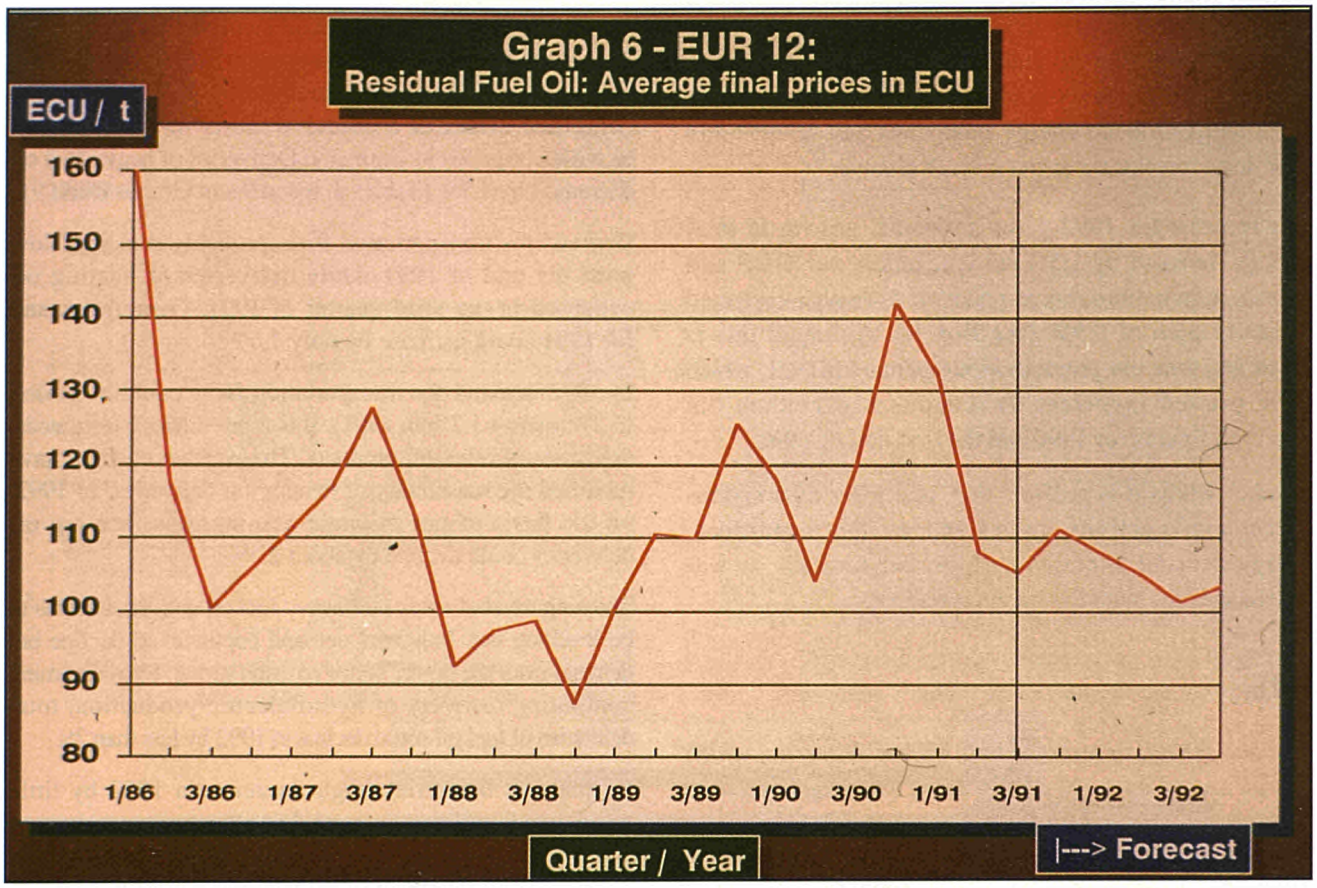
On the basis of our assumption, prices of oil products in 1992 could remain close to their current level with the exception of residual fuel oil, the price of which could decline on average by about 9% in 1992.





Considering the usual lags in the transmission of the impact of oil prices on other fuels, average annual natural gas prices could rise by 10% in 1991 and then slow down. Coal prices will probably remain close to present levels, while electricity prices could increase by 3% to 4% in 1992.

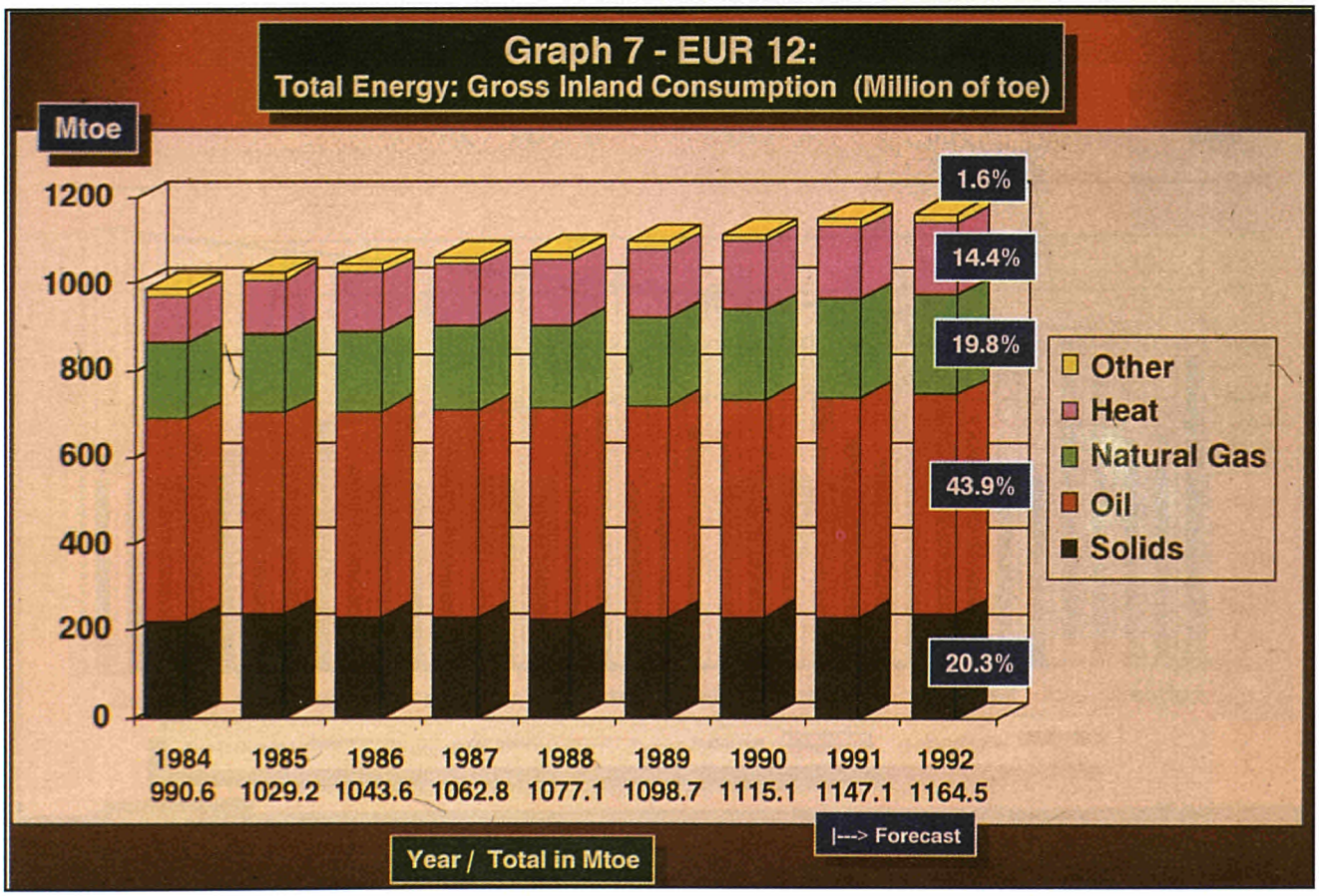
However, we should like to point out that due to the insufficient quality of historical data on average final energy prices, other than for oil, these forecasts must be considered only as indicative.



ENERGY IN 1991 AND 1992

Taking account of the economic slow-down and assuming "normal" weather conditions, a growth in total energy demand of about 3% is expected for 1991 and 1.5% for 1992.

Our present forecast for 1991 gives an overall growth in energy demand of 3%. In practice, 2.3% can be attributed to climatic factors. This forecast assumes, on the base of fragmentary information, a small decline in demand in the third quarter 1991 (-0.4%), due partly to the high levels of consumption in the same quarter of 1990, and an increase of only 1% for the last quarter of the year (Tables 4 and 8).



This annual rate of growth is double that of our previous forecast but it might still underestimate reality. As we have already pointed out, the climatic effect has seriously perturbed European energy behaviour and renders any short-term forecast more uncertain than usual.

Our forecast for 1992 gives an annual growth in total energy demand of 1.5% which, under our GDP and climate assumptions, corresponds to a weather-corrected intensity gain of 0.9% (see Box B). Although this is much less than our previous assumptions for 1991, which have proved incorrect, it remains higher than the observed figures for 1990 and the first half of 1991.

In other words it is possible that, under our assumptions on economic activity, prices and weather conditions, energy demand might outperform our forecast, as was indeed the case with the previous STEO.

OIL

Demand for oil, in terms of total inland deliveries, which has increased by 1.1% during 1990, increased again by 2.7% in the first 6 months of 1991. Total deliveries are now expected to grow by 1.6% in 1991 and 1.3% in 1992. Production of crude oil in 1991 is expected to remain at the same level as in 1990 and increase by 3 million tonnes in 1992.

Deliveries of motor gasoline and aviation fuels (kerosenes) decreased in the first part of 1991 under the combined impact of the Gulf war and the economic slow-down. Demand for automotive diesel oil increased by 3.2%, a rate of growth much lower than recent trends. However, deliveries of heating oil increased by 13.1% under the combined effect of a colder weather and anticipated increases of prices in Germany. Deliveries of heavy fuel oil decreased by 1.2% (Tables 4, 8 and 9 and Graphs 8 and 9).

Demand for transportation fuels probably remained low until the end of 1991 while deliveries of heating oil collapsed in the third quarter of 1991. Overall demand for 1991 could increase by only 1.6%.

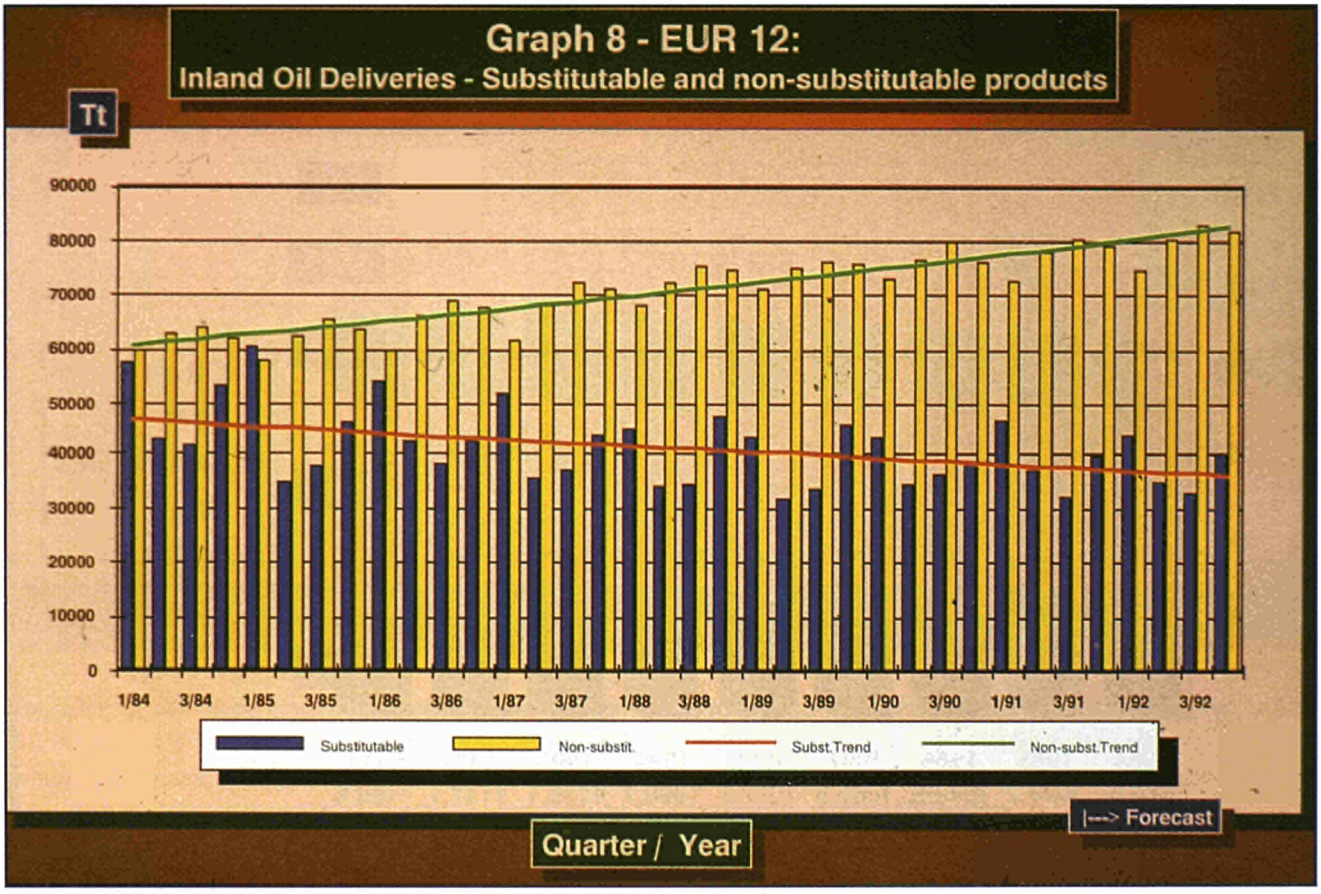
In 1992 demand for transportation fuels could be strong (3.2% against 1.7% in 1991). It is more difficult to forecast deliveries of other oil products. The weather changes have modified the seasonality of heating oil deliveries. In 1992, on the basis of our climatic assumptions, heating oil deliveries could decline by about 2.5%.

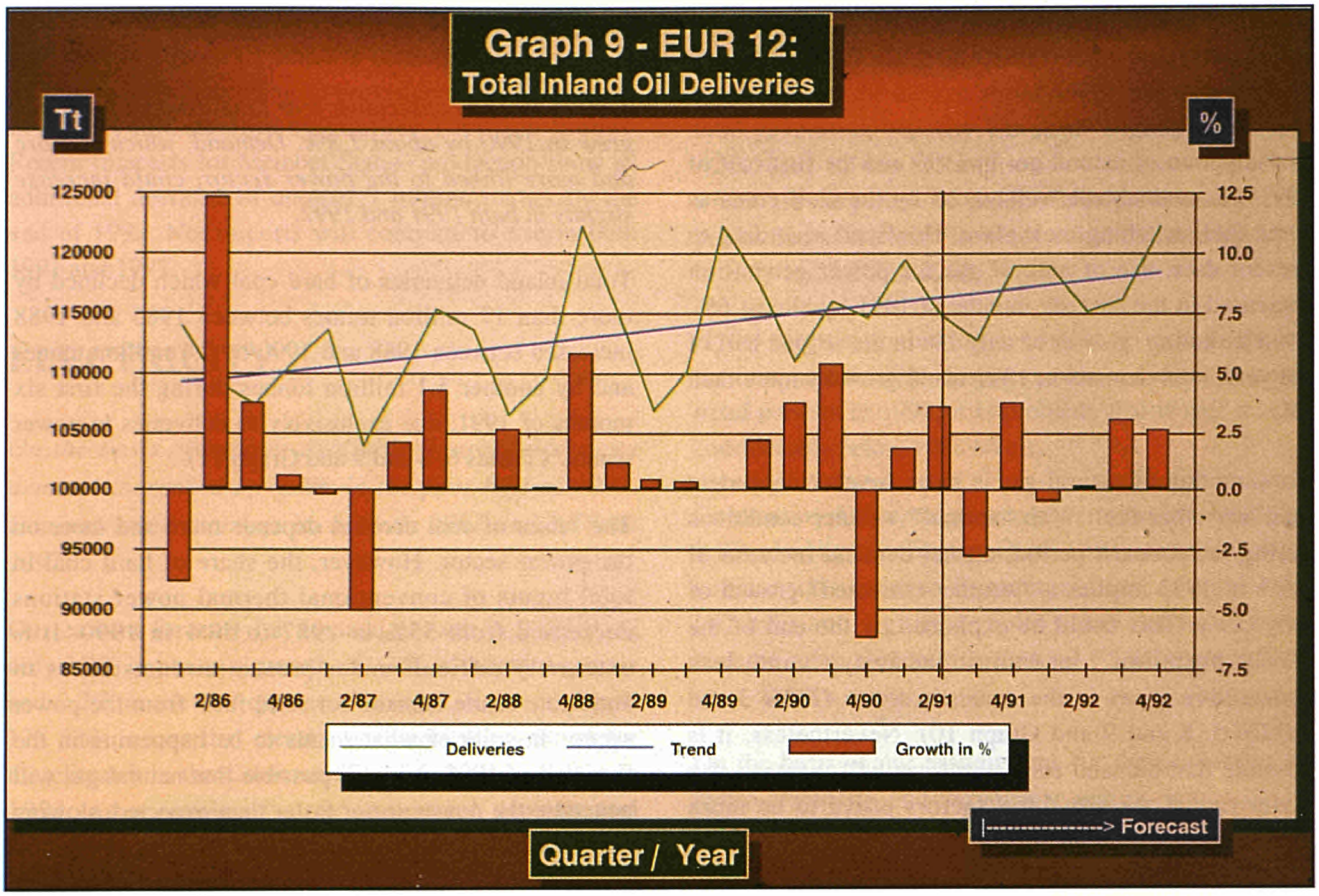
The long trend of decline of heavy fuel oil deliveries seems to be levelling out. Industrial demand continues to decline but demand from the power sector remains strong. Even assuming continuing recovery of hydro-electric production, total deliveries of fuel oil could decline in 1992 by less than 2%.

In total, oil deliveries might increase in 1992 by little more than 6 million tonnes (1.3%).

Oil production in 1991 remained close at its low level of 1989 and 1990. Production in 1992 is expected to be about 3 million tonnes higher.

Given the patterns of production and demand and substantial stocking, net oil imports increased considerably in 1991. In 1992 they could remain more or less at the same level.

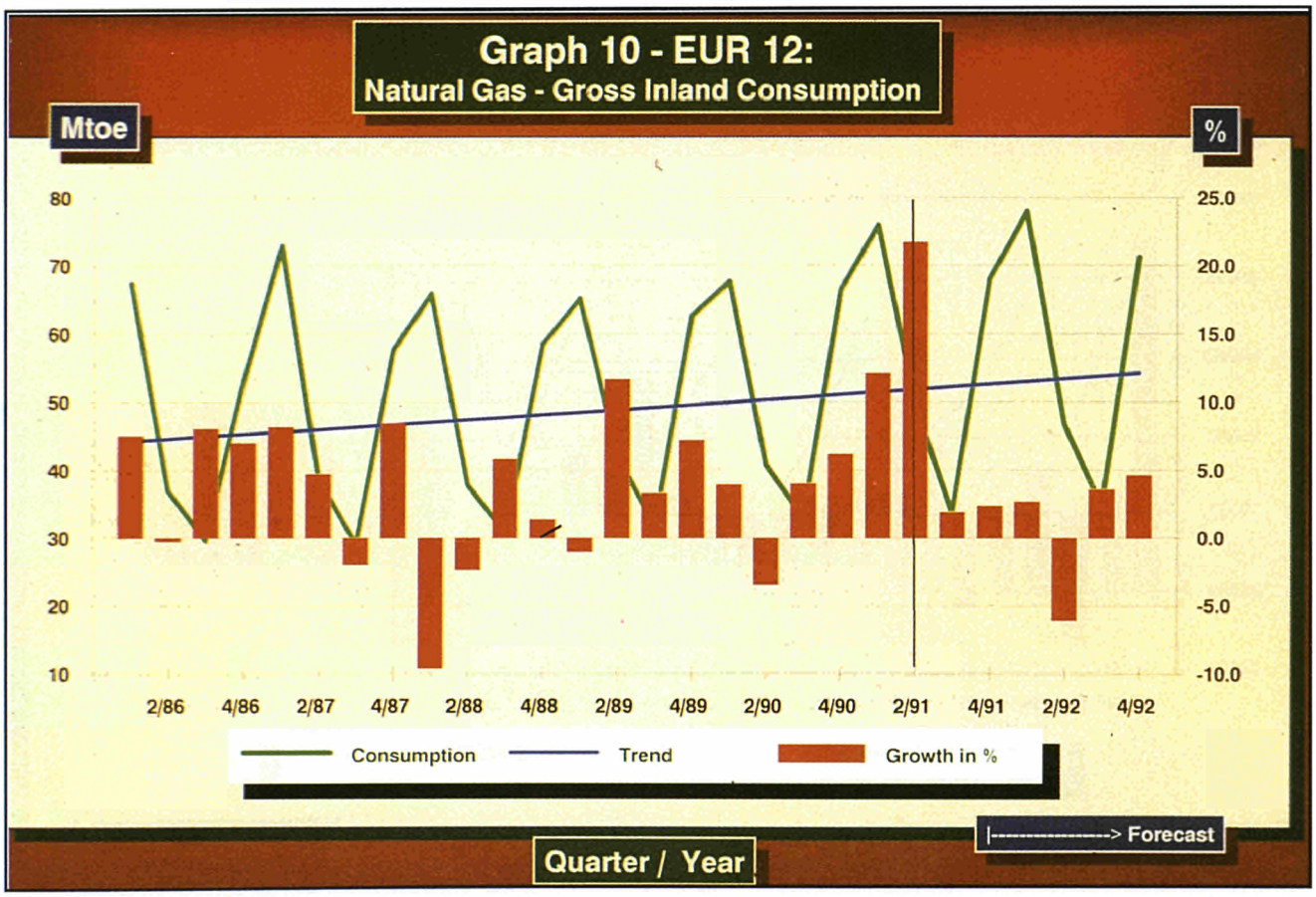




NATURAL GAS

Demand for natural gas in the first half of 1991 increased by more than 15%. This fast growing trend, due mainly to weather conditions, will probably slow considerably in 1992. Under our economic and weather assumptions, demand in 1992 could grow by only 1.5%.

According to SOEC monthly data, total consumption in the first half of 1991 increased by 15.7%. "Weather-corrected" consumption increased by about 5.2%, as



compared to 5.4% in 1990 (see Box B). However, there is considerable uncertainty in these figures due to German data (see Box A).

Consumption of natural gas in 1990 and the first half of 1991 was undoubtedly influenced by the Gulf crisis as some fuel switching took place. However, according to present data, use of natural gas for power generation decreased in the first six months of 1991 by almost 6%. Even assuming growth of only 2% in the second half of the year, total demand in 1991 could grow by more than 9%.

Consumption of natural gas is more weather dependent than any other fuel. With "normal" weather conditions during the forecast period, a total demand increase of 1.5% in 1992 implies a "weather-corrected" growth of only 0.9%. This could be explained by the end of the "Gulf premium", economic activity, and less competitive prices in the domestic sector (Table 3 and Tables 5, 8 and 9 and Graph 10). Nevertheless, it is possible that demand for natural gas will increase at a faster rate if the structural factors prove to be more influential than assumed in this forecast

Indigenous production of natural gas increased in the first six months of 1991 by 9.8 Mtoe (14.7%). Net imports increased also by 2.5 Mtoe or 3.2%. Both production and net imports will probably continue to expand in 1992, but at a lower rate.

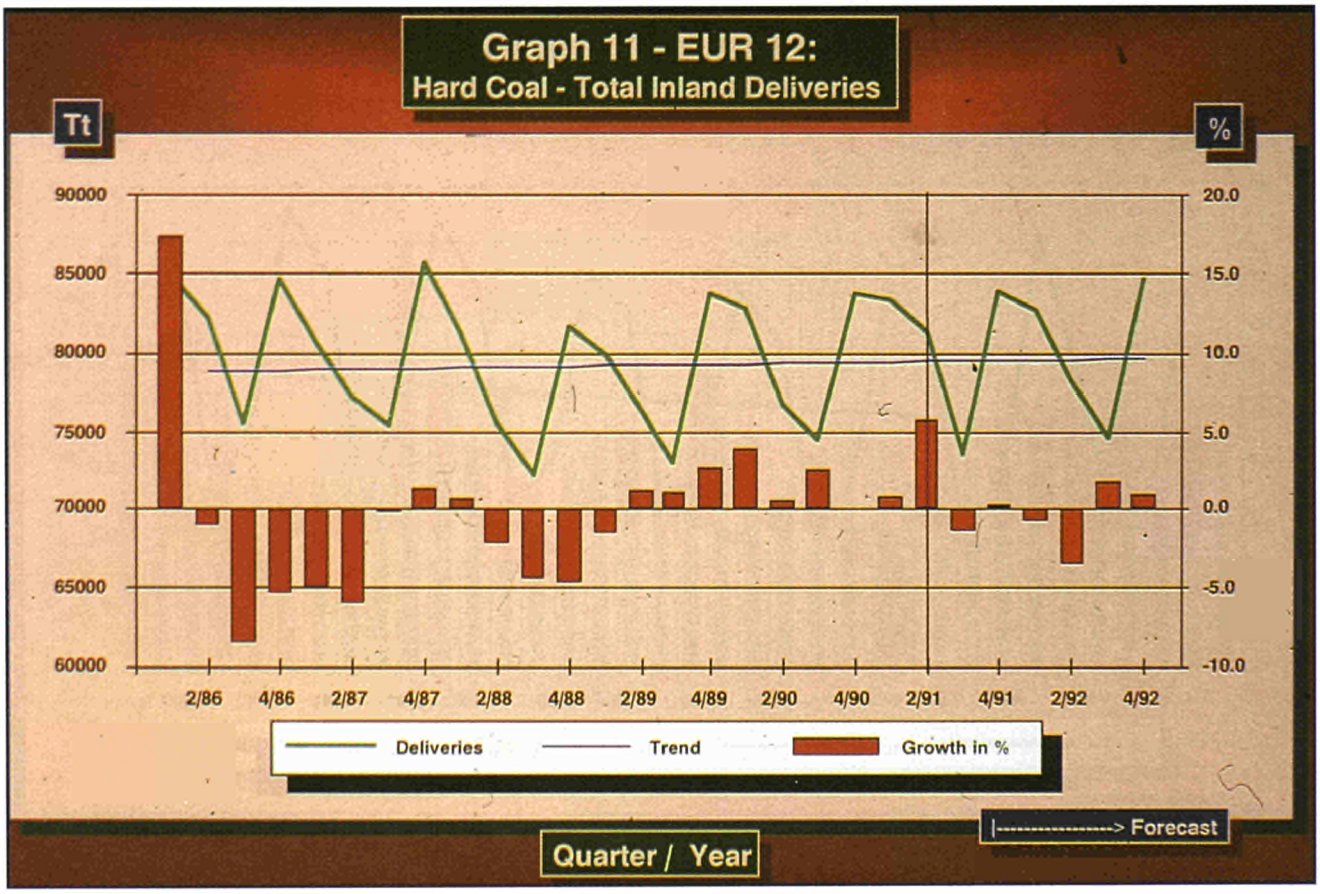
SOLIDS

For the second consecutive year total demand for solids grew in 1990 by about 1.3%. Demand, which is more and more linked to the power sector, could increase slightly in both 1991 and 1992.

Total inland deliveries of hard coal which declined by more than 17 million tonnes between 1985 and 1988 increased between 1988 and 1990 by 7.4 million tonnes and by another 5.1 million tonnes during the first six months of 1991, due exclusively to deliveries to power plants. (Tables 6, 8 and 9 and Graph 11).

The future of coal demand depends more and more on the power sector. However, the share of hard coal in total inputs of conventional thermal power stations decreased from 55% in 1987 to 53% in 1990. It is extremely difficult under present circumstances to anticipate future demand for solid fuels from the power sector. In spite of what seems to be happening in the first half of 1991, it is still possible that natural gas will penetrate the power sector faster than expected, slowing the growth of coal demand.

For 1991 as a whole total hard coal deliveries could finally increase by about 4 million tonnes. In 1992, given a slower growth of power sector demand and decreasing demand from coking plants, total deliveries could decline by about 2 million tonnes.



Production of hard coal in 1990 was 11.4 million tonnes less than in 1989. Net imports increased by almost 13 million tonnes. According to provisional data production in 1991 could decline by another 6 million tonnes. Recent forecasts for Member States' production show an additional decrease of another 7 million tonnes by the end of 1992. Net imports will continue to rise in both 1991 and 1992.

ELECTRICITY

On the basis of current available figures, electricity demand increased by 4.9% in the first half of 1991. Demand could increase by 3.2% in 1991 and 2.7% in 1992.

Our current forecast for demand growth in 1991 is of only 3.2% implying a growth of 0.7% in the third quarter and 2.2% in the last quarter. (Tables 7, 8 and 9, Graph 12). This means that electricity intensity (corrected for the climate) in the Community could decline slightly in 1991, as a result of slow industrial growth and moderately growing real electricity prices in the domestic sector (Tables 2 and 3).

However, this trend could be reversed in 1992 with a growth of demand in the order of 2.7%.

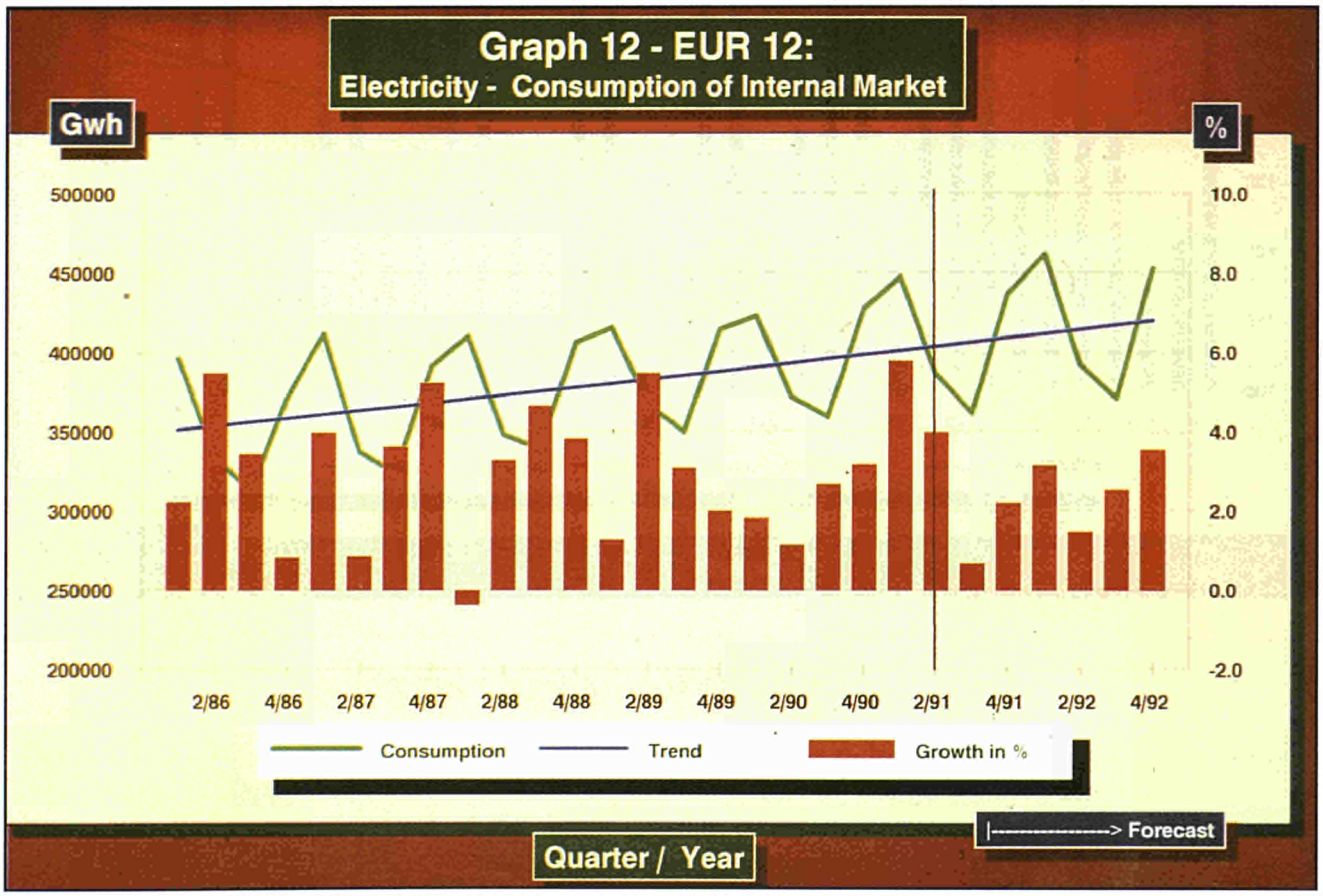
According to monthly data, production of nuclear heat shows rather erratic behaviour of late. After a sharp increase of 10% in the first quarter 1991 there was a decline of 1% in the second quarter. Normally, production by the nuclear sector will increase in 1991 as total generating capacity has itself slightly increased. According to our assumptions on nuclear capacity, which are very close to those of our previous forecast, production of nuclear electricity could increase by 2.9% in 1991 and 2.2% in 1992.

Hydro-electric production continued to recover during the first part of 1991. However, even assuming that this trend persists in 1992, it is probable that it will remain considerably below 1988 levels.

Conventional thermal power generation increased by 3.8% during the first part of 1991, resulting in a substantial increase in consumption of hard coal (+7.8%) and lignite (+6.4%) that seems to have become more competitive than oil (-5.9%) and natural gas (- 2.8%).

On the basis of our assumptions for the production of hydro-electricity and the nuclear sector, production of electricity by conventional thermal power stations could finally increase in 1991 by 2.5% and in 1992 by 2.1%.

It is probable that demand for solid fuels and oil will increase by 1% to 2% in 1992 and natural gas will most likely be the fossil fuel growing fastest (at around 5%).



TOTAL SUPPLY

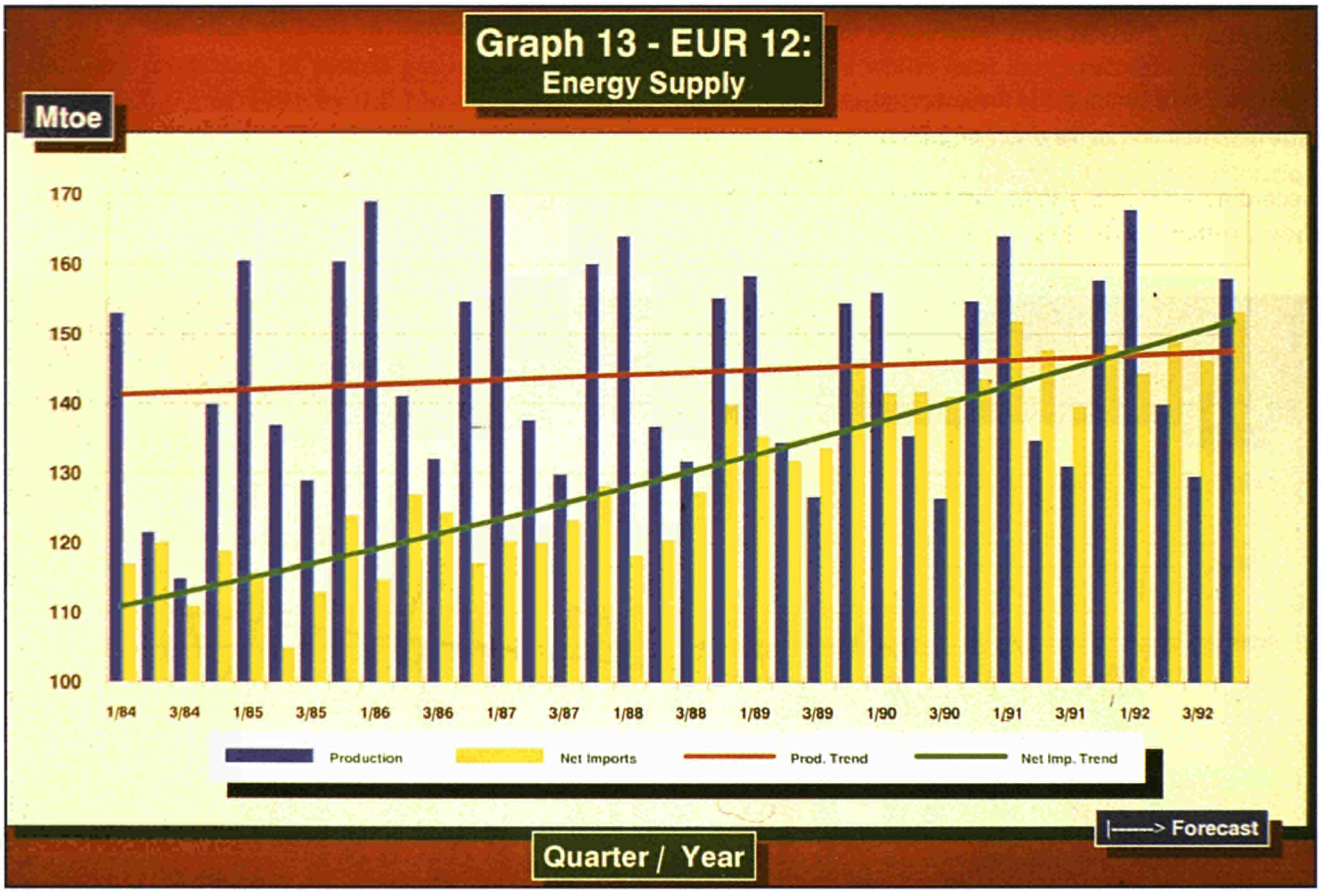
Total primary production of energy increased by 2.5% during the first half of 1991. Both indigenous production and net imports could increase in 1991 and in 1992. Dependency on imports which increased sharply in 1989 and a little more in 1990 could probably be even higher in 1991 but return in 1992 to its 1990 level.

Due to the increase in the production of natural gas, nuclear power, and hydro-electricity, and in spite of a decrease in the production of other sectors (solid fuels and oil), total inland primary production increased in the first half of 1991 by 7.4 Mtoe, or by 2.5%. Net imports increased by more than 16 Mtoe, or 5.7% (Table 4, Graph 13).

Total production in 1991 could increase by 15 Mtoe and net imports by almost 20 Mtoe. In 1992 production could increase by another 8 Mtoe and net imports by only 5 Mtoe.

In that case, total net imports could represent (on the basis of monthly data) about 49.8% of total primary energy consumption (including bunkers) in 1991, compared to 43.3% in 1985 and 49.5% in 1990. However in 1992 this ratio could decline to 49.5%, equal to its 1990 value. This would be the first time, since 1986, that the energy dependency of the Community decreased (Graph 13). In 1992 net oil imports could probably represent a larger part of total energy consumption than in 1984 (about 35.2%, as compared to 34.5% in 1984, but 35.8% in 1991, Table 4).

NOTE: This report is based on statistical data available as of 12 December 1991 and covering, with some minor exceptions, the second quarter of 1991. In all tables observed data are presented in boldface characters and forecasts in italics.



DATA AND DEFINITIONS

The short-term energy outlook is presented in nine tables:

Table 1 : Summary of main assumptions and results, on an annual basis.

Table 2 : Macroeconomic, oil price and weather assumptions.

Historical values for macroeconomic variables are based on EUROSTAT figures, the average import oil price is estimated by DG XVII and degree-days are the weighted average (by the population) of degree-days in 9 Member States (Spain, Greece and Portugal are excluded). Those data, on a monthly basis, are published in the "Energy, Monthly Statistics" bulletin of EUROSTAT.

Table 3 : Energy prices

These figures are based on data collected by DG XVII and by the OECD.

Tables 4 to 7 : present energy data:

Table 4 : Primary energy balance sheet.

Table 5 : Oil and natural gas.

Table 6 : Solid fuels.

Table 7 : Electricity and heat.

The contents of these tables are discussed in Annex I.

Tables 8 and 9: Quarterly growth rates for main variables

Table 8 : Presents the quarterly growth rates for main variables relative to the same quarter of the previous year.

Table 9 : Presents quarterly year-to-date growth rates for the same variables.

Short-term energy outlook on PC diskette

DG XVII is now offering all the historical data and forecasts published in the short-term energy outlook on PC floppy disk. You can now consult these data on your personal computer.

For more information please contact the editor.

TABLE 2 - EUR 12
Macroeconomic, Oil price, and Weather Assumptions
(Data available the 12 December 1991)

	1Q90	2Q90	3Q90	4Q90	1Q91	2Q91	3Q91	4Q91	1Q92	2Q92	3Q92	4Q92	1984	1985	1986	Year 1987	1988	1989	1990	1991	1992
A. Macroeconomic Variables																					
1. Gross Domestic Product (GDP)																					
(1985=100)	115.5	115.9	116.6	116.6	116.7	117.4	118.1	118.5	118.9	119.9	120.7	121.5	97.5	100.0	102.8	105.5	109.7	113.1	116.2	117.7	120.3
Percentage change																					
from prior year	3.2	2.7	2.8	2.0	1.0	1.3	1.3	1.6	1.9	2.1	2.2	2.6	2.3	2.6	2.8	2.6	3.9	3.1	2.7	1.3	2.2
from prior quarter(x4)	4.2	1.4	2.4	0.0	0.3	2.4	2.4	1.2	1.5	3.2	2.8	2.8									
2. Private Consumption																					
(1985=100)	118.0	119.0	119.4	119.9	120.3	121.0	121.2	121.9	122.5	123.2	123.9	124.6	97.5	100.0	104.3	108.2	112.4	115.6	119.1	121.1	123.5
Percentage change																					
from prior year	3.1	3.2	3.0	2.7	1.9	1.7	1.5	1.7	1.8	1.8	2.2	2.2	1.6	2.6	4.3	3.7	3.9	2.8	3.0	1.7	2.0
from prior quarter(x4)	4.5	3.4	1.3	1.7	1.3	2.3	0.6	2.5	1.7	2.3	2.2	2.5									
3. Industrial Production																					
(1985=100)	117.9	116.1	104.9	119.5	118.5	116.2	105.4	120.1	121.6	119.2	108.2	123.2	96.4	99.8	102.2	104.1	108.6	112.6	114.6	115.1	118.0
Percentage change																					
from prior year	3.0	1.9	1.9	0.5	0.5	0.1	0.5	0.5	2.6	2.6	2.6	2.6	2.4	3.5	2.4	1.9	4.2	3.7	1.8	0.4	2.6
from prior quarter(x4)	-3.4	-6.1	-38.6	55.7	-3.3	-7.8	-37.1	55.7	4.9	-7.8	-37.1	55.7									
4. Steel Production																					
(1985=100)	104.6	104.0	96.1	99.1	101.4	103.6	91.5	98.1	100.9	103.6	91.5	98.6	99.1	99.9	92.7	93.0	101.4	103.0	101.0	98.7	98.6
Percentage change																					
from prior year	-1.5	-3.2	-2.9	-0.1	-3.1	-0.4	-4.8	-1.0	-0.5	0.0	0.0	0.5	22.6	0.8	-7.2	0.3	9.0	1.6	-1.9	-2.3	0.0
from prior quarter(x4)	21.8	-2.3	-30.4	12.5	9.3	8.7	-46.7	28.9	11.4	10.7	-46.7	31.0									
5. Chemical Indus.,NACE 25																					
(1985=100, SA)	116.8	114.9	116.3	116.3	116.2	116.6	117.1	116.6	117.3	118.5	121.1	121.3	97.3	99.8	100.4	104.3	110.7	114.6	116.1	116.6	119.5
Percentage change																					
from prior year	2.0	0.9	2.0	0.3	-0.6	1.5	0.7	0.3	1.0	1.6	3.4	4.0	6.4	2.6	0.6	3.8	6.2	3.5	1.3	0.5	2.5
from prior quarter(x4)	3.0	-6.6	4.9	0.0	-0.4	1.5	1.7	-1.5	2.3	3.9	8.8	0.8									
6. Consumer Price Index																					
(1985=100)	120.2	122.3	123.8	125.6	126.8	128.4	129.9	131.6	132.9	134.4	136.0	136.9	94.3	100.0	103.5	106.9	110.7	116.4	123.0	129.2	135.1
Percentage change																					
from prior year	5.3	5.4	5.8	6.0	5.5	5.0	4.9	4.8	4.8	4.7	4.7	4.0	7.2	6.0	3.5	3.2	3.6	5.2	5.6	5.0	4.5
from prior quarter(x4)	5.7	7.0	4.9	5.8	3.8	5.0	4.7	5.3	3.8	4.7	4.7	2.6									
7. Exchange Rate																					
(1 ECU = xx US $)	1.206	1.223	1.296	1.367	1.341	1.188	1.177	1.260	1.260	1.260	1.260	1.260	0.790	0.762	0.983	1.154	1.184	1.102	1.273	1.242	1.260
Percentage change																					
from prior quarter	6.9	1.4	6.0	5.5	-1.9	-11.4	-0.9	7.1	0.0	0.0	0.0	0.0	-11.4	-3.5	29.0	17.4	2.5	-6.9	15.6	-2.5	1.5
B. Oil Prices																					
Imported Crude Oil																					
(cif, USD/barrel)	19.46	15.32	24.03	32.77	21.09	17.94	18.68	20.00	19.00	18.00	17.00	18.00	28.98	27.54	14.51	17.87	14.78	17.61	22.89	19.43	18.00
Percentage change																					
from prior quarter	5.1	-21.3	56.8	36.4	-35.6	-15.0	4.2	7.0	-5.0	-5.3	-5.6	5.9	-3.7	-5.0	-47.3	23.2	-17.3	19.2	30.0	-15.1	-7.4
C. Weather																					
Degree Days	996	346	0	901	1201	471	0	1011	1254	432	0	1011	2746	2803	2710	2774	2409	2376	2243	2683	2697
Difference from average	-258	-86	0	-110	-53	39	0	0	0	0	0	0	49	106	13	77	-288	-321	-454	-14	0

Sources: EUROSTAT, DG XVII

TABLE 3 - EUR 12
Energy Prices
(Last revision: 17 December 1991)

	1Q90	2Q90	3Q90	4Q90	1Q91	2Q91	3Q91	4Q91	1Q92	2Q92	3Q92	4Q92	1984	1985	1986	Year 1987	1988	1989	1990	1991	1992
A. IMPORT PRICES																					
A1. Crude Oil (cif)																					
USD/barrel	19.46	15.32	24.03	32.77	21.09	17.94	18.68	20.00	19.00	18.00	17.00	18.00	28.98	27.54	14.51	17.87	14.78	17.61	22.89	19.43	18.00
ECU/barrel	16.13	12.53	18.54	23.97	15.73	15.10	15.87	15.87	15.08	14.29	13.49	14.29	36.77	36.40	14.91	15.50	12.48	16.00	17.79	15.64	14.29
Growth rate from previous quarter, in %																					
USD/barrel	5.1	-21.3	56.8	36.4	-35.6	-15.0	4.2	7.0	-5.0	-5.3	-5.6	5.9	-3.7	-5.0	-47.3	23.2	-17.3	19.2	30.0	-15.1	-7.4
ECU/barrel	-1.7	-22.4	48.0	29.3	-34.4	-4.0	5.1	0.0	-5.0	-5.3	-5.6	5.9	8.8	-1.0	-59.0	3.9	-19.5	28.2	11.2	-12.1	-8.7
Real prices in ECU																					
(in 1985 prices)	13.4	10.2	15.0	19.1	12.4	11.8	12.2	12.1	11.3	10.6	9.9	10.4	39.0	36.4	14.4	14.5	11.3	13.7	14.4	12.1	10.6
(in 1990 prices)	16.5	12.6	18.4	23.5	15.3	14.5	15.0	14.8	14.0	13.1	12.2	12.8	47.9	44.8	17.7	17.8	13.9	16.9	17.7	14.9	13.0
Growth rate from previous quarter, in %																					
(in real ECU)	-3.1	-23.7	46.2	27.5	-35.0	-5.2	3.9	-1.3	-5.9	-6.4	-6.6	5.2	1.5	-6.5	-60.4	0.5	-22.2	21.8	5.0	-16.1	-12.6
A2. Steam Coal																					
USD/tce	53.1	53.5	55.2	55.3	52.2	51.1	51.3	53.7	53.6	52.1	51.6	52.5	51.0	51.6	48.3	43.1	46.4	50.2	54.3	52.1	52.5
ECU/tce	44.0	43.7	42.6	40.5	38.9	43.0	43.6	42.6	42.5	41.3	41.0	41.7	64.7	68.2	49.3	37.4	39.3	45.6	42.7	42.0	41.6
Growth rate from previous quarter, in %																					
USD/tce	1.9	0.8	3.3	0.2	-5.7	-2.1	0.5	4.6	-0.3	-2.7	-0.9	1.8	-11.5	1.2	-6.4	-10.8	7.6	8.2	8.1	-4.0	0.7
ECU/tce	-4.7	-0.6	-2.5	-5.0	-3.9	10.5	1.5	-2.3	-0.3	-2.7	-0.9	1.8	0.0	5.3	-27.7	-24.2	5.1	16.1	-6.3	-1.5	-1.0
Real prices in ECU																					
(in 1985 prices)	36.6	35.7	34.4	32.2	30.7	33.5	33.6	32.4	32.0	30.7	30.1	30.5	68.6	68.2	47.7	35.0	35.4	39.1	34.7	32.5	30.8
(in 1990 prices)	45.0	43.9	42.3	39.6	37.7	41.2	41.3	39.8	39.3	37.8	37.1	37.5	84.3	83.9	58.6	43.0	43.6	48.1	42.7	40.0	37.9
Growth rate from previous quarter, in %																					
(in real ECU)	-6.0	-2.4	-3.7	-6.3	-4.8	9.1	0.3	-3.5	-1.3	-3.9	-2.0	1.1	-6.8	-0.5	-30.2	-26.6	1.4	10.4	-11.2	-6.3	-5.2
B. FINAL CONSUMER PRICES																					
B1. Oil Products																					
Gasoline (ECU/1000 lt)	670	681	730	753	709	744	784	776	774	770	775	785	723.0	752.6	624.6	615.2	613.0	669.4	708.2	753.2	776.3
Diesel (ECU/1000 lt)	433	425	449	509	511	480	506	511	510	511	510	512	481.2	506.1	396.7	386.2	381.1	411.0	453.7	502.1	510.9
Heating Oil (ECU/1000lt)	286	277	320	375	389	323	333	358	345	338	339	332	370.9	395.4	257.9	248.4	232.6	273.5	314.6	350.8	338.6
Residual Fuel Oil (ECU/t)	118	104	119	142	132	108	105	114	109	104	101	103	242.7	243.8	122.1	117.2	93.8	111.3	120.7	114.7	104.3
Growth rate from previous quarter, in %																					
Gasoline	0.6	1.7	7.2	3.2	-5.9	5.0	5.3	-1.0	-0.2	-0.5	0.6	1.3	4.9	4.1	-17.0	-1.5	-0.4	9.2	5.8	6.4	3.1
Diesel	0.8	-1.7	5.5	13.4	0.5	-6.2	5.6	1.0	-0.3	0.3	-0.3	0.5	5.5	5.2	-21.6	-2.7	-1.3	7.8	10.4	10.7	1.8
Heating Oil	-4.7	-3.2	15.7	17.0	3.9	-17.0	3.0	7.6	-3.6	-2.2	0.4	-1.9	5.6	6.6	-34.8	-3.7	-6.3	17.6	15.0	11.5	-3.5
Residual Fuel Oil	-5.8	-11.8	14.8	18.6	-7.0	-18.0	-2.4	8.0	-4.5	-3.9	-3.5	2.5	18.1	0.4	-49.9	-4.0	-20.0	18.6	8.4	-4.9	-9.1
B2. Natural Gas																					
Households (1984 =100)	91.3	94.2	98.9	96.7	100.7	104.9	110.0	104.9	106.7	108.9	111.6	107.1	100.0	105.4	97.2	81.6	83.7	87.7	95.3	105.1	108.6
Industry (1984 =100)	63.0	63.3	62.3	64.2	68.4	70.6	71.3	70.0	70.0	69.1	67.8	67.3	100.0	104.6	74.8	57.6	52.4	56.4	63.2	70.1	68.6
Growth rate from previous quarter, in %																					
Households	4.5	3.1	5.0	-2.2	4.1	4.2	4.8	-4.6	1.7	2.1	2.4	-4.0	4.4	5.4	-7.8	-16.0	2.5	4.7	8.7	10.3	3.3
Industry	6.3	0.6	-1.6	3.0	6.5	3.2	1.0	-1.8	0.0	-1.3	-1.8	-0.7	10.8	4.6	-28.5	-22.9	-9.2	7.7	12.0	10.9	-2.2
B3. Coal																					
Households (ECU/t)	199.1	192.4	198.3	206.7	211.5	206.5	209.0	213.8	216.2	213.3	213.9	218.2	199.0	207.3	203.6	199.6	201.8	205.2	199.1	210.2	215.4
Industry (ECU/t)	93.4	92.8	93.2	92.8	93.4	93.1	92.7	92.2	92.2	91.7	91.2	90.8	102.0	104.3	98.6	95.8	93.8	93.9	93.1	92.9	91.5
Growth rate from previous quarter, in %																					
Households	-3.9	-3.4	3.0	4.3	2.3	-2.4	1.2	2.3	1.1	-1.4	0.3	2.0	9.3	4.1	-1.8	-1.9	1.1	1.7	-3.0	5.5	2.5
Industry	-1.4	-0.7	0.4	-0.4	0.7	-0.3	-0.4	-0.5	0.0	-0.6	-0.5	-0.4	2.9	2.3	-5.5	-2.8	-2.1	0.1	-0.9	-0.2	-1.5
B4. Electricity																					
Households (ECU/100 Kwh)	11.28	11.49	11.26	11.66	11.86	12.07	12.30	12.28	12.34	12.46	12.74	12.81	10.39	10.75	10.53	10.47	10.76	11.16	11.42	12.13	12.59
Industry (ECU/100 Kwh)	6.38	6.22	6.25	6.32	6.55	6.50	6.57	6.79	6.89	6.72	6.75	7.00	5.91	6.11	5.92	5.87	5.94	6.18	6.29	6.60	6.84
Growth rate from previous quarter, in %																					
Households	0.0	1.9	-2.0	3.5	1.8	1.8	1.9	-0.1	0.5	1.0	2.2	0.6	6.5	3.5	-2.1	-0.5	2.7	3.7	2.4	6.2	3.8
Industry	-0.1	-2.6	0.5	1.2	3.6	-0.8	1.0	3.5	1.4	-2.4	0.5	3.7	4.4	3.4	-3.0	-0.9	1.1	4.1	1.8	4.9	3.6

Sources: IEA, DG XVII estimate

TABLE 4 - EUR 12
Primary Energy Balance and Final Consumption (million toe)
(Last revision: 17 December 1991)

	1Q90	2Q90	3Q90	4Q90	1Q91	2Q91	3Q91	4Q91	1Q92	2Q92	3Q92	4Q92	Year 1984	1985	1986	1987	1988	1989	1990	1991	1992
Primary Production																					
Solid Fuels:	38.8	38.5	37.8	37.6	38.6	38.1	36.3	36.6	37.7	37.0	35.6	35.8	143.8	168.4	172.7	166.6	161.8	159.8	152.6	149.6	146.1
Hard Coal	30.6	30.1	29.4	29.1	30.1	29.5	28.1	28.1	29.0	28.5	27.0	27.1	106.1	132.5	138.6	134.1	129.7	126.0	119.2	115.8	111.7
Lignite	8.2	8.4	8.3	8.5	8.5	8.6	8.2	8.5	8.6	8.5	8.5	8.7	37.7	35.9	34.0	32.5	32.2	33.8	33.4	33.8	34.4
Oil	30.7	30.3	27.2	28.8	29.1	25.1	30.9	32.3	32.3	28.0	28.6	32.0	146.1	149.8	150.8	148.6	140.7	117.3	117.0	117.4	120.9
Natural Gas	41.1	25.5	21.0	41.9	46.4	30.0	22.1	42.4	48.1	29.4	22.2	43.3	119.4	126.7	123.6	128.5	118.4	123.9	129.6	141.0	143.1
Heat:	41.2	37.4	37.3	42.7	45.3	37.0	38.4	42.4	45.0	40.7	39.5	42.4	103.3	125.6	134.0	137.8	147.6	159.2	158.5	163.0	167.6
Nuclear	40.7	36.9	36.8	42.2	44.8	36.5	37.9	41.9	44.5	40.2	39.0	41.9	101.6	123.9	132.2	135.9	145.8	157.3	156.5	161.1	165.6
Geothermy	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.8	1.7	1.7	1.8	1.8	1.9	2.0	2.0	2.0
Primary Electricity	3.5	3.2	2.6	3.2	3.9	3.9	2.7	3.4	4.0	4.0	3.1	3.8	15.0	14.6	14.2	15.0	16.5	11.3	12.5	13.8	14.9
Other	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.7	0.8	0.7	0.7	0.7	1.7	1.8	1.7	2.2	2.6	2.5	2.6	2.8	2.9
TOTAL	156.0	135.4	126.5	154.8	164.1	134.7	131.1	157.7	167.8	139.9	129.7	158.0	529.3	586.9	596.9	598.7	587.8	573.9	572.6	587.6	595.4
Recovered Production																					
Hard Coal	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	2.4	3.3	3.1	2.3	2.3	1.8	2.2	2.4	2.4
Oil	0.2	0.3	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	1.6	1.2	1.3	1.3	0.7	0.5	0.7
TOTAL	0.7	0.8	0.7	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.7	0.7	2.7	3.6	4.7	3.5	3.6	3.1	2.9	2.9	3.0
Net Imports																					
Solid Fuels:	18.9	18.9	18.0	20.6	18.9	20.8	18.7	22.2	21.7	20.9	19.1	24.2	57.9	63.5	60.7	60.5	62.1	66.8	76.5	80.6	85.8
Hard Coal	18.6	18.7	17.8	20.4	18.7	20.6	18.4	21.7	21.8	20.5	18.8	23.4	56.7	63.3	60.3	59.5	61.4	66.6	75.4	79.4	84.5
Oil	100.1	103.1	105.4	100.3	110.6	104.9	104.1	102.6	97.9	107.0	110.8	105.2	350.0	333.5	356.4	357.6	368.8	399.3	409.0	422.2	420.9
Natural Gas	22.4	19.0	17.0	22.4	22.2	21.7	16.4	23.3	24.6	20.7	15.9	23.6	57.0	59.1	64.8	71.8	73.0	78.1	80.9	83.5	84.7
Electricity	0.1	0.6	0.4	0.2	0.1	0.3	0.5	0.3	0.2	0.4	0.6	0.2	1.5	1.2	1.2	1.6	1.8	1.6	1.3	1.1	1.3
TOTAL	141.6	141.7	140.9	143.5	151.8	147.7	139.6	148.3	144.3	148.9	146.3	153.2	466.5	457.3	483.1	491.5	505.6	545.8	567.6	587.4	592.7
Change in Stocks																					
Solid Fuels:	-2.7	3.4	2.8	-4.7	-3.7	2.6	4.0	-3.8	-4.0	3.6	3.9	-4.1	-15.2	-4.1	5.8	-2.6	-0.7	-2.2	-1.2	-0.9	-0.5
Hard Coal	-2.8	3.3	2.7	-4.7	-4.1	2.9	3.9	-3.5	-3.6	3.8	3.6	-3.9	-12.4	-0.4	4.4	-4.2	1.1	-0.2	-1.4	-0.8	0.0
Coke	0.0	0.1	0.1	-0.1	0.3	-0.2	0.1	-0.4	-0.4	-0.3	0.2	-0.2	-3.5	-2.6	1.5	0.9	-1.5	-2.0	0.2	-0.1	-0.6
Oil	-2.1	4.4	2.5	-5.0	2.7	-1.9	5.2	-0.9	-5.4	2.8	6.0	-1.8	-3.5	0.7	4.7	2.1	-1.7	4.5	-0.2	5.2	1.6
Natural Gas	-4.2	3.8	5.1	-2.2	-7.3	2.2	5.0	-2.4	-5.2	3.7	3.4	-4.3	0.1	1.3	1.6	1.4	0.3	2.2	2.5	-2.5	-2.5
TOTAL	-9.0	11.7	10.4	-11.9	-8.3	2.9	14.2	-7.0	-14.6	10.1	13.3	-10.1	-18.5	-2.1	12.1	0.8	-2.1	4.4	1.2	1.9	-1.4
Bunkers	7.8	8.4	8.2	8.2	7.9	8.2	8.4	7.9	8.0	8.3	8.3	7.7	23.8	26.2	30.5	29.5	30.5	30.2	32.6	32.4	32.3
Apparent Gross Consumption																					
Solid Fuels:	61.0	54.5	53.5	63.3	61.8	56.9	51.6	63.1	63.9	54.8	51.3	64.6	219.3	239.3	230.7	231.9	226.9	230.5	232.2	233.4	234.7
Hard Coal	52.5	45.9	45.0	54.6	53.5	47.8	43.2	53.8	55.1	45.7	42.7	54.9	177.7	199.6	197.6	200.0	192.2	194.5	198.0	198.3	198.4
Coke	0.0	-0.1	-0.1	0.1	-0.3	0.3	-0.1	0.5	0.3	0.3	-0.1	0.6	2.7	1.3	-2.5	-1.1	1.2	1.1	-0.1	0.4	1.0
Lignite	8.5	8.6	8.6	8.6	8.6	8.8	8.5	8.8	8.6	8.8	8.7	9.1	38.8	38.4	35.6	33.1	33.5	34.9	34.3	34.7	35.2
Oil	125.3	120.8	122.1	126.0	129.2	123.8	121.5	128.0	127.8	124.0	125.2	131.4	476.2	456.8	473.7	475.9	482.0	483.2	494.2	502.4	508.5
Natural Gas	67.7	40.7	33.0	66.5	75.9	49.5	33.5	68.1	77.9	46.5	34.7	71.2	176.2	184.5	186.8	198.9	191.1	199.8	207.9	226.9	230.3
Heat	41.2	37.4	37.3	42.7	45.3	37.0	38.4	42.4	45.0	40.7	39.5	42.4	103.3	125.6	134.0	137.8	147.6	159.2	158.5	163.0	167.6
Primary Electricity	3.6	3.8	3.0	3.4	3.9	4.1	3.2	3.6	4.1	4.4	3.7	3.9	16.5	15.8	15.4	16.5	18.3	12.9	13.8	14.9	16.1
Other	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.7	0.8	0.7	0.7	0.7	1.7	1.8	1.7	2.2	2.6	2.5	2.6	2.8	2.9
TOTAL	299.5	257.7	249.4	302.5	316.8	272.0	248.8	305.8	319.6	271.2	255.1	314.2	993.2	1023.7	1042.2	1063.2	1068.5	1088.1	1109.2	1143.5	1160.1
Adjustment to Annual Figures																					
Solid Fuels	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	-0.3	0.9	-0.7	-0.1	0.6	2.0	1.4	1.4
Oil	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	-4.2	5.8	0.4	0.8	6.1	8.5	3.2	3.0	3.0
Natural Gas	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.1	-0.9	1.4	1.7	-0.2	0.0	0.0
Heat	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	-0.2	0.1	0.4	1.2	-0.3	0.7	0.0	0.0
Primary Electricity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0
TOTAL	1.5	1.5	1.5	1.5	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	-2.6	5.5	1.4	-0.4	8.6	10.6	5.9	4.4	4.4
Gross Inland Consumption																					
Solid Fuels	61.5	55.0	54.0	63.8	62.2	57.2	51.9	63.5	64.3	55.2	51.7	64.9	219.7	239.0	231.5	231.3	226.8	231.1	234.2	234.8	236.1
Oil	126.1	121.6	122.9	126.8	129.9	124.5	122.3	128.7	128.6	124.8	126.0	132.2	472.0	462.6	474.0	476.7	488.1	491.8	497.4	505.4	511.5
Natural Gas	67.7	40.6	32.9	66.5	75.9	49.5	33.5	68.1	77.9	46.5	34.7	71.2	176.7	184.7	186.9	198.1	192.6	201.5	207.7	226.9	230.3
Heat	41.4	37.5	37.4	42.8	45.3	37.0	38.4	42.4	45.0	40.7	39.5	42.4	104.0	125.3	134.0	138.1	148.8	158.9	159.2	163.0	167.6
Primary Electricity	3.6	3.8	3.1	3.4	3.9	4.1	3.2	3.6	4.1	4.4	3.7	3.9	16.6	15.8	15.4	16.5	18.3	13.0	13.9	14.9	16.1
Other	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.7	0.8	0.7	0.7	0.7	1.7	1.8	1.7	2.2	2.6	2.5	2.6	2.8	2.9
TOTAL	301.0	259.2	250.9	304.0	317.9	273.1	249.9	306.9	320.7	272.3	256.2	315.3	990.6	1029.2	1043.6	1062.8	1077.1	1098.7	1115.1	1147.9	1164.5
Net imports as % of consumption																					
Hard Coal	35.2	40.4	39.2	37.1	34.7	42.8	42.3	40.1	39.4	44.5	43.5	42.4	32.0	31.7	30.4	29.9	32.0	34.3	37.8	39.8	42.3
Oil	74.8	79.3	80.4	74.3	80.2	79.1	79.7	75.1	71.7	80.4	82.5	75.2	70.6	68.2	70.7	70.6	71.1	76.5	77.2	78.5	77.4
Natural Gas	33.1	46.8	51.7	33.7	29.3	43.8	48.8	34.2	31.5	44.6	45.7	33.1	32.3	32.0	34.7	36.3	37.9	38.7	38.9	36.8	36.8
TOTAL	45.9	52.9	54.4	46.0	46.6	52.5	54.1	47.1	43.9	53.1	55.3	47.4	46.0	43.3	45.0	45.0	45.6	48.3	49.5	49.8	49.5
Oil imports as % of total energy consumption																					
	32.4	38.5	40.7	32.1	33.9	37.3	40.3	32.6	29.8	38.1	41.9	32.6	34.5	31.6	33.2	32.7	33.3	35.4	35.6	35.8	35.2
Estimated Final Consumption																					
Solid Fuels	13.5	13.3	12.5	14.1	13.3	13.6	11.9	14.1	12.7	13.1	11.7	13.8	61.0	67.9	61.0	59.2	56.0	57.1	53.5	53.0	51.3
Oil	106.2	102.1	107.5	105.6	109.5	106.4	103.9	108.3	108.2	106.7	107.4	110.8	395.2	391.4	407.5	409.5	420.1	416.3	421.5	428.1	433.1
Natural Gas	58.4	32.7	25.0	56.0	66.4	41.3	26.2	56.6	66.5	39.0	27.7	59.2	145.4	155.2	156.9	166.5	161.7	166.8	172.0	190.6	192.3
Derived Gas	2.9	2.7	2.4	2.7	2.7	2.7	2.4	2.6	2.7	2.6	2.3	2.3	12.8	13.2	12.1	11.6	11.5	11.5	10.7	10.4	9.9
Heat	1.4	1.2	1.2	1.4	1.4	1.2	1.2	1.5	1.5	1.2	1.2	1.6	3.9	4.4	4.4	5.2	4.7	5.0	5.1	5.3	5.5
Electricity	35.1	30.9	29.8	35.5	37.1	32.1	30.0	36.2	38.3	32.5	30.8	37.5	108.7	112.8	115.9	120.4	123.8	128.3	131.4	135.4	139.1
TOTAL	217.6	182.8	178.5	215.3	230.5	197.3	175.7	219.3	229.8	195.1	180.9	225.2	727.0	744.8	757.7	772.4	777.9	785.0	794.2	822.8	831.1
for memory: SOEC Annual data																					
Available for Final Consumption													723.1	748.0	754.4	773.9	778.5	784.1	797.6		
Total Non-energy Consumption													69.9	69.5	69.5	69.7	75.1	75.6	72.4		
Total Energy Consumption													655.8	676.4	689.3	704.4	707.3	712.8	723.2		
Total Final Consumption													725.7	745.9	758.8	774.1	782.4	788.3	795.7		
Statistical Error													-2.7	2.1	-4.4	-0.2	-3.9	-4.2	1.9		

TABLE 5 - EUR 12
Oil and Natural Gas: Supply and Disposal
(Last revision: 17 December 1991)

	1Q90	2Q90	3Q90	4Q90	1Q91	2Q91	3Q91	4Q91	1Q92	2Q92	3Q92	4Q92	1984	1985	1986	Year 1987	1988	1989	1990	1991	1992
1. OIL (Million tonnes)																					
Primary Production	30.3	29.9	26.8	28.4	28.7	24.7	30.5	31.8	31.8	27.6	28.2	31.6	144.0	147.7	148.5	146.4	138.6	115.6	115.3	115.7	119.2
of which: Crude	29.3	29.0	26.4	27.9	28.1	24.0	29.7	30.9	30.8	26.8	27.4	30.5	140.3	144.2	143.7	141.2	134.4	111.9	112.6	112.7	115.5
Oil products	0.9	0.9	0.4	0.5	0.7	0.7	0.8	1.0	1.0	0.8	0.8	1.0	3.7	3.5	4.8	5.2	4.2	3.7	2.8	3.1	3.7
Recovered Production	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.5	1.1	1.2	1.2	0.6	0.4	0.6
Change in Stocks	-2.2	4.5	2.6	-5.1	2.8	-2.0	5.2	-0.9	-5.4	2.8	6.0	-1.8	-3.5	0.7	4.8	2.0	-1.7	4.6	-0.2	5.2	1.6
Net Imports	99.8	102.6	105.0	100.0	110.2	104.4	103.6	102.1	97.5	106.5	110.2	104.7	349.5	332.6	355.4	356.6	367.5	397.7	407.3	420.2	418.8
Bunkers	8.0	8.7	8.4	8.5	8.2	8.4	8.7	8.2	8.3	8.6	8.5	8.0	24.5	27.0	31.4	30.4	31.5	31.1	33.6	33.4	33.3
Apparent Consumption	124.4	119.5	120.9	125.0	128.0	122.8	120.3	126.7	126.6	122.9	124.0	130.2	472.7	452.9	469.2	471.6	477.6	478.7	489.9	497.8	503.7
Adjustment	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	-2.3	7.3	1.7	1.5	6.6	8.9	3.0	3.0	3.0
Gross Inland Consumption	125.1	120.3	121.7	125.8	128.8	123.5	121.0	127.5	127.4	123.6	124.8	131.0	470.4	460.1	470.9	473.1	484.2	487.6	492.9	500.8	506.7
Transformation Input	135.1	139.7	141.4	134.4	139.0	136.3	143.5	144.1	138.9	139.1	144.1	145.7	517.7	492.3	515.6	506.0	526.4	536.4	550.7	562.9	567.8
of which:																					
Refineries	122.4	129.1	131.1	123.7	127.4	125.9	133.3	131.9	126.7	129.1	133.8	132.8	462.3	448.9	476.1	467.0	488.2	492.0	506.3	518.5	522.5
Power Generation	12.4	10.3	10.0	10.4	11.3	10.0	9.9	11.8	11.9	9.6	10.0	12.6	52.9	41.3	37.3	37.3	36.7	42.8	43.0	43.1	44.0
Refineries Gross Output	121.2	127.5	129.9	121.9	126.3	125.2	132.6	131.3	126.0	128.3	133.0	132.0	456.6	444.6	473.1	464.2	485.6	489.2	500.5	515.4	519.3
Refineries Consumption	7.4	7.5	7.6	7.5	7.6	7.5	7.7	7.9	7.8	7.6	7.8	8.0	25.7	24.8	27.4	27.2	28.1	29.3	29.9	30.7	31.1
Refineries Net Output	113.8	120.1	122.4	114.4	118.7	117.7	124.9	123.4	118.3	120.7	125.2	124.0	430.9	419.8	445.7	437.0	457.5	459.9	470.6	484.7	488.2
Avail.Final Consumption	103.8	100.6	102.6	105.7	108.5	104.9	102.5	106.8	106.7	105.3	105.9	109.3	383.5	387.6	401.0	404.1	415.3	411.2	412.8	422.7	427.1
Final Consumption (est)	104.6	100.4	105.7	103.9	107.8	104.6	102.5	106.8	106.7	105.3	105.9	109.3	390.1	385.8	401.6	403.3	413.7	409.7	414.6	421.8	427.1
Statistical Difference	-0.8	0.2	-3.1	1.8	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	-6.6	1.9	-0.7	0.8	1.6	1.5	-1.9	0.9	0.0
Inland Deliveries:																					
Motor Gasoline	24.8	26.7	27.6	25.9	24.2	27.0	28.3	26.5	24.5	27.5	28.8	27.0	91.6	91.2	95.5	97.9	101.3	102.8	105.0	106.0	107.9
Kerosenes	6.3	6.7	7.8	6.5	6.2	6.4	7.6	6.9	6.6	7.1	8.0	7.1	21.0	21.7	22.8	24.0	25.6	26.2	27.3	27.1	28.7
Gas/Diesel Oil-Total	45.4	39.5	41.8	43.9	49.1	42.8	39.1	44.6	47.6	42.1	40.8	46.5	155.9	162.3	169.9	168.5	170.1	166.0	170.6	175.6	177.0
of which:																					
Autom.Diesel	20.6	21.1	21.6	21.7	20.7	22.3	22.1	22.7	21.4	22.9	23.2	24.0	57.7	60.8	65.8	69.9	76.2	81.2	85.1	87.9	91.4
Heating Gas Oil	24.7	18.4	20.2	22.2	28.3	20.4	17.0	22.0	26.2	19.2	17.6	22.6	98.2	101.4	104.1	98.5	94.0	84.8	85.6	87.7	85.6
Heavy Fuel Oil	19.3	16.2	16.0	16.4	18.5	16.6	15.2	17.8	18.2	15.5	15.4	17.8	98.2	78.1	74.2	70.4	67.6	71.0	67.9	68.1	66.9
Other Products	21.7	21.9	22.8	21.8	21.6	22.1	22.5	23.1	22.0	23.0	23.1	23.8	78.9	76.0	78.8	81.6	87.4	88.1	88.2	89.3	91.9
TOTAL	117.3	111.0	116.0	114.6	119.5	115.0	112.7	119.0	118.9	115.2	116.2	122.2	445.6	429.2	441.1	442.3	451.9	454.0	459.0	466.1	472.4
Total Oil Stocks (end of period)	129.0	133.5	136.1	131.0	133.8	131.8	137.0	136.2	130.8	133.6	139.6	137.8	120.9	121.5	126.4	128.4	126.6	131.2	131.0	136.2	137.8
2. NATURAL GAS (Million toe)																					
Primary Production	41.1	25.5	21.0	41.9	46.4	30.0	22.1	42.4	48.1	29.4	22.2	43.3	119.4	126.7	123.6	128.5	118.4	123.9	129.6	141.0	143.1
Change in Stocks	-4.2	3.8	5.1	-2.2	-7.3	2.2	5.0	-2.4	-5.2	3.7	3.4	-4.3	0.1	1.3	1.6	1.4	0.3	2.2	2.5	-2.5	-2.5
Net Imports	22.4	19.0	17.0	22.4	22.2	21.7	16.4	23.3	24.6	20.7	15.9	23.6	57.0	59.1	64.8	71.8	73.0	78.1	80.9	83.5	84.7
Apparent Consumption	67.7	40.7	33.0	66.5	75.9	49.5	33.5	68.1	77.9	46.5	34.7	71.2	176.2	184.5	186.8	198.9	191.1	199.8	207.9	226.9	230.3
Adjustment	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.1	-0.9	1.4	1.7	-0.2	0.0	0.0
Gross Inland Consumption	67.7	40.6	32.9	66.5	75.9	49.5	33.5	68.1	77.9	46.5	34.7	71.2	176.7	184.7	186.9	198.1	192.6	201.5	207.7	226.9	230.3
of which:																					
Power Generation	6.7	6.4	6.6	8.0	6.5	6.3	6.0	8.8	8.4	5.7	5.7	9.2	24.8	22.7	21.9	23.8	23.6	26.8	27.7	27.5	29.0
Final Consumption (est)	58.4	32.7	25.0	56.0	66.4	41.3	26.2	56.6	66.5	39.0	27.7	59.2	145.4	155.2	156.9	166.5	161.7	166.8	172.0	190.6	192.3

TABLE 6 - EUR 12
Solid Fuels: Supply and Disposal (*)
(Last revision: 17 December 1991)

	1Q90	2Q90	3Q90	4Q90	1Q91	2Q91	3Q91	4Q91	1Q92	2Q92	3Q92	4Q92	1984	1985	1986	Year 1987	1988	1989	1990	1991	1992
1. HARD COAL (Million tonnes)																					
Primary Production	50.6	49.9	48.6	48.3	49.9	48.9	46.5	46.6	48.2	47.2	44.9	45.0	172.6	217.5	228.2	221.8	214.7	208.8	197.4	191.9	185.2
Recovered Production	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	5.4	7.4	6.8	5.0	5.0	4.1	5.2	5.6	5.6
Change in Stocks:																					
Collieries	-2.0	1.6	1.0	-3.0	-1.9	1.7	2.6	-2.7	0.3	1.8	0.3	-2.6	-8.0	-10.3	0.3	-2.8	1.2	0.8	-2.4	-0.2	-0.2
Power Plants	-2.5	3.6	3.8	-4.6	-5.3	2.8	3.7	-3.1	-6.4	4.5	5.7	-4.0	-13.0	8.2	8.2	-4.3	0.6	-1.8	0.3	-1.9	-0.2
Coking Plants	0.2	0.4	-0.5	-0.2	0.3	0.4	0.1	0.1	0.1	0.1	0.1	0.1	-0.4	1.4	-0.8	-0.1	0.1	0.4	-0.1	0.9	0.4
Total	-4.4	5.5	4.3	-7.7	-6.9	5.0	6.5	-5.8	-6.0	6.4	6.0	-6.5	-21.5	-0.7	7.6	-7.2	1.9	-0.6	-2.3	-1.2	0.0
Net Imports	28.1	28.1	27.0	30.9	28.1	31.2	27.9	32.9	33.1	31.1	28.4	35.5	86.4	96.4	91.8	90.9	93.3	101.5	114.1	120.1	128.1
Apparent Consumption	84.4	73.7	72.6	88.0	86.3	76.5	69.3	86.5	88.6	73.3	68.5	88.2	285.9	322.0	319.2	324.7	311.0	314.8	318.7	318.6	318.6
Adjustment	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	-0.5	-0.2	0.3	-0.9	0.6	0.5	1.9	2.0	2.0
Gross Inland Consumption	84.9	74.2	73.1	88.5	86.8	77.0	69.8	87.0	89.1	73.8	69.0	88.7	285.4	321.8	319.5	323.8	311.6	315.3	320.6	320.6	320.6
Transformation Input	75.7	63.9	62.0	78.1	77.9	68.5	61.1	76.4	78.7	64.0	60.2	78.1	245.7	272.9	276.9	280.0	270.4	273.1	279.6	283.9	280.9
of which:																					
Power Generation	57.6	46.4	45.6	60.4	61.3	50.8	45.1	60.4	63.1	48.5	45.1	63.0	167.9	188.2	195.4	205.1	196.1	200.4	210.0	217.6	219.7
Coke	17.7	17.1	16.0	17.0	16.0	17.1	15.6	15.4	15.0	15.1	14.7	14.6	75.1	81.3	78.1	71.9	71.7	70.8	67.7	64.1	59.4
Production Patent Fuels	0.4	0.4	0.4	0.6	0.6	0.5	0.4	0.5	0.5	0.4	0.3	0.5	3.1	3.6	3.2	3.0	2.5	1.6	1.8	2.0	1.6
Avail.Final Consumption	9.6	10.7	11.5	11.0	9.4	9.0	9.1	11.1	10.9	10.2	9.1	11.0	42.7	52.5	45.8	46.8	43.6	43.8	42.8	38.7	41.2
Final Consumption (est)	10.0	9.7	9.2	10.8	11.4	10.3	9.1	11.1	10.9	10.2	9.1	11.0	41.1	50.0	45.4	46.2	41.7	43.0	39.7	41.9	41.2
Industry	6.6	6.5	6.4	6.7	6.8	6.9	6.2	7.1	6.9	6.9	6.3	7.3	22.0	28.1	24.1	27.1	25.7	29.2	26.3	27.1	27.5
Domestic	3.4	3.2	2.8	4.1	4.5	3.4	2.9	4.0	4.0	3.2	2.8	3.7	19.0	21.9	21.3	19.1	16.0	13.8	13.4	14.9	13.8
Statistical Difference	-0.5	1.0	2.3	0.2	-1.9	-1.3	0.0	0.0	0.0	0.0	0.0	0.0	1.7	2.5	0.4	0.6	1.9	0.8	3.1	-3.3	0.0
Deliveries of Hard Coal to:																					
Power Plants	53.1	48.0	47.5	53.9	54.3	51.9	47.3	55.5	55.0	51.2	49.2	57.2	146.5	189.2	195.4	194.9	188.1	194.8	202.5	209.1	212.7
Coking Plants	17.7	17.1	16.0	17.0	16.0	17.1	15.6	15.4	15.0	15.1	14.7	14.6	75.1	81.3	78.1	71.9	71.7	70.8	67.7	64.1	59.4
Patent Plants	0.4	0.4	0.4	0.7	0.6	0.6	0.4	0.6	0.6	0.5	0.3	0.6	2.8	3.4	3.4	3.0	2.7	1.9	1.8	2.2	1.9
All Industries	8.3	8.3	8.1	8.5	8.4	8.5	7.6	8.8	8.5	8.5	7.7	8.9	28.8	33.6	30.9	31.5	32.9	32.2	33.3	33.2	33.7
Households	3.0	2.7	2.4	3.5	4.0	3.0	2.5	3.5	3.5	2.9	2.6	3.2	16.0	18.3	18.1	16.1	13.6	12.2	11.7	12.8	12.2
Other	0.3	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.6	1.8	1.4	1.6	1.5	0.8	0.8	0.5	0.5
TOTAL	82.8	76.7	74.5	83.7	83.4	81.2	73.5	83.9	82.7	78.3	74.7	84.7	270.7	327.5	327.3	319.0	310.4	312.7	317.8	322.0	320.3
Power Sector:																					
Deliv. to Power Plants	53.1	48.0	47.5	53.9	54.3	51.9	47.3	55.5	55.0	51.2	49.2	57.2	146.5	189.2	195.4	194.9	188.1	194.8	202.5	209.1	212.7
Industry	1.9	1.9	1.9	2.0	1.7	1.7	1.5	1.8	1.7	1.7	1.5	1.8	8.4	7.2	8.3	6.0	8.7	3.8	7.8	6.6	6.7
Total	55.1	50.0	49.4	55.9	56.0	53.6	48.8	57.3	56.7	53.0	50.7	59.0	154.9	196.4	203.6	200.8	196.8	198.6	210.3	215.8	219.4
Change in Stocks	-2.5	3.6	3.8	-4.6	-5.3	2.8	3.7	-3.1	-6.4	4.5	5.7	-4.0	-13.0	8.2	8.2	-4.3	0.6	-1.8	0.3	-1.9	-0.2
Consumption in Power																					
Stations	57.6	46.4	45.6	60.4	61.3	50.8	45.1	60.4	63.1	48.5	45.1	63.0	167.9	188.2	195.4	205.1	196.1	200.4	210.0	217.6	219.7
2. HARD COKE (Million tonnes)																					
oking Plants																					
Production	12.6	12.6	12.5	12.4	12.0	11.8	11.6	11.4	11.0	11.1	10.9	10.8	56.2	60.8	58.4	53.8	52.9	52.7	50.1	46.8	43.8
Change in Stocks	0.0	0.2	0.2	-0.1	0.5	-0.3	0.2	-0.5	-0.6	-0.4	0.4	-0.3	-5.2	-3.9	2.2	1.4	-2.2	-3.0	0.3	-0.1	-0.9
Deliveries to the Iron																					
and Steel Industry	11.3	11.3	11.0	10.4	10.9	10.9	10.1	10.2	10.3	10.3	9.6	9.7	52.1	53.2	47.9	45.0	47.1	47.1	44.0	42.1	39.8
Final Consumption	8.3	8.1	8.0	8.4	7.8	8.0	7.4	8.2	7.4	7.5	7.0	7.9	43.0	44.3	38.9	35.6	36.1	36.2	32.9	31.4	29.8
3. LIGNITE (Million tonnes)																					
Production	45.8	47.0	46.8	47.2	47.2	48.0	45.8	47.2	47.9	47.5	47.4	48.5	196.4	186.8	183.0	179.8	179.8	188.7	186.8	188.2	191.3
Gross Inland Consumption	46.5	47.6	47.4	47.5	47.6	48.5	46.4	47.9	47.9	48.2	47.7	49.3	197.9	195.6	187.5	180.2	183.9	191.5	189.1	190.5	193.1
Consumption in Power																					
Stations	40.3	41.1	42.2	41.8	44.2	42.4	41.3	42.0	44.4	41.8	42.6	43.4	174.1	170.9	162.7	156.4	163.8	168.9	165.3	169.9	172.2

(*) NOTES:
1) Final demand figures for hard coal include patent fuels
2) From 1987 Spanish black lignite («negro») is included in hard coal figure

TABLE 7 - EUR 12
Electricity: Generation and Disposal
(Last revision: 17 December 1991)

	1Q90	2Q90	3Q90	4Q90	1Q91	2Q91	3Q91	4Q91	1Q92	2Q92	3Q92	4Q92	Year 1984	1985	1986	1987	1988	1989	1990	1991	1992
1. ELECTRICAL POWER (TWh)																					
A.GENERATION																					
Total Gross Generation	483.7	418.0	408.3	489.0	511.6	439.2	409.5	497.6	526.0	444.8	418.6	516.4	1499.9	1571.1	1612.0	1659.3	1706.7	1755.1	1799.1	1857.9	1905.9
(Produced by Pumping)	3.3	3.3	3.4	3.8	3.4	3.2	3.2	3.4	3.1	3.2	3.0	3.2	12.2	13.6	12.5	11.9	12.5	13.7	13.8	13.1	12.6
net of Pumping	480.4	414.7	404.9	485.2	508.3	436.0	406.3	494.2	522.9	441.7	415.6	513.2	1487.7	1557.5	1599.4	1647.4	1694.2	1741.4	1785.3	1844.7	1893.3
of which:																					
Primary (Hydro):	40.2	37.2	30.0	37.4	44.9	45.0	31.5	39.4	46.2	46.9	36.1	43.9	174.1	169.9	165.4	173.9	192.1	131.6	144.9	160.8	173.1
Derived:	440.2	377.5	374.9	447.8	463.3	390.9	374.8	454.8	476.7	394.7	379.4	469.4	1313.6	1387.6	1434.1	1473.4	1502.1	1609.8	1640.4	1683.9	1720.2
Nuclear	163.7	147.0	145.7	171.1	181.3	146.6	150.6	167.2	177.8	160.4	154.2	167.2	399.0	483.2	522.6	538.2	581.2	627.4	627.5	645.6	659.7
Conventional Thermal	275.8	229.7	228.4	275.8	281.3	243.6	223.5	286.8	298.0	233.5	224.4	301.3	911.7	901.7	908.7	932.2	917.8	979.3	1009.7	1035.2	1057.3
Geothermal	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	2.8	2.7	2.8	3.0	3.1	3.2	3.2	3.2	3.3
Total Net Production	456.7	395.4	384.6	461.8	483.0	415.0	385.8	469.6	496.6	420.0	394.3	487.3	1419.5	1486.3	1523.5	1567.8	1611.1	1656.4	1698.3	1753.4	1798.2
net of Pumping	453.4	392.0	381.1	458.0	479.7	411.8	382.6	466.3	493.5	416.8	391.2	484.1	1407.3	1472.7	1511.0	1555.8	1598.6	1642.7	1684.5	1740.3	1785.6
B.DISPOSAL																					
Total Gross Generation	483.7	418.0	408.3	489.0	511.6	439.2	409.5	497.6	526.0	444.8	418.6	516.4	1499.9	1571.1	1612.0	1659.3	1706.7	1755.1	1799.1	1857.9	1905.9
Net Imports	1.2	7.1	5.0	1.9	0.9	3.2	5.7	3.0	1.9	4.1	6.8	1.8	18.0	14.3	13.7	18.5	20.5	18.9	15.2	12.8	14.7
Gross Inland Consuption	484.9	425.1	413.4	490.8	512.6	442.4	415.2	500.6	527.9	449.0	425.4	518.3	1517.9	1585.4	1625.6	1677.8	1727.2	1774.0	1814.3	1870.7	1920.5
Absorbed by Pumping	4.6	4.7	4.8	5.3	4.8	4.6	4.4	4.7	4.3	4.4	4.2	4.5	17.0	18.8	17.3	16.4	16.9	19.2	19.4	18.5	17.5
Own Consumption	27.1	22.7	23.8	27.2	28.6	24.2	23.7	27.9	29.3	24.8	24.3	29.2	80.4	84.8	88.5	91.5	95.6	98.7	100.7	104.4	107.7
Available for Int.Market	453.3	397.8	384.8	458.3	479.2	413.6	387.0	468.0	494.2	419.7	396.8	484.7	1420.5	1481.8	1519.9	1569.9	1614.7	1656.1	1694.1	1747.8	1795.4
Distribution Losses	30.3	26.2	25.6	30.6	31.7	27.2	25.4	30.8	32.6	27.6	26.0	32.0	99.4	106.3	104.9	105.5	110.7	109.0	112.8	115.2	118.2
Consumption Int.Market	422.9	371.6	359.2	427.7	447.4	386.4	361.7	437.1	461.6	392.1	370.9	452.6	1321.1	1375.5	1414.9	1464.4	1504.1	1547.1	1581.4	1632.6	1677.2
Energy Branch Consumption	15.0	12.9	12.6	15.1	15.9	13.6	12.9	15.7	16.6	14.0	13.2	16.3	57.3	63.3	67.6	64.8	64.4	56.5	55.7	58.0	60.0
Final Consumption (est)	408.4	359.0	347.0	413.0	431.6	372.8	348.8	421.4	445.0	378.1	357.7	436.4	1264.4	1311.2	1347.2	1399.5	1439.9	1491.7	1527.4	1574.5	1617.2
2 INPUT TO CONVENTIONAL THERMAL POWER STATIONS (Million toe)																					
Hard Coal	33.6	27.1	26.6	35.2	35.8	29.6	26.3	35.2	36.8	28.2	26.3	36.7	97.9	107.2	112.5	117.7	113.4	116.3	122.5	126.9	128.1
Lignite	7.3	7.4	7.6	7.5	8.0	7.6	7.4	7.6	8.0	7.5	7.7	7.8	33.4	32.5	30.7	28.3	28.9	30.9	29.8	30.6	31.0
Brown Coal Briquettes	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.7	0.6	0.6	0.3	0.3	0.4	0.4	0.5	0.4
Petroleum Products	11.9	9.9	9.6	10.0	10.9	9.6	9.5	11.4	11.4	9.2	9.6	12.1	50.7	39.4	35.8	35.8	35.3	41.1	41.4	41.4	42.3
Natural Gas	6.7	6.4	6.6	8.0	6.5	6.3	6.0	8.8	8.4	5.7	5.7	9.2	24.8	22.7	21.9	23.8	23.6	26.8	27.7	27.5	29.0
Derived Gas	1.4	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.2	1.3	1.4	1.3	5.4	5.5	5.5	5.1	5.8	5.9	5.7	5.4	5.2
Other	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.7	0.8	0.7	0.7	0.7	1.7	1.8	1.7	2.2	2.6	2.5	2.6	2.8	2.9
TOTAL, excl Geothermal	61.6	53.0	52.8	62.8	63.3	55.4	51.4	65.0	66.7	52.8	51.3	67.9	214.6	209.8	208.7	213.2	210.1	223.9	230.2	235.0	238.8
Geothermal	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.8	1.7	1.7	1.8	1.8	1.9	2.0	2.0	2.0
TOTAL	62.1	53.5	53.3	63.3	63.8	55.9	51.9	65.5	67.2	53.3	51.8	68.4	216.3	211.5	210.5	215.0	211.9	225.7	232.2	237.0	240.8
3. HEAT (TWh)																					
Production Nuclear Heat	473.5	428.5	427.4	490.3	521.0	424.7	440.4	486.9	517.0	467.9	453.1	487.0	1181.1	1440.3	1537.5	1580.4	1694.9	1829.0	1819.7	1873.1	1925.0
Production Geoth. Heat	5.8	5.8	5.8	5.8	5.8	5.8	5.7	5.5	6.0	6.0	5.8	5.6	20.6	19.8	20.1	21.5	21.4	21.7	23.0	22.7	23.4
Production Total Heat	479.3	434.3	433.1	496.0	526.8	430.5	446.1	492.5	523.0	473.8	458.9	492.7	1201.7	1460.0	1557.6	1601.9	1716.3	1850.7	1842.7	1895.8	1948.4
Adjustment	2.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	-2.6	0.9	4.2	13.5	-3.3	8.0	0.0	0.0
Gross Consumption	481.3	436.3	435.2	498.0	526.8	430.5	446.1	492.5	523.0	473.8	458.9	492.7	1209.5	1457.5	1558.5	1606.0	1729.8	1847.4	1850.7	1895.8	1948.4
Nuclear Capacity (GW)	102.6	104.7	105.0	105.0	105.0	104.7	106.0	106.0	107.3	106.8	106.6	106.4	70.7	79.1	89.1	94.7	101.5	102.7	105.0	106.0	106.4

TABLE 8 - EUR 12
Main Variables: Growth Rates from same Quarter of previous Year - in %
(Last revision: 17 December 1991)

	1Q89	2Q89	3Q89	4Q89	1Q90	2Q90	3Q90	4Q90	1Q91	2Q91	3Q91	4Q91	1Q92	2Q92	3Q92	4Q92
A. SPECIFIC UNITS																
1. HARD COAL																
Primary Production	2.5	-1.7	-4.2	-7.6	-10.8	-3.7	2.0	-8.1	-1.4	-1.9	-4.4	-3.5	-3.5	-3.5	-3.5	-3.5
Net Imports	8.6	11.9	4.8	9.5	14.7	11.4	10.0	13.7	-0.3	11.2	3.3	6.6	17.8	-0.4	1.8	7.8
Apparent Consumption	-1.1	1.6	2.4	2.2	-0.4	3.0	1.2	1.3	2.2	3.9	-4.6	-1.7	2.7	-4.3	-1.0	1.9
Gross Inland Consumption	-1.1	1.6	2.4	2.2	0.0	3.5	1.7	1.7	2.2	3.9	-4.5	-1.7	2.7	-4.2	-1.0	1.9
Deliveries																
Power Plants	2.4	0.2	5.9	6.0	5.4	3.6	5.9	1.2	2.3	8.1	-0.4	3.1	1.2	-1.3	4.0	3.0
Coking Plants	-3.5	3.9	-5.2	0.2	-1.2	-5.3	-6.7	-4.2	-9.6	0.2	-2.2	-9.2	-6.4	-12.0	-5.6	-5.4
All Industries	-10.7	3.3	4.0	-5.0	12.9	1.6	0.6	-0.2	0.9	1.8	-6.3	2.5	1.6	0.5	1.6	2.0
Domestic	-17.7	9.6	-24.8	-6.7	-10.3	-13.4	10.2	0.7	31.8	7.8	0.4	0.4	-11.1	-3.0	4.4	-6.8
TOTAL	-1.7	1.2	1.1	2.5	3.8	0.5	2.4	0.0	0.7	5.8	-1.4	0.2	-0.8	-3.6	1.7	0.9
Transform.Power Generation	-2.0	0.9	5.6	5.1	2.0	6.6	4.6	6.3	6.5	9.4	-1.1	0.0	2.9	-4.6	-0.1	4.3
Final Consumption (est.)	-5.4	12.9	3.3	2.4	-4.8	-11.5	-6.4	-7.2	13.2	6.8	-1.0	3.0	-3.6	-1.6	0.2	-1.3
2. COKE																
Production	-2.8	-1.9	2.3	1.0	-3.4	-2.3	-7.1	-6.7	-4.4	-6.5	-7.5	-7.7	-8.2	5.8	-5.8	-5.6
Deliv. to Iron and Steel	3.4	3.2	-1.1	-9.6	-8.0	-7.8	-6.0	-6.8	-3.4	-3.1	-8.3	-2.1	-5.6	-5.9	-5.4	-5.0
Final Consumption (est.)	3.0	2.9	0.0	-5.6	-10.4	-11.2	-9.9	-4.5	-5.7	-2.0	-8.0	-1.9	-5.4	-5.6	-5.1	-4.3
3. LIGNITE																
Primary Production	9.5	16.0	2.1	-5.5	-7.5	0.9	2.8	0.2	3.0	2.1	-2.1	0.1	1.6	-1.1	3.6	2.6
Apparent Consumption	8.6	14.8	1.3	-6.0	-7.5	0.7	2.6	-0.4	2.4	1.9	-2.1	0.8	0.6	-0.7	2.8	2.8
Gross Inland Consumption	8.6	14.8	1.4	-6.0	-7.5	0.7	2.6	-0.4	2.4	1.9	-2.1	0.9	0.6	-0.7	2.8	2.8
Transform.Power Generation	11.7	11.0	1.6	-8.8	-9.2	1.7	2.6	-2.9	9.7	3.2	-2.1	0.6	0.6	-1.4	3.2	3.3
4. OIL																
Crude Production	-23.8	-26.8	-10.8	-3.4	5.1	14.9	-7.6	-7.8	-4.3	-17.1	12.6	10.8	9.9	11.6	-7.9	-1.1
Total Primary Production	-23.4	-26.4	-10.8	-4.0	4.6	14.5	-8.8	-9.0	-5.1	-17.2	13.6	12.2	10.9	11.9	-7.4	-0.9
Net Imports	16.6	9.3	5.9	2.7	2.7	8.3	4.5	-5.1	10.5	1.7	-1.3	2.1	-11.6	2.0	6.4	2.6
Apparent Consumption	-0.1	1.4	-0.3	0.0	2.7	6.3	4.3	-3.3	2.9	2.7	-0.5	1.4	-1.1	0.1	3.1	2.7
Gross Inland Consumption	0.4	1.9	0.2	0.4	1.5	4.9	3.0	-4.4	2.9	2.7	-0.5	1.4	-1.1	0.1	3.1	2.7
Deliveries																
Motor Gasoline	2.7	2.0	0.1	1.4	2.3	2.5	2.6	1.1	-2.3	1.3	2.4	2.6	1.3	1.8	2.0	1.7
Gas/Diesel Oil	-6.0	-3.6	2.4	-2.0	5.1	9.5	5.5	-6.7	8.2	8.2	-6.5	1.6	-3.0	-1.6	4.3	4.2
Autom. Diesel Oil	7.7	7.4	6.1	5.3	7.0	4.0	6.6	1.6	0.6	5.7	2.4	4.3	3.1	2.4	4.9	5.7
Heating Gas Oil	-14.8	-14.9	-1.3	-7.2	3.5	16.6	4.4	-13.6	14.6	11.0	-16.1	-1.0	-7.6	-6.0	3.5	2.7
Heavy Fuel Oil	13.4	3.4	-1.7	4.3	-2.8	1.3	10.4	-20.6	-4.3	2.4	-4.7	8.4	-1.6	-6.5	1.5	-0.3
Kerosenes	0.8	3.5	1.4	3.8	7.5	2.5	6.0	0.9	-1.5	-3.2	-2.1	4.8	6.8	9.5	4.5	3.4
Other products	4.8	2.5	-1.8	-2.1	-0.5	-1.8	5.2	-2.2	-0.5	1.0	-1.4	5.9	2.2	4.0	2.9	2.9
TOTAL	1.1	0.4	0.4	0.0	2.2	3.8	5.4	-6.2	1.8	3.6	-2.9	3.8	-0.5	0.2	3.1	2.7
Transform.Power Generation	22.9	11.5	12.9	17.3	6.4	18.8	5.9	-20.6	-8.7	-2.6	-0.8	14.0	5.0	-4.3	0.6	6.2
Input to Refineries	4.4	-0.2	-0.5	-0.3	1.7	11.5	4.7	-5.2	4.1	-2.5	1.6	6.6	-9.5	2.5	0.4	0.7
Refineries Gross Output	4.2	-0.3	-0.1	-0.6	1.4	10.8	4.3	-6.3	4.3	-1.8	2.1	7.7	-9.2	2.5	0.3	0.5
Final Consumption (est.)	-0.9	-0.5	-0.7	-1.7	1.8	2.5	5.4	-4.4	3.1	4.2	-3.1	2.8	-1.1	0.6	3.3	2.3
5. NATURAL GAS																
Primary Production	-2.0	13.3	-0.2	9.1	4.8	-2.9	5.7	8.9	12.8	17.8	5.2	1.2	3.7	-1.9	0.5	2.1
Net Imports	12.3	9.3	0.9	4.8	5.1	-1.9	5.2	5.8	-0.8	13.9	-3.8	3.7	10.6	-4.4	-3.1	1.4
Apparent Consumption	-1.2	11.6	3.1	7.1	4.7	-2.3	5.6	7.0	12.0	21.6	1.7	2.3	2.7	-6.1	3.6	4.6
Gross Inland Consumption	-1.1	11.7	3.3	7.2	3.9	-3.4	4.0	6.1	12.1	21.7	1.9	2.4	2.7	-6.1	3.6	4.6
Transform.Power Generation	-2.4	24.4	32.2	5.9	3.4	-1.4	-0.1	11.7	-3.2	-2.4	-9.9	10.6	29.8	-8.9	-4.9	4.6
Final Consumption (est.)	-1.1	9.3	-2.9	7.2	4.1	-3.8	5.2	5.5	13.8	26.4	5.0	1.1	0.0	-5.6	5.5	4.6
6. HEAT																
Production of Nuclear Heat	12.1	15.3	1.9	3.1	-5.1	-2.0	1.4	4.0	10.0	-0.9	3.1	-0.7	-0.8	10.2	2.9	0.0
Apparent Consumption	12.0	15.1	1.9	3.1	-5.0	-1.9	1.5	4.0	9.9	-0.9	3.0	-0.7	-0.7	10.1	2.9	0.0
Gross Inland Consumption	11.0	13.9	0.9	2.2	-4.4	-1.2	2.1	4.6	9.5	-1.3	2.5	-1.1	-0.7	10.1	2.9	0.0
7. ELECTRICITY																
Primary electricity:																
Apparent Consumption	-44.2	-24.8	-22.6	-23.3	29.3	-9.7	-5.7	21.8	10.6	8.9	6.2	7.8	4.9	5.9	15.4	7.9
Total Gross Generation	1.3	6.1	2.5	1.9	2.3	1.0	3.3	3.4	5.8	5.1	0.3	1.8	2.8	1.3	2.2	3.8
Total Net Production	1.2	5.8	2.6	2.1	2.3	1.2	3.2	3.4	5.8	5.0	0.3	1.7	2.8	1.2	2.2	3.8
Generation Primary	-45.7	-26.4	-27.8	-23.2	37.4	-11.1	-2.2	25.6	11.6	21.1	5.0	5.1	2.8	4.2	14.7	11.4
Generation Derived	7.5	11.7	6.3	4.0	0.0	2.4	3.7	1.9	5.3	3.6	0.0	1.6	2.9	1.0	1.2	3.2
Generation Nuclear	12.4	15.0	3.0	2.2	-4.7	-2.0	1.9	5.2	10.8	-0.3	3.3	-2.3	-1.9	9.5	2.4	0.0
Generation Conv.Thermal	4.7	9.5	8.5	5.2	3.0	5.3	5.0	0.0	2.0	6.0	-2.1	4.0	5.9	-4.2	0.4	5.1
Gross Inland Consumption	1.2	5.7	2.7	1.7	2.0	0.9	2.9	3.2	5.7	4.1	0.4	2.0	3.0	1.5	2.5	3.5
Available Internal Market	1.0	5.2	2.8	1.7	1.9	1.2	2.8	3.3	5.7	4.0	0.6	2.1	3.1	1.5	2.5	3.6
Consumption Intern.Market	1.3	5.5	3.1	2.0	1.8	1.1	2.7	3.2	5.8	4.0	0.7	2.2	3.2	1.5	2.6	3.6
Final Consumption	2.0	6.2	3.9	2.7	2.0	1.3	2.8	3.4	5.7	3.8	0.5	2.1	3.1	1.4	2.6	3.5
II. TOE																
Primary Production	-3.5	-1.7	-3.8	-0.5	-1.5	0.7	-0.2	0.2	5.2	-0.5	3.7	1.9	2.3	3.9	-1.1	0.2
Net Imports	14.5	9.4	5.0	3.9	4.7	7.5	5.5	-1.2	7.2	4.3	-0.9	3.4	-4.9	0.8	4.8	3.3
Aparrent Consumption	0.7	4.9	0.4	1.6	1.4	2.4	3.2	1.0	5.8	5.5	-0.2	1.1	0.9	-0.3	2.5	2.8
Gross Inland Consumption	0.9	5.0	0.7	1.8	1.0	2.0	2.7	0.6	5.6	5.4	-0.4	1.0	0.9	-0.3	2.5	2.7
of which:																
Solids	0.9	4.6	1.8	0.7	-0.7	2.5	2.0	2.0	1.0	4.1	-3.8	-0.5	3.4	-3.6	-0.5	2.3
Oil	0.5	1.9	0.2	0.5	1.6	5.1	3.0	-4.4	3.0	2.4	-0.5	1.5	-1.0	0.2	3.0	2.7
Natural Gas	-1.1	11.7	3.3	7.2	3.9	-3.4	4.0	6.1	12.1	21.7	1.9	2.4	2.7	-6.1	3.6	4.6
Heat	11.0	13.9	0.9	2.2	-4.4	-1.2	2.1	4.6	9.5	-1.3	2.5	-1.1	-0.7	10.1	2.9	0.0
Primary Electricity	-43.7	-24.4	-22.0	-22.7	29.5	-9.3	-5.3	22.1	9.5	7.9	4.9	6.6	4.9	5.9	15.4	7.9
Total Final Consumption	-0.7	3.4	-0.1	1.2	1.8	0.0	3.8	-0.6	5.9	7.9	-1.6	1.9	-0.3	-1.1	3.0	2.7

TABLE 9 - EUR 12
Main Variables: Year to Date Growth Rates - in %
(Last revision: 17 December 1991)

	1Q89	2Q89	3Q89	4Q89	1Q90	2Q90	3Q90	4Q90	1Q91	2Q91	3Q91	4Q91	1Q92	2Q92	3Q92	4Q92
A.SPECIFIC UNITS																
1. HARD COAL																
Primary Production	2.5	0.4	-1.0	-2.7	-10.8	-7.4	-4.6	-5.5	-1.4	-1.7	-2.6	-2.8	-3.5	-3.5	-3.5	-3.5
Net Imports	8.6	10.2	8.4	8.7	14.7	13.0	12.0	12.5	-0.3	5.4	4.7	5.2	17.8	8.2	6.2	6.6
Apparent Consumption	-1.1	0.1	0.8	1.2	-0.4	1.2	1.2	1.2	2.2	3.0	0.6	0.0	2.7	-0.6	-0.7	0.0
Gross Inland Consumption	-1.1	0.1	0.8	1.2	0.0	1.6	1.7	1.7	2.2	3.0	0.6	0.0	2.7	-0.6	-0.7	0.0
Deliveries																
Power Plants	2.4	1.3	2.7	3.6	5.4	4.6	5.0	3.9	2.3	5.0	3.3	3.3	1.2	0.0	1.2	1.7
Coking Plants	-3.5	0.1	-1.7	-1.2	-1.2	-3.3	-4.4	-4.3	-9.6	-4.8	-4.0	-5.3	-6.4	-9.3	-8.1	-7.5
All Industries	-10.7	-3.9	-1.3	-2.3	12.9	7.0	4.8	3.5	0.9	1.3	-1.2	-0.2	1.6	1.1	1.2	1.4
Domestic	-17.7	-6.4	-11.9	-10.5	-10.3	-11.8	-6.2	-4.3	31.8	20.4	14.4	10.2	-11.1	-7.6	-4.5	-5.1
TOTAL	-1.7	-0.3	0.1	0.7	3.8	2.2	2.3	1.6	0.7	3.2	1.7	1.3	-0.8	-2.2	-1.0	-0.5
Transform.Power Generation	-2.0	-0.7	1.1	2.2	2.0	4.0	4.2	4.8	6.5	7.8	5.1	3.6	2.9	-0.5	-0.4	0.9
Final Consumption (est.)	-5.4	3.1	3.2	2.9	-4.8	-8.2	-7.6	-7.5	13.2	10.1	6.5	5.6	-3.6	-2.6	-1.8	-1.7
2. COKE																
Production	-2.8	-2.3	-0.8	-0.4	-3.4	-2.9	-4.3	-4.9	-4.4	-5.4	-6.1	-6.5	-8.2	-7.0	-6.6	-6.4
Deliv. to Iron and Steel	3.4	3.3	1.8	-1.1	-8.0	-7.9	-7.3	-7.1	-3.4	-3.2	-4.9	-4.2	-5.6	-5.8	-5.7	-5.5
Final Consumption (est.)	3.0	3.0	2.0	0.0	-10.4	-10.8	-10.5	-9.1	-5.7	-3.9	-5.2	-4.4	-5.4	-5.5	-5.4	-5.1
3. LIGNITE																
Primary Production	9.5	12.5	8.9	5.0	-7.5	-3.4	-1.4	-1.0	3.0	2.5	1.0	0.7	1.6	0.2	1.3	1.7
Apparent Consumption	8.6	11.5	8.0	4.2	-7.5	-3.5	-1.5	-1.3	2.4	2.1	0.7	0.7	0.6	-0.1	0.9	1.4
Gross Inland Consumption	8.6	11.5	8.1	4.2	-7.5	-3.6	-1.6	-1.3	2.4	2.2	0.7	0.8	0.6	-0.1	0.9	1.4
Transform.Power Generation	11.7	11.4	8.0	3.2	-9.2	-4.0	-1.9	-2.1	9.7	6.4	3.5	2.7	0.6	-0.4	0.7	1.4
4. OIL																
Crude Production	-23.8	-25.3	-20.8	-16.7	5.1	9.7	3.7	0.6	-4.3	-10.7	-3.4	0.1	9.9	10.6	3.9	2.5
Total Primary Production	-23.4	-24.8	-20.5	-16.6	4.6	9.3	3.0	-0.2	-5.1	-11.1	-3.5	0.4	10.9	11.3	4.5	3.0
Net Imports	16.6	12.9	10.4	8.2	2.7	5.4	5.1	2.4	10.5	6.0	3.5	3.2	-11.6	-5.0	-1.3	-0.3
Apparent Consumption	-0.1	0.6	0.3	0.2	2.7	4.5	4.4	2.3	2.9	2.8	1.7	1.6	-1.1	-0.5	0.7	1.2
Gross Inland Consumption	0.4	1.1	0.8	0.7	1.5	3.1	3.1	1.1	2.9	2.8	1.7	1.6	-1.1	-0.5	0.7	1.2
Deliveries																
Motor Gasoline	2.7	2.3	1.5	1.5	2.3	2.4	2.5	2.1	-2.3	-0.4	0.5	1.0	1.3	1.6	1.7	1.7
Gas/Diesel Oil	-6.0	-5.0	-2.6	-2.4	5.1	7.1	6.6	2.8	8.2	8.2	3.3	2.9	-3.0	-2.4	-0.4	0.8
Autom. Diesel Oil	7.7	7.6	7.1	6.6	7.0	5.4	5.8	4.7	0.6	3.2	2.9	3.3	3.1	2.8	3.5	4.1
Heating Gas Oil	-14.8	-14.8	-10.8	-9.8	3.5	8.7	7.3	1.0	14.6	13.1	3.8	2.5	-7.6	-6.9	-4.2	-2.5
Heavy Fuel Oil	13.4	8.7	5.5	5.1	-2.8	-1.0	2.3	-4.4	-4.3	-1.2	-2.3	0.3	-1.6	-3.9	-2.3	-1.8
Kerosenes	0.8	2.2	1.9	2.4	7.5	4.9	5.3	4.2	-1.5	-2.3	-2.3	-0.6	6.8	8.2	6.8	5.9
Other products	4.8	3.6	1.7	0.7	-0.5	-1.1	0.9	0.1	-0.5	0.3	-0.3	1.2	2.2	3.1	3.0	3.0
TOTAL	1.1	0.8	0.6	0.5	2.2	3.0	3.8	1.1	1.8	2.7	0.8	1.6	-0.5	-0.2	0.9	1.3
Transform.Power Generation	22.9	17.8	16.2	16.5	6.4	11.7	9.8	0.6	-8.7	-5.9	-4.4	0.1	5.0	0.6	0.6	2.1
Input to Refineries	4.4	2.1	1.2	0.8	1.7	6.5	5.8	2.9	4.1	0.7	1.0	2.4	-0.5	1.0	0.8	0.8
Refineries Gross Output	4.2	2.0	1.2	0.7	1.4	6.0	5.4	2.3	4.3	1.1	1.5	3.0	-0.2	1.1	0.8	0.7
Final Consumption (est.)	-0.9	-0.7	-0.7	-1.0	1.8	2.1	3.2	1.2	3.1	3.6	1.4	1.7	-1.1	-0.2	0.9	1.3
5. NATURAL GAS																
Primary Production	-2.0	3.6	2.7	4.6	4.8	1.7	2.6	4.6	12.8	14.7	12.4	8.8	3.7	1.5	1.3	1.5
Net Imports	12.3	10.9	7.8	7.0	5.1	1.8	2.8	3.6	-0.8	6.0	3.1	3.3	10.6	3.2	1.5	1.5
Apparent Consumption	-1.2	3.5	3.4	4.5	4.7	1.9	2.8	4.1	12.0	15.6	12.4	9.1	2.7	-0.8	0.1	1.5
Gross Inland Consumption	-1.1	3.6	3.5	4.6	3.9	1.0	1.7	3.1	12.1	15.7	12.5	9.3	2.7	-0.8	0.1	1.5
Transform.Power Generation	-2.4	9.4	16.2	13.2	3.4	1.0	0.6	3.6	-3.2	-2.8	-5.2	-0.6	29.8	10.8	5.8	5.4
Final Consumption (est.)	-1.1	2.6	1.4	3.2	4.1	1.1	2.0	3.1	13.8	18.4	15.5	10.8	0.0	-2.1	-0.6	0.9
6. HEAT																
Production of Nuclear Heat	12.1	13.6	9.7	7.9	-5.1	-3.6	-2.1	-0.5	10.0	4.8	4.3	2.9	-0.8	4.1	3.7	2.8
Apparent Consumption	12.0	13.4	9.6	7.8	-5.0	-3.5	-2.0	-0.4	9.9	4.8	4.2	2.9	-0.7	4.1	3.7	2.8
Gross Inland Consumption	11.0	12.3	8.5	6.8	-4.4	-2.9	-1.4	0.2	9.5	4.3	3.7	2.4	-0.7	4.1	3.7	2.8
7. ELECTRICITY																
Primary electricity: Apparent Consumption	-44.2	-33.9	-30.7	-29.2	29.3	5.8	2.2	6.4	10.6	9.7	8.7	8.5	4.9	5.4	8.2	8.1
Total Gross Generation	1.3	3.5	3.2	2.8	2.3	1.7	2.2	2.5	5.8	5.4	3.8	3.3	2.8	2.1	2.1	2.6
Total Net Production	1.2	3.3	3.1	2.8	2.3	1.8	2.2	2.5	5.8	5.4	3.8	3.2	2.8	2.1	2.1	2.6
Generation Primary	-45.7	-35.8	-33.6	-31.5	37.4	8.9	5.5	10.1	11.6	16.2	13.0	11.0	2.8	3.5	6.4	7.7
Generation Derived	7.5	9.4	8.4	7.2	0.0	1.1	1.9	1.9	5.3	4.5	3.1	2.7	2.9	2.0	1.8	2.2
Generation Nuclear	12.4	13.6	10.1	7.9	-4.7	-3.4	-1.8	0.0	10.8	5.5	4.8	2.9	-1.9	3.2	2.9	2.2
Generation Conv.Thermal	4.7	6.8	7.3	6.7	3.0	4.0	4.3	3.1	2.0	3.8	2.0	2.5	5.9	1.3	1.0	2.1
Gross Inland Consumption	1.2	3.3	3.1	2.7	2.0	1.5	1.9	2.3	5.7	4.9	3.5	3.1	3.0	2.3	2.3	2.7
Available Internal Market	1.0	2.9	2.9	2.6	1.9	1.6	1.9	2.3	5.7	4.9	3.6	3.2	3.1	2.4	2.4	2.7
Consumption Intern.Market	1.3	3.2	3.2	2.9	1.8	1.5	1.9	2.2	5.8	4.9	3.6	3.2	3.2	2.4	2.4	2.7
Final Consumption	2.0	3.9	3.9	3.6	2.0	1.7	2.0	2.4	5.7	4.8	3.5	3.1	3.1	2.3	2.4	2.7
II. TOE																
Primary Production	-3.5	-2.7	-3.0	-2.4	-1.5	-0.5	-0.4	-0.2	5.2	2.5	2.9	2.6	2.3	3.0	1.7	1.3
Net Imports	14.5	11.9	9.5	7.9	4.7	6.1	5.9	4.0	7.2	5.7	3.5	3.5	-4.9	-2.1	0.1	0.9
Aparrent Consumption	0.7	2.6	1.9	1.8	1.4	1.9	2.3	1.9	5.8	5.7	3.8	3.1	0.9	0.3	1.0	1.5
Gross Inland Consumption of which:	0.9	2.7	2.1	2.0	1.0	1.4	1.8	1.5	5.6	5.5	3.7	2.9	0.9	0.3	1.0	1.4
Solids	0.9	2.6	2.4	1.9	-0.7	0.7	1.1	1.4	1.0	2.5	0.5	0.2	3.4	0.1	-0.1	0.5
Oil	0.5	1.2	0.9	0.8	1.6	3.3	3.2	1.2	3.0	2.7	1.6	1.6	-1.0	-0.4	0.7	1.2
Natural Gas	-1.1	3.6	3.5	4.6	3.9	1.0	1.7	3.1	12.1	15.7	12.5	9.3	2.7	-0.8	0.1	1.5
Heat	11.0	12.3	8.5	6.8	-4.4	-2.9	-1.4	0.2	9.5	4.3	3.7	2.4	-0.7	4.1	3.7	2.8
Primary Electricity	-43.7	-33.5	-30.2	-28.8	29.5	6.1	2.5	6.7	9.5	8.7	7.6	7.3	4.9	5.4	8.2	8.1
Total Final Consumption	-0.7	1.2	0.8	0.9	1.8	1.0	1.8	1.2	5.9	6.8	4.3	3.6	-0.3	-0.7	0.4	1.0

ANNEX I: ENERGY DATA

The energy data used to prepare this outlook come mainly from the monthly energy statistics of the SOEC, published in the EUROSTAT publication "Energy: Monthly Statistics" (also available in CRONOS and SIRENE computer databases). For the moment those figures are not corrected for seasonal or weather variations.

I. Data in specific units

Tables 5 for hydrocarbons, 6 for solid fuels and 7 for electricity, present data in their initial form (in specific units). Those data are, in general, published without adjustment (with only a few exceptions which are described later).

For all fuels, a line called "Apparent Consumption" is estimated by the following formula:

Apparent Consumption = Primary Production + Recovered Production + Net Imports - Change in Stocks - Bunkers (for oil). (1)

Due to important differences when compared with published annual balance sheets, a line called "Adjustment to annual figures" is added and Gross Inland Consumption, in specific units (Tables 5 to 7) and in Toe (Table 4), is given by the relation:

Gross Inland Consumption = Apparent Consumption + Adjustment. (2)

The latest known annual balance sheet covers 1990. Exceptionally, adjustment for oil for the years 1991 and 1992 and for hard coal for the year 1991, is different from zero.

For the following fuels: oil and natural gas (Table 5), hard coal and lignite (Table 6), the line "Input to Power Generation" is estimated on the basis of monthly data of consumption by the thermal public supply power stations (published by the SOEC in the monthly bulletin) and annual data (published in annual balance sheets) including all other producers of electricity.

The following remarks give some additional informations for each fuel:

Table 5 - Oil

a) Crude oil: The item "other inputs" of SOEC crude oil balance sheet is added to net imports (value for 1990: 1.1 Mt).

b) Oil products: The item "out of refinery production" of SOEC balance sheet of petroleum products is considered as "recovered production".

c) The line "Available to final consumption" is estimated:

Available to Final Consumption = Gross Inland Consumption - Transformation Input +Refineries net Output (3)

d) The line "Final consumption" is estimated:

Final Consumption = Total Inland Deliveries - (Total Transformation Input - Input to Refineries) (4)

This information makes it possible to identify the relationship between Gross Inland Consumption and Deliveries:

Gross Inland Consumption = Total Inland Deliveries + (Input to Refineries - Refineries net Output) + Statistical Difference (5)

Table 5 - Natural Gas

The line "Natural Gas, Final Consumption" is estimated on the basis of annual data.

Table 6 - Hard coal

a) Hard Coal figures include patent fuels: Net imports, not shown in the table because of their small quantity, are added to hard coal apparent consumption, starting from 1987, and patent fuels production is considered as transformation output.

b) From 1987 Spanish black lignite ("negro") is included in hard coal figures (5.8 Mt in 1986).

c) The line "Input to Power Generation" is estimated by the formula:

$$\textit{Input to Power Generation} = \textit{Deliveries to Power Plants} + \textit{Transformation for Power Generation in Industry} - \textit{Change in Stocks in Power Plants} \quad (6)$$

The line "Transformation for Power Generation in Industry" is estimated on the basis of annual data.

d) The line "Transformation input" is given by the formula:

$$\textit{Transformation Input} = \textit{Input to Power Generation} + \textit{Deliveries to Coke} + \textit{Deliveries to Patent Plants} \quad (7)$$

e) The line "Available to final consumption" is estimated:

$$\textit{Available to Final Consumption} = \textit{Gross Inland Consumption} - \textit{Transformation Input} + \textit{Production of Patent Fuels} \quad (8)$$

f) The line "Final consumption" is estimated:

$$\textit{Final Consumption} = \textit{Final Consumption of Industry} + \textit{Final Consumption Domestic} \quad (9)$$

where:

$$\textit{Final Consumption of Industry} = \textit{Deliveries to all Industries} + \textit{'Other' Deliveries} - \textit{Transformation for Power Generation in Industry} \quad (10)$$

$$\textit{Final Consumption Domestic} = \textit{Deliveries to Households} + \textit{Patent Fuels} \quad (11)$$

This information makes it possible to identify the relationship between Gross Inland Consumption and Deliveries:

$$\textit{Gross Inland Consumption} = \textit{Total Inland Deliveries} - \textit{Change in Stocks in Power Plants} + \textit{Statistical Difference} \quad (12)$$

Table 6 - Lignite

a) Lignite gross inland consumption includes brown coal briquettes.

b) From 1987 Spanish black lignite ("negro") is included in hard coal figures (5.8 Mt in 1986).

c) The historical primary production monthly figures are adjusted to annual values.

d) Import data up to 1990 are adjusted to annual values.

Table 7 - Electricity

a) Primary production is treated in the same way as in SOEC's annual balance sheet.

$$\textit{Primary Electricity} = \textit{Gross Production of Hydro} - \textit{Pumping (Electricity produced)} \quad (13)$$

b) Geothermal electricity is considered as derived, while geothermal heat is considered as a primary energy, following the concepts of the annual balance sheet.

c) Distribution losses, consumption by the energy branch and final consumption are estimated on the basis of annual figures.

Table 7 - Input to power stations

Those data, in toe, are calculated from the same variables in specific units, adjusted according to annual figures, and cover all producers.

Table 7 - Heat

a) The distinction between primary nuclear and geothermal heat follows the conventions of SOEC's balance sheet.

b) Data on nuclear capacity are based on the informations of the "ELECNUC" data base and can be different from those of other sources.

II. Data in toe

Table 4 presents a complete quarterly primary balance sheet which is estimated by applying a conversion factor to each corresponding variable in specific units.

Starting from July 1989, the SOEC is publishing (in the monthly bulletin) a complete monthly primary balance sheet in toe, replacing the previous quarterly balance sheets. All time series run from January 1987 and several from January 1984. This new information is directly used in the case of hard coal, lignite and crude oil.

An estimation of final consumption by fuel is also presented.

The following table shows the conversion factors used to transform quarterly data from specific units to toe.

Historic	1979 to 83	1984	1985	1986	1987-90
Hard Coal					
Production	0.615	SOEC/MBS	SOEC/MBS	SOEC/MBS	SOEC/MBS
Recov.Production	0.450	0.450	0.450	0.450	SOEC/MBS
Imports	0.650	SOEC/MBS	SOEC/MBS	SOEC/MBS	SOEC/MBS
Exports	0.675	SOEC/MBS	SOEC/MBS	SOEC/MBS	SOEC/MBS
Stocks	0.580	0.580	0.580	0.580	SOEC/MBS
Patent Fuels					SOEC/MBS
Coke	0.681	0.681	0.681	0.681	0.681
Lignite					
Production	0.192	0.192	0.192	0.186	SOEC/MBS*
Imports	0.400	0.400	0.400	0.400	0.400
Exports	0.480	0.480	0.480	0.480	SOEC/MBS
Stocks	0.220	0.220	0.220	0.220	0.220
Crude Oil					
Production	1.008	SOEC/MBS	SOEC/MBS	SOEC/MBS	SOEC/MBS
Imports	1.004	SOEC/MBS	SOEC/MBS	SOEC/MBS	SOEC/MBS
Exports	1.010	SOEC/MBS	SOEC/MBS	SOEC/MBS	SOEC/MBS
Stocks	1.005	1.005	1.005	1.005	1.005
Oil Products					
Production	1.100	1.100	1.100	1.100	1.100
Recov.Production	1.100	1.100	1.100	1.100	1.100
Imports	1.000	1.000	1.000	1.000	1.000
Exports	1.003	1.003	1.000	1.000	1.000
Stocks	0.970	0.970	0.970	0.970	0.970
Bunkers	0.970	0.970	0.970	0.970	0.970
Natural gas	0.0215	0.0215	0.0215	0.0215	0.021
Heat and electricity	0.086	0.086	0.086	0.086	0.086

SOEC/MBS: SOEC Monthly Balance Sheet
*) Lignite production - adjusted

Forecast	Production	Recovered Production	Net Import	Stocks	Bunkers	Power Generation	Final Consumption
Hard Coal	0.603	0.430	0.660	0.600		0.583	0.667
Patent Fuels			0.700				
Coke			0.681	0.681		0.681	0.681
Lignite	0.180		0.390	0.220		0.180	0.310
Crude Oil	1.014						
Oil Products	1.014	1.100					
Total Oil			1.005	1.000	0.970	0.9615	1.014
Natural gas	0.0215		0.0215	0.0215		0.0215	0.0215
Heat and electricity	0.086		0.086				0.086

The main differences with the SOEC balance sheet can be summarized as follows:

a) Coke: A slightly different conversion factor is used (0.681 in place of 0.7)

b) Lignite: Our primary production and import figures are slightly adjusted.

c) Oil: SOEC uses generally a 1:1 conversion factor for oil products. In addition, recovered production is ignored. These factors can lead to considerable differences for EUR-12. For example the difference in apparent consumption for 1990 is of 3.1 Mtoe (494.2 against 491.1 Mtoe, or 0.6%).

d) Annual, rather than monthly data, are used for geothermal heat and other fuels.

The following table compares the 1990 figures by source.

1990		SOEC	STEO	Diff	in %
1.	Hard Coal	198.21	198.22	-0.01	0.0%
2.	Patent Fuels	-0.18	-0.18	0.00	0.0%
3.	Coke	-0.09	-0.09	0.00	2.2%
4.	Lignite and Briquettes	33.52	34.30	-0.78	-2.3%
5a.	Crude Oil	499.09	500.19	-1.10	-0.2%
5b.	Oil Products	-7.99	-6.01	-1.99	-24.9%
5.	Total Oil	491.10	494.19	-3.09	-0.6%
6.	Natural Gas	207.89	207.94	-0.04	0.0%
7.	Nuclear Heat	156.46	156.49	-0.03	0.0%
8.	Geothermal Heat	1.73	1.98	-0.25	-14.6%
9.	Electricity	13.76	13.76	-0.01	-0.1%
10.	Other	2.18	2.59	-0.41	-18.7%
TOTAL		1104.58	1109.20	-4.62	-0.4%

Source: SIRENE, December 1991

It can be seen that the major differences come from lignite and the oil sector.

ANNEX II : ERROR ANALYSIS OF PREVIOUS FORECASTS

The first "Short-Term Energy Outlook" (STEO) was published by the Directorate General for Energy of the European Commission (DG XVII) in No 0 of the review "Energy in Europe" in December 1984. Since then, 18 STEO's have been published including the present one.

The first nine STEOs, until mid-1987, covered EUR-10, i.e. the present Community excluding Spain and Portugal. Starting from the end of 1987 the STEO has covered EUR-12 (excluding for the moment ex-GDR).

At the same time, the first monthly econometric model (STEM, Short-Term Energy Model) has been replaced by a new quarterly econometric model called ERASME (Energy Relations in an Aggregate Short-term Model for Europe). The following table presents the main characteristics of the STEO.

Table 1: STEO, main features

No	EE Issue	Date	Coverage	Last known quarter	Forecast horizon	Forecast quarters ahead
1	0	Dec-84	EUR-10	2 Q 84	1985	6
2	1	Apr-85	EUR-10	4 Q 84	1985	4
3	2	Aug-85	EUR-10	1 Q 85	1986	7
4	3	Dec-85	EUR-10	2 Q 85	1986	6
5	4	Apr-86	EUR-10	4 Q 85	1986	4
6	5	Sep-86	EUR-10	1 Q 86	1987	7
7	6	Dec-86	EUR-10	3 Q 86	1987	5
8	7	Jul-87	EUR-10	4 Q 86	1987	4
9	8	Oct-87	EUR-10	1 Q 87	1988	7
10	9	Dec-87	EUR-12	2 Q 87	1988	6
11	10	Apr-88	EUR-12	3 Q 87	1988	5
12	11	Sep-88	EUR-12	4 Q 87	1988	4
13	12	Dec-88	EUR-12	2 Q 88	1989	6
14	Suppl	May-89	EUR-12	4 Q 88	1990	8
15	Suppl	Nov-89	EUR-12	2 Q 89	1990	6
16	Suppl	Aug-90	EUR-12	4 Q 89	1991	8
17	Unpubl	Dec-90	EUR-12	2 Q 90	1991	6
18	Suppl	May-91	EUR-12	4 Q 90	1991	4
19	En.Review	Dec-91	EUR-12	2 Q 91	1992	6

To assess the quality of forecasts, an error analysis of previous quarterly forecasts, starting from those published in No 9 of "Energy in Europe" (October 1987) has been conducted.[1]

Average absolute errors have been calculated by quarter, by forecast and globally for the whole period. Table 2 presents the average absolute error (AAE) over the whole period (47 to 50 forecast points) for the twenty most important variables. Detailed error analysis for 10 variables is presented in tables E1 to E10.

1 For an analysis of annual errors starting from 1984, see N.Deimezis, Short-term energy forecasts: Analysis of the Forecasting Record of the Commission of the European Communities, presented at the "8th International Symposium on Forecasting", Amsterdam, Netherlands, June 1988. An updated summary of this paper has been published in Energy in Europe, No 12, March 1989.

Table 2: STEO, Average Errors for main variables

VARIABLE	Unit	Average absolute error	in percent
EXOGENOUS			
1. GDP (*)	Index, 100	1.1	1.0%
2. Crude oil price	USD/bbl	2.82	13.7%
OIL			
3. Deliveries, Total	Mt	3.0	2.6%
4. Motor Gasoline	Mt	0.5	1.9%
5. Gas Diesel Oil	Mt	1.8	4.1%
6. Heavy Fuel Oil	Mt	1.3	7.8%
7. Crude Production	Mt	3.1	10.8%
8. Net Imports	Mt	5.9	5.9%
NATURAL GAS			
9. Consumption	Mtoe	2.1	4.1%
10. Production	Mtoe	1.9	6.0%
SOLIDS			
11. Hard Coal Deliveries	Mt	2.2	2.8%
12. Deliveries to Power Plants	Mt	2.3	4.7%
13. Hard Coal Production	Mt	1.3	2.6%
14. Coke Production	Mt	0.0	2.0%
NUCLEAR			
15. Nuclear Heat	TWh	21.1	4.8%
ELECTRICITY			
16. Demand	TWh	6.9	1.6%
17. Generation	TWh	7.5	1.7%
18. Primary Electricity	TWh	7.6	20.1%
TOTAL ENERGY			
19. Apparent Consumption	Mtoe	5.1	1.8%
20. Production	Mtoe	4.6	3.2%

(*) Adjusted for change of base year

During the period under examination (December 1987 to May 1991, see table 1) there have been at least four unexpected "shocks", exogenous to the European energy system, that could à priori perturb the energy forecast:

a. The October 1987 stock exchange crash and the unforeseen economic growth in 1988.

b. The Gulf crisis and war and their impact on oil prices and macro-economic activity.

c. Unexpected warm winters for three consecutive years (1988, 1989, 1990) and the resulting drought.

d. The accidents in North Sea oil production system (Piper Alpha, July 1988 and Cormoran Alpha, April 1989).

Despite these "accidents" the overall quality of the forecast seems to be satisfactory. The AAE are small except for oil prices (Gulf crisis), primary electricity (drought) and crude oil production (accidents). Electricity demand and generation show the smallest error (1.6% and 1.7%). Total oil deliveries and total hard coal deliveries were forecast with an AAE of about 2.5% to 3%. Natural gas demand, which is more weather-dependent, shows an AAE of 4.1%.

The AAE of the total energy demand (Total Apparent Consumption) forecast was 1.8%, which can be considered as an excellent result given the magnitude of the statistical error of the whole system. Table E10 shows the detailed error analysis for this variable.

As it can be seen 17, out of 47 forecasts have an error of less than 1%. The biggest errors were made in the forecasts of:

* the fourth quarter 1987 (3.5%): underestimate of demand due to a bad anticipation of the impact of the October 1987 stock exchange crash;

* the third and fourth quarters 1988 (3% and 2.2% respectively): underestimate of demand, explained by the error on GDP;

* the first quarters of 1989 and 1990 (2.6% and 2.7%): overestimate of demand, explained by weather assumptions;

* the second quarter 1991 (4.1%): serious underestimate of the weather impact on demand.

Table E1 :

Forecast Report, Actual versus Forecasts (adjusted): GDP, Index and %

Forecast Quarter	Observed	Nov-87 EE 9	Feb-88 EE 10	Jun-88 EE 11	Nov-88 EE 12	Apr-89 S May 89	Oct-89 S Nov 89	Jun-90 S Jul 90	Dec-90 Unpubl	Apr-91 S May 91	Average Absolute Error by Quarter: Number of Forecasts	GDP Index	Percent
		4 Q 87	**1 Q 88**	**2 Q 88**	**4 Q 88**	**2 Q 89**	**4 Q 89**	**2 Q 90**	**4 Q 90**	**2 Q 91**			
1 Q 87	103.8												
2 Q 87	105.0	105.0											
		0.0%											
3 Q 87	106.0	106.0	106.0								1	0.0	0.0%
		0.0%	*0.0%*										
4 Q 87	107.2	106.4	106.7	107.2							2	0.6	0.6%
		-0.7%	*-0.5%*	*0.0%*									
1 Q 88	108.5	105.8	105.3	107.6							3	2.3	2.1%
		-2.5%	*-2.9%*	*-0.8%*									
2 Q 88	108.9	106.6	106.8	108.0	108.9						3	1.8	1.6%
		-2.1%	*-1.9%*	*-0.8%*	*0.0%*								
3 Q 88	110.1	107.6	108.1	108.8	110.1	110.0					4	1.5	1.3%
		-2.3%	*-1.8%*	*-1.2%*	*0.0%*	*-0.1%*							
4 Q 88	111.1	108.0	108.9	109.5	112.0	113.4					5	2.0	1.8%
		-2.8%	*-2.0%*	*-1.4%*	*0.8%*	*2.1%*							
1 Q 89	111.9				112.5	113.6					2	1.1	1.0%
					0.5%	*1.5%*							
2 Q 89	112.8				112.9	113.7	112.8				2	0.5	0.4%
					0.1%	*0.8%*	*0.0%*						
3 Q 89	113.4				113.1	113.7	113.2				3	0.3	0.2%
					-0.3%	*0.3%*	*-0.2%*						
4 Q 89	114.3				113.4	114.4	114.0	114.3			3	0.4	0.4%
					-0.8%	*0.1%*	*-0.3%*	*0.0%*					
1 Q 90	115.5					116.9	115.0	115.2			3	0.7	0.6%
						1.2%	*-0.4%*	*-0.3%*					
2 Q 90	115.9					117.1	116.1	115.8	115.9		3	0.5	0.4%
						1.0%	*0.2%*	*-0.1%*	*0.0%*				
3 Q 90	116.6					117.2	117.2	117.4	116.8	116.6	4	0.6	0.5%
						0.5%	*0.5%*	*0.7%*	*0.2%*	*0.0%*			
4 Q 90	116.6					117.8	118.1	118.4	117.6	117.0	5	1.2	1.0%
						1.0%	*1.3%*	*1.5%*	*0.9%*	*0.3%*			
1 Q 91	116.7							119.1	118.2	117.5	3	1.6	1.3%
								2.1%	*1.3%*	*0.7%*			
2 Q 91	117.4							119.5	118.6	118.0	3	1.3	1.1%
								1.8%	*1.0%*	*0.5%*			
3 Q 91								120.7	119.5	118.9			
4 Q91								122.0	120.1	119.5			
Average Absolute Error by Issue													
Forecast quarters		6	5	4	6	9	6	6	4	3	49		
GDP Index		1.9	2.0	1.2	0.5	1.1	0.5	1.3	1.0	0.6		1.1	
Percent		1.7%	1.8%	1.1%	0.4%	0.9%	0.5%	1.1%	0.8%	0.5%			1.0%

Table E2

Forecast Report, Actual versus Forecasts: Imported Crude Oil Price (cif) - USD/barrel and %

Forecast Quarter	Observed	Nov-87 EE 9	Feb-88 EE 10	Jun-88 EE 11	Nov-88 EE 12	Apr-89 S May 89	Oct-89 S Nov 89	Jun-90 S Jul 90	Dec-90 Unpubl	Apr-91 S May 91	Average Absolute Error by Quarter: Number of Forecasts	Dollars/ Barrel	Percent
		4 Q 87	**1 Q 88**	**2 Q 88**	**4 Q 88**	**2 Q 89**	**4 Q 89**	**2 Q 90**	**4 Q 90**	**2 Q 91**			
1 Q 87	17.12												
2 Q 87	17.98	18.13											
		0.8%											
3 Q 87	18.60	18.60	18.58								1	0.00	0.0%
		0.0%	*-0.1%*										
4 Q 87	17.78	18.40	17.80	17.88							2	0.32	1.8%
		3.5%	*0.1%*	*0.6%*									
1 Q 88	15.92	19.00	16.00	15.99							3	1.08	6.8%
		19.3%	*0.5%*	*0.4%*									
2 Q 88	15.77	19.15	16.00	15.00	15.91						3	1.46	9.3%
		21.4%	*1.5%*	*-4.9%*	*0.9%*								
3 Q 88	14.34	19.30	16.00	16.00	14.20						4	2.10	14.7%
		34.6%	*11.6%*	*11.6%*	*-1.0%*								
4 Q 88	13.08	19.35	16.00	17.00	12.50	13.27					4	3.42	26.2%
		47.9%	*22.3%*	*30.0%*	*-4.4%*	*1.5%*							
1 Q 89	16.55				13.00	16.90					2	1.95	11.8%
					-21.5%	*2.1%*							
2 Q 89	18.34				14.00	18.00	18.40				2	2.34	12.8%
					-23.7%	*-1.9%*	*0.3%*						
3 Q 89	17.04				15.00	17.00	17.50				3	0.85	5.0%
					-12.0%	*-0.2%*	*2.7%*						
4 Q 89	18.52				16.00	17.00	17.20	18.60			3	1.79	9.6%
					-13.6%	*-8.2%*	*-7.1%*	*0.4%*					
1 Q 90	19.46					17.50	17.50	19.47			3	1.31	6.7%
						-10.1%	*-10.1%*	*0.1%*					
2 Q 90	15.32					17.50	17.50	16.50	15.32		3	1.85	12.1%
						14.2%	*14.2%*	*7.7%*	*0.0%*				
3 Q 90	24.03					18.00	18.00	17.00	24.03		4	4.77	19.9%
						-25.1%	*-25.1%*	*-29.3%*	*0.0%*				
4 Q 90	32.77					18.00	18.00	17.50	31.20	32.76	4	11.60	35.4%
						-45.1%	*-45.1%*	*-46.6%*	*-4.8%*	*-0.0%*			
1 Q 91	21.09							18.00	28.00	21.25	3	3.39	16.1%
								-14.7%	*32.8%*	*0.8%*			
2 Q 91	17.94							18.50	22.60	19.00	3	2.09	11.7%
								3.1%	*26.0%*	*5.9%*			
3 Q 91	18.68							18.50	21.20	19.00	3	1.01	5.4%
								-1.0%	*13.5%*	*1.7%*			
4 Q91								18.50	20.20	20.00			
Average Absolute Error by Issue													
Forecast quarters		6	5	4	6	8	6	7	5	3	50		
Dollars/Barrel		3.05	0.98	1.60	2.19	3.40	4.45	3.90	3.13	0.51		2.82	
Percent		21.1%	7.2%	11.7%	12.7%	13.4%	17.4%	14.6%	15.4%	2.8%			13.7%

Table E3

Forecast Report, Actual versus Forecasts: Total Oil Deliveries, in Mt and %

Forecast Quarter	Observed	Nov-87 EE 9	Feb-88 EE 10	Jun-88 EE 11	Nov-88 EE 12	Apr-89 S May 89	Oct-89 S Nov 89	Jun-90 S Jul 90	Dec-90 Unpubl	Apr-91 S May 91	Average Absolute Error by Quarter: Number of Forecasts	Million tonnes	Percent
		4 Q 87	**1 Q 88**	**2 Q 88**	**4 Q 88**	**2 Q 89**	**4 Q 89**	**2 Q 90**	**4 Q 90**	**2 Q 91**			
1 Q 87	113.6												
2 Q 87	103.7	103.9											
		0.2%											
3 Q 87	109.6	105.1	109.9								1	4.5	4.1%
		-4.1%	*0.3%*										
4 Q 87	115.4	113.4	113.5	115.2							2	2.0	1.7%
		-1.7%	*-1.6%*	*-0.2%*									
1 Q 88	113.6	113.5	115.5	119.7							3	2.7	2.4%
		-0.1%	*1.7%*	*5.4%*									
2 Q 88	106.5	103.1	104.7	107.7	106.1						3	2.1	2.0%
		-3.2%	*-1.7%*	*1.1%*	*-0.4%*								
3 Q 88	109.7	104.2	107.2	108.7	109.4						4	2.3	2.1%
		-5.0%	*-2.3%*	*-0.9%*	*-0.3%*								
4 Q 88	122.1	111.7	114.4	114.6	118.5	121.8					4	7.3	6.0%
		-8.5%	*-6.3%*	*-6.1%*	*-2.9%*	*-0.2%*							
1 Q 89	114.8				118.2	113.6					2	2.3	2.0%
					3.0%	*-1.0%*							
2 Q 89	106.9				109.8	108.0	106.5				2	2.0	1.9%
					2.7%	*1.0%*	*-0.4%*						
3 Q 89	110.1				110.3	109.8	110.7				3	0.4	0.3%
					0.2%	*-0.3%*	*0.5%*						
4 Q 89	122.2				117.4	118.2	122.0	122.4			3	3.0	2.5%
					-3.9%	*-3.3%*	*-0.2%*	*0.2%*					
1 Q 90	117.3					116.2	117.6	115.9			3	0.9	0.8%
						-0.9%	*0.3%*	*-1.2%*					
2 Q 90	111.0					109.8	110.0	108.9	110.8		3	1.4	1.3%
						-1.1%	*-0.9%*	*-1.9%*	*-0.2%*				
3 Q 90	116.0					111.1	112.7	112.9	115.7		4	2.9	2.5%
						-4.2%	*-2.8%*	*-2.7%*	*-0.3%*				
4 Q 90	114.6					118.8	123.1	123.0	120.0	114.5	4	6.6	5.8%
						3.7%	*7.4%*	*7.3%*	*4.7%*	*-0.1%*			
1 Q 91	119.5							120.7	115.5	119.2	3	1.8	1.5%
								1.0%	*-3.3%*	*-0.3%*			
2 Q 91	115.0							111.3	111.2	110.2	3	4.1	3.6%
								-3.2%	*-3.3%*	*-4.2%*			
3 Q 91								113.9	114.4	112.3			
4 Q91								124.5	122.2	119.7			
Average Absolute Error by Issue													
Forecast quarters		6	5	4	6	8	6	6	4	2	47		
Million tonnes		4.3	3.2	4.0	2.5	2.2	2.3	3.3	3.4	2.5		3.04	
Percent		3.8%	2.7%	3.4%	2.2%	1.9%	2.0%	2.9%	2.9%	2.2%			2.6%

Table E4 :

Forecast Report, Actual versus Forecasts: Natural Gas, App.Consumption in Mtoe and %

Forecast Quarter	Observed	Nov-87 EE 9	Feb-88 EE 10	Jun-88 EE 11	Nov-88 EE 12	Apr-89 S May 89	Oct-89 S Nov 89	Jun-90 S Jul 90	Dec-90 Unpubl	Apr-91 S May 91	Average Absolute Error by Quarter: Number of Forecasts	Mtoe	Percent
		4 Q 87	**1 Q 88**	**2 Q 88**	**4 Q 88**	**2 Q 89**	**4 Q 89**	**2 Q 90**	**4 Q 90**	**2 Q 91**			
1 Q 87	73.1												
2 Q 87	38.8	38.8											
		0.0%											
3 Q 87	29.2	30.6	28.9								1	1.4	4.8%
		4.8%	*-1.0%*										
4 Q 87	57.9	56.0	53.4	57.9							2	3.2	5.5%
		-3.3%	*-7.8%*	*0.0%*									
1 Q 88	65.5	69.3	65.0	62.5							3	2.4	3.7%
		5.8%	*-0.8%*	*-4.6%*									
2 Q 88	37.3	41.6	41.1	41.5	37.3						3	4.1	11.0%
		11.5%	*10.2%*	*11.3%*	*0.0%*								
3 Q 88	30.3	31.5	31.0	30.9	30.8						4	0.7	2.5%
		4.0%	*2.3%*	*2.0%*	*1.7%*								
4 Q 88	58.1	60.4	59.4	61.0	58.4	58.3					4	1.7	2.9%
		4.0%	*2.2%*	*5.0%*	*0.5%*	*0.3%*							
1 Q 89	64.7				70.2	64.6					2	2.8	4.3%
					8.5%	*-0.2%*							
2 Q 89	41.7				41.1	40.6	41.3				2	0.9	2.0%
					-1.4%	*-2.6%*	*-1.0%*						
3 Q 89	31.2				30.8	31.2	31.6				3	0.3	0.9%
					-1.3%	*0.0%*	*1.3%*						
4 Q 89	62.2				57.6	62.2	62.8	62.2			3	1.7	2.8%
					-7.4%	*0.0%*	*1.0%*	*0.0%*					
1 Q 90	67.7					71.2	72.0	66.2			3	3.1	4.6%
						5.2%	*6.4%*	*-2.2%*					
2 Q 90	40.7					41.9	42.3	41.9	40.7		3	1.3	3.3%
						2.9%	*3.9%*	*2.9%*	*0.0%*				
3 Q 90	33.0					32.2	32.4	32.7	33.8		4	0.6	1.9%
						-2.4%	*-1.8%*	*-0.9%*	*2.4%*				
4 Q 90	66.5					63.8	63.8	66.9	65.7	66.4	4	1.6	2.5%
						-4.1%	*-4.1%*	*0.6%*	*-1.2%*	*-0.2%*			
1 Q 91	75.9							74.8	72.4	72.9	3	2.5	3.3%
								-1.4%	*-4.6%*	*-4.0%*			
2 Q 91	49.5							45.1	44.2	41.7	3	5.8	11.8%
								-8.9%	*-10.7%*	*-15.8%*			
3 Q 91								35.3	34.2	32.9			
4 Q91								69.1	67.5	67.0			
Average Absolute Error by Issue													
Forecast quarters		6	5	4	6	8	6	6	4	2	47		
Mtoe		2.5	2.2	2.7	2.0	1.2	1.7	1.5	2.6	5.4		2.1	
Percent		5.6%	4.7%	5.7%	3.5%	2.2%	3.1%	2.8%	4.7%	9.9%			4.1%

Table E5

Forecast Report, Actual versus Forecasts: Hard Coal Deliveries in Mt and %

Forecast Quarter	Observed	Nov-87 EE 9	Feb-88 EE 10	Jun-88 EE 11	Nov-88 EE 12	Apr-89 S May 89	Oct-89 S Nov 89	Jun-90 S Jul 90	Dec-90 Unpubl	Apr-91 S May 91	Average Absolute Error by Quarter: Number of Forecasts	Million tonnes	Percent
		4 Q 87	1 Q 88	2 Q 88	4 Q 88	2 Q 89	4 Q 89	2 Q 90	4 Q 90	2 Q 91			
1 Q 87	80.6												
2 Q 87	77.3	78.1											
		1.0%											
3 Q 87	75.4	76.0	74.8								1	0.6	0.8%
		0.8%	*-0.8%*										
4 Q 87	85.7	86.8	84.7	84.8							2	1.1	1.2%
		1.3%	*-1.2%*	*-1.1%*									
1 Q 88	81.1	80.5	77.6	83.2							3	2.1	2.5%
		-0.7%	*-4.3%*	*2.6%*									
2 Q 88	75.5	75.3	74.7	74.7	74.0						3	0.6	0.8%
		-0.3%	*-1.1%*	*-1.1%*	*-2.0%*								
3 Q 88	72.0	74.4	73.5	73.6	72.4						4	1.5	2.0%
		3.3%	*2.1%*	*2.2%*	*0.6%*								
4 Q 88	81.7	87.4	85.2	83.6	85.6	80.9					4	3.7	4.6%
		7.0%	*4.3%*	*2.3%*	*4.8%*	*-1.0%*							
1 Q 89	79.8				81.4	83.2					2	2.5	3.1%
					2.0%	*4.3%*							
2 Q 89	76.4				75.5	73.2	76.5				2	2.0	2.7%
					-1.2%	*-4.2%*	*0.1%*						
3 Q 89	72.8				72.3	69.5	70.0				3	2.2	3.0%
					-0.7%	*-4.5%*	*-3.8%*						
4 Q 89	83.7				85.7	84.0	82.4	83.1			3	1.2	1.4%
					2.4%	*0.4%*	*-1.6%*	*-0.7%*					
1 Q 90	82.8					83.6	81.7	82.3			3	0.8	1.0%
						1.0%	*-1.3%*	*-0.6%*					
2 Q 90	76.7					74.7	74.0	73.2	77.0		3	2.7	3.6%
						-2.6%	*-3.5%*	*-4.6%*	*0.4%*				
3 Q 90	74.5					71.1	70.5	70.7	71.8		4	3.5	4.7%
						-4.6%	*-5.4%*	*-5.1%*	*-3.6%*				
4 Q 90	83.7					84.3	84.5	82.5	83.8	83.7	4	0.7	0.8%
						0.7%	*1.0%*	*-1.4%*	*0.1%*	*0.0%*			
1 Q 91	83.4							82.2	83.4	82.8	3	0.6	0.7%
								-1.4%	*0.0%*	*-0.7%*			
2 Q 91	81.2							73.6	74.8	73.1	3	7.4	9.1%
								-9.4%	*-7.9%*	*-10.0%*			
3 Q 91								71.2	73.0	72.4			
4 Q91								84.6	84.6	84.5			
Average Absolute Error by Issue													
Forecast quarters		6	5	4	6	8	6	6	4	2	47		
Million tonnes		1.8	2.1	1.6	1.6	2.1	2.1	3.0	2.3	4.4		2.2	
Percent		*2.2%*	*2.6%*	*2.0%*	*1.9%*	*2.8%*	*2.8%*	*3.7%*	*2.9%*	*5.3%*			2.8%

Table E6

Forecast Report, Actual versus Forecasts: Hard Coal Production in Mt and %

Forecast Quarter	Observed	Nov-87 EE 9	Feb-88 EE 10	Jun-88 EE 11	Nov-88 EE 12	Apr-89 S May 89	Oct-89 S Nov 89	Jun-90 S Jul 90	Dec-90 Unpubl	Apr-91 S May 91	Average Absolute Error by Quarter: Number of Forecasts	Million tonnes	Percent
		4 Q 87	**1 Q 88**	**2 Q 88**	**4 Q 88**	**2 Q 89**	**4 Q 89**	**2 Q 90**	**4 Q 90**	**2 Q 91**			
1 Q 87	58.0												
2 Q 87	55.2	55.2											
		0.0%											
3 Q 87	50.7	52.5	51.6								1	1.8	3.6%
		3.6%	*1.8%*										
4 Q 87	57.9	58.4	58.7	57.9							2	0.7	1.1%
		0.9%	*1.4%*	*0.0%*									
1 Q 88	55.4	56.3	56.3	56.8							3	1.1	1.9%
		1.6%	*1.6%*	*2.5%*									
2 Q 88	52.7	53.6	54.4	54.1	52.7						3	1.3	2.5%
		1.7%	*3.2%*	*2.7%*	*0.0%*								
3 Q 88	49.8	51.0	50.0	49.7	49.9						4	0.4	0.8%
		2.4%	*0.4%*	*-0.2%*	*0.2%*								
4 Q 88	56.8	56.6	56.9	56.8	56.0	56.8					4	0.3	0.5%
		-0.4%	*0.2%*	*0.0%*	*-1.4%*	*0.0%*							
1 Q 89	56.7				54.5	53.6					2	2.6	4.7%
					-3.9%	*-5.5%*							
2 Q 89	51.8				51.9	51.0	51.8				2	0.4	0.9%
					0.2%	*-1.5%*	*0.0%*						
3 Q 89	47.7				49.1	48.2	48.3				3	0.8	1.7%
					2.9%	*1.0%*	*1.3%*						
4 Q 89	52.5				55.1	55.0	55.1	52.5			3	2.6	4.9%
					5.0%	*4.8%*	*5.0%*	*0.0%*					
1 Q 90	50.6					51.9	54.8	50.6			3	1.8	3.6%
						2.6%	*8.3%*	*0.0%*					
2 Q 90	49.9					49.4	50.2	50.7	49.9		3	0.5	1.1%
						-1.0%	*0.6%*	*1.6%*	*0.0%*				
3 Q 90	48.6					46.6	46.8	46.6	48.6		4	1.5	3.0%
						-4.1%	*-3.7%*	*-4.1%*	*0.0%*				
4 Q 90	48.3					53.2	53.4	51.3	51.2	48.3	4	4.0	8.2%
						10.1%	*10.6%*	*6.2%*	*6.0%*	*0.0%*			
1 Q 91	49.9							49.5	49.3	50.7	3	0.6	1.2%
								-0.8%	*-1.2%*	*1.6%*			
2 Q 91	48.9							49.5	48.6	46.9	3	1.0	2.0%
								1.2%	*-0.6%*	*-4.1%*			
3 Q 91								45.6	47.4	45.7			
4 Q91								50.2	49.9	45.4			
Average Absolute Error by Issue													
Forecast quarters		6	5	4	6	8	6	6	4	2	47		
Million tonnes		0.9	0.7	0.7	1.2	2.0	2.4	1.1	1.0	1.4		1.3	
Percent		1.8%	1.4%	1.3%	2.3%	3.8%	4.9%	2.3%	2.0%	2.8%			2.6%

Table E7

Forecast Report, Actual versus Forecasts: Nuclear Heat in TWh and %

Forecast Quarter	Observed	Nov-87 EE 9	Feb-88 EE 10	Juni-88 EE 11	Nov-88 EE 12	Apr-89 S May 89	Oct-89 S Nov 89	Jun-90 S Jul 90	Dec-90 Unpubl	Apr-91 S May 91	Average Absolute Error by Quarter: Number of Forecasts	TWh	Percent
		4 Q 87	**1 Q 88**	**2 Q 88**	**4 Q 88**	**2 Q 89**	**4 Q 89**	**2 Q 90**	**4 Q 90**	**2 Q 91**			
1 Q 87	446.0												
2 Q 87	352.2	358.7											
		1.8%											
3 Q 87	347.6	374.5	348.3								1	26.9	7.7%
		7.7%	*0.2%*										
4 Q 87	434.6	451.7	415.3	434.6							2	18.2	4.2%
		3.9%	*-4.4%*	*0.0%*									
1 Q 88	445.0	472.0	439.0	434.3							3	14.6	3.3%
		6.1%	*-1.3%*	*-2.4%*									
2 Q 88	379.2	403.7	375.3	377.5	379.2						3	10.0	2.6%
		6.5%	*-1.0%*	*-0.4%*	*0.0%*								
3 Q 88	413.7	376.5	358.9	369.2	376.0						4	43.5	10.5%
		-9.0%	*-13.2%*	*-10.8%*	*-9.1%*								
4 Q 88	457.1	450.8	425.7	454.7	456.2	457.1					4	10.3	2.2%
		-1.4%	*-6.9%*	*-0.5%*	*-0.2%*	*0.0%*							
1 Q 89	499.0				478.0	489.0					2	15.5	3.1%
					-4.2%	*-2.0%*							
2 Q 89	437.1				413.4	441.2	437.1				2	13.9	3.2%
					-5.4%	*0.9%*	*0.0%*						
3 Q 89	421.5				401.6	438.0	444.1				3	19.7	4.7%
					-4.7%	*3.9%*	*5.4%*						
4 Q 89	471.4				470.7	483.4	489.6	471.4			3	10.3	2.2%
					-0.1%	*2.5%*	*3.9%*	*0.0%*					
1 Q 90	473.5					497.0	525.0	499.9			3	33.8	7.1%
						5.0%	*10.9%*	*5.6%*					
2 Q 90	428.5					465.1	465.0	468.9	425.7		3	37.8	8.8%
						8.5%	*8.5%*	*9.4%*	*-0.7%*				
3 Q 90	427.4					457.9	456.3	455.5	441.5		4	25.4	5.9%
						7.1%	*6.8%*	*6.6%*	*3.3%*				
4 Q 90	490.3					494.1	501.1	489.5	487.8	489.6	4	4.5	0.9%
						0.8%	*2.2%*	*-0.2%*	*-0.5%*	*-0.1%*			
1 Q 91	521.0							503.7	499.1	505.3	3	18.3	3.5%
								-3.3%	*-4.2%*	*-3.0%*			
2 Q 91	424.7							470.3	448.4	456.9	3	33.8	8.0%
								10.7%	*5.6%*	*7.6%*			
3 Q 91								456.9	448.4	448.1			
4 Q91								495.1	494.3	492.5			
Average Absolute Error by Issue													
Forecast quarters		6	5	4	6	8	6	6	4	2	47		
TWh		23.2	23.1	14.8	17.3	17.1	28.1	26.4	15.6	24.0		21.1	
Percent		5.8%	5.4%	3.5%	4.0%	3.9%	6.3%	6.0%	3.4%	5.3%			4.8%

Table E8 :
Forecast Report, Actual versus Forecasts: Electricity Demand (AIM) in TWh and %

Forecast Quarter	Observed	Nov-87 EE 9	Feb-88 EE 10	Jun-88 EE 11	Nov-88 EE 12	Apr-89 S May 89	Oct-89 S Nov 89	Jun-90 S Jul 90	Dec-90 Unpubl	Apr-91 S May 91	Average Absolute Error by Quarter: Number of Forecasts	Twh	Percent
		4 Q 87	**1 Q 88**	**2 Q 88**	**4 Q 88**	**2 Q 89**	**4 Q 89**	**2 Q 90**	**4 Q 90**	**2 Q 91**			
1 Q 87	441.5												
2 Q 87	361.4	363.7											
		0.6%											
3 Q 87	347.3	344.9	344.4								1	2.4	0.7%
		-0.7%	*-0.8%*										
4 Q 87	419.6	411.8	412.1	417.0							2	7.7	1.8%
		-1.9%	*-1.8%*	*-0.6%*									
1 Q 88	440.4	441.8	438.3	436.3							3	2.5	0.6%
		0.3%	*-0.5%*	*-0.9%*									
2 Q 88	373.6	371.1	372.5	378.9	370.6						3	3.0	0.8%
		-0.7%	*-0.3%*	*1.4%*	*-0.8%*								
3 Q 88	364.3	351.6	353.2	357.2	360.6						4	8.7	2.4%
		-3.5%	*-3.0%*	*-1.9%*	*-1.0%*								
4 Q 88	436.4	422.5	426.9	433.1	439.9	436.7					4	7.5	1.7%
		-3.2%	*-2.2%*	*-0.8%*	*0.8%*	*0.1%*							
1 Q 89	444.7				459.2	458.7					2	14.3	3.2%
					3.3%	*3.1%*							
2 Q 89	393.1				391.0	393.5	392.8				2	1.3	0.3%
					-0.5%	*0.1%*	*-0.1%*						
3 Q 89	374.4				372.9	369.1	372.2				3	3.0	0.8%
					-0.4%	*-1.4%*	*-0.6%*						
4 Q 89	443.9				451.6	453.5	457.2	443.9			3	10.2	2.3%
					1.7%	*2.2%*	*3.0%*	*0.0%*					
1 Q 90	453.3					481.7	478.9	454.3			3	18.3	4.0%
						6.3%	*5.6%*	*0.2%*					
2 Q 90	397.8					405.1	405.6	401.3	397.8		3	6.2	1.6%
						1.8%	*2.0%*	*0.9%*	*0.0%*				
3 Q 90	384.8					381.0	384.2	387.2	380.7		4	2.7	0.7%
						-1.0%	*-0.2%*	*0.6%*	*-1.1%*				
4 Q 90	458.3					468.4	472.1	468.3	458.1	458.3	4	8.5	1.9%
						2.2%	*3.0%*	*2.2%*	*-0.0%*	*0.0%*			
1 Q 91	479.2							494.3	477.9	480.1	3	5.8	1.2%
								3.2%	*-0.3%*	*0.2%*			
2 Q 91	413.6							416.7	407.7	405.3	3	5.8	1.4%
								0.7%	*-1.4%*	*-2.0%*			
3 Q 91								394.7	386.3	385.9			
4 Q91								486.3	472.9	471.4			
Average Absolute Error by Issue													
Forecast quarters		6	5	4	6	8	6	6	4	2	47		
TWh		6.8	6.3	4.9	5.5	9.9	10.6	5.8	2.9	4.6		6.9	
Percent		1.7%	1.6%	1.3%	1.3%	2.3%	2.4%	1.3%	0.7%	1.1%			1.6%

Table E9 :

Forecast Report, Actual versus Forecasts: Primary Electricity in TWh and %

Forecast Quarter	Observed	Nov-87 EE 9	Feb-88 EE 10	Jun-88 EE 11	Nov-88 EE 12	Apr-89 S May 89	Oct-89 S Nov 89	Jun-90 S Jul 90	Dec-90 Unpubl	Apr-91 S May 91	Average Absolute Error by Quarter: Number of Forecasts	TWh	Percent
		4 Q 87	**1 Q 88**	**2 Q 88**	**4 Q 88**	**2 Q 89**	**4 Q 89**	**2 Q 90**	**4 Q 90**	**2 Q 91**			
1 Q 87	40.1												
2 Q 87	47.1	49.5											
		5.1%											
3 Q 87	40.2	36.0	40.0								1	4.2	10.4%
		-10.4%	*-0.5%*										
4 Q 87	46.6	29.7	31.4	45.7							2	16.1	34.4%
		-36.3%	*-32.6%*	*-1.9%*									
1 Q 88	54.0	40.6	41.3	47.3							3	10.9	20.2%
		-24.8%	*-23.5%*	*-12.4%*									
2 Q 88	56.8	51.1	51.7	54.3	56.5						3	4.4	7.8%
		-10.0%	*-9.0%*	*-4.4%*	*-0.5%*								
3 Q 88	42.5	36.8	37.0	38.1	38.9						4	4.8	11.3%
		-13.4%	*-12.9%*	*-10.4%*	*-8.5%*								
4 Q 88	38.8	30.1	30.2	30.8	31.2	38.6					4	8.2	21.2%
		-22.4%	*-22.2%*	*-20.6%*	*-19.6%*	*-0.5%*							
1 Q 89	29.3				44.4	38.2					2	12.0	41.0%
					51.5%	*30.4%*							
2 Q 89	41.8				56.9	56.0	41.7				2	14.7	35.0%
					36.1%	*34.0%*	*-0.2%*						
3 Q 89	30.7				42.8	42.3	38.1				3	10.4	33.8%
					39.4%	*37.8%*	*24.1%*						
4 Q 89	29.8				35.6	41.9	39.9	29.8			3	9.3	31.3%
					19.5%	*40.6%*	*33.9%*	*0.0%*					
1 Q 90	40.2					49.9	42.4	34.7			3	5.8	14.4%
						24.1%	*5.5%*	*-13.7%*					
2 Q 90	37.2					52.9	50.9	42.1	37.2		3	11.4	30.7%
						42.2%	*36.8%*	*13.2%*	*0.0%*				
3 Q 90	30.0					40.9	40.4	33.9	29.7		4	6.4	21.2%
						36.3%	*34.7%*	*13.0%*	*-1.0%*				
4 Q 90	37.4					44.2	40.0	37.5	38.6	37.4	4	2.7	7.2%
						18.2%	*7.0%*	*0.3%*	*3.2%*	*0.0%*			
1 Q 91	44.9							45.3	43.7	45.0	3	0.6	1.3%
								0.9%	*-2.7%*	*0.2%*			
2 Q 91	45.0							53.6	51.6	52.5	3	7.6	16.8%
								19.1%	*14.7%*	*16.7%*			
3 Q 91								41.8	33.2	36.8			
4 Q91								42.4	38.0	40.1			
Average Absolute Error by Issue													
Forecast quarters		6	5	4	6	8	6	6	4	2	47		
TWh		9.1	9.4	5.4	9.9	11.2	7.7	3.9	2.3	3.8		7.6	
Percent		19.6%	20.0%	11.9%	29.1%	32.9%	23.7%	10.0%	5.4%	8.4%			20.1%

Table E10 :
Forecast Report, Actual versus Forecasts: Total Apparent Consumption in Mtoe and %

Forecast Quarter	Observed	Nov-87 EE 9	Feb-88 EE 10	Jun-88 EE 11	Nov-88 EE 12	Apr-89 S May 89	Oct-89 S Nov 89	Jun-90 S Jul 90	Dec-90 Unpubl	Apr-91 S May 91	Average Absolute Error by Quarter: Number of Forecasts	Mtoe	Percent
		4 Q 87	**1 Q 88**	**2 Q 88**	**4 Q 88**	**2 Q 89**	**4 Q 89**	**2 Q 90**	**4 Q 90**	**2 Q 91**			
1 Q 87	302.1												
2 Q 87	241.4	240.4											
		-0.4%											
3 Q 87	232.4	228.2	232.4								1	4.2	1.8%
		-1.8%	*0.0%*										
4 Q 87	287.4	279.5	275.3	284.6							2	10.0	3.5%
		-2.7%	*-4.2%*	*-1.0%*									
1 Q 88	293.3	298.1	293.8	297.9							3	3.3	1.1%
		1.6%	*0.2%*	*1.6%*									
2 Q 88	239.9	242.6	243.8	248.8	239.3						3	5.2	2.2%
		1.1%	*1.6%*	*3.7%*	*-0.3%*								
3 Q 88	240.6	228.8	231.9	235.4	237.2						4	7.3	3.0%
		-4.9%	*-3.6%*	*-2.2%*	*-1.4%*								
4 Q 88	294.7	283.5	284.1	290.4	294.3	292.2					4	6.6	2.2%
		-3.8%	*-3.6%*	*-1.5%*	*-0.1%*	*-0.8%*							
1 Q 89	295.3				308.6	297.1					2	7.6	2.6%
					4.5%	*0.6%*							
2 Q 89	251.6				254.6	251.9	251.5				2	1.7	0.7%
					1.2%	*0.1%*	*-0.0%*						
3 Q 89	241.7				240.3	240.0	242.8				3	1.4	0.6%
					-0.6%	*-0.7%*	*0.5%*						
4 Q 89	299.5				293.9	298.9	302.0	300.0			3	2.9	1.0%
					-1.9%	*-0.2%*	*0.8%*	*0.2%*					
1 Q 90	299.5					310.2	312.2	298.6			3	8.1	2.7%
						3.6%	*4.2%*	*-0.3%*					
2 Q 90	257.7					258.5	260.4	256.8	256.6		3	1.5	0.6%
						0.3%	*1.0%*	*-0.3%*	*-0.4%*				
3 Q 90	249.4					244.7	248.0	248.2	253.9		4	3.0	1.2%
						-1.9%	*-0.6%*	*-0.5%*	*1.8%*				
4 Q 90	302.5					303.4	307.1	307.6	301.3	301.5	4	3.0	1.0%
						0.3%	*1.5%*	*1.7%*	*-0.4%*	*-0.3%*			
1 Q 91	316.8							317.4	306.6	312.7	3	5.0	1.6%
								0.2%	*-3.2%*	*-1.3%*			
2 Q 91	272.0							263.4	260.3	258.6	3	11.2	4.1%
								-3.2%	*-4.3%*	*-4.9%*			
3 Q 91								251.8	249.9	247.6			
4 Q91								313.5	306.9	307.8			
Average Absolute Error by Issue													
Forecast quarters		6	5	4	6	8	6	6	4	2	47		
Mtoe		7.1	7.2	5.7	4.5	2.7	4.2	2.9	6.9	8.8		5.1	
Percent		2.7%	2.6%	2.2%	1.6%	1.0%	1.4%	1.0%	2.4%	3.1%			1.8%

12

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