

COMMISSION OF THE EUROPEAN COMMUNITIES

The Energy Situation in the Community

Situation 1978

Outlook 1979

Report as at 15 February 1979

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ENERGY DEMAND

In 1978 the estimated inland demand for energy reached 937 million tons of oil equivalent (m toe), slightly exceeding the 1973 level of consumption and representing a growth of 2.3% on 1977. This increase in demand, which contrasted with the virtual stagnation of the previous year, was a reflection of the somewhat higher rate of economic growth, the increase in GDP in 1978 being estimated at 2.8%. The GDP/energy growth relationship was significantly different from that of 1977 (GDP +2.3% / energy -0.08%), but broadly in line with the objective established for the year 1985 for the Community (1.0 : 0.8).

The economic outlook for 1979 indicates a higher rate of growth estimated at 3.4%. The forecast rate of growth in inland energy consumption is of the order of 2.9%. This implies a GDP/energy growth relationship fairly similar to that of last year. The demand for oil is expected to grow by about 2.0%, or the same rate as in 1978, and that of natural gas to rise by about 7%. However, some diminution in the rate of growth of coal (+1.7%) is envisaged. Net electricity consumption is expected to rise by about 4-5% (Appendix 1).

OIL

Consumption in the EEC, USA and Japan (which account for 85% of OECD demand) as a whole is estimated to have risen in 1978 by about 1.7%. In all three regions the increase occurred mainly in motor gasoline and heating gasoil, while demand for residual fuel changed little. Official and company forecasts for 1979 suggest a further growth in total consumption of the order of 2%. However, the OECD's requirement for OPEC oil is expected to change little over the years 1977-79 because of increased production outside OPEC, mostly in the North Sea (Appendix 2).

Crude oil supplies remained generally adequate throughout the year 1978, but in April Saudi Arabia placed new restrictions upon the export of Arabian Light crude, limiting it to 65% of total 1978 exports. The consequent reduction in light crude availability led to a rise in the prices of gasoline and the other lighter products in the second half-year.

The supply prospects for 1979 became very uncertain when Iranian exports ceased at the end of 1978. Although the replacement of 5 million barrels per day of Iranian exports is within the "technical" capacity of other OPEC states, its loss was not fully made good in the early part of 1979, and there will remain a shortfall of about 2 m b/d (100 m t/y), or 5% of OECD consumption, assuming Saudi Arabia limits production to 9.5 m b/d and others continue to produce at end 1978 levels. A run down of stocks of about 10 million tons per month, therefore, seems likely so long as Iranian exports are withheld, but this figure is to be compared with OECD stocks of crude oil and finished products of the order of 400 million tons at the end of 1978.

Although no early deficiency in overall supply is expected, the consequences for certain companies, and for their customers, were already serious by early 1979, and their efforts to obtain additional supplies on the spot and auction markets pushed prices to levels well above official state selling prices.

The official selling price of the reference crude (Arabian Light 34° API) remained unchanged throughout 1978. In December OPEC announced quarterly increases for 1979, starting with 5% in January, reaching a cumulative 14.5% by October and averaging 10% for the year. Higher first quarter increases were applied to light low sulphur crudes whose contract prices in many cases rose by over 10%. In February Saudi Arabia decided to apply the prices agreed by OPEC for October 1979 to those additional quantities produced to replace lost Iranian production, bringing the average price increase to 6.5% so far this year.

The average cost of crude oil imported by the Community during 1978 changed very little (Appendix 3). F.o.b. dollar prices for crude oil were in fact virtually unchanged over the period January/September, while oil prices expressed in national currencies fell on average by about 10% as a result of the decline in the value of the dollar. Official and companies' scheduled selling prices for petroleum products in the Member States likewise moved little in 1978, although there were some increases for gasoline and reductions for high sulphur fuel oil in the second half. In 1979 the Community's supply costs must be expected to rise rather more than the 10% average increase announced by OPEC because of the larger increase in prices of the light low sulphur crude and the elimination of discounts.

A similar trend is foreseen for domestic product selling prices in the EEC, while importers and consumers whose purchase prices are linked to the Rotterdam spot market will face much higher increases.

Gross consumption of oil in the Community is estimated to have reached about 535 million tons in 1978, representing an increase of about 2% on 1977. This increase resulted from higher demand for distillates (motor gasoline +5.5%, gasoils +6%), while consumption of residual fuel oil was little changed. Demand trends were not uniform in the various member countries, increases of 4-5% in France, Germany and the United Kingdom contrasting with reduced or unchanged consumption in Denmark, the Netherlands and Italy. A similar increase in demand is generally expected in 1979.

The increase in consumption in 1978 was more than covered by higher indigenous production of crude oil which rose from nearly 49 million tons in 1977 to an estimated 63 million tons in 1978, representing 12% of total EEC supply. Import requirements of crude and products were consequently slightly lower at about 472 million tons. Gross consumption in 1979 is estimated to reach about 545 million tons and, with domestic production expected to rise to 95 million tons, the import requirement should be further reduced to 450 million tons (22% below 1973). The total cost of Community net import requirements in 1979 is tentatively estimated at over US \$52 bn. compared with \$48 bn. in 1978.

NATURAL GAS

The year 1978 has seen a continuation in the growth of the importance of gas in meeting the Community's energy needs. The share held by natural gas of total primary energy consumption within the Community is estimated to have increased from 16.7% in 1976 to 17.1% in 1977 and 17.5% in 1978. As Community production of gas has slowed down, this rapid increase is being met from imports.

In fact a fall of almost 5% was recorded for total gas production within the Community in 1978 at 135 m toe. This was partly due to a fall in production of almost 9% by the Netherlands, the main producer in the Community, reflecting a policy of more selective utilization of the country's natural gas resources. There was also a 4% fall in gas production by the UK, whilst German production

increased by almost 10%. For the first time, Ireland reported production of small quantities of natural gas, which although forecast to grow rapidly, will still remain relatively small compared to other Member States' production.

Against this fall in Community production there was approximately a 5% increase in total consumption of gas to about 164 m toe. This was despite a fall in consumption by the Netherlands, although all other Member States increased their consumption. The increase recorded for the Federal Republic of Germany was about 10%, for France 7% and for the UK about 3%.

The disparity between growing consumption and a fall in production was made up by a jump of 74% in the quantity of gas imported from third countries. In particular there was a massive increase in the gas imported from Norway and this trend will continue so that the quantities supplied in 1980 will be double the 1978 level. The USSR also increased the quantities supplied during 1978, and there was a relatively small increase in the supplies of gas from Algeria. The other third country supplier, Libya, has maintained supplies (to Italy) at about the same level as 1977.

The use of gas in power stations fell by 5%; however, the forecast for 1979 is for an increase of almost 4% over 1978. Only the UK is forecast to decrease its use of gas for electricity generation this coming year, whilst increases are forecast for the Federal Republic of Germany, the Netherlands, Belgium and Ireland.

Looking to the future, production is forecast to increase in 1979 by about 2% and imports by about 30%. These sources will be used to meet a forecast increase in demand of about 7%. This increase is forecast to result from a fairly large increase in the industrial sector and a more moderate increase of 5% in the domestic and commercial sectors.

COAL

Total coal consumption in the Community in 1978 at about 290 m tonnes (177.1 m toe) showed a modest increase over that of the previous year. Electricity producers who, for the first time, emerged as the biggest consumers of coal in the Community in 1976, have continued to increase their lead over the next largest market, the steel industry.

Provisional figures show electricity coal-burn to have been of the order of 159 m tonnes in 1978 compared to slightly under 151 m tonnes the previous year. This growth should be seen in the context of the above-average availability of hydro-electricity, at least during the first part of the year, and a number of nuclear power stations coming into operation. However, this further rise has done little to narrow the enormous differences in coal consumption for electricity generation between different Member States: about 80% of all hard coal for electricity generation was used in the UK and Germany, or an even higher percentage if brown coal is taken into account.

The markets for coal and coke for steel production at about 72 m tonnes (coke being reckoned as coal by a factor of 1.3) and in foundries and general industry, have been stagnant in 1978 with no more than faint indications of an upturn. On the other hand, the market for domestic solid fuels has continued its contraction, though at a slightly slower rate than in recent years, probably due to prolonged cold weather.

Coal production in the Community in 1978 of about 238 m tonnes (147 m toe) represents a marginal fall from the previous year. However, production could have been substantially higher if market conditions had not obliged the German coal industry to hold back output at well below capacity.

Like the picture for production and consumption, that for coal imports from outside the Community in 1978 at about 45 m tonnes (31.8 m toe) is similar to that in 1977. Of these, about 24 m tonnes went to power stations and 18 m tonnes were coking coal.

There was little change in world market coal prices in 1978 in terms of US dollars, implying a fall in prices in most Community currencies. This situation, combined with rising costs, has put the Community's coal industry under increasingly severe financial pressure, resulting in mounting losses and needs for subsidies.

German coal producers continue to hold large stocks of coal of varying qualities and of coke, though these are slightly smaller than in 1977. In the UK, stocks of coal suitable for electricity generation and general industry have risen to substantial levels. Elsewhere in the Community, producers' stocks do not exceed working requirements.

No important changes to coal consumption can be expected for 1979. Existing coal-fired power stations are already being used at close to their full economic potential but some new coal-fired plant due to come into operation is expected to lead to a slight increase in the Community's total coal-burn. Demand for the steel industry is unlikely to rise above that of last year, while further significant expansion of the market for coal in general industry must await further technical developments.

Likewise, there are no grounds to expect any substantial changes in 1979 either in the Community's own coal production or in imports from third countries.

ELECTRICITY

(i) Electricity consumption

In 1978 net consumption of electricity (at 1127.7 Twh) in the Community increased by 4.2%. At national level, the more significant increases in consumption were in Denmark (6.8%), France (6.6%) and Ireland (6.9%), whose economy was the fastest growing in the Community. The lowest rates of increase were in Luxembourg and the UK (Appendix 5).

In 1979 electricity consumption is forecast to increase further by between 4-5%; the position will be in part affected by the particularly severe winter weather at the start of the year.

(ii) Conventional power stations

Conventional thermal power stations (i.e. those fuelled principally by coal, oil or natural gas) continued in 1978 to supply about three-quarters of total net production by Community power stations and this should remain the position in 1979. Production from these stations was over 6% higher than in 1977 and entailed further increases to coal and oil burning, but use of natural gas in power stations is estimated to have decreased for the second consecutive year.

Hydrological conditions were not as favourable in 1978 for production of hydro-electricity as in the earlier record year of 1977 and hydro-generation accordingly fell by about 8% to 141 Twh (Appendix 5).

(iii) Nuclear energy

The nuclear units which had been expected to come into operation in 1978 did so in keeping with the planned datelines, with the exception of Philippsburg 1 (Federal Republic of Germany). The fuel loading for this unit of 864 MWe, which had been blocked for two years, was finally approved and this unit should enter into operation early in 1979.

The addition of nearly 4000 MWe to the installed nuclear capacity of the Community has raised total nuclear capacity to 26,300 MWe at end 1978 and the corresponding production is estimated at some 115 TWh or 10% of total net electricity production.

Apart from Philippsburg 1, only two or three additional French units are expected to be linked to the grid in 1979, and installed nuclear capacity within the Community should reach between 29,000 and 30,000 MWe.

NUCLEAR FUELS

In the natural uranium field, the market was somewhat more lively in 1978 than in 1977 despite construction delays of power plants in the majority of Member States. The needs of reactors in operation or which are likely to enter into operation in the near future are covered by existing contracts.

In brief, the year 1978 may be described as one in which supplies continued to be received from the traditional suppliers, and in which the market awaited the prospects of production in Australia to be realized.

With regard to the outlook, conditions of stable supply seem likely and major difficulties in respect of natural uranium or enriched uranium cannot be foreseen, although price uncertainty is probable, particularly because of the increasing intervention of public authorities in the commercial field.

Table 1

Inland Consumption of Primary Energy in the Community

	1976		1977		1978 Estimates		1979 Forecasts	
	M toe	%	M toe	%	M toe	%	M toe	%
Hard coal	178.6	19.5	172.9	18.9	177.1	18.9	180.3	18.7
Lignite	29.2	3.2	26.8	2.9	26.8	2.9	27.0	2.8
Oil	507.4	55.3	493.9	53.9	505.5	53.9	515.0	53.4
Natural gas	153.3	16.7	157.3	17.1	164.3	17.5	175.4	18.2
Nuclear energy	21.8	2.4	26.3	2.9	28.7	3.1	35.1	3.6
Hydro, geothermal and others	26.7	2.9	39.1	4.3	34.9	3.7	32.0	3.3
TOTAL	917.0	100.0	916.3	100.0	937.3	100.0	964.8	100.0

Table 2

Percentage Variation in GDP and Energy Consumption

	1977-1976	1978-1977 Estimates	1979-1978 Forecasts
Gross Domestic Product	+ 2.3	+ 2.8	+ 3.4
Energy inland consumption of which:	- 0.08	+ 2.3	+ 2.9
- Oil	- 2.7	+ 2.3	+ 1.9
- Solid fuels	- 3.9	+ 2.1	+ 1.7
- Natural gas	+ 2.6	+ 4.5	+ 6.8
- Nuclear energy	+ 20.6	+ 9.1	+ 22.3
- Hydro, geothermal and others	+ 46.4	- 10.7	- 8.3

Table 3

Energy Supply in the Community

(M toe)

	1976		1977		1978		1979	
	Produ- ction	Net imports*	Produ- ction	Net imports*	Produ- ction	Net imports*	Produ- ction	Net imports*
- Solid fuels	186.8	28.4	174.3	27.7	173.5	26.3	174.7	31.6
- Oil	21.8	520.1	48.6	480.3	63.0	472.0	95.0	450.0
- Natural gas	142.2	11.6	142.2	16.9	135.2	30.6	137.9	38.6
- Primary electricity, etc.	47.4	1.1	61.5	3.8	60.3	3.3	64.4	2.7
TOTAL	398.2	561.2	426.6	528.7	432.0	532.2	472.0	522.9

* Imports minus exports.

Source: 1976, 1977 and partly 1978: SOEC; other 1978 and 1979: DG XVII (EEC).

Table 4

EEC: Oil consumption, production and import requirements

(millions of tonnes)

	1977	77/78	1978 estimates	78/79	1979
<u>Consumption</u>					
Inland *	493.9	+ 2.3%	505.5	+ 1.9%	515.0
<u>Bunkers</u>	30.6		29.5		30.0
Total	524.5	+ 2.0%	535.0	+ 1.9%	545.0
<u>Production</u>	48.6		63.0		95.0
Net imports	475.9 **	- 0.8%	472.0	- 4.7%	450.0

* Including refiners' own consumption and losses

** Including stock variation

Appendix 2

EEC, USA AND JAPAN: OIL IMPORT REQUIREMENTS 1977-79

(Millions of tonnes)

	1977	1977/78 % ±	1978 (est.)	1978/79 % ±	1979
<u>Consumption</u> ¹					
EEC	525	+ 2.0	535	+ 2.0	545
USA	890	+ 1.5	905	+ 2.0	922
Japan	278	+ 1.0	281	+ 3.2	290
	1,693	+ 1.7	1,721	+ 2.1	1,757
<u>Production</u>					
EEC	49	+29.0	63	+51.0	95
USA	490	+ 2.5	503	-	505
Japan	1	-	1	-	1
	540	+ 5.0	567	+ 6.0	601
<u>Import requirements</u> ²					
EEC	476	- 0.8	472	- 4.7	450
USA	400	-	402	+ 3.7	417
Japan	277	+ 1.1	280	+ 3.2	289
	1,153	-	1,154	-	1,156

¹Including bunkers and refinery own use and losses

²Excluding imports for strategic reserve and other stock changes

Sources: EEC: Eurostat and Commission estimates
 USA: Chase Manhattan, Independent Petroleum Association
 Japan: OECD and Government 5-year plan

Table 1

Appendix 3

ROTTERDAM: Monthly average fob barge prices Dec. 1977 to Feb. 1979 (\$/tonne)

	Dec. 1977	June 1978	Dec. 1978	Jan. 1979	mid-Feb. 1979
<u>Motor Gasoline</u>					
Premium	138	154	214	219	320
Regular	130	141	201	209	310
Naphtha	122	131	180	199	289
Jet Kero	130	132	187	207	323
Gasoil	120	121	152	194	326
<u>Fuel Oil</u>					
Max. 1% S	87	84	97	112	137
Max. 3% S	80	73	80	84	107
Average (Arab Light Yield)	101	102	130	147	220

Movements in spot prices of some crude oils 1978/79 (\$/tonne)

	1978					1979	
	State selling price	Estimated spot values				State selling price 1 Jan.	Spot Value mid-Feb.
		1st Quart	2nd Quart	3rd Quart	Nov.		
Arabian Heavy 27° API	84.9	84.4	83.8	83.2	85.2	88.3	140
Arabian Light 34° API	93.6	93.3	93.6	94.3	97.3	98.3	160
Libyan Zuetina 41° API	106.5	105.7	105.5	106.1	113.4	113.0	180

Sources: Platts Oilgram, Petroleum Intelligence Weekly

Table 2

Average fob and cif prices of crude oil
imported into Member States (\$/tonne)

		B	D	DK	F	IRL	I	NL	UK	EEC
<u>F.o.b. cost</u>										
1977	q 3	92.37	91.84	97.20	92.79	91.59	92.21	95.40	92.30	94.01
	q 4	93.92	94.11	98.98	94.26	93.06	93.10	95.48	92.82	94.90
1978	q 1	94.06	94.69	98.16	93.53	92.76	92.35	96.58	91.78	94.45
	q 2	93.26	93.38	97.13	93.31	93.20	92.88	94.30	92.67	94.23
	q 3	92.74	94.55	97.05	93.16	92.40	92.88	94.74	92.97	94.16
	q 4									
<u>C.i.f. cost</u>										
1977	q 3	100.67	101.06	103.57	102.64	101.49	98.08	102.09	102.15	101.77
	q 4	101.99	101.79	104.60	104.11	103.10	98.37	102.46	101.78	102.36
1978	q 1	101.99	99.38	104.01	103.81	102.88	97.85	102.53	101.41	101.84
	q 2	101.70	101.50	102.31	104.18	102.88	97.63	101.94	101.19	101.54
	q 3	100.55	100.92	102.53	104.69	102.15	97.56	101.43	101.19	101.54
	q 4									

Index of cif crude oil costs in national currencies

(1977 q 1 = 100)

1977	q 3	103.65	103.78	99.04	101.92	100.87	102.64	101.41	101.62	101.45
	q 4	102.33	104.56	96.56	102.20	97.63	102.48	99.47	96.86	99.98
1978	q 1	94.92	95.85	89.57	100.23	94.88	100.01	92.76	90.81	95.18
	q 2	95.47	97.21	88.11	97.25	91.81	99.84	91.87	95.14	94.81
	q 3	92.82	94.36	85.33	93.22	91.28	96.97	89.36	90.42	91.33
	q 4									

Source : Information received under Council Directive 76/491/EEC of 4/5/1976.

Summary of Coal Supply Situation in the Community

(t = t) Mio t	Production	Imports	Exports	Stock variation	Inland consumption
1977					
Coal	240.4	46.0	1.8	+ 2.5*	287.1
Coke	69.2	0.6	4.5	- 2.7	62.6
Lignite and peat	132.0	1.6	0.2	+ 0.6	134.0
TOTAL Solid fuels M toe	174.3	32.3	4.6	- 2.3	199.7
1978					
Coal	238.1	45.3	3.5	+10.1*	290.0
Coke	64.4	0.5	6.0	+ 2.8	61.7
Lignite and peat	132.7	1.5	0.2	-	134.0
TOTAL Solid fuels M toe	173.5	33.1	6.8	+ 4.1	203.9
1979					
Coal	237.4	50.8	2.3	+ 9.1*	295.0
Coke	67.2	0.5	4.7	+ 1.5	64.5
Lignite and peat	134.0	1.0	0.2	-	134.8
TOTAL Solid fuels M toe	174.7	36.6	5.0	+ 1.0	207.3

* Including statistical variation, products from recuperation and production of small mines.

Source: 1977, SOEC; 1978 and 1979: DG XVII/B/3.

Net Consumption of Electricity (including losses)

(thousand millions of kWh)

YEAR	EUR-9	D	F	I	NL	B	L	UK	IRL	DK
1976	1,047.8	312.4	196.4	154.7	55.4	41.3	3.4	256.0	7.7	20.4
1977	1,081.7	319.6	206.8	160.1	56.5	43.1	3.4	262.2	8.3	21.7
1978	1,127.7	333.0	220.5	166.7	59.2	45.2	3.5	267.5	8.9	23.2
Increase:										
1977/76	+ 3.2%	+ 2.3%	+ 5.3%	+ 3.5%	+ 2.0%	+ 4.3%	+ 0.1%	+ 2.4%	+ 8.1%	+ 6.4%
1978/77	+ 4.2%	+ 4.2%	+ 6.6%	+ 4.1%	+ 4.7%	+ 4.9%	+ 2.5%	+ 2.0%	+ 6.9%	+ 6.8%

Total Net Production of Electricity

EUR-9	Total	Breakdown by energy sources			
		Hydro	Geothermal	Nuclear	Conventional thermal
Year 1977	1,073.0	152.9	2.4	103.8	813.9
Year 1978	1,122.7	140.8	2.4	115.1	864.4
Increase:					
1978/77	+ 4.6%	- 7.9%	+ 0.2%	+10.9%	+ 6.2%
Breakdown of total:					
1977	100%	14.2%	0.2%	9.7%	75.8%
1978	100%	12.5%	0.2%	10.3%	77.0%

Source: Eurostat