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REVIEW OF MEMBER STATES' ENERGY POLICY PROGRAMMES AND
PROGRESS TOWARDS 1990 OBJECTIVES

(Communication from the Commission to the Council)

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SUMMARY

1. The current projections presented by Member States in the context of this year's review of energy policy programmes present a relatively satisfactory picture of possible trends in the Community as a whole up to 1990 in terms of the guidelines agreed by the Council in June 1980.
2. New energy programmes in Denmark, France, Germany and Italy have moreover improved the prospects for increased energy security and reduced energy vulnerability of the Community economy.
3. But there are major uncertainties about the impact of lower expectations of economic growth and of current oil market trends on the likely pace of structural change. These affect both the demand side (conservation and fuel-switching) and the supply side (notably in the electricity-generating sector). Recent falls in energy and oil demand have brought a risk of complacency about the longer term while any sustained softening of oil prices may encourage hesitation about the economics of some alternatives.
4. The uncertainties apply in one form or another to all Member States.
5. They make it imperative that there should be no let-up in the commitment to continuing structural change throughout the Community and to sustaining the progress made to date.
6. The Council and individual Member States are invited to pay particular attention to paragraphs 28-33 which outline a number of key issues likely to affect the process of transition away from oil.
7. The Commission intends to improve the process of monitoring the progress of structural change in the Community, so as to ensure that the regular review of national programmes can be an increasingly effective instrument in encouraging consistency between the energy policies of Member States and equality of effort in the pursuit of common objectives. It invites Member States to cooperate closely in the approach described in Part III of this report which reflects the importance which they have all attached to a constructive process of review.

REVIEW OF MEMBER STATES' ENERGY POLICY PROGRAMMES
AND PROGRESS TOWARDS 1990 OBJECTIVES

INTRODUCTION

1. In its *Communication to the Council on the Development of an Energy Strategy for the Community*¹ the Commission underlined the importance of a regular review of Member States' energy policy programmes as a key element in ensuring consistency and equality of effort in the pursuit of collective goals.

2. The Council has also endorsed the importance of this process of monitoring. In its *Resolution of 9 June 1980*² on the Community's energy objectives for 1990 it requested the Commission to submit an annual report on Member States' programmes and to make recommendations and proposals with a view to increasing consistency between Member States' policies.

3. Against this background the Commission has undertaken this year a review not only of the programmes themselves but of ways to make the process of monitoring more effective in the future, taking account of experience to date.

The report that follows covers both aspects.

4. The review of national programmes (Part I) reflects the outcome of recent policy reviews and major forecasting exercises recently undertaken in some Member States. But the absence of a consistent set of up-to-date projections that reflect policy changes, the implications of developments since 1980 on the oil and energy markets and changing macro-economic trends, means that this year even more than usual particular caution is required in interpreting the quantitative projections for 1990.

The fact that major uncertainties attach to all the projections renders all the more important careful consideration by the Council of the key points for discussion identified in Part II (paragraphs 28-33 below).

¹COM(81)540 final.

²OJ C149, 18 June 1980. The main elements of the Resolution are recalled in paragraph 11 below.

The improvements in the monitoring process outlined in Part III are based on the experience not only of this year's review but of difficulties identified in previous years. The Commission intends to inform Member States separately in greater detail about the approach it will adopt from next year.

Annex 1 summarises the energy policy programmes of each Member States.

Annex 2 outlines their progress in relation to the provisions of the Council Resolution of 9 June 1980 on New Lines of Action by the Community in the Field of Energy Saving¹ which is complementary to the resolution on energy objectives as a whole.

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¹0J C149 of 18 June 1980.

I

PROGRESS IN STRUCTURAL CHANGE

(i) Energy Demand and Supply in the Community since 1980

5. The two years since the Council Resolution of June 1980 have been marked by a substantial fall in energy and oil demand throughout the OECD area and a corresponding reduction in net oil import requirements.

Gross inland primary energy consumption in the Community fell by a further 3.9% in 1981 after a fall of 4.2% in 1980. Inland oil consumption fell even more sharply (by 8.0% in 1980 and 8.9% in 1981). Last year the share of oil (including bunkers) in gross primary energy consumption was down to 51%, compared with 62% in 1973, 56% in 1979 and the Community guideline for 1990 of "about 40%".

Falling oil demand, combined with an increase of 11.3% (0.2 mbd) last year in the Community's domestic oil production following the start up of production from four new fields in the British and Danish sectors of the North Sea, brought an impressive drop of 18.3% in the Community's net oil import requirements. These fell to 358m tonnes, compared with 600m tonnes in 1973 and 487 m tonnes in 1979. This is substantially below the ceiling of 472 m tonnes¹ agreed by the European Council in Strasbourg in 1979.

6. At the same time there has been a substantial increase in the contribution of nuclear energy to the Community's energy balance. The output from nuclear stations increased by 14.7% in 1980 and by 31.3% in 1981, with nuclear stations providing last year some 16.7% of total Community electricity supplies. In contrast the output of thermal stations fell by 7% and that of oil-fired power stations by some 20% in 1981.

¹Ceiling for EUR-9.

In 1981 nuclear and solid fuels combined accounted for 67.8% of total primary fuel inputs to electricity-generation, compared with the guideline of 70-75% for 1990.

7. For the first time since 1965 the Community's overall dependence on external sources of energy supply fell to less than 50% last year (it stood at 64% in 1973), despite a continuing fall in domestic production of natural gas (-9% between 1979 and 1981) coinciding with a further increase in natural gas imports.

(ii) Major Policy Developments

8. During the past year four Member States (Denmark, France, Germany and Italy) have concluded either major energy policy reviews or exercises to update energy balance projections so as to reflect policy developments and new appreciations of the possible macro-economic environment in the medium and longer-term. The Netherlands government has also made new energy forecasts for 1985 and 1990 which have substantially altered the projected fuel mix in the electricity-generating sector; and the United Kingdom is in the process of a review of energy forecasts up to 1990 and beyond. Elsewhere in the Community aspects of energy policy and longer-term trends are also currently under examination.

The Belgian Government, for example, has recently submitted to Parliament a number of proposals on energy policy as an input to a major Parliamentary debate on lines of future action.

9. One common feature of three of the new programmes or forecasts (Denmark, Germany, Netherlands) is the reflection in the projections of energy supply and demand of reduced expectations of economic growth over this decade compared with the assumptions used in previous years. The Dutch forecasts are now based on particularly low rates of GDP growth (0.3% per annum 1980-85 and 1.2% 1985-1990); the most up-to-date German forecast¹ assumes GDP growth of 2.1% per annum 1978-85 and 2.3% per annum 1985-95; the Danish programme assumes 2.0% per annum 1980-84 and 3.7% 1985-92 compared with an average of 4% per annum for the decade assumed in the figures included in last year's review. The current projections for Ireland too involve a ...

¹The energy balance projections used in the German programme are not official Government forecasts but the results of work by three independent institutes. The figures quoted here are from the projection by DIW, Berlin which was completed in mid-1981.

substantial scaling down of GDP growth rates, although the implications of reduced growth rates have not yet been reflected fully in the energy forecasts.

The Italian programme, in contrast, continues to be based on average annual GDP growth of 3.5% per annum 1980-1990; while the new French programme assumes a return to much higher levels of growth (5% per annum), which is a fundamental objective of the French government's macro-economic policy.

10. Main elements derived from the new programmes and the data submissions of Member States are as follows:

Denmark (within the framework of projections up to 2000)

- the share of oil in total gross primary energy demand is expected to fall to 45.5% in 1990, compared with nearly 70% in 1980; and oil imports to fall to about 25% of total primary energy demand as a result of reduced oil use combined with a substantial increase in indigenous oil production;
- coal will continue to be vigorously promoted as the main substitute for oil in electricity-generation, providing 85% of the primary fuel used in the electricity sector in 1990. This will require a 30% increase in coal imports over the decade;
- growing use of natural gas from the Danish sector of the North Sea, notably for heating purposes, with a small natural gas production surplus available for export by 1990;
- continuing efforts to promote and expand the district heating system.

France The French programme aims to reduce the share of oil in total primary energy demand to 35% in 1990 compared with 60% in 1980 through:

- a vigorous energy conservation effort expected to impact significantly on the ratio between growth in energy demand and economic growth (the "energy coefficient");
- the continued rapid development of nuclear power as the main source of electricity-generation;
- ambitious new targets for the development of renewable energy sources (10m toe by 1990 or over 4% of expected primary energy demand);
- increased domestic coal production; and
- a substantial increase in natural gas imports (up to 12% of gross primary energy consumption) as consumption expands while domestic production tails off.

Germany The new programme points to a reduction in the share of oil in total primary energy demand from over 48% in 1980 to around 40% in 1990. This is expected to be achieved by:

- a significant increase in the contribution of nuclear power (to supply over 12% of primary energy demand in 1990 compared with 4% in 1980);
- an increase of 12% in the use of solid fuels, which could continue to provide over 30% of total energy demand. Associated with this is a major programme of support for coal gasification;
- a growing rôle for natural gas (with over two-thirds of gas supplies derived from imports and nearly 45% from imports from non-Community countries in 1990);
- the more rapid development of district heating. The aim is to double the contribution to 8 m toe in 1995.

Italy The main objective of the new National Energy Plan is to reduce Italy's dependence on oil from over 70% in 1980 to close to 50% in 1990, by:

- an accelerated nuclear programme, with nuclear providing up to 15% of electricity supply in 1990 and nearly 5% of total primary energy demand;
- the production of 35% of electricity from coal by 1990, this requiring a trebling of coal imports;
- a 50% increase in natural gas consumption and an increase of almost two and a half times in natural gas imports with over 70% of natural gas consumption based on imports from non-Community countries in 1990.

(iii) Forecast Trends

11. The Council Resolution of June 1980 refers to five main guidelines for the Community as a whole for 1990 which should provide the essential points of reference for the Commission's review, viz:

- reducing to 0.7 or less the average ratio between the rate of growth in gross primary energy demand and the rate of growth of gross domestic product;
- reducing oil consumption in the Community to a level of about 40% of gross primary energy consumption;
- covering 70-75% of primary energy requirements for electricity production by means of solid fuels and nuclear energy;
- encouraging the use of renewable energy sources so as to increase their contribution to the Community's energy supplies;
- the pursuit of energy pricing policies geared to attaining Community energy objectives.

The following paragraphs consider the picture with respect to each of these guidelines as it emerges from the programme submissions and, where available, from more recent information about the performance and plans of Member States.

Member States projections indicate the following energy supply and demand in the Community 1980-1990:

TABLE I

	Mtoe			
	1980	1981 ⁺	1985	1990
DEMAND				
Gross primary energy demand	970	934	1.062	1.165
Gross oil consumption	520	477	521	493
Oil as % of primary energy demand	54%	51%	49%	42%
<hr/>				
Total primary energy inputs to power stations	279	278	322	398
(of which) solid fuels & nuclear	62%	67%	70%	80%
<hr/>				
SUPPLY*				
Total domestic primary energy production	462	484	550	587
(of which) solid fuels	185	187	184	199
natural gas	129	125	126	110
nuclear	43	56	94	145
oil**	91	101	126	106
new and renewable sources***	14.1	14.2	19.3	26.5
Net energy imports	527	445	512	578
(of which) net oil imports**	438	358	395	388
<hr/>				
	1980/75	1981/80	1985/80	1990/85
ENERGY AND ECONOMIC GROWTH				
Gross inland energy consumption				
(% change per year)	+1.9	-3.9	+1.8	+1.9
(of which) oil				
(% change per year)	+0.3	-8.9	-0.2	-1.3
GDP				
(% change per year)	+3.0	-0.7	+2.8	+2.7
<u>Coefficient E/GDP</u>	0.63	-	0.64	0.70

Sources: 1981 Submissions by Member States, up-dated where necessary.

⁺ provisional data

* total primary energy supply exceeds total demand 1980 and 1981 because of stock-build

** mid-points of ranges submitted

*** hydro-electricity, geothermal energy, solar, biomass, etc.

The energy coefficient¹

12. The sum of Member States' projections to 1990 points to a 20% increase in gross primary energy consumption over the 1980 base and to a 25% increase above actual consumption levels in 1981². At the same time the net effect of revised assumptions about GDP growth in a number of national submissions is to suggest an increase of 31% in the Community's combined GDP in 1990. Some comments on these forecasts are set out in paragraph 30 below. If they are realised, however, the energy coefficient for the period 1980-85 should be comfortably within the longer-term target. But the projections of higher economic growth in some Member States during the second half of the decade combined with an expected shift from oil to other primary fuels has the effect, paradoxically, of worsening the likely coefficient during the second half of the decade³.

13. The coefficient (both actual and projected) varies quite significantly between Member States. In Denmark, for example, it is expected to fall from 0.75 in 1980 to 0.24 1985-1990. In Greece, on the other hand, it is forecast to rise from 1.26 to 1.38.

14. It would be wrong to conclude from such projections alone that one economy is expected to be more energy-efficient than another by 1990 or that the degree of effort expected to be devoted to improving energy-efficiency varies accordingly between Member States. The relationship between energy demand and economic growth is affected by the changing structure both of GDP and of the primary fuel mix itself as well as by the efficiency of final use in individual sectors. Moreover, in some countries, notably those where GDP growth has been very low in recent years, the energy coefficient has experienced extreme volatility from year to year which appears unconnected with changes in the efficiency of final consumption or in the primary fuel mix. For these reasons further thought needs to be given to less ambiguous objective measures of the progress by Member States in improving the efficiency with which energy is used, both at the primary and the end-use levels. This point is discussed further in Part III.

Alongside such quantitative projections must be set the progress in policy measures to promote energy saving. Recent developments in this field are outlined at Annex 2.

¹ The ratio between the rate of growth in gross inland energy demand and the rate of growth of gross domestic product.

² Provisional data for 1981.

³ The main reason is the effect of losses in electricity-generation.

The Share of Oil in Total Primary Energy Demand

15. Forecasts by Member States point to oil consumption (including bunkers) of 493 m tonnes in 1990, compared with 520 m tonnes in 1980 and 477 m tonnes in 1981. This would bring down the share of oil in total gross primary energy consumption to 42.4% compared with the Council guideline of about 40%.

16. The share of future oil demand to be met from external sources depends heavily on the contribution from the UK and Danish sectors of the North Sea. According to the submissions, total Community oil production could vary between 86 m tonnes and 126 m tonnes in 1990 (of which UK production 70 m tonnes and 110 m tonnes respectively¹). In the optimistic case net oil imports could be as low as 368 m tonnes and in the pessimistic case 408 m tonnes (roughly the same as the 1981 level). Even under the optimistic scenario net oil imports would provide some 75% of total Community oil consumption and some 32% of energy demand in 1990.

While a significant improvement on the performance in 1980 and a very substantial change since 1973 (when oil imports accounted for 62% of primary energy demand) such figures underline the continuing degree of vulnerability of the Community economy to oil price movements and to oil supply shortages. Even assuming 1981 net oil import levels an increase of \$5 per barrel on the average price of imported crude would involve a balance-of-payments cost to the Community equivalent to over 0.5% of its current GDP.

17. The degree of vulnerability will continue to vary significantly between Member States. While all Member States (except Luxembourg) project a fall in the share of oil in total energy consumption, Greece expects to depend on oil for nearly 60% of primary energy demand in 1990, Italy for 53%, the Netherlands for 50% and Ireland for some 48%.

18. The trends on the oil markets in the past two years and particularly the significant falls in oil consumption in the Community since most of these forecasts were made make it particularly difficult to assess their realism. Major factors are likely to be how long the oil market remains soft and the level of and trend in the post-tax prices of oil products over this decade : an underlying assumption in current projections is of continuing real increases in consumer prices for oil products.

¹1981 production from the UK sector was 90.4 m tonnes. The central scenario assumes plateau production in the mid-1980s, followed by a decline in output.

Primary Energy Inputs to Electricity-Generation

19. If Member States' programmes can be realised, the Community objectives with regard to the use of solid fuels and nuclear energy in electricity-generation should be comfortably achieved. The sum of programme projections points to solid fuels and nuclear together supplying some 80% of total primary fuel inputs to power stations. Of this 43% would be solid fuels and 37% nuclear. The forecasts also point to a fall of 30% (18 m toe) in power-station oil-burn (compared with the 1980 level) and of over 25% (8 m toe) in the use of natural gas, despite an expected increase of 44% (some 120 m toe) in total primary fuel use for electricity-generation.

The following table summarises the forecast picture up to 1990:

TABLE II - PRIMARY ENERGY INPUTS TO ELECTRICITY GENERATION
1980-1990, EUR-10

	1980		1981		1985		1990	
	Mtoe	%	Mtoe	%	Mtoe	%	Mtoe	%
<u>Total</u>	279	100%	278	100%	322	100%	398	100%
Solid fuels	130	46%	129	47%	132	41%	172	43%
Nuclear*	43	16%	56	20%	94	29%	146	37%
Solid fuels and nuclear	173	62%	185	67%	226	70%	318	80%
Oil products	61	22%	51	18%	57	18%	43	11%
Gas**	31	11%	28	10%	26	8%	23	6%
Oil and gas	92	33%	79	28%	83	26%	66	17%
<u>Hydro, geothermal and others</u>	14	5%	14	5%	13	4%	14	3%

Sources: As for Table I

* The French nuclear power programme is by far the largest in the Community. In 1980 France accounted for 38% (16 mtoe) of total Community energy inputs from nuclear, followed by Germany (26%) and the United Kingdom (24%). If the current projections are realised France will account for 50% (72 mtoe) of the much larger total output in 1990. Germany expects to remain the second largest producer (37 mtoe compared with 11 mtoe in 1980). Nuclear power production in the United Kingdom is assumed to almost double (from 10.4 mtoe in 1980 to 19 mtoe in 1990). In 1980 France had the largest share of energy inputs to electricity derived from nuclear (32%) followed by Belgium (25%).

** Includes coke-oven and blast-furnace gas.

The forecast picture for the Community as a whole has improved since last year. This is due principally to the major new Italian programme for coal- and nuclear power stations; the latest Dutch forecasts based on a very substantial decrease in oil use in power stations by 1990 (down to 0.5 m toe compared with 5.2 m toe in 1980) and its replacement largely by solid fuels (up to 59% of fuel inputs to electricity-generation by 1990); as well as less significant revisions to forecasts by other Member States. On the other hand continuing increases in oil-burn are expected in both Italy and the United Kingdom as new oil-fired plant ordered in the 1970s comes into operation. By 1990, however, in only three Community countries (Italy - 48%, Ireland - 68% and the Netherlands - 66%)¹ should solid fuels and nuclear be providing less than 70% of fuel inputs.

21. While these forecasts prima facie give grounds for satisfaction, they are especially subject to uncertainties.

In the first place, they are based in most cases on relatively high levels of growth in demand for electricity (3-4% a year). Some utilities are, however, known to be currently revising downwards their demand forecasts to reflect less optimistic projections of economic growth². These are likely to impact on the rate of ordering and commissioning of new plant.

Secondly, if the oil market remains soft for some time there may be financial pressures on utilities to revert to significantly higher levels of oil-burn. This would be feasible in the time-scale considered here unless the companies took advantage of the current weak market to decommission rather than to "mothball" oil-fired stations. The economic attraction of increased oil-burn could be enhanced by the possibility of continuing high levels of supply of heavy fuel oil on Community markets. This could slow down both conversion and the construction of new plant.

The forecasts assume the operation in 1990 of some 112 GW of total gross capacity in the nuclear field (compared with 35 GW in 1980) and of about 166 GW of solid fuel capacity (compared with 119 in 1980). Decisions to construct the bulk of the new nuclear capacity have already been taken. If it is to be feasible for the remainder (upwards of 5 GW) to be in operation by 1990, decisions to begin construction will have to be taken in the next 12 months or so.

¹Power generation in Luxembourg will continue to depend predominantly on waste gas from blast furnaces.

²Notably the CEGB which foresees growth of around 1% p.a. during this decade.

The operation of the projected capacity by 1990 is dependent in any case on the timely completion of the existing construction programmes which could be adversely affected by the factors described above and indeed by other factors. If this were to happen it could have important consequences for the primary fuel mix in electricity-generation in 1990. As far as solid fuels are concerned, there is greater flexibility because of the somewhat shorter investment lead-times and many decisions need only be taken at a later stage.

Progress in Renewables and New Energy Technologies

22. The contribution of renewable energy sources (hydro, geothermal, biomass, solar, etc) to the Community's energy balance is currently small (14.1 m toe or 1.5% in 1980). The bulk of this is hydro-electricity which currently (1981) provides nearly 4.5% of electricity supplies in the Community as a whole and over 12% in Italy and France¹.

23. On the latest forecasts the contribution of renewables is expected to almost double in volume terms (to 26.5 m toe) by 1990, increasing to 2.3% of total primary energy demand. These forecasts have changed substantially since last year in the light, principally, of the new French objective of securing 10 m toe (4% of total primary energy demand) from solar and biomass alone by 1990. The prospects have also been improved by a new Danish forecast of 0.8 m toe (4% of primary energy) from new sources by 1990, and by an increase in the forecast contribution in the Netherlands, to 0.6 m toe (0.7% of primary energy). Italy continues to expect 2 m toe from new sources by the end of the decade. The total figures for the Community may however understate the possible availability of supplies from new sources and new energy technologies in 1990. The German energy balances, for example, take no account of the forecast contribution from solar collectors and from heat pumps² which, according to the programme, could supply up to 2 m toe or 1% of total final energy consumption in 1990³.

24. Whether these forecasts can be realised depends both on the scale of effort and success of research and development and technological demonstration; and also on the trends in the price of conventional fuels. The introduction of new sources could be limited by restrictions particularly on programmes to commercialise new technologies, while the economics of some of them could be adversely affected if there were to be continuing real falls in the price of competing fuels.

¹ Following SOEC conventions, the calculations for hydro-electricity are based on the primary fuel equivalents of energy output rather than input.

² Production of gas from coal is not included in the figures for renewable energy.

³ No estimate is available of their impact on primary energy demand.

The forecast supply of primary energy from hydro, geothermal energy and new sources in each Member State is summarised in the following table:

TABLE III

Mtoe

	1980			1990		
	Total	Hydro & Geothermal	New Sources	Total	Hydro & Geothermal	New Sources
B	0.07	0.02	0.05	0.1	0	0.1
DK	0	0	0	0.8	0	0.8
D	2.46	1.49	0.97	1.6	1.60	0
E	0.32	0.29	0.03	0.43	0.43	0
F	6.17	6.04	0.13	15.6	5.60	10.00
IRL	0.07	0.07	0	0.06	0.06	0
I	4.28	4.12	0.16	6.90	4.90	2.00
L	0.02	0.01	0.01	0.03	0.02	0.01
NL	0.32	0	0.32	0.60	0	0.60
UK	0.34	0.34	0	0.40	0.40	0
EUR-10	14.04	12.38	1.66	26.52	13.01	13.51

Sources: as previous tables.

Energy Pricing and Taxation

25. The sharp increases in energy prices during the 1970's have been a major factor in encouraging structural change in energy supply and demand. Despite the relative softening of oil prices observed in the first part of 1982, energy prices in general remain substantially higher in real terms than at any time in the period 1960-79.

The relative slackness of the oil market nevertheless involves a risk that the momentum of structural change will be lost in the absence of policies to ensure that the consumer responds rationally to the long-term realities of the energy market. It is therefore essential that energy prices should fully reflect conditions on world markets, taking account of long-term trends.

The Commission's Communication to the Council on "Energy Pricing - Policy and Transparency"¹ of October 1981 contained a brief survey of energy pricing practice in Member States. The same Communication made proposals which formed the basis for agreement by the Council in December on conclusions which reaffirmed and elaborated the Community's commitment to realistic pricing based on costs and market conditions.

26. Valuable progress towards the implementation of the principles has been made. Nevertheless, price control is still practised fairly widely, and the structure of energy prices and tariffs still advantages particular classes of consumer in a number of Member States in ways not always compatible with energy policy objectives. The Commission is continuing its work on the basis of the principles adopted by the Council with a view to ensuring both that each consumer pays his full share of the cost of supply, and that conditions of fair competition prevail throughout the Community. Work is in hand in particular to improve the transparency of energy prices and to develop consistent approaches to gas tarification to complement the progress already made in the electricity sector.

The Commission is at the same time strengthening its control of all forms of direct subsidy to energy consumption. Since the abrupt rise in oil prices

¹COM(81)539.

in 1979-80 it has permitted within strict limits, aids to energy consumers in agriculture and horticulture in the exercise of its powers under Articles 92 and 93.

These limits are now being redrawn, and it is the Commission's intention that, from March 1983 at the latest, no further aids will be permitted. Action is already in hand to require withdrawal of aids to energy consumption in the agricultural sector in Belgium, in fisheries in the UK, Germany, Italy, France and Belgium, and in the steel industry in Italy. The long-running problem of the preferential tariff for natural gas consumers in the Dutch horticultural sector has been the subject of continuing negotiations between the Dutch government and the Commission, and there is every reason to suppose that agreement will shortly be reached on a satisfactory solution.

27. Energy taxation policy, especially in relation to oil products, is another significant means whereby energy prices can assist progress towards energy objectives. In its Communication to the Council on Oil Taxation¹ the Commission proposed that an effort should be made to achieve greater consistency in the rates of tax applied to individual oil products within the Community, and to ensure that the impact of taxation was not eroded by inflation. These proposals are still under examination by the Council.

Although a number of Member States have expressed some reservations about the principle of a Community approach to oil taxation, five Member States have in practice made significant changes in oil taxation since January 1981 in line with the Commission's suggested approach. The Commission urges other Member States, and especially Germany, the Netherlands and Luxembourg to review their policy with respect to those products on which tax is significantly lower than in other Member States.

¹COM(81)511.

II

MAJOR UNCERTAINTIES

Issues for the Community as a whole

28. Four main factors are likely to condition the process of structural change mapped out in the programmes of Member States. The Council is invited to consider them further.

29. Firstly, the effects of lower real crude oil prices on the economics of alternatives and on decision to invest in energy saving and fuel-switching

At its meeting on 16 March 1982 the Council acknowledged the risk that the fall in real oil prices, if it continued, could slow down the process of structural change by creating uncertainty among consumers and investors about the benefits of fuel-switching and increasing energy-efficiency. The Council expressed its determination to ensure that this did not occur.

The risk remains, though the precise effects on energy investment of the present market situation are so far unclear.

Up-to-date data on energy investment by Member States were not submitted as part of this year's review. The Commission believes that the provision of such information and an analysis of trends must be an important element in future reviews, and Part III of this report indicates how investment data might now be handled. The likely effects on demand-side investment of uncertain price expectations have however already been considered in the Commission's recent Communication to the Council on Investment in the Rational Use of Energy¹; and the issues affecting major aspects of supply-side investment in the separate Communications on coal² and nuclear energy³, respectively.

Keys to the overall impact on the process of structural change lie both in expectations about the timing of renewed upward movement in crude oil prices and also in the degree to which the prices of oil and energy products to the consumer seem likely to be affected directly by changes in the price of crude oil. The latter depends on trends in the oil products' market, on movements in exchange rates, and on Government price and taxation policies.

¹ COM(82)24.

² COM(82)31.

³ COM(82)36.

30. Secondly, the impact on demand for energy, oil and electricity of possible further reductions in the expectations of economic growth up to 1990.

Not all the forecasts by Member States have taken account of the depths of the current economic recession and its possible implications for the pace and timing of economic recovery. A rapid return to high levels of economic growth must be a fundamental objective of Community economic policy. But the realisation of average rates of GDP growth of nearly 3% a year for the 1980s as a whole must now be in doubt given the performance in 1980 and 1981 and trends in 1982.

The Medium-Term Economic Policy Programme for the Community assumes 1.9% per annum 1980-85 on the basis of existing economic policies.

The effects of lower growth on energy demand were considered in broad terms in last year's review. On the one hand, lower economic growth than forecast means lower capacity utilisation and reduced energy use. The experience of the past suggests that the largest share of that reduction may occur in the oil sector. At the same time, however, lower economic growth reduces growth in electricity demand, with possible implications for the balance between hydrocarbons and coal and nuclear. It also discourages some of the investment in rational use of energy which would otherwise have occurred, thereby tending to worsen the expected ratio between energy and GDP.

The Commission is currently developing alternative quantified scenarios for energy and oil demand in the Community on various assumptions about economic growth. The results of this analysis should be available for inclusion in next year's report. Preliminary analysis, however, suggests that average annual economic growth of 2% a year for the Community as a whole 1980-90 could reduce expected total primary energy requirements in 1990 by some 100 m toe (nearly 9%) compared with the sum of Member States' forecasts. Information derived from discussions with oil companies suggests moreover that the oil market operators may be planning on oil demand below current forecasts by Member States (+/- 450 m toe in 1990 compared with over 490 m toe). This expectation is derived in part from assumptions of lower economic growth than previously projected.

31. Thirdly, the place of electricity in the Community economy if total energy demand is below expectations.

On Member States forecasts nuclear energy and solid fuels are expected together to supply the bulk of the Community's requirements for additional energy above the 1980 level, with nuclear alone accounting for the equivalent of almost half of the Community's increased use of non-oil fuels and solid fuels for 26% (Table IV). The main source of additional use of solid fuels will be in electricity-generation, and nuclear energy can only be used indirectly through electricity. If progress away from oil is to be sustained at lower levels of economic growth, the scope for accelerated electricity penetration deserves therefore further examination. This scope may vary from Member State to Member State and from sector to sector. Examination must take full account, of course, of efforts to increase energy efficiency and to reduce total primary and final energy consumption.

The place of electricity in the Community's energy economy raises complex issues which now require closer attention than in the past.

32. Finally, the availability, price and security of supplies of non-oil energy imports during the remainder of this decade

According to the forecasts made by Member States the Community's dependence on imported energy will remain around 50% in 1990. But with net oil imports continuing to fall, the pattern of dependence will shift significantly towards natural gas and solid fuels. In volume terms net energy import requirements may rise by 50 m toe from their 1980 level. The gross increase in imports (100 m toe) is expected to be met by an increase of some 60 m toe in net imports of natural gas and of some 40 m toe in net imports of solid fuels (Table IV). As far as gas is concerned the bulk of imports will come from three countries - Norway, Algeria and the USSR.

The implications of these trends have already received attention in discussions by the Council of the Commission's Communications on Coal¹ and on Natural Gas Supplies². The importance of those discussions is underlined by the outcome of this review of national energy programmes. It raises an important question for future reviews about the desirability of even closer attention to progress in diversification and security of energy supplies. This is discussed further in Part III below.

¹COM(82)31.

²COM(81)530.

TABLE IV

SOURCES OF INCREMENTAL ENERGY SUPPLY
1990/1980, EUR-10

	Mtoe	Per cent
INCREMENTAL DEMAND ¹		
Net increase in total gross primary energy requirements	175	-
Reduction in gross oil demand	35	-
<u>Net increase in non-oil requirements</u>	<u>210</u>	<u>100%</u>
INCREMENTAL NON-OIL SUPPLY		
<u>Domestic supplies</u>	<u>110</u>	<u>52%</u>
Nuclear	103	49%
Solid fuels	14	7%
New sources	12	6%
Natural gas	-19	-
<u>Net imports</u>	<u>100</u>	<u>48%</u>
Natural gas	60	29%
Solid fuels	40	19%

¹ Assuming end-1979 stock levels in 1990.

Issues for Individual Member States

33. Highlights of the energy programmes and forecasts of each Member State are given at Annex 1. The issues summarized below are not an exhaustive list of the uncertainties attached to particular programmes, but they provide an indication of some important issues which could significantly affect the success of the Community as a whole in reducing its dependence on imported oil, in diversifying its energy supplies and in increasing the efficiency of its energy use.

Belgium

The likely outcome of the planned Parliamentary debate on energy and its implications for Government policy, notably for the nuclear programme beyond 1985.

Denmark

The importance of security of supplies of imported coal given the very heavy dependence of the electricity-generating sector on coal (85% by 1990).

The sensitivity to oil price developments of plans for development of oil and gas resources in the Danish sector of the North Sea.

France

The sensitivity of planned investment in conservation to lower economic growth than planned.

The realism of the ambitious target for renewables in the light of possible developments in prices of competing conventional fuels.

The implications for the French energy balance in 1990 and especially for the nuclear power programme of lower estimates of electricity demand.

Germany

Continuing uncertainties about the nuclear capacity planned for 1990 despite recent progress, given decisions on construction of new nuclear installations still to be taken.

The implications of increasing amounts of Soviet gas for inter-fuel substitution and for district heating. Current forecasts were prepared too early to take account of the effects of planned deliveries under the new contracts.

Greece

The timing of decisions to construct nuclear and/or coal-fired electricity-generating plants likely to be required in the 1990s to replace existing and planned lignite plants. Lignite production will probably begin to decline after 1990, necessitating prior decisions to construct alternative facilities.

The desirability of a comprehensive energy conservation programme to slow down the projected rise of 66% in total primary energy demand over this decade.

Ireland

The scope for reducing the growth in total primary energy demand, projected to increase by 50% over the decade.

Possible constraints on the increased supply and use of solid fuels, particularly for electricity-generation, which depend on an increase in domestic peat production (which could be hampered by price controls) and a quadrupling of coal imports.

Italy

Possible problems over the rapid implementation of the ambitious new power station programme - notably difficulties over the selection of sites for new nuclear stations and shortages of finance for the Italian electricity utility, ENEL, exacerbated by the recession and by continuing inadequacies in the system of pricing electricity.

The implications of the substantial increase planned in imported gas supplies. On present plans, imports of natural gas will provide over 80% of total Italian gas supplies in 1990 and some 16% of total primary energy demand.

Luxembourg

The inadequacy of energy conservation and pricing policies, given the low level of some post-tax prices, especially for motor fuel.

Netherlands

The sensitivity of future planning decisions in the electricity-generation sector to any sustained falls in the real price of crude oil and to pressures to reduce the price of gas in the face of recent market developments.

The future role of gas in the Dutch economy, given the likely availability of growing supplies of gas on the Community markets.

The outcome of the public debate on nuclear energy expected at the end of next year, and its consequences for planning in the electricity-generating sector.

United Kingdom

The implications for overall energy demand, for the primary fuel-mix, and for the nuclear power programme, of revised assumptions about economic growth.

The prospects for the development of the domestic coal industry in view of possible delays and modifications to the development of the Belvoir field, the pace of closures of uneconomic pits, and the likely capital requirements of the NCB.

The pace of exploration and development of North sea oil and gas fields following the planned "privatisation" of BNOC's upstream assets and the reduction in BGC's powers in the sale and distribution of natural gas.

The importance of further progress in energy conservation and fuel-switching, notably in industry.

III

IMPROVING THE MONITORING PROCESS

34. In view of the importance attached by both the Commission and the Council to the regular review of progress towards Community objectives it is vital that the monitoring process itself should be made as effective as possible. This requires a clear procedure for handling the review; guidelines and indicators which are representative, unambiguous and also flexible to changes in the external environment; a satisfactory means of measuring the degree of equality of effort by individual Member States; and the very close cooperation of Member States in the provision of the necessary statistical and other data.

Procedure

35. A package of information is normally supplied to the Commission in the summer and early autumn for the preparation of a report the following spring. Policy changes, however, occur inevitably throughout the year and the results of major policy reviews or new forecasting exercises may not always be available at the time when data are normally submitted. This is a problem which has been felt particularly acutely this year, as a result of the developments described in Part I.

36. Any "snapshot" of the Community is likely to become out-of-date within a matter of months, but the procedure for taking it must be flexible enough to ensure that the picture is not frozen at an unrepresentative moment or at a time when key elements are likely to be missing. Such a situation could be avoided by regular and automatic notification to the Commission of major policy changes; by closer consultation between Member States and the Commission about the process and timing of new forecasting exercises; and by greater flexibility in the timing of reports to the Council.

37. The Commission therefore calls on Member States to keep it as closely informed as possible about policy developments and about the conduct of forecasting exercises. For its part the Commission intends to intensify its contacts with individual Member States in the continued monitoring of policy developments throughout the year and to report to the Council whenever during the year appears to be most appropriate in the light of both external and internal developments. In so doing it will base its analysis not only on the regular annual data submissions, which remain of great importance, but also on the results of bilateral exchanges about subsequent changes.

Planning beyond 1990

38. The present guidelines for structural change are based on desirable developments up to 1990. The Commission believes that the time is now ripe to begin looking at Community level at the likely picture for the Community beyond 1990, given the very long lead times of many energy investment projects and the need to consider more substantively the impact of new and prospective technological developments on Community energy supply and demand in the longer term. It notes that the programmes of some Member States are now set firmly in a framework which looks well beyond 1990: the new Danish programme, for example, looks forward to 2000.

39. The Commission itself has recently embarked on the preparation of a new set of energy scenarios for the Community to 2000 and it intends to reflect in future reviews the conclusions of that exercise.

In its bilateral exchanges with Member States (paragraph 37 above) it will also focus attention on prospects to 1995 and beyond and seek the help of Member States in presenting a reasoned outline

of quantitative prospectives and likely qualitative developments in that time-scale.

At a later stage it may be appropriate for the Council to consider a reformulation of the agreed Community objectives in terms of the 1995 horizon.

Indicators

40. The quantitative guidelines agreed by the Council in its Resolution of June 1980 have proved to be very useful reference points in measuring trends and the importance of policy changes and they should continue to be used in monitoring progress. But experience has also demonstrated the desirability of complementing these guidelines by other indicators of performance. In particular:

- the energy coefficient is not an unambiguous guide to progress in improving energy efficiency. Given its relative volatility from year to year; that it subsumes a number of different elements; and that, perversely, it may rise rather than fall as nuclear and coal-fired electricity replace the direct use of oil, the Commission considers that it should be complemented and qualified by other indicators. These should include changes over time in average ratios between GDP and energy demand, indicators of change in the composition of both GDP and industrial output, in the ratio between primary and final energy use and in the level of penetration of electricity;
- the guidelines about fuel inputs to power stations are only partial indicators of progress in shifting towards a more desirable pattern of electricity-generation. They take no account of the trends in hydro-electricity or of geothermal energy and other sources such as waste, which are important ways of diversifying away from oil and gas. Nor do they provide any indication of the actual level, pattern and trends in the use of oil and gas themselves in power stations. The latter may however require renewed attention in view of the risk that a sustained period of soft oil prices combined with financial pressure on utilities may encourage increased oil-burn and slow down the process of conversion and construction of new non-oil-fired capacity. The Commission intends therefore to devote particular attention in future reviews to the trends and prospects for development in the use of all primary fuel sources substituting for oil and gas, and to monitor closely developments in oil and gas burn.

- one essential aspect of Community energy strategy is diversification of energy supplies, both in terms of fuel source and supplier countries. Some Member States envisage much higher dependence than others on single sources or single suppliers. The Commission intends to devote particular attention in future reviews to the adequacy of progress in diversification;

- the agreed guidelines for the Community do not refer to levels of investment in the energy sector. In its Communications to the Council on Energy Strategy¹ and Investment in the Rational Use of Energy² the Commission underlined the importance of an adequate level of energy investment for reasons of both energy and also macro-economic policy. It is essential therefore that trends and prospects in investment should be carefully monitored. This will require the regular submission of appropriate data to the Commission.

- the guidelines currently in operation relate to the Community as a whole and not to individual Member States, where there are differing starting points, differing resource endowments and differing mixes of energy policy instruments. But if the Commission is to take account both of these individual national circumstances and equality of effort in the pursuit of collective goals it must also have in mind criteria or guidelines for the performance of individual Member States. It intends to develop and to present such guidelines within the framework of its next review. This is all the more important given the problem of inconsistencies in the data on which the quantitative forecasts for the Community as a whole are based (paragraph 41 below).

Consistency

41. A particular problem highlighted by this year's review is differing assessments by Member States of the likely macro-economic environment within which they will be operating in the remainder of this decade. Historically the growth performance of Member States has varied considerably from year to year. But the differences reflected in the current forecasts by Member States are particularly large and it must be doubtful whether they are reasonable given the existing degree of trade and economic integration in the Community.

¹COM(81)540 final.

²COM(82)24 final.

42. This problem is exacerbated by differences in the nature of the quantified projections submitted by Member States. For some the data reflect government targets both for macro-economic growth and for energy supply and demand during the decade; for others they are reference figures based on existing policies and plausible assumptions about developments in the main energy and economic parameters; some present central case estimates, others ranges of figures.

43. In view of these differences of approach the Commission intends to develop scenarios of its own for likely energy supply and demand at Community level up to 1990. These will be prepared alongside the scenarios up to 2000 referred to in paragraph 39.

The preparation of these scenarios on consistent macro-economic assumptions will require the close cooperation of Member States.

* * * * *

44. Before the preparatory work on next year's review begins later this year, the Commission will be informing Member States in greater detail about how it intends to proceed.

A N N E X 1

SUMMARIES OF THE ENERGY POLICY PROGRAMMES
AND FORECASTS OF EACH MEMBER STATE

Tableaux résumés / Summary tables

	EUR 10			
	<u>1980</u>	<u>1981</u>	<u>1985</u>	<u>1990</u>
PIB (Mrd ECU, 75)	1314	1305	1507	1724
GDP (Mrd ECU, 75)				
Population (Mio)	271	272	274,2	278,6
Population (Mio)				
Cons. brute énergie (Mio tep)	970	934	1062	1165
dont: part du pétrole (%)	54%	51%	49%	42%
Gross energy consumption (Mio toe) of which: oil (%)				
Import.nette d'énergie (Mio tep)	527	445	512	578
dont: pétrole (Mio tep)	438	358	395	388
Net energy import (Mio toe) of which: oil (Mio toe)				
Centrales électriques (Mio tep)	279	278	322	398
dont: part des comb. solides + nucléaire (%)	62%	67%	70%	80%
Power stations (Mio toe) of which: solid fuels and nuclear (%)				
	<u>1980/75</u>	<u>1981/80</u>	<u>1985/80</u>	<u>1990/85</u>
Cons. intér. énergie (% par an)	+ 1,9	- 3,9	+ 1,8	+ 1,9
dont: pétrole (% par an)	+ 0,3	- 8,9	- 0,2	- 1,3
Gross inland energy consumption (% per year) of which oil (% per year)				
PIB (% par an)	+ 3,0	- 0,7	+ 2,8	+ 2,7
GDP (% per year)				
Coefficient E/PIB	0.63	-	0.64	0.70
Coefficient E/GDP				

EUR-10

BILAN RESUME D'ENERGIE

(MIO TEP OU %)	1980		1981		1985		1990	
	MTEP	%	MTEP	%	MTEP	%	MTEP	%
-CONSOMMATION BRUTE D'ENERGIE PRIMAIRE	970.04	100.0	934.06	100.0	1062.47	100.0	1164.65	100.0
COMBUSTIBLES SOLIDES	222.68	23.0	220.62	23.6	232.03	21.8	288.14	24.7
PETROLE	520.02	53.6	476.40	51.0	521.40	49.1	493.38	42.4
GAZ NATUREL	169.26	17.4	164.75	17.6	196.11	18.5	211.17	18.1
ELECTRICITE PRIMAIRE ETC.	58.08	6.0	72.28	7.7	112.93	10.6	171.96	14.8
-PRODUCTION INTERIEURE PRIMAIRE	462.10	47.6	483.77	51.8	550.02	51.8	587.12	50.4
HOUILLE	153.31	15.8	152.72	16.4	150.74	14.2	163.04	14.0
LIGNITE ET TOURBE	31.81	3.3	34.35	3.7	33.47	3.2	36.39	3.1
PETROLE	91.10	9.4	101.35	10.9	126.10	11.9	105.70	9.1
GAZ NATUREL	129.16	13.3	125.11	13.4	126.71	11.9	109.97	9.4
ENERGIE NUCLEAIRE	42.67	4.4	56.02	6.0	93.70	8.8	145.50	12.5
HYDRO. + GEOTH.	12.39	1.3	12.54	1.3	12.49	1.2	13.01	1.1
AUTRES (NOUV. SOURCES)	1.66	0.2	1.68	0.2	6.81	0.6	13.51	1.2
-IMPORTATIONS NETTES	527.15	54.3	444.60	47.6	512.45	48.2	577.53	49.6
COMBUSTIBLES SOLIDES	47.28	4.9	42.11	4.5	47.82	4.5	88.71	7.6
PETROLE	437.95	45.1	357.78	38.3	395.30	37.2	387.68	33.3
GAZ NATUREL	40.56	4.2	42.67	4.6	69.40	6.5	101.20	8.7
ELECTRICITE	1.36	0.1	2.05	0.2	-0.07	-0.0	-0.06	-0.0
-MOUVEMENTS DE STOCKS	-19.21	-2.0	5.69	0.6	0.	0.	0.	0.
COMBUSTIBLES SOLIDES	-9.72	-1.0	-8.55	-0.9	0.	0.	0.	0.
PETROLE	-9.02	-0.9	17.27	1.8	0.	0.	0.	0.
GAZ	-0.46	-0.0	-3.03	-0.3	0.	0.	0.	0.

MOUVEMENTS DE STOCKS: SIGNE(+) = REPRISE AUX STOCKS; SIGNE(-) = MISE EN STOCK

SOURCE: 1980/1981 : OFFICE STATISTIQUE DES COMMUNAUTES EUROPEENNES

(DATE:820511) 1985/1990 : EXAMEN DES PROGRAMMES NATIONAUX

CONSOMMATION BRUTE ENERGIE / ENERGY GROSS CONSUMPTION

(Mio-tep / M toe)	<u>1980</u>	<u>1981</u>	<u>1985</u>	<u>1990</u>
EUR-10	<u>970.04</u>	<u>934.06</u>	<u>1062.47</u>	<u>1164.65</u>
BELGIQUE	48.12	46.41	55.10	59.30
DANMARK	19.53	17.68	19.30	20.20
DEUTSCHLAND	272.99	261.33	286.60	304.60
ELLAS	16.12	15.58	20.21	26.83
FRANCE	188.42	183.28	200.30	236.00
IRELAND	8.50	8.16	10.90	12.85
ITALIA	136.10	134.74	158.60	177.90
LUXEMBOURG	3.63	3.19	4.36	4.77
NEDERLAND	74.34	70.33	83.70	84.80
UNITED-KINGDOM	202.28	193.37	223.40	237.40

PRODUCTION INTERIEURE ENERGIE / INLAND ENERGY PRODUCTION

(Mio-tep / M toe)	<u>1980</u>	<u>1981</u>	<u>1985</u>	<u>1990</u>
EUR-10	<u>462.10</u>	<u>483.77</u>	<u>550.02</u>	<u>587.12</u>
BELGIQUE	7.92	7.92	11.80	12.40
DANMARK	0.30	0.76	5.00	7.50
DEUTSCHLAND	121.44	127.04	132.60	147.60
ELLAS	3.35	3.63	7.41	9.63
FRANCE	43.89	54.58	74.50	108.40
IRELAND	1.97	2.18	2.98	3.36
ITALIA	17.51	18.26	16.60	25.30
LUXEMBOURG	0.02	0.02	0.03	0.03
NEDERLAND	69.64	63.80	62.70	47.00
UNITED-KINGDOM	196.07	205.57	236.40	225.90

IMPORTATION NETTE DE PETROLE / NET OIL IMPORTS

(Mio-tep / M toe)	<u>1980</u>	<u>1981</u>	<u>1985</u>	<u>1990</u>
EUR-10	<u>437.95</u>	<u>357.78</u>	<u>395.30</u>	<u>387.68</u>
BELGIQUE	25.68	21.35	26.00	26.80
DANMARK	13.20	10.55	7.30	5.00
DEUTSCHLAND	131.25	108.67	124.00	117.00
ELLAS	13.11	12.06	11.20	15.60
FRANCE	112.65	93.52	88.20	81.40
IRELAND	5.74	4.90	6.70	6.18
ITALIA	95.76	91.99	102.90	91.40
LUXEMBOURG	1.10	1.03	1.50	1.50
NEDERLAND	37.52	32.60	45.00	40.30
UNITED-KINGDOM	1.95	-18.90	-17.50	2.50

BILAN ENERGIE FINALE / FINAL ENERGY BALANCE - SHEET

Combustibles solides	Produits pétroliers	Combustibles gazeux	Energie nucléaire	Hydraulique & géothermique	Energie électrique	Autres
Solid fuels	Petroleum products	Gaseous fuels	Nuclear energy	Hydro & Geothermal	Electrical energy	Others
Feste Brennstoffe	Mineralöl- Produkte	Gasförmige Brennstoffe	Kernenergie	Wasserkraft & Erdwärme	Elektrische Energie	Sonstige
Combustibili solidi	Prodotti pretroliferi	Combustibili gassosi	Energia nucleare	Idroelettrica & geotermica	Energia elettrica	Altri
Vaste brandstoffen	Aardolie- produkten	Gasvormige brandstoffen	Kernenergie	Waterkracht & geothermie	Elektrische energie	Andere

Production primaire	Primary production	Primärenergie Erzeugung	Produzione primaria	Primaire produktie
Importations totales	Total import	Einfuhr insgesamt	Importazioni totali	Totale invoer
Exportations totales	Total export	Ausfuhr insgesamt	Esportazioni totali	Totale uitvoer
Variations de stocks	Stock variation	Bestandsveränderungen	Variazioni delle scorte	Voorraadwijzigingen
Consommation brute	Gross consumption	Bruttoverbrauch	Consumo lordo	Brutoverbruik
Soutes	Bunkers	Bunker	Bunkeraggi	Zeescheepvaart
Consommation intérieure brute	Gross inland consumption	Brutto-Inlandsverbrauch	Consumo interno lordo	Bruto binnenlandsverbruik
Centrales électriques	Power stations	Kraftwerke	Centrali elettriche	Elektrische centrales
Secteur énergie & pertes	Energy sector & losses	Energiesektor & Verluste	Settore energia & perdite	Energie sektor & verliezen
Industrie de l'énergie	Energy industries	Energiewirtschaft	Industria dell'energia	Energiehuishouding
Consommateurs finals	Final consumers	Endverbraucher	Consumatori finali	Eindverbruikers
Industries	Industry	Industrie	Industria	Industrie
Transports	Transportation	Verkehr	Trasporti	Vervoer
Secteur domestique	Households sector	Sektor Haushaltungen	Settore Domestico	Sektor Huisbrand
Usages non énergétiques	Non-energy consumption	Nichtenergetischer Verbrauch	Consumo non energetico	Niet-energetisch verbruik
Ecart s statistiques	Statistical differences	Statistische Differenz	Differenza statistica	Statistische afwijking

BELGIUM

Programme Objectives

1. The Belgian government has recently submitted to Parliament nine draft Resolutions about energy policy, as an input to the long-awaited Parliamentary debate due to begin shortly. In the meantime the programme objectives have been set by the framework outlined in a number of documents published by the Ministry of Economic Affairs during the past four years¹. The essential policy aims described in those documents are to reduce dependence on oil to less than 50% before 1985 and to reduce the intensity of energy use by strong conservation measures. In July 1981 new conservation measures were introduced, with the announcement of a series of tax concessions to industry and domestic consumers to encourage investments in insulation and energy efficiency.

Forecast Trends

2. According to the latest forecasts:

- oil should fall to 45% of total primary energy demand by 1990, compared with 53% in 1980;
- coal (35%) and nuclear (46%) will together provide 81% of primary energy inputs to electricity-generation by 1990;
- the energy coefficient should fall from 0.65 (1980/75) to 0.53 (1990/85).

Key Issues

3. In the wake of the Parliamentary debate attention must be focussed on the electricity-generating sector. The current nuclear programme is expected to be completed by 1984, when the last tranche of Tihange comes into operation. By 1985 nuclear could be providing 50% of Belgian electricity supplies. But no decision has yet been taken about further capacity. Without an extension of the programme beyond 1984 coal must be expected to play an increasingly important role in electricity-generation if increased oil use is to be avoided. Present forecasts already point to an increase in solid fuel imports of over 50%, principally for electricity-generation.

¹Notably, "Eléments pour une nouvelle politique énergétique", April 1979.

"Note sur la politique énergétique", June 1979.

"Programme national de réorientation et d'utilisation rationnelle des énergies", March 1980.

BELGIQUE

	<u>1980</u>	<u>1981</u>	<u>1985</u>	<u>1990</u>
PIB (Mrd FB, 75)	2615	2550	3197	3706
GDP (Mrd FB, 75)				
Population (Mio)	9.9	9.9	9.9	10
Population (Mio)				
Cons.brute énergie (Mio tep)	48	46	55	59
dont: part du pétrole (%)	53%	51%	47%	45%
Gross energy consumption (Mio toe) of which: oil (%)				
Import.nette d'énergie (Mio tep)	41	36	43	47
dont:pétrole (Mio tep)	26	21	26	27
Net energy import (Mio toe) of which: oil (Mio toe)				
Centrales électriques (Mio tep)	12.6	11.9	14.5	17.4
dont part des comb. solides + nucléaire (%)	48%	55%	81%	81%
Power stations (Mio toe) of which solid fuels and nuclear (%)				
	<u>1980/75</u>	<u>1981/80</u>	<u>1985/80</u>	<u>1990/85</u>
Cons. intér. brute énergie (% par an) dont pétrole (% par an)	+ 1,9 + 0,3	- 4,9 - 9,3	+ 2,6 + 0,1	+ 1,6 + 0,7
Gross inland energy consumption (% per year) of which oil (% per year)				
PIB (% par an)	+ 2,9	- 2,5	+ 4,1	+ 3,0
GDP (% per year)				
Coefficient E/PIB	0,65	-	0,63	0,53
Coefficient E/GDP				

RELIGIUE-BELGIE

RILAN RESUME D'ENERGIE

(MIO TEP OU %)	1980		1981		1985		1990	
	MTEP	%	MTEP	%	MTEP	%	MTEP	%
-CONSOMMATION BRUTE D'ENERGIE PRIMAIRE	48.12	100.0	46.41	100.0	55.10	100.0	59.30	100.0
COMBUSTIBLES SOLIDES	10.98	22.8	11.18	24.1	12.40	22.5	15.00	25.3
PETROLE	25.27	52.5	23.67	51.0	26.00	47.2	26.80	45.2
GAZ NATUREL	8.91	18.5	8.25	17.8	9.40	17.1	9.80	16.5
ELECTRICITE PRIMAIRE ETC.	2.96	6.2	3.30 s"	7.1	7.30	13.2	7.70	13.0
-PRODUCTION INTERIEURE PRIMAIRE	7.92	16.5	7.92	17.1	11.80	21.4	12.40	20.9
HOUILLE	4.69	9.8	4.62	9.9	4.20	7.6	4.20	7.1
LIGNITE ET TOURBE	0.	0.	0.	0.	0.	0.	0.	0.
PETROLE	0.	0.	0.	0.	0.	0.	0.	0.
GAZ NATUREL	0.03	0.1	0.03	0.1	0.	0.	0.	0.
ENERGIE NUCLEAIRE	3.12	6.5	3.19	6.9	7.50	13.6	8.10	13.7
HYDRO. + GEOTH.	0.02	0.0	0.03	0.1	0.	0.	0.	0.
AUTRES (NOUV. SOURCES)	0.04	0.1	0.04	0.1	0.10	0.2	0.10	0.2
-IMPORTATIONS NETTES	41.25	85.7	36.15	77.9	43.30	78.6	46.90	79.1
COMBUSTIBLES SOLIDES	6.91	14.4	6.50	14.0	8.20	14.9	10.80	18.2
PETROLE	25.68	53.4	21.35	46.0	26.00	47.2	26.80	45.2
GAZ NATUREL	8.89	18.5	8.27	17.8	9.40	17.1	9.80	16.5
ELECTRICITE	-0.23	-0.5	0.04	0.1	-0.30	-0.5	-0.50	-0.8
-MOUVEMENTS DE STOCKS	-1.05	-2.2	2.34	5.0	0.	0.	0.	0.
COMBUSTIBLES SOLIDES	-0.63	-1.3	0.07	0.1	0.	0.	0.	0.
PETROLE	-0.41	-0.8	2.32	5.0	0.	0.	0.	0.
GAZ	-0.02	-0.0	-0.05	-0.1	0.	0.	0.	0.

MOUVEMENTS DE STOCKS: SIGNE(+) = REPRISE AUX STOCKS; SIGNE(-) = MISE EN STOCK
 SOURCE: 1980/1981 : OFFICE STATISTIQUE DES COMMUNAUTES EUROPEENNES
 (DATE:620511) 1985/1990 : EXAMEN DES PROGRAMMES NATIONAUX

DENMARK

Programme Objectives

1. A new Danish Energy Plan was presented to Parliament at the end of 1981, mapping out prospects and options up to 2000. In addition to the points described in the main body of the Commission's report (paragraph 10 above) the Plan devotes particular attention to heat supply and use, aiming for a highly structured heat supply system with some 75% of total supply passing through a fixed distribution system (gas, electricity, CHP) by 2000. By the end of the century oil is expected to provide some 40% of Danish primary energy needs, compared with 90% in 1973 and 70% in 1980, with coal and (to a lesser extent) gas supplying the bulk of the remainder. The Plan includes the option of a nuclear programme to meet a share of growing electricity requirements by 2000.

Forecast Trends

2. The forecasts derived from the Plan and earlier data submissions point to:
- oil accounting for 46% of total primary energy demand in 1990;
 - coal maintaining its position as the dominant source of electricity-supply, providing 83% of total primary fuel inputs to power stations in 1990;
 - an energy coefficient falling from 0.75 (1980/75) to 0.24 (1990/85).

Key Issues

3. Coal imports are expected to grow by a further 31% 1980-1990. Action¹ has already been taken to help encourage a diversification of long-term contracts. It is important that the risks in very heavy dependence on a single imported fuel should be spread in this way.

4. By 1990 oil from the Danish sector of the North Sea is forecast to supply over 45% of domestic requirements. The Government has negotiated a revision of the concession agreement held since 1962 by the sole concessionaire, the Danish Underground Consortium. This will release a number of areas for other companies to explore and develop. It has also introduced taxation arrangements designed, inter alia, to encourage the exploitation of small fields. The pace of Danish exploration and development is likely also to be influenced, however, by future trends in oil prices.

5. Production of Danish gas should begin in 1984. By 1990 it could supply 10% of primary energy demand. A major pipeline is currently under construction to bring the gas ashore. Ultimately the gas should be distributed to some 300,000 homes through a new distribution system. The viability of this ambitious venture is likely to be heavily affected by gas pricing policy.

¹In March 1980 a Coal Supplies Committee was established, bringing together representatives from the power utilities and the Ministry of Energy.

DANMARK

	<u>1980</u>	<u>1981</u>	<u>1985</u>	<u>1990</u>
GDP (Mrd DKR, 75)	245	246	275	329
Population (Mio)	5.1	5.1	5.1	5.1
Energy gross consumption (Mio toe) of which: oil (%)	19.5 70%	17.7 68%	19.3 55%	20.2 46%
Net energy import (Mio toe) of which: oil (Mio toe)	19.2 13.2	17.8 10.6	14.3 7.3	12.7 5.0
Power stations (Mio toe) of which: solid fuels and nuclear	6.2 81%	4.6 86%	7.4 82%	6.8 83%
	<u>1980/75</u>	<u>1981/80</u>	<u>1985/80</u>	<u>1990/85</u>
Gross inland energy consumption of which: oil (% per year)	+ 1.8 - 2.9	- 10.1 - 13.3	- 0.2 - 4.9	+ 0.9 - 3.1
GDP (% per year)	+ 2.4	+ 0.4	+ 2.3	+ 3.7
Coefficient E/GDP	0.75	-	- 0.09	0.24

DANEMARK

BILAN RESUME D'ENERGIE

(MIO TEP OU %)	1980		1981		1985		1990	
	MTEP	%	MTEP	%	MTEP	%	MTEP	%
-CONSOMMATION BRUTE D'ENERGIE PRIMAIRE	19.53	100.0	17.68	100.0	19.30	100.0	20.20	100.0
COMBUSTIBLES SOLIDES	5.84	29.9	5.07	28.7	7.30	37.8	8.20	40.6
PETROLE	13.65	69.9	11.97	67.7	10.70	55.4	9.20	45.5
GAZ NATUREL	0.	0.	0.	0.	0.90	4.7	2.00	9.9
ELECTRICITE PRIMAIRE ETC.	0.04	0.2	0.64	3.6	0.40	2.1	0.80	4.0
-PRODUCTION INTERIEURE PRIMAIRE	0.30	1.5	0.76	4.3	5.00	25.9	7.50	37.1
HOUILLE	0.	0.	0.	0.	0.	0.	0.	0.
LIGNITE ET TOURBE	0.	0.	0.	0.	0.30	1.6	0.30	1.5
PETROLE	0.30	1.5	0.76	4.3	3.40	17.6	4.20	20.8
GAZ NATUREL	0.	0.	0.	0.	0.90	4.7	2.20	10.9
ENERGIE NUCLEAIRE	0.	0.	0.	0.	0.	0.	0.	0.
HYDRO. + GEOTH.	0.00	0.0	0.00	0.0	0.	0.	0.	0.
AUTRES (NOUV. SOURCES)	0.	0.	0.	0.	0.40	2.1	0.80	4.0
-IMPORTATIONS NETTES	19.25	98.6	17.79	100.6	14.30	74.1	12.70	62.9
COMBUSTIBLES SOLIDES	6.01	30.8	6.60	37.3	7.00	36.3	7.90	39.1
PETROLE	13.20	67.6	10.55	59.7	7.30	37.8	5.00	24.8
GAZ NATUREL	0.	0.	0.	0.	0.	0.	-0.20	-1.0
ELECTRICITE	0.04	0.2	0.64	3.6	0.	0.	0.	0.
-MOUVEMENTS DE STOCKS	-0.02	-0.1	-0.87	-4.9	0.	0.	0.	0.
COMBUSTIBLES SOLIDES	-0.18	-0.9	-1.53	-8.6	0.	0.	0.	0.
PETROLE	0.15	0.8	0.66	3.7	0.	0.	0.	0.
GAZ	0.	0.	0.	0.	0.	0.	0.	0.

MOUVEMENTS DE STOCKS: SIGNE(+) = REPRISE AUX STOCKS; SIGNE(-) = MISE EN STOCK

SOURCE: 1980/1981 : OFFICE STATISTIQUE DES COMMUNAUTES EUROPEENNES

(DATE: 820511) 1985/1990 : EXAMEN DES PROGRAMMES NATIONAUX

GERMANY

Programme Objectives

1. The Third Revision of the German Energy Policy Programme was adopted by the Federal Government in November 1981. It represents an updating of the previous programme of December 1977, rather than a change in energy policy priorities. This updating reflects new assumptions about growth in energy demand to take account of the changing macro-economic environment and the success of conservation to date. The programme restates the Government's intention to rely primarily on the market and on the price mechanism to bring about the necessary changes in supply and demand. But it also recognises a role for continuing regulatory, fiscal and financial incentives to facilitate the process of adjustment in certain sectors (notably, conservation in buildings and in industry, district heating) and the need for financial support for coal gasification plants. The programme emphasises the desirability of continuing diversification in energy supply, including a growing role for nuclear power.

Forecast Trends

2. The German government does not make energy forecasts of its own. But the programme includes the forecasts prepared by three independent research institutes (Berlin, Cologne, Essen) using basic assumptions developed after discussion with the government. The figures used in the Commission's review are those drawn from the forecast of DIW, Berlin which was the most recently prepared.

3. According to the DIW forecast :

- oil would fall from 48% of total primary energy demand in 1980 to 40% in 1990;
- coal (53%) and nuclear (33%) would together supply 86% of total primary fuel inputs to power stations, compared with 72% in 1980;
- the energy coefficient would fall from 0.69 (1980/75) to 0.52 (1990/85).

Key Issues

4. Given the importance of the nuclear power programme in the forecast energy balances particular attention must continue to be paid to possible constraints. The Federal Government reached an agreement with the Länder in October 1981 to streamline the licensing procedures for pressurized water reactors. But decisions have still to be taken to begin construction of upward of 3 GW of the nuclear capacity projected to be needed by 1990.

5. The energy projections were prepared by the three institutes before the signature by German companies on 20 November 1981 of a long-term contract for additional supplies of Soviet gas starting in 1984. If supplies became available in the amounts and on the time-scale planned some 9.2 mtoe or 15% more gas will be available to German consumers in 1990 than is currently shown in the projections. This could have implications both for other gas supplies and for the substitution of natural gas for other energy sources, including district heating.

DEUTSCHLAND

	<u>1980</u>	<u>1981</u>	<u>1985</u>	<u>1990</u>
BIP (Mrd DM, 75) GDP (Mrd DM, 75)	1230	1231	1338	1499
Bevölkerung (Mio) Population (Mio)	61.6	61.6	61.1	61.0
Bruttoenergieverbrauch (Mio t Röe) davon: Öl Anteil (%) Energy gross consumption (Mio toe) of which: oil (Mio toe)	273 48%	261 45%	287 45%	305 40%
Netto Energie Einfuhren (Mio t Röe) davon: Öl Net energy import (Mio toe) of which oil (Mio toe)	157 131	133 109	154 124	157 117
Kraftwerke (Mio t Röe) davon: Anteil Feste Brennstoffe und Kernenergie (%) Power stations (Mio toe) of which solid fuels and nuclear	85 72%	84 77%	95 80%	113 86%
	<u>1980/75</u>	<u>1981/80</u>	<u>1985/80</u>	<u>1990/85</u>
Brutto Inlands-Energieverbrauch davon: Öl (jährlich %) Gross inland energy consumption of which: oil (% per year)	+ 2,4 + 0,5	- 4,4 - 11,5	+ 1,0 - 0,5	+ 1,2 - 1,2
BIP (jährlich %) GDP (% per year)	+ 3,5	-	+ 1,7	+ 2,3
Koeffizient E/BIP Coefficient E/GDP	0.69		0,59	0,52

DEUTSCHLAND

BILAN RESUME D'ENERGIE

(MIO TEP OU %)	1980		1981		1985		1990	
	MTEP	%	MTEP	%	MTEP	%	MTEP	%
-CONSOMMATION BRUTE D'ENERGIE PRIMAIRE	272.09	100.0	261.33	100.0	286.60	100.0	304.60	100.0
COMBUSTIBLES SOLIDES	82.67	30.3	85.58	32.7	82.00	28.6	93.00	30.5
PETROLE	131.72	48.2	117.23	44.9	129.00	45.0	122.00	40.1
GAZ NATUREL	44.59	16.3	41.81	16.0	50.00	17.4	51.00	16.7
ELECTRICITE PRIMAIRE ETC.	14.02	5.1	16.71	6.4	25.60	8.9	38.60	12.7
-PRODUCTION INTERIEURE PRIMAIRE	121.44	44.5	127.04	48.6	132.60	46.3	147.60	48.5
HOUILLE	62.19	22.8	62.87	24.1	62.50	21.8	64.50	21.2
LIGNITE ET TOURBE	26.50	9.7	29.06	11.1	24.50	8.5	24.50	8.0
PETROLE	4.97	1.8	4.46	1.7	5.00	1.7	5.00	1.6
GAZ NATUREL	14.25	5.2	14.62	5.6	15.00	5.2	15.00	4.9
ENERGIE NUCLEAIRE	11.06	4.1	13.52	5.2	24.00	8.4	37.00	12.1
HYDRO. + GEOTH.	1.49	0.5	1.56	0.6	1.60	0.6	1.60	0.5
AUTRES (NOUV. SOURCES)	0.97	0.4	0.96	0.4	0.	0.	0.	0.
-IMPORTATIONS NETTES	156.96	57.5	132.99	50.9	154.00	53.7	157.00	51.5
COMBUSTIBLES SOLIDES	-5.37	-2.0	-4.00	-1.5	-5.00	-1.7	4.00	1.3
PETROLE	131.25	48.1	108.67	41.6	124.00	43.3	117.00	38.4
GAZ NATUREL	30.58	11.2	27.64	10.6	35.00	12.2	36.00	11.8
ELECTRICITE	0.50	0.2	0.68	0.3	0.	0.	0.	0.
-MOUVEMENTS DE STOCKS	-5.40	-2.0	1.30	0.5	0.	0.	0.	0.
COMBUSTIBLES SOLIDES	-0.65	-0.2	-2.35	-0.9	0.	0.	0.	0.
PETROLE	-4.51	-1.7	4.10	1.6	0.	0.	0.	0.
GAZ	-0.24	-0.1	-0.45	-0.2	0.	0.	0.	0.

MOUVEMENTS DE STOCKS: SIGNE(+) = REPRISSE AUX STOCKS; SIGNE(-) = MISE EN STOCK
 SOURCE: 1980/1981: OFFICE STATISTIQUE DES COMMUNAUTES EUROPEENNES
 (DATE:F20511) 1985/1990: EXAMEN DES PROGRAMMES NATIONAUX

GREECE

Programme Objectives

1. The Greek programme up to 1990 is understood to be under review. The forecasts and comments included in the Commission's report are based on the information submitted last year.

2. Nearly 84% of Greek energy supplies were imported in 1980, the bulk of them oil. The current programme envisages a fall in energy import dependence to some 63% through, in particular:

- the development of domestic lignite sources for electricity generation. Eleven new units of 300 MWs each fired by lignite are expected to be constructed by 1990. If these plans are successful some 88% of electricity will be produced from these sources by 1990;
- a gradual expansion of hydro-electric capacity (new capacity of 2900 MW is planned for the decade);
- a modest increase in imports of hard coal for use in industry (notably cement manufacturing);
- the development of indigenous oil and natural gas.

Forecast Trends

3. The attached tables show that:

- oil is expected to fall from 77% of total primary energy demand to 59% by 1990 (though oil use could increase in volume terms by 28%);
- solid fuels (lignite) could provide 91% of primary fuel inputs to electricity-generation in 1990, with hydro-electricity providing a further 5% (this compares with 43% of electricity from oil in 1980);
- an energy coefficient remaining, however, above unity and rising to 1.38 1990/85.

Key Issues

4. The programme is based on the rapid development of limited domestic energy resources. It is recognised, however, that lignite production will begin to decline after 1990 unless new fields are discovered. If increased oil use in electricity-generation after 1990 is to be avoided, decisions will therefore have to be taken early enough to construct and commission the nuclear and coal-fired plants that were envisaged for this decade under earlier plans. On present plans the one nuclear plant that is considered will not be commissioned before 1992.

5. The high and rising energy coefficient, though imperfect as a measure of the trend in energy efficiency, suggests that the scope for energy saving remains large. It is important that the adequacy of the existing conservation efforts (summarised in Annex 2), including the role of the price mechanism, should be kept under careful review.

E L L A S

	<u>1980</u>	<u>1981</u>	<u>1985</u>	<u>1990</u>
GDP (Mrd DR, 75)	832	849	1013	1232
Population (Mio)	9.5	9.6	10.1	10.6
Gross energy consumption (Mio Toe) of which: oil (%)	16.1 77%	15.6 77%	20.2 60%	26.8 59%
Net energy import (Mio toe) of which: oil (Mio toe)	13.5 13.1	12.2 12.1	12.8 11.2	17.2 15.6
Power stations (Mio toe) of which: solid fuels (%)	5.0 50%	5.1 60%	6.6 86%	9.2 91%
	<u>1980/75</u>	<u>1981/80</u>	<u>1985/80</u>	<u>1990/85</u>
Gross inland energy consump- tion of which: oil (% year)	+ 5.4 + 5.9	- 5.1 - 6.0	+ 4.4 - 1.0	+ 5.5 + 4.8
GDP (% year)	+ 4.3	+ 2.0	+ 4.0	+ 4.0
coefficient E/GDP	1.26	-	1.1	1.38

HELLAS

BILAN RESUME D'ENERGIE

(MIO TEP OU %)	1980		1981		1985		1990	
	MTEP	%	MTEP	%	MTEP	%	MTEP	%
-CONSOMMATION BRUTE D'ENERGIE PRIMAIRE	16.12	100.0	15.58	100.0	20.21	100.0	26.83	100.0
COMBUSTIBLES SOLIDES	3.35	20.8	3.31	21.3	7.60	37.6	10.40	38.8
PETROLE	12.40	76.9	11.93	76.6	12.20	60.4	15.90	59.3
GAZ NATUREL	0.	0.	0.	0.	0.10	0.5	0.10	0.4
ELECTRICITE PRIMAIRE ETC.	0.37	2.3	0.34	2.2	0.31	1.5	0.43	1.6
-PRODUCTION INTERIEURE PRIMAIRE	3.35	20.8	3.63	23.3	7.41	36.7	9.63	35.9
HOUILLE	0.	0.	0.	0.	0.	0.	0.	0.
LIGNITE ET TOURBE	3.03	18.8	3.13	20.1	6.00	29.7	8.80	32.8
PETROLE	0.	0.	0.20	1.3	1.00	4.9	0.30	1.1
GAZ NATUREL	0.	0.	0.	0.	0.10	0.5	0.10	0.4
ENERGIE NUCLEAIRE	0.	0.	0.	0.	0.	0.	0.	0.
HYDRO. + GEOTH.	0.29	1.8	0.28	1.8	0.31	1.5	0.43	1.6
AUTRES (NOUV. SOURCES)	0.03	0.2	0.03	0.2	0.	0.	0.	0.
-IMPORTATIONS NETTES	13.55	84.1	12.18	78.2	12.80	63.3	17.20	64.1
COMBUSTIBLES SOLIDES	0.39	2.5	0.09	0.6	1.60	7.9	1.60	6.0
PETROLE	13.11	81.3	12.06	77.4	11.20	55.4	15.60	58.1
GAZ NATUREL	0.	0.	0.	0.	0.	0.	0.	0.
ELECTRICITE	0.05	0.3	0.04	0.2	0.	0.	0.	0.
-MOUVEMENTS DE STOCKS	-0.78	-4.8	-0.23	-1.5	0.	0.	0.	0.
COMBUSTIBLES SOLIDES	-0.07	-0.4	0.09	0.6	0.	0.	0.	0.
PETROLE	-0.71	-4.4	-0.33	-2.1	0.	0.	0.	0.
GAZ	0.	0.	0.	0.	0.	0.	0.	0.

MOUVEMENTS DE STOCKS: SIGNE(+) = REPRISE AUX STOCKS; SIGNE(-) = MISE EN STOCK
 SOURCE: 1980/1981 : OFFICE STATISTIQUE DES COMMUNAUTES EUROPEENNES
 (DATE:820511) 1985/1990 : EXAMEN DES PROGRAMMES NATIONAUX

FRANCE

Programme Objectives

1. In October 1981 the French Parliament approved a new French energy plan which envisages a boost to energy conservation (particularly in the residential, transport and tertiary sectors) and an accelerated development of domestic energy sources, including new and renewable energies, to replace imported oil. Solid fuels produced domestically are expected to provide nearly 50% of requirements in 1990, compared with 20-25% assumed earlier. The expansion of consumption of natural gas (+40% 1980-1990) will, however, continue to require a substantial increase in imports (up to 12% of total primary energy demand by 1990). The largest single element in reducing dependence on imported oil will remain the nuclear programme: nuclear could meet over 30% of total primary energy demand in 1990 and provide 80% of electricity.

Forecast Trends

2. The attached tables are derived as far as possible from the new plan, although there are some uncertainties about the precise expectations for nuclear power production and about the balance between different new and renewable energy sources. The tables show that:

- the share of oil in total primary energy demand is expected to fall from 60% in 1980 to 35% in 1990;
- coal (over 9%) and nuclear (nearly 80%) could together supply some 89% of the total primary fuel inputs to electricity-generation compared with 61% in 1980;
- the energy coefficient, however, is expected to rise over the decade to 0.68%. This appears to be due in part to the shift from oil use to nuclear energy.

Key Issues

3. The Plan assumes high rates of economic growth (5% a year). Its sensitivity to lower growth deserves especially careful consideration, given the inter-relationships between lower GDP growth, the rate of introduction of new energy-efficient technology and the pace of electrification.

4. The target for renewables is ambitious. It will be affected by the pace of commercialisation of new technologies, the rate of economic growth and by the availability of and trends in the prices of competing fuels. The impact of oil price developments and of the likely availability of increased amounts of imported natural gas could be important factors in influencing its realisation.

F R A N C E

	<u>1980</u>	<u>1981</u>	<u>1985</u>	<u>1990</u>
PIB (Mrd FF, 75) GDP (Mrd FF, 75)	1696	1706	2074	2647
Population (Mio) Population (Mio)	53.7	53.9	55.1	56.4
Cons.brute énergie (Mio tep) dont: part du pétrole (%) Energy gross consumption (Mio toe) of which: oil (%)	188 60%	183 54%	200 45%	236 35%
Import. nette d'énergie (Mio tep) dont: pétrole (Mio tep) Net energy import (Mio toe) of which: oil (Mio toe)	149 113	129 94	126 88	128 81
Centrales électriques (Mio tep) dont: part des comb. so- lides + nucléaire (%) Power stations (Mio toe) of which: solid fuels and nuclear	50 61%	55 72%	64 84%	91 89%
	<u>1980/75</u>	<u>1981/80</u>	<u>1985/80</u>	<u>1990/85</u>
Cons. intér. énergie (%) par an) dont pétrole (%/an) Gross inland energy con- sumption of which: oil (%) per year)	+ 3,2 + 0,6	- 2,8 -12,3	+ 1,2 - 4,6	+ 3,4 - 2,0
PIB (% par an) GDP (% per year)	+ 3,2	+ 0,6	85/81 + 5,0	+ 5,0
Coefficient E/PIB Coefficient E/GDP	1.0	-	0.29	0.68

FRANCE

BILAN RESUME D'ENERGIE

(MIO TEP OU %)	1980		1981		1985		1990	
	MTEP	%	MTEP	%	MTEP	%	MTEP	%
-CONSOMMATION BRUTE D'ENERGIE PRIMAIRE	188.42	100.0	183.28	100.0	200.30	100.0	236.00	100.0
COMBUSTIBLES SOLIDES	31.06	16.5	29.00	15.8	28.60	14.3	34.60	14.7
PETROLE	113.02	60.0	99.74	54.4	90.40	45.1	82.60	35.0
GAZ NATUREL	21.57	11.4	21.56	11.8	26.50	13.2	30.80	13.1
ELECTRICITE PRIMAIRE ETC.	22.77	12.1	32.98	18.0	54.80	27.4	88.00	37.3
-PRODUCTION INTERIEURE PRIMAIRE	43.89	23.3	54.58	29.8	74.50	37.2	108.40	45.9
HOUILLE	11.67	6.2	11.87	6.5	11.50	5.7	16.00	6.8
LIGNITE ET TOURBE	0.84	0.4	0.91	0.5	0.80	0.4	0.80	0.3
PETROLE	2.55	1.4	2.46	1.3	2.20	1.1	1.20	0.5
GAZ NATUREL	6.32	3.4	5.95	3.2	5.20	2.6	2.40	1.0
ENERGIE NUCLEAIRE	16.33	8.7	26.99	14.7	44.20	22.1	72.40	30.7
HYDRO. + GEOTH.	6.04	3.2	6.27	3.4	5.60	2.8	5.60	2.4
AUTRES (NOUV. SOURCES)	0.13	0.1	0.13	0.1	5.00	2.5	10.00	4.2
-IMPORTATIONS NETTES	149.12	79.1	128.50	70.1	125.80	62.8	127.60	54.1
COMBUSTIBLES SOLIDES	20.06	10.6	18.04	9.8	16.30	8.1	17.80	7.5
PETROLE	112.65	59.8	93.52	51.0	88.20	44.0	81.40	34.5
GAZ NATUREL	16.15	8.6	17.36	9.5	21.30	10.6	28.40	12.0
ELECTRICITE	0.27	0.1	-0.41	-0.2	0.	0.	0.	0.
-MOUVEMENTS DE STOCKS	-4.59	-2.4	0.20	0.1	0.	0.	0.	0.
COMBUSTIBLES SOLIDES	-1.51	-0.8	-1.82	-1.0	0.	0.	0.	0.
PETROLE	-2.18	-1.2	3.76	2.1	0.	0.	0.	0.
GAZ	-0.91	-0.5	-1.74	-1.0	0.	0.	0.	0.

MOUVEMENTS DE STOCKS: SIGNE(+) = REPRISE AUX STOCKS; SIGNE(-) = MISE EN STOCK

SOURCE: 1980/1981 : OFFICE STATISTIQUE DES COMMUNAUTES EUROPEENNES

(DATE: P20511) 1985/1990 : EXAMEN DES PROGRAMMES NATIONAUX

IRELAND

Programme Objectives

1. In 1980 imported oil accounted for some 67% of Ireland's primary energy supplies. Plans to reduce this share to below 50% by 1990 are based principally on:

- a shift from oil to solid fuels in electricity-generation. This will require both the development of domestic peat production (expected to increase by 50% and to 13% of total primary energy demand by 1990) and a quadrupling of coal imports. Of major importance will be the commissioning of the coal-fired electricity plant at Moneypoint, in the South West of Ireland, where two 300 MW units are expected to come into service in 1985 and 1986;
- a growing availability of natural gas from the Kinsale Head field off the coast near Cork, which could meet over 12% of total primary energy demand by 1990. The commissioning of the planned pipeline between Cork-Dublin is expected to facilitate more diversified use of this gas in industry and the domestic sector (about 60% of current gas supplies are used for power-generation);
- conservation. A National Energy Conservation Programme was introduced in 1980. It has subsequently been strengthened, notably in industry (Annex 2).

Forecast Trends

2. Current forecasts point to:

- a fall to 48% by 1990 in the share of oil in total primary energy demand;
- solid fuels (coal and peat) should provide 68% of total primary energy inputs to power stations by 1990. But there will be a volume increase in oil use in power stations and a doubling of gas use up to the middle of the decade pending the commissioning of the Moneypoint units;
- the energy coefficient is expected to remain above unity up to 1985, with inland energy consumption rising substantially more quickly than GDP. This may result, in part at least, from the failure so far to reflect in the energy balances the impact of more recent downward revisions to GDP growth rates.

Key Issues

3. The availability and use of solid fuels will be critical to the achievement of the programme objectives. About one-third of the steam coal required from 1985 onwards has already been secured under long-term contracts: it is important that rapid progress should be made in securing further supplies on a similar long-term basis.

The necessary expansion of domestic peat production will require the development of an increasing number of small deposits. This could be hampered by continuing price controls.

4. The projected growth of 50% in total primary energy demand over this decade may be justified in part by the current low level of per capita consumption. But there is further scope for energy saving efforts, particularly in the domestic and transport sectors. The projected rise in energy demand could be reduced by closer attention to the relationship between domestic consumer prices and world market prices for energy.

I R E L A N D

	<u>1980</u>	<u>1981</u>	<u>1985</u>	<u>1990</u>
GDP (Mio IRL, 75)	4527	4417	5455	6637
Population (Mio)	3.4	3.4	3.6	3.8
Gross energy consumption (Mio toe) of which: oil (%)	8.5 67%	8.2 63%	10.9 61%	12.8 48%
Net energy import (Mio toe) of which: oil (Mio toe)	6.5 5.7	5.8 4.9	7.9 6.7	9.5 6.2
Power stations (Mio toe) of which: solid fuels (%)	2.6 24%	2.6 24%	3.3 33%	4.2 68%
	<u>1980/75</u>	<u>1981/80</u>	<u>1985/80</u>	<u>1990/85</u>
Gross inland energy consump- tion of which: oil (% per year)	+ 5.8 + 2.1	- 3.9 -10.0	+ 5.1 + 3.3	+ 3.4 - 1.7
GDP (% year)	+ 4.2	- 2.4	+ 3.8	+ 4.0
Coefficient E/GDP	1.38	-	1.34	0,85

IRELAND

BILAN RESUME D'ENERGIE

(MIO TEP OU %)	1980		1981		1985		1990	
	MTEP	%	MTEP	%	MTEP	%	MTEP	%
-CONSOMMATION BRUTE D'ENERGIE PRIMAIRE	8.50	100.0	8.16	100.0	10.90	100.0	12.85	100.0
COMBUSTIBLES SOLIDES	2.00	23.5	1.85	22.6	2.83	26.0	5.04	39.2
PETROLE	5.70	67.0	5.12	62.7	6.70	61.5	6.18	48.1
GAZ NATUREL	0.74	8.7	1.12	13.8	1.31	12.0	1.57	12.2
ELECTRICITE PRIMAIRE ETC.	0.07	0.8	0.07	0.9	0.06	0.6	0.06	0.5
-PRODUCTION INTERIEURE PRIMAIRE	1.97	23.2	2.18	26.7	2.98	27.3	3.36	26.1
HOUILLE	0.03	0.4	0.04	0.4	0.04	0.4	0.04	0.3
LIGNITE ET TOURBE	1.13	13.3	0.95	11.6	1.57	14.4	1.69	13.2
PETROLE	0.	0.	0.	0.	0.	0.	0.	0.
GAZ NATUREL	0.74	8.7	1.12	13.8	1.31	12.0	1.57	12.2
ENERGIE NUCLEAIRE	0.	0.	0.	0.	0.	0.	0.	0.
HYDRO. + GEOTH.	0.07	0.8	0.07	0.9	0.06	0.6	0.06	0.5
AUTRES (NOUV. SOURCES)	0.	0.	0.	0.	0.	0.	0.	0.
-IMPORTATIONS NETTES	6.54	76.8	5.77	70.7	7.92	72.7	9.49	73.9
COMBUSTIBLES SOLIDES	0.79	9.3	0.87	10.6	1.22	11.2	3.31	25.8
PETROLE	5.74	67.5	4.90	60.1	6.70	61.5	6.18	48.1
GAZ NATUREL	0.	0.	0.	0.	0.	0.	0.	0.
ELECTRICITE	0.	0.	0.	0.	0.	0.	0.	0.
-MOUVEMENTS DE STOCKS	0.00	0.0	0.21	2.6	0.	0.	0.	0.
COMBUSTIBLES SOLIDES	0.04	0.5	0.	0.	0.	0.	0.	0.
PETROLE	-0.04	-0.5	0.21	2.6	0.	0.	0.	0.
GAZ	0.	0.	0.	0.	0.	0.	0.	0.

MOUVEMENTS DE STOCKS: SIGNE(+) = REPRISE AUX STOCKS; SIGNE(-) = MISE EN STOCK
 SOURCE: 1980/1981 : OFFICE STATISTIQUE DES COMMUNAUTES EUROPEENNES
 (DATE:620511) 1985/1990 : EXAMEN DES PROGRAMMES NATIONAUX

ITALY

Programme Objectives

1. Italy's new National Energy Plan was approved by the Italian Parliament in December 1981. Its main elements are summarized in para 10 of the Commission's report. It involves a substantial expansion of installed nuclear capacity, requiring the construction of 4 GW new capacity between now and 1990 over and above the 2 GW already under construction; the construction of new coal-fired stations with a total capacity of 17 GW as well as the conversion of a further 3.7 GW from oil to coal; the construction of 3 major coal handling ports to receive the large increase in coal imports; and substantial penetration of natural gas, both in industry and in the domestic and commercial sectors.

The total plan is estimated to involve investment of over 83,000 bn 1980 lire, of which nearly one-quarter will be required for the construction of new power plants. This also includes 8,000 bn lire needed for energy saving incentives (3,000 bn in transport alone), reflecting the provisions of the Bill* approved by the Italian senate in February 1981.

Forecast Trends

2. According to the Plan:

- oil is expected to fall to 53% of total primary energy demand by 1990;
- solid fuels (35%) and nuclear (13%) should provide together 48% of total primary energy inputs to electricity generation by 1990. But oil use in power stations is expected to rise by 40% during the first half of the decade as power stations ordered in the 1970s come into operation; and even in 1990 oil will continue to supply 38% of power station inputs;
- the energy coefficient is expected to rise during the first half of the decade and then to fall to 0.66 in 1990/85.

Key Issues

3. The current plan provides for greater diversification of energy supply in 1990 than envisaged previously, with a somewhat more limited rôle for nuclear and an enhanced rôle for solid fuels and natural gas. It has been widely welcomed not only by the Italian Parliament (where it was passed unanimously) but also by regional governments.

But the ambitious new power station programme in particular will require vigorous resolution in its implementation and attention to a number of continuing difficulties, notably:

- over the selection of sites for new nuclear stations;
- in the availability of the necessary finance.

The latter will depend heavily on the financial position of ENEL, the Italian state electricity corporation, which has been adversely affected both by the recession and by the pricing of electricity below cost to certain categories of consumer. Particular attention must be paid to measures to enable ENEL to finance the new construction, including a more rigorous approach to electricity pricing.

4. If the forecasts are achieved, imported gas will provide some 80% of total natural gas supplies in 1990 and Italy could have the highest level of dependence of any Community country on Soviet gas supplies (35% of total requirements). The implications of these developments will require careful consideration, particularly if there is any slowdown in the other aspects of the programme to diversify away from oil.

*Bill No. 2383

I T A L I A

	<u>1980</u>	<u>1981</u>	<u>1985</u>	<u>1990</u>
PIL (Mrd LIT, 75) GDP (Mrd LIT, 75)	151423	150212	179842	213595
Popolazione (Mio) Population (Mio)	57	57	58	59.2
Consumo lordo dell'energia (Mio tep) di cui: aliquota del petrolio (%) Energy gross consumption (Mio toe) of which: oil (%)	136 71%	135 71%	159 66%	178 53%
Importazioni nette della energia (Mio tep) di cui petrolio (Mio tep) Net energy import (Mio toe) of which: oil (Mio toe)	119 96	116 92	142 103	153 91
Centrali elettriche (Mio tep) 34 di cui aliquota dei combusti- 12% bili solidi +nucleare (%) Power stations (Mio toe) of which: solid fuels and nuclear (%)		33 14%	47 17%	62 48%
	<u>1980/75</u>	<u>1981/80</u>	<u>1985/80</u>	<u>1990/85</u>
Consumo interno lordo della energia di cui: petrolio (% anno) Gross inland energy consump- tion of which:oil (% per year)	+ 1,9 + 1,0	- 0,9 - 2,0	+ 3,1 + 1,6	+ 2,3 - 2,3
PIL (% anno) GDP (% per year)	+ 3,8	- 0,8	+ 3,5	+ 3,5
Coefficiente E/PIL Coefficient E/GDP	0.50	-	0.88	0.66

ITALIA

BILAN RESUME D'ENERGIE

(MIO TEP OU %)	1980		1981		1985		1990	
	MTEP	%	MTEP	%	MTEP	%	MTEP	%
-CONSOMMATION BRUTE D'ENERGIE PRIMAIRE	136.10	100.0	134.74	100.0	158.60	100.0	177.90	100.0
COMBUSTIBLES SOLIDES	10.90	8.0	11.79	8.8	16.70	10.5	33.60	18.9
PETROLE	97.00	71.3	95.01	70.5	105.40	66.5	94.40	53.1
GAZ NATUREL	22.73	16.7	22.22	16.5	28.90	18.2	35.00	19.7
ELECTRICITE PRIMAIRE ETC.	5.47	4.0	5.71	4.2	7.60	4.8	14.90	8.4
-PRODUCTION INTERIEURE PRIMAIRE	17.51	12.9	18.26	13.6	16.60	10.5	25.30	14.2
HOUILLE	0.	0.	0.	0.	0.	0.	1.30	0.7
LIGNITE ET TOURBE	0.31	0.2	0.31	0.2	0.30	0.2	0.30	0.2
PETROLE	1.09	1.5	1.51	1.1	2.50	1.6	3.00	1.7
GAZ NATUREL	10.26	7.5	11.56	8.6	6.20	3.9	5.80	3.3
ENERGIE NUCLEAIRE	0.67	0.5	0.79	0.6	2.00	1.3	8.00	4.5
HYDRO. + GEOTH.	4.12	3.0	3.93	2.9	4.50	2.8	4.90	2.8
AUTRES (NOUV. SOURCES)	0.16	0.1	0.17	0.1	1.10	0.7	2.00	1.1
-IMPORTATIONS NETTES	118.79	87.3	116.06	86.1	142.00	89.5	152.60	85.8
COMBUSTIBLES SOLIDES	10.75	7.9	11.80	8.8	16.40	10.3	32.00	18.0
PETROLE	95.76	70.4	91.09	68.3	102.90	64.9	91.40	51.4
GAZ NATUREL	11.76	8.6	11.43	8.5	22.70	14.3	29.20	16.4
ELECTRICITE	0.52	0.4	0.83	0.6	0.	0.	0.	0.
-MOUVEMENTS DE STOCKS	-0.21	-0.2	0.42	0.3	0.	0.	0.	0.
COMBUSTIBLES SOLIDES	-0.15	-0.1	-0.32	-0.2	0.	0.	0.	0.
PETROLE	-0.75	-0.6	1.51	1.1	0.	0.	0.	0.
GAZ	0.70	0.5	-0.77	-0.6	0.	0.	0.	0.

MOUVEMENTS DE STOCKS: SIGNE(+) = REPRISE AUX STOCKS; SIGNE(-) = MISE EN STOCK
 SOURCE: 1980/1981 : OFFICE STATISTIQUE DES COMMUNAUTES EUROPEENNES
 (DATE:R20511) 1985/1990 : EXAMEN DES PROGRAMMES NATIONAUX

LUXEMBOURG

Programme Objectives

1. Almost all of Luxembourg's energy is imported, with imported coal meeting 50% of requirements and imported oil 30%. Government policy is based on further diversification of imported supplies (including electricity and natural gas) and on conservation. There are no quantitative objectives.

Forecast Trends

2. According to current forecasts:

- oil use is expected to rise by over 35% during the decade. But in 1990 it will still account for little more than 30% of total primary energy demand;
- solid fuels are expected to play a growing rôle in electricity generation, rising from a negligible contribution in 1980 to around 30% in 1990. Gas from blast furnaces will, however, continue to supply the bulk of primary energy inputs to power stations;
- the energy coefficient is expected to rise during the first half of the decade and then to fall to 0.65 in 1990/85. The expected trends in the coefficient would be in contrast to developments in 1973-80 when GDP growth of 1.2% a year was combined with a steady decline in energy use.

Key Issues

3. The level of future energy demand is likely to depend heavily on the prospects of the iron and steel industry which accounts for some 90% of total industrial energy use and for 60% of total final energy demand. Considerable efforts have already been made to increase the energy efficiency of the industry and to reduce oil consumption (now down to 4% of total energy used in the iron and steel industry). Attention must, however, continue to be paid to the scope for further improvements.

4. The prospect of an increase over this decade in the total volume of oil consumed underlies the desirability of substantial efforts to encourage fuel switching and conservation in the residential and transport sectors. Renewed attention must be paid to the rôle of pricing and taxation policies and particularly to the level of post-tax prices for motor fuel which are lower than in neighbouring countries.

L U X E M B O U R G

	<u>1980</u>	<u>1981</u>	<u>1985</u>	<u>1990</u>
PIB (Mrd LFr, 75)	97	93	109	120
GDP (Mrd LFr, 75)				
Population (Mio)	0.4	0.4	0.4	0.4
Population (Mio)				
Cons. Brute énergie (Mio tep)	4	3	4	5
dont: part du pétrole (%)	30%	33%	34%	31%
Gross energy consumption (Mio toe) of which: oil (%)				
Import. nette d'énergie (Mio tep) dont: pétrole (Mio tep)	4	3	4	5
Net energy import (Mio toe) of which: oil (Mio toe)	1	1	1.5	1.5
Centrales électriques (Mio tep) dont: part des comb. solides (%)	0,3	0,3	0,3	0,3
Power stations (Mio toe) of which: solid fuels (%)	-	-	30%	30%
	<u>1980/75</u>	<u>1981/80</u>	<u>1985/80</u>	<u>1990/85</u>
Cons. intér. énergie (% par an) dont pétrole (% par an)	- 1,2	- 12,1	+ 3,8	+ 1,3
Gross inland energy consumption of which: oil (% per year)	- 3,5	- 4,6	+ 6,4	-
PIB (% par an)	+ 2,7	- 4,1	+ 2,3	+ 2,0
GDP (% per year)				
Coefficient E/PIB	- 0,44	-	1.65	0.65
Coefficient E/GDP				

LUXEMBOURG

BILAN RESUME D'ENERGIE

(MIO TEP OU %)	1980		1981		1985		1990	
	MTEP	%	MTEP	%	MTEP	%	MTEP	%
-CONSOMMATION BRUTE D'ENERGIE PRIMAIRE	3.63	100.0	3.19	100.0	4.36	100.0	4.77	100.0
COMBUSTIBLES SOLIDES	1.84	50.7	1.54	48.4	2.10	48.2	2.20	46.1
PETROLE	1.10	30.3	1.05	32.9	1.50	34.4	1.50	31.4
GAZ NATUREL	0.42	11.7	0.32	10.2	0.50	11.5	0.60	12.6
ELECTRICITE PRIMAIRE ETC.	0.27	7.3	0.27	8.6	0.26	6.0	0.47	9.9
-PRODUCTION INTERIEURE PRIMAIRE	0.02	0.6	0.02	0.7	0.03	0.7	0.03	0.6
HOUILLE	0.	0.	0.	0.	0.	0.	0.	0.
LIGNITE ET TOURBE	0.	0.	0.	0.	0.	0.	0.	0.
PETROLE	0.	0.	0.	0.	0.	0.	0.	0.
GAZ NATUREL	0.	0.	0.	0.	0.	0.	0.	0.
ENERGIE NUCLEAIRE	0.	0.	0.	0.	0.	0.	0.	0.
HYDRG. + GEOTH.	0.01	0.2	0.01	0.3	0.02	0.5	0.02	0.4
AUTRES (NOUV. SOURCES)	0.01	0.4	0.01	0.4	0.01	0.2	0.01	0.2
-IMPORTATIONS NETTES	3.61	99.5	3.10	97.1	4.33	99.3	4.74	99.4
COMBUSTIBLES SOLIDES	1.84	50.8	1.49	46.8	2.10	48.2	2.20	46.1
PETROLE	1.10	30.3	1.03	32.4	1.50	34.4	1.50	31.4
GAZ NATUREL	0.42	11.7	0.32	10.2	0.50	11.5	0.60	12.6
ELECTRICITE	0.24	6.7	0.25	7.9	0.23	5.3	0.44	9.2
-MOUVEMENTS DE STOCKS	-0.01	-0.1	0.07	2.1	0.	0.	0.	0.
COMBUSTIBLES SOLIDES	-0.00	-0.1	0.05	1.6	0.	0.	0.	0.
PETROLE	-0.00	-0.0	0.02	0.5	0.	0.	0.	0.
GAZ	0.	0.	0.	0.	0.	0.	0.	0.

MOUVEMENTS DE STOCKS: SIGNE(+) = REPRISE AUX STOCKS; SIGNE(-) = MISE EN STOCK
 SOURCE: 1980/1981 : OFFICE STATISTIQUE DES COMMUNAUTES EUROPEENNES
 (DATE:820511) 1985/1990 : EXAMEN DES PROGRAMMES NATIONAUX

NETHERLANDS

Programme Objectives

1. The Netherlands depends predominantly on imported oil (51% in 1980) and domestic natural gas (41%) for its total energy supplies. At present, the contribution of solid fuels is small (less than 6%) and that of nuclear power negligible (less than 1.5%).

Dutch policy has been focussed hitherto on the rational exploitation of the Groningen gas field and on a vigorous energy conservation effort involving financial inducements (e.g. for retrofitting in the residential sector); fiscal incentives in industry; and subsidies for district heating. But the latest energy forecasts for 1985 and 1990 (the latter completed in December 1981) presuppose major new efforts to increase the rôle for coal, which is expected to become the dominant source of power generation in the second half of the decade. This would mean a radical change in the pattern of fuel use in power stations.

Forecast Trends

2. According to the latest forecasts:

- oil use will increase substantially up to 1985 and then be reduced as oil is 'backed out' of electricity generation. Expected oil use in 1990 will, however, remain higher than in 1980 and oil will account for almost 50% of total primary energy demand;
- solid fuels (57%) and nuclear (7%) will together provide the bulk (64%) of total primary energy inputs to electricity generation in 1990. But up to the middle of the decade, oil and gas will remain the dominant sources of supply;
- the expected relationship between growth in energy demand and GDP growth is particularly difficult to interpret. The figures show a very large coefficient for 1985/80 and then a slightly negative figure for 1990/85. The volatility of these figures may reflect, in part, the inadequacies in the coefficient as an ambiguous measure of progress at low levels of GDP growth.

Key Issues

3. There are great uncertainties about the realism of the forecasts for coal use in electricity generating. The pace of conversion of existing oil and gas fired stations could be affected not only by future trends in oil and gas prices, but also by possible pressure to increase domestic consumption of Dutch gas as increased alternative supplies become available to other Community members that are currently taking large quantities of Dutch gas. Such pressures could have implications also for the pattern of energy demand outside the electricity sector.

4. A further element of uncertainty is the future rôle for nuclear power. Current forecasts assume nuclear output in 1990 to be roughly at 1980 level. A public debate, currently under way, should be concluded towards the end of 1983 and provide the basis for definitive decisions about the future of the nuclear programme. If the preliminary decision of the previous Dutch Government is confirmed 3000 MW new capacity could be built after 1983, enabling nuclear to provide up to 35% of electricity supplies by 2000. But given the lead-time of 8-10 years between a positive decision and the entry of new plant into service there would be no additional nuclear contribution before 1992 at the earliest.

N E D E R L A N D

	<u>1980</u>	<u>1981</u>	<u>1985</u>	<u>1990</u>
BBP (Mrd HFL, 75)	250	237	254	269
GDP (Mrd HFL, 75)				
Bevolking (Mio)	14	14.1	14.6	15.0
Population (Mio)				
Bruto energie verbruik (Mio toe)	74	70	84	85
waarvan: olie (%)	52%	51%	56%	50%
Gross energy consumption (Mio toe) of which: oil (Mio toe)				
Netto energie invoer (Mio toe)	5	5	21	38
waarvan: olie (Mio toe)	38	33	45	40
Net energy import (Mio toe) of which: oil (Mio toe)				
Elektrische Centrales (Mio toe)	14	14	14	15
waarvan: aandeel vaste brandstoffen en kernenergie(%)	17%	20%	26%	64%
Power stations (Mio toe) of which: part of solid fuels (%)				
	<u>1980/75</u>	<u>1981/80</u>	<u>1985/80</u>	<u>1990/85</u>
Bruto binnenlands energie verbruik waarvan: olie (% per jaar)	+ 2,1	- 5,9	+ 1,5	- 0,1
Gross inland energy consumption of which: oil (% per year)	+ 4,1	- 7,5	+ 2,7	- 3,8
BBP (% per jaar)	+ 3,7	- 5,2	+ 0,3	+ 1,2
GDP (% per year)				
Coëfficiënt E/BBP	0,57	-	5.0	-
Coefficient E/GDP				

NEDERLAND

BILAN RESUME D'ENERGIE

(MIO TEP OU %)	1980		1981		1985		1990	
	MTEP	%	MTEP	%	MTEP	%	MTEP	%
-CONSOMMATION BRUTE D'ENERGIE PRIMAIRE	74.34	100.0	70.33	100.0	83.70	100.0	84.80	100.0
COMBUSTIBLES SOLIDES	4.16	5.6	4.08	5.8	5.50	6.6	12.60	14.9
PETROLE	38.40	51.7	36.05	51.3	47.00	56.2	42.30	49.9
GAZ NATUREL	30.42	40.9	28.93	41.1	30.00	35.8	28.30	33.4
ELECTRICITE PRIMAIRE ETC.	1.37	1.8	1.27	1.8	1.20	1.4	1.60	1.9
-PRODUCTION INTERIEURE PRIMAIRE	69.64	93.7	63.80	90.7	62.70	74.9	47.00	55.4
HOUILLE	0.	0.	0.	0.	0.	0.	0.	0.
LIGNITE ET TOURBE	0.	0.	0.	0.	0.	0.	0.	0.
PETROLE	1.58	2.1	1.60	2.3	2.00	2.4	2.00	2.4
GAZ NATUREL	66.67	89.7	60.93	86.6	59.50	71.1	43.40	51.2
ENERGIE NUCLEAIRE	1.08	1.4	0.94	1.3	1.00	1.2	1.00	1.2
HYDRO. + GEOTH.	0.	0.	0.	0.	0.	0.	0.	0.
AUTRES (NOUV. SOURCES)	0.32	0.4	0.33	0.5	0.20	0.2	0.60	0.7
-IMPORTATIONS NETTES	5.36	7.2	5.34	7.6	21.00	25.1	37.80	44.6
COMBUSTIBLES SOLIDES	4.12	5.5	4.74	6.7	5.50	6.6	12.60	14.9
PETROLE	37.52	50.5	32.60	46.4	45.00	53.8	40.30	47.5
GAZ NATUREL	-36.25	-48.8	-31.09	-45.5	-29.50	-35.2	-15.10	-17.8
ELECTRICITE	-0.03	-0.0	-0.01	-0.0	0.	0.	0.	0.
-MOUVEMENTS DE STOCKS	-0.66	-0.9	1.19	1.7	0.	0.	0.	0.
COMBUSTIBLES SOLIDES	0.04	0.1	-0.65	-0.9	0.	0.	0.	0.
PETROLE	-0.69	-0.9	1.85	2.6	0.	0.	0.	0.
GAZ	0.	0.	-0.01	-0.0	0.	0.	0.	0.

MOUVEMENTS DE STOCKS: SIGNE(+) = REPRISE AUX STOCKS; SIGNE(-) = MISE EN STOCK
 SOURCE: 1980/1981 : OFFICE STATISTIQUE DES COMMUNAUTES EUROPEENNES
 (DATE:820511) 1985/1990 : EXAMEN DES PROGRAMMES NATIONAUX

UNITED KINGDOM

Programme Objectives

1. The present British Government has not yet published a comprehensive statement of energy policy priorities or objectives to guide decisions on energy supply and use. But policy continues to be based on the economic development of the four main domestic supply sources (coal, oil, natural gas and nuclear), with economic pricing of energy remaining the essential instrument in encouraging more rational energy use, fuel-switching and the development of indigenous resources.
2. The energy balance projections used in the Commission's report were prepared by the British Government in mid-1980. They are understood to be currently under revision to reflect developments since that date. The main assumptions are that:
 - the United Kingdom can expect to remain energy self-sufficient and a net exporter of oil for most of the 1980s, with oil production probably reaching its peak in the middle of the decade (figures here, as elsewhere, are based on the mid-point of the ranges submitted by the British Government);
 - the production of natural gas will grow but this will be outpaced by a growth in domestic consumption. There is therefore likely to be an increase in natural gas imports;
 - there will be a modest increase in domestic coal production which should provide a small exportable surplus;
 - there will be a substantial increase in the contribution from nuclear power. Three new advanced gas cooled reactors (AGRs) are expected to come on stream this year. A public enquiry into the planned pressurized water reactor (PWR) is due to begin in January 1983.
3. A major policy development in 1981 was the introduction into Parliament of the Oil and Gas (Enterprise) Bill to enable the disposal of the exploration, development and production assets of the British National Oil Corporation (BNOC) and to reduce the powers of the British Gas Corporation (BGC) as sole producer and distributor of gas supplies.

Forecast Trends

4. In terms of the three quantitative guidelines agreed for the Community as a whole the forecasts present the following picture:
 - oil use is expected to grow in volume terms during the decade. But by 1990 it could be down to 39% of total primary energy demand;
 - coal (63%) and nuclear (24%) are expected to provide 87% of total primary energy inputs to electricity generation. This will involve something of a shift from coal to nuclear. Oil use in power stations is expected to grow in the mid-1980s as oil-fired plant ordered in the 1970s comes into operation. By 1990 oil use in power stations could be 17% above its 1980 level;
 - the energy coefficient is expected to fall to 0.52 during the second half of the decade.

Key Issues

5. Existing forecasts are based on an increase of some 17% in total primary energy demand over this decade. If this estimate is now believed to be too high, the anticipated growth in electricity demand is also likely to be revised downwards. A continuing low level of growth in electricity demand is now thought likely by the electricity generating industry. The implications of such a development will require close attention, particularly if it is combined with any substantial weakening of oil prices. It could influence (positively or negatively) the pace of closures of older plant and the planned nuclear programme.
6. A second major uncertainty relates to the prospects for the UK coal industry in the light of the possible delay in the development of the Belvoir field; the pace of closures of uneconomic pits; and the financial position of the NCB (with its very substantial burden of debt interest). The longer-term prospects for the industry will clearly be affected by developments in the electricity markets which represent the major outlet for NCB coal.

UNITED KINGDOM (contd.)

7. The likely pace of exploration and development of North Sea oil and gas is difficult to predict. Factors will include the effects on the attitudes of market operators of applying the provisions of the Oil and Gas (Enterprise) Bill; their reaction to recent changes in taxation and royalty arrangements; trends in crude oil prices; and possible Government intervention to smooth out the depletion curve so as to optimise production on a long-term basis. A further element of uncertainty in the gas sector has been introduced by the collapse in September 1981 of the efforts to put together agreed arrangements for the construction of a gas-gathering system in the North Sea. It is not clear whether attempts will be made to resuscitate this idea or similar arrangements.

UNITED - KINGDOM

	<u>1980</u>	<u>1981</u>	<u>1985</u>	<u>1990</u>
GDP (Mrd UKL, 75)	113	111	128	145
Population (Mio)	56	56	56.3	57.1
Gross energy consumption (Mio toe) of which: oil (%)	202 40%	193 39%	223 41%	237 39%
Net energy import (Mio toe) of which: oil (Mio toe)	13 2	-13 -19	-13 -18	12 3
Power stations (Mio toe) of which: solid fuels and nuclear (%)	70 87%	67 89%	70 85%	78 87%
	<u>1980/75</u>	<u>1981/80</u>	<u>1985/80</u>	<u>1990/85</u>
Gross inland energy consumption (% year) of which: oil	- 0.1% - 2.5%	- 4.3 - 8.6	+ 1.5 + 2.3	+ 1.3 -
GDP (% per year)	+ 1.7	- 1.8	+ 2.6	+ 2.5
Coefficient E/GDP	- 0.06	-	0.58	0.52

UNITED-KINGDOM

BILAN RESUME D'ENERGIE

(MIO TEP OU %)	1980		1981		1985		1990	
	MTEP	%	MTEP	%	MTEP	%	MTEP	%
-CONSOMMATION BRUTE D'ENERGIE PRIMAIRE	202.28	100.0	193.37	100.0	223.40	100.0	237.40	100.0
COMBUSTIBLES SOLIDES	69.98	34.5	67.22	34.8	67.00	30.0	73.50	31.0
PETROLE	81.77	40.4	74.64	38.6	92.50	41.4	92.50	39.0
GAZ NATUREL	30.89	19.7	40.53	21.0	48.50	21.7	52.00	21.9
ELECTRICITE PRIMAIRE ETC.	10.75	5.3	10.98	5.7	15.40	6.9	19.40	8.2
-PRODUCTION INTERIEURE PRIMAIRE	196.07	96.9	205.57	106.3	236.40	105.8	225.90	95.2
HOUILLE	74.73	36.9	73.33	37.9	72.50	32.5	77.00	32.4
LIGNITE ET TOURBE	0.	0.	0.	0.	0.	0.	0.	0.
PETROLE	79.70	39.4	90.37	46.7	110.00	49.2	90.00	37.9
GAZ NATUREL	30.89	15.3	30.90	16.0	38.50	17.2	39.50	16.6
ENERGIE NUCLEAIRE	10.41	5.1	10.58	5.5	15.00	6.7	19.00	8.0
HYDRO. + GEOTH.	0.34	0.2	0.40	0.2	0.40	0.2	0.40	0.2
AUTRES (NOUV. SOURCES)	0.	0.	0.	0.	0.	0.	0.	0.
-IMPORTATIONS NETTES	12.72	6.3	-13.28	-6.9	-13.00	-5.8	11.50	4.8
COMBUSTIBLES SOLIDES	1.77	0.9	-4.01	-2.1	-5.50	-2.5	-3.50	-1.5
PETROLE	1.95	1.0	-18.90	-9.8	-17.50	-7.8	2.50	1.1
GAZ NATUREL	9.00	4.4	9.64	5.0	10.00	4.5	12.50	5.3
ELECTRICITE	0.	0.	0.	0.	0.	0.	0.	0.
-MOUVEMENTS DE STOCKS	-6.51	-3.2	1.07	0.6	0.	0.	0.	0.
COMBUSTIBLES SOLIDES	-6.62	-3.3	-2.10	-1.1	0.	0.	0.	0.
PETROLE	0.11	0.1	3.17	1.6	0.	0.	0.	0.
GAZ	0.	0.	0.	0.	0.	0.	0.	0.

MOUVEMENTS DE STOCKS: SIGNE(+) = REPRISE AUX STOCKS; SIGNE(-) = MISE EN STOCK

SOURCE: 1980/1981: OFFICE STATISTIQUE DES COMMUNAUTES EUROPEENNES

(DATE:820511) 1985/1990: EXAMEN DES PROGRAMMES NATIONAUX

A N N E X 2

CHANGES IN NATIONAL ENERGY SAVINGS
PROGRAMMES SINCE MAY 1980

CHANGES IN NATIONAL ENERGY SAVINGS PROGRAMMES SINCE MAY 1980

In an earlier report the Commission prepared a review of national measures to promote energy saving which were in force in May 1980 (COM(80)899), comparing the lines of action set out in the Council Resolution of 9 June 1980^{*} with the programmes then in progress.

This annex updates the earlier review by summarising national measures approved since May 1980^{**}.

Five Member States (DK, D, F, NL and UK) now have action programmes which cover more or less the sectors of the basic programme annexed to the Council Resolution. Ireland and Belgium have also taken steps to improve their action programmes. It remains possible and indeed necessary for every Member State to supplement and to improve its measures along the lines set out in the Resolution. It would also make it easier to assess the effectiveness of aids if Member States could improve the follow-up to their programmes.

* See OJ No C 149 of 18 June 1980.

** For agriculture, the lists state only aids to investment, i.e. those from which structural effects can be expected. For the sake of completeness it must be pointed out that some Member States (B, DK, D, L and UK) have also provided, by way of exception, aids to reduce agricultural enterprises' heating costs.

BELGIUM

- From July 1981 a 40% tax allowance for the cost of the insulation of housing (eligible amount: 555 to 6 670 ECU).
- Partial VAT refund (in 1981); reduction in VAT on renovation from 17 to 6% from March 1982 (planned).
- Depreciation "ad libitum" of new items, acquired or built, for making more efficient use of energy, for industrial reequipment and for energy-recovery in industry; applicable from 1982 (Law of 10 February 1981).
- Financial aids for investments made between January 1980 and December 1982 to save energy in the agricultural sector; special aids for horticulture.

DENMARK

- Upward revision in 1981 of - already very high - insulation and heating standards.
- Annual inspection of oil-fired boilers and compulsory energy auditing for boilers with an output exceeding 120 kW.
- "Energy certification" of buildings is planned (for compliance with heat standards).
- Aid for total insulation 1981-84: 20% for owners and 30% for tenants; maximum: 895 ECU (at a decreasing rate in 1983-84).
- Aids for the connection of glasshouses to district heating systems (1981).

GERMANY

- Upward revision of minimum performance levels for (new) housing and offices, and of standards for insulation and the adjustment of heating systems.
- Individual billing of actual (heat) consumption in apartment buildings.
- Reduced-interest credit from the "Kreditanstalt für Wiederaufbau", chiefly for investments to save energy in small and medium-sized businesses (up to July 1982).
- Considerable planned extension of district heating under a joint Federal/Länder programme 1982-1986 (35% subsidy; budget: 493 million ECU).
- Agriculture: financial aids for the conversion of oil-fired heating systems to coal, district heating, gas or alternative energy sources (1980).
- The motor industry has raised its voluntary target for 1978-85 for reducing fuel consumption from 12 to 15%.
- Extension of the "DM 4.35 million programme" (subsidy and tax relief for heat saving in residential premises) is under discussion between the Federal and Länder authorities and will probably concentrate on new energy technologies.

The Greek energy-saving programme was not described in document (COM(80)899; at present it consists of the following measures:

- Tax deduction for solar energy (heating and air conditioning) systems: up to 489 ECU/unit.
- Interest-free loans for up to 60% of the capital cost of low-energy equipment.
- Aids for investment (from 1981): up to 40% for energy conservation and the replacement of oil and electricity (in order to cut oil-dependence from 75 to 51% by 1990, chiefly by switching to natural gas and coal).
- Extension of compulsory energy auditing to industries with a medium level of energy consumption.
- Seminars and brochures for small and medium-sized businesses published by the Committee on Energy Saving in Industry; courses for engineers.
- Transport: publicity campaign for better driving.

FRANCE

- Higher standards for thermal insulation in new buildings (eligibility for financial aids) which will become compulsory in 1982.
- Tax deduction (maximum of 8.000 FF plus 1.000 FF per dependant) for expenditure on boiler replacements, controlling and regulating of heating, thermal insulation, control of heat losses through ventilation and the use of new energy sources; law of December 1981; in force from 1982.
- Grant for coal investments: 20-25% of the incremental cost with a ceiling of FF 250/toe (averaging FF 200/toe).
- 10% tax deduction for investments in energy-saving and substitution between 1 October 1980 and 31 December 1985.
- 25% aid for the cost of implementing certain new techniques (from 1981).
- Derestriction of credit (in November 1981) applying to 40% of bank involvement so as to reduce the rate of interest by one point.
- Increase in long-term very low interest loans from 65 million to 147 million and then to 180 million ECU; up to 70% financing of the cost of conversion back to coal and of schemes to save raw materials. Rate: 12.75%; 13.5% for the last 33 million ECU; (from November 1981).
- Allocation of 82 million ECU from SOFERGIE for leasing at the reduced rate of 14.75% (from November 1981).
- Aids for investments to save energy in agriculture (1980-81).

IRELAND

- Insulation standards for subsidized housing, in effect since 1979, have been improved (from January 1982) and standards for non-subsidized housing are under consideration.
- In 1980 a renovation programme was approved for local authority buildings.
- In July 1980 loans at attractive rates (9%) were approved for investments in the rational use of energy.
- In April 1981 the Government offered industry aid to offset the worst effects of the increase in fuel-oil duty.
- Apart from a general 25% subsidy on expenditure to reduce energy use, big energy consumers (cement, sugar) receive special aids.
- From August 1981: a demonstration programme which provides financial support for one-third of total investment costs.
- Industrial boilers rated above 50 kW are inspected by the National Boiler Testing Service.
- Energy-consumption targets have been set for the milk sector.
- Two, out of a total of 15, industrial energy audits have already been published.

ITALY

In May 1982 Italy adopted a law concerning the reduction of energy consumption. This outlines the following measures:

- 30% aid towards the cost of energy-saving measures and the use of alternative sources in new and existing housing.
- Energy-consumption labelling of domestic appliances and heating systems.
- Investment subsidies and investment grants in the industrial and agricultural sectors.
- A 50% contribution to the cost of demonstration projects.
- Up to 30% subsidies for district heating using CHP and renewable energy sources (up to 50% subsidy for feasibility studies).
- In addition there is a research programme, 1981-90 amounting to 2 300 m ECU.

LUXEMBOURG

- Extension of the 25% aid for insulation costs (in force since October 1979) to double glazing and outside-wall insulation; from October 1980.