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COMMISSION REPORT

on the implementation by Member States of the Council Recommendations
of 24 May 1983 on the encouragement of investments in the use of
solid fuels in industry (83/250/EEC) and in public buildings
and in district heating systems (83/251/EEC)

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1 - INTRODUCTION

1. On 10 February 1982 the Commission submitted to the Council a communication on "The role for coal in Community energy strategy"⁽¹⁾. In it the Commission stressed the need to reduce the Community's dependence on oil through positive measures to encourage the more rational use of energy and to increase diversification in sources of supply. Coal had an important part to play in the pursuit of these aims. But there has been no significant growth in coal consumption in the Community since the first oil crisis : from 310 million tonnes in 1973 consumption of hard coal in the Community of ten had only increased to 314 million by 1980⁽²⁾. Having examined the reasons for this lack of progress, the Commission concluded that further moves to promote investment in the use of solid fuels were needed both at Member State and Community levels. With its communication of 10 February 1982 the Commission included two draft Council recommendations to the Member States on measures to be taken to encourage investment in coal-fired heat supply systems. In September 1982 the Commission submitted to the Council a proposal for a regulation on financial incentives for certain categories of investment in the field of the rational use of energy⁽³⁾. Three of the proposed investment categories related to solid fuels, namely investments in :
 - the use in district heating systems of industrial waste heat and heat produced from solid fuels and refuse-derived fuel ...;
 - conversion of industrial oil-fired combustion plant to burn solid fuels such as hard coal, lignite and peat;
 - preparation of solid fuels for uses other than in power stations and coking ovens, including gasification, pelletisation and oil or water mixtures.

2. Although the proposal for a regulation has not led to the Council taking a decision, it did adopt, on 24 May 1983, two recommendations to the Member States concerning the encouragement of investment in the use of solid fuel in industry (83/250/EEC), and in public buildings and in district heating systems (83/251/EEC)⁽⁴⁾.

(1) OJ No 105, 26.4.1982.

(2) By 1987, consumption (EUR-10) had fallen to 292 million tonnes.

(3) COM(82)357 final of 14 September 1982 as amended in January 1984.

(4) OJ No L 140, 31.5.1983, pp. 25 and 26.

3. Together those recommendations call on the Member States to take all environmentally compatible measures which they consider appropriate to encourage the conversion, or reconversion to solid fuel of existing combustion plant fired by fuel oil and to encourage the building of new solid-fuel-fired installations :
 - In undertakings in all branches of industry, with the exception of the iron and steel industry and the energy sector;
 - In public buildings (administrative buildings, barracks, schools, etc.); and
 - In district heating systems.
4. In both recommendations, paragraph 2 calls on the Member States to notify the Commission at the end of each year of the measures taken in the above mentioned fields so that the Commission can report to the Council in the appropriate form.
5. The Commission submitted its first report to the Council on 10 May 1984⁽⁵⁾. Examination of the measures in force at that time showed a considerable disparity in objectives, types of intervention and their results. The second review in July 1985 showed very little new compared with the previous year. To enable the impact of the fall in oil prices to be better assessed, and to allow Spain and Portugal to be included, the Commission put off its third examination of the implementation of the Council recommendations of 24 May 1983 until December 1987. This is the subject of the present report. It covers the entire period from the time when the recommendations were adopted by the Council in 1983 to the end of 1987.
6. The report is based on information supplied to the Commission under paragraph 2 of both Council recommendations. This information was supplemented at meetings and through direct contact with national governments and agencies and the other circles concerned. One Member State did not respond to the Commission's request for information.
7. Member States' policy for solid fuels as a whole is analysed in a paper reviewing their energy policies⁽⁶⁾ which will be sent to the Council at the same time as this communication. This paper examines only the sectors covered by the Council recommendations of 24 May 1983.

(5) SEC. (84)76.

(6) - Review of Member States' Energy Policies
- The Main Findings of the Commission's Review of Member States' Energy Policies - The 1995 Community Energy Objectives.

II - CHANGES IN THE MARKET FOR SOLID FUELS

Statistics

8. The table below shows the changes in the shares of the various forms of primary energy in the gross inland energy consumption of the Community of Twelve since the first energy crisis in 1973 :

| | (%) | | | |
|-------------|------|------|------|------|
| | 1973 | 1980 | 1983 | 1987 |
| | ---- | ---- | ---- | ---- |
| Solid fuels | 23.5 | 23.1 | 23.9 | 22.2 |
| Oil | 61.3 | 53.9 | 48.5 | 45.1 |
| Natural gas | 11.8 | 16.7 | 17.4 | 18.5 |
| Nuclear | 1.9 | 4.3 | 8.2 | 12.8 |
| Other | 1.5 | 2.0 | 2.0 | 1.4 |

These figures show that considerable progress has been made in reducing the Community's dependence on oil. The fact that solid fuels themselves lost ground between 1973 and 1987 might lead one to believe that they made no contribution to endeavours to replace oil. Actually, the important role of solid fuels in reducing the share of oil products in electricity generation between 1975 and 1985 is masked by the effects of loss of market share in the other sectors which use coal, the steel industry and households in particular.

9. Solid-fuel consumption in recent years has been as follows :

| | (million tonnes) | | |
|----------------------------------|------------------|-------|-------|
| | 1983 | 1985 | 1987 |
| | ---- | ---- | ---- |
| Hard coal | 321.4 | 335.1 | 321.9 |
| Brown coal (lignite) and peat | 184.2 | 189.8 | 180.6 |

Variations in coal consumption between 1983 and 1987 have to be seen in the context of changes in demand from the steel industry and the growth in the contribution from nuclear power. The rise in lignite consumption between 1983 and 1985 was due to its increased use for electricity generation, notably in Greece; the fall between 1985 and 1987 was caused by temporary shutdowns of several lignite-fired power stations in Germany for flue gas purification equipment to be installed.

10. The breakdown of demand for coal by consumer sector is as follows :

| | 1983 | | 1987 | |
|---|-------|-------|-------|-------|
| | Mt | % | Mt | % |
| Power stations (public utilities and pithead) | 197.0 | 61.3 | 195.3 | 60.7 |
| Coking plants and steel industry | 76.7 | 29.3 | 75.4 | 23.4 |
| Others Industries (including industry-owned power stations) | 24.8 | 7.7 | 29.5 | 9.2 |
| Households and small consumers | 14.6 | 4.5 | 13.0 | 4.0 |
| Other | 8.3 | 2.6 | 8.7 | 2.7 |
| Total | 321.4 | 100.0 | 321.9 | 100.0 |

Since the 1987 statistics are still provisional it would be unwise to draw conclusions from relatively small variations. "Others Industries" account for only 29.5 million tonnes or 9.2% of hard coal consumption in the Community, a considerable increase over 1983 (see paragraph 15).

11. The statistics available are such that it is not possible to estimate precisely how much of coal consumption is accounted for by the heating of public buildings and district heating. Some of the consumption of coal under this heading is included under "Households and small consumers". Some public buildings, such as barracks and buildings belonging to coal boards, are included under "Other"; coke for heating public buildings is included in coal supplied to coking plants. Consumption by combined-heat-and-power stations supplying heat to district heating systems is included in deliveries to power stations. Over the past 10 years solid fuel consumption increased only in district heating (see paragraph 18); in heating of public buildings the contribution of solid fuels was steadily decreasing.

Consumption of coal in the sectors covered by recommendation 83/251/EEC (public buildings and district heating systems) is 8-9 million tonnes, 6 million tonnes of which is used for district heating. This amounts to approximately 2.5-2.8% of the Community's total coal consumption in 1987.

12. For guidance purposes, therefore, the Council recommendations of 24 May 1983 cover a coal market which amounted in 1987 to 38 million tonnes (29.5 plus 8.5 Mt) or 12% (9.2 plus 2.8%) of total consumption. The importance of lignite and peat in the sectors covered by the recommendations are small, though not inconsiderable in certain regions.

Competitiveness of solid fuels in the heat market

13. The scope for the economic replacement of oil products by solid fuels in the sectors covered by the two Council recommendations depends on a number of factors, chief among which is the difference in price between the two. The difference itself may vary considerably between consumers; it will depend in particular on the cost of transport to site, on the selected sources of supply, taxes, and national aids. The table below provides an indication of how the price differential has varied over the last five years :

| | (ECU/tce) | | | | |
|--|-----------|--------|--------|--------|-------|
| | 1983 | 1984 | 1985 | 1986 | 1987 |
| | ---- | ---- | ---- | ---- | ---- |
| A) Annual average price of heavy fuel oil (a) | 131.61 | 160.70 | 158.62 | 67.19 | 65.11 |
| B) Average list price of Community steam coal (b) | 87.37 | 92.21 | 92.37 | 84.35 | ... |
| C) Annual average price of imported steam coal (c) | 64.76 | 64.45 | 67.65 | 48.96 | 38.33 |
| Price differential : | | | | | |
| A - B | 44.24 | 68.45 | 66.25 | -17.16 | ... |
| A - C | 66.85 | 96.25 | 90.97 | 18.23 | 26.78 |

- (a) Source : EUROSTAT
 (b) Source : Information supplied to the Commission by the coal producers.
 (c) Source : Information supplied to the Commission under Commission Decision 85/161/ECSC

14. Both capital and operating costs of solid-fuel boilers are higher than those of oil- and gas-fired boilers. For solid fuels to be competitive with fuel oil despite this technical handicap the price differential in favour of coal must be at least 15 ECU/tce, for large boilers in base-load power stations, and at least 30 ECU/tce in the case of smaller boilers with lower annual load factors. The cost increment of using coal also depends very much on the environment- protection measures required for the various types of boilers. With small boilers the cost increment may be such as to make the use of solid fuels prohibitive.

As is shown by the table above, the price differential between fuel oil and steam coal, both Community and imported, was easily sufficient up to 1985 to make the use of coal economic. One may wonder why a price differential as high as 66 to 96 ECU/tonne in 1984 did not trigger off a much more extensive move to convert to coal-firing. Even if in some cases the differential had to be reduced by, say, 10 ECU/tonne to take account of extra transport costs, coal's advantage was still appreciable. The answer no doubt lies in the uncertainty about future movements of the price differential between fuel oil and coal, and in a sort of psychological barrier to the use of coal even where it is economically warranted.

The big drop in oil prices, combined with the fall in the dollar, caused a fundamental change in the situation from 1986 : at list prices Community coal ceased entirely to be competitive with fuel oil; imported steam coal was just about able to remain competitive, and then only in power stations.

Substitution in industry

15. While variations in oil prices hardly affected the amount of coal used in power stations, it was not so in the heat market, at which the Council recommendations of 24 May 1983 were aimed. The demand for coal from "other industries" over the last five years is summarized by the following table :

| | 1983 | 1984 | 1985 | 1986 | 1987 |
|--|------|------|------|------|------|
| | ---- | ---- | ---- | ---- | ---- |
| Coal consumption by "other industries" (Mt) | 24.8 | 26.8 | 30.8 | 29.3 | 29.5 |
| Solid fuels' share of energy consumption by "other industries" (%) | 11.5 | 11.6 | 13.9 | 12.7 | 12.6 |

The combined effect of the big price differential between coal and oil and of the national incentives for industry to switch to solid fuel boosted coal consumption in "other industries" by 6 million tonnes, or almost 25%, between 1983 and 1985. Since then falling oil prices and the declining dollar have led to consumption slipping back to 1.3 million tonnes below the 1985 peak. The Member States' latest forecasts suggest that in 1988 consumption is likely to remain close to the 1987 level. Consequently, it is fair to conclude that the swing back to oil in these industries is losing momentum.

16. The Member States' replies to the Commission survey on the measures taken to implement the recommendations indicate the tonnage of coal added by market forces and the national measures to promote coal. The total for "other industries" is 9 million tonnes, well above the 6 million tonnes in the 1983 and 1985 statistics.

While not ruling out a degree of overoptimism in this assessment of the amount of substitution, there are three other possible explanations for this apparent overestimate by the Member States :

- some pre-1983 substitutions have been included in the figures sent to the Commission;
- the figures refer to newly-built capacity but take no account of plant decommissioned, shut down or converted to other fuels over the same period;
- the new installations have been operating below nominal capacity or burning solid fuels only temporarily.

Although it is impossible to give exact figures for the advances by coal in industry between 1983 and 1987, real progress was made : annual coal consumption rose by almost 5 million tonnes or 20%.

17. The cement industry was one of the first to switch to coal on a massive big scale. The process started in 1980 and reached its peak in 1985, by which time over 80% of capacity had been converted. In 1986 the trend continued in Denmark, Portugal and Spain, but ground was lost in France, Germany, Ireland and Italy, where some cement works switched back from coal to petroleum coke or to a lesser extent, fuel oil and natural gas.

Other industries which converted to coal on a large scale up to 1985 and over 1986 were agri-food, chemicals and paper.

Substitution in public buildings and district heating systems

18. In the final analysis, very few public buildings were converted to solid fuel except in Ireland. Most of the increase in coal consumption came from the district heating sector. However, even this trend was confined chiefly to the countries with a tradition of this type of system, i.e. Denmark, France and Germany.

Coal consumption estimates for district heating systems in these three countries are set out below.

| | 1983 | 1986 | |
|---------|------|------|-----------------------|
| | ---- | ---- | |
| Denmark | 0.70 | 1.05 | + 0.35 Mt |
| Germany | 3.10 | 3.40 | + 0.30 Mt |
| France | 0.80 | 1.35 | + 0.55 Mt |
| | ---- | ---- | ----- |
| | 4.60 | 5.80 | + 1.20 Mt or + 25% |

Potential of substitution

19. This conversion in industry and in public heating systems is only a small fraction of the potential.

In 1982 a detailed study on the use of coal in industry by the IEA⁽⁷⁾ put potential steam coal consumption in industry at 61 million tonnes in 1990 and 83 million tonnes in 2000⁽⁸⁾. These figures were based on the assumption that the price gap between oil and coal would remain wide and that governments would continue with a policy of encouraging conversion of industrial boilers to coal. Neither of these is the case at the moment: consequently, this potential can no longer be realistically achieved. Nevertheless it is highly illuminating to set these figures against the record coal consumption in "other industries" of 30.8 million tonnes in 1985. This suggests that the increase in consumption in the early '80s fell far short of the full potential and that coal could make further inroads if more favourable conditions can be restored.

III - COUNCIL RECOMMENDATIONS OF 24 MAY 1983

20. The Commission has conducted a survey of the measures taken by the Member States to implement the Council recommendations of 24 May 1983. The Member States were asked to send the Commission three lists:

- A. Measures in force on 24 May 1983 (1 January 1986 for Spain and Portugal)
- B. measures introduced between 24 May 1983 (1 January 1986 for Spain and Portugal) and 31 December 1986
- C. measures planned or introduced after 1 January 1987.

The Commission asked brief details on the following aspects of each measure listed:

- (a) nature, objective and legal basis;
- (b) cost, if any, to central government and, where appropriate, at other levels;
- (c) quantitative and qualitative impact in terms of increase of consumption of solid fuels and replacement of oil and gas in the sectors covered by the two recommendations;

(7) "Use of coal in industry". IEA-OECD, May 1982.

(8) Figures for the Twelve, estimated from the values calculated for the OECD members countries.

(d) date of entry into force and of expiry.

21. Eleven Member States replied. Further details were gathered directly. Despite the request for extra details, the amount of information on the measures taken by the Member States varied widely. Many of the measures to encourage use of solid fuels formed part of a broader energy-efficiency programme. It was impossible to single out spending, and results achieved, on the use of coal from the rest of the programme. Consequently, it is extremely difficult, if not impossible, to produce conclusive figures for the Community as a whole.

Tables I and II sum up the situation regarding the two recommendations in each Member State. Fact sheets on each Member State are annexed.

Council recommendation 83/250/EEC concerning the encouragement of investment in the use of solid fuel in industry

22. Eleven Member States had taken measures to encourage use of solid fuel in industry before 24 May 1983 or, in the case of Spain and Portugal, before they joined the Community. Consequently, the Council recommendation merely consolidated a policy already generally pursued by the Member States. Only the coal-producing Member States, apart from Belgium, have taken specific measures to promote the use of coal in industry. In all the others, measures to encourage use of solid fuel formed part of a broader energy efficiency programme for industry.

23. Only four Member States introduced new measures or extended their existing schemes after 24 May 1983 (1 January 1986 in Spain and Portugal). Consequently, Council recommendation 83/250/EEC has produced only a limited incentive and knock-on effect.

24. By 1 January 1988 only six Member States still had government incentives to encourage investment in the use of solid fuel in industry. Virtually all of them were part of energy efficiency programmes covering more than just solid fuels. No account is taken here of measures to promote technological research, development and demonstration work.

25. National and Community financial support to promote technologies to use coal in industry is still available in at least nine Member States. In the current climate, with the price gap between oil and coal too narrow to offer industries an incentive to invest in conversion to coal, the national and Community demonstration programmes play a key role in sustaining efforts to replace oil by

solid fuels. Even if the price gap were wider, uncertainties about future regulations on emissions from small and medium-sized industrial boilers handicap the use of coal in industry. Industrial coal burn in future will depend heavily on whether new, economic, clean technologies can be made available in time. Steps must be taken to coordinate the environmental protection measures with the R,D&D programmes on clean methods of using coal.

26. Many of the measures taken by the Member States apply only to coal mined in the Community. They take various forms :

- aid for feasibility studies (IRL);
- tax incentives (B);
- investment aid (B, D, E, F, L, NL, P, UK);
- aid to demonstrate new technologies (B, DK, D, E, F, IRL, I, NL, UK);
- aid for environmental protection measures (NL).

It is impossible, from the information in the Commission's hands, to put a figure on spending to promote investment in the use of solid fuels.

27. In the coal-producing Member States, non-governmental schemes have been launched, at the initiative of the coal producers in particular. Naturally, they cannot afford to offer users financial inducements. Instead, they have opted for commercial schemes to reduce the risk to industrialists who decide to convert to coal. Often these take the form of all-in packages offering :

- to carry out feasibility studies, select equipment and provide assistance during construction, start-up and operation;
- third-party financing, with only the heat actually bought by the industrialist; this financial arrangement provides a way around the problem of the very short payback time (two to three years at most) required on industrial investments;
- to grant technical guarantees on plant; this substantially reduces the maintenance and plant availability risk to the buyer;
- to underwrite a minimum price differential between oil and coal for a certain length of time. (If the price differential falls below the guaranteed value the coal suppliers pay the difference. If it is higher, the two parties share the difference).

These schemes have generally produced good results. For example, in France the Société Industrielle pour le Développement de l'Énergie - Charbon (SIDEK) has achieved particularly encouraging results. However, now that the price differential between oil and coal is too narrow to offset the extra cost of coal-fired installations, all-in packages of this sort no longer provide an effective enough incentive for industry to switch to coal.

28. Paragraphs 16 and 17 discussed the increase in solid fuel consumption in industry between 1983 and 1987. For the entire Community, the share of this total attributable to promotional measures, cannot be calculated from the Commission's information.

Noteworthy results were obtained in France, where between 1982 and 1986 CDF-Energie recorded the following increases :

| | |
|-------------------------------|-------------------|
| - Agri-Food | : + 847 823 t/yr |
| - Chemicals | : + 427 730 t/yr |
| - Cement, materials and paper | : + 804 490 t/yr |
| - Other Industries | : + 210 000 t/yr |
| | ----- |
| - Total Industries | : +2 290 043 t/yr |

Council recommendation 83/251/EEC concerning the encouragement of investment in the use of solid fuel in public buildings and in district heating systems

29. This recommendation affects some Member States more than others. In much of southern Europe the climate does not warrant heating systems requiring such heavy investment as coal-fired boilers or district heating systems. In northern Europe, only Denmark, France and Germany have fully developed district heating networks though there are small-scale systems in Belgium, the Netherlands, Northern Italy and the United Kingdom.
30. Four Member States (Denmark, France, Germany and Ireland) had launched schemes before 24 May 1983. Only the United Kingdom introduced fresh measures after this date, the only ones still in force on 1 January 1988, after the other Member States had completed their programmes. Community-wide, efforts have been very patchy. In the final analysis, the Council recommendation has made little impact.
31. Efforts towards technological development have also been made in the area of district heating. The main thrust has been on the development of automatic, low-maintenance boilers for large

buildings and of special boilers, such as fluidized-bed units, for district heating systems. Demonstration projects have been completed (in Denmark, France, Germany, Ireland, Italy and the United Kingdom) some with Community support.

32. Leaving aside the R,D&D programmes, most of the measures introduced by the Member States have taken the form of investment grants (in Denmark, France, Germany, Ireland and the United Kingdom). In Ireland, considerable progress has been made in the use of solid fuel (peat) in public buildings. In Germany, district heating systems were developed in the late '70s and early '80s under the Zukunftinvestitionsprogramm (ZIP) funded jointly by the Federal and Länder governments. In the coal-producing countries, non-governmental campaigns, by the coal producers in particular, have also made a major contribution. They are virtually the only schemes still in operation today. Some of the projects have qualified for financing as investments covered by Article 54 of the ECSC Treaty.
33. Solid fuels captured a large proportion of their current share of the district heating market before 1983. Since then almost 1.2 million tonnes of new capacity has come on stream. But all the signs are that this expansion is unlikely to continue. The shift in priorities in the Danish heat plan towards indigenous fuels (biomass, etc.) and natural gas and the completion of the German aid programme for district heating systems, combined with the increasingly stringent emissions limits for medium-sized boilers and, more generally, coal's loss of competitiveness against oil and gas all fuel this fear.
34. Certain non-coal-producing Member States such as Greece and Italy still have reservations about decentralized use of coal for space heating. Greece entered such a reservation based on environmental protection grounds at the time that the Council adopted recommendation 83/251/EEC.

The recommendation itself was drafted so as to leave the Member States complete freedom of action. It recommends that they "take all environmentally compatible measures which they consider appropriate ...". The lack of economic techniques compatible with the environment has no doubt limited the Member States' scope for promoting the use of coal for space heating.

IV - CONCLUSIONS

35. The replies from the Member States to the Commission's survey have not shown for certain that specific measures to encourage investment in the use of solid fuels have in fact been taken following the two Council recommendations of 24 May 1983. In effect, very few new measures were introduced in the three years following the Council's adoption of the two recommendations. The measures that were taken during that period were essentially non-specific measures covering the entire field of the rational use of energy.

Countries that had taken measures prior to 24 May 1983 also continued with them after that date. In contrast, countries that had not yet introduced measures before 24 May 1983 generally did not do so after that date, either.

36. Specific measures to encourage investment in the use of solid fuels were designed essentially to develop the market in fuels of Community origin. These measures were taken only in the Member States that produce coal.

Non-specific measures designed to promote all techniques in the rational use of energy were taken by most of the Member States. Generally speaking, these measures also applied to projects involving the use of imported coal.

37. Wherever specific promotion measures have been introduced by the Member States the results have generally been positive. However, the information supplied to the Commission has not always been sufficient to quantify the results of the measures taken by the Member States and to differentiate between results due to market forces and results attributable to promotional measures.

38. Very encouraging results have also been obtained by non-governmental promotion efforts. In this respect the scheme put into effect by Charbonnages de France is worth mentioning.

The overall package, which consists of a suitable promoter taking responsibility, against remuneration, for all the technical, economic and financial constraints of a project involving the use of coal, could serve as a model for a Community approach to the problem of encouraging the use of solid fuels in the heat market.

39. Conversions effected without promotional measures, i.e. those due to market forces alone, have mainly been confined to the cement industry. They have also proved to be the least enduring: in many cases the drop in the price of oil has resulted in a return to petroleum products.

40. At the beginning of 1988 few measures were still in force or had any real impact on conversion to solid fuels. The combined effect of lower oil prices and the drop in the dollar has meant that the price differential between petroleum products and coal is no longer enough to make conversion projects economically viable. Conversion efforts can be expected to slow down if not to grind to a complete halt if the prices of petroleum products remain at their current level and fresh measures are not taken.

41. For reasons of environmental protection Member States that are not coal producers are often more reserved than the others when it comes to the decentralized use of coal. It is in these countries, which generally import cheap coal from non-Community countries, that the differential between the price of fuel oil and coal is still at its highest.
42. The uncertainties surrounding future regulations limiting emissions from small and medium-sized boilers and the lack of economic technologies compatible with the environment form an additional handicap to the use of coal in the sectors covered by the two Council recommendations. There is a need for environmental protection measures and technological development efforts to be coordinated.
43. In this difficult period national and Community programmes of financial aid to demonstration projects in the field of new coal utilization technologies provide fundamental support for investments in the sectors covered by the Council recommendations. In a good number of the Member States these programmes are currently the only support for the use of solid fuels.
44. The analysis in this report shows that in the sectors in question solid fuels are not currently playing the role of petroleum products substitutes which they are assigned by the objectives of Community energy policy.

If sufficient price differential between oil and coal could be reestablished and if suitable promotional measures were taken, the potential for using solid fuels in the heating sector would be far from exhausted. According to a study by the IEA, the quantity of coal used in this sector could at least be doubled between now and the turn of the century.

However, at current fuel oil prices and in the absence of effective promotional measures there is no chance of realizing even part of this potential. On the contrary, solid fuels are losing ground all the time to gas and oil.

While the current low oil prices continue this situation will not change unless a positive policy in favour of coal is adopted.

45. New approaches need to be found and the Commission will make specific proposals in due course.

REPORT

on the

Implementation by Member States of the Council Recommendations of 24 May 1983 on the encouragement of investments in the use of solid fuels in industry (83/250/EEC) and in public buildings and in district heating systems (83/251/EEC)

ANNEXES

TABLE I : COUNCIL RECOMMENDATION 83/250/EEC : OTHER INDUSTRIES

| | B | DK | D | GR | E | F | IR | I | L | NL | P | UK | EUR-12 | |
|--|--------------------------------------|------------------------------|--------------------------------------|----------------------------|----------------------------|---|------------------------------|---|-------------------------|--|--|-------------------------------------|----------------------------|----------------------------|
| Government Measures in force on May 24, 1983 (E and P : 1.1.86) A | yes 4.3.85 22.6.82 23.12.82 | no | yes | no | yes IDAE | yes | yes "Survey Grant Scheme" | yes RUE | yes | yes WIR+MT | yes RUE | yes "Coal Firing Scheme" | 10 yes | |
| New Measures Introduced 24.5.1983 - 31.12.1986 (E and P : 1.1. - 31.12.1986) B | yes 21.7.84 | no | no Regional aids | no | yes DGM | yes | no | no | no | no | yes RUE | no | 4 yes | |
| New Measures introduced after 1.1.1987 C | no | no | no | no | yes | no | no | no | no | yes Cogeneration | yes RUE | no | 3 yes | |
| Government Measures still in force after 1.1.1988 | yes B, D | no | no expired 31.12.87 | no | yes | no expired end 1986 | yes A | no | yes A | C yes A expired 1.1.1988 | yes | no A expired 30.6.1987 | 6 yes | |
| Promotion of Technology R, D & D 1983 - 1988 D | yes DEMO | yes | yes | no | yes | yes | yes DEMO | yes DEMO | no | yes | no | yes | 9 yes | |
| Non-Government Measures 1983 - 1988 E | yes KS | no | yes Aktionsprogramm Wärmemarkt | no | yes Oxicarbon | yes Action Commerc. EDF | no | no | no | no | no | yes B C loans | 5 yes | |
| Type of Promotion | Fiscal aid to DEMO | / | Aids : 35 % + 7.5 % | / | Subvent. | Public Aids + Actions of CDF | Consult + financ. aids | / | invest- ment aids | invest- ment aid :15% envir:10% | invest- ment aid :25% max:100 Misc | invest- ment 10-25% | | |
| Expenditures for Promotion MECU | | / | | / | 2.7 + 1.2 | | 0.4 per year | / | | 1983-87 15.0 + 2.6 | 6.2 programme RUE | 72.1 + | | |
| Effective Conversion to Solid Fuels since 1983 in the Sector | yes | yes | yes | yes ciment | yes | yes agro- food ciment chemistry | yes agro- food | yes ciment | yes | yes | yes ciment ceramics textiles paper | yes ciment agro-food paper | | |
| Increase of annual Coal Consumption tce | 511 000 | 90 000 | | 400 000 | 395 000 | 650 000 + 2 130 000 | 112 000 | increase up to 1985 decrease thereafter | 15 000 | 300 000 | 560 000 | 3 000 000 | | |
| Obstacles to the penetration of Solid Fuels | oilprice | oilprice environ- ment | oilprice environ- ment | environ- ment | | oilprice | | oilprice environ- ment | | Environ- ment | Infra- struc- tures | | | |
| Part of Solid Fuels in Energy Consumption of the sector | 1983 1985 1987 | 8.5 % 10.3 % 6.0 % | 11.6 % 12.4 % 11.8 % | 15.1 % 17.3 % 14.5 % | 22.8 % 34.1 % 34.0 % | 14.4 % 14.6 % 13.3 % | 10.2 % 14.1 % 14.0 % | 13.5 % 14.6 % 19.0 % | 6.4 % 7.1 % 4.0 % | 22.1 % 27.8 % 20.0 % | 2.7 % 7.4 % 3.4 % | 2.8 % 8.1 % 19.5 % | 13.9 % 15.5 % 17.0 % | 11.5 % 13.9 % 12.6 % |

TABLE II : COUNCIL RECOMMENDATION 83/251/EEC : PUBLIC BUILDINGS AND DISTRICT HEATING

| | B | DK | D | GR | E | F | IR | I | L | NL | P | UK | EUR-12 | |
|--|--------------------------|----------------------|---|----------------------|----------------------|-------------------------------|----------------------|-------------------------|----------------------|----------------------|----------------------|-----------------------------------|-------------------------|----------------------|
| Government Measures in force on May 24, 1983 (E and P : 1.1.1986) | A no RUE Programme | yes | yes | no | no | yes | yes | no | no | no | no | no | 4 yes | |
| New Measures introduced 24.5.1983 - 31.12.1986 (E and P : 1.1. - 31.12.1986) | B no | no | no | no | no | yes | no | no | no | no | no | yes | 2 yes | |
| New Measures introduced after 1.1.1987 | C no | no | no | no | no | no | no | no | no | no | no | no | 0 yes | |
| Government Measures still in force after 1.1.1988 | no RUE Programme | no | no | no | no | no | no | no | no | no | no | yes | 1 yes | |
| Promotion of Technology R, D & D 1983 - 1988 | D no | yes | yes | no | no | yes | yes DEMO | yes dist. heat- | no | no | no | yes dist. heating | 6 yes | |
| Non-Government Measures 1983 - 1988 | E no | no | yes coal producer | no | no | yes commerc. action CDF | no | no | no | no | no | yes B C dist. heating | 3 yes | |
| Type of Promotion | / | | dist. heating inv. aid. 35+7.5% agri :20% | / | / | public aid + action CDF | consult financ. aid | / | Studies | / | / | Build. 5% Discount DH : loans B C | | |
| Expenditures for Promotion MECU | / | | dist. heating 580 | / | / | | | / | / | / | / | | | |
| Effective Conversion to Solid fuels since 1983 in the Sector | / | yes DH and build. | yes dist. heating agricult. | / | / | yes public build + dist. heat | yes domest. + terti. | / | / | / | / | yes D H | | |
| Increase of annual Coal Consumption tce | / | 300 000 | | / | / | 372 000 970 000 | 750 000 (peat) | / | / | / | / | | | |
| Obstacles to the Penetration of Solid Fuels | high costs | environ- ment | | environ- ment | | oilprice | decrease peat prod | environ- cost | cost | cost | climat. condit. | cost | | |
| Part of Solid Fuels in Energy Consumption of the sector | 1983 1985 1987 | 8.9% 9.5% 6.6% | 3.1% 6.2% 4.0% | 6.0% 6.1% 4.9% | 1.6% 1.5% 1.5% | 4.4% 4.5% 4.1% | 5.6% 5.5% 4.6% | 47.3% 55.7% 57.0% | 0.8% 0.5% 0.2% | 5.4% 4.0% 3.0% | 0.4% 0.2% 0.1% | 0.6% 0.6% 0.6% | 15.4% 15.5% 11.5% | 2.1% 7.3% 6.0% |

BELGIUM

1. General situation

Over recent years Belgium has succeeded in reducing both its level of energy consumption and its level of dependency on imported oil (from 50 % in 1982 to 42 % in 1987). This has been largely due to its programme of nuclear electricity generation, which is ongoing.

Coal production in Belgium, which stood at 7 million tonnes in 1983, was 4.4 million tonnes in 1987 and is scheduled to fall to 2.5 million in future as a result of closures in the Campine coalfield. Imports of coal from EC and third countries reached 8.6 million tonnes in 1987 as compared with 7.5 in 1983. Deliveries to power stations declined slightly from 5.8 million tonnes in 1983 to 5 million tonnes in 1987 ; to coke- and iron and steel-making, they increased from 6.1 million tonnes in 1983 to 6.6 million in 1987. "Other industries" and "domestic" deliveries showed declines, from 0.8 to 0.6 and from 1.1 to 1 million tonnes in 1983 and 1987 respectively.

Expressed as a proportion of primary energy use, solid fuels amounted to 23 % in 1983 and almost 20 % in 1987. Within "other industries", the 1983 share was 8.5 %, 1987's 6 % ; within "domestic", the share was 9 % in 1983 and 6.6 % in 1987.

2. Council Recommendations of 24 May 1983

Measures had already been taken by the Belgian government over several previous years, as follows :

- since 1965 fiscal relief of 20 % of the cost of investments in solid-fuel-burning and handling equipment ; between 1983 and 1985 this measure is reckoned to have resulted in about 400 000 tonnes of extra annual coal burn ;
- development and demonstration support for the rational use of energy, including projects for the new coal-burning technologies. This is reckoned to have resulted in the burning of an extra 180 000 tonnes annually in both the industrial and non-industrial areas ;

B

- as regards public buildings, none of the measures in force is aimed particularly at solid fuels; solid fuel use is in decline, mainly because of the disincentives represented by lower oil prices and high initial installation costs for solid fuel systems.

3. Conclusions

- The decline in oil prices is chiefly responsible for the perceptible decline in solid fuel use in Belgium.
- The attractiveness of solid fuels investment projects is thereby much reduced.
- The Belgian government has made efforts to stimulate coal use in general but not in the public building sector in particular.

DENMARK

1. General situation

Efforts towards the substitution of imported oil by other energy sources continue to be Danish Government policy. Policy places considerable emphasis on the introduction of natural gas and the removal of nuclear from energy planning; the effect of these objectives on the development of solid fuel use is uncertain.

Danish imports of coal (there is no domestic coal production, and other solid fuels occupy a negligible position) amounted to 8.7 million tonnes in 1983 and by 1987 stood at 12.5 million tonnes.

Deliveries of coal to power stations - the major users - amounted to 8.4 million tonnes in 1983 and 11.4 million tonnes in 1987; but over the same period deliveries to industry increased from 300 000 tonnes to 400 000 as compared with 270 000 to 450 000 tonnes in the domestic sector (including coal based heat supplied by district heating). Expressed as a proportion of Danish primary energy consumption, solid fuels amounted to 33% in 1983 and 40% in 1987. As proportions of industrial and domestic energy consumption, solid fuels represented 11% throughout for industry and 3-6% for domestic over the same period.

2. The Council Recommendations of 24 May 1983

No government measures appear to have been taken specifically in pursuit of the two Council Recommendations.

3. National measures

There are virtually no national measures embodied in legislation for the period in question. Action has been taken within the general framework of national policy in the area of the heat market (households, district heating and combined heat and power), for which grants are available. By 1986, there had been an increase to 1 050 000 tonnes of coal used in district heating, from the 700 000 tonnes of 1983; and in the commercial sector, the same period saw an increase from 37 000 to 58 000 tonnes. The switch of emphasis from coal to solid waste and natural gas in the 1985 Heat Plan may affect the future of coal.

DK

As regards the increased use of solid fuels in industry, it must be pointed out that Government action to achieve sustained energy savings in industrial sectors, together with the stricter emission standards set for 1995, are major obstacles to greater use of solid fuels in this sector.

4. Conclusions

- The intention of the Danish government to reduce dependency on oil is clear, but it is not necessarily the Government's intention to do this by encouraging solid fuel use in particular ;
- the shift in emphasis in policy towards energy savings, renewable energy sources and the environment does not bode well for the future use of solid fuels, especially in industry ;
- It is Danish government policy to allow market forces, in general, to govern the coal/oil equation. However, high import tax on oil, and to a lesser degree on coal, create a situation, where the price differential between oil and coal exceeds 100 ECU/tce. Coal thus remains competitive with oil products.

F

FRANCE1. General situation

The French energy scene since 1983 has been characterized by an increasing level of energy consumption (+11 %) combined with a reduction in the share of oil from 52 % in 1982 to 43 % in 1987. Another well-known feature is the large growth in nuclear electricity over the period (+138 %), so that it now accounts for 70 % of total electricity production. This is a result of French government policy to rationalize energy use and maximize indigenous energy production, thus achieving a greater measure of independence from imports.

As regards solid fuels, production of coal amounted to 12.3 million tonnes in 1987 as compared with 17 million tonnes in 1983. There was a similar reduction from 2.6 to 1.9 million tonnes of lignite and peat over the period. Imports of hard coal totalled 18.5 million tonnes in 1983 and by 1987 stood at 14.3 million tonnes of which 11.6 million were of non-EEC origin. Deliveries to power stations (coal) declined markedly, from 20 million tonnes in 1983 to 10 million tonnes in 1987, while those to the iron and steel industry remained constant at 700 000-800 000 tonnes and those to other industries rose to 4 million tonnes in 1987 from 2,8 million tonnes in 1983. Deliveries to households, at 2 million tonnes, remained static.

As a proportion of total primary energy consumed, solid fuels fell from 14 % in 1983 to 9 % in 1987, while their shares of industrial and domestic energy use moved from 10 to 14 % in the first case but fell from 6 to 5 % in the second. In the electricity sector solid fuel consumption was halved (see above).

2. Recommendations of the Council of 24 May 1983

The increases in consumption since 1983 in the industrial sector are due to a mixture of commercial and government action.

- a) Specifically commercial measures included vigorous action by Charbonnages de France to promote coal (French or other) in industry and the residential and tertiary sector. This action began in 1982 before the date of the Recommendations. It has resulted in more than a thousand reconversions to coal, estimated to have yielded more than 3 million tonnes of increased coal burn. The means employed are : the provision of finance for coal-fired heating in the residential sector ; the guaranteeing of loans to

F

investment in coal use generally ; and the stimulation of conversion to coal use by SIDEC (Société Industrielle pour le Développement et l'Énergie-Charbon) which finances, builds and sells the heat produced by coal-fired installations. This last activity alone is reckoned to have added another 900 000 tonnes to annual consumption, mainly in the residential and tertiary sectors.

b) Specific governmental measures :

- For industry, action has since 1984 been within the framework of aids from the "Fonds Spécial des Grands Travaux" and has been particularly successful in chemicals, paper, construction and foodstuffs. The programme was not, however, repeated in 1987.
- In research, efforts have been concentrated not only on projects which involve combustion and boiler technology, e.g. fluidised bed combustion, but also on underground gasification and liquid/coal mixtures. Such research would benefit mainly industrial uses of coal.

3. Conclusions

- Levels of penetration of solid fuels since 1985 have not been striking, as was only to be expected from the fall in oil prices ;
- this has resulted in a wait-and-see attitude, on the part of industrialists and in delaying decisions to convert to coal or install new coal-fired equipment ;
- despite the declines in oil prices and the value of the dollar, there might still be in certain cases an advantage in favour of coal; this is not sufficient, in present circumstances, to remove the hesitations referred to above.

GERMANY

1. General situation

Since 1983 the general situation in Germany is characterized by a slightly increasing, followed by a stagnant total energy consumption. Dependency on oil imports remains constant. At the same time there has been a stagnant, even declining pattern in solid fuels demand, as described below. Within a generally static energy demand framework, it cannot be expected that future coal and lignite consumption will increase substantially. Environmental (emissions) standards are becoming a factor of ever greater importance in solid fuels use.

German solid fuels production consists of coal and lignite. Coal production, concentrated in the Länder of Nordrhein-Westfalen and Saar, declined from 89.6 million tonnes in 1985 to 82.3 million tonnes in 1987. In response to the decreasing demand for indigenous hard coal, hard coke and patent fuels and an increasing need for State aids, a further cut of 13 to 15 million tonnes by 1995 has been decided. Lignite production fell from 124.4 million tonnes in 1983 to 119.5 million tonnes in 1987.

Imports of hard coal amounted to 9.5 million tonnes in 1983 and 7.5 million tonnes in 1987. Deliveries were, in 1983, 46 million tonnes to power stations, 30 million tonnes to coke-and steel-making, 8.7 million to other industries and 1.1 million to households. In 1987 these figures were, respectively, 46 million, 26 million, 8.9 million and 0.9 million tonnes, all showing a stagnant or regressive trend. For lignite, the amounts delivered to power stations and briquetting plants in 1983 were 111.1 million and 13.8 million tonnes; in 1987 they were 93.5 and 18.5 million respectively.

Between 1983 and 1987 the share of solid fuels in energy consumption fell from 32.8 % to 28.4 % mainly due to a drop from 60.0 % to 50.4 % in power generation, whereas the decline in "other industries" (from 15.1 to 14.5) was much less substantial. Of the industrial consumers, the principal are the chemical, cement and paper industries throughout.

2. Council Recommendations of 24 May 1983

No specific measures were adopted by the German Government as a response to the two Recommendations.

3. A number of national measures were however in force before 1983 and have been thereafter; they include:

- support to combined heat and power generation as provided under the 3rd Verstromungsgesetz;

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- up to 35 % subsidy to investments for the construction or extension of coal-fired heat-producing appliances or conversion of gas- or fuel-oil-fired appliances to coal (programme expired end 1987) ;
- 7.5 % taxfree grant for certain investments in the field of energy production and distribution (not for coal alone) ;
- grants (up to 20 %) for certain investments in the framework of a programme aimed to promote the agricultural structure. Under this programme about 2000 horticultural undertakings have been converted to solid fuels use ;
- support for investments necessary for environmental protection (special depreciation allowances, special loans).

The above-mentioned measures were complemented by other financial aids granted by the governments of the Länder and the ECSC in the framework of various programmes.

4. Use of solid fuels in public buildings

The efforts by the federal government as well as the governments of the "Länder" to promote, or at least maintain, the use of solid fuels in public buildings have been successful ; in 1986 deliveries to the armed forces totalled 726 000 and to other public institutions 150 000, while district heating consumed 3 370 000 tonnes of hard coal. In December 1987 the central government again underlined its determination to promote the use of solid fuels in public buildings.

5. Conclusions

- Several measures have been taken by State and private institutions to promote investments for the use of solid fuels in industry as well as in public heating systems .
- Between 1983 and 1986 the use of coal in "other industries" was slightly increased ; but now that the fall in oil prices has made itself felt on coal use, the outlook for the latter is not brilliant.
- A decisive year for the use of solid fuels in industry and public buildings will be 1992, when the transitory rulings under the "Bundesemissionsschutzgesetz" and the implementing of "Technische Anleitung Luft" will make it necessary to adapt small- and medium-sized coal-burning appliances to new environmental standards.

GREECE**1. General situation**

National production of fuels in 1987 totalled 40 million tonnes of lignite, 38 million tonnes being supplied to power stations.

Coal imports in 1987 amounted to 1.7 million tonnes. These were mainly for the cement industry and power stations, where the burning of lignite with a low calorific value requires a lignite/coal mixture.

The share of solid fuels in the energy consumption of industries other than iron and steel and electricity production rose from 22.8% in 1983 to 34% in 1987. In the household and small consumers sector the share of solid fuels remained more or less constant at 1.5%.

2. Council recommendations of 24 May 1983

No specific measures have been taken to encourage investment in the use of solid fuels following the adoption by the Council of two recommendations on 24 May 1983. At the time of the Council decision the Greek delegation had expressed reservations about the two recommendations.

No other system of aid to investment in the sectors covered by the two recommendations has existed or currently exists in Greece.

3. Use of solid fuels in industries other than iron and steel and electricity production

The 45% increase in the consumption of solid fuels between 1983 and 1987 in these industries is due largely to the conversion to coal of cement works. This conversion now completed, a marked increase in coal consumption in the "Other industries" sector cannot be expected.

The Greek authorities are not trying to encourage coal consumption in these industries because the infrastructure for coal handling is lacking and because these industries are often sited near towns where for environmental reasons extensive use of solid fuels is not desirable.

GR

4. Use of solid fuels in public buildings and district heating

The Greek authorities are opposed to the use of solid fuels in built-up areas, on grounds of environmental protection.

5. Conclusion

- The Greek authorities have not taken any specific measures to encourage investment in the use of solid fuels following the adoption of the two Council recommendations. The Greek delegation had in fact expressed reservations about the recommendations.
- No other system of aid to investment in the sectors covered by the two recommendations has existed or currently exists in Greece.
- The cement industry is the only one to have completed full-scale conversion to coal, using own means.

IR

IRELAND1. General situation

Ireland's production of solid fuels amounted, in 1987, to some 55 000 tonnes of coal and 7.4 million tonnes of turf (peat). This latter figure represents a more than doubling of the 1973 figure and an increase on 1983's level, but future levels may be lower as small, as uneconomic bogs are closed down.

Coal imports in 1987 amounted to 3.3 million tonnes as compared with 1.4 million in 1983, a more than doubling which resulted from the building of the Moneypoint coal-fired power station. Of these imports, 0.6 million tonnes were of Community, 2.7 million of third-country provenance.

Deliveries of solid fuels were : coal, a total of 3.4 million tonnes of which 1.6 million went to power stations, 0.4 to industry (excluding the coke and steel sector, which is negligible) and 1.4 million to household use ; lignite and peat, a total of 7 million tonnes, of which 3.6 million went to power stations, 1.3 million to briquetting, and 2.1 million to other uses (household). Although peat deliveries, especially those to households, represent very considerable increases on 1983 levels, they will be replaced by a declining future trend for the reason stated above.

Consumption of solid fuels increased by some 100% in the period 1983-1987. As a result of the new power-station, the share of solid fuels in the energy consumption of electricity generation rose from 16% to 45%; in industrial uses, it rose from 13% to 19%, and in domestic uses from 47% to 57%.

2. Council Recommendations of 24 May 1983

There were no specific measures taken in aid of solid fuel use investments as a result of the Council's adoption of the two Recommendations of 24 May 1983.

The measures in force in 1983, which were described in the Commission's Working Document of 8 May 1984, consisted of:

- grants under the Fuel Efficiency Survey Scheme of one-third of conversion consultancy costs ;
- advice given on energy savings and switches to solid fuels in the form of publications and the services of Regional Energy Conservation Officers ;
- and a Demonstration Grant Scheme under which firms changing to solid fuels were grant-aided.

IR

Grants were also given to industry, particularly the dairy sector, which practiced energy conservation.

The measures continue, with the exception of the Demonstration Grant Scheme, but the amount now set aside for that is modest (IRL 300 000 per annum). It should be noted that they relate to industry only (Recommendation 83/250/EEC).

3. Use of solid fuels in industry

The Irish government maintains that it cannot evaluate the effect on solid fuels alone of measures which are not separated from activities on the level of general energy efficiency. However, the figures for industry show an increase in solid fuels' share from 13,5% to 19%, as stated above, and this included a substantial volume increase in the use of coal of no less than 40% (0.42 million tonnes as against 0.30 million tonnes in 1983). This represents a considerable achievement.

4. The use of solid fuels in public building and district heating

No change is reported in Government policy on the use of solid fuels in public building, where it is encouraged where technically and economically feasible. As regards district heating, this is almost non-existent in Ireland and no measures to encourage the use of solid fuels in that area have been introduced.

5. Conclusions

- No specific measures have been introduced in Ireland as a result of the two Recommendations ;
- A certain number (though reduced) of measures in force in 1983 have been continued, though they are more in the general energy field than that of solid fuels alone;
- A substantial (40%) increase in the share of solid fuels in industry has been noted;
- The future of coal, mostly imported, seems assured in the field of electricity generation. In the industrial sector, it is expected that current levels of coal consumption will be maintained, subject to environmental acceptability;
- In the case of peat, very considerable increases in deliveries have been noted, but it must be questioned whether there is a need for further increasing consumption of a fuel which is set to be produced in ever decreasing quantities towards the close of the century.

ITALY1. General situation

With the Sulcis coalmines not due to start up again until 1990, Italy currently has no domestic production of hard coal ; lignite production is 1.7 million tonnes.

Imports of coal amounted to 30.4 million tonnes in 1987 : 1.4 million tonnes from the Community and 19 million tonnes from non-Community countries. Deliveries involved 9.8 million tonnes to power stations, 9.7 million tonnes to the steel industry and coking plants and 0.9 million tonnes to coal merchants who, in the main, supply cement works. These figures do not include the supplies of 1.9 million tonnes of petroleum coke.

Between 1983 and 1987 the consumption of solid fuels in Italy rose by almost 17%. While consumption in power stations increased by 40%, consumption in the other sectors remained more or less constant or decreased.

The share of solid fuels in the energy consumption of industries other than iron and steel and electricity production dropped from 8.4% in 1983 to 4.0% in 1987. In the household sector the share fell from 0.8% in 1983 to less than 0.4% in 1987. The share of solid fuels in gross internal energy consumption was 11% in 1987.

2. Council recommendations of 24 May 1983

There have been no specific measures taken to encourage investment in the use of solid fuels following the adoption by the Council of the two recommendations on 24 May 1983.

The system of financial aid to projects for the rational use of energy, as provided for by law No 308, has in certain cases been used to support projects employing solid fuels.

The use of coal in Italy is, at present, promoted above all by research, development and demonstration programmes run jointly by companies, the national authorities and the Community. Fluidized bed boilers and coal/water mixtures have received special attention.

3. Use of solid fuels in industries other than iron and steel and electricity production

Cement works have largely converted their kilns to solid fuels. This is very cost-effective in a period of high oil prices and was done without public aid. The share of solid fuels (including

petroleum coke) in the total consumption of fuels by the cement industry rose from 4% in 1977 to 80% in 1985. It then dropped to 75% in 1986 and 70% in 1987, the decline in relation to 1985 being due to extensive use of heavy fuel oil and natural gas.

4. Use of solid fuels in public buildings and district heating

The policy pursued by the Italian authorities in this sector has been to promote where possible the use of natural gas because of its availability and its environmental compatibility. Nonetheless, three small heating networks use or will be using solid fuels for part of their production of heat.

5. Conclusions

- There have been no specific measures taken by the Italian authorities to encourage investment in the use of solid fuels following the adoption of the two Council recommendations.
- Certain projects employing solid fuels have been promoted under law No 308 on the rational use of energy and under the research, development and demonstration programme on new technologies using coal.
- The cement industry is the only one to have achieved extensive conversion to coal and petroleum coke by itself.
- The poor image of coal in the public eye makes any promotion of solid fuels in Italy a problem.

LUXEMBOURG

1. General

Luxembourg has no indigenous solid fuel production. Coal imports amounted to 153 000 tonnes in 1987 of which 10 000 tonnes was of Community origin and 143 000 tonnes was imported from non-Community countries. Coke imports totalled 1 322 000 tonnes of which 1 305 000 tonnes was from Community countries and 17 000 tonnes from non-Community countries.

Solid fuel consumption depends largely on the steel industry which accounts for 90% of the country's overall demand.

The proportion of solid fuel used to cover the energy requirements of industries other than steel and electricity generation rose from 22.1% in 1983 to 27.8% in 1985. Following the drop in oil prices this proportion dropped to 20% in 1987. In the household sector the market share of solid fuels dropped from 5.4% in 1983 to 2.5% in 1987.

2. Council recommendations of 24 May 1983

No special measures promoting investment in the use of solid fuels were introduced on the basis of the two Council recommendations of 24 May 1983. Nevertheless, a system of investment aids for industry and business in general, which was already applicable before that date, was prolonged and made available to provide support for projects involving the use of solid fuels.

3. Use of solid fuels in industries other than steel and electricity generation

The increase over the last few years in the share of solid fuels in energy consumption of the above industries is due to the installations of several undertakings being converted to coal. As a result, coal consumption has increased by 10 000 - 20 000 tonnes per year.

4. Use of solid fuels in public buildings and district heating

The possibility of converting heating systems in new buildings to coal has been studied. As it was not certain that these systems would be profitable, no projects were carried out.

District heating is not used in Luxembourg.

5. Conclusions

- The Luxembourg authorities have not undertaken any specific measures to promote investment in the use of solid fuels following the adoption of the Council recommendations.

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- Nevertheless, support for certain projects using solid fuels has been provided under existing measures providing investment aid for industry.
- As a result, some industrial installations have been converted to coal in the last few years.

NETHERLANDS

1. General situation

The Dutch energy balance is characterized by large reserves of natural gas together with a degree of dependency on imported oil which has shown very substantial improvement over the years since the first oil crisis (degree of dependency, 1973 : 45 % ; 1986, 28 %). At the same time, energy demand has grown slightly (+5.5%). Other aspects of Government policy include diversification in electricity generation including a smaller role for gas and a greater one for coal. It is possible that there may be a doubling of coal imports in the 1990s as a result. However, stringent environmental standards tend to limit increases in coal consumption generally ; R,D&D efforts are concentrated on meeting these.

The Netherlands has no indigenous coal production. As regards imports, these amounted to 11.5 million tonnes in 1987, as compared with 7.8 million tonnes in 1983. Deliveries to power stations amounted to 4.2 million tonnes in 1983 and 5.1 million tonnes in 1987 ; over the same period deliveries to coking plants and to the iron and steel industry stood at 4.7 million tonnes in 1987 compared with 2.7 million in 1983. Other industries increased their demand from 0.5 to 0.75 million tonnes. Domestic deliveries showed a marked decline, at 30 000 tonnes in 1987 compared with the already low level of 70 000 in 1983.

Expressed as a proportion of industrial and household energy consumption, solid fuels amounted to 2.7 % in 1983 and 3.4 % in 1987 (industry, iron and steel industry excluded), 0.4 % in 1983 and only 0.1 % in 1987 (domestic). Solid fuels as a whole took 9 % of total primary energy use in the Netherlands in 1983 and 11 % in 1987.

2. The Council Recommendations of 24 May 1983

No specific solid fuels investment measures have been introduced as a direct result of the adoption by the Council of the two Recommendations of 24 May 1983.

3. National measures

Measures in force to benefit industry have included grants to investments aimed at the direct application of coal as fuel (15 % of investment) and the conversion of coal into coalgas to be used as fuel

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(10 % of Investment). These grants totalled 35 million Fl. 1983-1987. There were also grants of 10 % of Investment for the installation of equipment to reduce emissions of SO₂. Investment grants will be continued in a different form until the beginning of 1991, though supports to coal use, in line with gas incentives, will only be available in relation to CHP application. A 15 % Investment grant for CHP application is available, under a 195 million Fl. budget provision for three years.

As regards public buildings and district heating, the Dutch government has no measures, or plans for measures, to stimulate solid fuels consumption.

Conclusions

- There has been a modest degree of financial support for coal consumption in industry, but none for public buildings and district heating.
- The consumption of coal in power stations, coking plants and industry increased significantly between 1983 and 1987, but in the domestic sector it declined further from an already low level.
- Dutch policy is to seek to expand coal use in the electricity sector first and foremost, and to concentrate efforts on research to overcome environmental and technological barriers.

PORTUGAL

1. General situation

The Portuguese energy situation shows high dependency on imported oil, which represents 82% of energy consumed and in the 1980's led to balance of payments constraints on the development of other energies, though the fall in the oil price has now eased matters. The Government's latest energy policy developments are expected to be made known late 1988 -early 1989. Solid fuel usage in industry is at present being studied by the Government, but is to some extent held back by the fragmented nature of the solid fuel trade and of industry itself, together with a lack of infrastructure for handling.

Domestic fuel production (all coal, though reserves of lignite exist) amounted to 235,000 tonnes in 1987, which represents a modest increase on 1983's 185,000 tonnes.

Imports of coal increased greatly between those two years (489,000 tonnes in 1983, 2,900,000 tonnes in 1987, of which only a tenth came from other Community countries).

Deliveries of solid fuels (coal) have greatly increased, from 126,000 tonnes to power stations in 1983 to 1.9 million tonnes in 1987. Industries other than the steel industry received 109,000 tonnes in 1983 and by 1987 this had risen to 820,000 tonnes, a substantial increase, due largely to conversions to coal in the cement industry.

Expressed as a proportion of industrial energy consumption, solid fuels increased from 2.8% to 20% between 1983 and 1987, well above their overall national energy share which rose from 4% to 15% over the same period.

2. The Council Recommendations of 24 May 1983

No specific solid fuels investment measures have been introduced as a direct result of the adoption by the Council of the two Recommendations of 24 May 1983, but Portuguese accession to the Community dates only from 1 January 1986.

3. National legislation

The main governmental measures are :

(a) Grants:

- Decreto-Lei 312/82, which has the effect of granting tax relief to firms installing new energy saving equipment. This does not relate specifically to solid fuels and it is not possible to estimate what effect it has had in increasing consumption of them.

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- Decreto-Lei 250-86 : this applies to the industrial, but not the domestic field. It provides grants of 25% of investment cost, up to a maximum of 100 million Escudos, for projects which result in the diversification of energy sources or other ways of reducing oil dependency. The sectors to which this aid, amounting to a total of 900,000 Escudos in 1987, was directed included the manufacture of ceramics, textiles, paper and wood derivatives. Similar budgetary provision has been made for 1988. It is also proposed to modify this legislation so as to include plans and studies for rational energy use generally, but only in the industrial area ; it does not appear that any measures have been directed towards public heating.

b) financing measures

The Portuguese Banco de Fomento Nacional is considering, in conjunction with the Government, methods of encouraging third-party financing for projects.

c) promotional measures

It would seem that the promotion of solid fuel use is officially entrusted to Petrogal, the state-owned oil company. Most promotion so far has been carried out not by Petrogal but by the Spanish coal trading body (Carboox).

4. Conclusions

- No specific measures so far taken in Portugal can be attributed to the Council Recommendations ;
- There has been a relatively favourable development in industrial solid fuel use through the 1980's. It is too early to estimate the effect of the government's 1986 legislation ;
- It may be questioned whether Petrogal, as the state owned oil company, is the best agency for the promotion of solid fuels ;
- The infrastructural base for the handling of solid fuels, together with the structure of the importers' market, need to be expanded and consolidated if solid fuel use is to penetrate much further outside the electricity sector.

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SPAIN

1. General situation

The energy scene in Spain is at present characterized by a period of transition following the adoption of the new National Energy Plan (PEN) in 1984. This has entailed restructuring of the institutions concerned with energy production and distribution and the adoption of 1995 forecasts which, provisionally, see an annual increase in overall energy demand of 2.1 %, a final demand for gas increasing at 11.4 % yearly, a minimal increase in petroleum demand of 1.1 % and a marginal increase in solid fuels consumption (0.8 %, most of it due to the cement industry).

Production of hard coal in Spain has amounted to 22.6 million tonnes in 1983 as compared with 19.3 million tonnes in 1987. Lignite production was 17 million tonnes.

Deliveries of coal have stayed at the 20 million tonne mark for power stations and have risen slightly for industries other than iron and steel, from 1.8 million tonnes in 1983 to 2.7 million tonnes in 1987, the increase being largely due to the cement industry. Deliveries to household and other users have shown no significant development. For lignite, deliveries to power stations have remained constant at 16-17 million tonnes.

Spanish imports of coal from third countries have risen sharply from 5.9 million tonnes in 1983 to 9.2 million tonnes in 1987. The share of imports in total coal resources has risen from 20 % in 1983 to 32 % in 1987. As regards the share of solid fuels in the country's primary energy use, this has remained at 27 %; the share of solid fuels in industrial energy consumption has remained at 13-14 % and in household consumption at 3-4 %.

2. The Council Recommendations of 24 May 1983

No measures to encourage solid fuel consumption have been taken as a direct result of the two Council Recommendations, but it should be remembered, as in the case of Portugal, that Spain has been a member of the Community for two years only.

1. National measures in force

Through what has become the IDAE (Energy Savings Institute) grants were given from 1984-1987 to projects designed to replace hydrocarbons by solid fuels. These grants totalled 373.8 million pesetas (2.7 MECU) and gave rise to 0.46 million tonnes of extra solid fuel burn. The grant scheme has not operated since 1987.

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The DGM (Energy Ministry's Mining Department) has since 1986 given grants to research and development in the field of fluidized bed combustion. Grants have also been made by OCICARBON (Coal Research Organization) to a total of 224 million pesetas (1.6 MECU) for fluidized bed installations.

3. Conclusions

- The consumption of solid fuels generally in Spain is stagnant and has been at the same level for a number of years ;
- Government efforts have been in the field of research and development, and have not been directed particularly at industrial or public use of solid fuels ;
- Although solid fuel use is scheduled to increase by 1995, it is not clear how this feature of the National Energy Plan will be achieved.

UNITED KINGDOM1. General situation

With its considerable resources of oil and natural gas as well as coal, the UK occupies a unique position in the Community. Overall, its tendency has been to increase energy consumption over recent years (1982-1986) though not ahead of the growth of GDP. Government policy on energy generally favours the operation of market forces and measures, such as energy efficiency programmes, which can be provided by the market.

As regards domestic solid fuels production (virtually all coal at the present time), this amounted to 120 million tonnes in 1983 but underwent a considerable reduction thereafter and now stands at 105 million tonnes.

Imports of coal amounted to 4.4 million tonnes in 1983 but by 1987 had grown to 9.6 m.t., nearly all from non-EC countries.

Deliveries of solid fuels (coal) have remained fairly constant over the period (making allowances for the 1984-1985 miners' strike). In 1983 deliveries to power stations amounted to 85 million tonnes, and this is also the figure in 1987. In 1983 and 1987 there were 12 million tonnes delivered to coking plants (amounts delivered to steelworks are negligible). In 1983 industry received 7 million tonnes and the household (and public building) sector 8 million; in 1987 the figures were 8.5 million and 5.5 million tonnes respectively, showing a fairly pronounced decline in the latter case.

Expressed as a proportion of industrial and household energy consumption, solid fuels amounted to 14 % in 1983 and 17 % in 1987 (industry), 15 % in 1983 and 11.5 % in 1987, the household sector again showing a decline in the use of coal.

2. The Council Recommendations of 24 May 1983

No specific solid fuels investment measures have been introduced as a direct result of the adoption by the Council of the two Recommendations of 24 May 1983.

3. National measures since 1981

The coal conversion scheme introduced as long ago as May 1981 was reported on in the Commission's working document of 1984. It involved the provision of grants to industry of up to 25 % of the capital cost of conversion to coal of oil and/or gas-fired equipment. In 1983 the United Kingdom Government reported that grants had been offered, in that year, totalling £ 18 million to 137 projects; this was estimated to result in 900 000 tonnes more of coal burnt per annum.

The UK Government reports the closure of the coal conversion scheme in June 1987, by which time grants totalling £ 49.7 million had been offered to 423 companies, on projects with an annual coal burn totalling 2.7 million tonnes; a further 27 projects offering coal burn of 0.5 m.t. per annum are "in the pipeline".

The object of the scheme throughout has been to enable industry (including cement, textiles, goodstuffs, chemicals and paper) to become more independent of fuel oil. However, towards the end of its life the take-up of the scheme had become very disappointing and this is probably attributable to the now much reduced (even negative) price advantage of coal over fuel oil. Even so, results from the scheme were generally above target.

Since the closure of the government scheme, this area of activity has passed to British Coal, who are operating a modest financial package involving the provision of mainly loans for installations in both public and private sectors. It is too early to say how this will operate and what effect it will have on increasing consumption.

4. As regards public buildings, the Commission was informed in 1984 of the practice of favouring tenders involving coal-fired systems by means of a national 5 % discount of their cost. This situation has not changed. In the case of district heating and combined heat and power, the most significant scheme in the United Kingdom - the Nottingham CHP scheme to provide heat to industry, commercial buildings and domestic premises - is operated by British Coal. BC has declared its willingness to lend money under its financial package for the construction of coal-fired boiler plant. The Government has agreed to this and British Coal has expressed a desire to obtain Community Interest-rebated loans which would have the effect of making its own financial packages more attractive.
5. The exchange rate guaranteed scheme for ECSC loans, operated by the British Government, has now terminated for new borrowers. For existing borrowers it will continue until about 1991, at a cost of £ 1 - £ 2 million a year.

6. Conclusions

- No specific measures have been taken in the United Kingdom as a result of the two Council Recommendations.
- The coal conversion scheme existing in 1983 continued until 1987 and is estimated to have increased coal consumption by 2.7 million tonnes a year. While it is true that coal consumption in industry stood at 7 million tonnes in 1983 and by 1987 had risen to only 8.5 million tonnes, this reflects increased efficiency in coal use and plant closures.
- The Coal Conversion Scheme has been replaced by a British Coal scheme based on loans, the effects of which cannot yet be foreseen. Generally, British Government policy is now to give much less emphasis to its own interventions than to commercial operations by the British Coal direct with industry.