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The Long-term Energy Supply

by Dr Hans-Helmut Kuhnke, Essen *

The structure of the energy consumption in the six EEC-countries varies and is subject to the different influences of the national and supra-national energy policy. The dissimilar distribution of the energy incidence in the various countries leads to different interests for the securing of energy supply. The emphasis is on the opposing concerns in cheaper and more secure supply with energy.

Merger of the Former Executive Bodies

Progress towards the realisation of the Common Market has brought about the merger of the three formerly independent European executive bodies into the Commission of the European Economic Communities. This Commission has united the responsibility for the various sources of energy onto itself. It was, however, not in the position automatically to pursue a unified energy policy for all sources of energy, nor could the Commission remove the differences arising from the state of competitiveness in the various countries. The integration of energy policies within EEC is yet to come. The equalisation of interests due to be brought about during the next few years will decisively influence the long-term energy supply in the EEC. The energy integration of the Federal Republic of Germany, France, Italy, the Netherlands, Belgium and Luxembourg is rendered difficult by the diversity of these countries' energy policies as well as the varying costs of the domestic sources of energy and imported energy. Unequal national aid for individual sources of energy and the resulting differences of their cost distort the conditions of competition. Because of the rather unequal distribution of energy incidence among the various countries, their dependence on the import of energy varies a great deal. In Italy with its small internal energy sources the aspect of cheap energy supply has top priority. The Federal Republic with its vast domestic sources of energy cannot be guided exclusively by this fact but also has to consider the security of the energy supply granted by its own resources.

It will be the task of the Commission of the European Communities to safeguard the energy supply

on the strength of a common energy policy by means of the deployment of domestic sources of energy as far as economically justifiable and through the purposeful spreading of imported energy. In doing this, energy must be supplied at prices not jeopardising the competitiveness of the energy consumers. The Commission of the European Communities has laid down this aim as follows: "In the interests of the Community a secure supply at relatively stable prices which must be as low as possible has to be aimed at first of all. The assertion that this demand be in itself an unsolvable contradiction is ill-founded. It is merely correct to say that neither security of energy supply nor its cheapness can be achieved in the extremes¹."

Combination of Security and Cheapness

The combination of security and cheapness as the aim of the long-term energy supply must on the one hand draw in the natural sources and reserves of energy available within the Community itself and, on the other hand, also take into account the long-term secure possibilities of the import of cheap energy. Energy available cheaply in the short-term only as result of surplus production can never be a basis for the secure supply in the long run. This applies to mineral oil as well as coal. The overall picture has changed because of the constantly rising demand in the US market, the considerable rise of wages and costs in the American coal mining industry and a world-wide demand for coking coal.

The present supply structure in the oil market will in the long run not necessarily be a permanent feature. It is not so much a problem of a supply of the required quantities but rather one of the prices at which mineral oil will be offered in future. The oil prices are increasingly determined by the cost of production including royalties, transport and refining as well as by the urgency of the demand and the seller's power in the market. Experts of the international oil market agree that the cost of the production of crude oil will go up in the future.

¹ Commission of the European Communities in "First Orientation of a Common Energy Policy" ("Erste Orientierung für eine gemeinschaftliche Energiepolitik") — Page 11.

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In the rich oil fields of North Africa and the Near East the crude oil production will become dearer particularly for the reason of the countries belonging to OPEC (Organisation of the Petroleum Exporting Countries) systematically aiming at a unified line towards higher royalties to be paid them by the oil companies. Negotiations for concession contracts without OPEC as the negotiating party are hardly conceivable at all in the future. Besides, there are a number of oil companies attempting to take up the production of crude oil in OPEC-countries. As newcomers they will have to agree to conditions less favourable than those given in the past to the big international oil concerns. The headway made by newcomers will in the long run therefore also lead to higher costs of the production of crude oil. Lower transportation costs as the result of the increasing deployment of super tankers will counterbalance these higher production costs to a limited extent only.

Prices of oil products are furthermore influenced by the production costs of crude oil in oil fields newly to be exploited; in view of the strongly growing oil consumption the oil industry is forced to carry out new explorations all the time. In most cases the costs in new drilling areas are higher than in those which are already in production, for which fact Alaska and Canada are outstanding examples. In Alaska important reserves of mineral oil have been discovered in Prudhoe Bay along the northern slopes of the Brooks mountain ranges. In the Canadian north-west the tar sands on the Athabaska river have been de-oiled in the refinery at Lake Mildred since the autumn of 1967 and been utilised for their transformation into oil products. Up to now, \$ 870 mn have been invested in this project. The oil companies working in these areas can be sure of a high degree of security without political risks, but at the price of correspondingly high production costs. According

to estimates of the Atlantic Richfield Company the prices at Prudhoe Bay will be between \$ 1.65 and 2.10 a barrel of crude oil ex-well (which in German currency would be DM 42.27 to 53.80 a ton). The transport costs from Prudhoe Bay to Chicago via a pipeline are estimated at between \$ 1.00 and 1.25 a barrel (DM 25.62 to 32.03 a ton). Against this, the average production costs of Near East oil are about \$ 1.30 a barrel (equal to DM 33.31 a ton). They are thus about the same as the cost only of the transportation of Alaska oil.

These few examples indicate that in the long-term the energy supply of the EEC-countries cannot be judged merely by looking upon the presently cheap offers of imported energy which will possibly not for ever remain cheap and sufficiently plentiful. It is, over and above all this, also necessary to draw into the long-term considerations of satisfying the energy demand the utilisation of energy in the various consumers' sectors, and in doing this the problem of supply security gains weight over global aspects.

Energy Consumption up to now

Any estimate of future energy consumption in the EEC-countries pre-supposes some knowledge of the past development. The Table 1 gives figures of the primary energy consumption of the EEC-countries in 1960 and the years from 1966 to 1968.

Table 1
Primary Energy Consumption of EEC
(in mn tons of hard coal units)

	1960	1966	1967	1968
Hard Coal	243.3	206.7	202.2	201.0
Lignite	32.6	31.7	31.3	32.6
Natural Gas	12.6	24.5	31.0	43.0
Mineral Oil	139.0	333.7	363.1	403.8
Electricity	39.2	44.5	42.3	43.4
Total	466.7	641.1	669.9	723.8



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Between 1960 and 1968 the EEC's primary energy consumption went up by 257 mn of hard coal units. The table clearly shows the structural changes of energy consumption. In spite of the pronounced growth of consumption, the consumption of hard coal was lower by 42 mn tons of hard coal units whereas, in the same period, 265 mn tons of hard coal units more of mineral oil were used. The consumption of natural gas, too, went up considerably, and natural gas comes as good as totally from sources within the EEC-area. The consumption of lignite, or brown coal, remained unchanged. Electricity produced from water power and nuclear energy went up but slightly. The higher consumption of mineral oil meant much greater EEC dependence on the import of energy. In 1960 some 73 p.c. of the primary energy consumption of the EEC still stemmed from the EEC's own energy incidence, but by 1967 this proportion was down to 48 p.c. The further growth of energy consumption will bring in its wake a still larger share of imported energy.

Table 2 depicts the structure of energy consumption in the individual EEC-countries during 1968.

Table 2
Primary Energy Consumption in the EEC
by Countries in 1968
(in mn tons hard coal units)

	Federal Republic	France	Italy	Netherlands	Belgium	Luxembourg	Total EEC
Hard Coal	98.6	55.0	11.8	10.8	21.2	3.6	201.0
Lignite	29.8	1.9	0.8	0	0	0.1	32.6
Natural Gas	9.1	8.8	12.8	10.8	1.5	0	43.6
Mineral Oil	141.6	101.9	93.5	36.9	28.2	1.7	403.8
Electricity	8.5	18.1	16.2	0	0.1	0.5	43.4
Total	287.6	185.7	135.1	58.5	51.0	5.9	723.8

According to the figures in Table 2, the share of mineral oil in the primary energy consumption is the highest in all countries except Luxembourg. The oil consumption within EEC is double that of coal. In Italy and the Netherlands the coal consumption is of the smallest significance. Both countries are the pioneers of a policy of as cheaply an energy supply as possible. The security risk is in the Netherlands largely reduced as a result of the country's substantial natural gas reserves. On the other hand, Italy because of its great import dependence is particularly prone to disturbances of its supplies with energy. It must therefore appear doubtful whether, for Italy, the priority of cheapness will lastingly prove the right policy over the aspect of a corresponding securing of the required energy quantities. The strong growth of the world's energy consumption makes one wonder whether or not at least some markets of

energy will become seller's markets with corresponding effects on the prices of energy.

Energy Consumption in the Future

Caution is called for in any estimate of the future energy consumption of EEC. The 1957 report of the Three Wise Atom Men Armand, Etzel and Giordani—to mention just one example—has shown that, as far as experience with prognoses goes, the accuracy of aim depends decisively on factors outside the scope of any statistically-mathematic calculation. For this reason forecasts of the EEC's future energy consumption have become rare occurrences. The High Authority of the European Community for Coal and Steel in co-operation with the Commission of the European Economic Communities and the Commission of the European Atomic Community issued, in 1964, a prognosis of the Community's energy consumption up to 1975 and again, in 1966, up to 1980. Since then, no prognoses have been forthcoming at a more recent date. Table 3 shows the results of both prognoses subdivided as to domestically produced and imported sources of energy.

In its last estimate, dating from 1966, the High Authority came forward with a correction for the year of 1970 and a new calculation for 1980, at the same time abstaining from any comment on the old estimate for 1975. But basing one's own conclusions on the new estimates for the years of 1970 and 1980, the energy consumption for 1975 was likely to have been underestimated. More probably, it will be around 900 mn tons hard coal units in 1975 which would also seem in more appropriate ratio to the further development until 1980.

Table 3 shows that the Community's dependence on the import of energy will remain almost unchanged in 1975 as well as in 1980. The upper variant indicates a further increase of the dependence on import as compared with the present degree, and the lower variant means the same level of dependence on import in 1975 as at present. This average calculation, however, does not show the differences existing between the various EEC-countries.

For 1975 the figures of net imports are still shown broken down as to sources of energy, but for the year of 1980 net imports of coal and mineral oil are given together. The conclusive evidence of such a lump figure is but meagre because this method no longer allows for a separate assessment of each, coal and oil. Moreover, the fluctuation range of the consumption of the various sources of energy is, on account of the wide margins, a considerable one.

Table 3
Estimate of the Primary Energy Consumption of the European Economic Community
(in mn tons hard coal units)

Source of Energy	1975			1980		
	EEC Production	Net Import	Total	EEC Production	Net Import	Total
Hard Coal	125-200	100- 40	225-240	100-185 }	695-525	825-760
Mineral Oil	20	420-371	440-391	30- 50 }		130-160
Natural Gas	44- 56	20- 26	64- 82	120-140	10- 20	40
Lignite	34	—	34	40	—	47
Water Power Electricity	58	2	60	46	1	90-125
Nuclear Energy	24- 40	—	24- 40	90-125	—	
Total	305-408	542-439	847	425-585	705-545	1130
in p.c.						
	1975			1980		
Hard Coal	15-23	11- 5	26-28	9-16 }	61-47	73-67
Mineral Oil	2	50-44	52-46	3- 4 }		
Natural Gas	5- 7	3	8-10	11-13	1- 2	12-15
Lignite	4	—	4	3	—	3
Water Power Electricity	7	—	7	4	—	4
Nuclear Energy	3- 5	—	3- 5	8-11	—	8-11
Total	36-48	64-52	100	38-51	62-49	100

Source: Estimate 1975: Analysis of the Long-term Energy Prospects of EEC. Luxembourg 1964, Page 166. Estimate 1980: New Considerations of the Long-term Prospects of EEC. Luxembourg 1966, Page 43.

Changes of Consumption in Detail

According to the High Authority's assumptions, coal consumption of the Community will change from 200 to 233 mn tons of hard coal units in 1970 to 225-240 mn by 1975. This will largely be due to the expected strong increase of the net import of coal from 32 to 35 mn tons of hard coal units in 1970 to 100 to 140 mn in 1975. Such margins do not seem very realistic. Besides, under present market conditions an increase of the Community's net coal import by as much as nearly 70 mn tons of hard coal units within so short a period as five years does not appear very likely because the corresponding quantities will hardly be available on the world markets during this period. No conclusions for the year of 1980 can be drawn from the High Authority's assumptions. The Community's mineral oil consumption will continue to increase substantially in the next few

years. The High Authority reckons with a consumption of 398 to 365 mn tons of hard coal units in 1970 and 440 to 391 mn in 1975. The assessment of this increase is too small in view of the fact that in the Federal Republic alone the consumption of mineral oil will grow by more during the said period. In assessing the 1975 higher energy consumption at approximately 900 mn tons of hard coal units, one will have brought also the expected oil consumption up to the correct size.

The High Authority also forecasts a remarkable increase of the consumption of natural gas and nuclear energy. In this field, the shown consumption figures within the upper variant might reflect the likely tendencies, but it is quite possible that the Community's consumption of natural gas will go up even by somewhat more. No particular comments seem necessary on the advance assessments of the consumption of lignite and energy

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from water power. The estimated figures should be more or less correct.

Increase of Energy Prices to Be Expected

The research of the High Authority does not permit an answer to the question whether on the long-term the energy supply of the European Economic Community will be secured at a favourable price level. There is no evidence from the Authority's investigations as to whether the assumed net import will in the long run actually be available, let alone at what prices. There is a certain balancing of the decrease of the Community's coal production against higher production of natural gas and in later years higher electricity production from nuclear power. On the other hand, the consumption of mineral oil goes up in step with high

growth rates. By 1980 mineral oil will still hold the key position in the Community's energy supply.

The rapid world-wide growth of energy consumption leads to the assumption that the energy supply of the European Economic Community will in future much more than at present be dominated by the securing of the required quantities than by any endeavours to profit on the short-term from lowest possible prices during a temporary surplus situation. There are many indications for a buyer's market for energy becoming a seller's market in the foreseeable future. This turn of the tide would necessarily entail an upward trend of energy prices. Surely, the energy policy of the European Commission will not neglect this aspect in its deliberations for the securing of the long-term energy supply of the European Economic Community.

Entering into the Seventies

by Carsten R. Moser, Hamburg

In 1969, it has been made abundantly clear that the European Economic Community which, as its founders had fondly believed, might have grown together through a rising number of acts of cooperation, is still far away from its true aim of being transformed into the political and economic union of tomorrow's Europe. The farm price policy of the EEC has produced vast surpluses of agricultural goods, which had to be financed, but the EEC's Council of Ministers, during the sixties, has pushed these problems from one expedient to the next, without even trying to solve them. The ministers forming the Council of Euratom refused to answer the question whether this institution should survive or perish. In reply to the question whether the Community should remain the „Little European“ one of the Six, or whether the time had now come to make its membership grow to a larger number, there were only individual evaluations of that problem but no agreed official answer. When the autumn of 1969 came and brought the two decisions of French currency devaluation and German revaluation, this hastened the break-up of the Common Agricultural Market and brought on the climax in the EEC's crisis.

The main effect of this event was that the EEC's Summit Conference, convened at The Hague early in December, was given as its chief task the making of the decision whether the Common Market should now be led to its completion or not. The question whether and when negotiations should begin on the admission of new member states had thus become a secondary problem. The six heads of government assembled in The Hague deserve praise for having voted in favour both of the Common Market's completion and of negotiations about increasing the future membership roll. The switches have thus been thrown to guide Europe into its common future in the spirit of Monnet. It will depend on the practical results of future deliberations of the Council of Ministers, which are to take place during the current year, whether and when the aim of forming a European Economic Union may be reached.

Overcoming the Agricultural Dilemma

After the heads of governments decided on December 2 that the methods of financing the EEC in future would have to be settled by January 1, 1970, this target was actually reached already