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Report

drawn up on behalf of the Committee on Energy and Research

on the prospects for and requirements of a Community oil supply and processing policy

Rapporteur: Mr T. NORMANTON

PE 49.832/fin

2/1

English Edition

By letter of 24 January 1977 the Committee on Energy and Research requested authorization to draw up a report on the prospects for and requirements of a Community oil supply and processing policy.

Authorization was given by the President of the European Parliament in his letter of 2 February 1977. The Committee on Economic and Monetary Affairs and the Committee on the Environment, Public Health and Consumer Protection were asked for their opinions.

On 17 February 1977 the Committee on Energy and Research appointed Mr Normanton rapporteur.

It considered the draft report at its meetings of 28 March 1977, 26 April 1977, 19 October 1977, 2 November 1977, 22 November 1977 and 1 March 1978 and unanimously adopted the motion for a resolution and the explanatory statement with one abstention on 1 March 1978.

Present: Mrs Walz, chairman; Mr Flämig, vice-chairman; Mr Normanton, vice-chairman and rapporteur; Mr Veronesi, vice-chairman; Lord Bessborough, Mr Brown, Mr Edwards, Mr Ellis, Mr Fuchs, Mr Houdet, Mr Jensen, Mr Noè, Mr Osborn, Mr Verhaegen and Mr Zywietz.

The opinion of the Committee on Economic and Monetary Affairs is attached. The Committee on the Environment, Public Health and Consumer Protection decided not to present an opinion.

C O N T E N T S

A

The Committee on Energy and Research hereby submits to the European Parliament the following motion for a resolution, together with explanatory statement:

MOTION FOR A RESOLUTION

on the prospects for and requirements of a Community oil supply and processing policy

The European Parliament

- having regard to the report from the Committee on Energy and Research and the opinion of the Committee on Economic and Monetary Affairs (Doc. 577/77),
- having regard to the communication from the Commission of the European Communities to the Council on a Community approach to the refining problems of the Community (Com. (77) 71 final),

1. Calls on the Commission to intensify its efforts to achieve
   - a common market in the field of oil and petroleum products, without distortion of competition;
   - transparency in the market for oil and petroleum products;
   - a common policy on the importation of oil and refined products;
2. Believes that overcapacity in the European refining industry is a structural problem which can best be solved through cooperation between the industry and the Community, which would have a role to play in creating the most favourable administrative, fiscal and social environment so that the industry could adapt itself to the requirements of the market;
3. Feels that a solution to the problem could be found if the industry, in cooperation with the competent Community authorities and representatives of those employed in the industry, were to
   - withdraw less efficient refining plants from service, in accordance with market requirements, without neglecting the social problems that could result therefrom;
   - adapt refining structure to market needs by reducing the proportion of heavy petroleum products produced in the Community while increasing output of lighter products;

- restrict the construction of new refineries in the Community over the next ten years, exceptions being made for an appropriate number of conversion plants for the production of gasoline and other lighter products;

4. Urges the Council and Commission of the European Communities to give further consideration to imports of refined products in the future, and, in particular, to

   - draw up indicative medium-term forecasts of imports;
   - collect more detailed and complete information and statistics on prices of petroleum products;
   - develop the consultation system within the Community;
   - organise consultations, should the need arise, with the third countries concerned, on the problems relating to trade in refined products;
   - continue a dialogue with petroleum producers, including perhaps the Organisation of Petroleum Exporting Countries.
   - ensure that measures taken in the refining sector in no way endanger the security of Europe's energy supplies for which the OECD/IEA has a role to play.

5. Recognises the need for a strong institution covering all sectors of the refining industry which would represent the views of the industry, after consultation with the relevant trade unions, to the Commission;

6. Instructs its President to forward this resolution, and the report of its Committee, to the Council and Commission of the European Communities.

EXPLANATORY STATEMENT

I Introduction

1. Before the Second World War oil was quantitively of much less importance for the economies of Western Europe than in the period after 1945. In 1938 oil accounted for only 8% of the total consumption of primary energy in Western Europe, while coal accounted for some 90%. Up to 1939 and in the years immediately following the Second World War the oil industry built refineries near the sources of crude oil, and exported refined products to Europe, demand in Europe at that time was scarcely sufficient to permit the economies of scale that were technically possible in the refining of oil, and so it was more convenient to transport oil products than crude. The exception to this general pattern was France, which imported most of its oil as crude, to be refined in France, much of it by the state-controlled Compagnie Française de Raffinage. In the late 1940s, in order to reduce the foreign exchange cost of oil, other European governments encouraged the oil companies to build refineries in Europe, often offering financial inducements. At the same time the economic structure of the oil industry and of oil consumption was changing in the immediate post-war years, and economically it became advantageous for the oil companies to refine their oil in Europe. By 1950 large oil refineries were in operation at Marseille in France, Fawley in the United Kingdom and Pernis in the Netherlands. The changing pattern is clearly illustrated by Annex XII.

2. The growth of the oil refining industry in Europe was extraordinarily rapid after the Second World War; in 1948 the throughput of crude oil in refineries in OEEC countries was 19.5 million tonnes, by 1955 it amounted to 103 million tonnes. At first oil refineries were built at points on the European coastline where oil could be imported conveniently. Subsequently it became more usual to build refineries near highly industrialised regions, these refineries being supplied by pipelines from the coast. Nevertheless most refineries are still to be found near suitable ports.
A more recent factor affecting refinery location has been the attempts by some Member State governments to bring industry to economically less advantaged regions by either constructing or favouring the construction of oil refineries in the hope that other industries would be created around new refining complexes in development regions.

3. By far the greatest proportion of crude oil for European refineries has to be imported from third countries. In 1975 the Community's biggest supplier of crude oil was Saudi Arabia, with 129.5 million tonnes exported to the Community, followed by Iran (87.6m tonnes), Iraq (43.4m tonnes). The most important oil suppliers apart from Middle Eastern countries are Nigeria (34.9 m tonnes in 1975), Libya (34.2 m tonnes) and Algeria (22.8 m

tonnes). From the American continent Venezuela exported 7.8 m tonnes of crude oil to the Community, while 10.1 m tonnes were imported from Eastern Europe, principally from the Soviet Union, (see Annex III). As can be seen from the above figures and from the tables in Annex III, the Middle East/Persian Gulf occupies a pre-eminent position as far as oil exports to Europe are concerned. This reflects the balance of production, as the Middle East produced some 19.7 m barrels per day of oil in 1975, while Africa produced 5.1 million and the Caribbean and South America 3.6 m barrels per day. North America produced 12.5 million barrels per day in 1975, almost all of which was for internal consumption. The pattern has changed considerably over the preceding 25 years. In 1950 the Middle Eastern region produced only 1.8 m barrels/day and African production was negligible, while the Caribbean/South America with 1.8 m barrely/day produced as much oil as the Middle East, and North America produced 6.2 m barrels/day. At the same time, so that a realistic comparison can be made, it should be noted that, in the world, excluding the USSR, Eastern Europe and China, the 10 million barrels of oil per day produced in 1950 had increased to some 44 million barrels of oil per day in 1975. Corresponding changes naturally had taken place in the capacity, as well as in the geographical location of oil refineries.

II. Basic refining techniques

4. The processing of crude oil can be divided into the basic distillation process and a variety of other processing stages known as conversion. Conversion processes include reforming, catalytic cracking, hydrocracking and alkylation which, together with the distillation process, are described in detail in Annex XIV.

5. The distillation process separates the crude oil into various distillates, the lightest being gas and naphtha, followed by heavier products such as kerosene, light and heavy gas oil and finally a heavy distillation residue that can be used as a mixing agent in heavy fuel oil or directly as an asphalt product.

6. The conversion units can be used to further refine the distillates for two purposes: firstly, to produce raw materials such as aromatics for the chemical industry; secondly, and particularly important from the point of view of general use of capacity, to convert distillates for which there is not enough demand (such as heavy fuel oil) into products in greater demand (such as petrol). In recent years therefore there has been a general drop in utilization of capacity at European refineries and an increased utilization and often some expansion of conversion capacity.

III. Structure of the Refining Industry in the Community.

7. Total theoretical refining capacity[1] in the Community was about 855 million tons at 1 January 1976. Italy with 221 million tons has the largest share of this capacity. Then comes France with 169 million tons, the Federal Republic of Germany with 154 million tons, the United Kingdom with 147 million tons, the Netherlands with 102 million tons and Belgium with 49 million tons. Denmark and Ireland with 11 and 3 million tons respectively account for a very small proportion of the Community's refining capacity. Luxembourg is the only Member State with no refining industry at all (see Annex XVI). It should be noted that refining rights are granted by concessions in Italy and France.

8. By far the majority of the European refineries are owned by multinational companies; most of them are American but some are British or Dutch. In Denmark and Ireland all refineries are owned by multinationals. In Belgium, the Federal Republic of Germany, the United Kingdom and the Netherlands, multinational companies with headquarters elsewhere account for between 2/3 and 3/4 of the total capacity whereas multinational companies with headquarters in those countries and independent national companies account for the remainder. There are no state-controlled companies in the refining industry in any of these countries but there is in individual cases capital participation by the state.

9. The situation is somewhat different in France and Italy: in France half of the existing capacity is owned by multinational companies with headquarters elsewhere and the other half by state-controlled national companies. In Italy one state-owned company accounts for about 18% of capacity, multinationals with headquarters outside Italy about 29% and the remainder is owned by other companies.

IV. The present situation with regard to supplies of crude oil and petroleum products

10. As can be seen from Annex VI, (Sources of crude oil supply 1973-1975), the Middle East region, particularly Saudi Arabia, followed by Iran, is Europe's most important source of crude oil, other important suppliers being Nigeria in West Africa, Libya and Algeria in North Africa, and Venezuela. In 1975 Saudi Arabia was the most important supplier of Belgium, France, Germany Italy and the United Kingdom, while Iran supplied most of the crude oil for Denmark and the Netherlands. Kuwait was Ireland's main supplier.

[1] When a refining plant is designed it has a 'theoretical' or 'design' capacity. When it goes into operation the owner finds out just what it will do by test runs. The 'strategic' capacity thus discovered may turn out to be 95 to 120% of 'theoretical' or 'design' capacity. Most owners never reveal this figure. At a later date a plant may be 'debottlenecked' to increase capacity, without ever releasing this figure. In addition, all plants have to be shut down at intervals for 4 to 6 weeks; in addition breakdowns, fires, etc. can occur. Therefore 'effective' capacity in the Community is probably 90% of 'strategic' capacity

11. As far as petroleum products are concerned, the situation is quite different. The biggest supplier of petroleum products is the USSR while, in 1975, Saudi Arabia processed only 1% and Iran 1.8% of the petroleum products imported into the Community. For fuller details of imports of petroleum products, broken down by source, see Annex VII (Petroleum Products - Imports into the Community). It should also be noted that, while imports of crude oil amounted to 477.2 million tonnes in 1975, imports of petroleum products came to only 39.3 million tonnes in that year. This is evidence of the importance of the Community's oil refining and processing industry, and of the growth in refining away from sources of oil production that has taken place since the Second World War (see Annex XII).

V. Possible future developments in the demand for crude oil and petroleum products

12. A vital element in any assessment of refining policy must be the development of demand for crude oil and petroleum products, considered together with pressure from oil producing countries to process crude near the sources of production. Annex IX (Energy Prodcution, Consumption and Imports for the EEC in 1974, 1980 and 1985) gives estimates, as prepared by the OECD, of oil production, consumption and imports for 1980 and 1985, and assumes a modest increase in consumption from 10.6 m barrels/day in 1974 to 11.0 m barrels/day in 1980 and 13.2 m barrels/day in 1985. Such estimates can be taken as no more than approximations. As well as this, consideration must be given to the break-down of demand by products - gasolines, petro-chemical feedstocks, jet fuels and kerosenes, gasoils (diesel oil and domestic heating oils), heavy fuel oils, etc.

13. As far as overall supplies are concerned the position is even more uncertain. This would be affected by, for example, the availability and cost of oil supplies, the structure of demand as modified by conservation measures, the success, or lack of success, in the development of alternative sources of energy and the general prosperity of the Community economy in the future. The OECD, in its 'World Energy Outlook' has estimated that, by 1985, total OPEC oil production could be around 39.3 million barrels/day, while EEC oil production (mainly North Sea) would amount to some 3.3 million barrels/day. Estimates of exports of crude oil and petroleum products from Eastern Europe and China are much more hypothetical. While it is generally held that China will not become a major exporter of energy, the Soviet Union, which already supplies about a third of the Community's present imports of petroleum products, could affect the supply situation.

14. Within the next ten years it is almost certain that Community refiners will be affected by the large number of export refineries planned in oil producing countries, particularly in the Middle East and North Africa. At present, capacity in those two regions is about 160 m tonnes/year. For the future, estimates of from 260 to 373 m tonnes/year, and possibly up to 7,096,500 barrels per day - (See Annex XIX) have been put forward by oil producing states; current estimates, though more moderate, are still considerable. Up to now, imports of oil products by the Community have not been sufficient in volume to cause serious problems for Community refineries. Although the domestic requirements of producer countries are growing and imports by the USA and Japan may rise, nevertheless it seems likely that increa ing quantities of product exports will be directed towards the Community market. Thus the Community's oil industry will have to cope with intense competition from producer countries. The Community has traditionally been a net exporter of petroleum products. This situation has changed somewhat, and in 1976 the Community became a net importer by some 6 million tonnes, or around 1% of its internal requirements.

15. This trend could reasonably continue in the future, and the Community must be aware of its dependence on imports of crude oil from the Middle East and North Africa, while the producer countries, before investing heavily in refineries, will no doubt study the real possibilities offered by the Community market.

VI. The long distance transport by sea of crude oil

16. By far the greater part of crude oil is at present transported by sea and control of large sectors of the tanker fleet thus automatically entails control of supplies for the oil-importing countries.

17. At the end of 1976 the tanker and combination-carrier fleet throughout the world comprised 4,092 ships of 10,000 tons dead-weight or over. The oil companies owned 24% of the fleet (calculated in tons deadweight) and independent owners 67%. The rest were state-owned.

18. In 1975 and 1976 these ships sailed under the following flags:

Tankers and combination carriers - Breakdown by flag

Million tons deadweight	1976	%	1975	%
Liberia	116.9	31	103.4	30
Japan	38.4	10	37.7	11
Norway	36.8	10	33.2	10
United Kingdom	36.2	10	38.2	11
Greece	19.7	5	18.3	6
France	15.9	4	14.2	4
United States	11.9	3	11.0	3
Italy	11.7	3	10.7	3
Panama	11.7	3	10.8	3
USSR	5.9	2	5.2	2
Other countries	68.8	19	58.1	17
Total world	373.9	100	340.8	100

19. This breakdown does not at present give rise to major concern on the part of the Member States about their dependence on politically unstable areas for transport. It is, however, important to realise the danger of becoming dependent on such areas for transport and, if necessary, to take measures to prevent it.

20. This situation varies according to whether it is the oil-producing countries or other third countries that provide the transport: the provision by the oil-producing countries of additional transport to carry their own products will scarcely reduce security of supplies since consumer countries are already wholly dependent on them. On the other hand it could be dangerous to become too dependent on those countries for transport in the context of competition in the field of transport prices.

21. Any major dependence for transport on politically unstable third countries other than oil-exporting countries would lead to further uncertainty about the Community's oil supplies and would, therefore, be quite unacceptable from the security angle.

VII. Present refinery capacity and utilization in the Community

22. As can be seen from Annex II (Refinery Capacity and its geographical distribution in the European Communities 1975) and Annex V (Oil refineries - capacity, throughput and utilization 1974-76) Italy, with 220.7 m tonnes in 1976, has the highest refinery capacity in the Community, followed by France, Germany and the United Kingdom. In 1976, however, Italy did not have the greatest volume throughput, France handling 118.2 m tonnes (capacity 169.5 m tonnes) as opposed to Italy's 104.0 m tonnes throughput. Capacity utilisation in 1976 varied from 73% for Denmark, 71% for Ireland and 70% for France, to 47% for Italy. Capacity utilisation for other Member States was as follows: Belgium and Germany (Federal Republic) 67%, United Kingdom 66%, the Netherlands 62%. For the Community as a whole the average rate of capacity utilisation for 1976 was 62%. Thus while the situation is unsatisfactory throughout the Community, it is most critical in Italy where less than half the total available capacity was used. It should, however, be noted that, for the Community as a whole, the 1976 utilisation figures showed a slight improvement on the figures for 1975, when only 59% of capacity was used.

23. In 1976 total consumption of refined petroleum products in the Community was 468 million tons[1]. This is a considerable drop from 1973, when 555 million tons were consumed[2]. The pattern of consumption also changed: the consumption of motor spirit increased from 13% of the total in 1973 to 16% in 1976, in absolute figures the change being from 72m tonnes to 75m tonnes. For naphtha however, which is used on a large scale as a raw material in the petrochemical industry, there was a considerable drop in absolute figures from 41 million tons in 1973 to 28 million tons in 1976, the percentage drop in total consumption being from 7.4 to 5.98. Consumption of middle distillates, chiefly kerosene and light gas oil, also dropped in absolute figures but increased slightly as a percentage of total consumption. Finally, there was a sharp drop in the consumption of residual fuel oil, from 201 million tons in 1973 to 145 million tons in 1976. Consumption of 'other products' such as lubricating oils, lubricating grease and bitumen also dropped sharply from 45 million tons in 1973 to 25 million tons in 1976.

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[1] Source: Eurostat

[2] Source: Commission of the European Communities

24. The following table shows the consumption of refinery products in tons and as a percentage of total consumption in the Community in 1973 and 1975. Annex IV shows graphically how overall consumption was divided between individual Member States in 1976.

Breakdown of consumption in the Community (million tons and %)

	1973	%	1975	%
Petrol	72	13.0	72	15.2
Naphtha	41	7.4	31	6.4
Total petrol	113	20.4	103	21.6
Middle distillates	196	35.3	174	36.8
Residual fuel oil	201	36.2	163	34.4
Other products	45	8.1	33	7.2
Total refinery products	555	100.0	473	100.0

25. The main reason for this trend in consumption is the general economic recession and oil price increases which led to attempts to limit the consumption of petroleum products by means of energy-saving measures and by switching to substitutes such as coal. This trend has also been encouraged in several countries by legislation aimed at a general reduction in energy consumption and a shift away from oil-based forms of energy. Many Member States for instance have encouraged the use of coal rather than residual fuel oil in power plants and this is presumably one of the main reasons for the sharp drop in consumption of the latter product.

VIII. Present consumption and Possible future demand for refined products in the Community

26. It has been estimated that, by 1980, the total theoretical refinery capacity requirement for the European Economic Community would amount to some 695 m tonnes. Such a figure, however, is only an estimate, and must be subject to such variables as the development of the European and world economies, the success of energy-conservation measures, internal product demand, advances in research into alternative sources of energy and developments in such fields as heating, power production and transport. Nevertheless estimates must be made if refinery capacity is to be planned for the future. However, the other major variable, pressure from producing countries to refine at source, is even more difficult to assess. This problem has already been mentioned, and some figures given, in paragraph No. 14.

27. How the economy will develop in the coming years is one of the major unknowns when attempting to estimate future demand for refinery products. Most estimates therefore presuppose a certain economic growth while treating with reserve the validity of this supposition.

28. Even if the presumed economic growth on which estimated demand for refined products is based proves correct, it is far from sure that demand will develop as expected. Admittedly, developments in total energy consumption based on a specific economic growth rate can be foreseen with some certainty, but the pattern of consumption, especially of refinery products, depends on a variety of other factors whose development is today subject to considerable uncertainty.

29. The main factor of uncertainty regarding the future pattern of energy consumption, including consumption of refinery products, is the use of nuclear power. Recent discussions on the future role of this form of energy has created considerable planning difficulties for those branches of trade and industry in the Community directly or indirectly involved with energy production. The uncertainty about nuclear power also affects the uncertainty about the use of coal and natural gas, which may be expected to play a more important role if Member States reduce their nuclear power programmes.

30. Mention should also be made of the unreliability of crude oil supplies and prices, which greatly affect the demand for refinery products.

31. Other important factors are Community and national legislation. Energy saving provisions can severely limit demand for motor fuel and energy for domestic heating or industrial purposes, as can any change in the taxation of energy or in the official price of energy (gas and electricity).

32. New environmental provisions (lead content of petrol, sulphur content of fuel oil) can also affect demand for refinery products, not just by affecting the price of the product but also by changing its product structure to some extent.

33. Lastly, there are the difficulties in forecasting the effect of technological developments on the volume and type of energy and raw materials consumed. Admittedly, we are already familiar with the basic technology that could influence energy production and consumption in the next 10 to 15 years, but there is great uncertainty about the extent to which the different branches of technology will in fact be applied. An example of the difficulty of foreseeing the development of familiar techniques is the diesel engine which, after being used for decades solely in heavy transport vehicles, is now expected to be used to a much greater extent in an improved form in private cars in

the 80s. If this theory proves correct it could lead to major changes in the relationship between the production structure of refineries and the structure of demand.

34. These factors of uncertainty make it very difficult to form any precise estimates of demand for refinery products for more than three or four years in the future. Estimates for from five to ten years in the future must be treated with great reserve, having regard to possible deviations from the general development trend on which they are based. If longer-term estimates are to have any value as a basis for decisions, they must be confined to the upper and lower limits of possible developments and the situations in which they might occur.

35. Since longer-term estimates are acknowledged to be very unreliable, an attempt has merely been made to forecast the demand trends for refinery products up to 1985. The following estimate of demand for refined petroleum products in the period 1975-85 has been drawn up by the Commission of the European Communities on the basis of information available in 1976. Your rapporteur has not been in a position to confirm these forecasts.

Expected trend in demand for refined petroleum products in the Community in the period 1975 - 85

(million tons)

(Domestic consumption + reserves)

	1975	%	1980	%	1985	%	75/85 percentage increase
Petrol	72	15.2	84	15.2	93	15.5	+ 30
Naphtha	31	6.4	53	9.6	67	11.2	+ 117
Total petrol	103	21.6	137	24.8	160	26.7	+ 57
Middle distillates	174	36.8	195	35.3	206	34.3	+ 18
Residual fuel oil	163	34.4	185	33.4	193	32.2	+ 18
Other products	33	7.2	36	6.5	40	6.8	+ 17
Total refined products	473	100.0	553	100.0	599	100.0	+ 27

36. The forecast is based on the expectation that the gross national product of the Member States will increase by an average of 4.3% in the period 1976-1980 and by 4.2% in the period 1981-1985. For the individual Member States the expected increase in the gross national product is as follows:

	B	F	D	DK	I	IRL	L	NL	UK
1976-80	4.2%	5.7%	4.0%	3.8%	4.0%	4.8%	3.0%	4.2%	3.0%
1981-85	3.3%	5.2%	4.0%	3.8%	4.5%	5.5%	3.0%	3.5%	3.0%

37. It is assumed that petrol consumption will increase by 30% since there is not expected to be any appreciable increase in the number of diesel-powered cars. For the same reasons it is assumed that consumption of middle distillates (including diesel fuel) will increase by only 18%. These two figures obviously depend on the accuracy of the assumed increase in the number of diesel-powered cars. Consumption of naphtha, an important raw material in the petro-chemical industry, is expected to increase by 117% (using 1975 as base year). It should be noted that, in 1976, naphtha consumption amounted to only 28,182,000 tonnes. It is assumed that very little new petrochemical processing capacity will be created by 1985 since much of the present petrochemical capacity is already unused. However, a figure of 7% growth in demand per annum has been suggested also. The position is thus uncertain. If major new processing capacity is created, the estimated naphtha demand will probably prove wrong, since new plants will as a rule be equipped to use gas oil and fluid natural gas derivatives as raw material.

38. As regards residual fuel oil, the increase in consumption in the period 1975-85 is estimated at 17%. In view of the efforts currently being made by the Community and several Member States to reduce consumption of residual fuel oil in favour of coal, the estimate is scarcely too low. It is more likely that incentives to use coal instead of fuel oil in the future will result in the consumption of residual fuel oil remaining stable or even falling.

IX. The situation with regard to refining in areas other than the European Economic Community

39. It is necessary, at this stage, to consider world refining capacity. In Western Europe outside the Community, theoretical capacity in 1975 stood at some 181 million tonnes, while refining capacity requirements came to about 144 m tonnes, giving some 37 m tonnes surplus capacity. At the same time Japan's capacity came to some 267 m tonnes and requirements to 264 m tonnes, a reasonable balance. The same was true for Canada,

with refinery requirements of 98 m tonnes and capacity of 100 m tonnes. In the United States the situation was reversed, with theoretical requirements amounting to about 905 m tonnes and capacity totalling only some 748 m tonnes, a refinery capacity deficit of some 157 m tonnes. In 1975 the Middle East and Africa both had surplus refining capacity, the figures being 57 m tonnes for the Middle East (capacity 146 m tonnes, theoretical capacity requirements 89 m tonnes) and 5 m tonnes for Africa (capacity 66 m tonnes, requirements 61 m tonnes, a reasonable balance). For the communist world as a whole, a small surplus capacity, some 40 m tonnes, is believed to exist. Taking the whole world, it is calculated that, in 1975, refining capacity came to about 3,614 m tonnes and theoretical refining capacity requirements to about 3,061 m tonnes, giving some 553 m tonnes of surplus capacity.

40. Future estimates are much more problematic. Some sources have estimated that the Community might require refining capacity of some 695 m tonnes by 1980. By that time, unless measures are taken to reduce capacity, the Community's refining capacity could amount to between 855 and 880 m tonnes, giving a surplus of 160-185 m tonnes. It has also been estimated that the Middle East region might, by that time, have theoretical capacity requirements amounting to 128 m tonnes, and refining capacity of some 200 m tonnes, giving that region a surplus capacity of some 72 m tonnes. By the same calculations it has been estimated that by 1980 the non-Communist world could have a refinery capacity surplus of some 389 m tonnes (capacity 3,434 m tonnes, theoretical capacity required 3,045 m tonnes) even though the United States would continue to have a deficit of refining capacity.

X. Basic requirements for a Community oil supply and processing policy

41. Any Community oil supply and processing policy would have to take account not only of estimated Community requirements, but also of the availability of crude oil at economically viable prices. Such considerations must form part of the Community's overall international trade policy, as oil and petroleum products cannot be regarded in isolation, and must form part of flobal trade agreements with producer countries. The interdependence of developing oil-producers and technologically advanced oil consumers provides a basis on which progress can be made. This in turn impinges upon overseas aid and cooperation policies and consider technological development schemes.

42. The security of oil supplies, in both the physical and economic aspects of the term 'security', must also be taken into account when oil supply and processing policy is being formulated. Europe will, inevitably, be dependent on third countries for the overwhelming bulk of its crude oil requirements, and any interference with this supply could have a crippling effect on European economics. Awareness of this fact should be one of the most pressing arguments in favour of a Community policy for oil and petroleum product imports, as a common policy would strengthen the Community's hand when dealing with third countries.

43. Refining and processing policy must also take account of decisions taken outside the European Community, particularly by producer countries, by the Organisation of Petroleum Exporting Countries (OPEC) and, because of its possible effects on the world energy market, by the International Energy Agency. The Community can have no voice, and only very indirect influence, on decisions made by oil producers and OPEC. This contributes to the variables to be considered when formulating refining policy.

44. There is considerable demand, from consumers and public opinion, for greater transparency of costs and prices in the distribution of petroleum products. This is partly a reaction to the public image of the multinational oil companies, and, more particularly, because of accusations of price fixing in several member states and in the United States. The Community and most Member State governments have considerable experience of working closely with the major oil companies, and a certain degree of mutual trust and confidence, however, does not exclude a measure of control. Though the oil companies provide, via the governments of the Member States, information relating to the volume of imports of crude oil and petroleum products, the volume of exports to third countries, and certain figures concerning import prices and consumer prices, the Commission has not been able to devise a system that would enable it to obtain all relevant information. The Committee on Energy and Research, in the report by Mr Ellis (Doc. 419/75) criticised some aspects of the Commission's proposal for monitoring prices, particularly those aspects that Mr Ellis referred to as 'mechanistic price reporting'. It now appears that the Commission's proposals were not completely successful, and have recently been modified. Thus, at present, true price transparency has not been achieved in the oil and refined products market, despite the wishes expressed by the European Parliament in the resolution[1] contained in Mr Ellis' report. The European Parliament, in the same resolution, called for ongoing information of short periodicity, and flexible data presentation in this sector. This presupposes an effective Community mechanism for collecting price information. Some valuable work in this field has been carried out by the statistical office of the European Communities, and other information has been received

[1] OJ No. C 28 of 9.2.1976, p.9

via Member State governments, as a result of Council regulations. This is not the place to go into details on the techniques through which price transparency can be achieved. Nevertheless the need for greater information in this field is evident, and the further development of the energy section of the Statistical Office would constitute an important step forward.

45. The social effects of any aspect of industrial policy are considerable, and as far as refining policy is considered, aspects of regional development complicate the situation. While not by any means labour intensive in themselves, the construction of oil refineries can provide considerable short-term employment in the building sector, and in parts of Europe refineries have been set up with the intention of forming the nuclei of regional industrial centres. Such refineries, away from the major industrial centres and the most important parts, have frequently been the hardest hit by the recession, and in many cases it is these refineries in which under-utilisation of capacity is most pronounced. For this reason Trade Unions, representatives of the technical staff, and all other interested bodies should be consulted before a refinery would be taken out of production or any major reorganisation of the industry would be undertaken.

XI. Conclusions

46. The problems facing the Community's refining industry are partly internal in nature - surplus of distillation capacity, need to adapt refining structures to market requirements - and partly external as pressure increases from third countries to sell petroleum products on the Community market. As can be seen from Annex XVII (Community import régime for oil products) there is not yet in existence a common import régime for petroleum products, though petroleum imports are monitored by the Commission. At present, as far as oil is concerned, the Community consists of nine autonomous Member States, each acting almost independently. The need for a common policy is evident, as is the need for equalising competition. Tax and financial incentives should also be equalised throughout the Community, so that a real common market in oil and petroleum products can be set up. The need for transparency in all aspects of the petroleum market is important, so that all interested parties can be aware of the price charged at every stage, and particularly final price transparency so that purchasers can be sure that published scale prices are evenly applied.

47. Oil supply must form a vital part of the Community's external trading policy, and other factors including security of supplies and the volume of petroleum products imported into the Community must be considered. Such policy is a Community matter, but the Community can only exercise its full rights on the international scene when a European common market in oil and petroleum products, without distortion of competition, has been created. Negotiation and dialogue with third countries supplying oil and products could be undertaken, in some cases, through the Lomé agreements. A more global approach could be achieved if the Community were to initiate an ongoing dialogue with producer states, preferably through the Organisation of Petroleum Exporting Countries.

48. The Community also has a role, even if only supervisory, in investment policy. While your rapporteur believes that investment policy is primarily a matter for the companies concerned, the Commission, as guardian of the Treaties, must see that a real Common Market, with equality of incentives at national level, is achieved.

49. Turning to the problem of overcapacity in the European refining industry, your rapporteur believes that this is not just a cyclical imbalance, but is rather a structural problem which can only be solved by far-reaching, long-term measures involving commercial policy, both external and internal, and investment policy. In view of the Community's market vulnerability to external pressures in the oil industry, and the probable evolution of the market for petroleum products, it is unlikely that market demand will, in the future, fit in with the current refinery capacity structure.

50. It has been estimated by the Commission in its communication[1] to the Council entitled 'Community approach to the Refining Problems of the Community' of 17 March 1977, that some 140 million tonnes/year of distillation plant, (i.e. about 16.5% of total existing capacity) needs to be withdrawn from service. The Commission maintains that this objective would involve a standstill on new construction and exceptions should only be made after consultation at Community level. Furthermore marginal and/or less efficient plants should be temporarily or, in some cases finally, taken out of service.

51. In order to solve the problem of imbalance between refining structure and demand structure, the Commission, in the same communication, (COM(77) 71 final) estimates that the construction of additional conversion capacity, ranging between 8 and 12 million tonnes/year of gasoline output, will be necessary, at an estimated investment cost of about 2 to 3 billion U.S. dollars at 1976 prices. Your rapporteur, after careful examination of this problem, agrees with the Commission's conclusions.

52. The problem of pressure from Third Countries to export petroleum products to the Community would require a policy, based on information and cooperation between all parties concerned, that would

- establish indicative medium-term forecasts of imports;
- set up a system for information and consultation within the Community;
- organise consultations with third countries concerned on the problems relating to the trade in refined products (in the case of third countries with which the Community has agreements, these consultations should take place within the framework of the institutional apparatus laid down in these agreements);
- if necessary, apply commercial policy measures.

53. Your rapporteur believes that, within the Community framework in general, with a free common market, cost transparency and a Community policy on imports, the problems facing the refining industry can best be met by the industry itself. Meanwhile the Community authorities and the Member State governments can help by creating the best possible administrative, fiscal and social environment for the industry's internal regulation, which should include the withdrawal of some 140 m tonnes/year of distillation plant from service and the modification of the product structure to produce a higher proportion of lighter products, particularly gasoline and naphtha, by 1985. This could be achieved by an increase in the proportion of light crude oils processed, a further expansion of conversion capacity and, where possible, the export of heavy fuel oils.

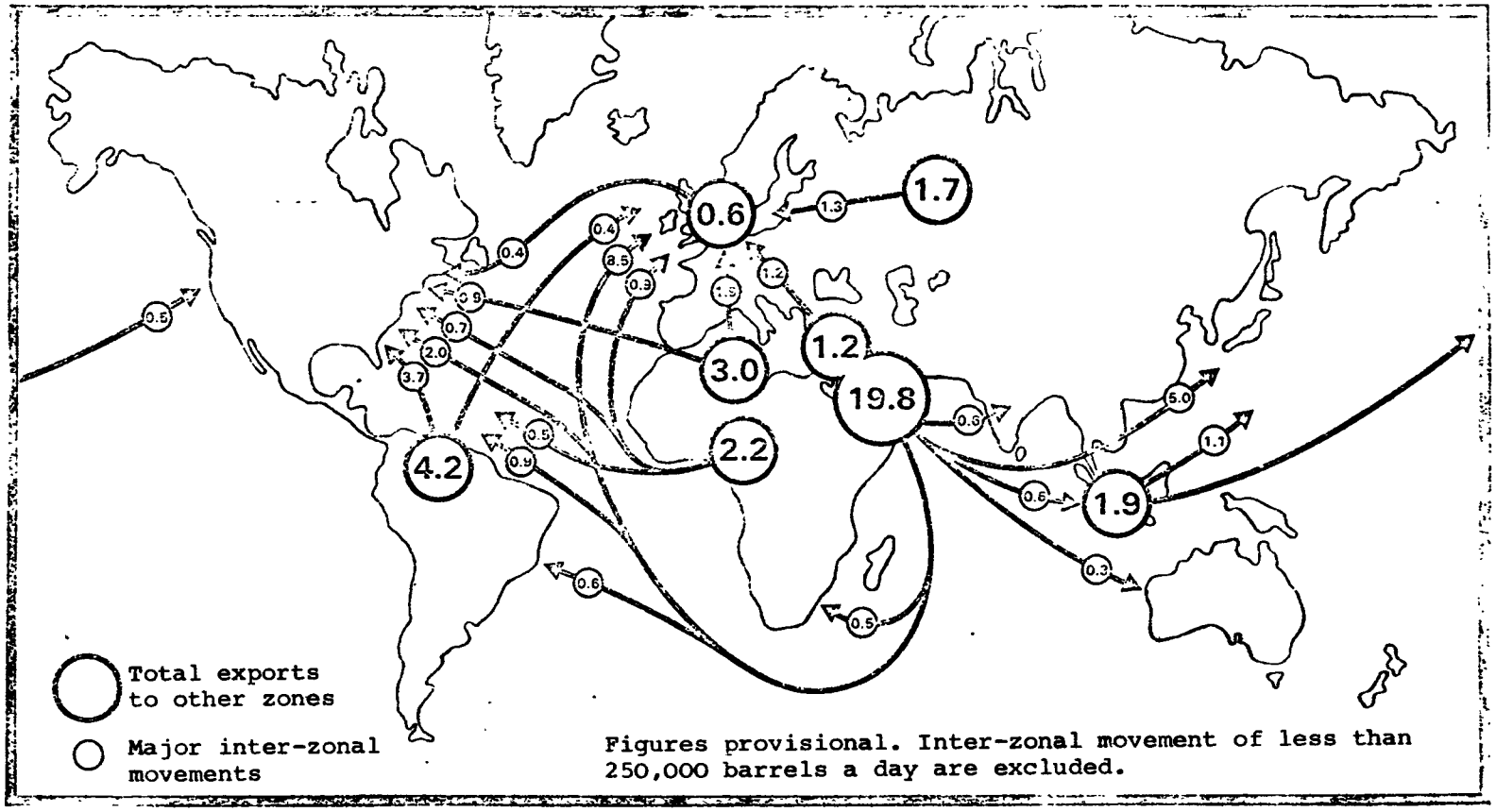
[1] COM(77) 71 final

54. Your rapporteur believes that intervention, by either governments or Community authorities, in the refining industry must be practised only where absolutely necessary, though intervention cannot be excluded totally. The Community, and Member State governments, can help create the best possible environment for the industry's adjustments, and should also, when companies are obliged to incur major expenses as a result of Community or government decisions, provide at least a proportion of the sums required, in the form of repayable loans rather than grants. Intervention by the Community might also be necessary in the future in order to maintain European refining capacity should it become advantageous for oil companies to move their refining operations for the European market out of Europe. One of the major problems raised by any form of intervention in its efficiency, and its possible effect on the Community as a whole. At present the Community does not have either the legal means, or the necessary powers, to intervene directly, while intervention by Member States could distort competition, send investment to other countries and hinder the growth of a common market in this sector. For this reason, where intervention has to be envisaged, the Commission, despite its present weaknesses, would be more acceptable to your rapporteur than would the governments of the Member States.

55. All of these actions should give impetus to the formation of a strong trade association covering the industry. As it would have worldwide repercussions, and in view of the importance of the United States in the international oil market, both as the major consumer and as the home of give of the major oil companies and several smaller companies, the American section of the oil industry must be actively involved in the work of this trade association. This trade association, similar to associations existing in other industrial sectors, notably textiles, and in the agricultural sector, would represent the point of view of the refining industry to the Community authorities and could be consulted by the Commission when required. Such a body could play a useful role in any consultation procedure, along with trade union representatives, representatives of the technicians and other interested bodies. Only by "transparent" active collective participation can coordination be established at industrial level, so that the industry, in the context of a common market in oil and petroleum products, can modify its structure to meet the needs of the market in the 1980s.

ANNEX I

PRINCIPAL MOVEMENTS OF CRUDE OIL AND PRODUCTS BETWEEN ZONES, 1976 (million barrels a day)

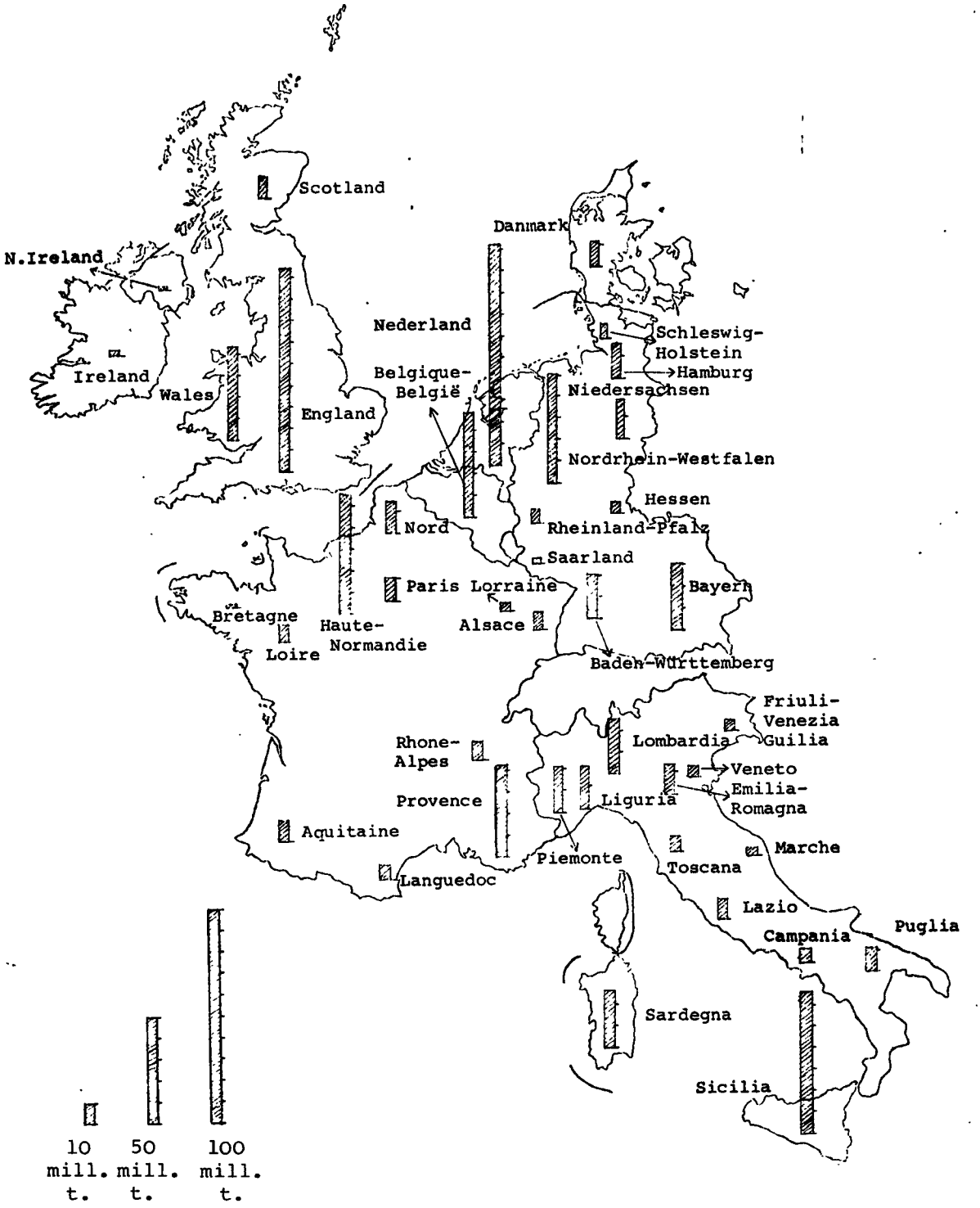


Source: Shell

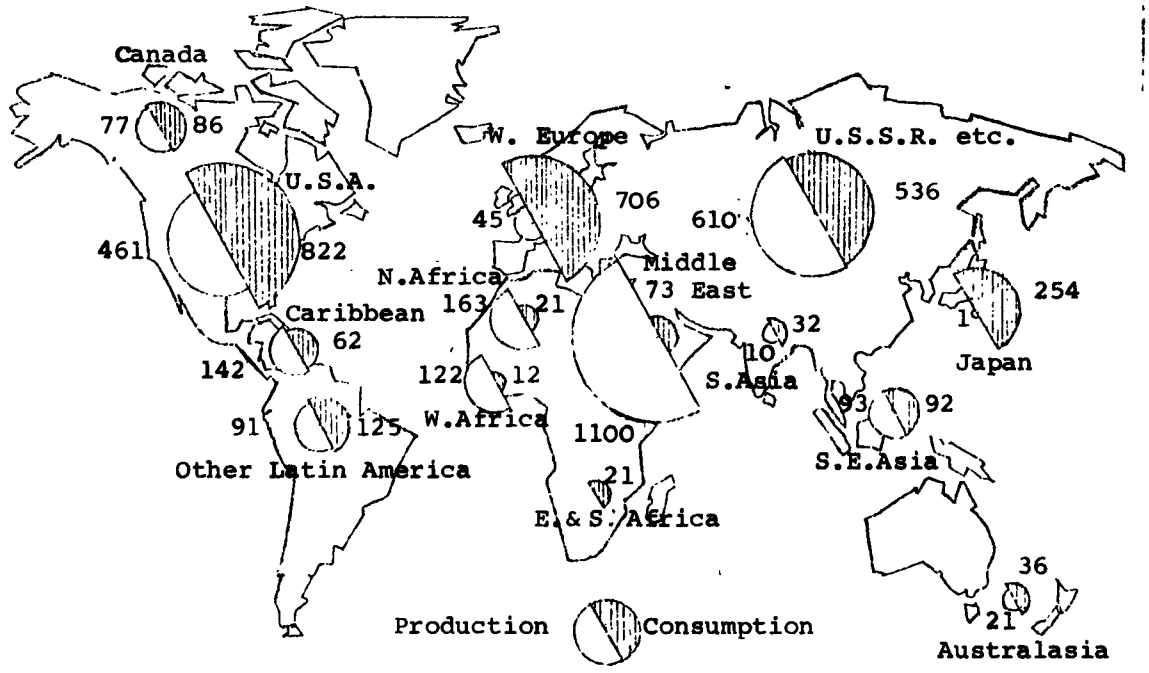
ANNEX II

REFINERY CAPACITY AND ITS GEOGRAPHICAL DISTRIBUTION

IN THE EUROPEAN COMMUNITIES, 1975

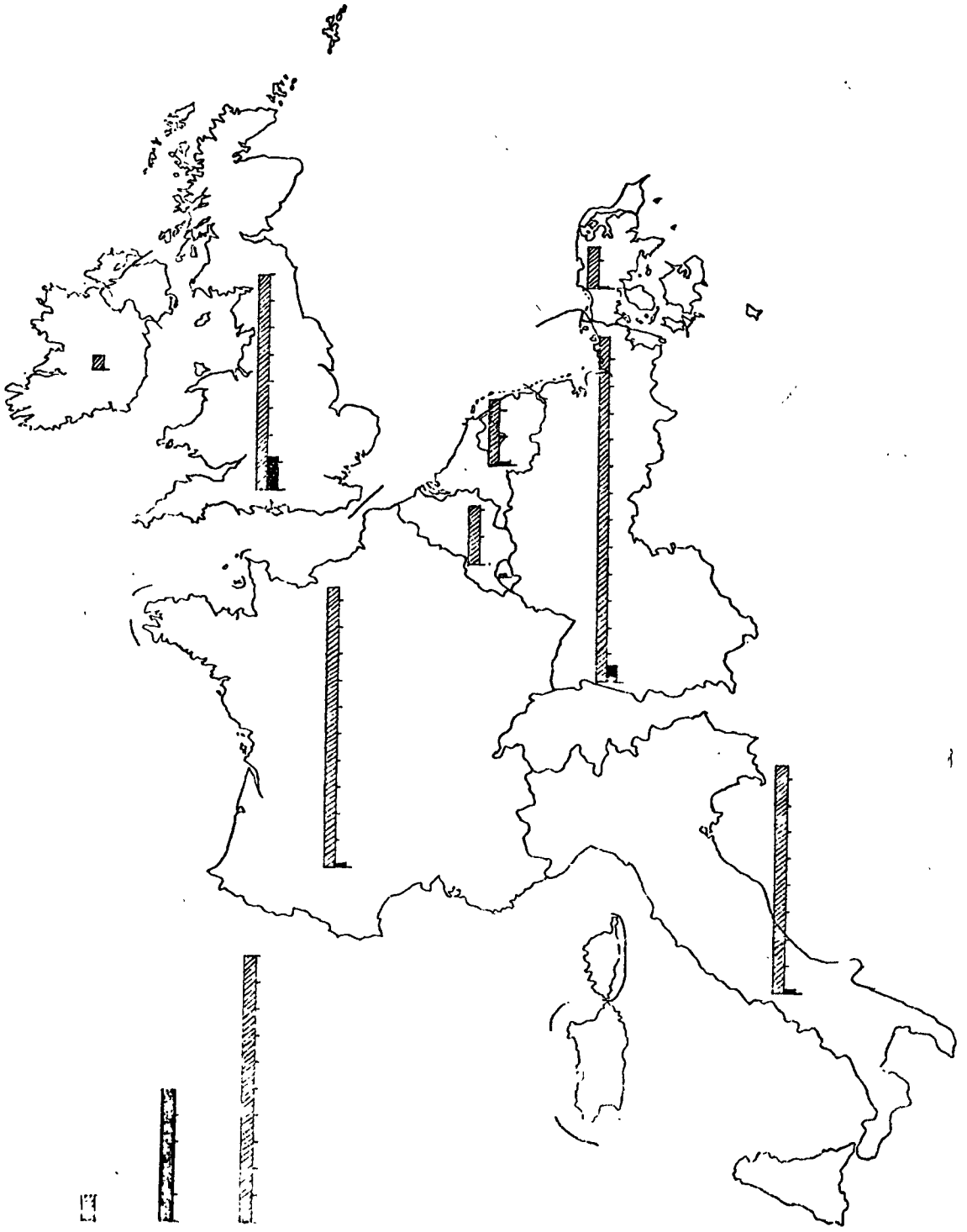


World Oil Supply and Demand 1976 - Million Tonnes



PRODUCTION OF CRUDE OIL AND GROSS INLAND CONSUMPTION OF PETROLEUM PRODUCTS WITHIN THE EEC

1976



OIL REFINERIES

ANNEX V

capacity, throughput (mill. t.) and utilization (%)

1974-76

	EUR-9			Federal Republic of Germany			France			Italy			Netherlands		
	cap.*	thr.p.	util.	cap.*	thr.p.	util.	cap.*	thr.p.	util.	cap.*	thr.p.	util.	cap.*	thr.p.	util
1974	795.2	573.2	72 %	145.6	109.0	75 %	153.9	128.1	83 %	197.6	119.8	61 %	99.1	64.6	65 %
1975	838.7	490.5	59 %	148.8	94.2	63 %	169.4	109.3	64 %	207.5	97.7	47 %	103.1	57.0	55 %
1976	855.7	528.0	62 %	153.9	103.0	67 %	169.5	118.2	70 %	220.7	104.0	47 %	102.1	63.5	62 %

	Belgium			Luxembourg			United Kingdom			Ireland			Denmark		
	cap.*	thr.p.	util.	cap.*	thr.p.	util.	cap.*	thr.p.	util.	cap.*	thr.p.	util.	cap.*	thr.p.	util.
1974	43.1	30.3	70 %	-	-	-	142.0	109.4	77 %	3.0	2.7	90 %	11.0	9.3	85 %
1975	46.6	29.3	63 %	-	-	-	149.3	92.3	62 %	3.0	2.5	83 %	11.0	8.1	74 %
1976	48.7	32.4	67 %	-	-	-	147.1	96.9	66 %	2.8	2.0	71 %	11.0	8.0	73 %

* As at 1 January

Source: Eurostat

SOURCES OF CRUDE OIL SUPPLY

1973-1975

(million tonnes)

ANNEX VI

Country of origin	EUR-9			Republic of Germany			France			Italy			Netherlands		
	1973	1974	1975	1973	1974	1975	1973	1974	1975	1973	1974	1975	1973	1974	1975
Eastern Europe	13.9	7.6	10.1	2.8	3.1	3.4	3.4	0.2	1.2	7.1	4.0	3.4	-	0.0	0.5
Algeria	31.9	22.5	22.8	13.6	9.7	10.2	11.1	8.9	5.9	3.9	2.5	3.8	0.6	0.2	0.5
Libya	76.2	55.5	34.2	25.7	16.7	14.9	6.5	3.7	2.2	25.3	23.8	13.0	2.0	0.4	0.4
Nigeria	44.7	48.9	34.9	10.2	11.5	10.1	12.6	10.5	8.7	0.2	3.2	0.3	11.5	13.9	7.5
Iraq	44.2	38.7	43.4	1.6	3.6	1.4	18.7	16.8	12.0	19.7	13.4	23.0	0.7	0.5	1.9
Iran	87.7	102.0	87.6	14.1	13.4	14.2	10.8	8.6	13.3	16.7	15.0	12.9	13.7	39.7	17.5
Saudi Arabia	159.0	164.7	129.5	25.3	25.2	18.8	30.2	41.4	33.5	35.4	40.6	26.2	19.9	5.9	12.6
Kuwait	72.3	49.0	34.8	4.3	4.3	2.7	15.5	12.4	6.7	11.3	6.5	3.7	12.8	1.8	5.4
Qatar	16.7	12.9	10.1	0.7	1.1	1.3	3.4	3.5	2.4	2.2	2.8	1.3	5.5	0.2	1.0
Abu Dhabi	24.5	25.7	25.7	5.3	6.4	5.2	13.8	13.1	10.5	2.4	0.9	0.7	2.6	0.9	5.7
Muscat-Oman	4.1	3.8	4.5	-	0.0	-	2.1	1.9	1.2	-	1.0	-	0.7	-	-
Venezuela	10.7	8.8	7.8	2.3	2.4	2.3	1.8	1.5	0.8	1.3	0.6	0.6	0.3	0.3	0.3
All third countries	610.0	572.2	477.2	111.2	103.3	91.0	134.9	130.7	106.1	128.6	120.2	95.9	71.3	63.9	54.2

ANNEX VI

SOURCES OF CRUDE OIL SUPPLY

1973-1975

(million tonnes)

Country of origin	Belgium			Luxembourg			United Kingdom			Ireland			Denmark		
	1973	1974	1975	1973	1974	1975	1973	1974	1975	1973	1974	1975	1973	1974	1975
Eastern Europe	0.5	0.1	0.3	-	-	-	0.2	0.2	0.9	-	-	-	-	-	0.4
Algeria	0.3	0.5	0.9	-	-	-	2.2	0.5	1.5	-	-	-	0.2	0.3	-
Libya	4.3	1.6	0.6	-	-	-	12.2	9.0	3.0	-	-	-	0.1	0.3	0.1
Nigeria	0.9	1.1	1.2	-	-	-	8.2	8.1	6.1	-	-	-	1.0	0.7	0.9
Iraq	0.8	0.4	1.6	-	-	-	2.8	3.8	3.1	-	-	0.1	-	0.3	0.2
Iran	7.2	4.7	5.4	-	-	-	21.4	15.5	20.6	0.9	0.7	0.7	2.8	4.4	3.0
Saudi Arabia	15.9	15.8	12.7	-	-	-	28.0	33.4	23.3	0.8	1.2	0.7	3.6	1.1	1.7
Kuwait	5.0	3.9	2.9	-	-	-	21.7	18.7	11.8	0.7	0.7	0.9	1.1	0.8	0.6
Qatar	0.4	0.4	0.1	-	-	-	4.2	4.6	3.9	-	-	-	0.1	0.4	0.1
Abu Dhabi	0.4	0.3	0.9	-	-	-	-	4.0	2.5	-	-	-	-	0.2	0.1
Muscat-Oman	0.0	-	-	-	-	-	0.7	0.3	2.8	-	-	-	0.7	0.5	0.5
Venezuela	1.0	0.3	0.4	-	-	-	4.0	3.4	3.5	-	-	-	-	0.3	-
All third countries	37.4	30.4	29.3	-	-	-	114.3	111.6	90.4	2.6	2.7	2.4	9.8	9.4	7.9

ANNEX VII

PETROLEUM PRODUCTS

IMPORTS INTO THE COMMUNITY [1]

	1973		1974		1975		1976 [2]	
	million tonnes	%	million tonnes	%	million tonnes	%	million tonnes	%
Canada	0	-	0.7	2.0	0.8	2.0	0.1	0.2
USA	3.6	12.0	3.5	10.1	3.1	7.9	2.7	6.6
Greece	1.9	6.3	1.3	3.8	2.4	6.1	0.4	1.0
Norway	0.7	2.3	0.3	0.9	1.0	2.5	0.9	2.2
Spain	1.8	6.0	1.1	3.2	1.0	2.5	0.8	1.9
Sweden	0.7	2.3	0.7	2.0	1.2	3.1	1.6	3.9
Japan	0	-	0	-	0.6	1.5	0	-
Venezuela	1.4	4.7	1.7	4.9	1.7	4.3	2.7	6.6
Netherlands Antilles	0.5	1.7	0.3	0.9	1.5	3.8	0.3	0.7
USSR	9.4	31.3	11.1	32.1	13.0	33.1	14.2	34.5
Rumania	1.1	3.7	1.9	5.5	1.5	3.8	0.5	1.2
Algeria	0.7	2.3	0.4	1.2	0.6	1.5	0.5	1.2
Libya	0.2	0.6	0.2	0.6	0.4	1.0	0.5	1.2
Kuwait	0.6	2.0	0.8	2.3	1.0	2.5	1.5	3.6
Saudi Arabia	0.5	1.7	1.0	2.9	0.4	1.0	0.6	1.5
Iran	0.3	1.0	0.8	2.3	0.7	1.8	0.3	0.7
Egypt	0.4	1.3	0.4	1.2	0.7	1.8	-	-
Total	23.6	79.3	26.0	75.7	31.6	80.4	27.6	67.0
Other non-specified	6.4	20.7	8.6	24.3	7.7	19.6	13.6	33.0
Total imports third-party countries	30.0	100.0	34.6	100.0	39.3	100.0	41.2	100.0
Total imports Inter EEC	75.6		65.2		60.9		64.6	

[1] The countries shown in this summary table are only those which have been the source of at least 0.5 million tonnes in any of the years 1973 to 1976.

[2] Provisional. 1976 data incomplete, partially estimated; subject to amendment.

Source: SOEC estimates

ANNEX VIII

PETROLEUM PRODUCTS
Structure of production

EUR-9

1 000 t

	1960	1963	1965	1967	1968	1969	1970	1971	1972	1973	1974	1975	1960 %	1975 %
Refinery gas	892	1 444	2 338	3 287	3 549	3 415	3 603	2 885	2 307	2 472	2 661	2 109	0.58	0.46
Liquefied petroleum gas	2 849	4 691	6 219	7 584	7 850	8 335	8 792	8 974	9 744	10 787	10 424	9 633	1.87	
Motor spirit	27 730	35 776	42 989	48 428	53 454	57 051	61 754	64 462	70 213	75 527	73 472	73 601	18.16	16.11
Petroleum and jet fuels	8 472	10 474	11 980	14 661	16 757	19 307	21 535	21 909	24 327	25 506	22 962	20 471	5.55	4.48
Naphthas	1 149	5 248	10 182	16 487	21 475	25 363	29 253	27 051	29 821	31 512	27 481	16 276	0.75	3.56
Gas/Diesel oil	39 084	60 937	83 304	99 485	115 645	133 538	153 753	160 143	170 832	186 643	172 038	148 091	25.60	32.42
Residual fuel oil	62 113	87 519	119 244	141 422	152 086	173 276	196 169	198 793	207 565	217 701	196 068	162 513	40.69	35.58
White and industrial spirit	768	874	1 030	994	1 197	1 166	1 274	1 246	1 261	1 467	1 403	1 162	0.50	0.25
Lubricants	2 557	2 868	3 308	2 971	3 712	4 523	4 785	5 353	5 004	5 149	5 519	4 434	1.68	0.97
Bitumen	5 041	7 600	9 288	11 048	11 964	12 569	13 817	14 384	14 742	15 234	14 262	13 467	3.30	2.95
Petroleum coke	179	221	210	235	348	363	379	412	492	515	518	542	0.12	0.12
Other products	1 833	1 178	2 671	3 558	2 843	3 555	3 594	3 444	3 686	5 468	6 179	4 520	1.20	0.99
All finished products	152 667	218 830	292 763	350 160	390 880	442 461	498 709	509 056	539 994	577 981	532 987	456 819	100	100

PETROLEUM PRODUCTS IMPORTED INTO COMMUNITY COUNTRIES FROM USSR

ANNEX VIIIA

1975 1976

		Total EUR 9 ('000t)	Product expressed as % of all products	Federal Rep. of Germany	France	Italy	Belgium	Nether lands	Luxem bourg	United Kingdom	Ireland	Denmark
				Proportion of EUR 9 total imported into each country								
All products	1975	13,107	100%	33%	13%	20%	6%	14%	-	5%	3%	6%
	1976	13,056	100%	39%	15%	8%	4%	18%	-	7%	3%	6%
Naptha	1975	2,925	22%	15%	3%	20%	5%	45%	-	12%	-	-
	1976	2,970	23%	30%	3%	8%	-	45%	-	13%	-	1%
LPG	1975	116	1%	-	100%	-	-	-	-	-	-	-
	1976	123	1%	7%	86%	-	-	-	-	-	-	7%
Gasoline (motor spirit)	1975	363	3%	80%	14%	-	-	2%	-	3%	-	1%
	1976	257	2%	66%	18%	-	2%	-	-	13%	-	2%
Kerosene	1975	161	1%	50%	-	1%	23%	26%	-	-	-	-
(jet fuels)	1976	343	3%	48%	-	-	-	34%	-	-	-	19%
Fuel Oil Residual	1975	3,139	24%	1%	20%	52%	8%	4%	-	0%	11%	5%
	1976	1,753	13%	4%	26%	34%	4%	3%	-	1%	18%	10%
Gas/Diesel Oil	1975	6,106	47%	56%	14%	6%	5%	5%	-	4%	2%	9%
	1976	7,517	58%	51%	17%	2%	6%	12%	-	6%	1%	7%
Not specified	1975	297	2%	15%	0%	8%	34%	-	-	-	-	43%
	1976	93	1%	18%	-	60%	-	-	-	-	-	22%

Totals expressed in percentage may not equate to 100 because of rounding error.

For comparison purposes: Total imports of Petroleum Products into the Community in 1975 were - 100,1 million tonnes (USSR = 13%); and in 1976 were - 106,9 million tonnes (USSR = 12%)

SOEC Division Energy: Provisional data.

ANNEX IX

ENERGY PRODUCTION, CONSUMPTION AND IMPORTS FOR THE EEC
in 1974, 1980 and 1985

	1974	1980	1985
Oil (million barrels per day)			
Production	0.3	2.5	3.3
Consumption	10.6	11.0	13.2
Net Imports	11.3	9.4	10.8
Natural Gas (billion cubic metres per year)			
Production	155.0	194.2	189.9
Consumption	160.2	242.3	287.4
Net Imports	6.8	48.1	97.5
Coal (million metric tons)			
Production[1, 2]	385.9	370.1	372.6
Consumption	419.4	426.5	430.7
Net Imports	33.5	56.4	58.1
Nuclear Power (terawatt-hours per year)	34.0	246.0	525.0
Hydro and Geothermal Power (terawatt-hours per year)	120.2	139.0	145.0
Total Electricity (terawatt-hours per year)	1,050.0	1,343.0	1,826.0
Total Energy Requirements (Mtoe per year)	927.9	1,067.6	1,276.3

[1]Includes some non-coal solids for Ireland and Italy

[2]Excludes stock increases for the UK in 1980 and 1985

Source: OECD World Energy Outlook

CAPITAL INVESTMENTS OF THE WORLD

PETROLEUM INDUSTRY 1968 - 1974

ANNEX X

(The table indicates, in millions dollars, the capital and exploration expenditures of the world petroleum industry as well as the main data for different countries or regions).

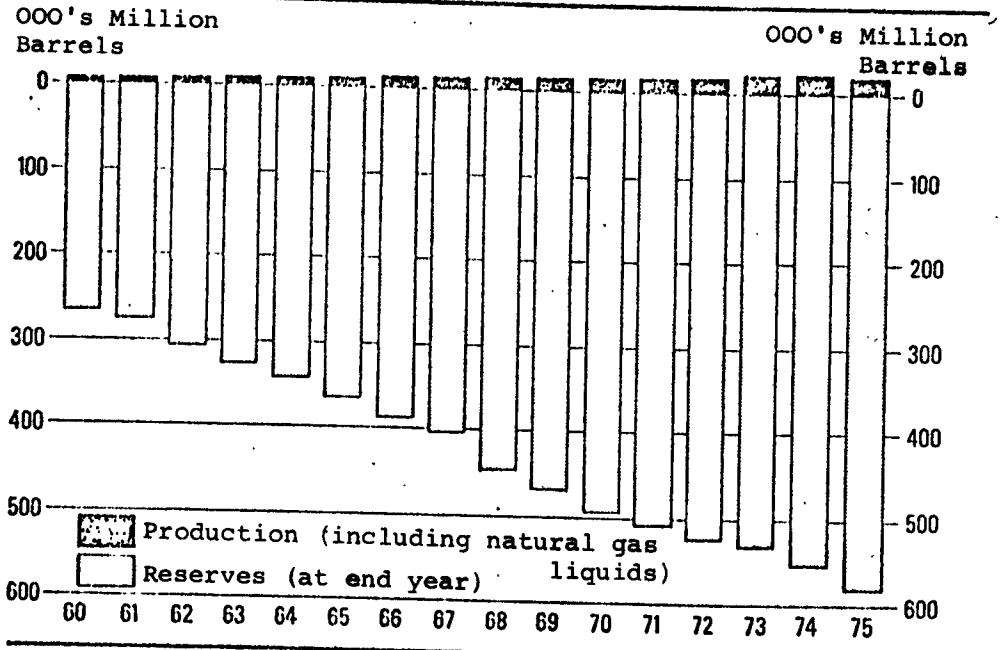
mill. dollars	1968	1970	1972	1973	1974
WORLD					
Crude oil and natural gas	6,875	6,650	9,590	12,415	18,765
Natural Gas Liquid Plants	585	580	515	510	770
Pipe Lines	1,080	850	1,230	1,230	2,460
Tankers	1,650	2,575	3,775	6,550	8,900
Refineries	2,950	4,000	4,955	4,865	7,720
Chemical Plants	1,480	1,525	1,350	1,175	1,995
Marketing	2,665	3,220	2,825	2,480	2,215
Other	615	725	710	770	875
Total Capital Expenditure	17,900	20,125	24,950	29,995	43,700
Geological expenditure and lease rentals	1,330	1,340	1,540	1,700	2,185
COMBINED	19,230	21,465	26,490	31,695	45,885
UNITED STATES	9,065	8,890	9,790	11,490	17,755
of which: crude & natural gas	4,675	4,110	5,740	7,290	11,225
pipelines	425	450	300	450	1,400
refineries	800	1,075	900	1,050	1,775
CANADA	1,200	1,475	1,675	1,825	2,300
of which: crude & gas	500	650	850	1,000	1,150
refineries	145	240	325	290	400
VENEZUELA	255	315	220	245	365
of which: crude & gas	175	205	150	200	290
OTHER WESTERN HEMISPHERE	1,300	1,245	1,475	1,510	2,685
of which: crude & gas	350	360	550	575	925
refineries	275	400	475	550	1,025
WESTERN EUROPE	2,750	3,360	4,575	5,000	7,145
of which: crude & gas	250	300	650	1,300	2,375
pipelines	175	75	400	350	475
refineries	900	1,050	1,500	1,550	2,250
chemical plants	350	725	800	600	850
marketing	825	900	825	800	750

mill. dollars	1968	1970	1972	1973	1974
AFRICA	860	890	1,180	1,100	1,365
of which crude & gas	475	450	500	500	750
MIDDLE EAST	675	615	1,025	1,440	1,820
of which: crude & gas	275	275	500	850	975
refineries	150	140	225	300	450
FAR EAST	1,525	2,200	2,900	2,635	3,750
of which: crude & gas	175	300	650	700	1,075
refineries	600	975	1,300	950	1,650

Source: Chase Manhattan Bank

World crude oil production and proven reserves

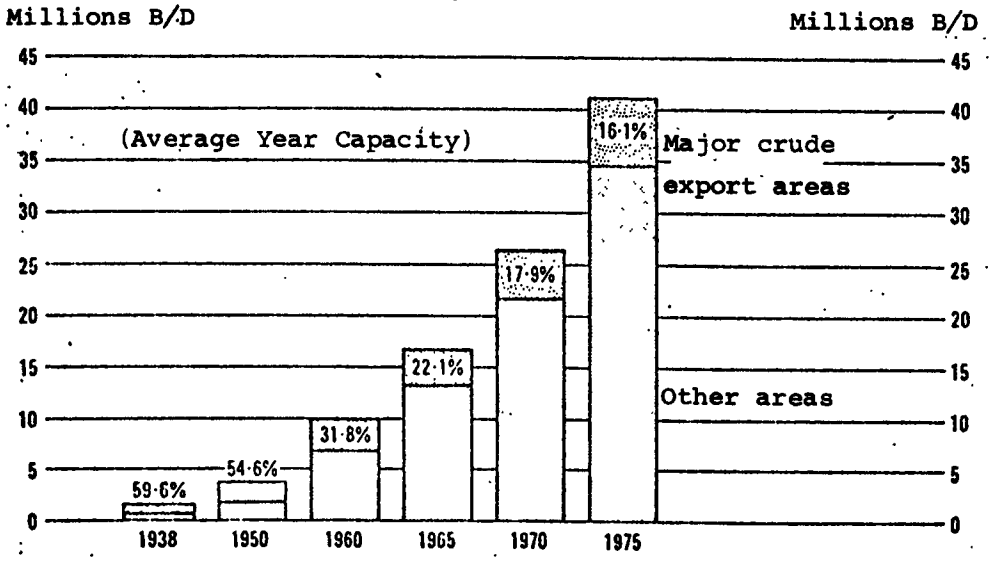
Including the Communist Areas



Source: "World Oil"

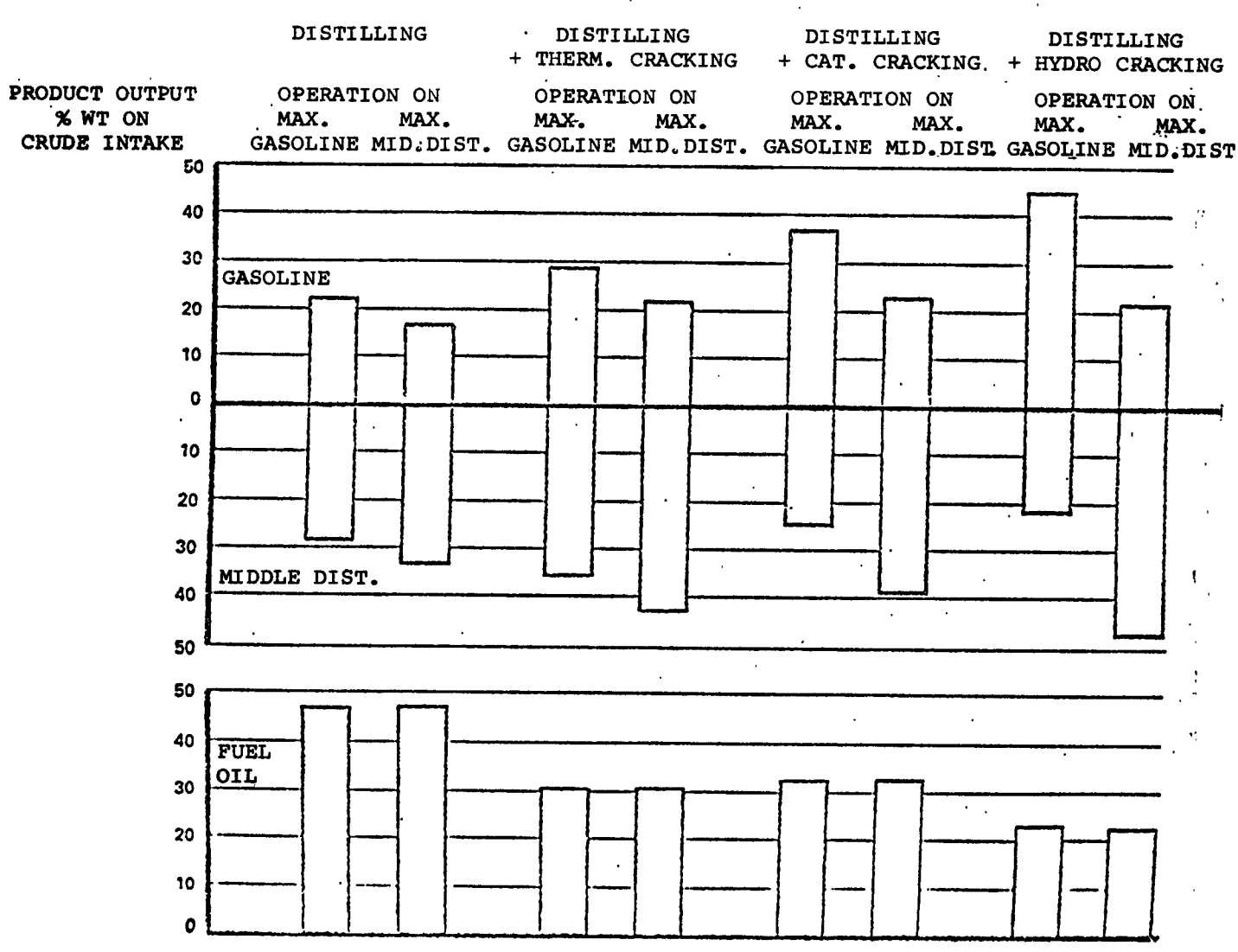
Changing location of refinery capacity

World excluding North America and the Communist Areas



REFINERY FLEXIBILITY

FIXED CRUDE INTAKE AT MINIMUM FUEL OIL PRODUCTION



OIL REFINING

Crude oil is a very complex mixture of hydrocarbons but is only rarely used directly as a fuel (although some power plants burn crude oil instead of heavy fuel oil). The oil must therefore go through a series of refining processes to be converted into the various petroleum products such as petrol, fuel gas oil, motor diesel oil, heavy fuel oil and asphalt. The following is a short description of the most important refining processes.

CRUDE OIL DISTILLATION

Crude oil distillation is the most important of the refining processes since the crude oil is separated into several fractions of different boiling point ranges (that in turn form the starting materials for a number of other refining processes).

The crude oil is pumped from the storage tanks to the distillation unit where it is pre-heated before going to a desalting unit where inorganic salts are removed by washing with water. If these salts (especially calcium and magnesium chloride) were not removed, they would, with the high temperatures of the distillation process, undergo chemical decomposition to form hydrogen chloride. The subsequent formation of hydrochloric acid could cause drastic corrosion of the plant. After desalting, the oil is further heated, partly in heat exchangers and partly in directly fired tube furnaces until it reaches a temperature of about 325°C when it becomes an almost equal mixture of liquid and vapour and is then fed to the atmospheric crude oil distillation tower. The tower is equipped with a large number of horizontal, perforated trays through which the hydrocarbon vapours rise and are gradually condensed so that the lightest liquid collects on the top trays and the heaviest at the bottom. The lightest fraction of the crude oil, i.e. gas and naphtha (boiling range up to about 160°C), leaves the top of the tower in the form of vapour and, after cooling and condensing, is led to a stabilizer tower, where the naphtha fraction is distilled, releasing the lightest hydrocarbon solubles (C_1 - C_4), which by repeated distillation are processed into LPG and butane. The stabilized naphtha passes on to a splitter tower where the naphtha fraction is split into light naphtha (C_5 - 80°C) and heavy naphtha (80° - 160°C). The light naphtha is used as a mixing agent in the production of petrol. Naphtha's gas oils are used as feedstocks to make olefins. The heavy naphtha must be further refined by reforming (see below) before it can be used as a fuel mixture.

Kerosene (160° - 225°C), light gas oil (225° - 325°C) and heavy gas oil (325°- 360°C) are normally produced as sidestreams from the atmospheric crude oil distillation tower. After stripping with steam for flash-point adjustment and further refining (mainly desulphurization) these intermediate products form the starting material from which kerosene, fuel gas oil, motor diesel oil and ship diesel oil are blended. A substance with a boiling point above 360°C is obtained as a distillation residue from the atmospheric distillation tower. This can either be used directly as a heavy fuel oil or as feed in a vacuum distillation unit. Other gas oils, for use after further refining as mixing agents for a variety of light fuel oils or for the production of lubricating oils, are extracted in this unit. The residue after vacuum distillation can be used as a mixing agent for heavy fuel oils or directly as an asphalt product.

For this distillation process, a careful heat balance must be maintained throughout the plant which means that the condensing heat from the distiller must be constantly extracted. The heat balance is controlled by means of a return pipe to the top of the tower and by a number of internal circulation streams (pump-arounds) which are cooled in the heat exchangers by the crude oil introduced into the unit which at the same time becomes slightly heated. Efficient control equipment is necessary to maintain the crude oil distillation unit in constant operation and to ensure maximum output from a given crude oil. Most modern crude oil distillation units are largely heat-integrated, i.e. full use is made of the thermal energy supplied to the unit, for, for instance, heating the crude oil by pump-arounds or with the warm intermediate products, and the heat needed to distil the naphtha fraction is supplied through heat exchange with one of the hot crude oil products such as heavy fuel oil.

REFORMING

Reforming is a catalytic process whereby heavy naphtha with a low octane rating undergoes a series of chemical changes so that there is a sharp increase in naphtha components with high octane ratings. Reforming processes are known under names such as Platforming, Powerforming and Ultraforming which are in principle identical, all very important and used for the production of

(1) high octane blending agents for petrol production,
(2) aromatic raw materials for the petrochemical industry and
(3) LPG and butane.

Four main chemical reactions occur in the catalytic reforming process:

(1) dehydrogenation of naphthenes for aromatics,
(2) dehydrogenation of alkanes with subsequent ring-formation to aromatics,
(3) hydrocracking of heavy alkanes to light alkanes and
(4) isomerization of alkanes and naphthas to compounds with higher octane ratings. A considerable amount of hydrogen is produced during the first two reactions and the third uses up hydrogen but hydrogen plays no special role in the isomerization process. On the whole, most catalytic reforming processes will give a net hydrogen yield of about 250Nm^3/m^3 crude naphtha by-product. The relatively cheap hydrogen produced is often used in other, usually catalytic processes such as desulphurization, hydrocracking, dehydrogenation, hydrodealkylation, etc.

There are a variety of reforming catalysts, most of which contain a platinum compound precipitated on an aluminium oxide carrier. One of the most recently developed catalysts that has some interesting characteristics contains rhenium.

Depending on the purpose of the process and the composition and characteristics of the crude naphtha, the catalytic reforming process is carried out at temperatures of 470° - 540°C in a hydrogen pressure of 14-35 atm. The overall chemical reaction is endothermic i.e. it consumes energy and therefore requires additional heat to maintain the optimal reaction conditions. The number of catalysts required is therefore most often divided between 3 or 4 reactor vessels in series with heating facilities installed between them. Organic sulphur compounds, ammonia, organic nitrogen compounds, certain metals such as lead, and excessive humidity will have a strong deactivating effect on the catalyst either temporarily or permanently. Such compounds are therefore undesirable in the crude naphtha and must be removed through pre-treatment. The most common method is to treat the naphtha with hydrogen in the presence of a cobalt/molybdenum - containing catalyst. This pre-treatment process, known as Unifining or Hydrofining, converts the most undesirable substances in the crude naphtha to their corresponding hydrogen compounds (e.g. hydrogen sulphide, ammonia and water) which can easily be removed in a subsequent stripping process. The same process is used to a large extent in the desulphurization of petroleum and gas oils in the production of finished products such as kerosene, jet fuel, fuel gas oil and motor diesel fuel. The octane rating of the final product (reformate) can be varied by changing the operating conditions of the reforming process. There are also variations in the gas (hydrogen, methane, ethane, propane

and butane) produced during the reforming process.

CATALYTIC CRACKING

Cracking is the refining process by means of which large hydrocarbon molecules are broken down to smaller molecules under fixed operating conditions. The purpose of the process is to increase the output of valuable products such as petrol and gas oils above the quantities in which they naturally occur in crude oil. Previously a process known as thermal cracking was widely used but today it has almost completely been replaced by catalytic processes. Catalytic cracking has experienced considerable technological development and is used today in many advanced types of processes. The term 'catalytic cracking' normally refers to Fluid Catalytic Cracking (FCC), a process in which the catalyst in fluid form comes in contact with the feed in gas form. An FCC plant consists of three main sections:

(1) the cracking or reactor section
(2) the regenerating section and
(3) the fractionating section

The feed for the cracking unit is normally a heavy gas oil with a boiling point up to 600°C. The feed is preheated and passed through a riser pipe where it meets the hot regenerated fluidized catalyst at a termperature of 560° - 680°C. Cracking occurs at temperatures of 450° - 540°C, with the catalyst and the oil vapours moving upwards to the reactor. Unconverted gas oil (recycle oil) from the subsequent fractionating column is introduced through another riser pipe through the bottom of the reactor. The recycle oil rises through the catalyst in the reactor and further cracking takes place. The reaction product and recycle oil vapours leave the reactor through a cyclone which retains catalyser dust, and the mixture is distilled in a fractionating column. The cracking process produces a highly carbonaceous substance (coke) which will settle on the surface of the catalyst particles and reduce the reaction of the catalyst. To continue the cracking process, the catalyst must be reactivated, and this is done through combustion in a regenerator into which combustion gases are injected. Before the catalyst reaches the regenerator it passes through the reactor's stripper section where entrained hydrocarbons are expelled by steam. The purpose of the stripping process is to increase output and to reduce the combustion load on the regenerator. The regenerated and burnt out catalyst returns to the reactor whilst the combustion gases leave the regenerator through a cyclone. These gases still contain combustible substances (especially carbon monoxide) and are therefore conveyed for final burning in a boiler where high pressure steam is produced.

The catalytic cracking process, to a large extent self-sufficient in thermal energy, produces gas containing large quantities of unsaturated hydrocarbons as well as high octane petrol blending components and gas oils. This gas mixture is processed into various raw products for the petreochemical industry and feed for the alkylation process.

HYDROCRACKING

Hydrocracking is a relatively new catalytic refining process the purpose of which is to convert heavy distillates and distillate residues to lighter and more valuable products such as high-octane petrol blending components.

Hydrocracking is a very flexible process since the end product can be varied considerably by changing the operating conditions and the composition of the feed. This makes hydrocracking a valuable process that can easily be adapted to changes on the market and in product demand. It has been developed commercially in several forms, the best known being Unicracking-JHC with a stationary catalyst and the H-oil process which applies the principle of of a catalyst kept in constant motion. Recently the latter has become of additional interest as a process suitable for desulphurizing fuel oil and distillation residues containing sulphur. After preheating, the oil mixed with hydrogen is sent to two reactors. A series of cracking reactions and hydrogenation take place in the presence of the catalyst which is kept in constant motion by circulating a stream of liquid from the top to the bottom of the reactor. In this system there is very intimate contact between the hydrogen, the oil and the catalyst, and it is possible to control the termperature of the highly exothermic hydrocracking process effectively. Catalyst can be removed or added during the process which makes it easier to keep catalyst activity and therefore operating conditions constant and to maintain product quality. The reaction products go to a separating vessel where most of the excess hydrogen is separated off from the liquid reaction product. After purification in an absorption column, the hydrogen is returned to the reactor and fresh hydrogen is at the same time supplied to replace that used up in the cracking process. The reaction product passes through a decontamination vessel and is finally fractionated in a distillation column.

ALKYLATION

The purpose of the alkylation process is to produce high octane petrol by means of a chemical reaction between olefins and isoparaffins. The olefin - rich gas obtained by catalytic cracking is often used as the raw product. It is made to react with isobutane in the presence of hydrogen fluoride as catalyst. The olefin - rich feed, mixed with isobutane, is passed to a combined reactor/separating vessel where a chemical reaction takes place after contact with the catalyst. Hydrogen fluoride is

separated off and regenerated and the reaction product goes to a fractionating column. After having its entrained hydrogen fluoride removed, the top product from this column can be used for processing into LPG (bottled gas). Unreacted isobutane is produced as a side-stream from the column and is returned to the reactor vessel. The bottom product passes from the column to a debutanizer where normal butane is removed for subsequent processing into butane products, and the final product of the process, stabilized alkylate, can be used directly as a petrol blending agent.

ISOMERIZATION

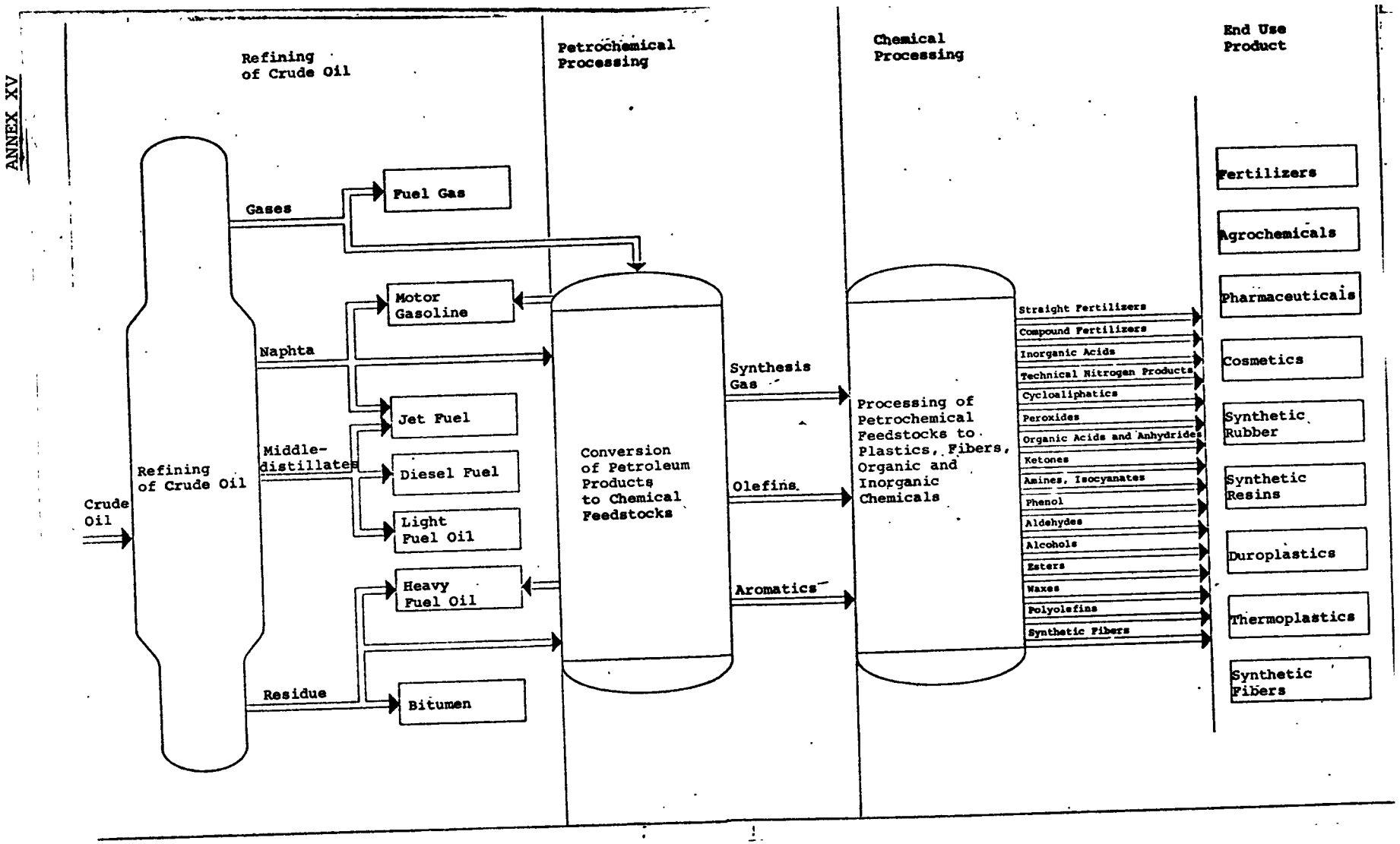
Isomerization is a chemical reaction in which the individual molecules undergo an inversion from a given structure to another structure with the same basic chemical formula but other physical and chemical properties. This chemical reaction has been developed commercially in the form of several refining processes, including the Penex process which improves the octane rating of certain crude naphtha fractions through isomerization so that they can be used for the production of petrol. Another process known as Butamer converts normal butane to isobutane that can again be used as a constituent of the feed to an alkylation unit. Isomerization to improve the octane rating takes place at temperatures of 120-205°C and at pressures varying from 20-70 atm. in a hydrogen atmosphere in the presence of a platinum-containing catalyst. The feed for the process is a pentane/hexane-containing light crude naphtha.

POLYMERIZATION

Polymerization is a chemical process in which smaller molecules react with each other to form larger molecules with quite different chemical and physical properties. Polymerization is used commercially as a refining process for the production of high octane petrol. The feed for the polymerization unit is a mixture of the olefin hydrocarbons propylene and butylene obtained for instance by catalytic cracking. The mixture is fed to a reactor together with liquid phosphoric acid which acts as a catalyst in the polymerization process. The reaction mixture is led to a separating vessel from which the phosphoric acid is recirculated to the reactor. The final product is neutralized with soda dye and stabilizes to the finished petrol component polymer petrol. A product with a normal octane rating of 97 or 101 is produced in this process.

ANNEX XV

FROM CRUDE OIL TO END-USE PRODUCT



REFINERIES WITHIN THE EEC - THEIR LOCATION AND THEIR CAPACITY

1 000 t

Company	Location	Theoretical capacity of crude oil throughout (end of year)					
		1970	1971	1972	1973	1974	1975
BR DEUTSCHLAND		120 263	126 508	133 160	145 610	148 810	153 860
Schleswig-Holstein		3 550	3 550	3 550	6 000	6 000	6 050
Deutsche Texaco A G	Heide/Holstein	3 000	3 000	3 000	5 600	5 600	5 600
Elf-Bitumenwerke G M B H. & Co	Brunsbuttel/Holst.	550	550	550	400	400	450
Hamburg		12 560	13 380	15 300	15 300	15 300	15 300
Deutsche BP Aktiengesellschaft	Hamburg-Finkenwerder	4 300	5 100	5 100	5 100	5 100	5 100
Deutsche Shell A.G.	Hamburg-Harburg	4 300	4 300	4 300	4 300	4 300	4 300
Esso A.G	Hamburg-Harburg	3 600	3 600	5 500	5 500	5 500	5 500
Ölwerke Julius Schindler GmbH	Hamburg	360	380	400	400	400	400
Bremen							
Mobil Oil A G.	Bremen	1 800	1 800	1 800	1 800	1 800	–
Niedersachsen		9 053	9 078	10 060	10 060	10 060	17 810
Gew. Erdol-Raffinerie Deurag-Nerag	Misburg/Hannover	2 550	2 550	2 550	2 550	2 550	2 550
Mineralolwerke Peine	Peine	18	18			-	-
Wintershall A.G	Salzbergen	335	360	360	360	360	360
Wintershall A.G.	Lingen/Ems	3 750	3 750	4 750	4 750	4 750	4 500
Erdolwerke Frisia A G	Emden	2 400	2 400	2 400	2 400	2 400	2 400
Mobil Oil A G in Deutschland	Wilhelmshaven	-	-	-	-	-	8 000
Nordrhein-Westfalen		39 550	43 850	43 850	51 350	51 550	50 600
VEBA-Chemie A G.	Gelsenkirchen-Horst	7 000	7 000	7 000	7 000	7 000	7 000
Union Kraftstoff	Wesseling/Koln	5 600	6 000	6 000	6 000	6 000	6 000
Deutsche Shell A G	Monheim/Rhein	400	500	500	500	500	500
Elf Bitumenwerke G M B H. & Co	Essen	750	750	750	750	950	-
Fina Bitumenwerke G M B.H.	Mulheim/Ruhr	500	500	500	500	500	500
VEBA-Chemie A G	Gelsenkirchen-Scholven	4 400	7 400	7 400	10 000	10 000	10 000
Esso A G	Koln	5 600	5 700	5 700	5 700	5 700	5 700
Erdöl Raffinerie Duisburg G M.B.H.	Duisburg	2 000	2 000	2 000	2 000	2 000	2 000
Deutsche BP Aktiengesellschaft	Dinslaken	5 000	5 000	5 000	9 900	9 900	9 900
Deutsche Shell A.G.	Godorf	8 300	9 000	9 000	9 000	9 000	9 000
Hessen							
Caltex Deutschland G.M.B.H	Raunheim	4 500	4 500	4 500	4 500	4 500	4 500
Rheinland-Pfalz		5 800	6 050	6 300	6 300	6 300	6 300
Erdöl Raffinerie Speyer Elf-Gelsenb. OHG	Speyer	2 300	2 550	2 800	2 800	2 800	2 800
Mobil Oil Raffinerie Wörth G.M.B.H.	Wörth/Rhein	3 500	3 500	3 500	3 500	3 500	3 500
Baden-Württemberg		19 250	18 800	21 600	21 600	21 600	20 600
Esso A.G.	Karlsruhe	8 900	9 000	9 000	9 000	9 000	8 000
Oberrh. Mineralolwerke G.M B H.	Karlsruhe	6 750	7 000	7 000	7 000	7 000	7 000
Erdolraffinerie Mannheim G.M B H.	Mannheim	3 600	3 600	5 600	5 600	5 600	5 600
Bayern		21 900	22 400	23 800	26 300	29 300	30 300
Deutsche Shell A.G.	Ingolstadt	3 000	3 000	3 000	3 000	3 000	3 000
Esso A.G.	Ingolstadt	4 800	4 900	5 000	5 000	5 000	5 000
Erdölraffinerie Ingolstadt A.G.	Ingolstadt	3 200	3 200	3 000	3 000	6 000	7 000
Erdolraffinerie Neustadt G.M B.H. & Co	Neustadt/D.	3 500	3 500	5 000	7 000	7 000	7 000
Deutsche BP Aktiengesellschaft	Vohburg	4 400	4 800	4 800	5 100	5 100	5 100
Deutsche Marathon Petroleum G.M.B.H.	Burghausen	3 000	3 000	3 000	3 200	3 200	3 200
Saarland							
Saarland-Raffinerie G.M.B.H.	Klarenthal	2 300	2 300	2 400	2 400	2 400	2 400
NEDERLAND		68 472	77 697	99 130	99 130	103 130	102 130
West (Noord- en Zuid-Holland)		68 472	77 697	99 130	99 130	96 130	95 130
Asphalt- en chemische fabrieken	Amsterdam	300	300	200	200	200	200
Mobil Oil N V.	Amsterdam	4 000	6 000	6 500	6 500	6 000	6 000
Chevron Petroleum (Caltex)	Pernis-Rotterdam	12 900	12 900	15 900	15 900	15 900	15 900
Esso Nederland	Rotterdam Botlek	16 000	16 000	16 000	16 000	16 000	16 000
Shell Nederland	Pernis-Rotterdam	24 500	21 725	30 000	30 000	27 500	26 500
Gulf	Rotterdam Europoort	4 972	4 972	4 730	4 730	4 730	4 730
British Petroleum	Rotterdam Europoort	5 800	15 800	25 800	25 800	25 800	25 800
Zeeland - C F P	Borsele/Vlissingen	-	-	-	-	7 000	7 000

1 000 t

Company	Location	Theoretical capacity of crude oil throughout (end of year)					
		1970	1971	1972	1973	1974	1975
FRANCE		116 485	121 045	145 410	153 885	169 385	169 485
Paris		7 300	7 300	9 600	9 600	9 600	10 100
Elf	Grandpuits	3 600	3 600	3 600	3 600	3 600	4 100
Elf	Vexin	3 700	3 700	6 000	6 000	6 000	6 000
Haute-Normandie		37 300	37 300	46 300	46 300	55 900	55 800
Compagnie Française de Raffinage	Gonfreville	14 300	14 300	23 300	23 300	23 300	23 300
Esso	Port-Jérôme	7 200	7 200	7 200	7 200	7 200	7 200
Shell	Petit-Couronne	9 200	9 200	9 200	9 200	18 800	18 800
Mobil	Gravenchon	3 600	3 600	3 600	3 600	3 600	3 600
Société Française des Pétroles B.P	Vernon	3 000	3 000	3 000	3 000	3 000	3 000
Nord		9 000	9 000	9 000	9 000	15 000	14 500
Compagnie Francaise de Raffinage	Dunkerque	–	–	–	–	6 000	6 000
Société Française des Petroles B P	Dunkerque	5 500	5 500	5 500	5 500	5 500	5 000
Antar	Valenciennes	3 500	3 500	3 500	3 500	3 500	3 500
Bretagne Antar	Vern s/Seiche	1 450	1 450	1 450	1 450	1 450	1 450
Loire Antar	Donges	4 550	8 000	8 000	8 300	8 300	8 300
Lorraine							
Société de la Raffinerie de Lorraine	Hauconcourt	4 000	4 400	4 400	4 500	4 500	4 500
Alsace		8 100	8 100	8 200	8 200	8 100	8 200
Compagnie Rhénane de Raffinage	Reichstett	3 700	3 700	3 700	3 700	3 700	3 700
Société de Raffinage de Strasbourg	Herrlisheim	4 400	4 400	4 500	4 500	4 400	4 500
Aquitaine		9 400	9 400	9 500	9 000	9 000	9 000
Shell	Pauillac	4 500	4 500	4 500	4 000	4 000	4 000
Elf	Ambès	2 100	2 100	2 100	2 100	2 100	2 100
Esso	Bordeaux	2 800	2 800	2 900	2 900	2 900	2 900
Rhône-Alpes							
Elf	Feyzin	6 250	6 960	7 225	8 800	8 800	8 800
Languedoc Mobil Oil Française S.A.	Frontignan	4 000	4 000	4 000	6 000	6 000	6 000
Provence		25 135	25 135	37 735	42 735	42 735	42 735
Compagnie Française de Raffinage	La Mède	10 235	10 235	10 235	10 235	10 235	10 235
Shell	Berre-l'Etang	7 500	7 500	13 500	13 500	13 500	13 500
Société Française des Pétroles B.P	Lavéra	4 400	4 400	11 000	11 000	11 000	11 000
Esso	Fos s/Mer	3 000	3 000	3 000	8 000	8 000	8 000
BELGIQUE-BELGIË		35 885	41 700	42 284	43 084	46 584	48 684
Nord/Noord		35 885	36 700	37 284	38 084	39 584	41 684
Albatros	Antwerpen-Noord	2 700	3 200	3 500	3 500	5 000	5 000
International Oil Refinery (Albatros)	Antwerpen-Zuid	1 750	1 750	–	–	–	–
Esso Belgium S A	Antwerpen-Noord	4 730	4 730	4 730	4 730	4 730	4 730
Raffinerie Belge des Petroles	Antwerpen-Noord	5 000	5 000	5 000	5 000	5 000	5 000
Société Industrielle Belge des Pétroles	Antwerpen-Noord	15 500	15 500	16 200	17 000	17 000	17 000
S.A. Anglo-Belge des Petroles	Antwerpen-Zuid	40	40	40	40	40	40
Belgian Shell S.A	Gent	540	540	544	544	544	544
Texaco Belgium S.A.	Gent	5 625	5 940	7 270	7 270	7 270	9 370
Sud/Zuid							
Chevron Oil Belgium S A	Feluy	–	6 000	6 000	6 000	7 000	7 000

ANNEX XVI

1 000 t

Company	Location	Theoretical capacity of crude oil throughout (end of year)					
		1970	1971	1972	1973	1974	1975
ITALIA			**169 880**	**173 780**	**197 600**	**207 505**	**220 690**
Piemonte			**12 850**	**12 850**	**19 350**	**21 100**	**21 050**
Sarpom	Trecate		7 800	7 800	14 000	15 550	15 550
Rol	Viguzzolo		50	50	50	50	-
R P Italiana	Volpiano		5 000	5 000	5 000	5 200	5 200
Maura	Conolo-Monferrato		-	-	300	300	300
Liguria			**16 650**	**16 650**	**17 500**	**18 680**	**19 250**
Garrone	Genova		6 700	6 700	7 500	9 000	9 000
San Quirico	Genova		1 700	1 700	1 700	1 800	1 800
Fina	Genova		-	-	-	-	-
Iplom	Busalla		1 600	1 600	1 600	1 200	1 600
Ind. Ital. Petroli	La Spezia		5 700	5 700	5 700	5 250	5 250
SPI	Arcola		850	850	900	1 330	1 330
Deffepiane	Genova		100	100	100	100	270
Lombardia			**21 820**	**25 720**	**26 400**	**25 840**	**25 970**
AGIP	Cortemaggiore		140	140	-	-	-
Amoco	Cremona		5 000	5 000	5 000	5 000	5 000
Raffineria del Po	Sannazzaro		6 500	6 500	6 500	6 500	6 500
Ind Ital Petroli	Rho		5 700	5 700	5 100	4 050	4 050
Sarni	Bertonico			3 900	4 900	4 900	4 900
Fina	Milano		330	330	-	-	-
I.C.I.P.	Mantova		2 600	2 600	3 100	3 400	3 300
Ilsea	Valmadrera		450	450	450	450	450
Lombarda Petroli	Villasanta		1 100	1 100	1 350	1 540	1 500
Omar	Lacchiarella		-	-	-	-	270
Veneto Irom	Venezia/Porto Marghera		5 300	5 300	5 300	5 030	5 000
Friuli-Venezia Giulia Aquila	Muccia		3 000	3 000	3 000	5 150	5 150
Emilia-Romagna			**7 960**	**7 960**	**7 960**	**13 360**	**13 290**
Sarom	Ravenna		7 700	7 700	7 700	13 100	13 100
Alma	Ravenna		260	260	260	260	190
Toscana Stanic	Livorno		4 600	4 600	7 440	7 440	7 440
Marche Api	Falconara		3 300	3 300	3 300	3 410	3 410
Lazio			**6 000**	**6 000**	**9 060**	**9 460**	**9 460**
Raffinerie di Roma	Pantano di Grano		4 000	4 000	4 000	4 400	4 400
Gaeta Industria Petrol.	Gaeta		2 000	2 000	5 060	5 060	5 060
Campania Mobil Oil	Napoli		7 300	7 300	7 300	6 480	6 480
Puglia			**10 360**	**10 360**	**11 060**	**11 200**	**11 200**
Stanic	Bari		3 800	3 800	4 500	5 400	5 400
Montecatini Edison	Brindisi		1 560	1 560	1 560	1 600	1 600
Ind. Ital. Petroli	Taranto		5 000	5 000	5 000	4 200	4 200
Sicilia			**47 010**	**47 010**	**56 230**	**57 430**	**66 790**
Mediterranea	Milazzo		18 000	18 000	19 820	19 820	19 820
Anic (ABCD)	Ragusa		200	200	300	300	260
Anic	Gela		5 040	5 040	5 040	4 650	4 650
Raffineria di Augusta	Augusta		10 770	10 770	10 770	10 050	10 050
Montedison	Priolo		13 000	13 000	20 300	22 610	21 610
ISAB	Siracusa		-	-	-	-	10 400
Sardegna			**23 730**	**23 730**	**23 700**	**22 925**	**26 200**
Saras	Sarroch		18 000	18 000	18 000	17 225	20 500
Sardoil	Porto Torres		5 730	5 730	5 700	5 700	5 700

ANNEX XVI

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Company	Location	Theoretical capacity of crude oil throughout (end of year)					
		1970	1971	1972	1973	1974	1975
UNITED KINGDOM		114 809	121 936	124 222	141 870	149 280	147 100
England		79 192	85 073	86 559	89 645	96 700	93 600
British Petroleum Co. Ltd.	Kent	10 160	11 500	10 900	10 900	10 900	10 600
Shell U K. Ltd.	Stanlow	10 700	10 700	10 700	10 700	18 300	18 300
	Shellhaven	10 200	10 200	10 200	10 200	10 200	10 200
	Teesport	5 400	5 400	6 100	6 400	6 400	5 800
	Heysham	2 000	2 000	2 000	2 000	1 300	700
Esso Petroleum Co. Ltd.	Fawley	16 400	19 400	19 800	19 400	19 600	18 900
Lindsey Oil Refinery Ltd.	South Killingholme	7 000	7 200	8 460	9 600	9 750	8 800
Mobil Oil Co. Ltd.	Coryton	6 750	6 750	6 750	8 600	8 600	8 600
Philips-Imperial Petroleum Ltd.	North Tees	5 080	5 080	5 000	5 000	5 000	5 000
Continental Oil Co Ltd	Killingholme	4 064	4 064	3 940	4 300	4 300	4 400
Burma Oil Trading Ltd.	Ellesmere Port	300	1 626	1 626	1 445	1 450	1 400
	Barton	173	173	173	-	-	-
Berry Wiggins and Co. Ltd.	Kingsnorth	320	300	300	300	200	200
	Weaste	188	170	-	-	-	-
Philmac Oils Ltd	Eastham	457	500	600	700	700	700
Wales		24 630	25 830	27 000	41 750	41 750	43 100
British Petroleum Co. Ltd.	Llandarcy	8 130	8 330	8 300	8 300	8 300	8 100
Esso Petroleum Co. Ltd.	Milford Haven	6 100	6 100	6 300	15 400	15 400	15 400
Texaco Refining Co. Ltd.	Pembroke	5 900	6 900	7 250	8 900	8 900	9 400
Gulf Oil Refining Co. Ltd.	Milford Haven	4 500	4 500	5 150	5 150	5 150	5 200
Amoco (UK) Ltd.	Milford Haven	-	-	-	4 000	4 000	5 000
Scotland		9 467	9 403	9 163	9 175	9 300	8 900
British Petroleum Co. Ltd.	Grangemouth	9 144	9 040	8 800	8 800	8 800	8 500
Shell U.K. Ltd.	Ardrossan	200	200	200	200	200	200
Wm. Briggs and Sons Ltd.	Dundee (Campendown)	123	163	163	175	300	200
Ulster							
British Petroleum Co Ltd.	Belfast	1 520	1 630	1 500	1 500	1 500	1 500
IRELAND							
Irish Refining Co. Ltd.	White Gate (Cork)	2 966	2 966	2 966	2 966	2 966	2 770
DANMARK		10 800	10 900	10 992	10 992	10 992	10 992
Dansk Esso A/S	Kalundborg	3 500	3 500	3 500	3 500	3 500	3 500
Gulf Oil A/S	Gulf Havn (Stigsnäs)	4 500	4 500	4 592	4 592	4 592	4 592
A/S Shell Raffinaderiet	Fredericia	2 800	2 900	2 900	2 900	2 900	2 900

The Community import régime for oil products

There is not yet in existence a common import régime for crude and oil products for the Community. In all Member countries but one (France) the import of oil products has been liberalised.

As regards duties, product imports to the Community fall into various categories:

(a) imports subject, under the Common Customs Tariff (CCT), to duties varying from 3.5% on heavy oils to 6% on gasoline.

(b) imports free of duty, or at reduced rates, under preferential or co-operation agreements (see below) within quantitative limits (6.4 M.t. in 1977).

(c) imports free of duty under preferential agreements and without quantitative limits; the Lomé Convention and EFTA agreements.

(d) imports free of duty under the generalised preference system within a Community ceiling for oil products (2 M.t. in 1977).

Situation at 1 October 1977

Preferential Agreements relating to Oil Products

Country	Subject to	Total (tons)	Customs Status
Mediterranean Basin[1]			
Algeria[2]	Ceiling	1,100,000	Exempt
Morocco[2]	Ceiling	175,000	Exempt
Tunisia[2]	Ceiling	175,000	Exempt
Israel	Ceiling	661,500	Exempt
Spain	Contingent Tariff	1,200,000	40% of CCT
Egypt	Ceiling	500,000	Exempt
Syria	Ceiling	175,000	Exempt
Turkey	Ceiling	381,000	Exempt
Other Agreements			
Netherlands Antilles	Ceiling	2,000,000	Exempt
ACP countries (Africa, Caribb. Pacific)	No ceiling	--	Exempt
EFTA countries	No ceiling	--	Exempt
Generalised preference	Ceiling	2,560,000	Exempt

Note

Once the ceilings are reached, the CCT is reapplied if a Member State so requests.

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[1] The agreements with Malta, Cyprus, Lebanon and Jordan do not contain ceilings for oil products

[2] The ceilings for these countries increase each year by 5% and will be removed at 31.12.79

Annex XVIII

Pipelines in the European Community 1976

_____ crude oil

---------- oil products

ANNEX XIX

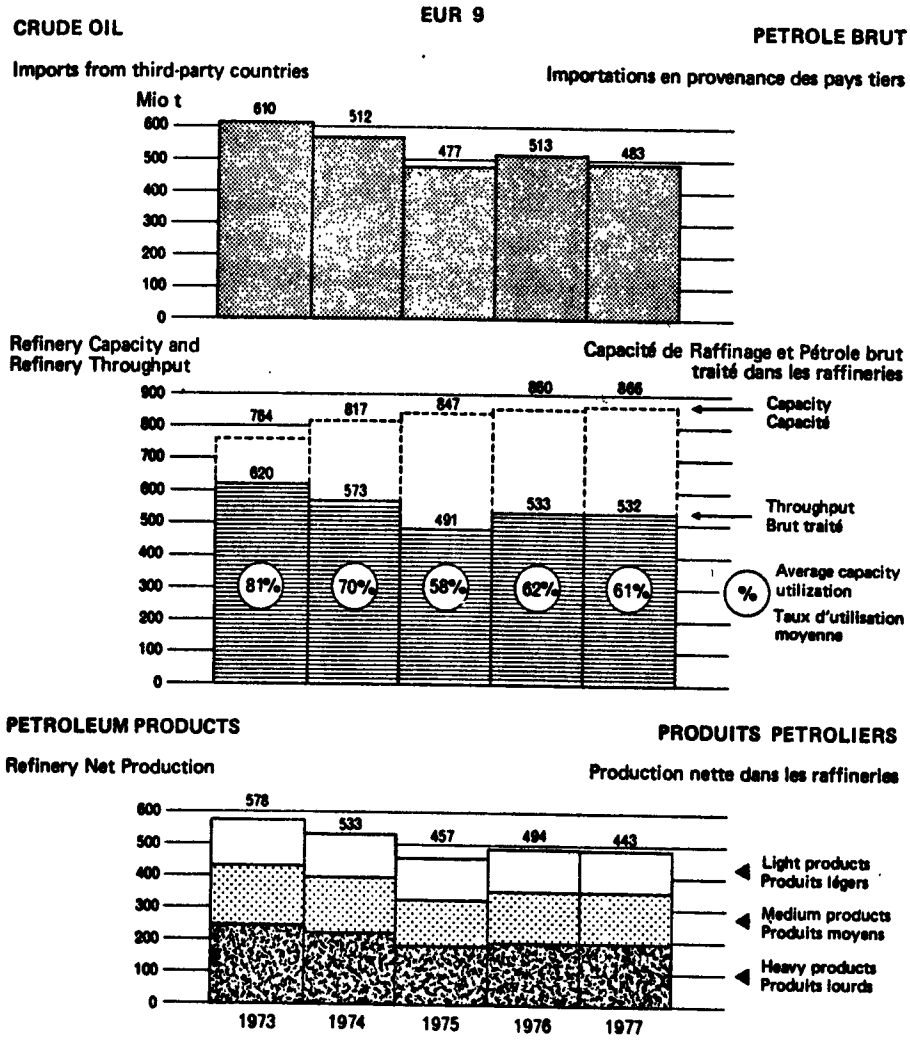
PRIMARY OIL REFINING CAPACITIES IN THE ARAB COUNTRIES (1000 B/D)

Country	Location	Present Refineries	Under design or Construction	Planning	Total
Algeria	Arzow	55	--	--	
	Maison Carree	60	40	--	
	Skikda	--	360	--	
	Ain aminas	--	7	--	
	Bejaia	--	180	--	
	Hassi Mas'oud	2	26	--	
Total		117	613	--	730
Bahrain	Bahrain	250	--	--	250
Egypt	Mex	60	--		
	Mostorod	80	--		
	El Ameria	25	--		
	Tanta	15	--		
	Suez	60	--		
	Sidi Karir	--	--	450	
Total		240	--	450	690
Iraq	Daura	70	--		
	Basrah	70	70		
	Kirkuk	20	--	250	
	Musel	--	40		
	Za'faranya	--	100		
	Others	36	--		
Total		196	210	250	656
Jordan	Zarka	10	--	40	50
Kuwait	Shuaiba	200	--	--	
	Ahmadi	250	--	--	
	Mina Abdulla	132	--	--	
	Ras Al-Khafji	30	--	--	
	Mina Saud	50	--	--	
Total		630			646
Libya	Assawia	60	60	--	
	Marsa Al Brega	10	--		
	Tobrok	--	220		
	Zuetina	--	--	400	
Total		70	280	400	750
Lebanon	Tripoli	36	--		
	Sidon	17.5	--		
Total		53.5	--	--	53.3

Source - European Report - Euro-Arab Relations - N.10

Mouritania	Nouadhibou	--	20	--	20
Morrocco	Mohammadia-1	58	50	--	
	Mohammadia-2	--	70	--	
Total		58	120	--	178
Qatar	Umm-Said	6	15	150	171
Saudi Arabia	Jeddah	45	--	155	
	Al Riyadh	15	--	110	
	Ras Tannura	500	--	--	
	Jubail-1	--	250	--	
	Jubail-11	--	120	--	
	Yanbu'	--	250	--	
Total		560	620	265	1,445
Somalia		--	--	10	10
South Yemen	Adan	162	--	--	162
Sudan	Port Sudan	22	--	250	272
Syria	Homs	55	55	--	
	Banias-1	--	120	--	
	Banias-11	--	--	80	
Total		55	175	80	310
Tunisia	Bizerta	22	66		
	Gabes	---	--	150	
Total		22	66	150	238
U.A.E.	Umm Al-Nar	15	--	250	
	Dubai	--	--	200	
Total		15	--	450	465
Grand Total		2466.5	2,119	2495	7,096.5

Source - European Report - Euro-Arab Relations - N.10



Source - Eurostat - Hydrocarbons - Monthly Bulletin 2-1978

OPINION OF THE COMMITTEE ON ECONOMIC AND MONETARY AFFAIRS

Letter from Mr GLINNE, chairman of the committee to Mrs WALZ, chairman of the Committee on Energy and Research

Luxembourg, 22 February 1978

Subject: Own-initiative report by the Committee on Energy and Research on the prospects for and requirements of a Community oil supply and processing policy (PE 49.832/rev.II)
Rapporteur: Mr NORMANTON

- informal opinion of the Committee on Economic and Monetary Affairs -

Dear Mrs Walz,

Further to the arrangement made on 28 February 1977, the Committee on Economic and Monetary Affairs considered the draft report on 3 February 1978.

It noted with considerable interest the matters dealt with by the rapporteur.

Within the framework of its terms of reference our committee keeps all aspects of the Community's competition and industrial policy under constant review and, where appropriate, draws up reports on them.

It shares your committee's view that it is essential to create without delay a common market in crude oil and oil products, in line with the conditions of competition set out in the Treaty. In this context the Committee on Economic and Monetary Affairs draws attention to the report recently presented by Mr Cousté on the Sixth Report of the Commission on competition policy[1], which calls on the Commission to ensure that administrative barriers to trade are eliminated, national monopolies abolished and transparency introduced into the market, particularly where the principles to be observed with regard to the activity of multinational undertakings are concerned.

The Committee on Economic and Monetary Affairs also shares your committee's conviction as to the need for a Community import policy for crude oil and oil products. This view is clearly set out in paragraphs 16 and 22 of the motion for a resolution (Doc. 431/75) tabled by Mr GULDBERG. In this report, which the European Parliament adopted, the Committee on Economic and Monetary Affairs stressed,in particular, the importance of coordinating structural policy and the need for solidarity among the Member States.

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[1] Doc. 347/77, Resolution, paragraphs 9, 11, 15 and 18

Having made the above points, which show how aptly your committee has covered matters falling within the terms of reference of the Committee on Economic and Monetary Affairs, our Committee decided unanimously not to deliver a formal opinion[1]. I can however assure you that the members of the Committee on Economic and Monetary Affairs fully support the demands set out by your rapporteur.

Yours sincerely,

(sgd) Ernest GLINNE

[1] Present: Mr Glinne, Chairman; Lord Ardwick, Mr Brugha, Mr Carpentier, Mr Cifarelli, Mr Cousté, Mrs Dahlerup, Mr Delmotte (deputizing for Mr Patijn), Mr Jakobsen, Mr De Keersmaeker, Mr Lange, Mr Normanton, Mr Notenboom, Mr Nyborg, Sir Brandon Rhys Williams, Mr Ripamonti, Mr Spinelli, Mr Starke, Mr Stetter and Mr Verhaegen