COMMISSION OF THE EUROPEAN COMMUNITIES

COM(84) 120 final

Brussels, 9th April 1984

COMMUNICATION FROM THE COMMISSION TO THE COUNCIL CONCERNING NATURAL GAS

COM(84) 120 final

I N D E X

1. INTRODUCTION

1.1. In an attempt to inform the Energy Council on the natural gas supply situation up to the year 2000 and the issues which Member States and the Community may face, the Commission, assisted by the experts of Member States, has undertaken a new study. This study is a follow-up to the Commission's Communication to the Energy Council of 15 October 1982 (COM(82) 653 final) on Community Natural Gas Supplies.

The Commission, in its 1982 study, reviewed the development and outlook for natural gas in the 1980's, with particular emphasis on the ability of the Community to sustain supply disruptions. The present Communication updates the supply and demand picture in the 1980's which had been examined in the previous Communication and looks at the development of existing and planned security measures. The specific data obtained from Member States for the year 1990 show the availability from indigenous production and already contracted imports.

In order to determine the Community's additional import requirements in the longer term, the possible evolution and supply and demand during the 1990's with specific emphasis on the year 2000 is also considered. In particular the study examines potential sources for these additional imports in the light of the Community's objectives of avoiding undue dependence on non-OECD sources. As requested by the Council at its meeting of 9 November 1982, (PV/CONS 55), the Commission's study also covers the possibilities for intensifying cooperation between Member States in the light of the Community's changing supply pattern. Special attention has been given to the adequacy of the gas transport network.

The Commission has obtained valuable assistance from experts of the Norwegian, Canadian, Spanish and Portuguese Governments, which has complemented the information obtained from Member States.

It should be noted that natural gas volumes in this study are expressed in million tonnes oil equivalent (mtoe). When comparing with high BTU gases such as natural gas from Norway and the USSR, 1 mtoe roughly equals 1 milliard cubic metres (10^9 m^3).

2. CURRENT SITUATION

2.1. Natural gas continues to play an important role in energy supply and at present meets about 18% of the Community's energy needs. The growth of this share from 12% in 1972, just before the first oil crisis, illustrates the important contribution of natural gas to the diversification of the Community's energy supplies and to the reduction of its over-dependence on oil.

2.2. Community gas demand, which had been growing rapidly since 1973, reached a peak of 172 mtoe in 1979. However, in 1980 and 1981 it started to decline for the first time (2% yearly). In 1982 consumption fell by a further 4.5% to reach 159 mtoe.

2.3. This fall in consumption reflected the impact of economic recession, energy saving measures and the substitution of gas by alternative energies. In 1982 the decline was further accentuated by the mild winter.

2.4. The fall in demand was accompanied by a change in the pattern of consumption. In contrast with the drop in overall demand, consumption in the domestic sector continued to increase, especially in the period 1979-1981. While in the industrial sector demand decreased only slightly, leaving market share unchanged, use of gas as a feedstock by the chemical industry dropped by almost half from 1979 to 1982. (Natural gas is used as a feedstock for the production of methanol and ammonia, a base product for fertilizer production).

Natural gas was also replaced to a considerable extent by heavy fuel oil and coal in public power plants. Recently, however, a reversal of this trend has occurred in some Member States. In the Netherlands, additional gas volumes replacing fuel oil have been supplied to power plants in anticipation of a planned conversion to coal. In Italy and Belgium, gas sales to power plants have increased because of excess quantitites of natural gas in these markets due to minimum take provisions in natural gas purchase contracts.

2.5. In 1983 demand picked up (by 3.4% in the first eight months). The picture varies, however. While most Member States showed considerable increases, German and Italian consumption changed little and Luxembourg showed a significant decline.

2.6. The rapid growth of imports from outside the Community as a portion of total natural gas supplies has slowed down. The import share expanded from 11% of total supplies in 1977 to 26% in 1980, but thereafter increased only slightly to 30% in 1983.

2.7. In Table 1, natural gas demand for the year 1982, and a breakdown of supply between indigenous production and imports from third countries, are shown for each Member State. It will be noted that the amount of imports from outside the Community, expressed as a share of total gas supply, varies greatly as between Member States (0% to 50.9%).

3. SITUATION 1990

3.1. Demand and Supply in 1990

3.1.1. Forecasts for total Community natural gas consumption in 1990 have fallen continuously over the last few years. While in 1981 they stood at 221 mtoe, by October 1982 they were already down to 206 mtoe (COM(82)653 final). Now, it is estimated that 1990 consumption will not exceed 197 mtoe. This decline is mainly due to a reduction in the assumed economic growth rates of Member States.

3.1.2. On the supply side, reduced demand forecasts have led to lower forecasts for indigenous production and imports. As the import contracts which were concluded with Algeria, USSR and Norway during the period 1970 to 1981 were based on the higher demand forecasts, natural gas availability is expected to exceed demand until the early 1990's. Indigenous production will therefore be lower than earlier anticipated while import contracts will have to be operated at minimum offtake levels. The resulting pattern of Community natural gas supplies forecast for 1990 is given in Table 2. It shows that about 57% of total Community consumption will be accounted for by indigenous production. This represents no change in comparison with the 1982 study, as both indigenous production and imports have been equally reduced.

3.1.3. With the exception of additional exports from the USSR to Italy, which are still under discussion, all imports from third countries included in the supply forecast for 1990 are contracted. Imports are thus expected to account for about 43% of consumption. Imports from the USSR will represent about 19% of total Community gas supplies and 4.5% of total energy supplies. Imports from Norway will account for about 14% of total Community gas supplies, and imports from Algeria about 10%.

3.1.4. Indeed, following requests currently being put by European gas transmission companies to Algeria and the USSR to reduce and/or defer their contracted exports, the above-mentioned share of these countries in total supplies to the Community in 1990 may even be slightly less.

3.1.5. It should be noted, however, that the figures just quoted are aggregated for the whole Community. Supply dependence on the biggest non-OECD supplier varies greatly as between individual Member States (from 0% to 36%).

3.2. Security of Community Natural Gas Supplies

3.2.1. The Commission's Communication of November 1982, based on information from Member States, stated that, on the basis of measures currently envisaged, it would be possible to deal with a major interruption in supplies (at least 25% during a period of six consecutive months), with a minimum of repercussions for the final consumer.

The Commission continues to follow the evolution of the situation in consultation with Member States.

3.2.2. During the 1983 monitoring exercise, Member States reported that the development of security capacity was progressing as planned. The reduced demand forecasts have not resulted in any decrease in planned security measures. The degree of security expected in the year 1990 has thus improved, because indigenous production will be less than expected but could, in case of interruption of supplies from outside the Community, be brought up rapidly to the level foreseen in the 1982 study.

4. SITUATION 2000

4.1. Demand in the year 2000

4.1.1. Based on the estimates provided by Member States, the demand forecast for the year 2000 ranges between 193 and 220 mtoe (Table 3). The wide spread reflects uncertainties about future developments such as economic growth, longer-term energy policy objectives, and the development of energy prices.

4.1.2. Gas will continue to have to compete for end-users with fuel oil, gas oil and coal. If the present relationship between the price of gas and the prices of competing fuels is changed to the disadvantage of gas, gas demand may be expected not to exceed the lower end of the range.

4.1.3. In a parallel study it is making on perspectives for Community energy markets, "Scenarios to the horizon 2000", which will be published shortly, the Commission has looked very carefully at the gas market, in the framework of the whole energy market, taking account of a multitude of socio-economic factors. The three scenarios initially examined resulted in a gas consumption for the year 2000 of respectively 206, 211 and 218 mtoe. The range mentioned under 4.1.1. above is broadly compatible with these results.

4.2. Supply in the year 2000

4.2.1. Supplies available to meet the demand in the year 2000 will comprise indigenous production, imports already committed under long-term contracts and new imports not yet contracted.

4.2.2. Indigenous production in the year 2000 is expected to stay at the 1990 level of about 108 mtoe in the high case, and to come down to about 89 mtoe in the low case (see Table 3).

4.2.3. The Netherlands will continue to play an important role in the gas supply situation during the 1990's. A change in the method of aggregating the proven reserves of individual onshore and offshore fields and a re-evaluation of the Groningen field have resulted in an upward revision of approximately 400 mtoe in proven Dutch reserves. Total reserves however, i.e. the combination of proven and probable reserves, have been increased by not more than 40 mtoe. Taking into account the decision of the Dutch Government to make additional reserves available for export, it can be expected that the present Dutch export contracts to other Member States, which expire during the 1990's, will be partly prolonged. It is therefore assumed that the indigenous production of the Netherlands in the year 2000 will cover an export volume of about 13 mtoe over and above the forecast indigenous demand of 27 mtoe, resulting in a total production of 40 mtoe (52 mtoe in 1990). Such a continuation of Dutch exports would make a significant contribution to the overall security of the Community gas supply.

4.2.4. Another important element in the Community's indigenous production is the United Kingdom. Higher production levels than at present could result from expanded exploration activities arising from the changes in market conditions for gas producers which occurred in 1983. These included the need for British Gas to contract for new supplies and new legislation under which the Corporation lost its purchasing monopoly. Consequently, it has to be seen how this will affect the conditions for exploitation in the coming years. For the purpose of this study, however, a production level of between 30 mtoe (equal to production in 1982) and 40 mtoe has been assumed for the year 2000.

4.2.5. The evolution of supplies to the Community already under contract is as follows:

mtoe	1982	1990	2000
Norway	22	27	17
USSR	18	37	14
Algeria	6	29	20

At present, negotiations on the purchase of gas from the Sleipner field are under way between the Norwegian producers and British Gas, on the one hand, and a Continental group of buyers, on the other. Sleipner is situated in the vicinity of an existing oil and gas production infrastructure in the southern part of the Norwegian Continental Shelf and reserves are estimated at about 200 mtoe. For the purpose of this study, the expected 11 mtoe annual production level of this field has been included in the estimate of already contracted imports referred to above and in the estimate of contracted imports from Norway shown in the table.

4.2.6. Comparison of demand with indigenous production and contracted imports shows that additional imports will be needed in the year 2000. Due to uncertainty in demand and supply forecasts, the volume required may range from 20 to 55 mtoe. Needs will first arise some time between 1990 and 1995. The range for the year 2000 was calculated in the following manner. The upper figure of 55 mtoe represents a combination of the high demand forecast with the low figure for indigenous production. Conversely, the low figure of 20 mtoe combines the low demand figure with what is considered as a realistic high indigenous production level in that context.

4.3. Demand versus Supply in the year 2000

4.3.1. Future supplies from outside the Community need to be looked at both in relation to overall import dependence, and in relation to diversification of supply sources. The following table is relevant:

	Case 1 : high demand low indigenous production		Case 2 : low demand high indigenous production	
	mtoe	%	mtoe	%
1. total demand	220	100%	193	100%
2. planned indigenous production	89	40%	97*	50%
3. imports already under contract	77	35%	77	40%
of which : Norway	17	8%	17	9%
Algeria	20	9%	20	10%
USSR	40	18%	40	21%
4. imports not yet contracted	54	25%	19	10%
5. total imports	131	60%	97	50%

The development of gas demand and supply in the Community is shown in figures I and II. It indicates that the overall import dependence of the Community will increase from 28% in 1982 to 43% in 1990, and to 50-60% in 2000.

4.3.2. The membership of Spain and Portugal in the Community would not make a significant difference to the overall supply and demand situation. Together they would represent an additional demand level of 9 mtoe in the year 2000, of which 2 mtoe in Spain would be provided by indigenous production.

4.4. Future Supply Resources from outside the Community

4.4.1. Although the additional imports required in the 1990's could be at the lower end of the range (referred to under paragraph 4.2.6. above), however the future of supplies from outside the Community should also be considered in the context of the uncertainties involved in demand forecasting and the possible need for future expansion of imports after the year 2000, if present assumptions about Community indigenous production trends in the longer term are confirmed (decline of the North Sea and Groningen).

4.4.2. Additional imports could come from traditional gas suppliers, notably Norway, the USSR and Algeria, or from new sources such as Nigeria, Cameroon, Ivory Coast, Canada, Qatar and Abu-Dhabi.

* 108 in case of a connection between the UK and the Continent. (see Table 3).

4.4.3. Analysis of these prospects leads to the following conclusions :

- For the huge Norwegian Troll field, long lead times must be taken into account and a decision on its development has to be taken around the mid-1980's if it is to contribute to Community supplies in the 1990's. Production could start in the latter part of the 1990's with a first phase output of 15 mtoe per annum. Subsequent phases after the year 2000 could permit production levels of around 50 mtoe per annum.

- The USSR could, at relatively low incremental costs and at short notice, make large additional volumes available to the Community. It would be able to export an additional volume of up to 20 mtoe to Europe without the need for new transport capacity. With additional transport capacity, even larger volumes could be made available.

- Additional volumes from Algeria could also be delivered at short notice and relatively low incremental costs. On the basis of spare capacity in the pipeline from Algeria to Italy and in the liquefaction facilities, it is estimated that an additional volume of about 15 mtoe could be made available as LNG and/or by pipeline.

- Nigeria has for a number of years considered establishing large-scale LNG facilities for export. Presently, it envisages a less ambitious LNG project with a supply volume of 5 to 10 mtoe per annum in the 1990's for the first phase, and with higher production levels in subsequent phases.

- The development of LNG export projects in Cameroon and the Ivory Coast geared towards the European market are presently under consideration. It cannot be excluded that either one or both could be brought on stream before the year 2000.

- It is improbable that export projects to Europe from Canada, Qatar and Abu-Dhabi could be brought on stream before the end of the century.

5. COOPERATION AND INTERCONNECTIONS

Until today the question of diversification has mainly been looked at and dealt with by Member States individually. As the import dependence of the Community grows from 30% now to 50-60% in the year 2000, diversification of supply sources will become increasingly important. In a fully interconnected Community market, which is not the case today, it would be sufficient if adequate diversification existed at a Community level, provided always that Member States were prepared in future - as they have already agreed to do in respect of oil - to assist each other in case of a supply disruption. To this end, increased cooperation between the gas industries of Member States, and an adequate transportation system, would both be required. The following paragraphs consider these two points.

5.1. Increased cooperation between Member States

5.1.1. At its meeting on 9 November 1982 the Council asked the Commission to continue, in consultation with Member States' representatives, assisted where necessary be experts from the gas industry, to assess the possibilities for intensifying cooperation between Member States.

5.1.2. Against the background of increasing import dependence, the Commission has identified the following possible areas for further cooperation :

- as regards stocks, the possibility of
  - making cross-border use of the stocks of a Member State which is unaffected by a supply disruption
  - building cross-border stocks for use in more than one Community country;
- as regards consumption, the possibility of making cross-border use of the interruptibility of gas sales to industrial customers of a Member State unaffected by a supply disruption;
- as regards production, the possibility of rapidly increasing indigenous production in case of disruption, also for cross-border purposes where necessary.

5.1.3. Depending on the sources of additional gas imports, further measures to those already listed have to be discussed in the future in order to maintain the existing level of security. Such measures could include the establishment on a Community-wide basis of minimum levels of compulsory stocks for natural gas.

5.2. Natural Gas Transport System

5.2.1. The Commission received a specific mandate from the Council (1) to study the adequacy of the natural gas transport system in cooperation with Member States' representatives and, where necessary, with industry experts.

5.2.2. The transport system for supplies until 1990 is already in place. It is adequate for indigenous supplies and imports, all of which are already contracted for.

5.2.3. The 1982 study, and the present work of the Commission jointly with Member States' experts, show that the industry has also provided for sufficient transport capacity in the case of a disruption during the period until 1990. However, after 1990, the Community will become considerably more dependent on imports from third countries. It is apparent that the European gas industry will have to conclude new gas import deals for the 1990's. The level of additional transportation infrastructure needed for these new imports will depend on the sources of supply. As a consequence of the increased import dependence, the security aspect should be given more attention than in the past in planning these additional transportation facilities. As new gas deals are increasingly negotiated by consortia of gas transmission companies from different Member States, there is scope for adding a Community dimension in the decision making of the companies. This would not only contribute to the optimisation of the Community natural gas grid but also make it possible to deal with the security aspects of gas supply more efficiently.

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(1) Energy Council of 9.11.1982 (Document 10743/82 PV/CONS 55 ENER 184)

6. SUMMARY CONCLUSIONS

6.1. The expected natural gas demand of the Community in the year 1990 is fully covered by indigenous production capacity and contracted imports from third countries.

6.2. The foreseen development of security capacity, which the Commission's 1982 natural gas study concluded would enable the gas industry to cope with an interruption of 25% of total gas supplies to the Community, is progressing as planned.

6.3. Additional imports will be needed from the mid-1990's onwards and are currently expected to reach a level of between 20 and 55 mtoe per annum by the year 2000. The import dependence of the Community would thus increase from 30% at present to 50-60% in that year.

6.4. Possible sources for additional imports in the 1990's are limited to Norway (Troll), USSR, Algeria and Nigeria. The supply potential from these countries far exceeds expected import needs. A decision on Troll has to be taken soon (i.e. in the mid-1980's) if it is to contribute to the Community's supplies in the 1990's.

6.5. To the extent that the Community can become a common gas market, and that Member States were willing to help each other out in case of need, the burden on individual Member States of ensuring adequate supplies to individual users in case of a supply disruption would be greatly eased.

6.6. Cross-border cooperation amongst the gas transmission companies could be further developed, notably in the fields of :

- storage;
- interruptible contracts to end-consumers;
- flexibility of indigenous production.

6.7. Similarly, the planning and construction of interconnections between the existing European pipelines could be coordinated between the various gas industries in parallel with consideration of new import deals, and security aspects could be taken fully into account.

Table 1 COMMUNITY NATURAL GAS SUPPLIES 1982

mtoe

	Total Natural Gas Consumption	Indigenous production	Intra Community Trade (Exp. - Imp. +)	Imports from Third Countries					Natural Gas Imports from Third Countries as :	
				TOTAL	Algeria	Libya	Norway	USSR	% of Total Energy Consumption	% of Natural Gas Consumption
Federal Republic of Germany	38.4	12.6	13.3	14.3	-	-	6.4	7.9	5.8	37.2
France	21.2	5.5	4.3	10.8	5.6	-	2.1	3.1	6.1	50.9
Italy	22.0	12.0	4.0	7.1	-	0.1	-	7.0	5.4	32.3
Netherlands	27.6	52.5	- 26.9	2.6	-	-	2.6	-	4.0	9.4
Belgium	6.8	-	5.0	2.0	0.3	-	1.7	-	4.8	29.4
Luxembourg	0.3	-	0.3	-	-	-	-	-	-	-
United Kingdom	40.7	31.8	-	8.9	-	-	8.9	-	4.7	21.9
Ireland	1.7	1.7	-	-	-	-	-	-	-	-
Denmark	-	-	-	-	-	-	-	-	-	-
Greece	-	0.1	-	-	-	-	-	-	-	-
EUR 10	158.7*	116.2	0	45.7	5.9	0.1	21.7	18.0	5.1	28.8

* Underground storage and losses amounted to 3.2 mtoe. These must be included in order to arrive at the complete balance of supply and demand.

Table 2 COMMUNITY NATURAL GAS SUPPLIES 1990

mtoe

	Total Natural Gas Consumption	Indigenous Production	Intra Community Trade (Exp. - Imp. +)	Contracted Imports from Third Countries					Natural Gas Imports from Third Countries as :	
				TOTAL	Algeria	Libya	Norway	USSR	% of Total Energy Consumption	% of Natural Gas Consumption
Federal Republic of Germany	52.9	13.8	15.9	23.5	-	-	7.8	15.7	7.9	44.4
France	26.3	2.3	3.5	20.5	7.7	-	3.4	9.4	9.9	78.0
Italy	32.9	6.3	3.9	20.4	8.6	-	-	5.5+(6.3)*	11.4	62.0
Netherlands	26.6	52.2	- 27.1**	1.6	-	-	1.6	-	2.1	6.0
Belgium	8.5	-	3.4	6.0	3.7	-	2.3	-	11.9	70.6
Luxembourg	0.6	-	0.6	-	-	-	-	-	-	-
United Kingdom	45.4	33.7	0.2	11.7	-	-	11.7	-	5.4	25.8
Ireland	1.5	1.7	- 0.2	-	-	-	-	-	-	-
Denmark	1.6	2.0***	- 0.2	-	-	-	-	-	-	-
Greece	0.1	0.1	-	-	-	-	-	-	-	-
EUR 10	196.5	112.1	0	83.7	20.0	-	26.8	36.9	7.8	42.6

* Contract not yet Government approved

** Based on forecasts from importers

*** 1.8 for Community use (2.0 total of which 0.2 are exported to Sweden)

Table 3 COMMUNITY NATURAL GAS SUPPLIES 2000

mtoe

	Total Natural Gas Consumption	Indigenous Production	Intra-Community Trade (Exp. - Imp. +)	Contracted Imports from Third Countries				
				TOTAL	Algeria	Libya	Norway	USSR
Federal Republic of Germany	56.1 - 58.7	9.2 - 14.2	6.7	20.1	-	-	2.8	17.3
France	18.7 - 28.5	1.3	2.2	16.0	4.9	-	1.7	9.4
Italy	36.9	4.3 - 8.5	2.0	23.7	10.9	-	-	6.0 + 6.8**
Netherlands	27.6	40.3	- 13.6	0.9	-	-	0.9	-
Belgium	9.0 - 11.9	-	2.6	5.0	4.2	-	0.8	-
Luxembourg	0.7	-	0.1	-	-	-	-	-
United Kingdom	40.0 - 50.0	30.0 - 40.0	0.2	0 - 11.0***	-	-	0 - 11.0***	-
Ireland	1.8	2.0	- 0.2	-	-	-	-	-
Denmark	2.0	2.3*	-	-	-	-	-	-
Greece	0 - 1.8	-	-	-	-	-	-	-
EUR 10	192.8-219.9	89.1 - 108.3	0	76.7	20.0	-	17.2	39.5

* 2.0 for Community use (2.3 total of which 0.3 are exported to Sweden)

** Contract not yet Government approved

*** Sleipner, in this table, allocated to the UK. Negotiations which are not yet finished may also result in volumes going partly to the Continent, partly to the UK, or completely to the Continent.

Fig. 1

EUR-10 : NATURAL GAS SUPPLIES

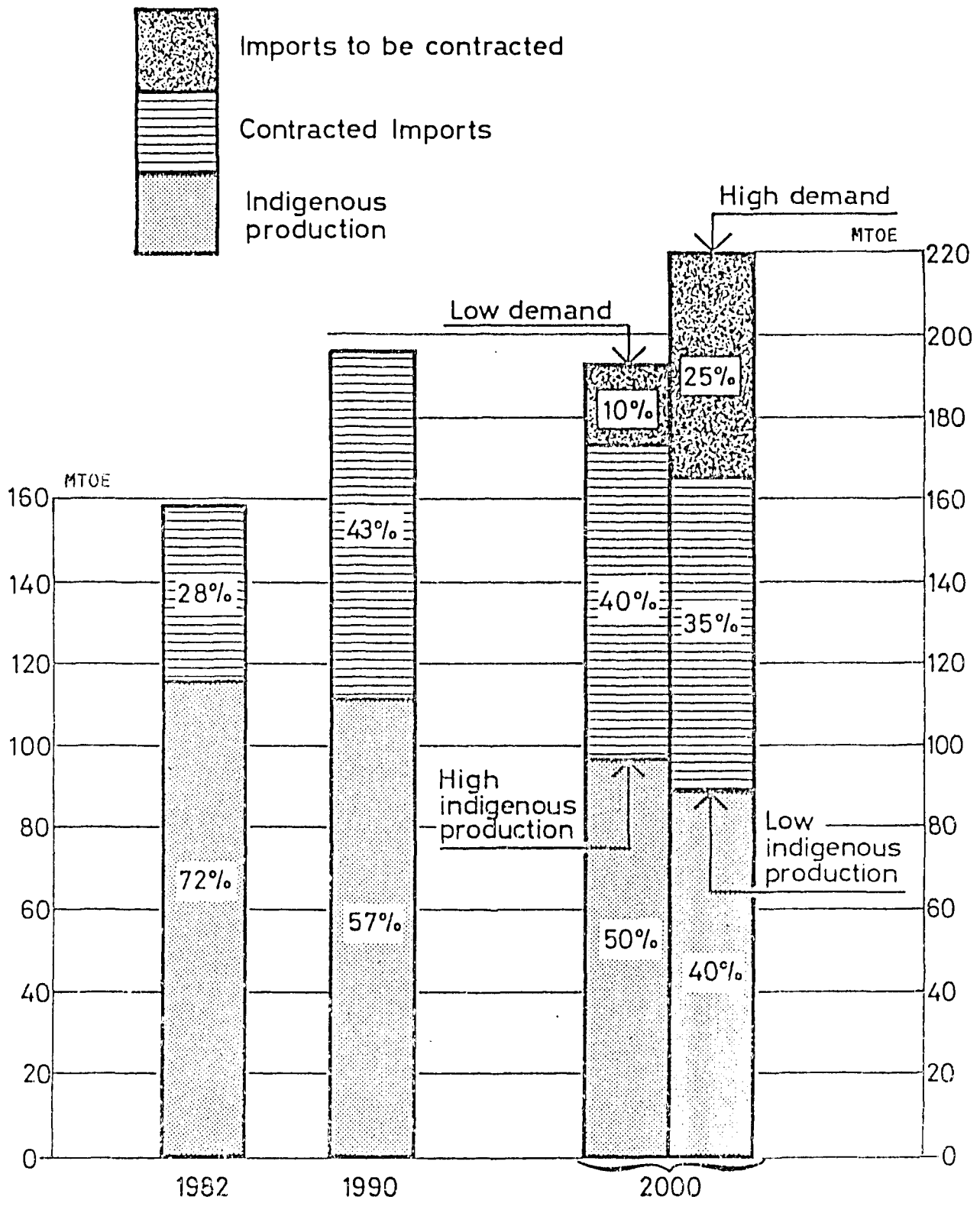
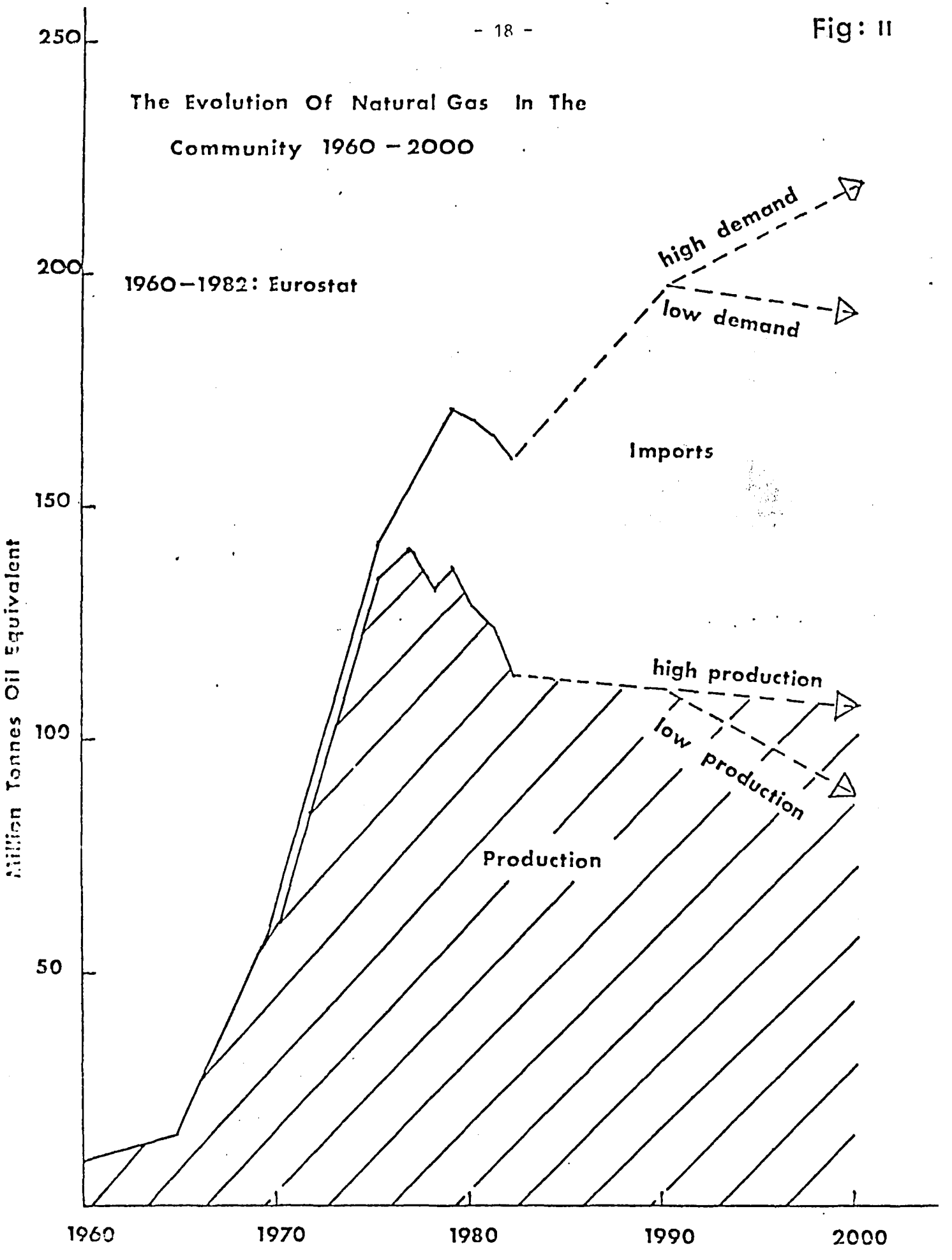


Fig: II


The Evolution Of Natural Gas In The Community 1960 – 2000
1960–1982: Eurostat
250
200
150
100
50
Million Tonnes Oil Equivalent
high demand
low demand
Imports
high production
low production
Production
1960
1970
1980
1990
2000