

# COMMISSION OF THE EUROPEAN COMMUNITIES

COM(82) 653 final

Brussels, 15 october 1982

COMMUNICATION FROM THE COMMISSION  
TO THE COUNCIL  
ON COMMUNITY NATURAL GAS SUPPLIES

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1. INTRODUCTION

- 1.1 In its Communication on natural gas<sup>(1)</sup> to the Council of the 27th October 1981 the Commission drew attention to the changing pattern of the Community's natural gas supplies and the growing contribution of imports of gas from outside the Community. The Council noted the Commission's analysis and invited the Commission to study this area in more detail, taking into account the views of the Member States.
- 1.2 In line with this invitation, the Commission presented a Communication on the security of natural gas supplies to the Community<sup>(2)</sup> to the Council of the 16th March 1982. This Communication had been prepared after consultation with Member States' experts and reviewed the broad types of measures available to enhance the security of natural gas supplies.
- 1.3 The Council welcomed the Commission's further work in this area and also recognised the growing role played by natural gas in meeting the Community's energy needs and reducing the Community's dependence on oil. The Council also noted that the Commission would carry out further studies in order to make any specific proposals judged necessary to reinforce natural gas supply security to the Community.
- 1.4 The present Communication briefly reviews the development and outlook for natural gas in the Community and summarises the Commission's further work on supply security, in particular the work undertaken in co-operation with Member States since the March 1982 Council.

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(1) COM(81) 530 final "Communication from the Commission to the Council concerning natural gas"

(2) COM(82) 45 final "Communication from the Commission to the Council concerning measures to enhance the security of natural gas supplies to the Community"

## 2. NATURAL GAS DEVELOPMENT IN THE COMMUNITY

- 2.1. The role of natural gas in the Community has grown rapidly over the past two decades and natural gas now meets about 18% of Community energy needs compared to only 7% as recently as 1970. This rapid growth in natural gas consumption was largely based on the considerable reserves discovered in the Netherlands, the leading producer in the Community, and the subsequent finds in the UK sector of the North Sea.
- 2.2. The growth in natural gas consumption has made an important contribution to the diversification of the Community's energy supplies, and in particular has helped to reduce the over-dependence on oil. This is illustrated by the growth in natural gas consumption from 153 milliard cubic metres<sup>(1)</sup> in 1973, the time of the first oil shock, to a peak consumption of 226 milliard cubic metres reached in 1979, compared to a decline in oil consumption over the same period.
- 2.3. More recently, the part of imports from outside the Community in total natural gas supplies has also grown rapidly. In 1977 imports from third countries accounted for about 11% of total natural gas supplies, a proportion which had reached 21% two years later.
- 2.4. In 1980, however, Community natural gas consumption fell for the first time, reflecting price developments and uncertainty surrounding some contracts for imports from third countries, together with a worsening economic environment.
- 2.5. Current levels of Community natural gas consumption continue to fall with consumption in 1981 at 214 milliard cubic metres showing a slight decline for the second year in succession. The picture varies between Member States, however, showing the different impact of energy saving measures and substitution by alternative energies, economic recession and progress on major new import contracts. In France, for example, consumption in 1981 grew by more than 4% over the previous year whilst the Federal Republic of Germany showed a decline of more than 6%.

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(1) Calorific value  $35\,162\text{ kJ/m}^3$ , equivalent to "Groningen" gas.  
1 tonne oil equivalent =  $1\,300\text{ m}^3$  "Groningen" gas.

Table 1 - Community Natural Gas Supplies 1990

10<sup>9</sup> m<sup>3</sup> Groningen

|                      | Total Natural Gas Consumption | Ind. Prod. | Intra Community trade (Exp.- Imp.+) | Estimated Imports from Third Countries |         |       |        |                          | Natural Gas Imports from Third Countries as : |                              |
|----------------------|-------------------------------|------------|-------------------------------------|----------------------------------------|---------|-------|--------|--------------------------|-----------------------------------------------|------------------------------|
|                      |                               |            |                                     | Total                                  | Algeria | Libya | Norway | USSR                     | % of Total Energy Consumption                 | % of Natural Gas consumption |
| Fed. Rep. of Germany | 68.0                          | 17.5       | 22.5                                | 28.0                                   | -       | -     | 8.0    | 20.0                     | 7%                                            | 41%                          |
| France               | 42.9                          | 3.1        | 6.5                                 | 33.3                                   | 9.2     | -     | 2.9    | 12.0                     | 11%                                           | 78%                          |
| Italy                | 45.5                          | 7.8        | 6.5                                 | 31.2                                   | 13.0    | 2.6   | -      | 7.0(8.0) <sup>2</sup>    | 14%                                           | 69%                          |
| Netherlands          | 38.0                          | 75.8       | -39.8 <sup>(1)</sup>                | 2.0                                    | -       | -     | 2.0    | -                        | 2%                                            | 5%                           |
| Belgium              | 12.7                          | -          | 4.3                                 | 8.4                                    | 5.0     | -     | 2.9    | (0.5) <sup>3</sup>       | 11%                                           | 66%                          |
| Luxembourg           | 0.7                           | -          | 0.7                                 | -                                      | -       | -     | -      | -                        | -                                             | -                            |
| United Kingdom       | 61.5                          | 45.0       | -                                   | 16.5                                   | -       | -     | 16.5   | -                        | 5%                                            | 27%                          |
| Ireland              | 2.1                           | 2.1        | -                                   | -                                      | -       | -     | -      | -                        | -                                             | -                            |
| Denmark              | 1.9                           | 2.6        | -0.7                                | -                                      | -       | -     | -      | -                        | -                                             | -                            |
| Greece               | 0.1                           | 0.1        | -                                   | -                                      | -       | -     | -      | -                        | -                                             | -                            |
| EUR 10               | 273.4                         | 154.0      | 0                                   | 119.4                                  | 27.2    | 2.6   | 32.3   | 39.0(8.5) <sup>2,3</sup> | 8%                                            | 44%                          |

(1) Based on forecasts for importers

(2) Contract not yet Government approved

(3) Under negotiation. Quantity given would be the estimated take in 1990.

Notes (i) The sum of the imports given by source country is not necessarily equal to total imports as the source of some supplies is not yet settled.

(ii) Forecasts based on expert group work. Not necessarily official Member State forecasts.

- 2.6. These recent developments are also reflected in a reduction in the forecast for total Community natural gas consumption for 1990; from the 1981 forecast of 292 milliard cubic metres to the latest forecast of 273 milliard cubic metres. This decline in the forecast for natural gas consumption is mainly reflected in a reduction in the forecast for imports from third countries.
- 2.7. The pattern of Community natural gas supplies forecast for 1990 is given in Table 1. This shows that about 56% of total Community consumption will be accounted for by indigenous production. The balance will be imported from existing suppliers to the Community, namely Algeria, Norway, the USSR and, for relatively small quantities of gas to Italy, Libya.
- 2.8. The contracts for supplies from Algeria have recently been the subject of re-negotiation with settlements reached for the contracts with Distrigaz of Belgium, Gaz de France and SNAM of Italy. The contract for Libyan gas supplies to Italy is still under re-negotiation.
- 2.9. Contracts for additional supplies have been agreed or are under negotiation between several undertakings from within the Community and Soyusgasexport of the USSR. A consortium of gas undertakings from within the Federal Republic of Germany have agreed new contracts for a total of 10.5 milliard cubic metres a year from the USSR from 1984 for 25 years. Negotiations on the supply of up to 0.7 milliard cubic metres a year of natural gas for West Berlin are currently taking place. A contract for 8 milliard cubic metres a year between Gaz de France and Soyusgasexport has also been agreed.
- 2.10. Heads of agreement for a contract of 8 milliard cubic metres a year between SNAM of Italy and Soyusgasexport have been drawn up, although the new contract has not yet been approved by the Italian Government. Talks are continuing between the Belgian and Soviet administrations concerning the contract for gas supplies to Distrigaz of Belgium although, in any event, the quantities would be under the 5 milliard cubic metres initially envisaged. Greece is currently giving consideration to imports of 1 to 2 milliard cubic metres a year from the USSR, although this would not be via the same pipeline.

2.11 Recently a new contract was signed by a consortium of undertakings from the Federal Republic of Germany, France, the Netherlands and Belgium for a total of 3.5 milliard cubic metres a year from fields in the Norwegian sector of the North Sea. This gas will come via the new Norwegian gas gathering pipeline currently under construction and deliveries are planned to start in 1986.

2.12 The forecasts given in Table 1 show that imports will account for about 44% of total natural gas consumption, or 8% of total energy consumption, if it is assumed that the current negotiations for gas supplies from the USSR with Italy and Belgium lead to an agreement.

2.13 Assuming full contractual quantities for imports from the USSR, (which are slightly above those given in Table 1) and assuming agreements with Belgium and Italy, gas imports from the USSR would represent about 19% of total Community gas supplies and less than 4% of total energy supplies.

Imports from Norway would account for about 12% of Community natural gas consumption, imports from Algeria 10%, from Libya about 1%, and the remaining 2% is accounted for by possible new third country suppliers. The percentages for individual Member States vary quite widely but in no case would the share of natural gas from the USSR, which would be the largest third country supplier, exceed one third of the total gas consumption in the importing country.

2.14 The pattern of consumption is also forecast to change somewhat over the next decade. For the Community as a whole the share of gas consumed by the domestic and commercial sector is forecast to increase from a current value of about 44% to 48% by 1990. This growth in share is mainly at the expense of the share held by electricity generation. Whilst this shift reflects a likely increased premium use of natural gas, it will also tend to increase the cost of supply because of the additional costs associated with the smaller but more numerous domestic consumer and his more seasonal pattern of demand.

- 2.15 Beyond 1990 more diversification is expected as the new sources with which Community gas undertakings are currently holding exploratory discussions or negotiations are developed and begin deliveries. Possible new sources of supply to the Community include Canada, some African countries including the Cameroun and Nigeria and some Middle East states including Qatar and the United Arab Emirates.
- 2.16 However, because of the need to fully consider the technical, economic and environmental aspects of such very large projects and the considerable lead times for their development, none of these sources could supply gas to the Community before the end of the decade at the earliest.
- 2.17 There is also considerable potential for additional Norwegian supplies in the longer term, although there would be formidable technical problems to be overcome and very large investments to be made. The Norwegian Government is also concerned that the wider economic and environmental implications of oil and gas development policy are fully considered.
- 2.18 Depending on the progress in developing such new sources of supply, as well as the development of production within the Community, it is estimated that total Community consumption in the year 2000 could be between 280 to 320 milliard cubic metres, and natural gas would then hold its current share of about 18% of total energy consumption.
- 2.19 One of the key factors in the long term development of natural gas will undoubtedly be the price of imports from third countries. In general, as sources of gas further from the Community are considered, so the costs involved tend to rise. Of course, for a viable project, the gas traded must give a reasonable return on investment for the developer, but the price of the gas must also be such as to remain competitive on the final consumer's market, after allowing for all the costs of transport and distribution.

### 3. SECURITY OF COMMUNITY NATURAL GAS SUPPLIES

- 3.1. At the presentation at the 16th March 1982 Council of the Commission's previous document on natural gas supply security<sup>(1)</sup> the Council noted that the Commission would carry out further studies into this subject and report on its findings. A meeting of Member States' experts was then convened by the Commission to decide upon an approach to adopt for the further studies. It was agreed that a scenario approach would be the most suitable and a set of scenario conditions was agreed by Member States.
- 3.2. These conditions gave scenarios of an interruption of 10% and 25% in normal forecast natural gas supplies, expressed at an annual rate, for a 6 month winter period in the reference year chosen (1990). Furthermore, Member States were asked to examine how they could deal with such interruptions in both a normal and a severe winter.
- 3.3. A questionnaire based on these scenarios was subsequently sent out to Member States and these were completed and returned to the Commission. The questionnaire replies were then analysed by the Commission and discussed with Member States. They form the basis of the general conclusions on natural gas supply security contained in the following sections of this report.
- 3.4. The results of the scenario exercise show that the gas industry in the Member States of the Community is able to deal with all the scenarios examined with only some limited peak supply problems in some of the countries, in the most extreme circumstances. As regards the Member States which are most reliant on imports from outside the Community (see Table 1) the gas industry in these countries have taken particular care to ensure security of supplies and indeed they would be able to deal with an even more severe shortfall in supplies than that represented by the most extreme scenario.
- 3.5. All of the types of measures to deal with a shortfall in gas supplies listed in the Commission's previous Communications<sup>(1)</sup> would be used by different Member States although the exact combinations vary widely. Much depends on what criteria are used to guide the gas industry in dealing with shortfall in supplies in terms of economic optimisation and operating procedures, bearing in mind that in reality the duration of the shortfall and the type of winter faced would not

(1) COM(82)45 final "Communication from the Commission to the Council concerning measures to enhance the security of natural gas supplies to the Community".



be known at the beginning of the interruption period. Indeed in the severe winter scenario the picture is complicated by the need to use emergency resources for both the increased demand from cold weather and to make up the shortfall in supplies.

3.6. The scenario results show, however, that for the Community as a whole, the measure which makes the greatest contribution to making up the shortfall in supplies is storage, which would make up about one third of the shortfall under each of the scenarios. An almost equal contribution is made by spare production capacity, which would play a more significant role in the 10% scenarios than in the 25% scenarios. Flexibility on import contracts would be used in only a few countries, although it makes a major contribution in these cases. The use of interruptible contracts is relatively small, meeting in the 10% scenarios around one eighth of the shortfall in supplies, although their role increases significantly in the 25% scenarios.

#### 4. ADDITIONAL LONG TERM MEASURES

4.1. Whilst the analysis described above illustrates that the gas industry in the Member States of the Community can deal with a major interruption in supplies through the use of a variety of measures, additional measures to enhance supply security should also be fully pursued.

4.2. Firstly, there are the long term measures to increase supply security as in the Commission's previous Communications :

- diversification of imports
- encourage indigenous production, exploration, development
- development of SNG (Substitute Natural Gas)

##### Diversification of Imports

4.3. Several Member States attach considerable importance to this long term measure to increase supply security and there are preliminary talks or negotiations underway with several possible new suppliers as mentioned in Section 2. Whilst diversification, like the other two long-term measures, is unlikely to make a significant impact in this decade, present efforts should be fully maintained, and the Commission will continue to watch progress closely.

##### Indigenous Production, Exploration and Development

4.4. The Commission's previous Communication on natural gas outlined the need to achieve a long term balance between the rate of indigenous production and natural gas reserves. The most scope for increasing or extending the contribution of indigenous production therefore lies in further exploration to increase the known resource base. Both of the two major Community natural gas producers, the Netherlands and the United Kingdom, are encouraging further exploration with the hope of increasing their known resources which underpin production. Exploration is also under way in other Member States although the possibility of major new finds is considered less likely.

4.5. To date relatively very little natural gas has been produced from depths greater than 5000 metres although many productive fields in Europe lie between 3000 and 4000 metres. Recently, however, there have been a number of theories advanced that suggest very substantial quantities of gas exist at greater depths. Earlier this year the Commission organised a seminar to discuss these theories and invited representatives of the Member States and leading industry and academic experts. Following this seminar a study group will be established by the Commission, including representatives of the Member States and Norway, to examine the approach and information required to evaluate the potential of "deep gas". If these initial investigations are sufficiently encouraging it would then be appropriate to consider the next step such as a preliminary geological survey, which could benefit from Community aid. Whilst the Commission is aware of the rather speculative nature of an investigation into "deep gas", it is exactly this fact which makes a step by step approach, at Community level, so appropriate.

#### Substitute Natural Gas (SNG)

4.6. The production of Substitute Natural Gas (SNG) from coal is again a long term possibility, which could make a contribution to future gas supplies if the technology can be developed to an economically viable stage. This depends to some extent on the future evolution of gas prices, but in any case research on SNG represents something of an insurance policy and should be fully pursued. With the softening of the energy market some SNG projects have recently been abandoned but it would be unfortunate if short term considerations prevented the development of a possibly viable long term option. The Commission, indeed, continues to give financial support for gasification projects in the Federal Republic of Germany, Italy, and the United Kingdom as well as for underground gasification projects in Belgium and France.

#### Further Co-operation at Community Level

4.7. The ability of Member States to deal with a major interruption in supplies relies on existing and planned measures undertaken by the gas industry in the individual Member States. It cannot, however, be excluded that some Member States could be affected more severely than others by a shortfall from outside supply sources and in such a case a degree of pooling of resources by Member States would further enhance the security of supply.

- 4.8. It is understandable that a precise commitment may be difficult to make in advance, particularly since the gas industry is essentially a commercial activity, but in exceptional circumstances there may be a need for such action. With the different measures available to individual Member States it is clear that there could be considerable scope for one Member State to help another, in addition to existing agreements.
- 4.9. The one physical constraint which could prevent such further co-operation is the inability of the gas transport system to re-allocate resources as required. However, the European gas grid is already highly integrated, although there may be a need for some further reinforcements to cope with the dislocation of a major supply shortfall.
- 4.10. In any event, the advantages of any further measures in terms of security of supply must be balanced against the extra cost. For this reason further links to enhance supply security which would also accommodate new supply patterns would be more likely to be justifiable. Such could be the case, for example, if there was a project for the export of Norwegian gas to continental customers via a route through the UK and additional benefits in terms of security of supply could be demonstrated.
- 4.11. The Commission is anxious to explore this area of additional co-operation at the Community level in more detail and proposes to undertake a series of studies into the different possibilities. The Commission also proposes to establish in conjunction with Member States' representatives and industry experts, a framework to advise, on an ad hoc basis, in the case where a major interruption in supplies from outside the Community could occur.

CONCLUSIONS

The Council is requested to agree the following conclusions:

- (i) Natural gas will continue to play an important role in meeting Community energy needs, in diversifying the Community's energy supplies and in helping to reduce the Community's dependence on oil.
- (ii) Very considerable efforts are in hand in the gas industry of the Member States to assure the security of natural gas supplies. On the basis of information returned by the Member States the measures currently envisaged could deal with a major interruption in supplies (at least 25% during a period of 6 consecutive months), with the minimum of repercussions for the final consumer. The gas deficit would then be partially covered by supplementary supplies of oil. The Commission will continue to follow the evolution of the situation in consultation with Member States.
- (iii) That the following measures continue to be fully pursued within Member States to further enhance the security of natural gas supplies in the long term:
  - encouraging indigenous production, exploration and development
  - diversification of imports
  - development of Substitute Natural Gas (SNG).
- (iv) That the possibilities for further co-operation at Community level on the security of natural gas supplies be explored. This includes studies into possible assistance between Member States in the case of difficulties in supplies from outside the Community, the adequacy of the natural gas transport system in this respect and studies into the prospects for the exploitation of "deep gas" in the Community.
- (v) That the Commission should establish, in conjunction with Member States' representatives and industry experts, a group to be consulted, on an ad hoc basis, in the case where a major interruption in supplies from outside the Community could occur.