

COMMISSION OF THE EUROPEAN COMMUNITIES

COM (76) 576 final

Brussels, 10 December 1976

(Draft)

Council Resolution

concerning consultation at Community level on the siting of
power stations

Proposal for Council Regulation:

The introduction of a Community consultation procedure in
respect of power stations likely to affect the territory of
another Member State

(Submitted to the Council by the Commission)

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1. Summary

1. In order to ensure that the requirements for electrical energy over the next decade in all the Community countries can be met, certain problems must be solved, one of the most important of which at present is the choice of sites for the location of new electricity power stations.
2. It is shown that an increase in the demand for electricity for some decades to come does not necessarily mean that the number of power station sites will go on increasing. However, the problem faced is about all one of quality of sites, since these must comply with an ever-increasing list of economic, technical, environmental protection and land-use planning parameters.
3. The selection and approval of electricity power station sites is the responsibility of the Member States. As a result the problems associated with site selection have not been tackled as a whole at Community level. Certain aspects, however, that come under the Euratom Treaty and other Council Decisions, regularly give rise to action by the Commission.
4. Developments over the last few years have shown that the siting of major power stations - particularly nuclear ones - is becoming increasingly bound up with land-use planning and environmental protection policy. With the aim of ensuring a balanced and orderly development of electrical energy production in the various Member States, these States must take the necessary measures to incorporate the programming of power station sites into their land-use planning and their environmental protection programme and then must coordinate their action on a regular basis, especially on the question of frontier regions. Accordingly, it is proposed to set up at Community level a consultative body on problems raised by the siting of power stations.

5. Under Article 37 of the EAEC Treaty "each Member State is required to provide the Commission with such general data relating to any plan for the disposal of radioactive waste in whatever form as will make it possible to determine whether the implementation of such plan is liable to result in the radioactive contamination of the water, soil or air-space of another Member State". The Commission shall deliver its opinion after consulting a group of experts. - It is proposed to introduce a similar procedure on non-radiological effects for power stations - both conventional and nuclear - located near frontiers as well as for stations likely to influence the territory of another Member State (e.g. clouds and fog caused by the cooling towers, drawing water from an international watercourse, thermal rejects in coastal waters, nuclear safety, air crashes, proximity of dangerous industrial installations, the cumulative effects of stations installed on both sides of a frontier, international transport of nuclear materials etc.). Member States would thus provide the Commission with the necessary data relating to new power station projects, data which would then be examined by the Commission with the help of a group of experts. Thereafter the Commission would deliver an opinion.

2. Introduction

6. For several years past the siting of new power stations, conventional as well as nuclear, has encountered increasing difficulties in most Member countries. In some Member States electricity development plans have thus been subject to considerable delays. A rapid improvement in the economic activity level could, in these countries, lead, for a certain period, to considerable difficulties of electricity supply.
7. The Community has also established as an objective the reduction of its heavy dependence on imported oil by a substantial increase in the share of electricity in the gross domestic consumption of energy. To achieve this objective and avoid local difficulties with electricity supply, some progress must be made in the resolution of problems

arising from the siting of new power stations.

8. The selection and approval of power station sites is the responsibility of the Member States. As a result, site selection problems have not been tackled as a whole at Community level, even though some aspects concerning nuclear installations are covered by the Euratom Treaty or in Council Decisions and regularly give rise to Community action (see Annex 1).
9. Although the problem of site selection is particularly acute for nuclear power stations, the location of conventional power stations, particularly those burning sulphur-containing fuels, is also fraught with difficulty. Furthermore, it is impossible to separate the problems concerning the transport of conventional and nuclear fuels and the electricity produced from the considerations underlying power station site selection.
10. Similar problems exist for other energy-producing installations (e.g. factories for reprocessing nuclear fuels, oil refineries etc.) and, more generally, the majority of large-scale industrial installations. In view of the urgency, however, of the problems of siting power stations, these will be given priority consideration.
11. It was the opinion⁽¹⁾ of the European Parliament that a Community policy on the siting of nuclear power stations should be worked out at the earliest opportunity. This report outlines the measures being taken (see Annex 1) and proposes new action with a view to defining such a policy (see Chapter 5). Even if in the future most of the large power stations will be nuclear, a siting policy cannot ignore conventional power stations. They are therefore included in this report.

(1) Doc. 392/75 - Report on the conditions for a Community policy on the siting of nuclear power stations, bearing in mind the likely effects on the population.

3. Practices and parameters concerning the selection of sites for power stations

12. In the past it was usually the electricity producers who selected the sites for their new power stations depending on their network's demands and in the light of technical, economic and environmental constraints. The competent national or regional authorities intervened only in the granting of a building permit.

13. Faced with the need to define a longer-term policy concerning the siting of conventional and nuclear power stations, some Member States recently began a systematic study of possible sites in their own territory and drew up a classification scheme for the sites based on their respective merits.

14. In making these assessments electricity producers and the authorities consider a number of parameters which vary from one country to another but which can nevertheless be grouped into four main categories. These are:
 - economic parameters,
 - land use parameters,
 - technical parameters,
 - environmental parameters and those relating to public health and safety.

15. The economic parameters basically concern the location of a power station in relation to centres of demand and to the major electricity transmission routes. The actual cost of transmitting electricity produced by conventional or nuclear power stations is generally higher than the cost of transporting the equivalent amount of fuel. The space occupied by the transmission lines connecting the power stations to the distribution network may represent an area on the ground equal to many times that of the

ground area of the power station. Wayleaves may be just as difficult to obtain as the authorization to build the power station itself.

16. Land-use planning parameters, closely linked to the economic parameters, relate to the industrial development of regions. In the past the selection of sites for conventional power stations and, to a lesser extent, for nuclear power stations too, was often determined by industrial development considerations in respect of a particular region. In future, the number of combined power stations, i.e. producing electricity and heat should increase given the concern for the more rational use of energy and a desire to reduce thermal discharges. It would then become essential to coordinate planning of power stations, industrial complexes (which are consumers of heat and electricity) and town district heating systems, for these should be sited near to each other. Thermal discharges could also in the future be used to heat agricultural land (projects of the Agrotherm type): agricultural productivity would increase and cooling towers disappear.
17. Among the technical parameters mention should be made of the availability of cooling water, seismic conditions, stability of the ground, dangers of flooding, possibilities for transporting power station components and fuel, questions of operating stability and reliability of the electricity distribution network etc.
18. Environmental and public health and safety parameters are becoming increasingly important. Included in the large number of parameters coming under this category are the nuisances caused by thermal discharges on the aquatic and atmospheric environment, the effects of water drawn on streams, lakes and rivers, radioactive

effluents, risks arising from any disturbance in the operation of the power station, from the proximity of dangerous industrial installations, air crashes, noise nuisances, changes to the landscape etc.

19. Although the dividing line between these various categories of parameter is somewhat unclear, it may be said that the economic and technical parameters come more directly under the responsibility of the electricity producers whereas the environmental and land-use planning parameters plus those concerned with public health and safety are primarily the concern of the public authorities and hence the Community. These then are the parameters which should take priority in any concerted action at Community level.

20. Annex I of this document gives a brief description of current or anticipated Community measures; Chapter 5 puts forward proposals for new measures.

4. Estimate of the number of power station sites

21. To estimate the approximate number of new sites which the Community should have available between now and the year 2000 to locate its new power stations, certain assumptions have to be made concerning the growth in demand for electricity, the average annual utilization of all power stations, the type of power stations to build and the size and number of units per site. Annex II shows a calculation of the foreseeable number of nuclear sites between now and the year 2000.
22. Working on the assumptions made in Annex II the number of nuclear power station sites in the Community in the year 2000 can be estimated at 180, almost 70 of which have already been selected. The number of new nuclear sites to be earmarked each year would therefore average 5 to 6. This number would remain constant over the period in question despite the growth in demand for electricity. This is due to the fact that the installed capacity per site is supposed to increase at the same rate as the demand for electricity, a tendency which has already been noted in the past.
23. Supposing that the life of a nuclear power station is 30 years and that 10 years are needed after decommissioning before it can be dismantled and the site made available for other purposes including, if possible, the installation of new power stations, the number of major nuclear sites in the Community would stabilize in about forty years at between 200 and 250. It should be remembered that at present some 70 sites are either already equipped with one or more units which are operating or under construction or have been definitely adopted and held in readiness.
24. At the present time the number of conventional power stations with an output of more than 100 MW is approximately 400. It is probable that between now and the end of the century this number will steadily

decline, the number of old decommissioned plants exceeding the number of new thermal power stations put into service. The number of sites occupied by conventional thermal power stations will therefore decrease provided that the decommissioned plants are effectively dismantled and the sites reused. The total number of sites for large conventional thermal and nuclear power stations should not therefore exceed 600 at any time.

25. The increase in electricity demand which is likely to go on for a few decades to come, will not necessarily lead to an ever-increasing number of power station sites. It is even possible that in view of the increasing difficulties in finding new sites, the total number of major power stations will decrease.

26. But such a development implies that the average installed capacity per site will continue to increase, and even increase at a faster rate than the demand for electricity. The considerations relating to thermal discharges and the transmission of electricity will then become determining factors and it will become increasingly difficult to find sites with the required characteristics. This is therefore the problem which has to be faced.

5. Community initiatives

5.1. Establishment of a body for Community cooperation on questions raised by the siting of power stations

27. The developments of the last few years have shown that the siting of major industrial installations such as electricity, and above all, nuclear power stations can no longer be a piece-meal operation as in the past but must be subject to long-term planning. Such planning is necessarily bound up with land-use planning and environmental protection policy. Examples illustrating this interdependence are given in Annex III.
28. With the aim of ensuring a balanced and orderly development of electricity production in the various Member States, the latter should - if they have not already done so - take the necessary measures without delay to incorporate power station site planning into their land-use planning and their environmental protection programme.
29. To avoid the onset of very different conditions in the development of electrical energy as between Member States the programming of sites for power stations must be carried out in line with consistent approaches. A permanent consultation among the Member countries is therefore essential.
30. With this aim in mind it would be appropriate to set up a body at Community level to organize cooperation among Member States on problems raised by the siting of power stations and overhead transmission lines. This body should work in close

cooperation with the Regional Policy Committee, that was set up following the Council Decision of 18 March 1975⁽¹⁾.

31. The task of this body would be to

- ensure that there is an exchange of information between Member States;
- stimulate and guide the work in the Member countries;
- assist the Commission in the preparation of common methods and criteria;
- study problems of power station siting especially in frontier regions, and the problems of sharing water resources (between Member States and non-member countries).

32. This body could also meet as a select committee, limited to two or three countries, to examine specific regional problems. At present these bi- or tripartite committees are generally only set up when there is a specific problem or difference of opinion and when investment projects are already at an advanced stage. In many cases earlier collaboration might have avoided the problem altogether.

33. Member States would be represented on this body for Community cooperation by national officials responsible for the siting of power stations and land-use planning. The rules of procedure of this body should, depending on the individual structure of each Member State, make it possible for the regional and local authorities responsible to be consulted.

(1) The Regional Policy Committee has the task of examining the problems of regional development. The specific problems posed by the integration of power station site planning into land-use planning do not presently come within the priority terms of reference of this Committee.

5.2. Establishment of a Community consultation procedure for power stations likely to affect the territory of another Member State

34. Article 37 of the EAEC Treaty provides for a Community consultation procedure concerning radioactive waste from nuclear installations: Each Member State is thus required to provide the Commission with such general data relating to any plan for the disposal of radioactive waste which will make it possible to determine whether the implementation of such a plan is likely to result in the radioactive contamination of the territory of another Member State. The Commission shall deliver an opinion within 6 months, after consulting a group of experts.
35. Power stations located near a frontier or on an international watercourse may affect the territory of a State other than the one under whose jurisdiction the power station falls. The following examples illustrate this point:
- sulphur dioxide emissions from a conventional thermal power station can increase the level of sulphur in the atmosphere of a neighbouring State;
 - thermal discharges into the atmosphere can influence the micro-climate (fog formation, change in the rainfall pattern and temperature) of a regional area belonging to another State;
 - thermal discharges and the drawing of water from international watercourses may have repercussions on all the riparian States downstream from the power station; in the same way the favourable effects of flow regulation which result from the construction of reservoirs and barrages for hydro-electric power stations will be felt downstream;
 - the building of a power station near the frontier with another State may be incompatible with an installation belonging to the neighbouring State (e.g. airport, allegedly dangerous chemical works etc.);

- the existence of practices in the field of nuclear safety, which vary from one Member State to another, can result in a situation in which a coordination becomes necessary.

36. At present there is no obligatory Community consultation procedure for such influences which do not come under Article 37 of the EAEC Treaty. To ensure that each Member State is supplied with adequate information on the effects caused by power stations in neighbouring Member States, it is proposed to set up a Community consultation procedure in respect of all those aspects not covered by Article 37 of the EAEC Treaty.

37. The main elements of such a Community consultation procedure should be as follows:

- Where a Member State considers that the carrying out of a power station project of another Member State is likely to affect his national territory, he shall request the Commission to apply the consultation procedure in respect of this power station.
- The Member State, responsible for the power station project should then provide the Commission with the necessary data which will permit the Commission to assess the possible effects across the frontier.
- With the assistance of a group of experts from the Member States, the Commission would examine these data, particularly in the light of the results of the work carried out at Commission level.
- After an appropriate period of time, the Commission would deliver its opinion to the Member States concerned.

38. The above Community consultation procedure should be the subject of a Council Regulation.

Commission action on the siting of power stations

1. Examination of plans for the discharge of radioactive waste pursuant to Article 37 of the EAEC Treaty

Each Member State is required to provide the Commission with such general data relating to any plan for the disposal of radioactive waste in whatever form as will make it possible to determine whether the implementation of such plan is liable to result in the radioactive contamination of the water, soil or air space of another Member State. The Commission shall examine the site of the installation likely to produce the radioactive waste from various points of view laid down in Commission Regulation of 16 November 1960 (and amended by doc. 1029/3/72) and, after consultation with a committee of experts, shall deliver its opinion within 6 months.

2. Declarations of investments pursuant to Chapter IV of the EAEC Treaty

Under Articles 41 and 44 of the Euratom Treaty, all persons and undertakings in the Community shall communicate to the Commission, three months before the work begins, details of their nuclear investment projects in the industrial sectors listed in Annex II to the EAEC Treaty (essentially prototype and commercial nuclear power stations and industries engaged in the fuel cycle).

After discussing with investors all aspects of the investment projects which relate to the objectives of the Euratom Treaty, the Commission shall communicate its views to the Member State concerned; this point of view does not commit the investor.

This procedure enables the Commission to gather information about the site and about the reasons for its choice. If the Commission considers it necessary and advisable, it thus has the possibility of including in its opinion considerations on the site and on certain environmental aspects.

The three-month period laid down before work begins, to communicate investment projects, is a serious obstacle, however, to the formulation of an opinion concerning all the aspects of site selection.

3. Implementation of the Council Resolution of 3 March 1975
on energy and the environment

It is the Commission's task to organize an exchange of information at Community level on planning the siting of new power stations, taking account of pollution and nuisance hazards (paragraph 5A of Council Resolution of 3 March 1975 concerning thermal discharges).

An exchange of information is currently taking place among a group of experts on the ecological parameters to be considered in selecting sites for commercial power stations. The group's task is to compare national practices and arrive at a Community consensus as to which ecological parameters should be considered in the site selection procedure. The Commission will use the findings of the group's work to prepare a reference guide. In a second phase a group will discuss the sites proposed in the various Member States and the environmental protection problems which these might cause at an international level (power stations located near frontiers or on an international river or on the coast near another Member State).

A sub-Group of experts is investigating the biological problems of thermal discharges and the possibilities of using waste heat for fish-farming and agriculture. The Commission will make appropriate proposals to the Council on the basis of the results of the group's work.

In accordance with the Council Resolution of 3 March 1975 the Commission has forwarded to the Council a proposal for a Directive on the use of fuel oils with a view to reducing sulphur emissions. This proposal for a Directive calls for the use of low-sulphur fuel oils in industry, including conventional power stations, with the aim of reducing emissions of this substance into the atmosphere of areas where air pollution from the sulphur dioxide is high (special protection zones).

4. Procedure for assessing the environmental impact of investment projects

In its proposals for an environment programme for the period 1977-1981, the Commission has proposed to the Council to start at Community level the setting up of an environmental impact assessment procedure (environmental impact statement) for any planned industrial installation coming under certain categories. Power stations would be one of these categories.

5. Harmonization of safety regulations

Commission activity in this field has been described in a general report to the Council in 1975 and has been reinforced by Council Resolution of 22 July 1975.

Some of the practices, concepts and technological regulations which are currently the subject of systematic Community cooperation and efforts to achieve harmonization are of special relevance to the problems of siting, for example seismic parameters, the probabilities of and protection against air crashes, explosions and floods, containment systems. These problems are just some of those which will be given priority consideration.

Other problems concerned with the siting of nuclear power stations are also being investigated at Community level such as the methodology for analysing the various ways of safeguarding against fairly serious potential accidents and their consequences, probabilistic methods of analysis and their impact on site evacuation and emergency plans.

6. Assistance given by Member States in site assessment and nuclear plant safety

The Commission may, at the request of a Member State, undertake specific studies concerning the siting and safety of nuclear installations with the assistance of outside experts. Thus, groups of Community experts have undertaken, since 1960, a series of assessments on the overall safety aspects or on specific technical problems. This resulted in about 20 reports concerning a dozen or more different nuclear installations. A site report for a nuclear power station has also recently been assessed by Community experts.

7. Information on legislation and authorization procedures

The Commission regularly seeks information on the various legislations and authorization procedures for nuclear installations in the Member States. It publishes periodically a report on all the procedures being used. An initial report entitled: "Authorization procedure for the construction and operation of nuclear installations within the EEC Member States" was published in 1974 (EUR 5284e).

Furthermore, following the Resolution on the technological problems of nuclear safety adopted by the Council on 22 July 1975, Member States are required to notify the Commission of any proposed legislation, regulation or measure of equivalent scope concerning the safety of nuclear installations so that the Commission can organize

appropriate Community-wide consultations.

8. Transport of irradiated fuels

The Commission, in its Joint Research Centre at Ispra, has made an assessment covering the next 10 years of the tonnage of irradiated fuel arising annually, the number of transport operations to the reprocessing plants and the probable proportion of the total to be carried by road or rail depending on the development of containers for each type of nuclear power plant and for each Community country.

Given the significant and increasing growth in the volume of cross-frontier traffic, the Commission is engaged in a work programme, including also the study of the discrepancies in the application of various national regulations (mainly of the IAEA recommendations) and will determine improved transportation conditions for these materials.

9. Studies undertaken by the Commission

9.1. Health protection studies

The Commission is currently engaged in the following studies:

- The long-term radiological implications inherent in the more widespread use of nuclear energy in the basins of the international watercourse of the Rhine and Meuse.
- Study of the atmospheric dispersion of radioactive gases over medium distances (meso-scale).

A study on the exposure of the population in the year 2000 to the discharge by the nuclear industry of certain long-life fission products (Kr - 85, H - 3, C - 14, I - 129) has been made and the results published.

9.2. Studies on nuclear power station sites

The Commission is proposing to carry out an assessment of the advantages and disadvantages of locating nuclear power stations in underground caverns.

A comparative study has been carried out on behalf of the Commission on the costs of carrying electricity over long distances against the costs of local production. This study compares the cost of electricity produced by thermal power stations sited near centres of consumption and requiring fairly costly cooling systems (wet and dry cooling towers) and by power stations located some way from centres of consumption yet possessing good cooling facilities (estuaries, lakes, sea).

As regards offshore power stations, a working party composed of representatives of the electricity producers is meeting regularly, with the Commission providing secretarial facilities. A document outlining a certain number of legal and administrative problems raised by offshore nuclear installations will shortly be presented to the working party. The Commission believes it should promote an exchange of technical and economic information etc. between the various parties interested in offshore power stations, even though there are unlikely to be any far-reaching initiatives in this sphere in the near future.

9.3. Study on the siting strategy for power stations

The Joint Research Centre at Ispra have developed the SITUS computer programme for the optimum selection of commercial power station sites having due regard to ecological constraints. This programme can be used to assess the economic consequences of regulations relating to the acceptable level of pollution.

9.4. Long-term geographical development model for nuclear energy

Starting from a map of currently known sites for power stations and other nuclear installations, one or more outline plans can be worked out for future geographical development and the radiological and thermal implications of such plans assessed at a regional level. The Commission is proposing to carry out such studies, the aim of which is to highlight as rapidly as possible the dangers which might arise from excessive regional concentration.

10. Research work

10.1. Research concerning radiation protection

Since 1961 the Commission has been pursuing a "Radiation Protection" programme the aim of which is to supplement, extend and further the scientific and technical knowledge required to determine and update the permissible radiation levels in man and environmental contamination levels and to improve the practical organization of radiation protection by the Member States.

The research centres on:

- the scientific and technical bases for fixing radiation protection standards and guaranteeing adequate protection of workers and the general public;
- the biological and ecological effects of ionizing radiation with the aim of ensuring protection of the various components of the environment.

In this context the research is designed to answer a number of questions, the main ones being:

How do radionuclides penetrate living organisms? What is the dose of radioactivity which they deliver? What are the biological effects of this dose? What measures should be taken in the event of accident? How can any damage be repaired?

These questions determine the structure of the programme which includes five sectors:

- behaviour of radionuclides and levels of irradiation,
- hereditary effects of ionizing radiation,
- short-term effects of ionizing radiation,
- late-developing effects of ionizing radiation.
- dosimetry and its interpretation.

This programme is carried out on a contract basis by specialist bodies and establishments in the Member States.

10.2. Research on nuclear safety

The Council Resolution of 22 July 1975 on the technological problems of nuclear safety also refers to the efforts to bring about coordination in safety research, certain areas of which have implications for the siting of power stations (e.g. protection against missiles and explosions, behaviour of radioactive substances in the event of accident, additional structural protection and containment etc. ...).

11. Setting up a Community reference system for nuclear installations

There is an ever-increasing number of Community measures concerning problems of environmental protection, nuclear safety, health protection, land-use planning, transport of fuels etc. which are raised by nuclear installations. With the aim of facilitating reference to these Community measures the Commission is proposing to make a systematic compilation which would be continually updated in the light of the progress achieved in the various fields.

Estimate of the number of nuclear power station sites needed
between now and the year 2000

The calculation of the number of nuclear power station sites needed between now and the year 2000, illustrated in Table 1, is based on the following assumptions:

- If the Community electricity development objectives are to be achieved with an average annual growth in the internal consumption of energy of 3.5 - 4% (35% of total energy consumption in 1985 and nearly 50% at the end of the century), gross electricity production must increase by an annual rate of 6 - 7% between 1975 and 1990 and by 5 - 6% between 1990 and 2000. This projection of electricity development is in line with the current forecasts of Member States although in the present economic climate it must be regarded as rather optimistic.
- Since the Community's hydro-electric potential is almost exhausted, hydroelectric production of electricity will not increase significantly between now and the end of the century. Geothermal and other new forms of energy will make but a small contribution. A proportion of the new thermal power stations will continue to be of the conventional type: hence the coal- and lignite-fired power stations ensuring the continuity of Community production, the peak-load power stations, the low-capacity industrial power plants, power stations burning by-product fuels and waste and the small-scale power stations for local networks will represent between 20 and 30% of the capacity of new plant to be built.
- The average annual utilization of conventional and nuclear thermal power stations in 1973 was 4324 h. Given the poor economic climate it was lower during the period 1974 to 1976; an economic upturn, however, would rapidly bring it back to its pre-crisis level. Under the influence of measures intended to improve the regularity of demand and thanks to the construction of new storage installations (e.g. pumped-storage power stations) the annual utilization of all thermal generating capacity will continue, as in the past, to increase slightly.
- The new power stations to be built must not only meet the increase in demand but also replace old decommissioned plant. At least half the

thermal power stations in service in 1975 will be replaced by the end of the century.

- Between 1950 and 1975 the maximum output of the installations in service increased more than tenfold (from 125 MW to 1300 MW). It is true that it was advanced to the level of 1300 MW to benefit from the economies of scale in respect of the specific cost of nuclear power stations. The majority of the major European distribution systems are still having difficulty in absorbing such unit capacities; this is even more the case for smaller distribution systems which will not be able to reach the 1300 MW level until some time during the next decade. The capacity of conventional thermal installations currently in service is between 400 and 700 MW. It is therefore highly unlikely that installations larger than 1300 MW will be put into service before the end of the next decade. After this period, however, one can again expect an increase in unit capacity: a 1600 MW level might be reached by extending present technology. More significant technological developments could lead to a level of 2500 - 3000 MW towards the end of the century.

- Faced with the increasing difficulties of earmarking new sites for nuclear power stations, the aim in future will be to increase the number of units per plant. Nearly all the sites adopted in the last few years are already designed to receive 2 to 4 units. Nuclear power station sites with ten or more units, whilst having certain advantages, raise serious problems allied to the concentration of thermal discharges, the transmission of electrical energy and of vulnerability in the event of any armed conflict: for these reasons the idea of creating nuclear "parks" might not be pursued. Under these circumstances a number of units per power station could stabilize at approximately 4.

A calculation carried out on the basis of these assumptions (see Table I) leads to the following conclusions:

- Between now and the end of the century some hundred new sites will be needed to accommodate the Community's nuclear power stations. This number must be compared to some 400 sites on which the present conventional

TABLE I

- 3 -

Estimate of the number of nuclear power station sites
which will be needed between now and the year 2000

	1975	1980	1985	1990	1995	2000
Gross electricity output [TWh]	1029	1430	2000	2750	3680	4700
Average annual increase in gross output [%]	6.8	6.9	6.6	6.0	5.0	
Gross hydroelectric and geothermal output + new sources of energy [TWh]	130	140	150	160	170	180
Gross output from thermal power stations [TWh]	899	1290	1850	2590	3510	4520
Average annual utilization of all thermal power stations [h]	3625*	4350	4450	4530	4600	4650
Installed capacity of thermal power stations [GW]	248	297	416	572	763	972
New capacity to be installed over five years to meet the increase in demand [GW]	49	119	156	191	209	
New capacity to be installed over five years to replace decommissioned power stations [GW]	7*	17	26	34	42	
Total new capacity to be installed over five years [GW]	56	136	182	225	251	
Proportion of the new capacity to be installed which will be nuclear [%]	70	70	74	77	80	
New nuclear capacity to be installed over five years [GW]	39	95	135	173	201	
Average installed capacity per nuclear site [MW]	2 x 800	3 x 1000	4 x 1300	4 x 1600	4 x 2000	
Number of nuclear sites to be developed over five years	25	32	26	27	25	
Total number of new sites to be developed between now and the year 2000	25 develop- ment in progress		110			

* Abnormally low value owing to the economic situation.

thermal power stations with a capacity of more than 100 MW are located. The bulk of these conventional power stations are to be decommissioned before the end of the century and their sites will become available for other purposes.

- The number of new nuclear power station sites to be earmarked each year is on average 5 to 6. This number remains static in time despite the growth in electricity production. This is due to the fact that the installed capacity per site increases in the same proportion as electricity demand, a tendency which has already been observed in the past. From a technological point of view there do not appear to be any insurmountable problems up to a power level of 3000 MW, a level which should be sufficient until well into the next century.

- Assuming that the life of a nuclear power station is thirty years and that ten years are needed after decommissioning for dismantling it and making the site available for other purposes including, if possible, the installation of new power stations, the number of major nuclear sites in the Community would stabilize at between 200 and 250. Approximately 70 sites are at present either already equipped with one or more units in operation or under construction or have been finally acquired and held in readiness.

The above calculation contains some simplifications in relation to reality. It is likely that a more sophisticated calculation would have altered the results to a certain extent. The aim here, however, has been to show that the increase in demand for electricity over the next few decades does not necessarily imply an ever-increasing number of power station sites.

Examples of interdependence of power station planning, land-use planning and environmental protection policy

The following examples show the interdependence of power station planning, land-use planning and environmental protection policy:

- a) If in future, for reasons connected with the rational utilization of energy and environmental protection, greater use is to be made of the combined production of electricity and heat¹, it is essential to site the power stations near industrial complexes and towns. In fact, the cost of transporting heat in the form of hot water or steam becomes prohibitive when the distances involved exceed 30 to 50 km. Combining together on the same site a major conventional or nuclear power station and a large-scale industrial complex involving several industrial undertakings poses problems of planning and land use which can only be solved with the active participation of the authorities and representatives of the local population affected. If the necessary labour force for the construction and operation of the industrial complex is to be available the complex must be sited near a fairly large agglomeration. In some cases it may be an advantage to equip these agglomerations with a district heating system supplied by the power station of the industrial complex.
- b) All thermal power stations, whether conventional or nuclear, with condensing turbine systems produce thermal discharges. In the hinterland where it is not possible to cool a power station by sea or estuary water, it will in future be essential to use wet or dry towers for the cooling process. Wet cooling towers evaporate large quantities of water which can account for a significant fraction of the rate of flow of a river

¹ Under favourable circumstances it is possible in a combined power station to obtain double the amount of useful energy from a given quantity of primary energy than could be obtained from a simple electricity generating power station; at the same time thermal discharges and harmful emissions (SO₂, NO_x, dust) to the atmosphere at the level of the heat users, are considerably reduced.

when at its lowest and from which the cooling water is drawn. There will therefore be a problem of water resources management and of allocation to the various uses (production of drinking water, industrial uses, irrigation, power stations, inland navigation etc.). The solution to this problem could preferably be sought on a Community basis especially when the watercourse belongs to several Member States.

- c) The use of air cooling towers cuts down the water consumption of power stations: this technique, however, leads to a reduction in output and to problems of reconciling enormous cooling towers with the landscape. F.R. of Germany and France are currently developing a system known as "agrotherm" which consists in injecting the waste heat from power stations into the ground through a network of underground pipes. With this system, output from power stations is higher than with air cooling towers, and crop yields from the heated ground are increased; it is even possible to cultivate non-indigenous plants. The implementation of this interesting technique means earmarking large areas of agricultural land for the entire life-span of the power stations.
- d) The building of a nuclear power station near to a frontier presupposes that, throughout the entire period of operation of this power station, the neighbouring State will not site any incompatible installation in the vicinity (e.g. chemical factory where there is a risk of explosion, airport, transport of explosives etc.). Prior agreement between the two States on the use of the territory either side of the frontier is therefore essential. This agreement must also stipulate the joint measures to be taken if necessary to protect the population on both sides of the frontier against the effects of any dangerous situation or accident.

DRAFT

COUNCIL RESOLUTION

concerning consultation at Community level
on the siting of power stations

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having taken note of the communication from the Commission of
concerning Community action on the siting of power stations;

Having taken note of the opinions of the European Parliament and the
Economic and Social Committee;

Having regard to the Council Resolutions of 17 December 1974 and
13 February 1975 which defined the role of electric power in the context
of a Community energy policy;

Having regard to the Council Resolution on energy and the environment
of 3 March 1975;

Whereas the selection of sites for new power stations, be they nuclear
or conventional, is one of the major problems raised by the development
of electric power;

Whereas the siting of new power stations is closely linked with land-use
planning and environmental protection policies;

Whereas the balanced development of electric power within the Community
cannot be achieved unless problems arising over the selection of power
station sites are solved in consistent fashion in each Member State;

Whereas power stations built in frontier regions or on international
watercourses and water surfaces may affect the national territory of
States other than those responsible for the power stations;

Whereas consultation between the Member States on matters relating to the siting of power stations is therefore essential :

1. emphasizes the need to intensify, at Community level, consultation on matters relating to the siting of new power stations and to extend this consultation to the aspects of land-use planning ;
2. takes note of the Commission's intention of setting up a body for consultation at Community level on problems arising out of the siting of new power stations; the task of this body will be to ensure that Member States are mutually informed, to encourage and guide the work in the Member States and to advise the Commission on the development of common criteria and methodologies, particularly on the siting of power stations in frontier regions and on international waters; it will assist the Commission in the drafting of proposals to the Council;
3. asks the Member States to give active support to this body and to delegate to it officials responsible for matters concerning the siting of power stations;
4. asks the Commission to submit to it periodic progress reports on the work of the consultation body;
5. takes note of the fact that the Commission will be submitting to it appropriate proposals based on the work of the consultation body.

PROPOSAL FOR A COUNCIL REGULATION

concerning the introduction of a Community consultation
procedure in respect of power stations likely to affect
the territory of another Member State

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community,
and in particular Article 235 thereof;

Having regard to the Treaty establishing the European Atomic Energy Community,
and in particular Article 203 thereof;

Having regard to the Proposal of the Commission;

Having regard to the Opinion of the European Parliament;

Having regard to the Opinion of the Economic and Social Committee;

Whereas the establishment of a common energy policy is one of the objectives
of the Community; whereas it is the Commission's task to propose the measures
to be taken for this purpose;

Whereas under the Council Resolution of 3 March 1975 on energy and the
environment it is incumbent on the Communities and the Member States to take
environmental protection requirements into account in all energy policy
strategy by taking effective measures;

Whereas electric power has an important role to play in a Community energy
policy;

Whereas the selection of sites for new power stations, be they nuclear or
conventional, is one of the major problems raised by the development of
electric power;

Whereas power stations, particularly those built in frontier regions and on international watercourses or water surfaces may affect the national territory of States other than those responsible for the stations;

Whereas Community-wide consultation exists only in respect of plans for the discharge of radioactive effluents likely to cause radioactive contamination of the waters, soil or air space of another Member State;

Whereas it is therefore necessary to introduce a Community consultation procedure in respect of the abovementioned power stations;

Whereas such a consultation procedure implies that the Member State on whose territory the proposed project is to be carried out shall communicate to the Commission such data as to make possible an assessment of the likely effects which the project might have on the territory of another Member State; whereas, to this end, the persons and undertakings involved shall be required to communicate this data to the Member State on whose territory the proposed project is to be carried out;

Whereas the powers of action required for this purpose are not provided for by the Treaty establishing the European Economic Community and the Treaty establishing the European Atomic Energy Community;

HAS ADOPTED THIS REGULATION

Article 1

1. The construction of new power stations and the extension of existing ones likely to have effects, not covered by Article 37 of the Treaty establishing the European Atomic Energy Community, on the territory of a Member State other than the one on whose territory it is proposed to carry out the project shall be subject to a procedure of prior Community consultation.

2. Conventional thermal power stations with a net generating capacity of less than 200 MW and hydroelectric power stations with a net generating capacity less than 50 MW shall be excluded from the consultation procedure.

Article 2

1. The Commission shall, on the basis of communications submitted to it pursuant to Council Regulation (EEC) No 1056/72 of 18 May 1972 on the notification to the Commission of investment projects of interest to the Community in the petroleum, natural gas and electricity sectors (1), as amended by Council Regulation (EEC) No 1215/76 (2), draw up a list of new power station projects, indicating their site, capacity and type and shall forward this list to the Member States during the month of March each year.
2. The Community consultation procedure envisaged by Articles 3 to 6 may be initiated
 - by a Member State which considers that a power station planned by another Member State is likely to have effects on its territory which are not covered by Article 37 of the EAEC Treaty;
 - by the Member State on whose territory it is proposed to build the power station;
 - by the Commission.

Article 3

1. The Commission shall inform the Member State in question that Community consultation has been requested in respect of a proposed power station to be built on its territory and shall request that State to supply such data as will enable an assessment to be made of the following points:

(1) OJ No L 120, 25 May 1972.

(2) OJ No L 140, 28 May 1976.

- the permanent, temporary or potential effects on the atmosphere, soil, surface and ground waters of the other Member States,
 - the risks for neighbouring States likely to arise from any malfunctioning of the power station or from accidents,
 - the possible interaction between one or more border power stations and installations of all types, whether existing, under construction or planned, in a neighbouring Member State where the hazards and effects on the environment and health might be cumulative.
2. This information shall, at the latest, be communicated to the Commission when the competent national authorities receive a request for permission to build or extend a power station.
 3. In order to fulfil the obligation specified in paragraphs 1 and 2, the persons and undertakings concerned are required to communicate the information referred to in paragraph 1 to each Member State on whose territory they intend to build the planned power station, in respect of which Community consultation has been requested.

Article 4

1. The Commission shall consult a panel of independent experts.
2. At the request of the Commission each Member State shall appoint one or more experts on whom the Commission may call in order to form the panel referred to in paragraph 1.

Article 5

1. The Commission shall, after consulting the panel of experts referred to in Article 4, deliver an opinion within six months from the date of notification of the information referred to in Article 3.

2. The Commission's opinion shall be forwarded to the Member State on whose territory the proposed project is to be carried out and to those Member States which have requested that the Community consultation procedure be put into operation.

Article 6

1. If the Commission considers that the information supplied is insufficient to enable an assessment to be made of the aspects referred to in Article 3 paragraph 1, it shall inform within sixty days the Member State on whose territory the project is to be carried out specifying the information which is lacking. The Member State concerned shall forward this additional information to the Commission within thirty days. Upon receipt of this additional information and in any case on expiry of the thirty-day period, the Commission shall deliver an opinion in accordance with the procedure laid down in Article 5.
2. If important changes likely to influence the assessment of the various points referred to in Article 3 paragraph 1 are made to the power station plans after the Commission has delivered its opinion, the Member State on whose territory the proposed power station is to be built shall be required to provide the Commission with the additional information as soon as it becomes available. In accordance with the procedure laid down in Article 4, the Commission shall deliver a supplementary opinion within three months.

Article 7

This Regulation shall enter into force one month after its publication in the Official Journal of the European Communities.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

