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The Commission of the European Communities has sent a draft memorandum on the GENERAL OBJECTIVES OF THE COMMUNITY'S STEEL INDUSTRY FOR 1975-80 to the Consultative Committee of the Coal and Steel Community (ECSC) for its opinion. A brief summary of this paper is given in ANNEX 1.

** The Commission of the European Communities has adopted the text of a proposed regulation establishing the general operating procedures of the EUROPEAN SOCIAL FUND, and determining the conditions governing action to cope with the employment difficulties that are currently hindering harmonious development of the Community (unemployment and underemployment of a structural nature, labour shortages and difficulties concerning certain manpower categories). As regards activities in support of joint policies and schemes decided upon at Community level, the Council will take a separate decision on each case as it arises.

** The model for the OPTIMUM DEVELOPMENT OF THE DIFFERENT MEANS OF GENERATING ELECTRICITY, and particularly of the various types of NUCLEAR POWER PLANT, involves a large number of parameters, since the object is to combine minimum cost with dependability of fuel

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The information and articles published in this Bulletin concern European scientific cooperation. Hence they are not simply confined to reports on the decisions or views of the Commission of the European Communities, but cover the whole field of questions discussed in circles concerned in European cooperation in science and technology.

PRESS AND INFORMATION OFFICES OF THE EUROPEAN COMMUNITIES

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supplies and with the various limits and constraints imposed by the present state of technological development. This kind of work can best be done by a computer and the Commission of the European Communities has had several computing programs written for the purpose. ANNEX 2 contains a brief note on the first results obtained by this method.

** In a reply to a written question from Mr Cousté, a French member of the European Parliament, concerning the COMMUNITY COUNTRIES' INVESTMENTS IN THE UNITED STATES AND CANADA, the Commission of the European Communities said that it has been trying for many years to obtain precise statistical data from the Member States in accordance with a standard formula. For that purpose it submitted a draft directive, based on the terms of the Treaty, to the Council of Ministers of the Community as long ago as 4 November 1965.

** Five new TECHNICAL NOTES, each summarizing a result obtained under Euratom research programmes, have been issued by the Commission of the European Communities. The purpose of these texts is to enable industrial firms to assess the prospects for the industrial exploitation of the results described. The subjects of these new technical notes are as follows:

- No. 9/C Computer-designed slide rule for the conversion of leak flow rates;
- No. 57/C Vertical universal measuring bench;
- No. 708 Method and apparatus for detecting radiation-induced inhomogeneities in metal wires;
- No. 723 Liquid-level indicator;
- No. 987 Device for the rapid detection of pressure-tube ruptures.

- ** In reply to a written question from Mr Vredeling, a Dutch member of the European Parliament, on the ESTABLISHMENT OF FOREIGN INDUSTRIAL FIRMS IN BELGIUM AND THE NETHERLANDS, the Commission of the European Communities stated that, in its opinion, the solution to the problem of rival bidding in the way of aid to foreign firms setting up in the six countries must be found at Community level. In this connection it announced that the work being done by the Community to put an end to overbidding in the field of aid granted for regional purposes had made progress and that substantial results might be obtained in the coming months.
- ** A EUROPEAN INSTITUTE FOR ADVANCED MANAGEMENT STUDIES has been set up in Brussels. It will offer various services, more especially to universities and other institutions of higher learning (planning and execution of research programmes, advice on doctoral level programmes in management, etc.).
- ** An INTERGOVERNMENTAL CONFERENCE FOR THE PURPOSE OF SETTING UP A WORLD SCIENTIFIC INFORMATION SYSTEM (UNISIST) will be held by UNESCO in Paris on 4-9 October 1971.

The General Aims of the Community's
Steel Industry for 1975-80

(Draft memorandum by the Commission
of the European Communities)

The prospects for the expansion of the Community steel industry are promising in the medium term; the mean growth rate of the total market for steel produced in the Community between 1970 and 1975 should be 4.7% and, given an extremely favourable economic climate and assuming that the export targets are reached at the same time, it might run to 6.2%.

To achieve this expansion and be capable of rivalling its powerful competitors, particularly the Japanese, the European steel industry will have to follow certain guidelines, especially as regards the capital investment and supply policy and the restructuring of the steel sector to meet the new demands. These are the central themes of the draft memorandum on the general aims of the Community's steel industry for 1975-80 which the Commission of the European Communities has prepared in accordance with Article 46 of the ECSC Treaty and forwarded to the ECSC Consultative Committee for its opinion.

These general aims form part of a series of forward studies undertaken by the Community to give specific shape, at the level of the chief industrial sectors, to the general guidelines defined in the memorandum on industrial policy.

Alongside a forward study of the internal and external markets, the foreseeable capital investments in production plant, the basic material resources, the balance of supply and demand, and the employment problems, the memorandum gives generous space to the action to be taken on the internal structures of the Community's steel industry.

(a) Research

The Commission of the European Communities will continue to guide decisions on the choice of new processes, largely by its policy on aid to research. The Community's research effort will have to be centred on a few major priority objectives of interest to the Community as a whole, and these must take into account the economic facts (scarcity of basic materials, competition between alternative products, fuel and power economy, new applications) and also the need to develop research in fields with a future, more especially those where the Community already has a lead over the rest of the world.

In both research and capital investment plans there is evidence of greater sensitivity to the users' requirements. A special research effort is to be devoted to products for which there will be the keenest demand in the medium and long term - and a forward analysis will show which they are - while a consistent investment policy will give priority to their manufacture.

(b) Production plant size and inter-company cooperation

For a long time the trend in the iron and steel industry, in the developed countries, has been towards ever larger

plants and firms, and generally fewer of them. This tendency has been most marked in the USA, the USSR and above all Japan, but it is reaching the Community also (in 1970, seven firms accounted for over 50% of Community output, as against 12 in 1965).

The problem of restructuring the steel industry is not simply a question of plant size; it is principally the magnitude of the capital costs involved and the fund-raising difficulties facing the European firms that militate in favour of joint foundations or combinations of some kind, preferably on a transfrontier basis.

The companies' behaviour is still very often governed by deep-rooted national traditions which impede cooperation between firms and actually prevent full achievement of the common market. One answer to this is to create conditions in which companies can grow to the right size without having to stay within their country's boundaries. Another solution lies in cooperative agreements between companies, on a multinational basis wherever possible.

The Community therefore needs to encourage multinational projects involving cooperative measures, not only as regards plant construction but also in the fields of research, basic material supplies, sea transport, port facilities and the setting-up of trade networks in non-member countries.

Computers Help to Decide Nuclear Energy's Contribution
to Community Electricity Production

The recent events in the oil world have once more highlighted the question of diversifying our energy sources and underlined the part nuclear energy can play in offsetting shortages or the high cost of traditional fuel.

Not only is it necessary to diversify in the light of costs and dependability of supply, but the power-generating utilities must be continually expanded to keep up with demand. Storage of electricity is not feasible in practice, so output must correspond almost exactly to consumption at all times and must therefore increase at the same rate, which means doubling at ten-year intervals. Every ten years, then, new additional capacity must be installed equal to the installed capacity in use at the start of the period, and scrapped plant must also be replaced (the average power plant lifetime is about 30 years).

The question is, what is the most profitable development plan for the future, i.e., the one most likely to produce the most economical combination of the various types of conventional and nuclear power plants available for installation at various times? In particular, as regards nuclear energy, it is necessary to discover what growth rate, over a given period, would ensure the lowest overall cost of total electricity generation, and what strategy

would be best for the development of the nuclear sector itself, bearing in mind not only the types of nuclear power plant now regarded as commercially proven, but the more advanced types as well, which can be expected to reach technological and economic maturity in the future.

To solve this problem the Commission of the European Communities has had a number of computer programs written, either through various research contracts or as part of its own work done at the Joint Research Centre; the programs are designed to determine the optimum development of electrical capacity in the Community and at the same time to decide upon the optimum development of the different means of electricity generation.

Computers can calculate the effects of an anticipated or predetermined development - fissile material requirements, supply and demand of nuclear fuels, capital and skilled personnel requirements, priorities to be given to research and development work, etc.

The optimization programs compute the most desirable development pattern on the basis of specific criteria, chief of which is, of course, the cutting down of power production costs. Certain constraining factors have to be taken into account, however, such as the need to adjust the program to the state of technological and industrial development, the need to amortize plants before replacing them, the interdependence of the different types of reactors, etc.

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The optimization studies are carried out, furthermore, in the context of certain political choices relating, for instance, to the dependability of fuel supplies, protection of the environment, "cost benefit" studies to estimate the usefulness of a new type of reactor, potential lowering of costs through large-scale production of a given type of nuclear power plant, and the effect that delays in commissioning certain types of reactor will have on costs.

The calculations done to date provide some pointers on the development of the different types of power plant, as far as it can be foreseen today:

The conventional utilities which now supply practically the whole power requirement will continue to grow normally until about 1985, when the light water reactors will reach their peak. They will then level off, resuming their growth in about 1995, when the rising power demand will require a substantial increase in capacity for the specific purpose of covering the peak periods.

Fast reactors will achieve their maximum permissible growth from about 1985 onwards, during the period immediately following their introduction. In the longer term, after some 15 years, these reactors will reach a steady state where their expansion will be determined by the growth rate of the power demand, the degree to which they are used for basic output, and the breeding rate obtained.

Advanced-type reactors, and particularly the high temperature reactors, will find their total installed capacity determined essentially by the progress they achieve (measured against the fast breeders) from the standpoint of time and technical and economic characteristics, and by the growth rate permitted at the outset. Nonetheless, once the fast breeders arrive, the installed capacity of advanced-type reactors will not expand any further.

Light water reactors, during the initial expansion period, ought to increase exponentially as fast as industrial development permits, assuming that there is a closed plutonium market: for in this case their justification, irrespective of their cost, lies in production of the plutonium needed for the fast breeders. If, on the other hand, there is a free market in plutonium, their growth would be determined entirely by the laws of economics. In any case it is probable that as soon as advanced reactors or fast breeders come on the scene, the growth rate of light water reactors will tend to slow down and then stop.