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Future Tasks of EURATOM

by Dr Dietmar Fuchs, Brussels

For years already the discussion of energy policy is going on in Europe, without the energy industry's problems having lost their topicality and importance. Quite the contrary, the unsolved and disputed problems of a secured and cheap energy supply increasingly come to the fore. Past years' discussions made it clear that within the European communities measures will have to be taken that guarantee an optimum utilisation of coal mining capacities and enable the maintenance of mines producing under the most favourable conditions. Such steps consequently have to be supplemented by common import policies of the EEC members in the field of coal, mineral oil and natural gas. As regards energy policy it is last but not least also a question of fixing joint development programmes for the utilisation of nuclear energy. In this connection a better coordination and concentration of all activities of the EURATOM member states seems to have priority in order to really communise nuclear research and the utilisation of nuclear energy. EURATOM's third five-year programme supposed to start on Jan. 1, 1968, might give the work of EURATOM new incentives.

Tasks and Working Methods of EURATOM

EURATOM's most important task is the promotion of a peaceful utilisation of nuclear energy in a common market whose population will surpass the 180 million mark soon.

According to Article 2 of the EURATOM Treaty it is the main target of the European Atomic Energy Commission to promote the development of research and the distribution of the already available technical know-how. The facilitation of investments for the development of nuclear energy as well as a regular and just supply of ores and nuclear fuels to all users within the Community belong also to the main tasks.

The EURATOM Commission has endeavoured to realise the above mentioned tasks within the scope of its present research programmes. In this connection the year 1957 was used for the preparation of the first five-year programme and in 1962 the second five-year programme now ending on Dec. 31, 1967, was prepared. At the beginning of February, 1967, the Commission submitted proposals to the Council stating what the future tasks of EURATOM might be after the end of the second research programme.

The administration of EURATOM whose budget in the fiscal year 1967 amounts to about \$ 10.749 mil-

lion—and including expenditure on common functions (European Parliament, Council of Ministers, European Council of Justice) totals about \$ 16.539 million—so far consists of eight Directorates General. In addition there are four research institutes in the member countries and the second research programme covering the period from 1963 to 1967 provided \$ 450 million for the financing of these establishments. Of the EURATOM budget to the amount of the above mentioned \$ 16.539 million about \$ 15.855 million are covered by financial contributions of the member states (shares of the Federal Republic, France and Italy 28 per cent or \$ 4.365 million each), the remaining rest is provided by tax revenues and other minor receipts.

According to EURATOM statements the total costs of the new research programme for five years beginning on Jan. 1, 1968, are estimated at between \$ 390 to 420 million.

The amount of \$ 292 to 322 million is to be distributed among the four research institutes as follows:

- research institute Ispra (1967 : 1,700 employees) \$ 180 to 200 million.
- research institute Karlsruhe (1967 : 293 employees) \$ 36 to 40 million.
- research institute Geel (1967 : 180 employees) \$ 32 to 34 million.
- research institute Petten (1967 : 281 employees) \$ 44 to 48 million.

The amount of \$ 45 to 50 million is appropriated for special activities of the Community, as e.g. dissemination of knowledge, safety measures, nuclear fuel supply as well as training and further training. A fractional amount only falls to the share of EURATOM's participation in different national projects for which \$ 35 million are provided. Excluding the last mentioned items the Community programme proper will therefore amount to somewhat more than \$ 350 million as compared with \$ 450 million in the second research programme lasting from 1963 to 1967.

Development of the Nuclear Industry

During the past five years there has been a tendency in the industrial sector to cover the higher demand for electric power increasingly by atomic energy. EURATOM states in its latest annual report that reactors put in operation at the end of the 'sixties will produce power at competitive or almost competitive prices. No doubt EURATOM has made an

important contribution to this successful development by means of direct and indirect research.

Last year's development of the nuclear industry is marked by a tendency towards the establishing of large-scale enterprises. This way the European industry will be enabled to be competitive within the Community as well as vis-à-vis industries abroad. The planning and development of large-scale power plants is brought into prominence, for the projects put up for tender in 1966 nearly always referred to reactors with a capacity of 600 megawatts. These power plants are comparable with American projects.

According to statements of the EURATOM Commission two nuclear power stations had been on order within the Community in 1965: St. Laurent des Eaux in France and Kahl in Germany. These projects are to be compared with seven American, two Indian, one British, one Japanese, and one Canadian power station projects. It is striking that the whole Community is represented with two projects only within the group of countries using nuclear energy. However, the fact that in 1965 the member states of the Community were mainly in the stage of putting projects up for tender and examining offers has the result that EURATOM's power supply enterprises could embark upon more advanced types of nuclear power plants than the United States and Britain which started such a programme one or two years earlier.

The Commission mentions a group of planned projects in its annual report, including the tenders for a German-Swiss joint project of 600 megawatts under the management of Rheinisch-Westfälische Elektrizitätswerke, the plans of the North German power producers (600 megawatts) and a German-French project (600 megawatts). Apart from the already mentioned large-scale projects numerous smaller nuclear power stations were under construction within the Community in 1965. Total electric capacity under construction in the Community amounted to 2,036 megawatts on Dec. 31, 1965.

The electrical net output of these prototype nuclear plants operating within the Community already in 1965 amounted to 1.1 per cent of the total net electricity supply from traditional power stations or 1,037 megawatts (atomic current: 4,300 million kilowatt hours). In 1964 the same share amounted to 0.8 per cent only (atomic current: 2,980 million kilowatt hours).

Hitherto cooperation in the sphere of nuclear industry has not been intensified enough within EURATOM. Indeed, a cooperation does not seem to be easy for several reasons, which are frequently caused by national autarchic ideas. So for instance the exchange of electric energy between the member states does not even reach 1 per cent of the Community's total consumption. In addition there is the different organisation of nuclear industries in the individual member countries. In France for instance

the energy policy is characterised by the fact that CEA (Commissariat à l'énergie atomique) and EDF (Electricité de France) act as public contractors. Therefore the French industry has confined itself to supply only reactor components for projects developed by the state. In the Federal Republic, however, the big reactor producers work independently of the planning of certain reactor types by government bodies. The enterprises develop projects independently until they are completed and the government contributes but financially.

It is an additional impediment to industrial cooperation that the placing of orders is not yet liberalised within the EEC. Thus for instance EDF places its orders for atomic power stations unilaterally with CEA. German industry, however, that on its part offers complete nuclear power plants, is excluded from the French market. Deficient contacts between industries within EURATOM are a consequence of this practice.

The transition to a purposive and coordinated utilisation of nuclear fuels oriented towards a linking of complementary industrial systems is of particular importance to the cooperation within the Community. The merger of nuclear industry enterprises in the Community could therefore have particularly encouraging effects. The optimum utilisation in the Community of available fissionable material, i.e. the elimination of needless transports, conversions and waiting periods would be part of a common industrial policy. Calculations revealed the fact that as compared with the so-called individual fuel cycles, which are not part of a linked and coordinated system, savings of about 10 per cent are resulting.

An amalgamation of enterprises in the Community is also necessary for an optimum utilisation of produced fuel elements. The supply of technically and economically perfect fuel elements is of particular importance in this connection. In addition the enterprises must be given an absolute guarantee of continuous supplies.

The processing of irradiated nuclear fuels offers further opportunities for a homogeneous fuel circulations within the Community. The first processing plants are under construction. If these processing plants are to be made competitive vis-à-vis such works abroad, here, too, a common solution of the industrial/technical preparation of fuels will be required.

New Measures for Industrial Promotion

In future, too, it will be the Commission's function to give advice and orientation. This will require close relations between the Commission and the enterprises, for the Commission will let its central administration carry through investigations of general interest, express its views and publish „reference programmes“. In this connection all measures taken by the Commission consist in the passing on of

knowledge and experience, that are to be utilised in practice as soon as possible within the Community. A systematic information about the results achieved by the Community's research institutes—concerning the development of nuclear energy—also belongs to this task of the Commission.

Of particular importance are the Commission's efforts to make the Council of Ministers create a fund for the promotion of industry. In its programme of action the Commission emphasises that such a financial aid should amount to but a relatively small share of total means required and should be temporary only. The financial means of this fund should be employed in such a way that the projects of the enterprises after a stop of EURATOM's financial assistance could be continued independently by the firms. For these promotion measures the Commission suggests certain sectors from which public or private quarters may chose pertaining projects:

- Improvement of reactor techniques and operation,
- nuclear fuel circulation, for instance examination of the processing and preparation of ores with a low uranium content, investigations aiming at the improvement of transport containers for radio-active materials, etc.,
- other sectors, e.g. the development of ship-reactors, the employment of nuclear techniques in the iron and steel using industries, test stations for the production of radio-isotopes, development activities for the desalination of seawater, possible investigations for the realisation of a future joint project for the production of heavy water.

Future Perspectives

The Commission demands in its programme a closer cooperation of nuclear industry enterprises. The EURATOM Commission believes to be able to contribute efficaciously to this aim. It could for instance carry out preparatory work for the legal form of a joint enterprise and assist in the creation of such establishment as will be required for the building of large-scale plants. Aided by the Commission electricity suppliers, reactor and fuel producers, official research institutes and public authorities could participate in the construction of reactor prototypes. In particular EURATOM aid measures would provide for a financial contribution to building and operating costs, while in return the Community should be conceded the evaluation and passing-on of knowledge obtained. Furthermore the passing-on of experiences

and knowledge obtained by the common research institutes is provided for.

The building of nuclear power stations has in part changed the working bases of EURATOM, as it involves a transition towards competition within the scope of atomic energy utilisation. EURATOM was founded as a research community and in future will therefore leave the field of applied nuclear energy techniques to industry and thus will be able to concentrate itself better on basic research.

After Jan. 1, 1968, future activities of EURATOM concerning the latest research programme will therefore be focused on research activities proper to be carried out in the joint research institutes in Ispra (Italy), Karlsruhe (Federal Republic of Germany), Geel (Belgium), and Petten (Netherlands). In future years close contacts between the Commission's offices and the individual enterprises as well as groups of firms will enable nuclear industry to obtain a practical evaluation of results achieved in the joint research centres.

Of great importance is the extension of international electricity grids in order in future to enable the transmission of electricity produced in nuclear power plants into an enlarged distribution network.

Finally research work for the development of fast breeder reactors is to be urged on vigorously, as the operation of these reactors, using their own plutonium, might become independent of the available natural resources of uranium 235. Therefore the EURATOM Commission is justified to demand a rapid development of fast breeder reactors, all the more since this way the Community's dependence on imports would be reduced in the energy sector. Until the putting into operation of these reactors and the industrial utilisation of plutonium at the end of the 'seventies it would be necessary for guaranteeing the annual fuel supply that the member states solve their supply problems jointly.

In addition the Community is endeavouring to become independent of imports by a number of further measures, among others those aiming at a larger-scale plutonium production within EURATOM.

However, a determining factor for the industrial utilisation of nuclear energy is, now as ever, the cooperation and merger of European enterprises. This way the abundant technological procedures can be evaluated quickly and utilised rationally in permanent contact with EURATOM.



H. Schuldt

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