

## 'Atomic Energy and the Future of Europe', from Foreign Affairs (July 1956)

**Caption:** In July 1956, in an article published in the American journal Foreign Affairs, Louis Armand, President of the Board of Directors of the French State Railways (SNCF), outlines the importance of a European nuclear energy organisation, particularly in its relations with the United States.

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## Atomic Energy and the Future of Europe

by Louis Armand

How are the countries of Europe going to handle the industrial transformation brought about by the development of atomic energy? Will that transformation contribute to the building of a united Europe and if so to what extent? These questions could not have even been foreseen a few years ago, but today they are provoking the most urgent sort of discussions in the chancelleries of the Western world.

The technical evolution has become so explosive that it affects most of the great problems of our time profoundly, indeed often rudely. The points of reference used in forming foreign policy constantly shift. Countries are called on to adapt themselves to change with a speed and flexibility quite foreign to the traditions of government. This was what happened when oil was discovered in great quantities in the Middle East. It is revealed again today with the development of the nuclear industry. It may be emphasized again on an even greater scale when the sun's rays are harnessed to create motive power and produce food.

Atomic energy today interests us on the continent of Europe in the highest degree because it will enable us to resolve a twofold problem which is becoming increasingly acute and for which until now we have had no practical solution. First, the European countries are consuming more and more power (an increase of 40 percent within the last 25 years), although per capita consumption is still relatively low (the equivalent of 2.5 tons of coal per year as compared to 7.6 tons in the United States), and since power consumption has a direct bearing on the standard of living, every effort must be made to improve the rate of increase. But Europe can no longer supply her current needs. She imports almost all of her oil (95 percent) from the Middle East, and she will be dependent on this source in the future if she is to sustain a policy of economic expansion. In the second place, energy derived from domestic natural resources is more expensive on this side of the Atlantic than in the United States (for example, certain coals cost \$15 per ton as against \$6) and this disparity will increase in the case both of coal and of hydroelectric power. The fact is that in Europe the best coal veins and power sites are already being exploited, and, except in a few countries, any new ones that might be worked are unlikely to yield worthwhile returns.

Thus all who were aware of the difficulties confronting the European economy were immensely relieved when atomic scientists declared a few years ago that they would be capable, within a relatively short time, of producing large quantities of energy at a net cost low enough to become competitive with existing sources of energy. Furthermore, since conventional resources are more costly and less abundant in Europe than in America, it was logical to suppose that the new form of energy would be applied on our side of the Atlantic first.

This difference between the two continents in the sense of urgency with which they face the problems of supply and price is illustrated by the American effort to find the best reactor and to perfect various prototypes while the British Government concentrates on the simplest type (natural uranium and graphite) so as to attain mass production of power as quickly as possible. The British hope to achieve the nuclear equivalent of eight to ten million tons of coal per year by 1965.

The British example should be studied carefully by the European countries, for it shows them not only why it is in their interest to exploit the atom as a source of energy for peaceful purposes, but also why they must hasten to do so as promptly as possible. Actual production must inevitably be preceded by a period of organization devoted to research and industrial conversion. Consequently, a number of important decisions must be taken now if atomic energy is to play an effective rôle in Europe's economy within a reasonable period of time, say, 20 years.

But many people who do not realize the technical problems involved have been lulled by the prospect of this relatively long period into underestimating the urgency of the situation. It was not until May 1954 that a report prepared for the Council of the O.E.E.C. suggested for the first time that an atomic research group should be set up without delay. The suggestion was accepted and a Commission to determine the most feasible method of coöperation among member countries submitted its conclusions to the Council at its

session held in February 1956.

In a parallel action, the six nations participating in the European Coal and Steel Community decided at their conference at Messina in the spring of 1955 to include the same problem on their agenda. Thus, at the instance of the Intergovernmental Committee sitting at Brussels under the chairmanship of Paul-Henri Spaak, a commission of experts immediately undertook important studies, subsequently incorporated in a general report for discussion by the foreign ministers of the six countries.

Furthermore, on January 18, 1956, the Action Committee for a United States of Europe decided, on recommendation of its chairman, Jean Monnet, to submit for parliamentary approval in the countries of the Coal and Steel Community a declaration "inviting the governments to conclude without delay a treaty ... assuring the exclusively peaceful development of atomic energy." During March and April favorable votes were obtained in Germany, Belgium and the Netherlands; as of the time of writing, the French, Italian and Luxembourg parliaments had not yet voted.

During the same period the European states have also participated in the work of the United Nations International Atomic Energy Agency. From all this it can be seen that the problem is indeed in the forefront of our concerns in Europe.

## II

Among these studies reflecting so many common hopes we can discern a certain number of ideas which also are common to all. Each project, for example, has the same point of departure, namely, the inability of any one of the countries concerned to shoulder by itself the burdens involved in developing the atomic industry satisfactorily. The unanimity of opinion in this regard is quite remarkable. There is likewise unanimous agreement on the need to set up an agency with essential functions as follows:

1. To coordinate programs and facilitate the development of research. It would be the agency's task to prevent the industries and research laboratories of the different countries from duplicating each other's efforts and to guide them into areas which had been insufficiently explored. In this coordinating rôle the agency would also encourage better utilization of existing installations, creation of joint enterprises for the construction of various types of reactors, and standardization of equipment to make industrial expansion as productive as possible.
2. To facilitate the free exchange of knowledge and technical personnel and to assure the sharing of information. This would constitute the first step toward real international technical cooperation. In the same spirit, participating countries which have bilateral agreements with non-member countries regarding exchange of information would seek the authorization of the latter to share such information with other member states. Also, the agency would protect patent rights and see to it that patent holders did not halt or restrict the industrial application of new technology.
3. To create schools for training specialists in different branches of nuclear science and engineering, such as prospecting for minerals, producing nuclear materials of exceptional purity, developing methods of treating metals after irradiation and producing and using radio isotopes. In the opinion of the Brussels experts, these schools for specialists should be combined with a bureau of standards and, above all, a research center.
4. To define scientifically standards of health and safety to protect both the public and workers in mines and nuclear plants.
5. To finance the creation or rapid development of basic equipment lacking in countries having no military program of atomic energy. Creation of this basic plant is a prerequisite to the full development of industry; but it involves major investments beyond the means of private enterprise or even individual governments. Among the projects agreed upon at Brussels, priority was given to a plant for separating uranium isotopes and a plant for the chemical treatment of irradiated uranium.

6. To guarantee, by a form of joint market, free and adequate access to new materials, especially natural or enriched uranium, thorium and their derivatives obtained from reactors, such as uranium and plutonium isotopes.

7. To assure control of the use of fissionable materials. As regards organization, the ideas of the O.E.E.C. differ considerably from those of the Brussels Intergovernmental Committee. The latter envisages the creation of an agency enjoying powers which could certainly be called "supranational." However, they could also be considered simply directive powers delegated to an "executive" acting within the framework of a well-defined mission, namely to encourage the formation of associations which are indispensable to the most successful evolution of nuclear industries. This agency, which has already been christened "Euratom," would report to the political Assembly of the Coal and Steel Community and would be under the jurisdiction of the Court of Justice of the High Authority.

It is proposed that Euratom should have its own budget, which not merely would support the joint installations described above but also would underwrite a large part of the undertakings in the individual countries. This is especially necessary since operations are not financed everywhere in the same way: the production of electricity, for example, is nationalized in France but not in the other five countries.

The Euratom budget will likewise provide for the purchase of uranium and thorium – a provision vital for the control of fissionable materials. Clearly, the Brussels Committee attaches great importance to the creation of this joint market, for it will assure a basic unity highly desirable in the economic policy of the six countries. Finally, Euratom must bear the expense of plants specializing in the reprocessing of irradiated materials. Since these plants will be its property, its rôle in relation to European industry will be analogous to that of the Atomic Energy Commission in relation to industries in the United States.

It is proposed that the treaty creating Euratom shall be signed by the governments concerned and submitted for parliamentary ratification within the next few months. According to optimistic estimates the institutions could be set up by 1957.

### III

The Euratom project has provoked widespread discussion, in the course of which the position of its opponents has become clear.

These opponents include, first of all, those who are averse on general grounds to the creation of an economically united Europe. They exist in all countries, but their number and their influence on this particular question are very limited in view of the testimony of both technical and economic experts that a European association in this field is most necessary. Furthermore, in this case their opposition does not have the support of vested interests attempting to hold on to what they have. In other words, the situation is very different from that faced by the Coal and Steel Community, which has the difficult task of coördinating the operations of great industries long in competition with each other. In the field of atomic energy we are starting from scratch.

The peaceful character of Euratom has also given rise to lively controversies. The tone of these suggests that some people are trying to renew the old quarrel over E.D.C. The problem is in fact a delicate one; the position of the French Government will not really be known until the text of the treaty has been put into final shape.

What we can say now is that it seems practicable to secure the agreement of the six countries under a control plan limited solely to the peaceful application of atomic energy. As for a definite renunciation of weapons of war, this seems more difficult, because no one can foresee all the military uses to which atomic fission may be put. In addition to the bomb and the submarine, artillery devices have already been tried out, and it is probable that certain purely defensive weapons will come next. A recent proposal has the advantage of taking into consideration the possible participation of Europe, and particularly of France, in a general disarmament program. In brief, it suggests that the member nations of Euratom pledge themselves to abstain

for five years from manufacturing nuclear weapons, with the understanding that at the expiration of that period the question would be reconsidered in the light of the current political situation and the evolution of technology.

In Belgium and even more in Germany the Euratom project has given rise to apprehension of quite another order. Here the production of electricity is in the hands of private companies. Like the industrial chemical concerns, these fear that the activities of an international agency will strengthen the tendency toward statism and nationalization.

The answer to this is easy. Euratom does not constitute an additional threat, because the utilization of fissionable materials must in any case be under state supervision. The proof is that both in the United States and in Great Britain the government controls the use of the atomic raw materials, over which it has a monopoly. Their right to do this is incontestable since it stems from the close inter-relationship between the nuclear industry and national defense; and it will be all the more justified as uranium and thorium become the objects of international exchange. Euratom represents only one of the ways in which inevitable control might be exercised; but private industry may well find that it is in its own interest that such control shall be entrusted to the agency which is to manage the joint installations and which will thus acquire knowledge and understanding of industrial problems. As for alleged statist tendencies in Euratom, it is precisely in order to minimize them that the Intergovernmental Committee at Brussels specified that the joint installations are to represent not more than one-fifth of the total investments. Each country will thus retain considerable freedom of action, guaranteeing the best utilization of its own technical resources.

Thus it may be said that the six governments are well informed on all aspects of the problem and are equipped to understand the nature and causes of any objections that are likely to be raised. They therefore are in a position to draw up a definitive treaty text which will stand a good chance of being approved with a minimum of delay.

#### IV

Finally, we must examine the question of how the Euratom project harmonizes with the ideas held by the Council of O.E.E.C.

There has never in fact been a fundamental difference of viewpoints. All those engaged in the effort to rebuild Europe have stressed their desire to coördinate their efforts. Both in the O.E.E.C. and at Brussels it has been acknowledged that if the six countries of the European Coal and Steel Community are going to create a joint agency in the atomic field it should be the nucleus of European coöperation. Specifically, it will be the valid representative of the six nations concerned. This position has already been given official sanction of a sort, since M. Spaak spoke in the name of the Community at the last meeting of the O.E.E.C.

A distinction must be drawn between the United Kingdom and the other states outside the Coal and Steel Community. Because Britain manufactures nuclear weapons she finds herself in a very special position. This fact gives added support to the more traditional reasons which have caused her to remain aloof from Europe's collective enterprises. But there is no doubt that because of her advances in the field of atomic technology Britain can provide invaluable assistance in the development of nuclear industry on the Continent. For this reason the Commission of Experts in Brussels has specified that Euratom must strive to coöperate with her as closely as possible. The significance of this declaration was underlined by the fact that a British delegate was present as an observer when it was made.

In the course of the proceedings of O.E.E.C., other countries, notably Switzerland and Sweden, have shown great interest in the nuclear energy projects. Through the intermediary of the O.E.E.C. such countries can associate themselves with Euratom, both for the exchange of technical information and for the utilization of joint installations. In other words, these are activities in which all countries and institutions can participate if they wish.

On the other hand, it does not appear that the O.E.E.C. could establish an agency for the purchase and

distribution of fissionable materials on the lines of the one envisaged by the Brussels Committee (although it is not ruled out that contracts may be drawn up between certain countries and Euratom). As regards the joint market for raw materials and nuclear equipment, there is complete harmony between the O.E.E.C. and the Community countries, with the distinction that Euratom will be authorized to insure their free circulation, whereas the O.E.E.C. will be limited to making recommendations.

## V

This brief summary shows that in the sphere of nuclear energy more than in any other an effort is being made to convert the "little Europe" of the six into the nucleus of a greater Europe. That is why Euratom promises to attract the adherence of such a large number of Europeans – a point that must be added to those already mentioned in its favor.

To sum up:

From the technical point of view, no form of integration is less controversial than integration in the field of nuclear energy.

None is less likely to conflict with established positions. The aim is to set up new installations, whether within the framework of the new community or of the national economies, though always on the understanding that the installations in each country shall be coordinated with those of the others.

In none is the objection to intergovernmental control less valid. Such control is necessitated in this case by the very nature of the nuclear industry.

Finally, the setting up of Euratom will create structures and machinery which may well encourage further economic integration. Thus the functioning of a real joint market in a new field, where it will have the greatest possibilities of success, will favor the development of a joint market in general. In addition, the scope of the joint financial enterprise involved will serve as an example for other investments on a scale in keeping with our times; the same can be said of the laboratories and the research center which Euratom is already planning and which may turn out to be the first of many international universities. Thus we have the right to hope that Euratom, with its various activities and the far-reaching consequences they may have, is in the vanguard of European economic unity.

Alternatively, if integration is not achieved the European countries, each on its own, will seek bilateral agreements with countries which are far advanced in nuclear technology and have supplies of enriched fuel. Obviously, such agreements will be made first of all with the United States. But the possibility that they might later be made with certain European states and with Soviet Russia must not be excluded.

In any case, if such agreements as that recently concluded between Belgium and the United States were to become the rule, it would be difficult for the European states to mobilize their intellectual and industrial resources for the exploitation of nuclear energy. Since they would not be able to participate in the development and application of techniques, they would soon find themselves in the position of "satellites." How could fragmented Europe possibly solve the problems on which her future depends? Her personality, her economic solvency, have already been threatened by the fact that she has played no part in the great oil adventure; and they have been weakened by other factors, for example her being left out of the building of long-range aircraft. Would she not then be in danger of losing her birthright altogether?

Western Europe still deserves to be considered the center of Western civilization and one of the richest sources of scientific and technical personnel. Clearly, this wealth should be used to the fullest possible extent to raise living standards, not only in the highly developed countries, but in those – including Russia – where only the presence of large numbers of engineers can assure the application of new technology.

Because of the rôle which nuclear energy is called upon to play and because of the attendant political circumstances, the atomic problem places Europe at a turning point. The decision taken with regard to

Euratom will determine whether the Continent is to move in a direction favorable or unfavorable to its destiny. Either divisive forces will continue to grow, making the atomic age one of technological slavery for the European countries; or we shall see the birth of a new unity and confidence among nations which heretofore have been most active in the development of both spiritual and material riches – permitting them to deal with the new World Powers, particularly the United States, without any feeling of inferiority. It will not be of advantage to America to have to deal with a clientele composed of states which have lost all their vigor and individuality and which will continue to require all sorts of help. Rather, the United States stands to benefit by dealing with a community conscious of its own worth, a co-partner able to offer its associates a valuable contribution in an exchange of resources and ideas.

This seems to be the feeling in Washington. After studying the European problem in detail and measuring the importance of what is at stake, the United States has declared itself in favor of Euratom. Let us hope that the clauses of the constitutive treaty will make it possible for the United States and Great Britain to give effective support to the launching of the nuclear industry in Europe. And let us hope that Europe in turn can occupy in this field the place which her scientific and industrial traditions warrant and which alone can enable her to view the future with confidence.