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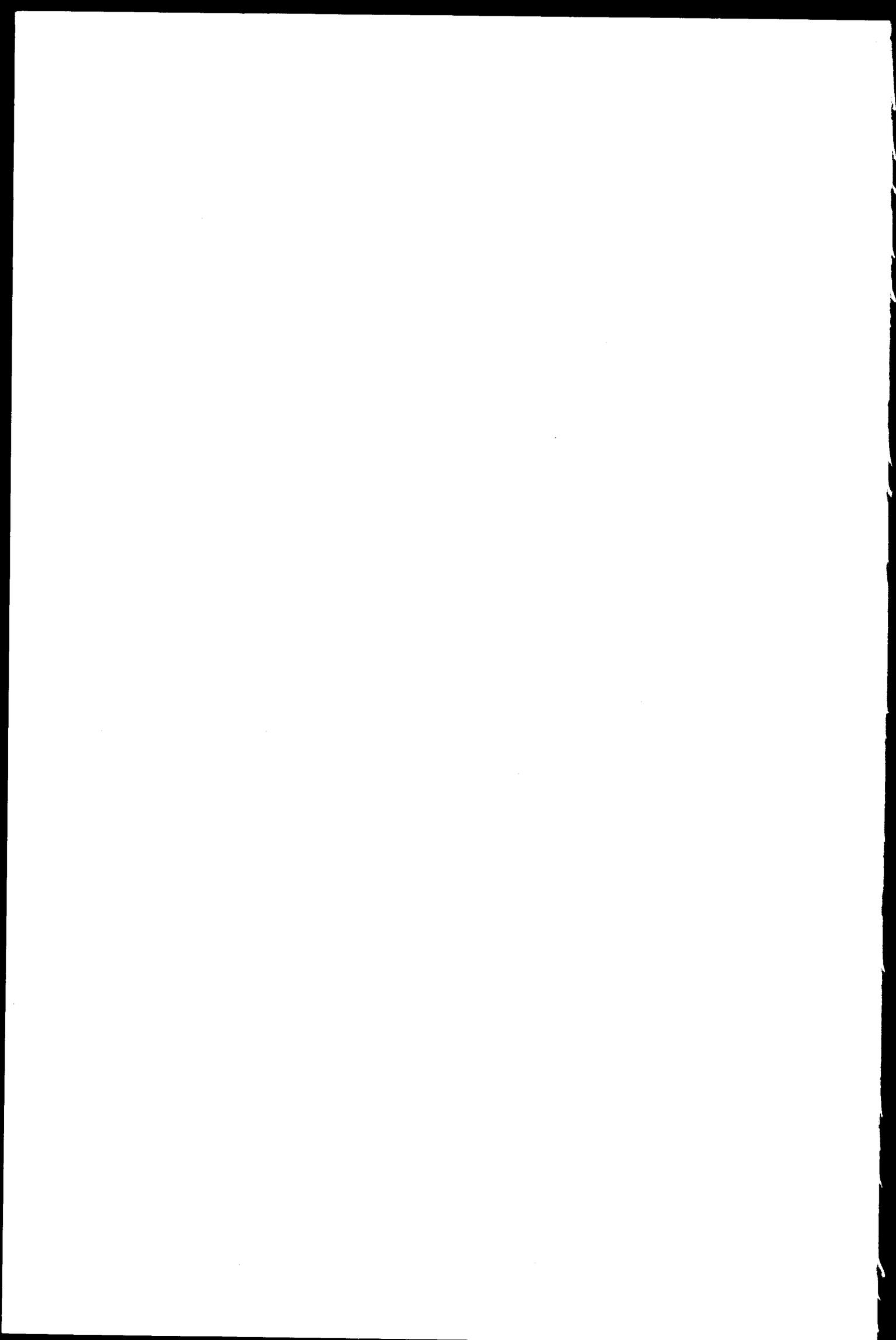
DOCUMENT 163/74

Report

drawn up on behalf of the Committee on Energy, Research and Technology

on the proposal from the Commission of the European Communities to the Council (Doc. 80/74) for a decision adopting a programme of research and education for the European Atomic Energy Community on plutonium recycling in lightwater reactors (indirect nuclear project)

Rapporteur: Mr Luigi NOÈ



By letter of 3 May 1974 the President of the Council of the European Communities requested the European Parliament, under the procedure for optional consultation, to deliver an opinion on the proposal from the Commission of the European Communities to the Council for a decision adopting a programme of research and education for the European Atomic Energy Community on plutonium recycling in light-water reactors (indirect nuclear project).

On 13 May 1974 the President of the European Parliament referred this proposal to the Committee on Energy, Research and Technology as the committee responsible and the Committee on Budgets as the committee asked for its opinion.

The Committee on Energy, Research and Technology appointed Mr Luigi Noè rapporteur on 24 May 1974.

It considered this proposal at its meetings of 17 and 24 June 1974.

At its meeting of 24 June 1974 the committee unanimously adopted the motion for a resolution and the explanatory statement with one abstention.

The following were present: Mr Springorum, chairman; Mr Leonardi, vice-chairman; Mr Noè, rapporteur; Lord Bessborough, Mr Burgbacher, Mr Covelli, Mr Delmotte (deputizing for Mr Kater), Mr Flämig, Mr Giraud, Mr Glesener, Mr Hougardy, Mr Jakobsen, Mr Krall, Mr Lagorce, Mr Lautenschlager, Mr Memmel, Mr W. Müller, Mr Normanton, Mr Nørgaard, Mr Petersen, Mr Pintat, Mr Schmidt (deputizing for Mr van der Hek), Mr Vandewiele, and Mr Vetrone (deputizing for Mr Andreotti).

The opinion of the Committee on Budgets is attached.

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The Committee on Energy, Research and Technology hereby submits to the European Parliament the following motion for a resolution, together with explanatory statement:

MOTION FOR A RESOLUTION

embodying the European Parliament's opinion on the proposal from the Commission of the European Communities to the Council for a decision adopting a programme of research and education on plutonium recycling in light-water reactors (indirect nuclear project)

The European Parliament,

- having regard to the proposal from the Commission of the European Communities to the Council ¹
 - having been consulted by the Council (Doc. 80/74),
 - having regard to the report of the Committee on Energy, Research and Technology and the opinion of the Committee on Budgets (Doc. 163/74),
1. Takes the view that a programme of research and education on plutonium recycling in light-water reactors will be useful for increasing the production of nuclear energy through better utilization of available fissile material resources; for the development of plutonium technology, in which the state of knowledge is still fragmentary compared with uranium technology - with the aim of introducing an 'all-plutonium' fast-reactor fuel cycle commercially; for eliminating most of the complex problems relating to the surveillance of unused plutonium stocks; and in preparing the ground for a concerted policy of industrial plutonium utilization in power reactors;
 2. Invites the Commission not to lose sight, in the course of implementation of the programme, of the possibility of utilizing plutonium in other types of thermal reactors;
 3. Notes that some industries and enterprises in Member States have already initiated research in this area with financial support from public or state sources;
 4. Emphasizes the need for close coordination of the Community programme with national programmes to ensure that the first effectively complements the second. Requests, therefore, that the establishment of a

¹) OJ No. C 68, 12.6.1974, p. 5

consultative management committee, suggested in the explanatory statement to the Commission's proposal be explicitly mentioned in the text of the proposed decision with the indication that the committee's specific task would be to advise the Commission on the conclusion of contracts under the programme in order to avoid unnecessary duplication;

5. Approves the proposal from the Commission of the European Communities and invites it to adopt the following addition, pursuant to Article 119, second paragraph, of the EAEC Treaty;
6. Instructs its President to forward this motion for a resolution and its committee's report to the Council and Commission of the European Communities.

Proposal for a decision of the
Council on a programme of research
and education for the European
Atomic Energy Community on plutonium
recycling in light-water reactors
(indirect nuclear project)

Text unchanged

Annex I

Indirect nuclear project - Plutonium recycling in light-water reactors.

Text unchanged

The following to be added at the end: A consultative management committee shall be established for the research programme on plutonium recycling in light-water reactors.

The composition and functioning of the committee shall be similar to those of consultative management committees set up in the past for other action programmes. Specifically however, the task of this committee shall be to advise the Commission on the conclusion of contracts envisaged under the programme, and particularly the prevention of unnecessary duplication.

Annex II unchanged

¹

For the complete text see COM(74) 513 fin.

EXPLANATORY STATEMENTI. Introduction

1. Plutonium is an element which does not exist in nature. It is produced by the operation of light-water reactors, which convert uranium 238 into plutonium. The problem is that when the fuel has been utilized for about 4 or 5 years, the remaining material is reprocessed in industrial plants designed for this purpose. This means that uranium residues are left which are collected in order to be re-utilized, but there is also the plutonium component and fission products, that is to say, waste products¹.

2. This plutonium can be used for two purposes:

- (a) it can be stockpiled to await later use in fast reactors;
- (b) it can be recycled before being used in fast reactors as a fuel for thermal, and particularly, light-water reactors.

There are, however, few heavy-water reactors in the Community, so the principal problem would be the re-utilization of plutonium for light-water reactors.

3. The proposal for a decision submitted for consideration by the European Parliament is designed to evolve Community action on the recycling of plutonium in light-water reactors.

This programme aims at:

- (a) increased production of nuclear energy, contributing to a better short-term utilization of fissile-material resources. Plutonium can, in fact, replace uranium-235 to the extent of 15%, thereby reducing the natural-uranium requirements and the need for uranium enrichment;
- (b) the development of plutonium technology, which is at present less advanced than that of uranium, with a view to the introduction in the medium term of an 'all-plutonium' fast reactor fuel cycle;

It should be noted that considerable gaps still remain in scientific and technical knowledge on the effective utilization of plutonium.

- (c) a considerable reduction - an aspect of great importance - of the major problems relating to surveillance of unused plutonium stocks.

¹ See Ballardini report: Doc. 217/72

It should be added in this connection that, apart from the advantages described under (a) and (b) above, the use of plutonium in light-water power stations also represents the safest method of storage. Plutonium used for recycling in nuclear power stations is not completely consumed, because after a further 3-4 year cycle plutonium can be again obtained from the irradiated fuels.

- (d) breaking the ground for a concerted policy of industrial plutonium utilization in power reactors.

4. This programme was proposed by the Commission towards the end of 1972 within the framework of the new Euratom research programme, but the Council decided that the content of the programme should be drawn up by a working party, consisting of representatives of the electricity generating industry, nuclear fuel and nuclear reactor producers and research establishments, before it could be approved. The resulting proposed programme takes account of the views expressed by the working party.

5. The plutonium used in the power stations for recycling is not entirely consumed because, after another cycle of 5 years, there is still plutonium left. Thus it appears from calculations made by the International Union of Producers and Distributors of Electrical Energy (UNIPEDE) that, by arresting this process 6 years before the date of putting the fast reactors into commercial use, it will be possible to have a large quantity of plutonium available to inaugurate an industrial programme of fast reactors.

II. Interests and benefits

6. This matter is of interest:

- (a) to the power station operators, that is to say, the producers of electrical energy;
- (b) to the industries producing the fuels;

7. The benefits are as follows:

- (a) saving of uranium;
- (b) saving on uranium enrichment, because plutonium replaces uranium-235 and a smaller enrichment capacity is needed;
- (c) as a contribution to the safety of the plutonium cycle, by preventing the build-up of enormous plutonium stocks which would otherwise remain unused for many years and would require permanent surveillance.

III. The two parts of the programme

8. The programme proposed by the Commission consists of two parts:

(a) The first part is aimed at studying the general problems associated with the use of plutonium, including the environmental aspect. Environmental problems posed by plutonium are more serious than those for uranium. Problems connected with storage, transport, supervision and reactor safety will require jointly planned studies.

(b) The second part deals with research on the rational use of plutonium fuels in light-water power plants, knowledge of which, as noted above, is still incomplete (the behaviour of higher plutonium isotopes and their decay products, control and safety of light-water reactors containing quantities of plutonium, laboratory examination of irradiated fuels).

IV. Procedure

9. The proposal for a decision submitted by the Commission of the European Communities to the Council provides for optional consultation of the European Parliament.

On 2 May 1974 the Council decided to consult the European Parliament on this proposal which was to be examined by the Council at a meeting on research problems (probably in the second half of July).

10. Although the programme, according to the proposed decision, would only come into force on 1 January 1975, its speedy adoption can only be advantageous. The Committee would then have several months at its disposal to prepare plans for research contracts in order to ensure that the programme does effectively begin on 1 January 1975.

V. Critical examination of the proposal and conclusions

11. Plutonium should be available to the electricity generating industry for fuelling existing nuclear power stations, but there must be no shortage of plutonium for operating the fast reactors when these come into commercial use. With this in mind a comprehensive and detailed study has been completed (March 1973) by UNIPEDE to assess the numbers of fast reactors after 1990 in relation to the availability of plutonium resulting from the various strategies that can be envisaged.

Seven different strategies have thus been postulated, corresponding to different percentage mixes of the currently used reactor types (light-water, heavy-water and high-temperature), pending the commercialization of fast reactors. In addition to the first hypothesis (light-water

reactors until 1990 and fast reactors thereafter, depending on plutonium availability) a subsidiary option, postulating the re-cycling of plutonium until 1985 was also examined.

The options envisaged are as follows:

Date	Percentage of fast reactors			
	Without recycling		With recycling	
	<u>Max.</u>	<u>Min.</u>	<u>Max.</u>	<u>Min.</u>
1990	15.9	17.3	15.2	16.3
2000	28.6	33.3	27.3	31.3

Max. = on the assumption of a maximum increase in power output

Min. = on the assumption of a minimum increase in power output

It will be noted that the effect of re-cycling on future fast reactor development is completely negligible.

12. The Committee on Energy, Research and Technology therefore approves the objectives of the programme submitted by the Commission.

13. The committee is of the opinion that the proposed programme represents a balanced and integrated plan for the promotion of effective cooperation among industries and undertakings in the Member States, irrespective of the stage of nuclear development attained by them. The various aspects of plutonium technology development are, in fact, of interest to the Community as a whole.

The Committee believes, however, that since plutonium recycling projects have already been initiated in some Member States, there is a risk that the Community programme may not be completely coordinated with national activities, to the detriment of its intended complementarity.

With this in mind, the committee requests that the proposal for a decision explicitly provide for the setting-up of a consultative management committee for the programme (which at present is only mentioned in the explanatory statement on the programme), stipulating its task of advising the Commission on the conclusion of contracts in implementation of the programme, notably with the aim of preventing unnecessary duplication.

The committee finally recommends the Commission to bear in mind, in the course of implementing the programme, the advisability of extending the programme to include the use of plutonium in other types (heavy-water and high-temperature) of thermal reactors.

The opinion of the Committee on Budgets will be attached as an integral part of this report.

OPINION OF THE COMMITTEE ON BUDGETS

Letter from Mr DURAND, vice-chairman of the Committee on Budgets, to Mr SPRINGORUM, chairman of the Committee on Energy, Research and Technology

Brussels, 2 July 1974

Dear Mr Chairman,

At its meeting of 1 and 2 July 1974, the Committee on Budgets discussed the proposal from the Commission of the European Communities to the Council for a

'decision adopting a programme of research and education for the European Atomic Energy Community on plutonium recycling in light-water reactors (indirect nuclear action)'.

This proposal is in two parts:

- a programme of general interest intended to solve general problems associated with the use of plutonium
- a basic programme mainly intended to fill in gaps in scientific and technical knowledge.

The Commission proposes that appropriations of 5,585,000 u.a. be made available for this programme over a period of four years (that is, approximately 1,500,000 u.a. per annum as from 1975).

The Committee on Budgets notes with satisfaction that the administrative costs of this programme account for only a small fraction of the total appropriations.

We leave it to the committee responsible to assess the basic value of the programme; from our point of view the proposal may be approved unconditionally as regards its financing.

Yours sincerely,

C. DURAND
Vice-Chairman

This opinion was unanimously adopted with the following members present: Mr Durand acting chairman; Mr Fabbrini, Mr Maigaard, Mr de la Malene, Mr Petre Sir Brandon Rhys Williams, Mr Schmidt and Mr Terrenoire.

