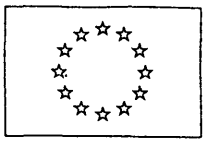

COMMISSION OF THE EUROPEAN COMMUNITIES

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98/0188 (CNS)

PROPOSALS FOR COUNCIL DECISIONS

CONCERNING THE SPECIFIC PROGRAMMES IMPLEMENTING

THE FIFTH FRAMEWORK PROGRAMME OF THE

EUROPEAN ATOMIC ENERGY COMMUNITY FOR RESEARCH AND

TRAINING ACTIVITIES

(1998 to 2002)

(presented by the Commission)

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EXPLANATORY MEMORANDUM

The European Parliament, in its opinion of 18 December 1987, and the Council, in the common position which it adopted on 23 March 1998, have endorsed the general principles underlying the Commission's proposal concerning the fifth framework programme for Community research. These principles place emphasis on a concentration of research activities that will make it possible to meet the Union's main socio-economic needs through the implementation of multidisciplinary activities grouped together in thematic programmes. They also apply to the activities of the Joint Research Centre (JRC).

This having been achieved, it is essential that the discussions concerning the specific programmes should be conducted in parallel with the last stages in the adoption of the final decision on the fifth framework programme, so that it can come on stream in 1999.

Pending that decision, proposals for specific programmes have been drawn up taking into account how close Parliament and the Council are in their positions with regard to the overall structure. At this stage, it is necessary to specify the arrangements for implementation with a view to achieving the objectives set: concentration of activities, close targeting of Community needs, and flexible application.

Since questions of energy and environment are closely linked, the Commission's proposals maintain an overall and multidisciplinary approach rather than dividing the programme in question into two separate subprogrammes. Furthermore, and in line with Parliament's position, a single key action has been retained for "health, food and environmental factors" covering a number of common issues which will benefit from being treated together.

In the case of the JRC, the specific programmes which concern it develop the Commission's initial proposal which has received the backing of Parliament and the JRC's Governing Board. They are based on the specific nature of its role with regard to Union policies, in connection with serving the citizen in the framework of sustainable and competitive growth. The activities carried out by the JRC complement those of the other specific programmes; effective coordination will be ensured where necessary.

The EURATOM specific programme assigns priority to the safety of the fuel cycle and the control of nuclear materials.

In comparison with the Commission's proposals, the first readings of Parliament and the Council increase the number of research priorities in the following areas:

- Under the *first* thematic programme ("Quality of life and management of living resources"), research on the ageing population has been given additional priority as a key action. Additional priorities have been introduced into the key action on "Integrated development of rural and coastal areas" (forestry, protection of land and prevention of erosion, prenormative research) and in the generic technologies (genomes and neurosciences).

- Under the *third* thematic programme ("Competitive and sustainable growth"), a key action on "land transport and marine technologies" has been introduced while the key action on "the city of tomorrow" has disappeared from this programme.

- Under the *fourth* thematic programme ("Preserving the ecosystem"), research on "global change" has been given additional priority as a key action, with the addition also of "climate and biodiversity". A new key action on "sustainable marine ecosystems" has been introduced. The balance of the priorities and objectives of the key action on "the city of tomorrow" (cultural heritage) have been altered; energy research has been separated into two key actions.

- Under the horizontal programme on "Improving human potential", additional importance has been assigned to socio-economic research (as a key action).

This increase in research activities provides extra justification for the Commission's request for an overall budget of ECU 16.3 billion. This request is in fact fully in line with the perspective opened by Agenda 2000. It fully respects the spirit and the letter of the latter: the aim is to give a fresh boost to research and, while respecting the general context of budgetary rigour, to increase spending relative to GDP growth. However, to take account of Parliament's opinion and the Council's position, the breakdown has been adjusted to the distribution of research activities in a structure based on four thematic programmes.

In the case of the JRC, the Commission has proposed a reduced budget in the nuclear field and a modest increase in the non-nuclear field by focusing the efforts on support of Community policies, concerning notably citizens, sustainable development and European competitiveness. In these areas the JRC has acknowledged expertise and independence which will only be preserved with an adequate level of resources.

The overall budget proposed by the Commission for the framework programme is based on an analysis of needs and a clear definition of research objectives. The proposals concerning the specific programmes present these requirements in detail for the first time.

It emerges clearly from this that the effectiveness of the programmes and the key actions could be seriously jeopardised by budget cuts, in the absence of corresponding changes in the general programme objectives. The level of Community RTD for each priority would risk falling below the critical threshold needed in order to sustain the Community's competitiveness and meet the expectations of its citizens. What is at stake has to be seen in the light of the increased spending by the European Union's main competitors.

The research activities proposed comply with the objectives of the framework programme and the criteria set out in Annex I to the framework programme and in each specific programme. They have therefore been designed to give added value at Community level and their content corresponds to major European problems.

To ensure that the framework programme applies the new strategic approach and can be adapted to developments in science and technology over four years, new provisions are needed concerning the activities of each programme committee. The proposals must guarantee the overall coherence of the programmes, their integrity and their efficient management. In particular, and following the recommendations of the Davignon Panel, which examined Community research over a five-year span, a basic principle is that the programme committees should handle strategic matters, while the Commission should bear the sole responsibility for day-to-day management. The Commission will regularly inform the programme committees of the economic and social impact of the programmes and the means deployed to ensure the European dimension, in particular as regards complementarity between the research activities carried out through these programmes and activities at national level or in other European RTD forums such as Eureka.

In addition, the Commission will set up consultative groups comprising recognised personalities representative of scientific circles, industry and users, and with a balanced composition of members from these three categories, in order to ensure interaction with the circles concerned. These groups will advise the Commission, in particular on the implementation of the key actions or clusters of key actions. The Commission will seek, while setting up these groups, a balanced participation of women and men, and will encourage Member States to do the same for the composition of Programme Committees.

* *

These proposals represent a decisive stage in putting into place the fifth framework programme. They reflect the major concern of focusing Community research on industrial competitiveness and the quality of life of Europe's citizens. They provide a detailed picture of the content of the research work to be undertaken and the arrangements for implementation. The European Parliament, the Council of Ministers, the Economic and Social Committee and the Committee of the Regions are invited to consider these proposals with a view to a decision being adopted in good time to launch the programmes by the end of 1998 and preserve the continuity of European research under the fifth framework programme.

For reasons of coherence, the proposals are presented in the form of a single document comprising all the specific programmes under the fifth framework programme, as listed in the table of contents.

In parallel, another document is being presented concerning the proposals for Council decisions concerning the specific programmes implementing the framework programme of the European Community for research, technological development and demonstration activities.

Proposal for a

COUNCIL DECISION

adopting a specific programme (Euratom)

for research and training on

"Preserving the ecosystem"

(1998 to 2002)

PROPOSAL FOR A COUNCIL DECISION
adopting a specific programme (Euratom) for research and training on "Preserving the ecosystem" (1998 to 2002)

THE COUNCIL OF THE EUROPEAN UNION,

98/0187 (CNS)

Having regard to the Treaty establishing the European Atomic Energy Community, and in particular Article 7 thereof,

Having regard to the proposal from the Commission,[1]

Having regard to the opinion of the European Parliament,[2]

Having regard to the opinion of the Economic and Social Committee,[3]

Whereas by Decision No .../Euratom,[4] the Council adopted the Fifth Framework Programme of the European Atomic Energy Community (hereinafter referred to as "the fifth framework programme") for research and training (hereinafter referred to as "RT") activities for the period 1998 to 2002 specifying *inter alia* the activities to be carried out in the field of "Preserving the ecosystem";

Whereas Article 3 of the fifth framework programme stipulates that the framework programme shall be implemented through specific programmes drawn up in accordance with Article 7 of the Treaty; whereas each specific programme defines the detailed rules for its implementation, fixes its duration and provides for the means deemed necessary;

Whereas, in accordance with Article 4(2) of Council Decision No 94/268/Euratom of 26 April 1994 concerning a framework programme of Community activities in the field of research and training for the European Atomic Energy Community (1994 to 1998)[5] and Article 4(2) of the Council Decisions on the specific programmes implementing the fourth framework programme, the Commission has had an external assessment conducted which it has sent to the European Parliament, the Council, the Economic and Social Committee, together with its conclusions and comments;

Whereas, in accordance with Article 7 of the Treaty, Council Decision .../.../Euratom of ... concerning the rules for the participation of undertakings, research centres and universities for the implementation of the Fifth Framework programme of the European Atomic

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1 OJ No , p.
2 OJ No , p.
3 OJ No , p.
4 OJ No , p.
5 OJ No L 115, 6.5.1994, p.31. Decision last amended by Decision 96/253/Euratom (OJ No L 86, 4.4.1996, p.72.)

Energy Community[6] (hereinafter referred to as "the rules for participation") applies to this specific programme and allows the Joint Research Centre to participate in the indirect actions covered by this programme;

Whereas, for the purpose of implementing this programme, it may be appropriate to engage in international cooperation activities with third countries and international organisations, notably on the basis of Article 101 of the Treaty;

Whereas implementation of this programme will also comprise activities and mechanisms aimed at stimulating, disseminating and exploiting RT results, and activities to encourage the mobility and training of researchers;

Whereas, in accordance with the objectives of the first action plan for innovation, research activities under the fifth framework programme should be geared more towards innovation;

Whereas implementation of the JET (Joint European Torus) project has been given to the Joint European Torus (JET) Joint Undertaking set up under Decision 78/471/Euratom;[7]

Whereas the implementation of this programme is to be monitored with a view to its adaptation, where appropriate, to scientific and technical developments; whereas, in due course, progress achieved in implementing the programme should also be assessed by independent experts;

Whereas the Scientific and Technical Committee (STC) has been consulted,

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6 OJ No L....., p.

7 OJ No L 151, 7.6.1978, p.10. Decision last amended by Decision 96/305/Euratom (OJ No L 177, 14.5.1996, p.9)

HAS ADOPTED THIS DECISION

Article 1

In accordance with Article 3(1) of the fifth framework programme, the specific programme on "Preserving the ecosystem" (hereinafter referred to as "the specific programme") is hereby adopted for the period from [*the date of adoption of this programme*] to 31 December 2002.

Article 2

1. In accordance with Article 2 of the fifth framework programme, the amount deemed necessary for carrying out the specific programme (hereinafter referred to as "the amount") is ECU 1141 million, including a maximum of 13% for the Commission's administrative expenditure.

2. An indicative breakdown of this amount is given in Annex I.

3. Of this amount
- ECU 375 million is for the period 1998 to 1999, and
- ECU 766 million is for the period 2000 to 2002.

Where appropriate, the latter figure will be adapted in accordance with Article 3(3) of the fifth framework programme.

4. The budgetary authority shall, in compliance with the scientific and technological objectives and priorities laid down in this Decision, set the appropriations for each financial year taking into account the availability of resources within the multiannual financial perspective.

Article 3

1. The general outlines, the scientific and technological objectives and the priorities for the specific programme are set out in Annex II. They are consistent with the fundamental principles and the three categories of selection criteria indicated in Annex I to the fifth framework programme.

2. In accordance with these principles and criteria the selection criteria indicated in Article 9 of the rules for participation and dissemination shall be applied for the selection of the RT activities to be carried out.

All these criteria shall be complied with in the implementation of the programme, including the work programme referred to in Article 5(1), although they may be weighted differently.

3. The rules for participation shall apply to the specific programme.

4. Detailed rules for financial participation by the Community in the specific programme are defined in Article 4 of the fifth framework programme.

5. The indirect RT actions under the specific programme are defined in Annex III to the fifth framework programme.

Specific rules for implementing the programme are set out in Annex III.

Article 4

In the light of the criteria set out in Article 3, and the scientific and technological objectives and priorities set out in Annex II, the Commission shall:

(a) monitor the implementation of the specific programme and, where appropriate, submit proposals for adapting it, in accordance with Article 5(1) of the fifth framework programme,

(b) have the external assessment provided for in Article 5(2) of the fifth framework programme conducted concerning the activities covered by the specific programme.

Article 5

1. The Commission shall draw up a work programme specifying:

(a) the content of Annex II,

(b) the indicative timetable for implementing the specific programme,

(c) the coordination arrangements indicated in Annex III,

(d) and, where necessary, the selection criteria and the arrangements for applying them for each type of indirect RT action.

The work programme shall be updated where appropriate.

2. For the purpose of implementing the indirect RT actions, the Commission shall, on the basis of the work programme, initiate the procedures set out in the rules for participation, primarily through calls for proposals.

Article 6

1. The Commission shall be responsible for implementing this specific programme.

2. For the purposes of implementing this programme the Commission shall be assisted by a consultative committee. The composition of this committee and the detailed operational rules and procedures applicable to it shall, for the fission-related aspects, be as laid down in Council Decision 84/338/Euratom, ECSC, EEC[8] dealing with management and coordination advisory committees; for the fusion-related aspects they shall be as laid down in the Council Decision of 16 December 1980 dealing with the consultative committee for the Fusion Programme.

Article 7

This Decision is addressed to the Member States.

Done at Brussels,

For the Council

The President

[8] OJ N° L 177, 4.7.1984, p. 25

ANNEX I

INDICATIVE BREAKDOWN OF THE AMOUNT

Type of activity	**Total**
a) Key actions	96,0%
i) Controlled thermonuclear fusion	80,6%
ii) Nuclear fission	15,4%
b) Research and technological development activities of a generic nature	3,1%
c) Support for research infrastructure	0,9%
TOTAL	ECU 1141 million

ANNEX II

THE GENERAL OUTLINES, THE SCIENTIFIC AND TECHNOLOGICAL OBJECTIVES AND THE PRIORITIES

INTRODUCTION

The availability of secure, sustainable and competitive sources of energy is essential to economic growth, prosperity and quality of life in the industrialised world. The aspirations of, and economic progress in, the developing world will lead to major increases in global energy demand, with possible implications for fuel prices, and could have adverse effects on health and the environment. In the medium term, much of the increased energy demand will be met by fossil fuels, which will exacerbate the problems of environmental acidification regionally and of carbon dioxide emissions globally. These problems can only be mitigated through concerted international effort. Energy savings and increased use of renewables will help, but their impact will be limited in the short and medium term; in the long term, such measures alone will be insufficient.

Given the expected growth in demand for energy, continuing use will need to be made of all potential sources. Strategic considerations will, however, favour the use of energy sources that offer greater sustainability and have lower health and environmental impacts. Nuclear energy has the potential to provide Europe with a secure and sustainable electricity supply at a competitive price.

Strategic objective of the programme

The activities carried out under this programme will, where necessary, be closely co-ordinated with the Joint Research Centre's direct action programme, as described in the fifth framework programme of the European Atomic Energy Community for research and training

The aim of this programme is to help exploit the full potential of nuclear energy, both by making current technologies even safer and more economical and by exploring new promising concepts. It has three distinct components:

- a key action on controlled thermonuclear fusion, the aim of which is to further develop the necessary basis for the possible construction of an experimental reactor, as well as basic concepts and technologies required in the long term for the reactor;

- a key action on nuclear fission, the aims of which are to enhance the safety of Europe's nuclear facilities and the protection of workers and the public from radiation, to help solve waste management and disposal problems and to improve the competitiveness and social acceptability of Europe's nuclear industry;

- research and technological development activities of a generic nature, the aim of which is to consolidate and advance European knowledge and competence in several areas that are important for the safe and competitive use of nuclear fission and other industrial and medical uses of ionising radiation and for the management of natural sources of radiation.

While nuclear fusion research is already fully integrated at a European level, greater and more effective integration of research is needed in the area of nuclear fission.

(a) KEY ACTIONS:

(i) Controlled thermonuclear fusion

Objectives and RT priorities

Under the strategy set out in the fifth framework programme, the contribution of fusion to safe and clean base-load electricity generation will be investigated in the wider context of studies on the socio-economic aspects of fusion. The mobility and training of scientific and technical personnel, the dissemination of results and the diffusion of information to the public will be an integral part of this key action. During the period covered by the fifth framework programme, the strategy will entail three main lines:

- **Continuation of ongoing research.** The fusion physics and technology activities will aim to develop the capacity - especially within the associations, JET and the European industry - to plan an experimental reactor. Europe will continue to participate in the ITER engineering design activities (EDA) in preparation of the possible reactor construction.
  Research priorities: to finalise the design, to complete the tests of prototypes and the supporting research; to finalise the procurement specifications; to consolidate the necessary scientific basis; to complete the full-scale operation of JET (after the end of the JET Joint Undertaking in December 1999, its facilities should be operated by teams from organisations associated with Euratom).

- **Concept improvements.** Structured activities in the field of physics will focus on improving the basic concepts of fusion devices.
  Research priorities: the construction, the exploitation and the upgrading of devices, decided upon during the previous Framework Programme and the upgrading of other existing devices; the diagnostics and the means of action on fusion plasmas; the continuation of theoretical studies; studies aiming at operating a remotely located fusion experiment; in addition to magnetic confinement, the coordination, in the context of a keep in touch activity, of the national civil research activities on inertial confinement and possible drawing up of new concepts.

- **Long-term technology.** Structured technological activities will be aimed at preparing, in the longer term, for the demonstration reactor (DEMO).
  Research priorities: to develop tritium breeding blankets and a reference structural material for constructing DEMO-relevant modules; to carry out prospective studies on advanced low-activation and radiation-resistant materials for DEMO; a new safety and environmental impact assessment; analysis of the socio-economic aspects of fusion; conceptual study of a DEMO reference design.

(i) Nuclear fission

Objectives and RT priorities

The main objectives are to help ensure the safety[9] of Europe's nuclear facilities, the protection of workers and the public and the safe and effective management and final disposal of radioactive waste, to improve the competitiveness of Europe's nuclear industry and enhance its prospects in world markets and to explore more innovative concepts that are sustainable and have potential longer term economic, safety, health and environmental benefits. While mainly scientific or technological in nature, the research will have a significant socio-economic dimension. A further objective is to contribute, through education and training, towards maintaining within the Union a high level of expertise and competence on nuclear safety.

- **Operational safety of existing facilities.** Research will focus on measures to maintain and improve the safety of existing facilities with particular emphasis on the safety aspects of prolonging the life-span of reactors and on strategies for serious accident management.
  RT priorities: to develop a common basis and common methods for determining safe residual life-spans; how ageing affects the integrity of structures and systems; improved methods of inspection and monitoring to enhance safety and reduce occupational exposure; modernisation of control systems; strategies to prevent and mitigate serious accidents; man-machine interface; organisation and management of safety.
- **Safety of the fuel cycle.** Research will focus on developing a scientifically-founded approach to the management and disposal of radioactive waste that is both cost-effective and acceptable in a broader social context. In addition, research will be directed towards the development of improved, more complete and broadly agreed methods for assessing and managing the safety of the whole nuclear fuel cycle, with a view to providing a better basis for policy choices, enabling resources to be more effectively allocated, promoting the adoption of best safety practice and enhancing public confidence.

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[9] "Safety" is used here in the broadest of senses and embraces health, environmental and technological aspects. "Nuclear safety" is used in a similar manner and encompasses the safety of facilities, waste management and disposal and the protection of people and the environment against the effects of ionising radiation.

RT priorities: to develop a common understanding and consensus on the management and disposal of radioactive waste, including waste minimisation and the potential use of chemical separation and transmutation; to test and demonstrate the technical feasibility of deep disposal in underground laboratories, including the assessment of repository performance and the long term behaviour of repository components; a common framework for assessing and managing the safety of the whole fuel cycle including social aspects; quality assurance systems.

- **Safety and efficiency of future systems.** Research will focus on improving the safety and competitiveness of future facilities and the exploration of more innovative or fundamentally new concepts for energy generation that offer advantages in terms of cost, safety (including the better management of wastes and utilisation of fissile materials), sustainability and reduced risk of diversion.
  RT priorities: smaller and simpler ("user friendly") reactors, innovative reactor designs and waste management concepts; new fuels including better utilisation of fissile material; optimisation of the fuel cycle as a whole, taking account of health, safety and environmental impacts; enhanced passive safety features and control systems; longer service life for materials and equipment with less need for inspection and maintenance.
- **Radiation protection.** Research will be aimed at helping operators and regulatory authorities to protect workers and the public during operations in the nuclear fuel cycle, to manage nuclear emergencies and to restore contaminated environments. It will be strictly limited to satisfying the objectives of the key action. Complementary research, having a more generic and fundamental nature, will be carried out in support.
  RT priorities: integrated risk management and optimisation of protection; risk governance; real-time occupational exposure monitoring in workplaces; decision support, information exchange and monitoring strategies for emergency management; the restoration and long term management of contaminated environments.

(b) RESEARCH AND TECHNOLOGICAL DEVELOPMENT ACTIVITIES OF A GENERIC NATURE

Objectives and RT Priorities

The objective is to consolidate and advance European knowledge and competence in the radiological sciences in order to: maintain and improve the safety and efficacy of industrial and medical uses of radiation; better assess and manage exposure from natural sources of radiation; support the development and practical application of radiation protection standards.

- **Radiation protection and health.** Research will focus on improving the basis for estimating the risks of low and protracted doses of ionising radiation.
  RT priorities: Biophysical and molecular-biological aspects of induction, repair and health effects of DNA damage; epidemiology; treatment of radiation injury.

- **Environmental transfer of radioactive material.** Research will focus on improving our understanding of the behaviour of radioactive material in the environment, with a view to developing sound policy and good practice in managing the impact of natural and artificial sources of radiation in the environment.
  RT priorities : fluxes of radionuclides in ecosystems; vulnerability indicators; conceptual and methodological bases for restoring contaminated environments.
- **Industrial and medical uses and natural sources of radiation**. Research will focus on enhancing the safety and efficacy of medical and industrial uses of radiation, on the better assessment and management of exposures to natural sources of radiation and on conceptual and methodological issues in optimising protection.
  RT priorities : innovative approaches for medical diagnosis and industrial uses of radiation; optimisation of radiation protection; management of exposure to natural radiation; risk perception and communication.

- **Internal and external dosimetry**: Research will focus on improving methods for assessing exposures to radiation from external sources and incorporated nuclides and developing innovative monitoring techniques which take advantage of progress in materials science and digital electronics.
  RT priorities : dosimetry of complex radiation fields and incorporated radionuclides; retrospective dosimetry; innovative monitoring techniques.

(c) SUPPORT FOR RESEARCH INFRASTRUCTURE

Collaboration within Europe among nuclear research institutes and with other nuclear organisations is relatively well developed. This should be intensified in future in response to the ongoing rationalisation and down-sizing of many national nuclear research programmes. More effective integration and better exploitation of research will be needed to ensure the continuing safe use of nuclear energy and to keep European industry competitive in external markets.

Objectives and activities

The objective is to further integrate nuclear research within the Union so that available resources can be used more effectively to the competitive advantage of European industry, and to ensure the continuing safe and socially acceptable exploitation of nuclear technologies.

Large scale facilities. Continued access to large scale facilities is essential and can be facilitated by shared use and collaborative programmes. Priority areas for support will include facilities for investigating core degradation, containment performance and materials testing, accelerators, underground laboratories for testing and demonstrating concepts for the deep geological disposal of wastes and for dosimetric and radio-biological experiments.

Networking. Existing networks will be reinforced and others established where they can demonstrably enhance the achievement of the programme objectives or broader Union goals: support for extensive and diverse networks, focusing on the key issues for nuclear safety, waste management and disposal, decommissioning, emergency preparedness and response, radiation protection, emerging safety or other technological issues.

Data bases and tissue banks. Existing data bases will be reinforced and others established where the need arises. Priority areas will include extending or establishing data bases on: decommissioning and dismantling techniques; the performance and safety of waste disposal; the safety assessment of major components; the mitigation of severe accidents; epidemiological studies. A data bank of tissues and biological samples from people affected by nuclear accidents will also be established.

ANNEX III

RULES FOR IMPLEMENTING THE SPECIFIC PROGRAMME

The specific programme will be implemented through indirect RT actions. These are defined in Annex III to the fifth framework programme, with the exception of: (i) grants for co-operating with third countries; (ii) research training networks, which are defined in point 2 of this Annex. In addition, the following rules will apply to this specific programme:

1. Accompanying measures

The accompanying measures comprise in particular:

- studies in support of the specific programme, including the preparation of future activities;

- the exchange of information, conferences, seminars, workshops and scientific and technical meetings;

- recourse to external expertise, including access to scientific data bases, in particular for the purposes of the monitoring of the specific programme, provided for in Article 5(1) of the fifth framework programme, the external assessment provided for in Article 5(2) of the fifth framework programme and the evaluation of indirect RT actions and the monitoring of their implementation;

- dissemination, information and communication activities, including scientific publications, and activities for exploiting the results and for the transfer of technologies;

- training schemes related to the RT activities covered by the specific programme, including special training courses for the key action on nuclear fission. The purpose of these special training courses is to maintain a high level of expertise and competence within the Community. They supplement the national training programmes when a particular need arises (e.g. Community added value, subsidiarity). Particular attention will be given to training dedicated to the rapid dissemination of the results of national and Community research programmes;

- support for schemes to provide information and assistance for research players, including SMEs.

2. Supplementary training schemes

For the purposes of this specific programme, the following two training schemes will be implemented:

- grants for co-operating with third countries : under the key action on nuclear fission, these grants enable young research workers from the countries of Central and Eastern Europe and the new independent States of the former Soviet Union to spend time

- research training network : set up in advanced or emerging fields of research, these networks deal with topics freely chosen by the researchers. Their main aim is to train young pre- and post-doctoral research workers.

3. Financial contribution

The levels of financial contribution towards the various indirect RT actions are as laid down in Annex III to the fifth Framework Programme.

In the case of the key action on controlled thermonuclear fusion, participation in the specific programme is envisaged within the framework of contracts of association with Member States (plus with Switzerland) or organisations in the Member States, within the framework of the JET Joint Undertaking, the NET Agreement (which takes account of the Community's participation in ITER-EDA) or other contracts of limited duration, particularly with organisations in a Member State which has no association.

In accordance with point 4 of Annex III to the fifth Framework Programme, projects are carried out in the frame of shared-cost research and technological development. These are implemented in accordance with the procedures laid down in the association contracts, the JET statutes, the NET Agreement, the ITER-EDA Agreement or any other multilateral agreement between the Community and the associated organisations and/or legal entities which may be set up subject to the approval of the advisory committee referred to in Article 6 of the specific programme. The creation of consortiums for integrated projects having a common objective will be encouraged.

The fifth framework programme will, as a general rule, make an uniform annual financial contribution of about 25% towards the current expenditure of associations and towards contracts of limited duration. Having consulted the consultative committee referred to in Article 6 of the specific programme, the Commission may finance:

- the capital costs of specifically defined projects to which priority status has been awarded by the advisory committee referred to in Article 6 of the specific programme, at a uniform rate of 45%;

- specifically defined activities (such as the use of the JET facilities after 1999), carried out under a multilateral agreement between Euratom and associated organisations or a legal entity, at a maximum rate of 75%;

- certain tasks which can be carried out only by the industry, at a maximum rate of 100%.

In the case of project and activities receiving a financial contribution up to 45% or 75%, all the associations and organisations taking part in the key action on controlled thermonuclear fusion have the right to take part in the experiments carried out on the equipment concerned.

The detailed rules governing the Community's participation in the JET Joint Undertaking are laid down in the JET statutes, which were adopted by Council Decision 78/471/Euratom on the establishment of the 'Joint European Torus (JET), Joint Undertaking'.[10]

The detailed rules governing the Community's participation in activities related to the detailed ITER project (ITER-EDA) are laid down in the EDA Agreement,[11] in Protocol No.2 to that agreement and its accompanying documents[12] and in the amendment extending the EDA Agreement and the relevant arrangements.[13]

4. Additional provisions concerning the rules for participation

The agreements referred to in the second indent of Article 8(1) of the rules for participation are agreements between the Community and the associated organisations and/or undertakings which may be set up after consultation with the advisory committee referred to in Article 6 of the specific programme. The Committee must be consulted on these agreements.

In accordance with Annex II to the fifth Framework Programme and with Article 5(3) of the rules for participation, legal entities established in countries of Central and Eastern Europe or in States which were formerly part of the Soviet Union may receive financing under the fifth Framework Programme provided they make a significant contribution to achieving the objectives of the specific programme.

2. Coordination arrangements

The Commission will endeavour to ensure complementarity between the indirect RT actions under the programme, in particular by grouping them around a common objective, and to avoid duplication, while respecting the legitimate interests of proposers of indirect RT actions.

Coordination will also be ensured between actions under the specific programme and those carried out in:

- other specific programmes implementing the fifth framework programme,

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10 OJ No L 151, 7.6.1978, p.10. Decision last amended by Decision 96/305/Euratom (OJ No L 117, 14.5.1996, p.9).

11 OJ No L 244, 26.8.1992, p.13.

12 OJ No L 114, 5.5.1994, p.25.

13 Subject to a Council Decision and agreement between the ITER partners on extending the ITER-EDA Agreement.

- the research, technological development and demonstration programmes implementing European Parliament and Council Decision .../.../CE of ... concerning the fifth framework programme of the European Community for research, technological development and demonstration activities (1998-2002),[14]

- other European research frameworks such as Eureka and COST,

- other Community research-related instruments such as PHARE, TACIS, MEDA, the EIF, the Structural Funds and the EIB.

It will comprise:

(i) the identification of common themes or priorities, resulting in particular in:

- the exchange of information,

- the carrying out of work decided upon jointly, entailing in particular the joint initiation of one of the procedures referred to in Article 8 of the rules for participation,

(ii) the reassignment of proposals for indirect actions between the specific RT programme and the specific research, technological development and demonstration programmes.

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[14] OJ No L...

FINANCIAL STATEMENT

1. TITLE OF OPERATION.

Proposal for a Council Decision adopting a specific programme (Euratom) for research and training on "Preserving the ecosystem" (1998 to 2002).

2. BUDGET HEADING INVOLVED.

Sub-section B6, heading B6-6511 "Preserving the ecosystem (Euratom)".

3. LEGAL BASIS .

Article 7 of the Treaty establishing the European Atomic Energy Community (Euratom).

Council Decision No ../..../Euratom of ... concerning the Fifth Framework Programme of the European Atomic Energy Community (Euratom) for research and training activities (1998-2002) (OJ No L ..., ... , p. ...).

4. DESCRIPTION OF OPERATION . .

4.1 General objective of the operation.

The aim of this programme is to help exploit the full potential of nuclear energy, both by making current technologies even safer and more economical and by exploring new promising concepts. It has three distinct components:

- a key action on controlled thermonuclear fusion, the aim of which is to further develop the necessary basis for the possible construction of an experimental reactor, as well as the basic concepts and the technologies required in the long term for the reactor;

- a key action on nuclear fission, the aims of which are to enhance the safety of Europe's nuclear facilities and the protection of workers and the public from radiation, to help solve waste management and disposal problems and to improve the competitiveness and social acceptability of Europe's nuclear industry;

- research and technological development activities of a generic nature, the aim of which is to consolidate and advance European knowledge and competence in several areas that are important for the safe and competitive use of nuclear fission and other industrial and medical uses of ionising radiation and for the management of natural sources of radiation.

4.2 Period covered by the operation

1998 to 2002

The arrangements for renewal of the operation are provided for in Article 7 of the Euratom Treaty.

5. CLASSIFICATION OF EXPENDITURE OR REVENUE.

5.1 NCE.
5.2 DA
5.3 Type of revenue involved

Certain Associated States will contribute to the financing of the specific programme.

In accordance with Article 27 of the Financial Regulation, certain revenue may be available for re-use.

6. TYPE OF EXPENDITURE OR REVENUE

The implementation arrangements for the programme are as follows:

6.1 Indirect RT actions

The indirect RT actions will comprise: shared-cost actions, training grants, thematic and research training networks, concerted actions and accompanying measures. The rate of financial participation of the fifth framework programme is as follows:

Indirect RT action	Rate of participation:
RT projects Demonstration projects Combined RT / demonstration projects	50% of total eligible costs[1] 35% of total eligible costs[1] 35% to 50% of total eligible costs[1,2]
Support for access to research infrastructures	Maximum of 100% of additional eligible costs
Training grants	Maximum of 100% of eligible additional costs[3]
Thematic and research training networks	Maximum of 100% of eligible additional costs
Concerted actions	Maximum of 100% of eligible additional costs
Accompanying measures	Maximum of 100% of total eligible costs

6.2 Detailed rules for the financial participation of Euratom in the case of the key action on Fusion

In the case of the key action on controlled thermonuclear fusion, partners will take part in the specific programme under contracts of association with Member States (plus Switzerland) or via organisations in the Member States, the JET Joint Undertaking, the NET Agreement (which governs the Community's participation in ITER-related EDA) and other short-term contracts, particularly with organisations in a Member State which has no association.

The fifth framework programme will, as a general rule, make an uniform annual financial contribution of about 25% towards the current expenditure of associations and towards short-term contracts. Having consulted the advisory committee referred to in Article 5 of the specific programme, the Commission may finance:

- the capital costs of specifically defined projects to which priority status has been awarded, at a uniform annual rate of 45%;

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1 In the particular case of legal entities which do not keep analytical accounts, the eligible additional costs arising from the research will be financed 100%.

2 35% for the "demonstration" part and 50% for the "RT" part.

3 In the case of initial grants for training within a firm, this amount will normally represent some 50% of the eligible total costs.

- specifically defined activities (such as the use of the JET facilities after 1999), carried out under a multilateral agreement between Euratom and associated organisations or a legal entity, at a maximum rate of 75%;

- tasks which can be carried out only by the industry, at a maximum rate of 100%.

6.3 The coordination arrangements for research actions within the same area consist of identifying common themes or priorities, leading, *inter alia*, to the exchange of information, the performance of jointly agreed work and/or the reassignment of indirect RT actions.

7. FINANCIAL IMPACT.

7.1 Method of calculating the total cost of the operation.

The estimated amount required is ECU 1 141 million for the period from 1998 to 2002.

7.2 Itemised breakdown of cost

Type of activity	Total (%)
(a) Key actions	96
i) Controlled thermonuclear fusion	80.6
ii) Nuclear fission	15.4
b) Research and technological development activities of a generic nature	3.1
c) Support for research infrastructure	0.9
Total :	**100**

7.3 Operational expenditure included in Part B of the Budget

Administrative expenditure: ECU 148.3 million, or 13% of the estimated amount required:

7.4 Indicative schedule of appropriations

The schedule is established on the basis of the breakdown of the maximum overall amount and the indicative schedule of appropriations for the period 1998-2002 for the proposal for the 5th framework programme.

Commitment appropriations		Payment appropriations				
		1999	2000	2001	2002 and subsequent years	Total.
1999	375	180	121	64	10	375
2000	290		99.7	89	101.3	290
2001	254			62.8	191.2	254
2002	222				222	222
Total	1 141	180	220.7	215.8	524.5	1 141

The final amounts will be laid down by the Budgetary Authority.

8. FRAUD PREVENTION MEASURES.

There is a wide range of administrative and financial checks at all stages of the procedure for awarding and executing research contracts, including the following:

- Prior to conclusion of the contract:

- selection of proposals on the basis of the scientific value of the project and of an assessment of whether the research costs are realistic in relation to the nature of the research, its duration and its potential impact;
- analysis of the financial data submitted by the proposers on their contract negotiation form.

- After the contract has been signed:

- scrutiny of statements of expenditure prior to payment, carried out at two levels (by the scientific officer and the financial officer);
- on-the-spot checks enabling errors or other irregularities to be detected by examining the supporting documents. To make these checks more effective, the Commission's departments have set up an audit unit which coordinates the results of all the checks. These checks are either carried out by members of the audit unit or entrusted to auditing companies with which the Commission has concluded contracts, under the supervision of officials from the audit unit;
- internal audit by the Financial Controller;
- unannounced inspections by the Commission's Financial Controller and by the Court of Auditors of the European Union.

9. ELEMENTS OF COST-EFFECTIVENESS ANALYSIS

9.1 Specific and quantified objectives; target population

This research and training programme consists of:

(a) Key actions having the following objectives:

(i) Controlled thermonuclear fusion

Objectives and RT priorities

Under the strategy set out in the fifth framework programme, the contribution of fusion to safe and clean base-load electricity generation will be investigated in the wider context of studies on the socio-economic aspects of fusion. The mobility and training of scientific and technical personnel, the dissemination of results and the diffusion of information to the public will be an integral part of this key action. During the period covered by the fifth framework programme, the strategy will entail three main lines:

- **Continuation of ongoing research.** The fusion physics and technology activities will aim to develop the capacity - especially within the associations, JET and the European industry - to plan an experimental reactor. Europe will continue to participate in the ITER engineering design activities (EDA) in preparation of the possible reactor construction.
  Research priorities: to finalise the design, to complete the tests of prototypes and the supporting research; to finalise the procurement specifications; to consolidate the necessary scientific basis; to complete the full-scale operation of JET (after the end of the JET Joint Undertaking in December 1999, its facilities should be operated by teams from organisations associated with Euratom).

- **Concept improvements.** Structured activities in the field of physics will focus on improving the basic concepts of fusion devices.
  Research priorities: the construction, the exploitation and the upgrading of devices, decided upon during the previous Framework Programme and the upgrading of other existing devices; the diagnostics and the means of action on fusion plasmas; the continuation of theoretical studies; studies aiming at operating a remotely located fusion experiment; in addition to magnetic confinement, the coordination, in the context of a keep in touch activity, of the national civil research activities on inertial confinement and possible drawing up of new concepts.

- **Long-term technology.** Structured technological activities will be aimed at preparing, in the longer term, for the demonstration reactor (DEMO).
  Research priorities: to develop tritium breeding blankets and a reference structural material for constructing DEMO-relevant modules; to carry out prospective studies on advanced low-activation and radiation-resistant materials for DEMO; a new safety and environmental impact assessment; analysis of the socio-economic aspects of fusion; conceptual study of a DEMO reference design.

(ii) Nuclear fission

The main objectives are to help ensure the safety[4] of Europe's nuclear facilities, the protection of workers and the public and the safe and effective management and final disposal of radioactive waste, to improve the competitiveness of Europe's nuclear industry and enhance its prospects in world markets and to explore more innovative concepts that are sustainable and have potential longer term economic, safety, health and environmental benefits. While mainly scientific or technological in nature, the research will have a significant socio-economic dimension. A further objective is, through education and training, to help maintain within the European Union a high level of expertise and competence on nuclear safety.

This strategy will be implemented along four main lines:

- **Operational safety of existing facilities.** Research will focus on measures to maintain and improve the safety of existing facilities with particular emphasis on the safety aspects of prolonging the life-span of reactors and on strategies for serious accident management.

- **Safety of the fuel cycle.** Research will focus on developing a scientifically-founded approach to the management and disposal of radioactive waste that is both cost-effective and acceptable in a broader social context. In addition, research will be directed towards the development of improved, more complete and broadly agreed methods for assessing and managing the safety of the whole nuclear fuel cycle, with a view to providing a better basis for policy choices, enabling resources to be more effectively allocated, promoting the adoption of best safety practice and enhancing public confidence.

- **Safety and efficiency of future systems.** Research will focus on improving the safety and competitiveness of future facilities and the exploration of more innovative and radical concepts for energy generation that offer advantages in terms of cost, safety (including the better management of wastes and utilisation of fissile materials), sustainability and reduced risk of diversion.

- **Radiation protection.** Research will be aimed at helping operators and regulatory authorities to protect workers and the public during operations in the nuclear fuel cycle, to manage nuclear emergencies and to restore contaminated environments. It will be strictly limited to satisfying the objectives of the key action. Complementary research, having a more generic and fundamental nature, will be carried out in support.

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[4] "Safety" is used here in the broadest of senses and embraces health, environmental and technological aspects. "Nuclear safety" is used in a similar manner and encompasses the safety of facilities, waste management and disposal and the protection of people and the environment against the effects of ionising radiation.

(b) Research and technological development activities of a generic nature

The objective is to consolidate and advance European knowledge and competence in the radiological sciences in order to: maintain and improve the safety and efficacy of industrial and medical uses of radiation; better assess and manage exposure from natural sources of radiation; support the development and practical application of radiation protection standards.

This activity will be implemented along four main lines:

- **Radiation protection and health.** Research will focus on improving the basis for estimating the risks of low and protracted doses of ionising radiation.

- **Environmental transfer of radioactive material.** Research will focus on improving our understanding of the behaviour of radioactive material in the environment, with a view to developing sound policy and good practice in managing the impact of natural and artificial sources of radiation.

- **Industrial and medical uses and natural sources of radiation**. Research will focus on enhancing the safety and efficacy of medical and industrial uses of radiation, on better assessment and management of exposures to natural sources of radiation and on conceptual and methodological issues in optimising protection.

- **Internal and external dosimetry**: Research will focus on improving methods for assessing exposures to radiation from external sources and incorporated nuclides and developing innovative monitoring techniques which take advantage of progress in materials science and digital electronics.

(c) Support for research infrastructure

The objective is to further integrate nuclear research within the Union so that available resources can be used more effectively to the competitive advantage of European industry, and to ensure the continuing safe and socially acceptable exploitation of nuclear technologies.

There are three main ways in which this support will be provided:

Large scale facilities. Continued access to large scale facilities is essential and can be facilitated by shared use and collaborative programmes.

Networking. Existing networks must be reinforced and others established where they can demonstrably help achieve the programme objectives or broader Union goals.

Data bases and tissue banks. Existing data bases should be reinforced and others established where the need arises.

The target population of this operation is the following: firms, research centres and universities.

9.2 Grounds for the operation.

The availability of secure, sustainable and competitive sources of energy is essential to economic growth, prosperity and quality of life in the industrialised world. The aspirations of, and economic progress in, the developing world will lead to major increases in global energy demand, with possible implications for fuel prices, and will have adverse effects on health and the environment. In the medium term, much of the increased energy demand will be met by fossil fuels, which will exacerbate the problems of environmental acidification regionally and of carbon dioxide emissions globally. These problems can be mitigated only through concerted international effort. Energy savings and increased use of renewables may help, but their impact will be limited in the short and medium term; in the long term, such measures alone would be insufficient.

Given the expected growth in demand for energy, continuing use will need to be made of all potential sources. Strategic considerations will, however, favour the use of energy sources that offer greater sustainability and have lower health and environmental impacts. Nuclear energy not only has the potential to provide Europe with a secure and sustainable electricity supply at a competitive price but also causes less pollution and fewer health problems than fossil fuels.

The research actions proposed conform to the objectives of the Framework Programme, as well as to the criteria set out both in Annex 1 of the Framework Programme and in the specific programme. These actions are, therefore, designed to ensure added value at European level and by their nature reflect major questions of European scale.

Under the Euratom Treaty, the Community will by this new action continue to complement the work being done on nuclear energy at Member State level by carrying out research and training programmes.

This continuation is proposed following assessments, in line with the SEM2000 initiative, of the actions undertaken during the past five years. These assessments were carried out during the second half of 1996 and early in 1997.

The assessments show that, overall, the programmes have achieved their objectives, in particular by financing a series of high-quality activities. The framework programme as a whole thus has a significant impact on the research being done in the Member States and leads to the development of a great many cross-border cooperation networks.

9.3 Monitoring and evaluation of the operation

The Commission will examine each year, with the help of appropriately qualified independent experts, progress with the implementation of the specific programme in the light of the criteria set out in Article 3(2) of the specific programme.

It will assess, in particular, whether the objectives, priorities and financial resources are still appropriate to the changing situation. Where appropriate, it will submit proposals to adapt or supplement the specific programme.

In addition, before submitting its proposal for a Sixth Framework Programme, the Commission will have an external assessment conducted by high-level independent experts on the management of, and progress made in, Community activities carried out during the five years preceding the assessment, in particular in the light of the criteria set out in Article 3(2) of the specific programme. The Commission will communicate the conclusions of this assessment, accompanied by its comments, to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions.

Furthermore, in accordance with Article 130p of the Treaty establishing the European Community, the Commission produces an annual report to the European Parliament and the Council on activities relating to research and technological development and the dissemination of results.

10. ADMINISTRATIVE EXPENDITURE (PART A OF SECTION III OF THE COMMISSION BUDGET).

Not applicable.

Proposal for a

COUNCIL DECISION

adopting a specific programme for research and training

to be implemented by the Joint Research Centre

by means of direct actions

for the European Atomic Energy Community

(1998-2002)

COUNCIL DECISION

adopting a specific programme for research and training to be implemented by the Joint Research Centre by means of direct actions for the European Atomic Energy Community (1998-2002)

(..../..../Euratom) 98/0188 (CNS)

THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Atomic Energy Community, and in particular Article 7 thereof,

Having regard to the proposal from the Commission[1],

Having regard to the opinion of the European Parliament[2],

Having regard to the opinion of the Economic and Social Committee[3],

Whereas, by Decision No .../.../Euratom[4], the Council adopted a Fifth Framework Programme for Community activities in the field of research and training for the European Atomic Energy Community (1998-2002), specifying the activities to be implemented by the Joint Research Centre (JRC) for the European Atomic Energy Community;

Whereas Article 3 of the Fifth Framework Programme stipulates that it shall be implemented through specific programmes adopted in accordance with Article 7 of the Treaty, one concerning in particular the JRC;

Whereas, according to article 4, paragraph 2 of the Council Decision n° 94/268/Euratom of 26 April 1994, concerning the European Community Fourth Framework Programme for activities in the field of research and training (1994-1998)[5] and to article 7 paragraph 3 of the Council Decision related to the specific programmes implementing the Direct Action in the Fourth Framework Programme, the Commission has requested to proceed to an external evaluation which has been transmitted, with its conclusions and observations, to the European Parliament, to the Council, to the Economic and Social Committee and to the Committee of the Regions;

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1 OJ No
2 OJ No
3 OJ No
4 OJ No
5 OJ No. L 361/114

Whereas the Scientific and Technical Committee and the Board of Governors of the JRC have been consulted on the scientific and technological objectives of this specific programme as described in the working document adopted on 5th November 1997[6] by the Commission and also on the present Decision;

Whereas the decision .../.../Euratom, concerning the rules for the participation of undertakings, research centres and universities[7] allows the participation of the Joint Research Centre in indirect actions;

Whereas in the implementation of the present programme international co-operation activities could be appropriate, in conformity with chapter X of the Treaty, with other third countries or international organisations;

Whereas the implementation of the present programme also includes activities and mechanisms aiming to stimulate, disseminate and exploit RTD results, in particular towards small and medium enterprises (SMEs), as well as activities supporting mobility and training of researchers;

Whereas, according to the objectives of the first Action Plan for Innovation, research activities in the Fifth Framework Programme must be better oriented to innovation; whereas the JRC should actively pursue activities in innovation and technology transfer;

Whereas the Joint Research Centre (JRC) should implement the research and training activities carried out by means of direct action, in particular the tasks entrusted to the Commission by the Treaty; wheras the Commission should undertake the tasks incumbent upon it in the area of nuclear fission, making use of the technical expertise of the JRC; whereas particular attention should be paid to the safety of the nuclear fuel cycle and its impact on man and the environment;

Whereas the implementation of this programme should be monitored with a view to its possible adaptation to scientific and technological developments and needs; whereas in due course there should be an independent evaluation of progress with the programme;

HAS ADOPTED THIS DECISION:

Article 1

In conformity with article 3 paragraph 1 of the Fifth Framework Programme, a specific programme related to direct actions of research and training activities to be carried out by the JRC, (hereafter referred as the "specific programme") is hereby adopted for the period from [...] to 31 December 2002.

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6 COM(97)553 final, 5.11.1997
7 OJ No

Article 2

1. In agreement with Annexe III of the Fifth Framework Programme, the amount deemed as necessary for the execution of direct actions by the JRC under this programme (hereafter referred as the "amount") is 326 million ECU.
2. An indicative breakdown of this amount is given in Annex I.
3. Of this amount,

   - 82,3 million ECU are for the period 1998-1999

   - 243,7 million ECU are for the period 2000-2002.

   This amount will be adapted in accordance with the conditions established in article 3 paragraph 3 of the Fifth Framework Programme.
4. The budgetary authority shall lay down, in accordance with the scientific and technological objectives and priorities detailed in the present decision, the appropriations for each financial year, subject to the availability of resources within the pluriannual financial perspectives.

Article 3

1. Annex II specifies the major domains, the scientific and technological objectives and priorities of this programme, which are defined according to the fundamental principles and to the three categories of selection criteria indicated in Annex I of the Fifth Framework Programme.
2. The general rules for the Community's financial contribution are laid down in article 4 of the Fifth Framework Programme.
3. Direct RTD Actions are defined in Annex II and IV of the Fifth Framework Programme.
4. Annex III sets out the specific rules for implementing this programme.

Article 4

With due regard to the criteria set out in article 3 paragraph 1, and to the scientific and technological objectives and priorities indicated in Annex II, the Commission shall:

a) monitor the implementation of this specific programme and submits, if necessary, adaptations, in conformity with article 5 paragraph 1 of the Fifth Framework Programme;

b) make an external assessment of the activities carried out within the areas covered by this programme, as foreseen in article 5 paragraph 2 of the Fifth Framework Programme.

Article 5

1. The Commission establishes a work-programme detailing:

   a) the content of Annex II

   b) an indicative time table for the implementation of the specific programme.

2. This work-programme is updated, if necessary.

Article 6

1. The Commission is responsible for the implementation of the present programme, carried out by the JRC.
2. The Commission is advised by the Board of Governors of the JRC (hereinafter referred to as the Board of Governors) in this task.
3. The representative of the Commission submits to the Board of Governors:
   a) projects of measures related to the establishment and updating of the work-programme referred in article 5 of this decision;
   b) the terms of reference for the external evaluation foreseen in article 5.2 of the Fifth Framework Programme;
   c) any necessary adaptation to the objectives and priorities indicated in Annex II, or the distribution of financial resources indicated in Annex I of the specific programme to ensure that it is still appropriate in view of scientific and technological developments and needs.
4. The Commission regularly informs the Board of Governors of the implementation of this specific programme.

Article 7

The Commission may, request the JRC to execute, on the basis of the criterion of mutual benefit, projects with legal entities established in third countries when this contributes effectively to the execution of direct actions.

Article 8

This Decision is addressed to the Member States.

Done at Brussels,

For the Council

The President

ANNEX I

INDICATIVE BREAKDOWN OF THE AMOUNT DEEMED NECESSARY FOR THIS PROGRAMME

CONROLLED THERMONUCLEAR FUSION	5,52%
NUCLEAR FISSION SAFETY	43,56%
CONTROL OF NUCLEAR MATERIALS AND NUCLEAR SAFEGUARDS	43,56%
DECOMMISSIONING AND WASTE MANAGEMENT	7,36%
TOTAL	326 MECU[8],[9]

8 of which approximately 6% may be allocated to exploratory research and up to 2% for exploitation of own JRC results and technology transfer

9 This total includes the JRC's budget contribution necessary for its participation in shared-cost actions

ANNEX II

Scientific and Technological Objectives and Content of the Direct Actions

A. The Mission of JRC

The mission of JRC is to provide customer-driven scientific and technical support for the conception, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of commercial or national interests.

Carrying out specific high-level research in close contact with industry and other bodies, the JRC supports the policy maker in addressing the concerns of the individual citizen, alleviating conflict between man and the environment and promoting sustainable development.

The JRC's work depends upon intensive networking with public and private institutions in the Member States through, for example, research networks, joint projects or staff exchanges. This is important because the JRC's mission is complementary to the indirect action part of the 5th Framework Programme; while the indirect actions will continue to be the EU's main mechanism for developing and testing new ideas, the JRC's role is to help apply them in the service of the policy maker.

B. Objective: Maintaining a Vigilant Approach

The percentage of JRC activity devoted to nuclear activities is declining. Nuclear energy is considered a mature technology and, for reasons recently analysed in the Nuclear Community Illustrative Programme, no new power plants are on order.
Nevertheless, nuclear energy continues to supply about a third of Europe's electricity and vigilance is still required to ensure a continuation of Europe's outstanding safety record, to maintain efforts to avoid proliferation and to efficiently manage the processing and long-term storage of waste. New challenges include a reactor park whose average age is increasing, an enlargement of the Union to include countries with a different safety culture and the coming into safeguards of material arising from the disarmament process.

The Commission has specific Treaty obligations in nuclear energy and it has always relied on JRC to provide a technical support that can keep up with technological developments and face new challenges.

JRC's objective is therefore to

- *support the Commission in its Treaty obligations*
- *remain vigilant so as to maintain Europe's excellent record in safety and safeguards*

- *prepare to face the new challenges*

The two selection criteria for JRC activities are:

- *Relevance to EU policies. An understanding of the policy agenda allows JRC research to be timely and support the formulation of policy where it is most needed.*

- *Subsidiarity. This has two aspects. Firstly the research must be in an area where EU involvement is appropriate and secondly it should be appropriate for this involvement to be through the JRC. Thus JRC only operates where its unique pan-European identity provides an added-value. In the nuclear area its action is justified by the cross-border aspects of nuclear safety and safeguards and by public concern about the issues.*

C. The JRC Programme

JRC's specific programme for the Fifth Framework Programme is shaped in a view to focus activities in areas where they have a high European added value or which correspond to tasks entrusted to the Commission by the Euratom Treaty. These activities aim to optimise, in a European, or even international framework, the use of JRC special facilities and core competencies, in particular where the JRC present unquestionable excellence and is the unique holder of European knowledge.

Work on fusion will be scaled down in accordance with the Council decision to postpone the decision on the Next Step and will concentrate on generic research on materials.

Activities on fission safety will take advantage of JRC's unique facilities and will focus on areas where JRC is considered a reference centre for Europe such as actinides and areas of public concern such as severe accidents and the handling of waste. Work on ageing of reactor materials will increase to reflect the increasing importance of this issue for safety authorities and industry. The needs of the enlargement countries will be given some priority.

Work on control of nuclear materials will continue at the same level in order to meet the present and future needs of inspectors. This will include measurement, analysis and monitoring techniques and the training of inspectors. Some prospective studies will be carried out in order to foresee the safeguards implications of proposed changes in the fuel cycle and to determine whether remote sensing can be used for the detection of illicit activities.

Lastly, some obsolete facilities will be decommissioned.

This programme should not to be considered a blueprint for the work programme over the next four years but rather a general outline that reflects the current view of the policy agenda and priorities. Changes to the JRC programme are to be expected as science and technology advance and the policy agenda and the priorities of the customer change.

1. Controlled Thermonuclear Fusion

The European Programme on Thermonuclear Fusion represents a common effort where practically all activities of the EU are co-ordinated in a unique management structure. The activities of the JRC are complementary to the Member States' activities and are totally integrated in this common effort on the same level as the Euratom Associations. Therefore, under this programme, activities on tritium handling will be stopped and no radioactive material will be introduced in the ETHEL facility which may be used for other non-nuclear purposes. JRC's activities concentrate on specific skills and facilities of the JRC and concern:

- *materials research and testing, with particular emphasis on low activation materials, the interaction of hydrogen and its isotopes with materials and components and participation in safety and environment impact studies.*

2. Nuclear Fission Safety

Even if nuclear fission is today considered a mature technology both the safety of nuclear installations and the management of the fuel cycle notably the management of waste cause considerable public concern. Also public authorities maintain vigilance and push for continuous improvement and industry maintain a strong interest in new technologies and further improvements. The JRC supports these efforts which are at the core of its mission. It also offers unique facilities and traditional competence and scientific excellence while concentrating on activities where the added value by its support is unquestioned. They concern:

- *the ageing of materials and components: determination of the residual lifespan of reactors and their main components, improvement and qualification of in-service inspection techniques through the evaluation of structural integrity and the development of methodologies and the qualification of non-destructive examination techniques;*
- *the fuel cycle safety: basic research on actinides is an area where the JRC is regarded as the centre of excellence, and in which it will produce detailed knowledge of the properties of these elements. This is essential to the whole fuel cycle safety and efficiency (basic properties of new fuel and waste, licensing and industrial operations such as reprocessing, processing, storage and disposal of waste and spent fuel), in particular it allows detailed studies of the phenomena occurring during irradiation of nuclear fuel, as well as the optimisation of those fuels to enhance both safety and efficiency (e.g. increased rate of irradiation, advanced fuels); studies on partitioning and transmutation will focus on lowering the radiotoxicity of waste by reducing, or even eliminating, the presence of actinides and other long-lived radioactive elements in the fuel cycle, on the development of appropriate techniques for processing these materials;*
- *study of irradiated fuels with a view to direct disposal, in particular the characterisation of irradiated fuels, the examination of long-term behaviour under storage and final disposal conditions, and the determination of the risks associated with their radiotoxicity;*
- *the study of severe accidents, including the operation in a European network and with the support of international partners, of the FARO facility — the only one of its kind in the world — to allow the study of in-vessel and ex-vessel phenomena*

following core meltdown using real materials and representative configurations. The JRC will host in its large installations, in particular FARO, research teams from research organisms from Member States and reciprocally, it will contribute to European or international projects.

3. Control of nuclear materials and nuclear safeguards

The scientific and technical support necessary to implement safeguards pursuant to Chapter VII of the Treaty and the obligations arising from the Non-Proliferation Treaty and the implementation of the Commission's IAEA support programme is part of a dual process:

- to meet the technological challenges of the large fuel cycle facilities, and
- to meet the new challenges arising following major international decisions, as well as the incorporation of new, more efficient technologies.

The JRC's impartiality is essential to support actions to combat illicit trafficking in nuclear materials and damage to the environment. The JRC's activities in this field are an integral part of a process both of European co-operation, as reflected in the European Safeguards Research and Development Association network, and of international co-operation with the United States, Russia, Japan, Brazil, Argentina and Canada.

JRC activities will focus on:

- *development and improvement of measurement, monitoring and analytical techniques with emphasis on automation: destructive and non-destructive testing and analytical techniques (including the development of high-performance analysis to detect traces of radioactive materials in the environment), sealing and confinement techniques, quality control; these activities concern in particular large reprocessing plants and the plutonium cycle, including MOX fuel, and will include the monitoring of performance in real operating conditions of industrial equipment and the study of its conformity with international standards;*

- *development of dedicated information technologies (processing techniques for the analysis and detection of anomalies between declarations and verifications; three-dimensional lasers techniques for the monitoring of very sensitive areas); assessment of remote sensing as a method of detecting illicit nuclear activities: establishment of the requisite infrastructure for implementation for control purposes;*

- *evaluation with regard to controls on fissile materials, of certain innovative concepts in the field of reactors and the fuel cycle; preparation of an approach that is adequate in terms of control;*

- *development of analytical techniques adapted to the fight against illicit trafficking and environmental damage involving radioactive materials (e.g. illicit dumping): research on analysis of specific properties of fissile materials such as isotopic composition, purity and granulation to evaluate intended use, date of fabrication etc. and development of a database to collate these characteristics; development*

of ultra-sensitive analysis to make it possible to identify the routing of materials up to their place of seizure;

- *training of inspectors and operators, in particular in new technologies.*

4. Decommissioning and waste management

The JRC will undertake and intensify work on decommissioning and dismantling of installations used for nuclear activities which are no longer use since some time and are becoming obsolete. This will include the treatment and management including disposal of waste resulting from this work. This is of vital importance not only to protect the environment but also for the protection of workers and the eventual reduction of operational costs as it will reduce the need for monitoring and surveillance as nuclear activities are being reduced and concentrated.

- *Establishment of a long term plan in order to ensure future and continuous implementation of these activities;*

- *Construction of an installation for the treatment of liquid wastes;*

- *Starting of decommissioning and dismantling operation of obsolete facilities and management of wastes issued from these activities.*

ANNEX III

SPECIFIC RULES FOR IMPLEMENTING THE "PROGRAMME

1. The Commission, advised by the Board of Governors of the JRC, shall implement the direct action on the basis of the scientific objectives and contents described in Annex I. The activities relating to this action shall be performed in the relevant institutes of the Joint Research Centre (JRC).

2. In the implementation of its activities, the JRC will, whenever appropriate and feasible, participate in or organise networks of public and private laboratories in the Member States or European research consortia. Particular attention shall be paid to co-operation with industry, especially with small and medium-sized enterprises. Research bodies established in third countries may also co-operate on projects, in accordance with the relevant provisions of Article 7 and, where applicable, of agreements for S&T co-operation between the Community and the third countries concerned. Particular attention will be paid to co-operation with research laboratories and institutes in the countries of Central and Eastern Europe and the former Soviet Union.
   The knowledge gained through implementation of the projects will be disseminated by the JRC itself (taking into account possible limitations due to confidentiality issues).

3. The accompanying measures shall include:

   - the organisation of visits to JRC institutes of grant holders, visiting scientists and seconded experts,
   - organisation of the secondment of JRC staff to national laboratories, industrial laboratories and universities,
   - systematic exchange of information, through *inter alia* the organisation of scientific seminars, workshops and colloquiums and scientific publications,
   - specialised training with the emphasis on multidisciplinarity,
   - the independent scientific and strategic evaluation of the performance of the projects and programmes.

FINANCIAL STATEMENT

1. TITLE OF OPERATION

Proposal for a Council Decision adopting a specific programme for research and training to be implemented by the JRC for the European Atomic Energy Community (1998 to 2002).

2. BUDGET HEADING INVOLVED

Subsection B6 - "Direct Action" part

Articles	B6-111	Staff (in part)
	B6-121	Resources (in part)
Title	B6-3	Direct operating appropriations

3. LEGAL BASIS

Articles 7 and 8 of the Treaty establishing the European Atomic Energy Community (Euratom).

Council Decision No .../.../Euratom of ... concerning the fifth framework programme of the European Atomic Energy Community for research and training activities (1998 to 2002) (OJ No L ..., ... , p. ...).

4. DESCRIPTION OF OPERATION

4.1 General objective of the operation

The JRC's mission is to provide scientific and technical support for the formulation, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States while remaining independent of commercial or national interests.

Nuclear energy continues to supply about a third of Europe's electricity, and vigilance is still required to ensure a continuation of Europe's outstanding safety record, to maintain efforts to avoid proliferation and to efficiently manage the processing and long-term storage of waste. New challenges include a reactor park whose average age is increasing, an enlargement of the Union to include countries with a different safety culture, and the coming into safeguards of material arising from the disarmament process.

4.2 Period covered by the operation

1998 to 2002

The arrangements for renewal of the operation are provided for in Article 7 of the Euratom Treaty.

5. CLASSIFICATION OF EXPENDITURE OR REVENUE

5.1 NCE.1. Compulsory/Non-compulsory expenditure
5.2 DA.2. Differentiated/Non-differentiated appropriations
5.3 Type of revenue involved

Certain Associated States will contribute to the financing of the specific programme by means of supplementary appropriations.

In accordance with Article 27 of the Financial Regulation, certain revenue may be available for re-use.

6. TYPE OF EXPENDITURE OR REVENUE

Appropriations to cover the various means (see point 2 above) used to implement the activities set out in point 4. In principle, the activities carried out by the JRC under this specific programme are funded entirely by Community own resources.

The implementation arrangements for the research and training programme are as follows:

6.1 Direct RTD actions

The direct RTD actions will comprise RTD projects carried out by the JRC and accompanying measures such as those indicated in Annex III to the specific programme.

7. FINANCIAL IMPACT

7.1 Method of calculating total cost of operation

The financial reference amount is ECU 326 million for the period from 1998 to 2002.

The total cost of the proposed programme is as provided for the JRC in the proposal for a framework programme for 1998-2002 referred to in point 3 above. This amount covers all scientific, technical and exploitation activities and their proportion of the expenditure in respect of the various sites and infrastructure of JRC institutes. The breakdown of the overall amount between the various activities, as set out in point 7.2 below, has been made taking account of the following:

- a forecast of staff expenditure based on medium-term economic development in the Member States which host the various JRC sites;

- a forecast of general and scientific and technical support expenditure under the same conditions;

- an evaluation of the operating appropriations needed to implement the research programmes (direct expenditure on operation, equipment and contracts) and for JRC participation in indirect actions.

7.2 Itemised breakdown of cost

Direct Action	Total
Controlled thermonuclear fusion	18
Nuclear fission safety	142
Control of fissile materials, and nuclear safeguards	142
Decommissioning of nuclear installations, waste management	24
Total:	**326 MECU**

* of which approximately 6% may be allocated to exploratory research and up to 2% for exploitation of own JRC results and technology transfer.

7.3 Operational expenditure included in Part B of the Budget

Administrative expenditure is covered by headings B6-111 staff and B6-121 resources.

For its activities as a whole in 1999 (both nuclear and non-nuclear), the Joint Research Centre provides for a list of posts totalling 2 080 (729 A, 662 B, 650 C and 39 D).

7.4 Indicative schedule of appropriations

The schedule is established on the basis of the breakdown of the financial reference amount and the indicative schedule of appropriations for the period 1998-2002 set out in the proposal for the 5th framework programme.

Commitment appropriations		Payment appropriations				
		1999	2000	2001	2002 and subsequent years	Total
1999	82 300	62160	15666	4474		82300
2000	79 300		64891	11081	3328	79300
2001	81 700			66358	15342	81700
2002	82 700				82700	82700
Total	326 000	62160	80557	81913	101370	326000

The final amounts will be laid down by the Budgetary Authority.

8. FRAUD PREVENTION MEASURES

Internal audit and control programme in respect of scientific and budgetary aspects, to be carried out by the JRC staff responsible; internal audit carried out by the Financial Controller; local inspections by the Financial Controller and the Court of Auditors.

9. ELEMENTS OF COST-EFFECTIVENESS ANALYSIS

9.1 Specific and quantified objectives; target population

The JRC programme forms part of the framework programme, which meets the objectives set out in Articles 7 and 8 of the Euratom Treaty.

The JRC's participation in the field of action covered by this proposal is commensurate with its capabilities and attributes and complies with the principle of subsidiarity.

The target population is Europe's scientific and industrial community and that concerned with the various sectoral policies of the Commission in which the JRC is required to provide its support.

This research and training programme is structured around four areas:

(a) Controlled thermonuclear fusion

The European Programme on Thermonuclear Fusion represents a common effort in which practically all the activities of the EU are co-ordinated in a single management structure. The activities of the JRC complement the Member States' activities and are fully integrated in this common effort on the same level as the Euratom Associations. The JRC's activities are focused on its specific skills and facilities and concern materials research and testing, with particular emphasis on low activation materials, the interaction of hydrogen and its isotopes with materials and components and participation in safety and environment impact studies.

(b) Nuclear fission safety

Even if nuclear fission is today considered a mature technology, both the safety of nuclear installations and the management of the fuel cycle (especially waste management) cause considerable public concern. Public authorities are therefore remaining vigilant and pushing for continuous improvement, while industry maintains a strong interest in new technologies and further improvements. The JRC supports these efforts, which are at the core of its mission. It also offers unique facilities and traditional competence and scientific excellence while concentrating on activities where the added value from its support is unquestioned. These concern different research aspects along the following four main lines:

i) the ageing of materials and components;

ii) fuel cycle safety;

iii) study of irradiated fuels with a view to direct disposal, the examination of long-term behaviour under storage, and determination of the risks associated with their radiotoxicity;

iv) the study of severe accidents.

(c) Control of fissile materials and nuclear safeguards

The scientific and technical support necessary for implementing safeguards pursuant to Chapter VII of the Treaty and the obligations arising from the Non-Proliferation Treaty and the implementation of the Commission's IAEA support programme is part of a dual process both to meet the technological challenges of the large fuel cycle facilities, and to meet the new challenges arising following major international decisions, as well as the incorporation of new, more efficient technologies.

The JRC's impartiality is essential to support actions to combat illicit trafficking in nuclear materials and damage to the environment. Its activities in this field are an integral part of a process both of European co-operation, as reflected in the European Safeguards Research and Development Association network, and of international co-operation with the United States, Russia, Japan, Brazil, Argentina and Canada.

JRC activities will target different issues in the following five main lines:

i) development and improvement of measurement, monitoring and analytical techniques with emphasis on automation;

ii) development of dedicated information technologies for the analysis and detection of anomalies between declarations and verifications;

iii) evaluation with regard to controls on fissile materials;

iv) development of analytical techniques adapted to the fight against illicit trafficking and environmental damage involving radioactive materials (e.g. illicit dumping);

v) training of inspectors and operators, in particular in new technologies.

(d) Decommissioning of nuclear installations, waste management

The JRC will undertake and intensify work on the decommissioning and dismantling of installations used for nuclear activities which have been out of use for some time and are becoming obsolete. This will include the treatment and management, including disposal, of waste resulting from this work. This is of vital importance not only to protect the environment but also for the protection of workers and the eventual reduction of operational costs, as it will reduce the need for monitoring and surveillance as nuclear activities are reduced and concentrated. Activities will start with the establishment of a long-term plan to ensure future and continuous implementation and will include the construction of an installation for the treatment of liquid wastes and the decommissioning and dismantling of obsolete facilities and management of wastes issued from these activities.

9.2 Grounds for the operation

The Commission has specific Treaty obligations in nuclear energy and it has always relied on the JRC to provide technical support that can keep up with technological developments and face new challenges. The objectives of this programme are,

therefore, to support the Commission in its Treaty obligations, to remain vigilant so as to maintain Europe's excellent record in safety and safeguards and to prepare to face the new challenges.

The JRC's specific programme for the fifth framework programme is designed to focus activities in areas where they have a high European added value or which correspond to tasks entrusted to the Commission by the Euratom Treaty. These activities aim to optimise, in a European or even international framework, the use of JRC special facilities and core competencies, particularly where the JRC presents unquestionable excellence and is the unique holder of European knowledge.

This new specific programme is being proposed in accordance with the objectives of the framework programme, and following evaluation - in line with the SEM2000 initiative - of operations pursued over the last five years. The said evaluation has shown that, all in all, programmes have attained their goals, particularly by having the JRC carry out a series of high-quality activities.

9.3 Monitoring and evaluation of the operation

Each year, with the help of appropriately qualified independent experts, the Commission will examine the implementation of the research and training programme, particularly in the light of the criteria set out in Article 4 thereof. It will, in particular, assess whether the objectives, priorities and financial resources are still appropriate to the changing situation. Where appropriate, it will submit proposals to adapt or supplement the research and training programme, particularly in the light of Articles 5 and 6 of the specific programme.

In addition, before submitting its proposal for a sixth framework programme, the Commission will have high-level independent experts conduct an external assessment on the management of, and progress made in, Community actions carried out during the five years preceding the assessment, with particular reference to the criteria set out in Article 3(2) of the research and training programme. The Commission will communicate the conclusions of this assessment, along with its comments, to the European Parliament, the Council and the Economic and Social Committee.

The Commission produces an annual report on the activities of the Joint Research Centre. It also produces an annual report on research and technological development and the dissemination of results, in accordance with Article 130p of the EC Treaty. These reports are sent to the European Parliament, the Council and the Economic and Social Committee.

10. ADMINISTRATIVE EXPENDITURE (PART A OF SECTION III OF THE COMMISSION BUDGET)

Not applicable.

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