Amended proposal for a Council Decision adopting a specific programme (Euratom) for research and training on nuclear energy (2002-2006) [1]

(2002/C 181 E/04)

(Text with EEA relevance)

COM(2002) 43 final — 2001/0125(CNS)

(Submitted by the Commission pursuant to Article 250(2) of the EC Treaty on 31 January 2002)

[1] OJ C 240 E, 28.8.2001, p. 249.

INITIAL PROPOSAL	AMENDED PROPOSAL
THE COUNCIL OF THE EUROPEAN UNION,	Unchanged
Having regard to the Treaty establishing the European Atomic Energy Community, and in particular the first paragraph of Article 7 thereof,	
Having regard to the proposal from the Commission,	
Having regard to the opinion of the European Parliament,	
Having regard to the opinion of the Economic and Social Committee,	
Whereas:	
(1) By Decision No . . ./. ./Euratom the Council adopted the multiannual framework programme 2002-2006 of the European Atomic Energy Community for research and training activities aimed at contributing towards the creation of the European Research Area (hereinafter referred to as 'the framework programme') to be implemented by means of research and training programme(s) drawn up in accordance with Article 7 of the Treaty, which define the detailed rules for their implementation, fix their duration and provide for the means deemed necessary.	(1) By Decision No . . ./. ./Euratom the Council adopted the sixth multiannual framework programme 2002-2006 of the European Atomic Energy Community for research and training activities aimed at contributing towards the creation of the European Research Area (hereinafter referred to as 'the framework programme') to be implemented by means of research and training programme(s) drawn up in accordance with Article 7 of the Treaty, which define the detailed rules for their implementation, fix their duration and provide for the means deemed necessary.
(2) The rules for the participation of undertakings, research centres and universities for the implementation of the framework programme, adopted by the Council in Decision No . . ./. ./Euratom (hereinafter referred to as 'the rules for participation') should apply to this programme.	Unchanged
(3) The Commission's administrative expenditure for the implementation of this programme reflects the high number of staff seconded to laboratories in the Member States and to the ITER project.	

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	(4) This programme is open to the participation of countries having concluded the necessary agreements to this effect, and is also, except in the case of fusion research, open on the project level, and on the basis of mutual benefit, to the participation of entities from third countries and of international organisations for scientific co-operation.
(4) In implementing this programme, emphasis should be given to promoting mobility of researchers, and innovation, in the Community as well as international co-operation activities with third countries and international organisations. Special attention should be paid to the Accession countries.	(5) In implementing this programme, emphasis should be given to promoting mobility of researchers, and innovation, in the Community as well as international co-operation activities with third countries and international organisations. Special attention should be paid to the candidate countries.
(5) Research activities carried out within this programme should respect fundamental ethical principles, notably those which appear in the Charter of Fundamental Rights of the European Union	(6) Research activities carried out within this programme should respect fundamental ethical principles, including those reflected in Article 6 of the Treaty on the European Union and in the Charter of Fundamental Rights of the European Union, as well as the need to take into account public acceptability of these activities.
(6) Following the Commission Communication 'Women and Science' [1] and the Resolution of the Council [2] and the European Parliament [3] on this theme, an action plan is being implemented in order to reinforce and increase the place and role of women in science and research.	(7) Following the Commission Communication 'Women and Science' [1] and the Resolution of the Council [2] and the European Parliament [3] on this theme, an action plan is being implemented in order to reinforce and increase the place and role of women in science and research, which should ensure the respect of equality of opportunity, irrespective of gender.
(7) This programme should be implemented in a flexible, efficient and transparent manner, taking account of relevant interests, in particular of the scientific, industrial, user and policy communities. The research activities carried out under it should be adapted where appropriate to the needs of Community policies and to scientific and technological developments.	(8) This programme should be implemented in a flexible, efficient and transparent manner, taking account of relevant interests, in particular of the scientific, industrial, user and policy communities. The research activities carried out under it should be adapted where appropriate to the needs of Community policies and to scientific and technological developments.
	(9) Participation in the activities of this programme will be encouraged through publication of the necessary information on content, conditions and procedures, to be made available in a timely and thorough manner to potential participants, including those from the associated candidate countries and other associated countries.

(1) COM(1999) 76.

(2) Resolution of 20 May 1999 (OJ C 201, 16.7.1999).

(3) Resolution of 3 February 2000, PE 284.656

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(8) The Commission should in due course arrange for an independent assessment to be conducted concerning the activities carried out in the fields covered by this programme.	(10) The Commission will in due course arrange for an independent assessment to be conducted concerning the activities carried out in the fields covered by this programme, which will be done in a spirit of openness with respect to all the relevant actors.
(9) The Scientific and Technical Committee has been consulted,	(11) The Scientific and Technical Committee has been consulted,
HAS ADOPTED THIS DECISION:	Unchanged
Article 1	
1. In accordance with the framework programme, a specific programme for research and training on nuclear energy (hereinafter referred to as 'the specific programme') is hereby adopted for the period from [. . .] to 31 December 2006.	1. In accordance with the sixth framework programme, a specific programme for research and training on nuclear energy (hereinafter referred to as 'the specific programme') is hereby adopted for the period from [. . .] to 31 December 2006.
2. The objectives and scientific and technological priorities for the specific programme are set out in Annex I.	Unchanged
Article 2	
In accordance with Annex II to the framework programme], the amount deemed necessary for the execution of the specific programme is EUR 900 million, including a maximum of 16,5 % for the Commission's administrative expenditure. An indicative breakdown of this amount is given in Annex II to this decision.	In accordance with Annex II to the framework programme, the amount deemed necessary for the execution of the specific programme is EUR 940 million, including a maximum of 16,5 % for the Commission's administrative expenditure. An indicative breakdown of this amount is given in Annex II to this decision.
	Article 3
	All research activities carried out under the specific programme shall be carried out in compliance with fundamental ethical principles.
Article 3	*Article 4*
1. The detailed rules for financial participation by the Community in the specific programme shall be those referred to in Article 2(2) of the framework programme.	Unchanged
2. The specific programme shall be implemented by means of instruments defined in Annex III.	
3. The rules for participation shall apply to the specific programme.	

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Article 4	*Article 5*
1. The Commission shall draw up a work programme for the implementation of the specific programme, setting out in greater detail the objectives and scientific and technological priorities set out in Annex I, and the timetable for implementation.	1. The Commission shall draw up a work programme for the implementation of the specific programme, setting out in greater detail the objectives and scientific and technological priorities set out in Annex I, including the instruments to be used on a priority basis, and the timetable for implementation.
2. The work programme shall take account of relevant research activities carried out by the Member States, Associated States, European and international organisations. It shall be updated where appropriate.	2. The work programme shall take account of relevant research activities carried out by the Member States, Associated States, European and international organisations. It shall be updated where appropriate, including in relation to the use of instruments on a priority basis.
Article 5	*Article 6*
1. The Commission shall be responsible for the implementation of the specific programme.	Unchanged
2. For the purposes of implementing the specific programme the Commission shall be assisted by a consultative committee. The members of this committee can vary according to the different subjects on the committee's agenda. For fission-related aspects, the composition of this committee and the detailed operational rules and procedures applicable to it shall be as laid down in Council Decision 84/338/Euratom, ECSC, EEC [1] dealing with management and co-ordination 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 6	*Article 7*
1. The Commission shall regularly report on the overall progress of the implementation of the specific programme, in accordance with Article of the framework programme.	1. The Commission shall regularly report on the overall progress of the implementation of the specific programme, in accordance with Article 5(2) of the framework programme, information on financial aspects shall be included.
2. The Commission shall arrange for the independent assessment provided for in Article 5 of the framework programme to be conducted concerning the activities carried out in the fields covered by the specific programme.	2. The Commission shall arrange for the independent monitoring and assessment provided for in Articles 5 and 6 of the framework programme to be conducted concerning the activities carried out in the fields covered by the specific programme.
Article 7	*Article 8*
This decision is addressed to the Member States.	Unchanged

[1] OJ L 177, 4.7.1984, p. 25.

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ANNEX I

SCIENTIFIC AND TECHNOLOGICAL OBJECTIVES AND BROAD LINES OF THE ACTIVITIES

1. INTRODUCTION

Unchanged

As the source of 35 % of the electricity produced in the European Union, nuclear energy is an element of the debate on how to combat climate change and reduce the energy dependency of the EU. But significant challenges need to be faced. Controlled thermonuclear fusion is one of the long term options for energy supply, in particular for the centralised supply of base-load electricity. The priority is to make progress towards demonstrating the scientific and technological feasibility of fusion energy and assessing its sustainable qualities. In the short term, ways of dealing with nuclear waste that are acceptable to society need to be found, and more particularly the implementation of technical solutions for the management of long-lived waste. Innovative concepts for the safer exploitation of nuclear fission should also be studied as possible contributions to meeting European energy needs in the decades ahead.

As the source of 35 % of the electricity produced in the European Union, nuclear energy is an element of the debate on how to combat climate change and reduce the energy dependency of the EU. But significant challenges need to be faced. Controlled thermonuclear fusion is one of the long term options for energy supply, in particular for the centralised supply of base-load electricity. The priority is to make progress towards demonstrating the scientific and technological feasibility of fusion energy and assessing its sustainable qualities. In the short term, ways of dealing with nuclear waste that are acceptable to society need to be found, and more particularly the implementation of technical solutions for the management of long-lived waste. Innovative concepts for the safer exploitation of nuclear fission should also be studied as possible contributions to meeting European energy needs in the decades ahead. The high standards of radiation protection in the Community must be maintained through focused and co-ordinated research, in particular into the effects of low levels of exposure.

Co-operation at European level, including the exchange of scientists and common research programmes, is already well established in this field. In respect of nuclear waste, and other activities, this will be intensified and deepened at programme and project level with the aim of better use of resources (both human resources and experimental facilities) and promoting a common European view on key problems and approaches, in accordance with the needs of the European research area. Links will be established with national programmes and networking will be promoted with third countries, in particular, USA, Canada and Japan. In the case of fusion, the Community and, Member States will continue to work within the framework of an integrated programme of activities.

Co-operation at European level, including the exchange of scientists and common research programmes, is already well established in this field. In respect of nuclear waste, radiation protection and other activities, this will be intensified and deepened at programme and project level in order to make better use of resources (both human resources and experimental facilities) and promote a common European view on key problems and approaches, in accordance with the needs of the European research area. Links will be established with national programmes and networking will be promoted with third countries, in particular, USA, the Newly Independent States of the Former Soviet Union (NIS), Canada and Japan. In the case of fusion, the Community, the Member States and Countries Associated with the activities covered by the Euratom Framework Programme will continue to work within the framework of an integrated programme of activities.

Co-ordination will be assured with the JRC programme on 'nuclear safety and safeguards'.

Unchanged

2. PRIORITY THEMATIC AREAS

2.1. **Fusion energy research**

Objectives

Fusion energy could contribute in the second half of the century to the emission-free large-scale production of base-load electricity. The advances made in fusion energy research justify to further pursue a vigorous effort towards the long-term objective of a fusion power plant. Theoretical work and experimental studies on the existing devices world-wide, in particular on JET, have established the scientific and technical readiness for the construction of a project of the next generation after JET with

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the objective of demonstrating the scientific and technological feasibility of fusion energy. World wide collaboration on fusion energy research has progressed to the detailed engineering design of such a Next Step device, ITER, with the objectives of extended burn in inductive operation with power amplification $Q > 10$, demonstrating generation of 400 MW of fusion power over about 400 seconds, that could allow burning plasmas to be studied in conditions relevant to energy production.	
The successful completion of the ITER Engineering Design Activities makes it possible, in line with the reactor orientation of the Community activities on fusion energy research, to take a decision about the realisation of the Next Step. Subject to a positive outcome of the international negotiations on the juridical and institutional conditions of the establishment of an ITER Legal Entity and negotiations for its joint implementation (construction, operation, exploitation and decommissioning), a specific decision could be sought in the period 2003-2004, so that construction could effectively start during the period 2005-2006. The period 2003-2006 has therefore to be seen as a transition period marked by the need to rationalise European activities due to the strong orientation of the programme towards the Next Step. The budgetary proposition for research in the field of fusion energy over the period 2003-2006 provides that out of a total appropriation of 700 Mio EUR, 200 Mio EUR are foreseen for the realisation of ITER.	The successful completion of the ITER Engineering Design Activities makes it possible, in line with the reactor orientation of the Community activities on fusion energy research, to take a decision about the realisation of the Next Step. Subject to a positive outcome of the international negotiations on the juridical and institutional conditions of the establishment of an ITER Legal Entity and negotiations for its joint implementation (construction, operation, exploitation and decommissioning), a specific decision could be sought in the period 2003-2004, so that construction could effectively start during the period 2005-2006. The period 2003-2006 has therefore to be seen as a transition period marked by the need to rationalise European activities due to the strong orientation of the programme towards the Next Step. The budgetary proposition for research in the field of fusion energy over the period 2003-2006 provides that out of a total appropriation of 750 Mio EUR, up to a maximum of 200 Mio EUR is foreseen for the realisation of ITER.
If and when decided, the realisation of the Next Step will mobilise significant human and financial resources. Once a decision is taken to go ahead with the project, adaptations to the current efforts of the European partners of Euratom in the field of fusion and organisational changes will be required, in particular to jointly steer the European contribution to ITER. The amount of 500 Mio EUR is proposed to allow the continuation of a meaningful R & D programme, including the transition between the activities currently carried out in the framework of the Associations [1] and JET, and what would become the 'accompanying programme' in physics and technology for fusion once construction of the Next Step/ITER device has reached its steady state after 2006.	If and when decided, the realisation of the Next Step will mobilise significant human and financial resources. Once a decision is taken to go ahead with the project, adaptations to the current efforts of the European partners of Euratom in the field of fusion and organisational changes will be required, in particular to jointly steer the European contribution to ITER. The amount of 550 Mio EUR is proposed to allow the continuation of a meaningful R & D programme, including the transition between the activities currently carried out in the framework of the Associations [1] and JET, and what would become the 'accompanying programme' in physics and technology for fusion once construction of the Next Step/ITER device has reached its steady state after 2006.
Priorities	Unchanged
(i) *Associations' programme in physics and technology* The Associations' programme will include: — R & D in fusion physics and plasma engineering, focusing on the study and evaluation of magnetic confinement formulas, with in particular the continuation of the construction of the Wendelstein 7-X 'stellarator' and operation of the existing installations in the Euratom Associations.	

[1] Established under contracts of associations between the Community and entities in the Members States.

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— Structured R & D activities in fusion technology in particular research on fusion materials and participation in the R & D activities for the decommissioning of JET, which is foreseen at the end of its operations.	
— Investigations of socio-economic aspects, focusing on evaluation of economic costs and social acceptability of fusion energy, in complement to the further studies on safety and environmental aspects; co-ordination, in the context of a keep-in-touch activity, of the Member States' civil research activities on inertial confinement and possible alternative concepts; dissemination of results and the diffusion of information to the public; mobility and training.	
In contributing to the Associations' programme, priority will be given to multilateral actions to focalise activities on common projects such as those directly related to operation on JET and to the Next Step/ITER and/or staff training. Depending on a decision on the realisation of ITER and its timing, the current Community support to the Associations activities will be adjusted, and the phasing out of the exploitation of a number of facilities will be considered. Adequate means shall be ensured to maintain a strong European co-ordination of the fusion activities, which has demonstrated its usefulness over the years.	
The extent of the accompanying domestic programme in fusion physics and technology which is required in the Associations and European industry to take full benefit from ITER, will depend (a) on the level of the European share in ITER and (b) on where it would be sited. This could entail investments aiming at maintaining experimentation on fusion devices at world-class level in Europe beyond the start of operation of ITER and an adequate programme of technological development.	
(ii) *Exploitation of the JET facilities*	
The JET facilities will continue to be exploited in the framework of the European Fusion Development Agreement (EFDA), in view of completing the exploitation of the performance enhancements currently under way. The use of the JET facilities will have to be suspended at an appropriate time to enable the corresponding resources to be redirected to the Next Step/ITER.	
(iii) *Next Step/ITER*	
The Proposal for the Euratom framework programme (2002-2006) includes the continuation of Next Step activities with a view to participate in its construction in the second half of the period. However, since decisions on ITER do not depend only upon EU Institutions but also on the EU international partners, the proposed programme of activities must be open regarding the eventual siting and framework of the Next Step/ITER and the precise content of the accompanying domestic programme.	The Proposal for the Euratom framework programme (2002-2006) includes the continuation of Next Step activities with a view to participate in its construction in the second half of the period. However, since decisions on ITER do not depend only upon EU Institutions but also on the EU international partners, the proposed programme of activities must be open regarding the eventual siting and framework of the Next Step/ITER and the precise content of the accompanying domestic programme. The studies performed in preparation of possible European site(s) will be completed.

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The EU participation in ITER would include contributions to the construction of equipment and installations, which are within the perimeter of the ITER site and necessary for its exploitation, as well as to the costs associated with the staffing and management of, and the support to be given to, the project during construction. The level and nature of this participation will depend on the outcome of the negotiations with the EU international partners, and in turn on the location of the ITER site. If ITER was located in Europe, the EU participation would also include contribution to the costs to be borne by Europe as a Host Party.	Unchanged
2.2. **Treatment and disposal of radioactive waste**	2.2. **Management of radioactive waste**
Objectives	Unchanged
The absence of a broadly agreed approach to waste management and disposal is one of the main impediments to the continued and future use of nuclear energy. In particular, this applies to the disposal of long-lived waste components in geological repositories, which will be required no matter what treatment method is chosen for the spent fuel and high level waste. Research alone cannot ensure societal acceptance; however, it is needed in order to develop and test the repository technologies, investigate suitable sites, promote basic scientific understanding relating to safety and safety assessment methods, and to develop decision processes that are perceived as fair and equitable by the stakeholders involved.	
Research is also needed to explore the potential offered by new reactor types and/or fuel cycles to make better use of fissile material and generate less waste, while meeting appropriate cost expectations, and to clarify the prospects for conducting partitioning and transmutation, which have a theoretical potential to reduce the hazard of the waste, on an industrial scale with adequate safety and at reasonable cost.	Research is also needed to explore the technical and economic potential of concepts for nuclear energy generation able to make better use of fissile material and generate less waste and of partitioning and transmutation to reduce the hazard of the waste on an industrial scale.
Research Priorities	Unchanged
(i) *Research on geological disposal*	
The aims are to establish a sound technical basis for demonstrating the safety of disposing high level radioactive wastes in geological formations and underpin the development of a common European view on the main issues related to the disposal of waste.	The aims are to establish a sound technical basis for demonstrating the safety of disposing spent fuel and long lived radioactive wastes in geological formations and underpin the development of a common European view on the main issues related to the disposal of waste.
— Improvement of fundamental knowledge, developing and testing technologies: research will focus on key physical, chemical and biological processes; interaction between the different natural and engineered barriers, their long-term stability and means of implementing disposal technologies in underground research laboratories.	Unchanged

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— New and improved tools: research will focus on models for performance, safety assessment and methodologies to demonstrate long term safety, including sensitivity and uncertainty analyses, evaluation of alternative measures of performance and processes to the public concerns on waste disposal.	— New and improved tools: research will focus on models for performance and safety assessment, and methodologies to demonstrate long term safety, including sensitivity and uncertainty analyses, and development and evaluation of alternative measures of performance and of better governance processes that properly address public concerns on waste disposal.
(ii) *Partitioning and transmutation and reactor nuclear energy*	(ii) *Partitioning and transmutation and other concepts to produce less waste in nuclear energy generation*
The aims are to determine practical ways of reducing the amount and/or hazard of the waste to be disposed of by partitioning and transmutation and to explore the potential of new reactor concepts.	The aims are to determine practical ways of reducing the amount and/or hazard of the waste to be disposed of by partitioning and transmutation and to explore the potential of concepts for nuclear energy to produce less waste.
— Partitioning and transmutation: research will focus on fundamental assessments of the overall concept; demonstration at pilot scale of the most promising partitioning technologies; further development of technologies for transmutation; and evaluation of their industrial practicability.	Unchanged
— New reactor to produce less waste: research will focus primarily on The High Temperature Reactor (HTR), in particular, in particular with regard to power conversion system for direct cycle, material properties in a high temperature helium environment, innovative fuel coatings, process heat applications and safety and licensing issues.	— Concepts to produce less waste: research will focus on exploring the potential for the more efficient use of fissile material in existing reactors and of other concepts to produce less waste in nuclear energy generation.
	2.3. **Radiation protection**
	Objectives
	Radiation is used extensively in medicine and industry (including the generation of nuclear energy) and its safety is predicated on a sound radiation protection policy and its effective implementation. Community research underpins European policy and has contributed to the high levels of protection achieved in practice. These standards must be maintained and, in some cases, improved and research has a key role in this process. The main objective is to resolve uncertainties in the risk from exposures to radiation at low and protracted doses (i.e. at levels typically encountered by the population and in workplaces) which remains a controversial scientific and policy issue, and has important implications for the use of radiation in both medicine and industry. Community research in other areas will focus on making better use of national efforts, principally through their more effective integration by networking and targeted research where this would either be complementary to, or provide synergy with, national programmes.
	Research priorities:
	— Quantification of risks associated with low and protracted exposures: research will focus on epidemiological studies of suitable exposed populations, complemented by cellular and molecular biology research on the interaction between radiation and the DNA, cells, organs and the body.

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	— Medical exposures and natural sources of radiation: enhancing the safety and efficacy of medical uses of radiation; better assessment and management of natural sources, in particular, naturally occurring radioactive materials.
	— Protection of the environment and radioecology: conceptual and methodological basis for protection of the environment; better assessment and management of the impact of natural and artificial sources of radiation on man and the environment.
	— Risk and emergency management: better approaches for risk governance; more effective and coherent emergency management in Europe, including rehabilitation of contaminated areas.
	— Protection of the workplace: improved monitoring and management of occupational exposures in industries involving exposure to radiation.
3. OTHER ACTIVITIES IN THE FIELD OF NUCLEAR SAFETY	3. OTHER ACTIVITIES IN THE FIELD OF NUCLEAR TECHNOLOGIES AND SAFETY
Objectives	Unchanged
The objectives are to support EU policies in the fields of health, safety energy and the environment, and better integrate European research on nuclear fission and the other uses of ionising radiation.	The objectives are to support EU policies in the fields of health, energy and the environment, to ensure that European capability is maintained at a high level in relevant fields not covered by the thematic priorities and to contribute towards the creation of the European Research Area.
Research priorities	Unchanged
(i) *Radiation protection*	Deleted
The aims are to underpin Community standards on radiation protection and how they are applied, to respond flexibly and rapidly to emerging needs and to enhance European capability through better integration of the research effort. Research will focus on:	
— quantification of risks at low and protracted doses typical of those encountered in the environment and the workplace, through epidemiological studies of suitable exposed populations complemented by cellular and molecular biology research. Collaboration with Russia and other CIS countries will be essential for gaining access to data on exposed populations of interest.	
— better integration of European research, in particular in the areas of health and environmental protection, radioecology, emergency and environmental management, medical uses of radiation and exposure to natural sources of radiation.	

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(ii) *Innovative concepts ways of producing nuclear energy*	(i) *Innovative concepts*
The aim is to investigate possible evaluate innovative concepts for nuclear energy. Research will focus on:	The aims are to evaluate innovative concepts and develop improved and safer processes in the field of nuclear energy. Research will focus on:
— further development of innovative concepts and for nuclear energy that have been identified as offering longer term benefits such as in terms of cost, safety, waste management, costs and sustainability.	— Evaluation of innovative concepts and development of improved and safer processes for the generation and exploitation of nuclear energy that have been identified as offering longer term benefits in terms of, cost, safety, environmental impact, resource utilisation, proliferation resistance, or diversity of application.
(iii) *Education and training*	(ii) Education and training
The aim is to better integrate European education and training in the nuclear sciences to combat the decline in both student numbers and teaching establishments, thus providing the necessary competence and expertise for the continued safe use of nuclear energy and other uses of radiation in industry and medicine. Support will focus on:	The aim is to better integrate European education and training in nuclear safety and radiation protection to combat the decline in both student numbers and teaching establishments, thus providing the necessary competence and expertise for the continued safe use of nuclear energy and other uses of radiation in industry and medicine. Support will focus on:
— development of a more harmonised approach for education in the nuclear sciences and engineering in Europe and its implementation, including and the better integration of national resources and capabilities.	Unchanged
This will be complemented by support for individual fellowships, special training courses, training networks, and grants for young research workers from former Soviet Union.	This will be complemented by support for fellowships, special training courses, training networks, grants for young research workers from the NIS and CEE countries, and transnational access to infrastructure.
	(iii) *Safety of existing nuclear installations*
	The aim is to improve safety in existing nuclear installations in Member States and candidate countries during their remaining operational lifetimes and subsequent decommissioning, making use of the considerable knowledge and experience gained internationally from experimental and theoretical research. Research will focus on:
	— plant management including effects of ageing and fuel performance; severe accident management, in particular the development of advanced numerical simulation codes; integration of European capabilities and knowledge from practical decommissioning; developing harmonised approaches to safety and best practice, both operational and regulatory, at a European level.

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ANNEX II

INDICATIVE BREAKDOWN OF THE AMOUNT

Types of activities	Amount (EUR million)
1. Priority thematic areas of research	890
1.1. Controlled thermonuclear fusion	750
1.2. Management of radioactive waste	90
1.3. Radiation protection	50
2. Other activities in the field of nuclear technologies and safety	50
Total	940

ANNEX III

MEANS FOR IMPLEMENTING THE PROGRAMME

In order to implement the specific programme, and in accordance with the Decisions of the European Parliament and of the Council concerning the multiannual Framework Programme 2002-2006 of the European Atomic Energy Community for research and training activities aimed at contributing towards the creation of the European Research Area (2002/. . ./Euratom) and with the rules for the participation of undertakings, research centres and universities for the implementation of the framework programme (2002/. . ./Euratom), the Commission will use various instruments.

Unchanged

The Commission will evaluate the proposals in accordance with the evaluation criteria set out in the abovementioned Decisions in order to verify their relevance with regard to the objectives of the programme, their scientific and technological excellence, their Community added value and the participants' management capacity.

The Commission will evaluate the proposals in accordance with the evaluation criteria set out in the abovementioned Decisions.

As regards the thematic priority areas, management of radioactive waste and radiation protection, the importance of the new instruments (Integrated Projects and Networks of Excellence) is recognised as being an overall priority means to attain the objectives of critical mass, management simplification and European added value contributed by Community research in relation to what is already undertaken at national level, and of the integration of the research capacities. However, the size of projects is not a criterion for exclusion, and access to new instruments is ensured for SMEs and other small entities.

The new instruments will be used from the start of the sixth framework programme in each theme and, where deemed appropriate, as a priority means, while maintaining the use of specific targeted projects and coordination actions.

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	The indirect RTD actions implemented in the area of thermonuclear fusion and in the framework of contracts, agreements or legal entities to which the Community is a party or of which it is a member, conform to the rules which have been established for them, in conformity with the Decision on the rules of participation.
	In carrying out the programme, the Commission may have recourse to technical assistance.
	In 2004 an evaluation will be undertaken by independent experts of the efficiency of each of these two types of instruments in the execution of the sixth framework programme.
A. **New instruments**	Unchanged
A.1. *Networks of excellence*	
In general, the network will be organised around a core group of participants to which others may be added. In order to create a virtual centre of excellence, they will integrate a considerable part or even the totality of their research activities in the area concerned. These activities will often be multidisciplinary, and oriented towards long-term objectives and not precise predefined results in terms of products, processes or services.	The purpose of networks of excellence is to strengthen and develop Community scientific and technological excellence by means of the integration, at European level, of research and training capacities currently existing or emerging at both national and regional level. Each network will also aim at advancing knowledge in a particular area by assembling a critical mass of expertise. They will foster cooperation between capacities of excellence in universities, research centres, enterprises, including SMEs, and science and technology organisations. The activities concerned will be generally targeted towards long-term, multidisciplinary objectives, rather than predefined results in terms of products, processes or services.
In addition to these integrated research activities, the network's joint programme of activities will also comprise integration activities as well as activities related to spreading of excellence outside the network.	A network of excellence will be implemented by a joint programme of activities involving some or, where appropriate, all of the research and training capacities and activities of the participants in the relevant area to attain a critical mass of expertise and European added value. A joint programme of activities could aim at the creation of a self-standing virtual centre of excellence that may result in developing the necessary means for achieving a durable integration of the research and training capacities. A joint programme of activities will necessarily include those aimed at integration, as well as activities related to the spreading of excellence and dissemination of results outside the network.
In pursuing its objectives, the network will therefore carry out:	Unchanged
— Research activities integrated by its participants	— Research and training activities integrated by its participants
— Integration activities which will comprise in particular:	Unchanged
— adaptation of the participants' research activities in order to strengthen their complementarity;	

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— development and utilisation of electronic information and communication means, and development of virtual and interactive working methods;	
— short-, medium- and long-term exchanges of personnel, the opening of positions to researchers from other members of the network, or their training;	
— development and use of joint research infrastructures, and adaptation of the existing facilities with a view to a shared use;	
— joint management and exploitation of the knowledge generated, and actions to promote innovation.	
— Activities of spreading of excellence which will comprise, as appropriate:	
— training of researchers;	
— communication concerning the achievements of the network and the dissemination of knowledge;	
— services in support of technological innovation, aimed in particular at the take-up of new technologies;	
— analyses of science/society issues related to the research carried out by the network.	
In carrying out some of its activities (such as training of researchers), the network will endeavour to ensure publicity by publishing calls for applications.	
The size of the network may vary according to the areas and subjects involved. As an indication, the number of participants should not be less than half a dozen. On average, in financial terms, the Community contribution to a network of excellence may represent several million euros per year.	
The network proposals should comprise the following elements:	
— a general outline of the joint programme of activities, and its content for the first year, broken down into research activities, integration activities, and activities for spreading excellence;	— a general outline of the joint programme of activities, and its content for the first period, broken down into research activities, integration activities, and activities for spreading excellence;
— the role of the participants, identifying the activities and resources that they will integrate;	Unchanged
— the operation of the network (co-ordination and management of activities);	

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— the plan for the dissemination of knowledge and the perspectives as regards exploitation of the results.	
The partnership may evolve when necessary, within the limit of the initial Community contribution, by replacing participants or adding new ones. In most cases, this will be done through publication of a call for applications.	The partnership may evolve when necessary, within the limit of the initial Community contribution, by replacing participants or adding new ones. In most cases, this will be done through publication of a competitive call.
The programme of activities would be updated yearly and would entail a reorientation of certain activities or launching of new ones not initially foreseen, which could involve new participants. The Commission may launch calls for proposals with a view to the allocation of additional contribution in order to cover, for example, an extension of the integrated activities of the existing network or the integration of new participants.	Unchanged
The Community's financial contribution will be a specified amount linked to the implementation of a set of work, initially calculated on the basis of the resources dedicated to carrying out the joint programme of activity and paid on an annual basis, taking into account activities and financial reports. As a complement to the resources of the participants should be sufficient to act as an incentive for integration, but without creating a financial dependence that might jeopardise the lasting association of the network.	The Community's financial contribution shall take the form of a grant for integration, the amount of which is determined in relation to the value of the capacities and resources which all the participants propose to integrate. It shall complement the resources deployed by the participants in order to carry out the joint programme of activities. It should be sufficient to act as an incentive for integration, but without creating a financial dependence that might jeopardise the lasting association of the network.
A.2. *Integrated projects*	Unchanged
The objective of this instrument is to strengthen European competitiveness or contribute to resolve major societal problems by mobilising a critical mass of research and technological development resources and skills existing in Europe.	Integrated projects are designed to give increased impetus to the Community's competitiveness or to address major societal needs by mobilising a critical mass of research and training resources and competence. Each integrated project will be assigned clearly defined scientific and technological objectives and should be directed at obtaining specific results applicable in terms of, for instance, products, processes or services. Under these objectives they may include more long-term or 'risky' research.
Accordingly, each integrated project will have the aim of obtaining identifiable scientific and technological results applicable to products, processes or services. The activities carried out in the context of an integrated project will have by definition clearly defined objectives even in the case of risky research.	Integrated projects will comprise a coherent set of component actions which may vary in size and structure according to the tasks to be carried out, each dealing with different aspects of the research needed to achieve common overall objectives, and forming a coherent whole and implemented in close coordination.
In general, the participants in the projects will be organised around a core group made up of the main participants.	They will be carried out on the basis of overall financing plans preferably involving significant mobilisation of public and private sector funding, including funding from EIB and collaboration schemes such as Eureka.
All the activities carried out in the context of an integrated project will be defined in the general framework of an 'execution plan' comprising activities relating to:	All the activities carried out in the context of an integrated project will be defined in the general framework of an 'implementation plan' comprising activities relating to:
— research, technological development and/or demonstration;	Unchanged
— management, dissemination and transfer of knowledge with a view to promoting innovation;	
— analysis and assessment of the technologies concerned, as well as the factors relating to their exploitation.	

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In pursuit of its objectives, it may also comprise activities relating to: — training researchers, students, engineers and industrial executives; — support for the take-up of new technologies; — information and communication, and dialogue with the public concerning the science/society aspects of the research carried out within the project.	
The size of an integrated project may vary according to the themes and subjects, depending critical mass necessary in order to obtain the expected results under the best possible conditions.	Deleted
The combined activities of an integrated project may represent a financial size ranging from several million euros to several tens of millions of euros.	Unchanged
In most cases an integrated project will comprise a set of specific actions, relating to certain aspects of the research needed to achieve the objectives pursued, of variable sizes and structures according to the tasks to be achieved, executed in a closely co-ordinated manner. In some cases, however, an integrated project may take the form of a single large project with a single component.	Deleted
Integrated project proposals should contain the following elements: — the scientific and technological objectives of the project; — the main lines and timetable of the execution plan, highlighting the articulation of the various components; — the stages of implementation and the results expected in each one of them; — the role of the participants within the consortium and the specific skills of each of them; — the organisation and management of the project; — the plan for the dissemination of knowledge and the exploitation of results; — the global budget estimate and the budget for the different activities, including a financial plan identifying the various contributions and their origin.	Unchanged
The partnership may evolve when necessary, within the limit of the initial Community contribution, by replacing participants or adding new ones. In most cases, this will be done through publication of a call for applications.	The partnership may evolve when necessary, within the limit of the initial Community contribution, by replacing participants or adding new ones. In most cases, this will be done through publication of a competitive call.

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The execution plan will be updated yearly. This updating may entail the reorientation of certain activities and the launching of new ones. In the latter case, and where an additional Community contribution is needed, the Commission will identify these activities and the participants who will carry them out, by means of a call for proposals.	The implementation plan will be updated yearly. This updating may entail the reorientation of certain activities and the launching of new ones. In the latter case, and where an additional Community contribution is needed, the Commission will identify these activities and the participants who will carry them out, by means of a call for proposals.
The Community contribution will be part of a financing plan which may involve recourse to other financing schemes, in particular Eureka or the instruments of the EIB or the EIF. It may amount to up to 50 % of the total project budget, broken down into budgets per activity. It will be paid annually on the basis of the proposed execution plan, and adjusted according to the activities and the financial reports.	The Community contribution shall take the form of a grant to the budget, calculated as a percentage of the budget allocated by the participants to carry out the project, adapted according to the type of activity.
	A.3. *Integrated infrastructure initiatives*
	Integrated infrastructure initiatives shall combine in a single action several activities essential to reinforce and develop research infrastructures, in order to provide services at the European level. To this end, they shall combine networking activities with a support activity (such as relating to transnational access) or research activities needed to improve infrastructure performance, excluding, however, the financing of investment for new infrastructures, which can only be financed as specific support actions. They will include a component of dissemination of knowledge to potential users, including industry and in particular to SMEs.
B. **Other instruments**	Unchanged
In order to implement the programme, the Commission can have recourse to	In order to implement the programme, other instruments may also be used:
— specific targeted projects in order to carry out research or demonstration activities	Deleted
— integrated initiatives relating to infrastructure, combining activities that are essential to strengthening and developing research infrastructures for the provision of services on a European scale	
— mobility and training actions	
— specific co-ordination and support actions in order to achieve the objectives identified in all the areas of the programme.	
— accompanying actions by way of additional measures to achieve the objectives of the programme or prepare future activities in the context of the Community's research and technological development policy.	
	B.1. *Specific targeted research or training projects*
	I. Specific targeted research projects will aim at improving European competitiveness. They will be sharply focussed and will take either of the following two forms, or a combination of the two:

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	(a) a research and technological development project designed to gain new knowledge either to improve considerably or to develop new products, processes or services or to meet other needs of society and Community policies;
	(b) a demonstration project designed to prove the viability of new technologies offering potential economic advantage but which cannot be commercialised directly.
	II. Specific targeted projects on training are designed to facilitate the timely diffusion of new knowledge on a European scale and better integrate national activities.
	B.2. *Actions to promote and develop human resources and mobility*
	These actions will be targeted at training, development of expertise or transfer of knowledge. They will involve support to actions carried out by natural persons, host structures, including training networks, and also by European research teams.
	B.3. *Coordination actions*
	Coordination actions are intended to promote and support the coordinated initiatives of a range of research and innovation operators aiming at improved integration. They will cover activities such as the organisation of conferences, meetings, the performance of studies, exchanges of personnel, the exchange and dissemination of good practices, setting up information systems and expert groups, and may, if necessary, include support for the definition, organisation and management of joint or common initiatives.
	B.4. *Specific support actions*
	Specific support actions will complement the implementation of the framework programme and may be used to help in preparations for future Community research and technological development policy activities including monitoring and assessment activities. In particular, they will involve transnational access to infrastructures, conferences, seminars, studies and analyses, working groups and expert groups, operational support and dissemination, information and communication activities, or a combination of these, as appropriate in each case.
C. **Specific implementation rules in the area of research into thermonuclear fusion**	Deleted
In the implementation of activities in the research area on controlled thermonuclear fusion, the following rules will be applied.	
I. ***Procedures***	
The projects undertaken in the context of shared-cost of research and technological development actions will be carried out on the basis of procedures set out in:	

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— the contracts of association with the Member States and the Associated States or organisations in those States,

— the European Fusion Development Agreement (EFDA),

— any other multilateral agreement concluded between the Community and associated organisations (such as the agreement on the promotion of mobility) or legal entities which may be set up after the competent consultative committee has given its opinion,

— other contracts of limited duration, in particular with organisations in the Member States or the associated states without an association,

— international agreements covering projects carried out in the framework of co-operation with third countries, such as ITER, and by legal entities which may be set up in the framework of such agreements.

II. ***Financial contribution***

The Framework programme financial contribution to the current expenditure of the Associations and to contracts of limited duration will be progressively and substantially reduced from its current annual rate, over the duration of the framework programme.

The modalities of participation of the Community in the activities related to the joint implementation of projects carried out within the framework of international co-operations such as ITER are defined in the relevant international co-operations and by the legal entities which can be established in the frame of these agreements. Appropriate legal entities, or any other appropriate forms, may be created by Euratom and the associated organisations in order to manage this Community participation.

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RTDT activities and Community financial contribution according to type of instrument

Type of instrument	RTD activities	Community contribution (1)
Networks of Excellence	Priority thematic areas Other activities in the field of nuclear technology and safety (2)	Grant for integration: maximum of 25 % of the value of the capacity and resources proposed for integration by participants as a fixed amount to support the joint programme of activities (3)
Integrated Projects	Priority thematic areas Other activities in the field of nuclear technology and safety (2)	Grant to the budget of a maximum of: 50 % for research 35 % for demonstration 100 % for certain other activities such as training of researchers and consortium management (4) (5)
Specific targeted research or training projects	Priority thematic areas (2) Other activities in the field of nuclear technology and safety	Grant to the budget of a maximum of 50 % of the budget (4) (5)
Actions to promote and develop human resources and mobility	Priority thematic areas Other activities in the field of nuclear technology and safety	Grant to the budget of a maximum of 100 % of the budget (4), if necessary as a lump sum
Coordination actions	Priority thematic areas Other activities in the field of nuclear technology and safety	Grant to the budget of a maximum of 100 % of the budget (4)
Specific support actions	Priority thematic areas Other activities in the field of nuclear technology and safety	Grant to the budget of a maximum of 100 % of the budget (4) (7), if necessary as a lump sum
Integrated initiatives relating to infrastructure	Priority thematic areas Other activities in the field of nuclear technology and safety	Grant to the budget: depending on the type of activity, of 50 to 100 % of the budget (4) (5) (6)

(1) As a general principle, the Community financial contribution cannot cover 100 % of the expenditure of an indirect action with the exception of proposals covering a purchase price governed by the terms applicable to public procurement procedures or taking the form of a pre-defined lump sum pre-set by the Commission.

However, the Community financial contribution may bear up to 100 % of the expenditure of an indirect action if they complement those otherwise borne by the participants. Also, in the specific case of coordination actions, it covers up to 100 % of the budget necessary for the coordination of activities funded by the participants themselves.

(2) In duly justified cases.

(3) This rate varies for different areas.

(4) Subject to specific conditions specific legal entities, particularly public bodies, will receive funding of up to 100 % of their marginal/additional cost.

(5) The rates of assistance may be differentiated in accordance with the rules of the Community framework for State aid for research and development depending on whether activities relate to research (maximum 50 %) or demonstration (maximum 35 %) or to other activities implemented, such as training of researchers (maximum 100 %) or the management of the consortium (maximum 100 %).

(6) The activities of an integrated initiative relating to infrastructure must include one networking activity (Coordination Action: maximum 100 % of the budget) and at least one of the following activities: research activities (maximum 50 % of the budget) or specific service activities (Specific Support Action, for example, transnational access to research infrastructures: maximum 100 % of the budget).

(7) For actions in support of research infrastructure relating to preparatory technical work (including feasibility studies) and the development of new infrastructure, 6th framework programme participation is restricted to maximum of 50 % and 10 % of the budget respectively.