# Research RTD, 7th Euratom Framework Programme 2007-2011: fusion energy, nuclear fission and radiation protection specific programme

2005/0190(CNS) - 21/09/2005 - Legislative proposal

PURPOSE: The establishment of a specific programme setting up indirect actions in the field of nuclear research and training activities within the context of the European Atomic Energy Community (Euratom) for nuclear energy.

PROPOSED ACT : Council Decision

CONTENT: The European Commission is presenting two “specific programmes” in follow up to the adoption in April 2005 of its proposal for the 7th Framework Programme of the European Atomic Community (Euratom) for nuclear research and training activities. The first specific programme of the Euratom Treaty concerns “direct” research activities of the Joint Research Centre relating to nuclear energy. This is the subject of a separate Commission proposal (2005/0189). The second, under discussion here, concerns “indirect” actions on fusion energy research, nuclear fission and radiation protection.

*Background:*

The specific programmes of the 7th Euratom Framework Programme have been specifically designed to address the major challenges facing European nuclear research. Financial support at a European level offers European nuclear researchers the kind of opportunities that can not be achieved at a national level. The specific programmes represent a further consolidation of the European Research Area by achieving a critical mass of knowledge in new areas of research. In addition, EU funded RT&D supports the free movement of ideas, knowledge and researchers. An emphasis on flexibility will allow researchers to respond to emerging industrial as well as social needs. Flexibility aside, the Commission also promises to streamline management methods by significantly cutting red tape as well as simplifying the funding and reporting requirements.

*Specific programme – Fusion energy, nuclear fission and radiation protection:*

Nuclear Power is the principal carbon-free source of base load electricity in the EU, totalling some 135We of installed capacity and accounting for one third of current electricity generation. It plays a key role in limiting the EU’s greenhouse gas emissions as well as contributing to the Union’s independence, security and diversity of energy supply. In the longer term, the Commission calculates that nuclear fission offers the prospect of an almost limitless supply of clean energy. ITER is considered the crucial next step in the progress towards this ultimate goal. It is the realisation of this goal that is the focus of present EU research strategies. Other areas of paramount importance and requiring on-going research relate to high levels of nuclear safety, sustainable waste management solutions and improving the efficiency and competitiveness of the nuclear sector. In order to achieve all of these gaols and to maintain a critical momentum for European nuclear research, the Commission proposes dividing this specific programme into two thematic research fields, namely fusion energy and secondly nuclear fission and radiation protection.

*Fusion Energy*: Any discussion on fusion energy has to be seen within the context the ITER facility in France and the “Broader Approach” projects, which have been designed to accelerate the development of

fusion energy. The domestic agency for ITER will be established as a Joint Undertaking under the Euratom treaty. It will provide the means for Euratom to discharge its international obligations under the ITER Agreement. Europe's leading position in fusion energy is thanks to the combination of a single and fully integrated European fusion programme. The overall objective of the "Fusion Energy" thematic research field is to realise ITER through the creation of prototype reactors for power stations that are safe, sustainable, environmentally responsible and economically viable. As such, the EU will play a leading role within the ITER organisation and will assume responsibility for site preparation, establishing the ITER Organisation, management and staffing. In addition, a focused physics and technology programme will seek to consolidate ITER projects. It will be executed through co-ordinated experimental, theoretical and modelling activities using the JET facilities. In addition, key technology activities will include the preparation of a DEMO power plant. The licensing, construction and operational phase thereof will be done in partnership with European industry. As far as the DEMO power plant is concerned a dedicated team will be established (ECEDA – Engineering Validation and Engineering Design Activities) to prepare for the construction of the International Fusion Materials Irradiation Facility (IFMIF). The later will be used for testing materials of a fusion power station. Other, related activities, will focus on irradiation testing and the modelling of low activation and radiation resistant material and the development of key technologies required for fusion power plant operation, the conceptual design activities of DEMO, which will take full account of environmental and safety consideration. In terms of ensuring adequate human resources, the paper proposes to address this through support for the mobility of researchers between organisations and high-level training programme for engineers and researchers at a post-graduate level.

*Nuclear fission and radiation protection*: Indirect actions will be undertaken in five principal areas of activity. They are the management of radioactive waste, the safe operation of existing installations under the heading Reactor Systems, radiation protection, supporting research infrastructures and providing for adequate human resources and training. Important cross-cutting links will exist throughout the programme.

Lastly, both at the implementation level and the research level, activities within indirect actions will respect fundamental ethical principles based, *inter alia*, on those reflected in the Charter of Fundamental EU Rights.

**For further information concerning the financial implications of this measure, please refer to the financial statement.**