

**Comments by the Programme Management to the
5-Year Assessment Report
NUCLEAR ENERGY PROGRAMME (EURATOM)
Fusion**

These comments have been prepared by officials of DG RTD and represent their personal views on the conclusions of the 5-year assessment. These views have not been adopted or in any way approved by the Commission and should not be relied upon as a statement of the views of the Commission or DG RTD.

The following comments of the Programme management have integrated the most recent developments, notably in the context of the European Research Area. As regards the overall 5-year assessment of the Framework Programmes, the Commission has expressed its position in the document COM(2000)659, 19 October 2000.

Recommendation 1 and 2 are about future activities beyond FP5.

The Programme management takes note of these two recommendations and, in particular, of the first priority given by the Panel to starting the construction of the Next Step in FP6. The Programme management agrees that the technical, engineering and industrial readiness exists in Europe to proceed to the construction of a Next Step device after JET that would enable the study of a burning plasma under reactor conditions. However, at the present stage of the preparation of the activities beyond 2002, it cannot be prejudged on such an important and long-term commitment.

Recommendations 3 to 10 are about actions that should be initiated during FP5.

- *Recommendation 3: proceeding with the Next Step in the international perspective of the New ITER.*

The Commission is presently seeking directives from the Council to conduct negotiations on the establishment of an international framework allowing the ITER-EDA Parties and qualified third countries, such as Canada and the USA, to prepare jointly for the future establishment of a legal entity for ITER construction and operation if and when so decided.

Regarding an ITER site in Europe, several potential locations have been explored under FP4 which, technically speaking, would be good candidates. However, the selection of such a site should follow possible Member State initiatives that are beyond the competence of the Commission and, as by now, have not been formally taken. The french Commissariat à l'Energie Atomique has proposed in July 2000 that the Associations and the European industry should study the use of its Cadarache centre as a possible european site for the construction of ITER. Formal site offers by Canada and Japan are expected during the year 2001. A thorough review of the financial costs and benefits of siting ITER in Europe, Canada or Japan will be undertaken.

- *Recommendation 4: due to the uncertainty over the outcome of the international negotiations, Europe should study an alternative to ITER, which would be suitable to be pursued by Europe alone.*

In response to the Panel recommendations and as approved by the Programme Committee, the CCE-FU, the evaluation of fall back possibilities of producing a sustained burning plasma has started.

- *Recommendation 5: limited investment on JET should be allowed to exploit the full value of the machine.*

The Programme management agrees with the Panel that JET remains the most relevant machine world-wide for supporting reactor-oriented fusion research and is currently the only machine capable of operation with tritium. In the framework of EFDA (European Fusion Development Agreement), and following an in depth examination by the CCE-FU the appropriate investment on JET that is required to exploit the full value of the machine has been defined and engaged.

- *Recommendations 6 and 7: a more innovative operational structure should be studied. The Committee structure governing the fusion R&D activities should be streamlined. Following a positive decision on the construction of a Next Step, a refocusing of the European Programme will be required.*

The Programme management agrees with the Panel that, if decided, the construction of a Next Step will require an evolution in the governance of the fusion activities in Europe. The increase in the number of associations (now 20 of them) with the coming enlargement of the Union will need also to be taken into account in this evolution. From an initiative of the Programme management, the European Fusion Development Agreement (EFDA), covering in particular the joint activities, such as JET and the contribution to ITER, has entered into force. Its successful implementation is an encouragement to move forward. The Programme management will foster studying an evolution of EFDA towards a more managerial structure in the governance of fusion R&D activities and studying how to refocus them if and when a positive decision on the construction of the Next Step is taken.

- *Recommendations 8 and 9: need for a Materials Research Programme and for a broader and more structured approach on environmental aspects that should be considered as a full programmatic issue.*

As identified by the Panel, R&D on materials for fusion address on one hand the materials used in the components directly facing the plasma (first wall materials), on the other hand those to be used in the structure of future fusion reactors. The development of first wall materials is an important element of the on-going R&D for ITER while the development of structure materials is a longer term issue. The present programme aims at the availability, in 15 to 20 years, of the materials to be used in post-ITER devices, i.e. DEMO. The Programme management agrees with the Panel that the important issue of a 14 MeV neutron source Materials Testing Facility or alternative solutions need to be resolved soon after a decision is taken on the Next Step/ITER.

As acknowledged by the Panel, major effort has already been dedicated to the assessment of the safety and environmental aspects of fusion. The updating of the 1995 report on the Safety and Environmental Assessment of Fusion Power and the significant contribution to the non site specific report for ITER have been the main achievements on these issues in the past 5 years. The Programme management will propose establishing, under EFDA, a small Working Group to review and promote the safety and environmental benefits of fusion energy.

- *Recommendation 10: need to improve the exploitation of transfer of technologies, skills and experience from the fusion R&D activities to other areas of science and technology and to European industry.*

As acknowledged by the Panel, there are various examples of such transfer, in particular with the increased involvement by industry in the ITER project. However, the Programme management agrees that the multi-disciplinarity of fusion R&D should enable to improve further the rate of transfer. Studies will be initiated to analyse the present status, and to propose schemes aiming at a more structured and entrepreneurial way of transferring know-how and experience to European industry.

The Programme management thanks all the members of the Panel for their dedicated work and the efforts they invested in carrying out the assessment.