

Position Statement: 6th Euratom Framework Programme (FP-6) 2003-2006 for Research & Development (R&D).

This paper comments on the 6th Euratom Framework Programme 2003-2006 proposed by the Commission, and now being considered by the Council and the Parliament.

Continuation of Euratom research is needed to ensure that the benefits of nuclear energy can continue to be available to future generations.

Community funded research has provided an important impetus to the development of nuclear energy in Europe. Nuclear now provides 35% of EU electricity. Nuclear is a clean energy source, producing virtually no greenhouse and acid gases, and provides a significant measure of security of supply to the EU.

The Green Paper on security of energy supply notes the important contribution of nuclear to the energy mix of the EU, and promotes the case for further Community funded research, especially in the area of waste management.

In order to keep the nuclear option fully open to future generations in the EU, it is necessary to preserve human skills and competencies. In this context mobility grants and funding of fellowships for researchers should be made available. It is also necessary to maintain the associated research infrastructures, including test facilities, centres of excellence, and communication networks.

Community support for basic research is needed. This should for example cover nuclear physics, materials performance, and radiation effects. Such work would provide common data and mechanisms to be used for consolidation of safety performance.

The Commission proposal would reduce the Euratom research budget, when in fact there are many important issues, which should not be overlooked.

The Commission proposal would increase the overall research budget by 17.5%, whereas the Euratom component would reduce by 2.5%. Thus represents a 20% reduction in real terms.

The proposed total research budget of 17,500 M€ for FP-6, includes 1,230 M€ (7%) for nuclear research, comprising 700 M€ (4%) for fusion, 200 M€ (1%) for fission and 330 M€ (2%) for financing programmes operated by the EC Joint Research Centre (JRC).

The EC proposal of 200 M€ for Fission allows adequate funding for research on waste management (150M€), but comparatively little (50M€) for all other activities. An increase to 70 M€, plus a 10 M€ provision for R&D fellowships and infrastructures is warranted. The Fusion budget is significantly reduced from that

of the 5th FP (788 M€) and will not be sufficient to implement the next stage of research, realisation of the pilot ITER plant.

Budget reduction will put the competitive edge of EU nuclear research at risk, especially in relation to ambitious new programmes in the USA for innovative fission reactor designs, which will be supported by public funding. For example, the impetus for new designs of fission reactor, (Generation IV) is being dominated almost entirely by US interests.

Implementation of FP-6 must reach greater efficiency and added value.

FP-5 contained too many different fission projects (about 200). FP-6 must reach greater efficiency by channelling resources into a limited number of large programmes, which would cluster smaller projects. Each should be managed by a group gathering representatives from the EC, the Member States, research institutes, and the nuclear industry. The proposed new instruments, in particular networks of excellence and integrated projects, may be useful to reach the goals towards the creation of a European Research Area. Closer relationships should be established between research institutes and industrial companies. A priority for FP-6 is to focus on areas where the Community action can provide the greatest possible European added value compared to the national R&D activities.

Priorities for nuclear research must focus on key areas.

- **Long term management of radioactive waste is a concern for all EU Member States.** In the EU all radioactive waste are currently safely managed by the nuclear industry. High-level long-lived wastes and spent nuclear fuel are safely stored on an interim basis in specially designed facilities. However, it is desirable to implement permanent disposal solutions in underground repositories in order not to pass this responsibility onto future generations. Packaging technologies and financing systems for such repositories are already in place. R&D networking collaboration is nevertheless needed for sharing experience and preparing site characterisation, including studies on behaviour of radio-nuclides in different geological formations, and for achieving harmonisation of criteria. Research programmes are needed to develop innovative reactor designs which will minimise waste volumes and radioactivity. Work is also needed to develop partitioning and transmutation techniques to reduce the active lifetime of radioactive residues. Generic programmes are required in communication psychology for public information and perception. Public and stakeholder involvement is to be sought in a transparent decision making process.
- **Nuclear safety remains a permanent priority of the industry.** Maintaining the existing high level of safety culture is of paramount importance in all nuclear industrial installations and research facilities. Research is required to promote the development of harmonised safety regulatory standards and it is thus important that FP-6 supports the action of the EU national regulatory

authorities. The role of the Commission and its Joint Research Centre is important in this context. Safety of reactors in candidate countries has already improved with assistance from the EC, and the continuing input of international organisations such as IAEA, WANO, and WENRA. The priorities in this field are to integrate the research institutions of the accession countries into the EU R&D networks, and to develop programmes which would permit future nuclear safety improvements to be identified. Co-operation between regulators and operators in this domain has to be encouraged.

- **Radiation protection requires continued action.** Knowledge of the long-term effects of radioactivity on human health and natural environment requires a continued generic action in order to reach a better quantification of the radiation impact and to establish a common EU approach. R&D is needed in particular on effects of low doses on man and on migration effects of radioactive elements in the biosphere.
- **Research for innovative fission reactor designs is needed.** This will help to maintain a long-term option for energy supply, after existing reactors have been retired, both for domestic and export use. The incorporation of passive safety concepts, improved proliferation resistance, and enhanced performance are needed. This could be provided through continuation of the EU so-called “Michaelangelo” network.
- **Thermonuclear fusion is one of the long term options for sustainable energy supply.** Fusion R&D has advanced considerably within previous EU programmes, enabling Europe to become the world leader in this field. Fusion now represents one of the long-term options for sustainable generation of base-load electricity. The next step is to build a prototype machine capable of fusion reactions in conditions comparable to that of an electricity generating reactor, the so-called ITER project. The proposed Euratom funding for this falls short of what would be required to realise the project in the EU. It is important that the lead in this domain stays in the EU.

Conclusions

- Nuclear research must continue to be an important priority in EU energy policy to maintain its capacity at the level of the USA and Japan, in order to be able to contribute on an equal footing to resolve the problem of sustainability, security of supply, and avoidance of climate change.
- To maintain safety culture and competence, education and training of young scientists and engineers is necessary in fundamental physics, material science, nuclear safety and radiation protection. Mobility of searchers and fellowships must be encouraged. New technologies and materials qualification require that searchers have access to appropriate infrastructure test facilities.
- The proposed cut of 20 % in real terms between the funding levels of the 6th and 5th FPs should be reviewed, noting the above mentioned requirements.