

INTERNATIONAL PROJECT ON INNOVATIVE NUCLEAR REACTORS AND FUEL CYCLES (INPRO)

Terms of Reference

At a meeting of Senior Officials from interested Member States in November 2000, the Terms of Reference for INPRO were adopted:

1. Rationale

- Existing scenarios for global energy use project that demand will at least double over the next 50 years. Electricity demand is projected to grow even faster. These scenarios suggest that the use of all available generating options, including nuclear energy, will inevitably be required to meet those demands.
- However, the location and availability of technology for the utilisation of those resources pose political, economic and environmental challenges, the impacts of which vary between different regions of the world.
- The long-term outlook for nuclear energy should be considered in the broader perspective of future energy needs and environmental impact. In order for nuclear energy to play a meaningful role in the global energy supply in the foreseeable future, innovative approaches will be required to address concerns about economic competitiveness, safety, waste and potential proliferation risks.
- At the national level, work on evolutionary and innovative approaches to nuclear energy reactor design and fuel cycle concepts is proceeding in several IAEA Member States. At the international level, OECD/IEA, OECD/NEA and the IAEA are co-operating to review ongoing R&D efforts on innovative reactor designs and to identify options for collaboration. The US Department of Energy is promoting the Generation IV International Forum (GIF) initiative, in which both the IAEA and OECD/NEA are participating as observers. The President of the Russian Federation, at the Millennium Summit, called upon IAEA Member States to join their efforts in creating an innovative nuclear power technology to further reduce nuclear proliferation risks and resolve the problem of radioactive waste.
- While existing national and international activities on innovative approaches play an important role, they are in most cases more limited in terms of scope, participation or timeframes. Against this background, and taking account of the Agency's unique mandate in the fields of nuclear technology, safety and safeguards, the IAEA General Conference has invited "all interested Member States to combine their efforts under the aegis of the Agency in considering the issues of the nuclear fuel cycle, in particular by examining innovative and proliferation-resistant nuclear technology". The International Project on

Innovative Nuclear Reactors and Fuel Cycles (INPRO) is a response to that invitation.

2. Overall Objectives

The overall objectives of INPRO are:

- to help to ensure that nuclear energy is available to contribute in fulfilling, in a sustainable manner, energy needs in the 21st century;
- to bring together all interested Member States, both technology holders and technology users, to consider jointly the international and national actions required to achieve desired innovations in nuclear reactors and fuel cycles that use sound and economically competitive technology, are based – to the extent possible – on systems with inherent safety features and minimise the risk of proliferation and the impact on the environment;
- to create a process that involves all relevant stake holders that will have an impact on, draw from, and complement the activities of existing institutions, as well as ongoing initiatives at the national and international level.

3. Implementation Strategy

The Project will be an Agency-wide project, with contributions from all relevant IAEA Departments within available resources.

The framework for implementation of the Project will consist of the following:

- a Steering Committee, comprising as members, senior officials from Member States that participate through provision of extrabudgetary resources and, as observers, representatives from interested Member States and international organizations. IAEA project management will also be represented. The Steering Committee will meet as appropriate to provide overall guidance, advise on planning and methods of work and review the results achieved;
- an International Co-ordinating Group (ICG), comprising cost free experts from participating Member States, which will co-ordinate and implement the project;
- Technical Expert Groups, comprising experts from Member States, which will be convened as appropriate by the ICG to consider specific subjects;
- support from the IAEA, including project management, administrative and technical support.

The Project will be implemented in two phases. Phase I will be initiated in early 2001 as soon as sufficient resources are made available. Results of the first phase and plans for the second phase will be subject to review and approval by the Steering Committee.

3.1 Phase I - Guidelines, Methodology and Review

In the first phase, work will proceed in five subject areas recognised as important for the future development of nuclear energy technology, and on two parallel tracks.

The five subject areas are:

- Resources, Demand and Economics;
- Safety;
- Spent Fuel and Waste;
- Non-proliferation;
- Environment.

The two tracks are :

- Track 1: selection of criteria and development of methodologies and guidelines for the comparison of different concepts and approaches, taking into account the compilation and review of such concepts and approaches; and determination of user requirements in the subject areas.
- Track 2: examination of innovative nuclear energy technologies made available by Member States against criteria and requirements.

ICG will seek input from the on-going Three-Agency Study (jointly conducted by OECD/IEA, OECD/NEA and IAEA) on “R&D on Innovative Nuclear Reactors – Status and Prospects” and will interact with other national and international stakeholders, in particular with OECD/NEA and Generation IV International Forum (GIF), in order to ensure effective co-ordination and co-operation in a complementary manner.

The Steering Committee will review the results of Phase I and recommend, based upon a proposal to be developed by ICG, actions for follow-up, intended to continue to meet the interests of IAEA Member States. These results and recommendations will be reported to IAEA Member States, as appropriate.

3.2. Phase II

Upon successful completion of the first phase, taking into account advice from the Steering Committee, and with the approval of participating Member States, a second phase of INPRO may be initiated. Drawing on the results from the first phase, it will be directed to:

- examining in the context of available technologies the feasibility of commencing an international project;

- identifying technologies which might be appropriate for implementation by Member States of such an international project.

4. Resources

The project will be implemented using mostly extrabudgetary resources offered by interested Member States. Contributions to implementation of the Project may be both in kind and in cash.

5. Partners

The following parties are considered important partners for the implementation of the project:

- participating Member States;
- interested Member States;
- interested international organisations;
- interested national and international institutions.

Partners will be invited to participate and/or contribute as appropriate to the project.