Terms of Reference
for
PHASE-1B (second part) and PHASE II
International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO)

International Atomic Energy Agency

1. Introduction

The Agency's International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO) is addressing the identification of full spectrum of user requirements for innovative technologies as well as the development of methodologies and guidelines for the comparison of different innovative approaches taking into account variations in potential demands across countries. INPRO can make major contributions by focussing on economic aspects and societal acceptability issues, and those areas where IAEA can make unique contributions, such as proliferation resistance, nuclear safety, waste management and sustainability issues, and by providing assistance to the user community. To enhance the potential for the deployment of innovative technologies, some changes in the infrastructure under which nuclear energy is developed and used should be envisaged.
Phase I of INPRO was initiated in May 2001. During Phase I, work was subdivided in two sub phases:

- Phase-1A (completed): Selection of basic principles, user requirements, criteria and development of a methodology and guidelines for the evaluation of different INS as well as of recommendations for changes in the infrastructure.
- Phase-1B (started after Phase-1A):
    - 1st Part:
- Validation and improvement of the Methodology through national and individual case studies; preparation of a User Manual to perform INS assessments;
    - 2nd Part
- Assessments of INS using the updated INPRO methodology.

2. Phase-1B (second part)

The Second Part of Phase-1B (2005 – middle 2006) will contain the following activities and objectives, bearing in mind that the Project should also integrate Agency activities on INS development and deployment:

- Facilitate assessments of INS by MS (nationally or jointly) using the updated INPRO methodology as stated in the IAEA General Conference Resolution GC(48)/RES/13(F), which invites all Member States to perform "innovative nuclear energy systems assessments";
- Continuous improvement of methodology with a focus on a more quantitative approach;

• Finalizing and publication of a Users' Manual, and identification and possible development of essential models, codes and techniques;

• Identification of possible frameworks and implementation options for collaborative R&D for INS development, which could be performed during Phase II;

• Enhance collaboration, on a complementary and synergetic basis, with other national and international INS initiatives (e.g. GIF);

• Determination of national, regional and global balances of demands and resources and of infrastructure needs, and establishment of a databank and further development of codes (e.g. DESAE);Defining and modelling of INS deployment scenarios taking into account strategies considered by MS;Review of technological and infrastructure options of Multilateral Nuclear Fuel Cycles (MNFC) as components of different INSs;

• Enhance communication among INPRO members by regular updating the website and publishing electronic newsletters.

3. Phase II (starting in mid 2006)

While some Member States may still require Agency assistance in assessment of various INS options, the main objective of Phase II is to encourage and support IAEA Member States in facilitating the development, demonstration and deployment of safe, competitive, environmentally clean, and proliferation resistant INSs for sustainable development. This will/could be achieved by R&D, Institutional/infrastructure and methodology oriented activities:

R&D oriented activities:

• Facilitate analysis of INS in INPRO Member States as required;

• Provide a forum to enable identifications and prioritizations of R&D needed under framework defined in Phase-1B (2);

• Assist in assessing R&D progress against targets and in reorienting as necessary;

• Identify and enable specific R&D to be performed under IAEA / INPRO auspices (e.g. under CRP framework, TC projects);

• Encourage, provide guidance and assistance to interested IAEA Member States to perform joint research and implement projects for INS development; Preparation of country profiles on R&D programmes for innovative nuclear technologies;

These activities will be performed by INPRO ICG with the involvement of INPRO Members and under the support from the IAEA/INPRO secretariat.

Institutional/infrastructure oriented activities

• Undertake relevant studies and analysis to demonstrate the strengthened role of INS for sustainable development

• Make efforts to promote the use of INS for electricity production and nonelectrical applications;

• Facilitate the application of INPRO methodology to provide guidance for INS deployment strategies on a national, regional, or global scale, with emphasis on the needs of developing countries;

• Identify MNFC institutional and infrastructure options and other innovative approaches which would facilitate the introduction and further deployment of nuclear energy;

• Identify innovative approaches to the communication process of all aspects of INS to the public, policy advisors, decision makers and other stakeholders;

• Assistance for and facilitation of harmonization of licensing and industrial codes and standards, subcontracting by licensing authorities and international design certification; maintenance or development of necessary competences and experience, research facilities, etc..

• Facilitate the analysis of fuel cycle strategies and options on national and regional basis in order to determine best-suited solutions, which meet anticipated local and global constraints, within the INPRO context.

Methodology oriented activities

• Further development of INPRO methodology and refinement of the assessment method in all INPRO areas in order to support the above mentioned activities;

Within Phase II INPRO activities will address the needs of both technology users and technology holders with special emphasis on the needs of developing countries. INPRO will seek cooperation with other international initiatives, such as Generation-IV International Forum.

4. Resources

The project will be implemented using extra budgetary contributions offered by interested IAEA Member States and the IAEA Regular budget. The ICG Members and Reference of Phase I taking into account the progress achieved.
Rules and procedures for Task Managers will be established by the Agency.

5. INPRO members

Members of INPRO are all IAEA Member States and International Organizations which contributed to INPRO during Phase I and Phase-1B (first part) of the project according to the established rules (via sending CFEs to the ICG, performing work packages, case studies or providing direct financial support). In Phase-1B, second part, and Phase II all interested Member States and International Organizations who are participating in an assessment of an INS will become Members of INPRO.

6. Steering Committee

Steering Committee formed by the representatives of INPRO members will continue its role in Phase-1B (second part) and Phase II.

7. Schedule

Phase II of the project is proposed to start in the middle of 2006. Phase-1B (second part) is planned to present first results in the middle of 2006 and may continue in parallel with Phase II.

8. Organisation

The organisation chart for Phase-1A and Phase-1B (first part) is given below.