

THE IAEA INTERNATIONAL PROJECT ON INNOVATIVE REACTORS AND FUEL SYSTEMS

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Nuclear power is faced with a dilemma. From one side, there is no doubt (particularly in our community) that nuclear power can play an outstanding role in a sustainable energy system worldwide due to its well known potential advantages.

From the other side we have near-term nuclear power projections and prospects that are not so promising. In 2000 nuclear's share was 3% of total global electricity capacity additions which is more than three times lower than nuclear's 10% share of today's currently installed global capacity. It is also unfortunate that nuclear capacity additions in developing countries, where the main increase in energy demand is expected, are relatively insignificant compared to fossil and hydro capacity additions in recent years. Most near-term projections show no drastic changes in these recent trends

How can we address this dilemma? If the nuclear power sector is to increase its role, it cannot simply continue to do what it has been doing and expect that factors outside its control, such as fossil fuel prices or environmental taxes, will change to make nuclear power's prospects more favorable. To reach a different outcome than that indicated by current near- and intermediate-term trends, something must be done within the nuclear community to generate new technological solutions. The challenge is to look to the future, to identify what innovations and new directions – that build upon and make good use of existing expertise and accomplishments – are most promising for helping nuclear power capture a *growing* share of a growing market.

There are several challenges that we have to deal to facilitate large-scale global nuclear power development. These are: achieving economic competitiveness of new NPPs in most parts of the world; successfully demonstrating effective nuclear waste management; responsiveness to public safety concerns; responsiveness to proliferation concerns. And as a result building support for nuclear power among the public and policy makers. A 2000 the IAEA General Conference resolution 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”. In response to this invitation, the IAEA initiated an “International Project on Innovative Nuclear Reactors and Fuel Cycles”, INPRO.

The INPRO Project will be implemented in two phases. In the first phase, the main objective is to identify user requirements facilitating large scale nuclear energy development in the 21st century in the following areas: Resources, Demand and Economics; Environment, Spent Fuel and Waste; Safety, and Non-proliferation. Plus two crosscutting groups addressing Criteria and Methodology; and Institutional, Infrastructure, Social and Sustainability Requirements. 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. It would examine, in the context of available technologies, the feasibility of an international project including the identification of technologies that might appropriately be implemented by Member States within such an international project.

We believe that INPRO's global character, encompassing both designers and end users and their user's requirements, its long time horizon, its consideration of the changing energy sector and its broad based input through IAEA membership all will make it a valuable forum for the assessment of perspectives for nuclear in the 21st century.