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Management of the IAEA Cross Cutting Activities on Research Reactors

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For several decades, research reactors have been a corner stone in the development and application of nuclear science and technology and in education and training of nuclear scientists and engineers. The benefits of research reactors also extended to many other fields including medical and industrial applications. Research reactors also can play an important role for building the national infrastructure in countries embarking on nuclear power programmes. Continued safe and secure operation, and effective utilization of research reactor facilities is essential for the benefits of the whole nuclear community.

Through its programmes and activities, the IAEA continues to provide a main contribution to enhancing safety, security, and effective operation and utilization of research reactors worldwide. These programmes and associated activities are continuously adapted to address the needs of Member States, issues and trends, and challenges facing the research reactor community. These programmes are established with the objectives to enhancing safety and security, improving utilization, promoting research and technological developments, supporting research reactor fuel cycle activities, supporting new research reactor projects, and minimizing the use of high enriched uranium (HEU).

The IAEA plays a leading role in coordinating the worldwide efforts in these areas and in supporting Member States to address the relevant issues and challenges. These issues and challenges include regulatory effectiveness, safety and security management, ageing of reactor facilities and personnel, lack of adequate utilization, increased pressure for increased vigilance with respect to non-proliferation, and the need for establishing an adequate national infrastructure supporting the development of new research reactor programmes. These compromise a wide range of elements in safety, operation, fuel cycle, and utilization areas, which require effective coordination and harmonization of methods and approaches.

The IAEA activities on research reactors are managed by several organizational units within the Department of Nuclear Sciences and Application (NA), Department of Nuclear Energy (NE), and Department of Nuclear Safety and Security (NS). Utilization and application activities for research reactors are led by NA and mainly oriented to supporting Member States in assessing their needs for research reactors and in improving effective utilization of the facilities for development in nuclear science and application. The technological aspects related to research reactor design, operation, maintenance, fuel cycle, HEU use minimization are managed by the NE which also coordinates the activities related to development of the national infrastructure to support new research reactor projects. NS is supporting Member States to build capacity in all aspects related to nuclear safety and nuclear security in all stages of the research reactor lifetime, including siting, design, commissioning, operation, utilization, and decommissioning. Additionally, the IAEA Department of Technical Cooperation supports research reactor activities in the TC recipient countries. NA, NE and NS support TC in the technical implementation of the TC projects and programme on research reactors.

To ensure optimization of resources and harmonized approaches for the benefits of Member States, an IAEA Cross-cutting Coordination Group on Research Reactors (CCCGRR) has been established with representatives from all IAEA organizational units have activities on research reactors. The role of the Coordinator of the CCCGRR is assigned to NA, NE, and NS on rotational basis.

After a brief review of the status of the research reactors worldwide and presentation of common issues and trends of a cross-cutting nature among nuclear safety, nuclear security, operation and utilization, the paper presents, along with discussions the ongoing and planned IAEA activities addressing these issues in a coordinated manner. These include, among others, activities on the development of national infrastructure for countries planning to build their first research reactor, managing ageing research reactors, conduct of coordinated research projects, conversion of research reactor fuel from highly to low enriched uranium, and fostering networking for safety and utilization improvements, and development of human resources. These activities have an important role in supporting Member States in effective application of the IAEA Code of Conduct on the Safety of Research Reactors, safety standards, and security guidance documents.

Organization

IAEA

Country

Vienna

Primary author: Mr SHOKR, Amgad (IAEA)

Co-authors: Dr BORIO DI TIGLIOLE, Andrea (IAEA); Dr RIDIKAS, Danas (IAEA); Mr MUHAMMAD, K. (IAEA, Division of Nuclear Safety and Security)

Presenter: Mr SHOKR, Amgad (IAEA)

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