

Tapping into the power of research reactors

By Cornel Feruta, Acting Director General, IAEA

Research reactors have been a powerful tool driving innovation in nuclear science and technology throughout the world for decades.

There are 224 research reactors operating in 53 countries today. Their numerous applications include producing radiopharmaceuticals for cancer care and nuclear medicine, helping to create new materials for research and industry and training nuclear scientists and engineers. They are generally not used for power generation.

For more than 60 years, the IAEA has helped countries to set up, operate and maintain research reactors in order to reap the great benefits that they offer to science and society.

This edition of the *IAEA Bulletin* examines research reactors and the many ways in which the IAEA helps countries to derive optimal benefit from them. It provides an overview of how they are used (page 4), such as for the production of radioisotopes for medical scans (page 12) and the education and training of nuclear professionals (page 14). A photo tour offers an inside look at a research reactor facility in Jordan (page 16).

For countries embarking on a research reactor programme, the IAEA's Milestones approach offers a holistic, step-by-step method to develop the necessary infrastructure to use these versatile tools safely and reliably (page 6). For countries that already have research reactors or are seeking to build more, the IAEA's expert peer review services offer an avenue for assessing and improving safety, security and operation (page 22).

Many countries work with the IAEA to maximize the utilization of their research reactors, particularly those that were built decades ago without a long-term strategic plan (page 20). Belgium, for example, is adopting ageing and management plans to optimize the use of its research reactor for decades to come (page 30). Uzbekistan, on the other hand, has worked with IAEA experts to decommission one of its research reactors (page 32).

Research reactors must always be used in a safe and secure manner. Many countries work with the IAEA to integrate security systems and measures into existing and new research reactors (page 24), implement safety regulations (page 8) and establish a strong safety culture (page 10).

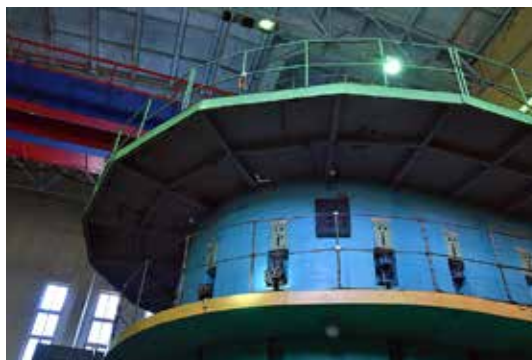
The IAEA has played an active role in international efforts to convert research reactor fuel from high enriched uranium (HEU) to low enriched uranium in order to minimize civilian use of HEU and reduce associated security and proliferation risks (page 26). IAEA safeguards inspectors verify that nuclear material and technology at research reactors are not diverted from peaceful uses (page 28).

The IAEA's International Conference on Research Reactors: Addressing Challenges and Opportunities to Ensure Effectiveness and Sustainability from 25 to 29 November 2019, will review all of these areas and provide a platform for reactor operators, managers, users, regulators, designers and suppliers to exchange best practices and learn from each other. I hope that this edition of the *IAEA Bulletin* will offer useful insights that help to encourage discussions at the conference and beyond.



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(Photos: IAEA)