Peace and development through the peaceful uses of nuclear science and technology

The IAEA serves the international goals of peace, health and prosperity by assisting countries to adopt nuclear tools for a wide range of peaceful applications.

Nuclear science and technology can help find solutions to many of the problems people face every day across the globe. When used safely and securely, nuclear science and technology are effective supplements or provide alternatives to conventional approaches, which makes them an important part of the international community's work for development. In its contribution to global objectives, the IAEA serves the international goals of peace, health and prosperity by assisting countries to adopt nuclear tools for a wide range of peaceful applications.

Within the context of global trends and development, IAEA services — some highly visible on the global stage, others delivered more discreetly— underpin collective efforts for the safe, secure and peaceful use of nuclear science and technology. They are supported by the IAEA's specialized laboratories in Seibersdorf, Austria, and in Monaco, as well as dedicated programmes, networks and collaborations with partners. Through the IAEA's assistance, nuclear techniques are put to use in various areas, including human health, food and agriculture, the environment, water, energy, nuclear safety and security, and the preservation of artefacts.

Human health

Health is of critical importance to people's lives and to achieve sustainable development. For low-income families, poor health can reinforce cycles of poverty. To increase access to health care, the IAEA and its specialized laboratories support IAEA Member States, in particular in low and middle income (LMI) countries, with assistance in the form of equipment, expert guidance and training, and knowledge exchange to aid in the use of nuclear techniques for diagnosing, treating and managing cancer, cardiovascular and other non-communicable diseases. This work also includes ensuring the safe and secure use and management of radioactive sources, such as those used in radiotherapy machines and for sterilizing medical tools, as well as the safe and secure production, availability and use of radiopharmaceuticals — drugs that contain radioactive substances — used in nuclear medicine and radiation therapy.

Good health also relies on proper nutrition and adequate access to food. Nuclear techniques can be applied to monitor and sustainably address malnutrition — from severe malnourishment to obesity — and to implement breastfeeding programmes to improve nutrition and health from the first days of life. The IAEA helps many countries with training and the provision of the equipment necessary to conduct these nutrition-related projects.

Food and agriculture

A number of countries, particularly those relying heavily on agriculture for food and livelihoods, are turning to nuclear techniques to enhance agricultural productivity and food security and safety. IAEA projects and programmes help to provide important equipment and expert guidance, as well as technology and training from the IAEA's specialized laboratories and partner organizations like the Food and Agriculture Organization of the United Nations (FAO). With this support nuclear techniques can be used by countries safely and properly, in such areas as, breeding improved crop and plant varieties, including vitamin or mineral-enriched varieties; controlling animal and plant pests and disease; improving food safety; enhancing livestock reproduction and nutrition; and strengthening soil and water management.

Environment

Food and agricultural development are often affected by adverse environmental conditions. This can pose serious challenges for many countries, in particular in LMI countries with economies that are reliant on agriculture. With the IAEA's support, many countries use nuclear and isotopic tools to research and address environment-related matters. They can evaluate the impact of changing environmental conditions due to natural or man-made causes, as well as monitor pollution, its trends and manage its impacts.

Water

Access to safe water sources is essential to supporting growing populations, accelerating economic development and meeting the demands of changing lifestyles. The quality of ocean water not only impacts marine life, but also affects those people who rely on the sea for their livelihoods. Many countries have now turned to the IAEA to assist them in using nuclear and isotopic techniques to better understand water in order to sustainably manage and protect them for the future.

Nuclear energy

In the face of climate change and increasing demands for electricity, some countries are now assessing or planning to include nuclear power as part of their energy mixes. They look to the IAEA for support to do so safely, securely, economically and sustainably. The IAEA assists these countries to do so in line with internationally recognized safety and security standards, best practices and relevant legal instruments including respective nuclear non-proliferation obligations.

Nuclear safety and security

The IAEA's assistance also facilitates the safe and secure transport, handling and use of radioactive materials in fuel cycle technologies, radioactive sources for energy production and other radiation-related purposes. This support also includes facilitating the proper and sustainable mining of essential chemical elements for nuclear energy production, as well as the effective decommissioning and management of nuclear facilities, radioactive waste and spent fuel from cradle to grave.

Behind each IAEA project, programme and service lies a foundation of safety and security, which is undertaken in line with international safety and security standards. The IAEA provides Member States with the assistance they need when they embark on using nuclear science and technology, through review services and facilitating tailored, dedicated training and emergency preparedness exercises. Ensuring that these uses remain peaceful and are properly managed in order to protect people and the environment while achieving the full benefits that these tools offer, are paramount attributes of the IAEA's services that are made available to Member States.

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What is the Peaceful Uses Initiative (PUI)?

The IAEA Peaceful Uses Initiative (PUI), launched in 2010, has become instrumental in raising extrabudgetary contributions which supplement the Technical Cooperation Fund to support technical cooperation projects and other unfunded projects of the IAEA in the areas of peaceful application of nuclear technology. Additional resources made available through the PUI have served to enhance the IAEA's ability to fulfil its priorities and statutory responsibilities, and to meet the needs of Member States. Extrabudgetary contributions made through the PUI have been used to support a wide variety of IAEA activities aimed at promoting broad development goals in Member States, such as in the areas of food security, water resource management, human health, nuclear power infrastructure development and nuclear safety, many of which would have remained unfunded otherwise.

The PUI has also allowed the IAEA to be more flexible and quicker in responding to shifting priorities of Member States, as well as to unexpected needs or unforeseen emergency events, as demonstrated in the aftermath of the Fukushima Daiichi accident as well as the Ebola virus disease outbreak in western African States. To date, the PUI has helped raise over €60 million in financial contributions from 13 Member States and the European Commission, in support of more than 170 projects that benefit more than 130 Member States.