

The future of the Peaceful Uses Initiative: Responding to global challenges and emergencies

By Rebekka Koelbl

Accelerating and enlarging the “contribution of atomic energy to peace, health and prosperity throughout the world” is a statutory objective of the IAEA. For ten years the Peaceful Uses Initiative (PUI) has contributed to this objective, proving to be effective in mobilizing extrabudgetary contributions toward peaceful applications of nuclear technology.

What is next? How will the PUI evolve in the coming years?

The world faces complex developmental challenges, such as zoonotic outbreaks, climate change and environmental pollution, among others, to which nuclear technologies can offer solutions and for which governments are seeking the support of the IAEA. Today’s complex global challenges increasingly call for large-scale, integrated responses, programmes and initiatives that are thematically overarching and strategically designed.

Multi-year pledges of PUI funding provide flexibility to the IAEA and allow it to identify and support such projects based on the

evolving needs of Member States. Multi-year pledges will continue to play an important role, helping to mobilize predictable funding and allowing donors to flexibly allocate resources for larger initiatives or emergencies when needed.

Early response to zoonotic outbreaks

This year, the world has witnessed an unprecedented global emergency in the COVID-19 pandemic, and reverse transcription–polymerase chain reaction (RT–PCR), a nuclear-derived technique used for detecting the virus that causes COVID-19, has been instrumental in fighting it. As part of its largest technical cooperation project, the IAEA has helped to provide over 120 countries with expertise and equipment. In addition to the immediate emergency response, it is essential that experts worldwide have the capacity to detect and characterize diseases at an early stage, before an outbreak can emerge.

Zoonotic diseases affect around 2.6 billion people every year. Nuclear

Real time RT-PCR is the most accurate method to detect the COVID-19 virus. The IAEA has been helping countries use this technique to detect zoonotic (animal to human) diseases like COVID-19 and Ebola.

(Photo: D. Calma/IAEA)



and nuclear-derived techniques can help scientists to investigate, prevent and contain outbreaks of zoonotic diseases. Worldwide access to spatial and temporal data on animal pathogens and diseases can help facilitate swift decision making and support veterinary and health authorities in responding in a timely manner and disseminating information to relevant stakeholders. To prepare for future outbreaks, national experts will benefit from coordinated research activities to better understand and address how zoonotic diseases impact human health.

To address this need and prevent future outbreaks, the IAEA has launched the Zoonotic Disease Integrated Action (ZODIAC) project, a comprehensive, multisectoral and multidisciplinary global initiative to enhance the surveillance, monitoring and timely detection of pathogens causing zoonotic diseases. The Veterinary Diagnostic Laboratory (VETLAB) Network, supported for years through PUI funding, will provide the basis for a new expanded laboratory network under ZODIAC. (For more on the VETLAB Network, read our article on page 10.)

Fighting plastic pollution

Plastic pollution is increasing at an alarming rate, threatening ecosystems, jeopardizing food safety, and endangering human health

and sustainable development. In 2018, global plastics production reached almost 360 million tonnes, and every year about 8 million tonnes of plastic waste finds its way into the oceans.

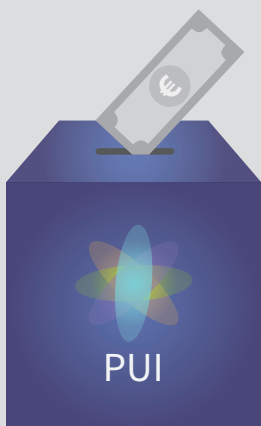
Nuclear technologies have the potential to complement conventional approaches to reduce plastic waste. Irradiation can be used to modify the structure and properties of plastic or to break it down to create feedstocks. In both cases, the modified or functionalized new material or feedstock is used to produce commercially viable plastic items, thus creating economic benefits while reducing waste volumes.

Recycling plastic into new products using radiation technologies is particularly beneficial when primary recycling of plastic waste is no longer possible, as many thermoplastics can only be recycled once or twice with conventional technology.

Furthermore, nuclear techniques can be used to characterize, monitor, trace and track microplastics to assess their prevalence and their impact on the environment, including in the oceans.

Dealing with climate change

To comply with international agreements and keep global temperature rise below two



How to make an extrabudgetary contribution through the Peaceful Uses Initiative

Member States initiate the process by sending a pledge letter to the IAEA, including the amount of the contribution, specific project to fund, if already identified, and an indication that the contribution is made through PUI. Member States are encouraged to closely consult with the Secretariat before they make their official pledge.

The IAEA will initiate the formal acceptance process for the contribution and respond to the pledge letter.

Private donors interested in contributing through the PUI are encouraged to contact the Secretariat to identify the appropriate modality.

For further information on PUI, please access www.iaea.org/services/key-programmes/peaceful-uses-initiative

degrees Celsius above pre-industrial levels, the energy sector must be decarbonized.

In the meantime, changing weather patterns are affecting agricultural systems, the global food supply and the livelihoods of small-scale farmers. Some of the most pressing effects of climate change already being felt are food shortages, water scarcity and biodiversity loss. The IAEA will play an increasingly important role in helping countries measure and adapt to the consequences of climate change using nuclear and isotopic techniques.

The IAEA will also continue to help mitigate climate change by assisting countries in assessing the development of their energy systems and the role nuclear power could play in generating electricity. Innovations in nuclear energy can assist countries in moving toward a clean energy transition, and nuclear power can complement renewables such as wind and solar power. Projects and programmes to help Member States operate nuclear power safely, sustainably and cost-effectively using innovative technologies will continue to be an important part of the IAEA's work supported by PUI funds.

Modernizing research laboratories

The renovation and modernization of the IAEA's nuclear applications laboratories in

Seibersdorf, Austria, have received support from the PUI, and this is expected to continue in the years to come. Three new laboratories will be built to better serve the evolving needs of Member States, providing lab services and training in food and agriculture, human health, the environment, and the development and use of neutronic instruments (see our article, page 24).

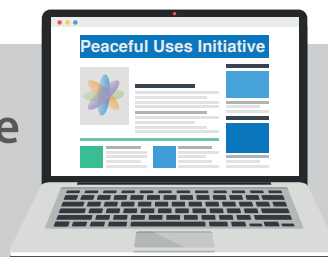
Safety of radioactive sources and nuclear material

The use of nuclear technology requires strong nuclear safety and security regulation and infrastructure at the national level. International cooperation through the harmonization of approaches in, for example, transport safety and security, radioactive waste management safety, and emergency preparedness and response provides tangible benefits to countries, using nuclear applications for development. PUI funding complements the Agency's programme on the safety of radioactive sources and further improves the effectiveness of national systems using these technologies.

With the support of partners from the public and private sectors, this decade can take the PUI to the next level in its capability to maximize the IAEA's impact on solving global challenges through the use of nuclear technologies.

The Peaceful Uses Initiative website

Your portal for up-to-date information on the programme and its supported projects



The web page of the Peaceful Uses Initiative (PUI) on iaea.org (www.iaea.org/services/key-programmes/peaceful-uses-initiative) provides an overview of the programme, recent publications and news related to its projects. It includes information on:

- **Funding** — with information on the amount of extrabudgetary contributions, contributing Member States and other donors, including from the private sector. This information is summarized in annual presentations given to Members States, which are uploaded to the website.
- **Projects** — with a list of all ongoing projects and concept notes for unfunded projects in the areas of nuclear applications, energy, safety and technical cooperation. The description of each project is presented in a structured format, showing objectives, activities, key technologies, duration, beneficiary countries, expected results and the total estimated budget. Information on the United Nations Sustainable Development Goals that the project contributes to is also included.
- **How to contribute to the PUI** — with a step-by-step guide on how to make an extrabudgetary contribution through the PUI.

To find out more about the PUI programme and its projects, contact information can be found on the website.