

Investing in Nuclear Science and Technology

Accelerating Progress Towards Development and Climate Goals

Why Invest in Nuclear Now?

The world is facing unprecedented challenges that require cutting-edge yet practical solutions. Nuclear science and technology **represent a strategic investment in sustainable development**. As countries work to meet climate commitments and development goals, nuclear applications offer proven solutions with lasting impact across healthcare, agriculture, and clean energy.

Proven Impact of Nuclear Applications Across Critical Areas

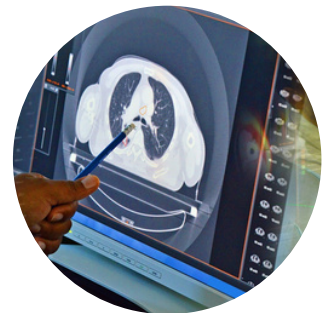
Food Security & Agriculture



- Irradiation can **produce crop varieties** that withstand drought and soil degradation, helping farmers adapt to changing climates. In Vietnam, nuclear-derived rice varieties have transformed farming in areas where rising sea levels have made groundwater increasingly saline, benefiting 400,000 families with increased yields of up to 40%.
- The Sterile Insect Technique (SIT) uses radiation to **sterilise insect pests**, preventing billions of dollars in agricultural losses each year. SIT facilities in Mexico and Guatemala sterilise ca. 1.5 billion flies weekly, protecting the multi-billion dollar produce industry.
- Irradiation **eliminates bacteria and pests from food**, reducing waste and enhancing food security. In Thailand, food irradiation protects \$200 million in export revenue each year.

Healthcare

- When detected early, **radiation therapy can cure over 50% of all cancers**, typically at a third of the cost of chemotherapy or surgery. Nuclear imaging detects certain tumours years earlier than traditional methods, and targeted radiotherapy destroys cancer cells while sparing healthy tissue. This combined approach has significantly improved survival rates for cancer patients in many countries.



Climate, Environment, and Clean Energy



- Scientists can **measure changes in ocean acidity** by tracking carbon isotopes in seawater and marine organisms. This monitoring reveals how ocean chemistry is changing, which is critical for predicting and mitigating impacts on marine life.
- Nuclear isotope techniques can **identify the sources of greenhouse gas emissions**, helping countries target their most significant emission sources.
- Scientists use nuclear techniques to **track aquifers and water movement** in drought-prone regions to identify water sources and predict how long they will last.
- Nuclear power reactors **provide reliable electricity at nearly no greenhouse gas emissions** during operation. Over the past 50 years, nuclear power has prevented ca. 70 billion tonnes of CO² emissions. Small modular reactors (SMRs) are an emerging technology that could make nuclear power more accessible to countries with smaller electrical grids.

The IAEA as a Development Actor

The IAEA offers a unique, proven delivery mechanism for investing in nuclear technology for sustainable development. Its Technical Cooperation programme has a 60-year track record of helping countries access and apply nuclear technology safely and securely. The Peaceful Uses Initiative (PUI) provides additional funding, allowing the IAEA to quickly respond to emerging needs and support innovative projects. With its networks of experts, laboratories, and training programmes, the IAEA ensures that **investments translate into development outcomes** and builds long-term technological capacity where it is needed most.

Many IAEA Activities are ODA-Eligible

Several of the IAEA's activities are eligible for official development assistance (ODA), according to criteria set by the Organisation for Economic Co-operation and Development (OECD). The OECD has determined the following co-efficients, meaning the share of funding that is eligible to be counted as ODA, for funds flowing through the IAEA.

For extra-budgetary contributions to projects under the IAEA's Regular Budget, special co-efficients of up to 89% apply, depending on the Major Programme (MP) under which a contribution will be used (see below).

Member State Contributions to the IAEA

- **Regular Budget: 33% ODA-eligible**
IAEA reports to OECD
- **Technical Cooperation Fund: 100% ODA-eligible**
IAEA reports to OECD
- **Extra-budgetary contributions to Technical Cooperation Programme: 100% ODA-eligible**
Donor country reports to OECD as bilateral assistance
- **Extra-budgetary contributions to Regular Budget**
Donor country reports to OECD as bilateral assistance

MP1 Nuclear Energy	61%
MP2 Nuclear Sciences & Applications	70%
MP3 Nuclear Safety & Security	66%
MP4 Nuclear Verification	0%
MP5 Management	33%
MP6 Technical Cooperation	89%

The IAEA's Unique Role

The International Atomic Energy Agency (IAEA) plays a pivotal role in helping countries achieve their development goals through peaceful nuclear applications.

Its Technical Cooperation (TC) programme provides **expertise, training, and technology transfer** for applications ranging from cancer treatment to crop improvement and water resource management. The IAEA also supports countries considering or embarking on nuclear power programmes, providing guidance throughout their journey.

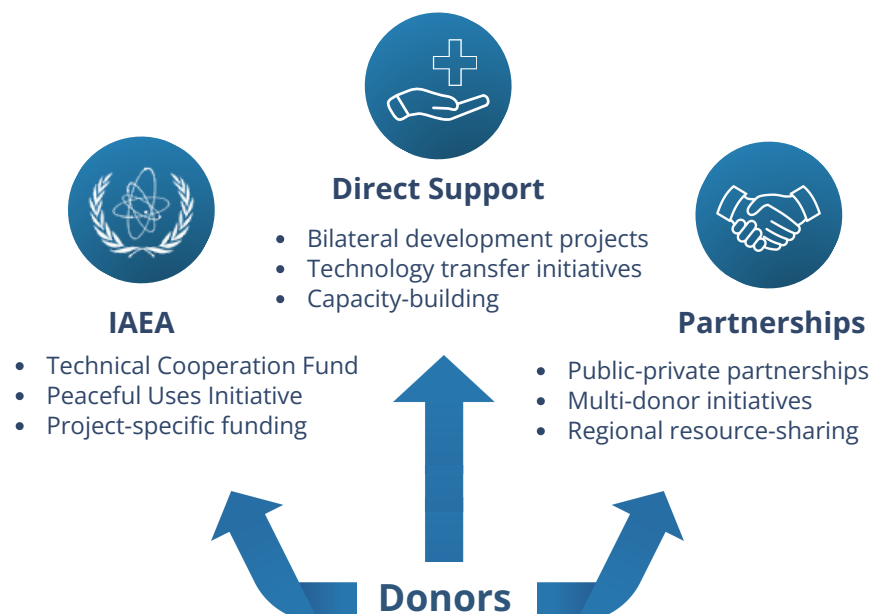
At the same time, it establishes international **safety standards** and **security guidelines** that protect people, the environment, and nuclear materials from both accidents and malicious acts.

While its **safeguards inspection system** verifies that nuclear materials remain in peaceful use, its comprehensive technical guidance helps countries implement robust safety and security measures.

This unique combination of development support and regulatory oversight enables countries to access nuclear technology confidently and securely.

Funding Pathways

Donors can support nuclear applications through funding via the IAEA as well as bilateral and regional initiatives that strengthen specific capabilities and foster cooperation.



VCDNP

Vienna Center for Disarmament and Non-Proliferation

The VCDNP is an international non-governmental organisation that conducts research, facilitates dialogue, and builds capacity on nuclear non-proliferation and disarmament.

 vcdnp.org

 info@vcdnp.org

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