

Key achievements in Indonesia

- 2018: The IAEA, UNIDO and the FAO begin a joint project to improve the productivity of the tempeh soybean, a common foodstuff.
- 2018: Indonesia's Ministry of Research, Technology and Higher Education signs Practical Arrangements with the IAEA to strengthen South-South cooperation in food and agriculture, industrial applications and non-destructive testing, radiation and nuclear safety, nuclear regulatory medicine, marine and terrestrial environmental monitoring and management, radioactive waste management and research reactor applications.

Atoms for peace and development

Widely known as the world's 'Atoms for Peace and Development' organization within the United Nations family, the IAEA is the international centre for cooperation in the nuclear field. The Agency works with its Member States and multiple partners worldwide to promote the safe, secure and peaceful use of nuclear technologies.

The IAEA's technical cooperation (TC) programme helps countries to use nuclear science and technology to address key development priorities in areas including health, agriculture, water, the environment and industry. The programme also helps countries to identify and meet future energy needs. It supports greater radiation safety and nuclear security, and provides legislative assistance.



For over 20 years, the IAEA has supported researchers at Indonesia's National Nuclear Energy Agency, BATAN, to use irradiation techniques to produce more durable and productive varieties of grain crops, including sorghum. Plant breeders are very protective of their sorghum seeds for their livelihood, so they cover the flowering panicle with netting to deter pests. (Photo: Yustaniana/BATAN).

Recent project successes

Livestock production

IAEA support to enhance cattle productivity through better feeding and reproductive management has helped Indonesia strengthen its food security and sustainability. Fellowships in molecular genetic characterization and evaluation of animal vaccines were provided to scientists from the IPB University. The enhanced national capacity has helped smallholder beef farmers, rearing around two to three animals each, improve the health and enhance the economic return of their livestock.

Plant breeding

Since 1997, the IAEA has assisted Indonesia in using plant breeding techniques. This has enabled the development of banana plants which are resistant to fungus-causing diseases, such as 'Fasarium wilt', as well as new soybean and rice varieties capable of higher yields, shorter cultivation times and with greater resistance to climate change factors and disease.

IAEA support through the technical cooperation programme has helped Indonesia in its efforts to produce enough rice to feed 20 million people. Twenty-three newly developed rice varieties now yield 150 per cent more rice than the regular local varieties and in a shorter time.

Indonesia's National Nuclear Energy Agency – BATAN – received state-of-the-art equipment, extensive specialist training and support from IAEA experts. This has helped to increase incomes and strengthen the country's drive for sustainable agricultural production.

Non-destructive testing and evaluation

With IAEA assistance, Indonesia's Ministry of Environment and Forestry and BATAN strengthened their ability to use analytical nuclear techniques for non-destructive testing and evaluation to improve the quality of environmental management. By upgrading the laboratory's capacities in advanced non-destructive evaluation and nuclear analytical techniques, the IAEA helped address metal contamination in the environment and provided a platform for a joint research project between the Institutes of Technology in Bandung and Surabaya on the island of Java which assessed the impact of the industrial sector on the air, soil and vegetation. There are currently 19 local environmental protection agencies using the laboratories' analytical services.

Active national projects

- Supporting Comprehensive Capacity Building of National Nuclear Institutions to Support the Nuclear Industry and Stakeholder Utilization of Nuclear Technology (INS0020)
- Enhancing the Utilization of the TRIGA Research Reactor (INS1028)
- Building Capacity on Advanced Non-Destructive Evaluation and Nuclear Analytical Techniques for Product Quality Improvement and Environmental Risk Assessment (INS1029)
- Improving National Capacity to Develop Reactor Design and Safety Analysis, Fuel Manufacturing, Testing, Infrastructure and Construction Strategy of Daya Experimental Reactor (INS2017)
- Improving Cattle Productivity Through Improved Feeding and Enhanced Reproduction (INS5042)
- Intensifying Quality Soybean Production to Achieve Self-Sufficiency (INS5043)
- Using Nuclear Technology to Support the National Food Security Programme (INS5044)
- Using Stable Isotope Tracer for Studying the Vitamin A Status of Children (INS6019)
- Upgrading the Secondary Standard Dosimetry Laboratory and Strengthening Medical Physics in University Hospitals (INS6020)
- Applying Nuclear and Isotopic Techniques for Identifying and Characterizing Sources of Blue Carbon in Coastal Ecosystems (INS7008)
- Strengthening Regulatory Capacity and Enhancing Effectiveness for Nuclear and Radiation Safety (INS9027)
- Strengthening the Regulatory Capabilities for Nuclear and Radiation Safety and Radiation Protection of Naturally Occurring Radioactive Materials (INS9028)
- Inducing National Capabilities for Radiation Protection in Radiodiagnostic Radiotherapy and Nuclear Medicine Based on Molecular Evidence (INS9029)

Indonesia also participates in 44 regional and 13 interregional projects, mostly in the area of food and agriculture, water and the environment, industrial applications, and radiation protection and nuclear safety.

Previous IAEA support to Indonesia

The IAEA has been supporting Indonesia's plant breeding programme for over 20 years. BATAN's research institutes have received state of the art equipment, extensive training in nuclear technology and support from experts. The development of banana cultivars resistant to Fusarium wilt was one of the first projects.

In 1999, the first gamma irradiation project was launched. It has been used to develop new varieties of cut-flowers with more desirable traits, such as pest and disease resistance, with improved market friendly colours, shapes, sizes and fragrances.

IAEA support to Indonesia, 2009–2019



941 trained
(including 301 women)

234 international experts provided

255 attended specialist meetings
(including 91 women)

Priority areas of support

- Improving the food and agriculture sector
- Supporting the improvement of human health
- Building the energy and industrial sectors
- Protecting water and the environment
- Supporting the mining industry
- Strengthening radiation safety, and nuclear safety and security

Indonesia's contribution to South-South and triangular cooperation, 2009–2019



118 expert and lecturer assignments provided by Indonesia

499 training course participants

156 fellows or scientific visitors hosted

Based on data available as of April 2020

Cancer control imPACT Review conducted: January 2018

Strategic documents supported

- United Nations Partnership for Development Framework (2016–2020)
- Country Programme Framework 2021–2025, signed in September 2020
- Practical Arrangements with the Ministry of Research, Technology and Higher Education of the Republic of Indonesia (2018–2021), signed in February 2018

www.iaea.org/technicalcooperation

The IAEA collaborates with National Liaison Officers and Permanent Missions to deliver its TC programme.