



Key achievements in the Philippines

- 2019: National Crop Protection Centre uses nuclear applications to boost rice yields on 40 000 hectares of land by 20 to 30 per cent.
- 2018–2019: An Integrated Nuclear Infrastructure Review is conducted and the first Integrated Workplan established to develop infrastructure for a nuclear power plant.
- 2014: Electron beam and gamma irradiation facilities for food, agricultural and medical applications is inaugurated at the Philippine Nuclear Research Institute.

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.



With IAEA support, the National Crop Protection Centre of the University of the Philippines used nuclear techniques to improve the growth characteristics of new rice varieties, helping to increase rice production by 20 to 30 per cent. (Photo: Philippine Nuclear Research Institute)

Recent project successes

Food and agriculture

The National Crop Protection Centre of the University of the Philippines found that 'carrageenan', a natural seaweed extract, when treated with radiation and applied to crops, makes plants more resistant to typhoons and promotes growth. Irradiation with gamma rays degrades the natural carrageenan into smaller oligomers with comparatively low molecular weight, which stimulates plant growth. The IAEA supported the country in the procurement of equipment and specialist training which enabled researchers to treat and use irradiated carrageenan.

Following successful tests, researchers from the Philippines' National Crop Protection Centre applied the growth promoter to rice, boosting yields in more than 40 000 hectares of farmland where conditions are affected by changing weather patterns. Rice production increased by 20 to 30 per cent, but only half of the recommended fertilizer dose was required. This is the first time researchers have been able to apply growth promoters to crops on such a large scale, with potential to boost farmers' incomes.

Industrial applications

The IAEA has assisted the Philippines since 2009 to establish a semi-automated gamma irradiation facility and an electron beam facility for research and development purposes, and to provide industrial services at the Philippine Nuclear Research Institute on the outskirts of Manila.

The IAEA helped procure equipment and provided expert advice for the commissioning of the gamma irradiation facility, while offering fellowship training to staff for operation and maintenance procedures.

The facilities currently provide services to over 70 clients (52 from industry and 23 academic and research institutions) for treating spices, vegetables, herbal products, and raw materials and items used for cosmetics. The facility also irradiates medical equipment to remove microbial contamination.

Energy planning and nuclear power

In 2018, the Government of the Philippines invited an IAEA team of experts to review its infrastructure with a view to including nuclear power in their energy mix.

The Integrated Nuclear Infrastructure Review provided detailed guidance across the three phases of nuclear power development using the IAEA's Milestone Approach: consider, prepare and construct.

The Philippines is currently drafting legislation for nuclear safety, security and safeguards, and is in the process of establishing an independent regulatory body.

Active national projects

- Building Capacity for the Safe Operation and Utilization of the Research Reactor's Subcritical Assembly for Training, Education and Research (PHI0016)
- Establishing a Graduate Programme in Nuclear Science, Engineering and Management for Accelerated Utilization of Nuclear Applications (PHI0017)
- Enhancing the Safety and Throughput of the Gamma Irradiation Facility Through Full Automation (PHI1019)
- Enhancing the Utilization of the Fully Automated Philippine Nuclear Research Institute Gamma Irradiation Facility (PHI1020)
- Enhancing Bench-scale Simulation for the Development of Continuous Extraction Technology of Uranium and Other Valuable Elements from Phosphates - Phase II (PHI2013)
- Developing Nuclear Energy Infrastructure (PHI2014)
- Applying Nuclear Techniques in the Attenuation of Flood and Natural Disaster-Borne Contamination (PHI5034)
- Advancing Laboratory Capabilities to Monitor Veterinary Drug Residues and Related Contaminants in Foods (PHI5035)
- Strengthening National Capacity in the Manufacture of Radiopharmaceuticals for Healthcare Applications (PHI6026)

The Philippines also participates in 53 regional and 12 interregional projects, mostly in the area of health and nutrition, food and agriculture, and energy planning and nuclear power.

Previous IAEA support to the Philippines

In recent years, the IAEA has focused its support on strengthening national capacities to manufacture radiopharmaceuticals for health care, developing a nuclear power infrastructure and improving the use of nuclear techniques to reduce flood and

IAEA support to the Philippines, 2009–2019



713 trained
(including 328 women)

114 international experts provided

239 attended specialist meetings
(including 130 women)

Priority areas of support

- Improving the food and agriculture sector
- Protecting national resources and the environment
- Enhancing energy and the industrial sector
- Improving the human health infrastructure
- Strengthening nuclear safety and security
- Developing human capacities in nuclear science and technology

The Philippines' contribution to South-South and triangular cooperation, 2009–2019

160 expert and lecturer assignments provided by the Philippines

649 training course participants

114 fellows or scientific visitors hosted

Based on data available as of April 2020

Cancer control imPACT Review conducted: March 2011

Strategic documents supported

- Country Programme Framework 2016–2021, signed in May 2017

natural disaster-borne contaminations. Assistance was also provided to build capacity to extract potentially damaging uranium and other elements from phosphates in imported fertilizer, as well as to improve the use of gamma irradiation in industrial services.

www.iaea.org/technicalcooperation

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