Nicaragua

IAEA Member State since September 1957

IAEA Technical Cooperation Programme

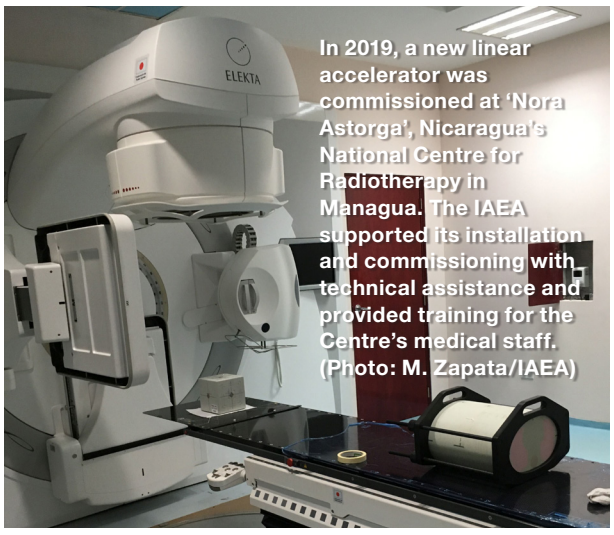
Key achievements in Nicaragua

- 2019: Nicaragua's first LINAC machine for cancer treatment is installed and commissioned by the National Radiotherapy Centre.
- 2018: A high dose rate brachytherapy machine to treat cervical cancer is inaugurated at the National Radiotherapy Centre in Managua.
- 2016: National 'Energy Demand and Supply Studies 2015-2050' are prepared, using IAEA's energy planning tools.
- 2016: Approval of the National Policy and Strategy on Training, Education and Training in Safety and Radiological Protection.

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.



In 2019, a new linear accelerator was commissioned at 'Nora Astorga', Nicaragua's National Centre for Radiotherapy in Managua. The IAEA supported its installation and commissioning with technical assistance and provided training for the Centre's medical staff. (Photo: M. Zapata/IAEA)

SUSTAINABLE DEVELOPMENT GOALS

Recent project successes

Human health

The National Radiotherapy Centre in Managua has expanded its services over the last 20 years with international and national support, to bring affordable, high-quality cancer detection, diagnosis and treatment within the reach of patients in Nicaragua.

The IAEA significantly contributed to improving diagnostic and treatment capacities at the Centre by upgrading technology and the skills of its medical and technical staff. With IAEA support, the Centre transitioned from 2D to 3D conformal radiation therapy, enabling for greater precision in radiation dose delivery and treatment. Procurement support included a new Cobalt-60 source for their teletherapy machine used in cancer treatment, a modern treatment planning system, and dosimetry and radiation protection equipment. In 2018, a new high dose rate brachytherapy machine with a supporting imaging unit was procured by the IAEA, enabling the Centre to provide up to 12 brachytherpay sessions a day. Significant technical support further aligned the Centre's practices with IAEA quality assurance and with radiation protection and safety standards.

In 2016, Nicaragua invested in the construction of a double bunker, which now hosts two linear acceleratory (LINAC) radiotherapy machines. The first LINAC was donated by Japan, and installed and commissioned with IAEA support in 2019. The second machine was acquired through Government funding and will be commissioned in 2021. Several fellowships in advanced radiotherapy techniques and nuclear medicine were provided to Nicaraguan health professionals, along with training and equipment to ensure safety and quality in the treatment planning and delivery.

Between 2017 and 2018, Nicaragua received IAEA expert support to develop its national cancer control plan, in close coordination with the World Health Organization.

Radiation protection

For over 20 years, the Laboratory of Radiation Physics and Metrology (LAF-RAM) in Managua has received IAEA support to provide radiation protection services. It is the only laboratory in the country that can monitor external exposure. Since 2013, dosimetry services to monitor radiation exposure for staff working in nuclear medicine and the verification of the sealing of radioactive sources have been conducted. Other services include

calibration and verification of radiation monitors and the irradiation of personal dosimeters since 2014, the calibration of surface contamination monitors from 2019, and the measurement of air activity concentration in nuclear medicine services from 2020. The IAEA helped procure equipment, provide staff training and establish a quality management system aligned with IS0 17025: 2017 and ISO 9001. These measures enabled the laboratory to specialize in internal and external dosimetry, calibration services, quality control and workplace monitoring, and to create a national dose registry.

Participation in IAEA projects has allowed for the establishment of synergies with international networks and the strengthening of nuclear knowledge management skills. Supported by IAEA capacity building initiatives, LAF-RAM staff are now able to actively contribute to the implementation of the National Strategy for Training in Safety and Radiological Protection.

Energy planning

Since 2005, the Ministry of Energy and Mines and the IAEA have been working together to strengthen the Government's capacity to calculate future demands for power and optimal energy supplies. National stakeholders benefited from training provided through IAEA energy planning tools (MAED, MESSAGE, FINPLAN, SIMPACT). As a result, Nicaragua has been able to produce strategic national energy planning documents such as the Energy Demand and Supply Studies 2015-2050, and others on energy indicators and financial analysis. These studies provide valuable input for major planning documents, such as the Indicative Plan for Expansion of Electricity Generation, Strategic Plan for the National Energy Sector, and the National Energy Balance.

Active national projects

- Broadening the Genetic Variation of Vegetative Propagated Crops Using Nuclear Techniques (NIC5011)
- Strengthening the Monitoring and Control System for Food Contaminants (NIC5012)
- Strengthening Radiotherapy and Nuclear Medicine Services by Improving Technical Capabilities at the National Center for Radiotherapy (NIC6021)
- Applying Isotopic Techniques in the Integrated Water Resources Management of Las Sierras Aquifer and its Influence Area (NIC7001)
- Strengthening the National Infrastructure for Radiation Safety (NIC9008)

Nicaragua also participates in 34 regional and 3 interregional projects, mostly in the areas of health, radiation protection and nuclear safety, food and agriculture, water and the environment, and energy planning.

IAEA support to Nicaragua, 2009–2019

363 trained (including 147 women)

67 international experts provided

81 attended specialist meetings (including 33 women)

Priority areas of support

- Facilitating human health and nutrition
- Supporting nuclear and radiation safety and security
- Improving the food and agriculture sector
- Protecting water resources and the environment
- Developing energy and industrial sectors

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

5 training courses hosted

20 expert and lecturer assignments provided by Nicaragua

Based on data available as of April 2020

Cancer control imPACT Review conducted: May 2006

Strategic documents supported

- Country Programme Framework 2018–2023, signed in November 2018

Previous IAEA support to Nicaragua

Previously, IAEA support focused on nuclear energy and safety, food security and irradiation technology and water and the environment. In addition, a personal dosimetry system was established in 1995 using 'Thermoluminescent Dosimetry' at the Laboratory of Radiation Physics and Metrology.

www.iaea.org/technicalcooperation

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