

# Pakistan

IAEA Member State since May 1957

## Selected achievements

**2023:** Pakistan's Nuclear Medicine, Oncology and Radiotherapy Institute (NORI) is designated as one of the first Anchor Centres under the IAEA's Rays of Hope initiative.

**2023:** Pakistan inaugurated the third unit of the Karachi Nuclear Power Plant (KANUPP) with 1.1GW of power generating capacity. This increases the number of operating NPPs to a total of six.

**2019:** The internationally accredited testing laboratory at the Nuclear Institute for Agriculture and Biology in Faisalabad starts providing food safety services to improve the quality of fish and shrimp.



IAEA Director General Rafael Mariano Grossi visits NORI in Pakistan in February 2023 where he inaugurated Cyberknife, a new cancer treatment facility that uses advanced nuclear technology to help diagnose and treat cancer. (Photo: D. Candano Laris/IAEA)

## National priorities

- Food and agriculture
- Human health
- Water resource management
- Nuclear safety
- Radioactive waste management
- Development of nuclear power
- Industrial applications
- Climate change and environmental protection

## Main areas of IAEA support

- Nuclear medicine and theranostics
- Nuclear safety
- Livestock productivity
- National capabilities for mitigating vitamin A deficiency

## Project successes

### Food safety

Pakistan's agricultural sector contributes 12 per cent of the country's gross domestic product. However, concerns about contaminants

in food exports have posed challenges for Pakistan to access international markets.

The IAEA helped Pakistan to establish its first veterinary drug residue laboratory at the Nuclear Institute for Agriculture and Biology.

The accredited veterinary drug residue laboratory has since been providing integrated, cost-effective analytical support to the quarantine departments of the Ministry of National Food Security and Research by analysing animal meat destined for export. Similar testing services are available to the private sector, providing many positive economic benefits.

### Human health

In 2018, Pakistan's first 'theranostics' laboratory became fully operational at the Institute of Nuclear Medicine and Oncology in Lahore. This technique combines targeted radionuclide therapy with diagnostic tests.

With IAEA support, the laboratory commissioned a gallium-68 generator — a landmark achievement for the Institute.

Since its inauguration in 2018, the now fully operational laboratory has been conducting numerous diagnostic scans for neuroendocrine tumours and prostate cancers, benefiting thousands of patients.

## Crop breeding

With support from the IAEA and the Food and Agriculture Organization of the United Nations (FAO), Pakistan is developing new crop varieties using nuclear techniques.

The IAEA helped to train scientists and upgrade essential equipment at the Plant Genomics and Molecular Breeding Laboratory in Faisalabad.

Capacity was also enhanced in the use of target-induced local lesion in genomes (TILLING), a molecular biology technique to identify mutations in specific genes. Successful new plant varieties have since increased productivity and farmer incomes.



During his visit to Pakistan, Grossi also visited the Chashma Nuclear Power Generating Station (CNPGS), where he inaugurated the spent fuel dry storage facilities. (Photo: D. Candano Laris/IAEA)

## Participation in the major initiatives

- NUTEC Plastics
- Rays of Hope
- ZODIAC

## Date of imPACT Review(s)

2014

### IAEA support received in the 21st century



### Contributions to South-South and triangular cooperation

