

# South Africa

IAEA Member State since June 1957

## Selected achievements

**2024:** The NuMeRI (Nuclear Medicine Research Institute) is inaugurated as Rays of Hope Anchor Centre on 6 June.

**2023:** The South African Isotope Facility (SAIF) at iThemba LABS in Cape Town is launched.

**2021:** The iThemba Laboratories for Accelerator-Based Science (iThemba LABS) are designated as an IAEA Collaborating Centre in the field of Accelerator-Based Scientific Research and Applications until 2025.

**2020:** The National Clinical Radiotherapy and Medical Physics Audit programmes are established.



Mike Sathekge, Professor and Head of the Nuclear Medicine Department at the University of Pretoria and Steve Biko Academic Hospital, with IAEA Director Rafael Mariano Grossi after the hospital was officially designated as a Rays of Hope Anchor Centre in September 2023. (Photo: IAEA)

## National priorities

- Human health
- Nuclear and radiation safety
- Food security
- Water resource management and sanitation
- Environmental monitoring and climate change
- Industrial applications of radiation technology

## Main areas of IAEA support

- Human health
- Agriculture
- Food safety
- Industrial applications

## Project successes

### Insect pest control

Following the success of the sterile insect technique (SIT) in controlling citrus pests and fruit flies in South Africa, the National Institute for Communicable Diseases (NICD) decided to extend the application of this innovative

methodology to fight against malaria, a critical decision given that 10 per cent of the population live in malaria areas.

An Anopheles mass-rearing facility was inaugurated at NICD in 2019, where 500 000 sterile males are now produced weekly. Several small-scale releases have successfully taken place, with plans to focus on larger scale releases from 2024.

The IAEA provided mass rearing equipment and trained numerous NICD researchers in its laboratories in Seibersdorf.

### Nuclear and radiation safety

South Africa strengthened its regulatory infrastructure in nuclear and radiation safety with IAEA support. This included providing peer review missions such as the Integrated Nuclear Infrastructure Review (INIR) in 2013, the Integrated Regulatory Review Services (IRRS) in 2016 and the Safety for Long Term Operation (SALTO) in 2022 for the Koeberg Nuclear Power Life Extension Programme.

The IAEA helped South Africa build capacity for the safe transport of radioactive material, responding to radiation emergencies, protecting the public and the environment and for the licensing and expanded use of nuclear and radiation applications such as uranium mining and milling, nuclear new build, production of radioisotopes and waste disposal facilities, to ensure compliance with international safety standards.

## Human health and nutrition

For over a decade, the IAEA has been helping South Africa to improve cancer management capacities. This has included training healthcare professionals and acquiring equipment for more accurate diagnostics and expanded treatment options.

In 2016, South Africa started developing Non-FDG PET/CT radiopharmaceuticals, and by 2018, Ga-68 tracers were already in clinical use at Steve Biko Academic Hospital and Tygerberg Hospital. As of 2023, seven of the country's teaching hospitals had nuclear medicine department with PET/CT systems.

In 2023, the National Metrology Institute of South Africa (NMISA) successfully established a National Audit Programme for Small Field and Non-Reference Fields in Radiotherapy.



IBA 18-MEV research cyclotron at the Nuclear Medicine Research Institute. (Photo: M. Warnau/IAEA)

## Participation in the major initiatives

- NUTEC Plastics
- Rays of Hope
- ZODIAC

## IAEA support received in the 21st century



## Contributions to South-South and triangular cooperation

