

MYANMAR

BUILDING CAPACITY IN VARIOUS NUCLEAR TECHNIQUES



Radiotracer and NDE techniques. Myanmar's three main coastal zones face the Indian Ocean, Bay of Bengal and Andaman Sea. There are 11 ports and harbours located along this wide coastal area which play a major role in Myanmar's economic and social well-being.

Myanmar spends a large amount of money on studies concerning sediment transport and dredging activities. The studies help in selecting right alignments for new navigation channels and in discovering ideal sites for disposing dredged sediments. The application of nuclear-based technologies will give Myanmar a more effective technology for sediment management of its ports and harbours.

Watershed management. Although other studies have analyzed the sedimentation and water quality in Inle Lake and its surrounding regions, no study using nuclear technology has ever been done yet. From 2015 to 2018, Myanmar, with the support of IAEA, launched two technical cooperation projects on using nuclear isotope based monitoring and assessment techniques on water quality and sedimentation (See Table).

shortage, pest and disease, salinity and the impacts of climate change. Myanmar is besieged with floods, long droughts, erratic rainfall patterns and intensity.

Technical cooperation projects in Myanmar on using nuclear isotopes techniques on water quality and sedimentation in Inle Lake.

Project	Title	Purpose
MYA5/025	Monitoring and Assessing Watershed Management Practices on Soil Erosion and Sedimentation Rates of the Inle Lake	To gather soil samples and use the Environmental Fallout Radionuclides (FRNs) technique to assess soil erosion and sedimentation rates.
MYA5027	Monitoring and Assessing Watershed Management Practices on Water Quality and Sedimentation Rates of the Inle Lak	Training on water stable isotopic techniques and its application in assessing water quality prior to sampling.

THE SITUATION

IAEA technical cooperation activities in Myanmar focus on three main areas: mutation breeding, radiotracer and non-destructive evaluation (NDE) techniques and watershed management.

Mutation breeding. Rice is a staple food in Myanmar and economically very important. To feed Myanmar's current population of 55 million and meet its export needs, farmers have to cultivate nearly 7 million acres of rice fields.

However, rice production is gradually being reduced by yield loss, urbanization, water

ACTIONS TAKEN

Mutation breeding. Support from the IAEA and the Myanmar Government has contributed to the success in applying nuclear techniques in food and agriculture. It also enabled Myanmar to achieve sustainable agricultural production both in the areas of mutation breeding and in efficient soil and water management.

Demonstrations on efficient soil and water management practices are continually being carried out to help local farmers increase rice production and obtain maximum yield from the mutant variety. They focus on rice cultivation techniques, good fertilization practice, and efficient water management for sustainable rice production. Farmers have benefited extensively from the techniques transferred through these demonstrations.

Radiotracer and NDE techniques. In Myanmar, radiotracer and sealed source techniques were introduced in 2012 with the support of the IAEA. Radiotracers and sealed source techniques provide information on the density and amount of the sediments deposited in a channel of navigation or harbour basin. It is also able to disclose the concentration of sediments circulating in suspension. Suitability of the selected location for dredged materials can also be confirmed using the techniques.

Two national projects carried out by the Department of Atomic Energy (DAE) have enhanced Myanmar's capacity in radiotracer and sealed source techniques, as well as its capacities in conventional and advanced NDE techniques in local industries like oil and gas.

To achieve professional skills development and career advancement, a human

resource development programme in industrial applications of radioisotope techniques was carried out through a national technical cooperation project in 2012.

Watershed management In the first phase of the project, the Department of Forest Research Institute (FRI) gathered quantitative information on soil erosion and sedimentation rate in and around the Inle Lake over a range of different timescales using fallout radionuclides (FRNs) measurements.

In the second phase, water samples were collected, first in February 2018 and then in December 2018. The initial samples were sent to USA and Australia for water stable isotopic analysis. The second samples are presently being processed. Results from



the first sampling has been communicated to the IAEA through Australia's technical experts.

Khin Maung Latt
Department of Technology Promotion and Coordination, Ministry of Education, Myanmar
Email: sayarkyee9@gmail.com

ACHIEVEMENTS

Mutation breeding. With IAEA's support, Myanmar produced a mutant rice variety (Sin Shwese) that is high yielding, of good quality and with shorter maturation period. With this variety, farmers are able to grow winter pulse crops and grow rice twice a year. The fields are productive the whole year round, enhancing farming activity and cropping intensity, and increasing the income of farmers and rural workers, including women. In the region of Myanmar using irrigated agriculture system, the new rice variety has also been beneficial to farmers facing shortage of irrigated water.

Radiotracer and NDE techniques. To share knowledge and information, a seminar on "Radiotracer and Non-Destructive Evaluation Techniques in Industry" was held in Yangon, Myanmar. The seminar provided a chance for hands-on experience on different radiotracer and non-destructive evaluation equipment and techniques

Watershed management. Myanmar was able to obtain knowledge, skills and software applications to assess soil erosion, sedimentation and water quality using stable isotopic techniques.