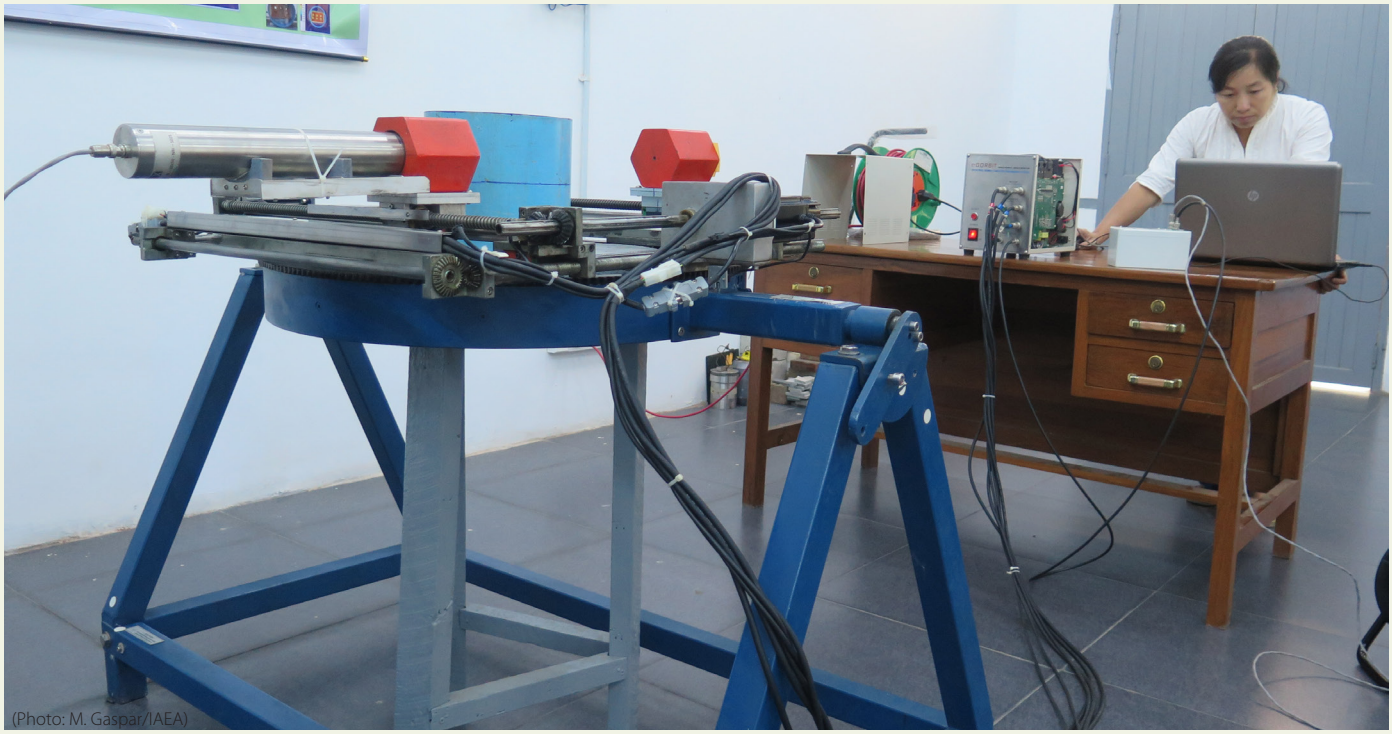
Japan to support use of non-destructive testing for disaster recovery in Asia and the Pacific



(Photo: M. Gaspar/IAEA)

In February 2017, Japan supported an IAEA initiative to use nuclear technology for the verification of the integrity of buildings following earthquakes and other natural disasters. The donation was channelled through the IAEA's Peaceful Uses Initiative.

Following an earthquake or flood, critical civil structures, even when they remain standing, may have developed hidden flaws, which could pose further risks if not detected early and remediated quickly. Industrial testing using nuclear technology involves the use of ionizing radiation — along with other methods — to test the quality of materials, without causing any damage to them or leaving any radioactive residue. Such non-destructive testing (NDT) was successfully used in the aftermath of the devastating earthquake in Nepal in April 2015 to test the integrity of critical buildings such as hospitals, schools and historical attractions.

"NDT technology allows countries to quickly and efficiently test structures using simple and easily portable equipment," said Joao Osso Junior, Head of the Radioisotope Products and Radiation Technology Section at the IAEA. "It can help countries that are particularly prone to natural disasters."

The new activity will complement ongoing IAEA work under a technical cooperation project to support the preparation and recovery of civil infrastructure following natural disasters in Asia and the Pacific. Experts from countries in the region will be offered training and, when needed in the aftermath of a disaster, NDT equipment.

Japan's contribution will include the organization of training courses and storage of equipment at the IAEA Response and Assistance Network (RANET) Capacity Building Centre (CBC) in Fukushima prefecture, which was opened in 2013. The IAEA has since conducted training activities at the RANET CBC to help local, national and international participants to prepare for response to nuclear and radiological emergencies. Now the scope of training activities will be expanded to include NDT technology.

The Malaysian Government, which hosts an IAEA collaborating centre on NDT, has also contributed to this new initiative. IAEA collaborating centres promote the practical use of nuclear techniques for research and development worldwide — in the case of Malaysia, in the fields of industry and NDT.

NDT methods include radiography, a type of radiation technology, and gamma tomography, which is based on the differential absorption in different materials of gamma rays emitted from a radioactive source. Through the measurement of the rays that pass through the material without being absorbed, its make-up and structure can be identified. These techniques are able to identify structural defects that cannot be discovered using traditional testing methods.

— By Miklos Gaspar