

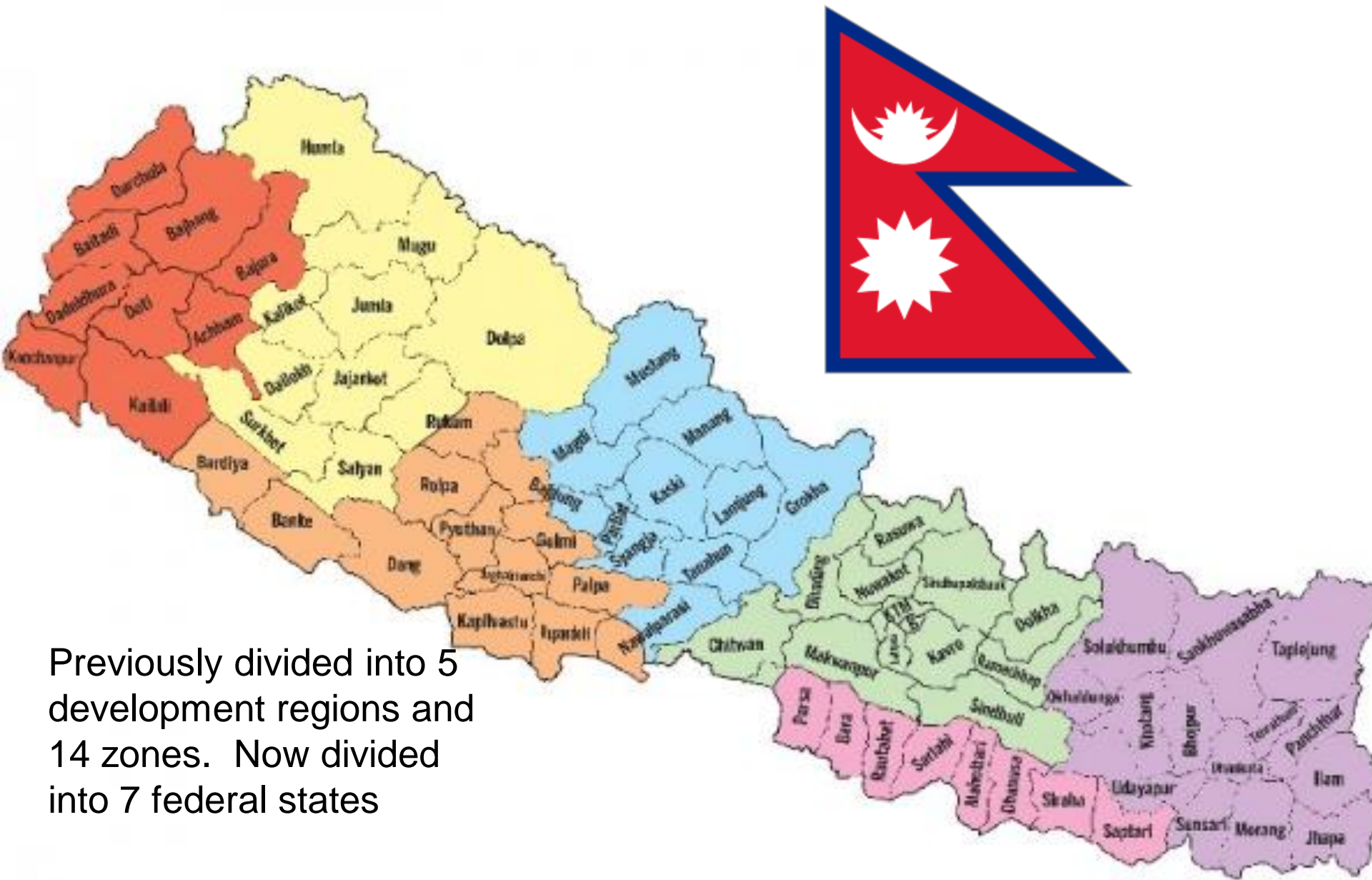
Joint ICTP-IAEA Workshop on
“Radioactive Waste Management – Solutions
for Countries Without Nuclear Power
Programme”

National Briefings
(Nepal)

Nepal (Country Profile)

- Federal Democratic Republic
- Small landlocked country situated between China in the north and India on three other sides
- Total area – 147181 sq km
- Population – more than 28 million (2015)
- Became member of IAEA on July 2008





Previously divided into 5 development regions and 14 zones. Now divided into 7 federal states

Radioisotopes use in Nepal

- Radiotherapy (Co-60, Ir-192)
- Nuclear Medicine (Tc-99, I-131)
- Academic Institutions (Co-60, Cs-137, Sr-90, Po-210, Tl-204)
- Research centres (Cs-137, Sr-90, Am-241,
- Department of Mines and Geology (samples of Uranium, Thorium and Potassium)

Sources of Radioactive waste

- The main user of radioactive material are the hospitals and health institutions so the main producer of radioactive waste are also them
 - Used Co-60 and Ir-192 sources
 - I-131 contaminated solid wastes
 - Tc-99 generator and Tc-99 contaminated solid wastes

Use of Radioisotopes and the management of radioactive waste

- 4 hospital using Co-60
- 4 hospital using Ir-192
- 3 centers using Tc-99 and I-133
 - Used Co-60 and Ir-192 sources are sent back to the supplier country
 - “Delay and Decay” principle of radioactive waste management is applied for the management of wastes generated by the use of I-131 and Tc-99
 - Disposal is carried out when the activity reaches to negligible value.

National nuclear policy

- **6.7 Human Safety and Health**

- 6.7.1 Basic safety measures of international standards shall be adopted in carrying out works related to nuclear energy mobilization and transportation of radioactive materials, use of ionizing radiation in any form and **management of radioactive materials after their use**. While doing this, the system that has least impact in the environment and human health shall be adopted.

Environment protection act (1997)

- **2. Definitions - "Wastes"** means the liquid, solid, gas, slurry, smoke, dust, radiated element or substance or similar other materials disposed in a manner to degrade the environment.
- **7. Prevention and Control of Pollution :**
 - (1) Nobody shall create pollution in such a manner as to cause significant adverse impacts on the environment or likely to be hazardous to public life and people's health, or dispose or cause to be disposed sound, heat, **radioactive wastes** from any mechanical devices, industrial enterprises, or other places contrary to the prescribed standards.

Nuclear and radioactive substances regulatory act (Draft 2013)

- Chapter 9 Management of radioactive waste
 - Responsibility for the security of the radioactive waste – licensee until the existence of its effective period and if the owner or licensee is not identified the regulatory authority will be responsible
 - Import prohibition – but reimport can be done
 - Export of radioactive waste
 - Can be exported after obtaining permission from the concerned agencies
 - Export permit can be issued if the country where the export is being made is informed and has regulatory mechanism at par set by IAEA

Directives on the regulation of nuclear materials (2015) MOST

- Directive No. 17 – Responsibility of security of radioactive waste
 - Licensee or the Ministry in case the licensee is not identified
- Directive No. 18 – Prohibition on the import of radioactive waste
 - Prohibited to import radioactive waste generated outside Nepal
- Directive No. 19 – Export of radioactive waste
 - Any radioactive waste can be exported by taking permission from the Ministry

Human resource

- The number of people involved in nuclear science are very limited
- Radioactive waste management at the moment in Nepal is just to manage medical radioactive waste
- All hospitals dealing with radioisotopes have Medical Physicists as in charge of radioactive waste management
- But no team to handle in the extreme situations as there can be fallouts from the neighboring countries

Challenges

- Lack of regulations so even the medical radioactive waste is not under Govt. control
- Country is still in a vulnerable situation politically
- Many other priorities for the country at the moment than radiation law
- Lack of awareness in various levels
- Security issues – GTRI has installed special security systems at all the Co-60 therapy centers

Storage of radioactive materials in premises of Dept. of Chemistry of a University



Buried radium sources

One radium source of 59.6 mg
and 3 other sources of 10.1mg each



100 mg of radium was donated to then Nepal Govt. by some American institution in 1972 and radium therapy was carried out until 1975



100 mg of Radium in the form of 6 tubes were stored in a 6 feet deep well under this building but now no body knows where exactly they are buried

A disused Co-60 Teletherapy source





Thank You