



JOINT ICTP-IAEA WORKSHOP ON RADIOACTIVE WASTE MANAGEMENT –  
SOLUTIONS FOR COUNTRIES WITHOUT NUCLEAR POWER PROGRAMME  
(NATIONAL BRIEFING – NIGERIA)

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# Overview of NAEC

- 1976 - Creation of Nigeria Atomic Energy Commission (NAEC)
- 1978 - Establishment of two university-based Nuclear Energy Centres were established in Ile-Ife and Zaria respectively.
- 1979 - Creation of Energy Commission of Nigeria (ECN)
- 1991 - Establishment of Sheda Science and Technology Complex, Abuja.
- 1995 - Establishment of Nigerian Nuclear Regulatory Authority (NNRA)



# Overview cont.

- 2004 - Inter-Ministerial Committee on Energy Resources identified Nuclear as a major potential source.
- 2005 - Inter-Ministerial Technical Committee (TC) on NPP mandated to evaluate the feasibility of deploying NPP.
- 2006 - NAEC was activated
- 2007 - National Nuclear Power Roadmap and Strategy approved by Federal Government
- 2007 – 2010 - Three additional university-based Nuclear Energy Research Centers established at Port Harcourt, Maiduguri and Owerri



# Main sources of radioactive waste

- Radioactive materials in the fields of research, medicine, industry and agriculture
- The extraction, processing and combustion of raw materials containing naturally occurring radioactive materials
- The operation of nuclear reactor and other facilities for research purposes



# National waste inventory

- The NNRA has an inventory of radioactive sources
- It is updated on annually basis using Regulatory Authority Information System (RAIS)



# National policy

- It stipulates that the management of radioactive waste in Nigeria shall be performed in a safe, secure and sustainable manner to protect individuals, society and environment from harmful effect of ionizing radiation
- Also, all radioactive waste management activities shall be conducted in an open and transparent manner



# National plan/strategy for managing RW

- Spent nuclear fuel considered as a valuable resource
- Return of spent nuclear fuel (from research or power reactors) to supplier's countries
- Return of disused sealed radioactive sources to suppliers or manufacturer's countries
- Disposal of radioactive waste in dedicated facilities considered as the final end-point for safe and sustainable long-term management
- Decay storage followed by authorized discharge to be considered as a possible option for the management of Category I low-level (very short lived) waste,



# Cont.

- Minimization of radioactive waste generation to be considered as a priority
- Reuse/recycling of radioactive materials to be considered in compliance with exemption and clearance levels
- Interim storage of spent nuclear fuel in licensed, safe and secure facilities to be considered as an intermediate management step before repatriation to suppliers' countries or final disposal
- Interim storage of disused sealed radioactive sources in licensed, safe and secure facilities to be considered as an intermediate management step before repatriation to suppliers' countries or final disposal.





# Availability of resources (human and financial)

- There are trained personnel to handle RW management
- Funding is by the Federal Government of Nigeria through annual budgetary allocation



# Institutional framework for managing RW

- The Nigeria Atomic Energy Commission (NAEC), established as the focal agency for the promotion and development of peaceful application of Nuclear technology
- The Nigeria Nuclear Regulatory Authority (NNRA) established to regulate radiological protection and nuclear safety so as to ensure the protection of life, health, property and the environment from the harmful effects of ionizing radiation



# Cont.

- Nigeria Environmental Standards and regulations enforcement agency (NESREA) responsible for the protection of the environment
- Department of Petroleum resources (DPR) responsible for ensuring compliance to petroleum laws, regulations and guidelines in the Oil and Gas Industry



# Applicable National legislation

- Nigerian Atomic Energy Commission (Establishment) Act 46 of 1976
- Nuclear Safety and Radiation Protection Act 19 of 1995 establishing the Nigerian Nuclear Regulatory Authority (NNRA)
- Nigeria Environmental Standards and Regulations Enforcement Agency Act 2007
- Petroleum Act of 1962 establishing the Department of Petroleum Resources



# Applicable National regulations for RW management

- Nigerian Radioactive Waste Management Regulations (NRWMR) 2006 is the reference document concerning the management of radioactive waste

Other applicable regulations are:

- Nigerian Safety Regulations for the Management of Naturally Occurring Radioactive Materials (NORM) Regulations 2008
- Nigerian Transportation of Radioactive Sources Regulations (NTRSR) 2006
- Nigerian Radiation Safety in NORM Regulations (NRSNR) 2008
- Nigerian Basic Ionizing Radiation Regulation (NBIRR) 2003



# Current Status of Infrastructure Development for Management of RW

- A Waste Treatment and Storage Facility for treatment and temporary storage of low and intermediate level radioactive waste is being developed at the Nuclear Technology Centre (NTC) Sheda, Abuja
- serve as a central collection station and processing of institutional wastes generated all over the country through applications of radio-nuclides in Research, Agriculture, Medicine and Industry



# Cont.

- Presently there is a RW management facility at the Centre for Energy Research and Training (CERT) ABU Zaria
- Developed for temporary storage of DSRS and retrieved orphan and legacy sources pending their repatriation, eventual containment, final storage or disposal.



# Cont.

- No reprocessing plant and there is yet no immediate plan to have one





# Management options considered for DSRS, NORM, LLW

- Return of spent sources to suppliers
- Interim storage of radioactive waste prior to clearance, discharge, predisposal management or disposal
- NORM waste generated to be managed by geological way



# Spent fuel management options

- Nigeria does not have spent fuel presently
- Expected source of spent fuel will be from the miniature nuclear reactor facility in CERT (NIRR-1)
- The NIRR-1 fuel was supplied under a Project Supply Agreement (PSA) between the IAEA, China and Nigeria
- It is expected that the manufacturers shall take back the spent core assembly at the end



# Disposal plan

- No plans to develop a disposal facility for now



# Concerns, problems, challenges in managing RW

- Lack of adequate funding
- Lack of synergy among Nuclear institutions



# THANK YOU