



The Establishment of Necessary Frameworks and Infrastructure for Nuclear Decommissioning as Preparedness for Nuclear Power Plant Deployment in Ghana #279

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1. Background and Goal of the present work

The successful and peaceful application of nuclear science and technology, particularly, nuclear power plant in Ghana calls for the establishment of all the necessary regulatory and physical infrastructural framework for decommissioning in tandem with local and international requirements such as the International Atomic Energy Agency's Fundamental Safety Principles and General Safety Requirements.

This paper highlights some vital aspects of decommissioning regulatory framework and infrastructure in Ghana including decommissioning plan, financing of decommissioning, obligations of an authorized person for decommissioning, and decommissioning of nuclear facilities.

2. Decommissioning Framework and Infrastructure

The decommissioning framework and infrastructure in Ghana can be classified as soft and hard as detailed in Figure 1 below.

2.1 Soft Component

The soft component refers to the legal basis upon which decommissioning can be conducted safely and effectively in Ghana. The core conversion of Ghana Research Reactor (GHARR-1) and the decommissioning of sealed radioactive sources were/are conducted on this legal framework.

The primary objective of radioactive waste management is to deal with radioactive waste in a manner that protects human and the environment now and in the future devoid of undue burden on future generations. Safety and sustainability measures are, therefore, essential components of radioactive waste management.

Four sections in the Atomic Energy Act, (ACT 588) of 2000 are devoted to the decommissioning of nuclear facilities in line with IAEA's General Safety Requirements on the decommissioning of facilities.

The IAEA stipulates that governments shall establish and maintain a governmental, legal, and regulatory framework within which all aspects of decommissioning, including management of the resulting radioactive waste, can be planned, and executed safely. Decommissioning of nuclear facilities, therefore, can no longer be considered as a back-end process of a facility's life cycle but an integral component of planning, commissioning, and operation.

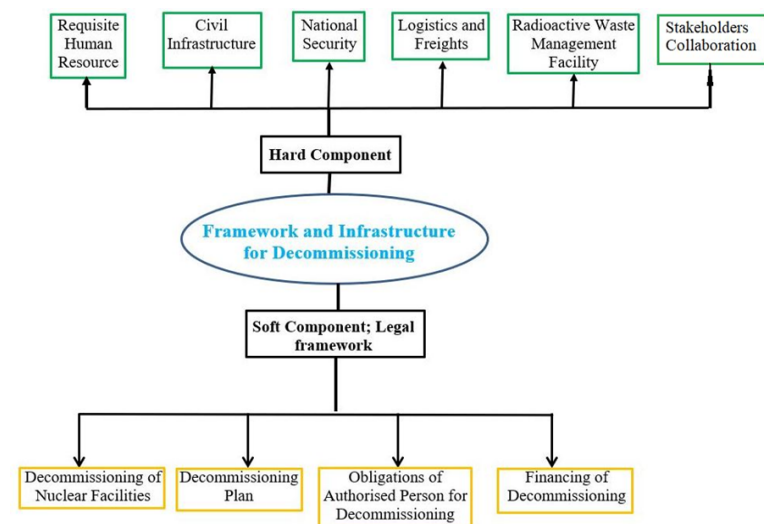


Figure 1: Chart of decommissioning framework and infrastructure in Ghana

The practicality of the established legal regime was put to test during the successful core conversion of the research reactor from highly enriched Uranium (HEU) fuel to low enriched Uranium (LEU) fuel with the return of all vital components to the manufacturer in China as shown in Figure 2.

The four legal areas entail decommissioning of nuclear facilities which demands the applicant to perform site baseline survey for comparison after decommissioning, the Authority shall specify the decommissioning procedure by a Gazette.

Secondly, decommissioning plan is required by the Authority from the applicant prior to licensing of facility construction and operation.

Thirdly, other critical obligations that are required of the authorized person includes preparation of safety and environmental assessments as part of the decommissioning plan for approval by the Ghana EPA, maintain a human resource management and development system, maintain emergency plan etc.

Finally, the applicant shall ensure the availability of adequate financial resources to cater for all aspects of the decommissioning.

2.2 Hard Component

The hard component refers to all the various physical resources required to undertake a successful decommissioning of a nuclear facility as stipulated below. The Government of Ghana is in most cases responsible for providing these hard components.

Examples of the hard components include;

Requisite human resource

Civil infrastructure

National security

Logistics and freights

Radioactive waste management facility

Stakeholder collaboration



Figure 2: Trailer loaded with HEU in a TUK/145/C MNSR package.

3. Conclusions and Acknowledgements

- Ghana, with the support of the IAEA has successfully established the necessary regulatory framework for the conduct of nuclear facility decommissioning. More governmental commitment and allocation of requisite financial resources are required in terms of meeting the infrastructure needs for decommissioning.
- I highly acknowledge the Radiation Protection Institute of the Ghana Atomic Energy Commission for their assistance.