

## **Application of the Convention on Nuclear Safety to the Nuclear Energy Policy in the Republic of Uganda**

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### **1. Introduction**

The Convention on Nuclear Safety (CNS) aims to promote and maintain safety of nuclear installations in participating states. High levels of safety are developed and promoted through regular meetings where experiences and good safety practices are shared. Participating countries engage in peer review of reports on the implementation of their obligations of the convention.

The convention on Nuclear Safety was adopted in Vienna on June 17, 1994 and entered into force on October 24, 1996. Eighty-five countries are parties while 65 countries are signatories to this convention as of December 18, 2017 [1]. Its aim is to commit participating States operating land-based civil nuclear power plants to maintain a high level of safety by setting international benchmarks to which States subscribe. The Convention is based on the parties' common interest to achieve high levels of safety. It obliges parties to submit reports on the implementation of their obligations for peer review at meetings that are normally held at the IAEA headquarters [2].

The Convention on Nuclear Safety (CNS) comprises of 19 articles stipulated in four sections i.e. general provisions, legislation and regulation, general safety considerations and safety of installations. The section on general provisions emphasizes safety of nuclear power plants that already exist when the convention enters into force. Legal and regulatory framework section entails establishment of the regulatory body to ensure safety of nuclear installations through licensing, inspection and enforcement. The section on safety of installations suggests ways of ensuring safety throughout the three phases of nuclear facilities i.e. siting, design and construction, and operation. Methods of handling spent fuel should be identified ahead of time such that this burden is not pushed to the future generation.

Uganda is considering introducing nuclear energy in its electricity generation mix. A policy on nuclear energy is being drafted to address the deficiencies in the Atomic Energy Act, 2008 that details regulation and promotion of all activities involving ionizing radiation in the country. In addition, a number of conventions and international treaties on peaceful utilization of nuclear energy are being examined and their provisions are to be included in the new policy.

### **2. Objectives and scope of the study**

To review Uganda's policy on nuclear energy in relation to the provisions of CNS. To identify issues that Uganda will have to address first before being a party to CNS.

In this study, Atomic Energy Act, 2008, and the Atomic Energy Regulation, 2012 will be reviewed in relation to the provisions of this convention.

### **3. Review of Uganda's nuclear energy policy in relation to the provisions of Convention on Nuclear Safety**

Uganda is not a party to the Convention on Nuclear Safety; however, it is considering its accession, firstly through alignment of policies and laws to include provisions of this convention. However, the country is a party to some conventions related to nuclear safety and security such as the convention on Physical Protection of Nuclear Material.

The policy governing promotion and regulation of ionizing radiation in Uganda is the Atomic Energy Act, 2008. It was enacted to regulate peaceful applications of ionizing radiation; to establish the Atomic Energy Council (regulatory body); to provide for the protection and safety of individuals, society and the environment from the dangers resulting from ionizing radiation; to provide for the production and use of radiation sources and the management of radioactive waste. Additionally, to provide a framework for the promotion and development of nuclear energy for use in power generation and other peaceful purposes and to provide for compliance with international safety requirements for the use of ionizing radiation, radiation protection and security of radioactive sources [3].

This act entails many aspects regarding safety of ionizing radiation including the establishment of the regulatory body, its functions and independence, authorization and enforcement, promotion and development of nuclear energy, safety and security of radioactive sources and emergency preparedness and response as discussed below;

The Atomic Energy Council is established by the Act as the regulator of activities involving ionizing radiation. It consists of a chairperson, four members appointed by the minister in charge of energy and a secretariat headed by a secretary. The secretariat acts as the technical arm of the council. To ensure independence from political influence, no politician can be appointed on the council according to the act.

The Act provides for independence of the council in performance of its functions and duties. Engagement of consultants and international cooperation are also provided for in the act.

The council is financially independent, its budget is approved by parliament and there is no direct relationship between fees charged and the activities of the council.

A detailed procedure for authorization, issue of permits and grounds for rejection of permit issuance are addressed in the Act.

The Nuclear Energy Unit under the Ministry of Energy and Mineral Development is mandated to promote and develop nuclear energy. According to the Act, its functions include; development of national strategy to assess the potential role, viability and obligations associated with nuclear energy in the context of energy needs for national socio-economic developments; coordination of research in Uganda on the development of nuclear energy for peaceful applications and coordination of IAEA Technical Cooperation Programme (TCP).

However, some deficiencies exist in the Atomic Energy Act that are related to the provisions of the Convention on Nuclear Safety as discussed below.

The mandate of the Atomic Energy Council is not specific on regulation of nuclear installations. Strong focus of the act is on radiation facilities and medical uses of radiation.

Licensing system, regulatory inspection and assessment are not detailed enough for regulation of nuclear installations. The licensing system in the act is suitable for small radiations facilities.

Separation of promotion and regulatory functions is not strong enough; these two institutions are established by the same act and currently are under the same ministry though different departments.

The number and competence of regulatory staff still requires enhancement to regulate effectively nuclear installations.

Emergency preparedness plans for nuclear installations are not specified. The plans in the current act are only sufficient for small radiation facilities.

The principle of defense in depth and its implementation in site selection, design, construction and operation of nuclear installations is not detailed in the Act.

Promotion of peaceful uses of atomic energy and research are all handled by the Nuclear Energy Unit which has limited staffing; both in number and competences.

#### **4. Discussions**

The deficiencies can be attributed to the fact that at the time this act was enacted, the country was not involved in development or regulation of nuclear installations. Currently many efforts are directed towards addressing these deficiencies since the country is planning to

develop nuclear power as part of long-term electricity generation mix.

In order to address these deficiencies, the country through Ministry of Energy and Mineral Development is in the process of developing a new Policy on Nuclear Energy to strengthen the existing policy, legal and institutional framework. It is proposed that national obligations with respect to relevant international treaties including convention on nuclear safety are addressed in the Nuclear Energy Policy for Uganda and in the subsequent law.

Furthermore, the Atomic Energy Council has developed documents in relation to safety and security of radioactive sources including the Atomic Energy Regulations, 2012 and some radiation safety guides. The purpose of the Atomic Energy Regulations is to specify the minimum requirements for the protection of individuals, society and environment from the dangers resulting from ionizing radiation and to provide for the safety and security of radiation sources [4]. More regulatory documents are in development with the technical assistance of the IAEA.

#### **5. Recommendations**

The mandate of the Atomic Energy Council should be widened to considering regulation of all facilities. If deemed not suitable, a capable organization should be established to handle this work.

The promotion and regulation functions should be effectively separated. It is recommended that the regulatory body be an independent organization, promotion can remain under the Ministry of Energy and Mineral Development.

Enhancing the number and competence of regulatory staff. Introduction of the training department to handle training needs of workers will ensure consistency and effectiveness in training programs.

Establishment of an atomic energy research institute under the Ministry of Science and Technology. This would be of much help since the nuclear industry is still young and requires considerable research and development.

International cooperation with countries that have nuclear power. There has been cooperation with Russian Federation and the People's Republic of China. Such cooperation should be widened and more nuclear export countries should be considered for cooperation. In addition, strong cooperation with international organizations like the IAEA is much helpful and strongly recommended.

#### **6. Conclusion**

The participation in the Convention on Nuclear Safety is crucial to all countries with nuclear installations and those actively planning to develop them. Uganda should address the deficiencies in the Atomic Energy Act, 2008 in the new policy and efforts should be made towards

accession to the convention on Nuclear Safety and other related Nuclear Safety and security conventions.

#### **REFERENCES**

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