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National Report on the implementation of the obligations under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

Republic of SENEGAL

ARSN

AUTORITE SENEGALAISE DE RADIOPROTECTION ET DE SURETE
NUCLEAIRE

National Report of the Republic of SENEGAL

On the implementation of the obligations
under the Joint Convention on the Safety of
Spent Fuel Management and on the Safety
of Radioactive Waste Management
submitted for the purposes of the 7th
Review Meeting of the Convention

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SECTION A. Introduction

- The Republic of Senegal does not have any nuclear installation according to the provisions of the Convention on Nuclear Safety.

However, during the General Conference of the International Atomic Energy Agency in September 2008, the Republic of Senegal has declared its interest in considering nuclear power energy as a possible source of energy along with biofuels, new and renewable energies, and fossil energies.

In that regard, Senegal established by decree 2008-1433 modified by decree 2010-892, a working group in charge of conception, planning, and operating a nuclear power plant.

The government has also ratified in December 2008 the following conventions:

- Convention on Nuclear Safety, accession: 24/12/2008, entered in force: 24/03/2009.
- Convention on Assistance in the case of a Nuclear Accident or Radiological Emergency (ASSIST), in force: 23/01/2009, ratification: 24/12/2008.
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive waste Management, in force: 24/03/2009; Accession: 24/12/2008
- Convention on the Early Notification of a Nuclear Accident. Vienna Convention on Civil Liability for Nuclear Damage, in force: 03/24/2009 ; accession : 24/12/2008.

The Law, titled “loi No2009-14 du 02 mars 2009 relative à la sécurité en matière nucléaire et à la radioprotection” abrogates the adverse provisions of the “loi No2004-17 du 15 juin 2004, relative à la protection contre les rayonnements ionisants et à la radioprotection”. Those two existing laws have been adopted by the Parliament and have been promulgated and its application decrees are now ready since 30 June 2010 (decree 2010-893 on 30 June 2010). That application decree define the roles and responsibilities of the National Regulatory Body called “Autorité sénégalaise de Radioprotection et de Sûreté Nucléaire (ARSN).

During the general conference of the IAEA, held in September 2011, in Austria, Senegal signed the Convention on Supplementary Compensation for Nuclear Damage.

By the way, Senegal established the Law n°2009-14, du 02 mars 2009 related to radiation protection nuclear safety to better undertaking legislative and regulatory aspects of nuclear safety and waste management. This law abrogates adverse provisions of the law N°2004-17 of 15 June 2004 on protection against ionizing radiations.

To date, Senegal doesn't keep in its territory spent fuel. Installations for storage, conversion, or transformation of spent fuel are not yet in place. However sealed and unsealed radioactive sources are used in the country in the field of industry, medical health, research, livestock, etc. General provision for nuclear materials and waste management are defined in chapter IV titled « installations nucléaires de base » in the law n° 2009-14.

In 2018, Senegal starts a two years national project titled: Developing a National Nuclear Infrastructure for Establishing a Research Reactor. The objective of this project is to improve the production of energy and to contribute to making the country self-sufficient in energy by using a research reactor. The same project was extended at the beginning of the year 2020 for 2 years.

SECTION B: Policies and practices

- No nuclear fuel is in use in Senegal.

A national policy on spent fuel and radioactive waste management is not yet established in Senegal. The Republic of Senegal intends to establish regulation on the safe management of spent fuel and radioactive waste based on international safety norms and standards. The draft law on safety, security, nuclear safeguards and civil liability prepared by Senegal with the help of the IAEA office of legal affairs has been studied by the technical committee of the general secretariat of the government. Title X of this bill relates to radioactive waste and spent fuel management. First Chapter requires the establishment of a national policy and strategy on radioactive waste and spent fuel management.

A draft decree on radiation protection based on international standards submitted to the government for promulgation addresses some aspects of the management of radioactive waste. This draft decree is not yet enacted.

In practice Users are in charge of managing their own radioactive waste based on the authorization granted by the ARSN and the relevant ministries.

SECTION C. Scope of application

The Government of the Republic of Senegal will ensure that the regulations on the management of the spent fuel and radioactive waste, take into account:

- a) consideration of reprocessing as part of spent fuel management,
- b) consideration of waste that contains only naturally occurring radioactive materials and does not come from the nuclear fuel cycle as radioactive waste for the purposes of the Convention,
- c) consideration of spent fuel or radioactive waste within military or defense programs as spent fuel or radioactive waste for the purposes of the Convention.

It should be noted that Senegal is a signatory of the Treaty on Non-Proliferation of Nuclear Weapons, the comprehensive safeguards agreements resulting from this Treaty, and has ratified in July 2017 the Additional Protocol to that Agreement. Senegal has also ratified in July 2017 the Amendment to the Convention on the Physical Protection of Nuclear Material.

SECTION D: Inventories and Lists

- The regulatory body (ARSN) is establishing the national registry and accounting of nuclear material, radioactive waste, radioactive and other ionizing radiation sources in the country.

Regulatory Authority Information System (RAIS) software is being used

- Since April 2011, ARSN undertakes a campaign of registration and accounting for radioactive sources, users, disused radioactive and orphan sources repositories, and, if any, spent fuel.

SECTION E: Legislative and regulatory framework

Law n°17-2004 “Loi relative à la protection contre les rayonnements ionisants” was promulgated

on 15th June 2004. It appears to be consistent with the BSS and the GS-R-1. The Law stipulates, among other things, the establishment of a regulatory framework with an independent regulatory body. A new Law «Loi n° 2009-14 relative à la sécurité en matière nucléaire et à la radioprotection» has been promulgated on 02 March 2009. The decree of the establishment of functions and responsibilities of the ARSN has been signed on 30 June 2010 and ARSN's General Director has been nominated on 20th January 2011. The Committee of Experts and the four Directions of ARSN are now established and technical and administrative personnel have been recruited.

Radiological safety: Management of nuclear facilities which take into consideration management of spent fuel are taken into account in, chapter premier, Title IV of the law number 2009-14.

Authorizations : Although the law has provisions on the implementation of the systems of authorization, inspection, and enforcement on the use of ionizing radiation, these systems of regulatory control are established and being implemented. License for nuclear facilities will be issued by joint action with ARSN, ministry in charge of environment, health and research, as stipulated by article 14 of the law 2009-14.

Operating's ban: Article 17 of that law provides for the suspension of a nuclear installation when it presents serious risks to health, safety, and public health. In case of imminent risk, ARSN may suspend provisionally the installation in accordance with Article 17. The Minister responsible for nuclear safety may, after consultation with the ARSN, prohibit the operation of an installation when it is not put into service within the time fixed by the decree authorizing its creation or if it ceases to operate continuously for more than two years in accordance with Article 23 of the law 200914. A facility that has operated without authorization may be closed or suspended by ARSN in accordance with Article 31, after approval of the Minister of Scientific Research under section 32 of the 2009-14 legislation.

Institutional control: article 27 chapter II, title IV of the law 2009-15 states that nuclear safety inspectors, under the authority of the nuclear regulatory body (ARSN), control and verify safety aspects of nuclear installations. This chapter addresses also formalities on nuclear inspection and other issues related to coercive and enforcement aspects (article 27 and 35).

Penal dispositions: articles 38 to 41 in section 2 of law 2009-14 address sanctions and penalties in case of using nuclear installation without authorization and in case of noncompliance in the application of the provisions of the nuclear law.

Responsibility of organizations involved in the different stages of the management of spent

fuel and radioactive waste: Article 13 of the law 2009-14 provides that the operator of a nuclear installation is responsible for the safety of its installation. The State through the Ministries concerned and ARSN is responsible for surveillance and control of all stages of the management of spent fuel and radioactive waste in accordance with Article 3 of the law and articles relevant to the mission of the ARSN.

Regulatory Body: ARSN is the regulatory body in charge of the operational application of the legislation related to nuclear safety and security.

ARSN, placed under the direct authority of the prime minister, is an independent institution, in terms of financial, human resources, and decision-making aspects.

SECTION F: Other General Safety Provisions

- **Responsibility of authorization holder:** the licensee operating a nuclear installation is responsible for its safety as stated in article 13 of law 2009-14 (first Chapter, title IV). Articles 14 and 15 give provision on the assessment of financial, managerial, and technical capabilities to fulfill the safety requirements for ensuring safe operation of nuclear installation including spent fuel and waste management facilities.

- **Human and financial resources:** Issuance of authorization takes into account, the financial

and technical capabilities of the applicant. This also takes into consideration capabilities in dismantling, closing, storing waste as stated in articles 11, 14, and 27 of law 2009-14.

- **Quality Assurance:** article 16 of the law 2009-14 states on general self-assessment for safety.
- **Operational radiation protection:** Prescriptions on radiation protection and regulatory requirements are based on IAEA norms and standards. Articles 12 and 13 of the law 2004-17, address provisions to be used by license holders and operators.

Emergency preparedness: prescriptions and requirements for a nuclear emergency are based on AIEA norms and standards. A national response team is being established in cooperation with the ministry in charge of environment, Research, and Institutions in charge of civil protection. The National Fireman Brigade already has a response team for radiological and nuclear emergency situation. The team has been trained through bilateral cooperation.

A national emergency response plan named RAD/ORSEC has been drafted and was tested through a national exercise in October 2016. This exercise has brought together the relevant response forces with the national CBRN unit of the brigade of firefighters. The drafted plan is expected to be adopted soon.

- **Decommissioning:** According to Article 18 of law 2009-14: the final shutdown and decommissioning of a nuclear installation are subject to prior authorization. The application for authorization contains provisions relating to conditions of the shutdown, the terms of decommissioning and waste management, as well as monitoring and subsequent maintenance of the location of the installation based on updated scientific and technical knowledge and forecasts of future use of the site, to prevent or limit sufficiently the risks or disadvantages for the health, safety, public safety, or protection of nature and environment.

The authorization is issued by joint order of the Minister of Scientific Research, the Minister in charge of the Environment and the Minister of Health issued after consultation with the Nuclear Safety Authority. This decree defines the characteristics of decommissioning, the duration of the

dismantling process, and the types of operations that are under the responsibility of the operator after decommissioning. The provisions of this Article shall not apply to facilities for the storage of radioactive waste.

The Article 19 of the law states that:

The final shutdown and the transition to the surveillance phase of a facility for storage of radioactive waste are subject to authorization. Application for authorization includes the provisions for decommissioning as well maintenance and monitoring of the site taking into account the scientific and technological knowledge of the moment, to prevent or sufficiently limits risks or drawbacks for the interests mentioned in Article 13 of this law.

The authorization is issued by joint order of the Minister of Scientific Research, the Minister for the Environment, and Minister responsible for Health issued after consultation with the Nuclear Safety Authority. This Order establishes the types of operations under the responsibility of the operator after the final shutdown.

SECTION G: Safety of Spent Fuel Management

General safety Requirement: article 14 of law 2009-14 states that a user must demonstrate technical and managerial capabilities on the safe management of spent fuel before obtaining a license for implanting a nuclear installation these aspects cover all stages from conception, construction to displacement and waste management. Regulations and guides are under consideration by ARSN.

- **Existing Installation:** Senegal doesn't hold a nuclear installation inside and outside of its territory.
- **Siting of proposed facilities:** site selection and site characterization will be regulated in compliance with IAEA standards, guides, codes, and conventions.
- **Design and construction of facilities:** article 14 of law 2009-14 addresses that issue. Regulations and guide in that issue are under consideration by ARSN.

- **Assessment of the safety of facilities:** ARSN defines safety prescription and safety assessment rules and procedures in compliance with international standards and conventions. An act or decree proposed by ARSN to the relevant Ministry will regulate the assessment of the safety of facilities.

- **Operation of facilities:** general conditions for operating, closing, and dismantling a nuclear waste management facility are addressed in law 2009-14,, chapter II, title II.

- **Disposal of spent fuel:** article 19 addresses that issue. No regulation is yet in place.

SECTION H: Safety of Radioactive Waste Management

- **General Safety Requirements:** article 14 of law 2009-14 addresses general safety prescriptions. ARSN's regulations on that issue will be established by ministerial act or decree.

- **Existing facilities and past practices:** Existing facilities (before the ratification of the Joint Convention) containing spent fuel or other radioactive waste are not yet known by the regulatory authority in the country. The regulatory authority does not yet know any past practice related to the nuclear fuel cycle. However, the regulatory authority has inventoried disused radioactive sources and associated equipment used in the past. Contamination associated with past practice in a research center has been also identified during ARSN investigations.

- **Siting of proposed facilities:** site selection and site characterization will be done in compliance with IAEA standards, guides, codes, and conventions of IAEA

- **Design and construction of facilities:** Article 14 provides that the requirements for the design and construction of radioactive waste management facilities are under the responsibility of the ARSN and are the subject of a ministerial decree.

- **Assessment of safety of facilities:** ARSN defines the safety prescriptions and safety assessment rules and procedures in compliance with international standards and conventions. An act or decree established jointly by ARSN and the Ministry in Charge of Environment edict legal

aspects on that issue.

- **Operation of facilities:** general conditions for operating, closing, and dismantling a radioactive waste management facility are addressed in law 2009-14, chapter II, title II.
- Institutional measures after closure: Ministerial order defines prescriptions for closing a nuclear installation.

SECTION I: Transboundary Movement: nuclear regulatory framework will be updated to well organize the control and management of trans-boundary movements of radioactive waste and spent fuel.

SECTION J: Disused Sealed Sources: article 8 law 2004-17 states that all sources will be returned to its provider, at his end of life. Senegal doesn't have yet any radioactive sources manufacturer.

Under the technical cooperation project with the IAEA, RAF9054, Senegal has set up a national interim storage facility for disused and orphan radioactive sources as well as nuclear material. The facility is currently operational. All orphan radioactive sources as well as radioactive sources inherited from old practices are conditioned and stored in the interim storage site in SINDIA (about sixty kilometers from DAKAR).

SECTION K. General Efforts to Improve Safety: To date, the country doesn't use nuclear fuel, spent fuel, and other related nuclear material. Actions and performance are focused on increasing the safety and security of radioactive sources used in medicine, industry, research, livestock hydrogeology.

Actions are being implemented on the search and secure of orphan sources and on inventory registration and accounting of sources of ionizing radiation.

By the way, the government undertakes a program for human resources development in nuclear safety and security, waste management, and combating illicit trafficking of nuclear material and

radioactive sources.

SECTION L. Attached documents:

loi No2009-14 du 02 mars 2009

loi No2004-17 du 15 juin 2004

Decree 2010-893 du 30 juin 2010

