

REPULIC OF TUNISIA



Convention on Nuclear Safety

NATIONAL REPORT OF TUNISIA

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List of Abbreviations

NCNS	National Commission for Nuclear Safety
CNS	Convention on nuclear safety
CNSTN	National Centre for Nuclear Science and Technologies
CNRP	National Centre for Radiation Protection
CNEA	National Atomic Energy Commission
STEG	Tunisian Company of Electricity and Gas

INTRODUCTION

Tunisia is among the leading developing countries to bank on the benefits of the peaceful uses of nuclear energy and technology. Accordingly, ever since its independence, Tunisia took the initiative in joining the International Atomic Energy Agency in 1957 and participating in the first general conference of its 59 member states in October the same year.

This orientation was based on an ambitious program that especially included the establishment of the Atomic Energy Commission, which has been operating since the early sixties of the twentieth century. That period was mostly characterized by undertaking a program aiming at the use of nuclear power for the production of electricity and the desalination of seawater in the south of Tunisia, in addition to the establishment of a significant number of laboratories at the Nuclear Research Center in Carthage and the training of a considerable number of specialized technicians, engineers and researchers.

In this respect, it is worth noting that Tunisia was one of the first countries in the world to have undertaken and carried out the relevant research studies for seawater desalination using nuclear energy, which is confirmed by the information circular No. 45 issued by the International Atomic Energy Agency on 22 July 1963 for the information of all Member States. To illustrate the particular importance and development of this program, it was supported by the creation of the Atomic Physics Institute under the Finance law of 1969 aiming at the promotion and training of human resources.

However, these various achievements, programs and schemes all suddenly disappeared towards the end of the sixties.

As a result of this major setback suffered by the Tunisian nuclear ambitious program, talk about nuclear power has disappeared altogether except technological applications during the 1970's up to 1981 with the emergence of a few regulatory laws such as the promulgation of the law relating to the radiation protection and the creation of the national center for radiation protection in 1982.

During the mid-eighties there was an attempt to revive the nuclear program by the Tunisian Company of Electricity and Gas through a feasibility study of electricity generation using nuclear power with the cooperation of the International Atomic Energy Agency.

The study was completed along with the selection of the suitable nuclear sites but no decision was taken in this regard due to the absence of a clearly defined nuclear program and the provision of the relevant requirements.

And towards the end of the eighties, and with the creation of the State Secretariat for Scientific Research and technology, and attaching it to the Prime Ministry, the Tunisian nuclear program was revived through setting up and implementing a plan for the development of peaceful uses of nuclear energy and technology, with its main components being the creation of a National Atomic Energy Commission to support this field on the national scale, the creation of the National Center for Nuclear Sciences and Technologies and the approval of setting a nuclear research reactor at the center. Most of the components of the plan were also completed, leading to a remarkable development in various sectors, with the exception of the research reactor, which was supposed to be commissioned by the year 2000.

On November, 2006, the Tunisian Company of Electricity and Gas (STEG) was assigned by the government to conduct, in collaboration with the Ministry of Higher Education and Scientific Research, through the National Centre for Nuclear Science and Technologies(CNSTN) a technical-economic feasibility study for NPP implementation, with the decision presumably due to be taken by the end of the year 2011. This occurred in an energy context marked by the dwindling production at Tunisia's oil fields and the surge in hydrocarbon prices that make the country spending depends heavily on energy imports to power its electricity network. This decision came in favour of further research and development of country's nuclear option in order to reduce the reliance on oil and gas.

Up-to-date and no decision was taken for nuclear power option and such decision was postponed. It should be recalled that Tunisia is currently under a transitional period in which the national priority was from 2011 until now the adoption of a new constitution and the promulgation of the constitution implementing laws and regulation. To summarize, Tunisia is still considering the introduction of nuclear energy in the country. More information is included in this report.

REPORTING ARTICLE BY ARTICLE

1-Article 6: Existing Nuclear Installations

According to the Convention on Nuclear Safety Hereinafter designated as “CNS” Tunisia is a non-nuclear country and has no nuclear installations as defined in the article 2 of CNS.

In Tunisia, developed practices using or related to radioactive sources are carried out in the different fields. Radioactive sources are largely used in medical, industrial, agriculture, education and research activities. Tunisia has neither Nuclear Power Plant nor Research Reactor and all radioactive sources are imported.

Tunisia is facing a growing activity all over the country in a wide range of applications such as in medicine, an increasing number of nuclear medicine centres with PET-CT, number of new cobalt therapy and linear accelerator units, high dose Curie therapy, interventional radiology, screening imaging for cancer as mammography. More than a thousand radioactive sources ranging in activity between weak and very high, those are used in various peaceful activities such as in health, environment, agriculture, industry and scientific research.

Nuclear medicine has undergone a remarkable development in Tunisia. For instance, nuclear medicine departments have been set up in many hospitals and equipped with gamma cameras for an enhanced accuracy of the test results and increased speed of delivery. It is worth noting that 12 nuclear medicine centers are operational in Tunisia,

2-ARTICLE 7: LEGISLATIVE AND REGULATORY FRAMEWORK

- *Each Contracting Party shall establish and maintain a legislative and regulatory framework to govern the safety of nuclear installations.*
- *The legislative and regulatory framework shall provide for:*
 - i. the establishment of applicable national safety requirements and regulations;*
 - ii. a system of licensing with regard to nuclear installations and the prohibition of the operation of a nuclear installation without a licence;*
 - iii. a system of regulatory inspection and assessment of nuclear installations to ascertain compliance with applicable regulations and the terms of licences;*
 - iv. the enforcement of applicable regulations and of the terms of licences, including suspension, modification or revocation*

2.1-ACTIONS ACHIEVED OR PLANNED

The current legislative and regulatory framework for peaceful uses of nuclear energy is based on a set of laws and decrees that have been drafted at the beginning of the eighties of the last century and based on international standards and conventions in force in the seventies.

Most of these standards does not respond to the current needs for a safe and secure use of nuclear energy and techniques especially when we take into consideration that this framework cover only radiation protection.

This legislative and regulatory framework is no longer complying with the current requirements and led to cases of legal and regulatory vacuum with regard to the protection of persons, property and the environment.

In the meantime, on international scale, it has been adopted an important set of conventions and agreements dictated by international events related to the uses of nuclear energy and technology and by the requirements of the international regime of nuclear safeguards and nuclear safety and security.

Tunisia ratified most of these conventions and consequently required to fulfill its obligations, especially those related to CNS.

It should also be recalled that during the two working sessions of the board of ministers about nuclear energy and technology sector in Tunisia held on 27 August 2009 and December 28, 2010 recommendations were adopted to review of the existing structural and institutional frameworks. It was also decided to establish a national expert under the supervision of the National Atomic Energy Commission and was mandated to prepare a new legislative and regulatory framework for peaceful uses of nuclear energy.

The national expert team proceeded in the first stage to the diagnosis of the existing legal and institutional framework for the peaceful use of nuclear energy it turned out through that the current legislative and regulatory framework is complaining of several situations of legal and institutional vacuum.

To remedy to this situation, the expert team decided to establish a new legislative and regulatory framework based on a comprehensive law for peaceful uses of nuclear energy and techniques.

The drafted provisions are in complete accordance with international obligations of the Republic of Tunisia in the field of peaceful uses of nuclear energy and aims to ensure nuclear safety, security and safeguards and civil liability for nuclear damage in order to ensure protection of people, property and the environment now and in the future.

This approach was approved by the government and approves the decision to establish a new legislative, regulatory, and institutional framework.

The drafted comprehensive nuclear law is currently under the official process of adoption. In this regard, all primary steps of the official process of adoption are being achieved and the next step will be the final adoption by the government and requesting its adoption to the parliament.

2.2 MAIN NATIONAL LAWS AND REGULATIONS RELATED TO NUCLEAR SAFETY

1. Decree No 342 of 22/02/2010 related to the ratification of the Convention on Nuclear Safety.
2. Law n°81-51 of 18/06/1981 related to the radiation protection.
3. Decree No. 86-433 of 28/03/1986 related to the protection against ionizing radiation
4. Law No. 88-67 of 16/06/1988 related to the ratification of the Vienna Convention on Early Notification of a Nuclear Accident
5. Law No. 88-68 of 16/06/1988 related to the ratification of the Vienna Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency
6. Decree No. 90-1399, 03/09/1990, establishing a National Atomic Energy Commission as amended by Decree No. 95-2566 of 25/12/1995
7. Law n° 96-41 dated on 10 June 1996, related to the Hazardous Waste control its management and elimination
8. Decree No. 2000-2339 of 10/10/2000 establishing the list of hazardous waste
9. Decree No. 2005-1991 of 11/07/2005, relating to the study of impact on the environment
10. Law n° 97-37 dated of 02/06/ 1997 related to the transport by road of hazardous materials
11. Decree No. 2000-439 of 14/02/2000 establishing the list of dangerous substances which transported by road must be under the control and with the accompaniment of security units
12. Decree No. 2002-2015 of 04/09/2002 fixing the technical rules related to the equipment and the design of vehicles used in the transport of hazardous materials by road.

3-ARTICLE 8: REGULATORY BODY

- 1. Each Contracting Party shall establish or designate a regulatory body entrusted with the implementation of the legislative and regulatory framework referred to in Article 7, and provided with adequate authority, competence and financial and human resources to fulfil its assigned responsibilities.*
- 2. Each Contracting Party shall take the appropriate steps to ensure an effective separation between the functions of the regulatory body and those of any other body or organization concerned with the promotion or utilization of nuclear energy.*

3.1-CURRENT REGULATORY FRAMEWORK

Tunisia has established a regulatory and institutional framework to insure safe and secure management of radioactive sources within all the territory.

a. Existing legislation and Regulation

Legislation and regulations are in place since 1981, aiming to the protection against ionizing radiations of the workers, the patients and the public and establishing a regulatory body for these activities called National Centre for Radiation Protection (CNRP) (under the ministry of health) which is acting since 1981 as regulatory authority.

b. Organization and activities of CNRP

The CNRP is placed under the aegis of the Ministry of Health; it is a public institution having administrative and financial autonomy. The CNRP is directed by a Medical Doctor, familiar with ionizing radiations, nominated by presidential decree.

The staff includes senior permanent employees and temporary employees (bio physicians, medical doctors, medical physicians, engineers, lawyer, and administrator), technicians, inspectors and other agents.

There are administrative and medical services, Dosimetry, Spectrometry and Calibration laboratories, Control and Inspection service, Documentation and Teaching Unit, Research Unit, and Radiological Security and Safety framework (RSSR Unit).

The CNRP is enabled to regulate all practices involving radioactive sources or devices generating ionizing radiation, to take enforcement actions if there is any non compliance with regulatory requirements, and to set administrative procedures: reporting to the Minister of Health.

3.2-ACTIONS ACHIEVED OR PLANNED

The drafted comprehensive nuclear law includes also the establishment of the National Commission for Nuclear Safety hereinafter designated as NCNS that will carry out regulatory functions in accordance with international standards, and related conventions.

The NCNS will be an independent regulatory body tasked with ensuring to take all necessary measures. This aims to ensure the safe, secure and safeguarded uses of nuclear energy and techniques in order to ensure the protection of facilities and activities, radioactive sources, individuals, property and the environment in line with the international obligations of Tunisia, especially in framework of the Convention on nuclear Safety.

One of the main functions of this commission will be licensing and controlling all nuclear and radiological activities, facilities and installations and the use of radioactive sources.

The NCNS will carry out regulatory functions for safety, security, safeguards, radiation protection, physical protection, radioactive material transport, and radioactive waste management.

NCNS will carry out such regulatory functions for nuclear installations and radioactive sources. The drafted law is containing provisions to ensure its effective independence by providing a clear separation between promotional/advisory and regulatory functions, as well as providing with the needed authority, the competent human resources and adequate financial means. It was approved that the NCNS will be complete independent authority.

It should be noted that the provisions of the comprehensive nuclear law should be completed by decrees of application of the law and by guidance's to be promulgated by the NCNS.

The list of decrees of application of the comprehensive nuclear law is as following:

- 1-Decree on conditions of exemption of certain sources and activities or any part thereof from licensing and regulatory regime.
- 2-Decree on conditions and procedures on the regime of the licensing system
- 3-Decree on standards and categories of habilitation
- 4-Decree on the special statute of inspectors
- 5-Decree on conditions and procedures of inspections
- 6-Decree on detailed requirements for nuclear safety
- 7-Decree on detailed requirements for radiation safety
- 8-Decree on conditions and procedures of emergency plans
- 9-Decree on detailed requirements for the decommissioning of nuclear facilities

10-Decree on detailed requirements for the physical protection of nuclear materials and installations

11-Decree on detailed requirements on security of radioactive sources and facilities.

12-Decree classifying areas within nuclear facilities and conditions of access, in addition to the classification of nuclear materials and emergency in case of intrusion.

13-Decree on conditions on situations of exposure

14-Decree on conditions and procedures of authorization addition of radioactive substances in the production and manufacture of drugs, supply and export of such products and the administration of radioactive materials for humans or animals, for the purposes of medical or veterinary research

15-Decree on conditions and procedures of authorization of transport of radioactive materials

16-Decree on the safe management of the radioactive waste and spent fuel

17-Decree establishing a Fund for the safe management of radioactive waste and spent fuel and the decommissioning

18-Decree on detailed requirements on safeguards and on controlling the supply and export of nuclear materials and technology.

This NCNS will:

- Evaluate the nuclear energy safety and security programme and prepare the decree of NPP authorizations.
- Authorise all nuclear and radioactive practices and sources
- Control and inspect to insure nuclear and radiological safety and security culture
- Enforce the application of relevant legal requirements(national laws and regulation and international conventions, standards, requirements adopted by Tunisia)
- Inform the public about nuclear safety and radiation protection...

It should be noted that detailed requirements and procedures should be included in the decrees of application of the comprehensive law and in other regulatory tools.

4-ARTICLE 9: RESPONSIBILITY OF THE LICENCE HOLDER

“Each Contracting Party shall ensure that prime responsibility for the safety of a nuclear installation rests with the holder of the relevant licence and shall take the appropriate steps to ensure that each such licence holder meets its responsibility”

Provisions are included in the drafted comprehensive nuclear law to ensure that the authorized person shall bear the prime responsibility for ensuring the safety of the nuclear installation and of all activities and procedures associated with it. These provisions are included as fundamental principles in the first chapter of the drafted law related to general provisions and detailed in the chapter 3 related to Nuclear Safety. To ensure that authorized persons meet their responsibilities, provisions are made under the chapter 2 related to the control of nuclear activities and the NCNS will control, inspect and enforce the application of relevant legal requirements.

5-ARTICLE 10: PRIORITY TO SAFETY

“Each Contracting Party shall take the appropriate steps to ensure that all organizations engaged in activities directly related to nuclear installations shall establish policies that give due priority to nuclear safety.”

Priority to Nuclear safety as a fundamental principle is included in the drafted law; more details should be completed by preparing the decrees of application. Furthermore, different institutions such as CNSTN are considering nuclear safety as priority number one in all activities. For that, CNSTN has established a department of nuclear safety, which is responsible for safety aspects of all nuclear activities in the CNSTN. The department deals with different issues related to Radiation protection, nuclear security and nuclear safety. STEG team in charge of NPP feasibility study adopted the same approach.

6-ARTICLE 15: RADIATION PROTECTION

Each Contracting Party shall take the appropriate steps to ensure that in all operational states the radiation exposure to the workers and the public caused by a nuclear installation shall be kept as low as reasonably achievable and that no individual shall be exposed to radiation doses which exceed prescribed national dose limits

The existing legislation and regulations related to radiation protection, which were not updated, are not fully in compliance with the international fundamental requirements.

To remedy this situation, provisions are made in the drafted law to ensure the principles of: justification, optimization and dose limitation. These provisions are included as fundamental principles in the first chapter of the drafted law related to general provisions and detailed in the chapter 5 related to radiation protection, these fundamental principles are intended to ensure protection of persons, property or the environment caused by nuclear installation or other radiological activities.

The detailed requirements and procedures should be included in the decrees of application of the comprehensive law and in other regulatory tools.

7-ARTICLE 16: EMERGENCY PREPAREDNESS

1. Each Contracting Party shall take the appropriate steps to ensure that there are on-site and off-site emergency plans that are routinely tested for nuclear installations and cover the activities to be carried out in the event of an emergency.

For any new nuclear installation, such plans shall be prepared and tested before it commences operation above a low power level agreed by the regulatory body.

2. Each Contracting Party shall take the appropriate steps to ensure that, insofar as they are likely to be affected by a radiological emergency, its own population and the competent authorities of the States in the vicinity of the nuclear installation are provided with appropriate information for emergency planning and response.

3. Contracting Parties which do not have a nuclear installation on their territory, insofar as they are likely to be affected in the event of a radiological emergency at a nuclear installation in the vicinity, shall take the appropriate steps for the preparation and testing of emergency plans for their territory that cover the activities to be carried out in the event of such an emergency.

Special provisions in the drafted nuclear law addressing emergency preparedness and response are included the chapter 3 related to Nuclear Safety, these provisions are intended to complete the law No. 91-39, dated on08/06/1991, related to disasters, their prevention and rescue organization. Users of nuclear installations and other radioactive material are requested to prepare and set up an appropriate on-site and off-site emergency plans dealing with accidents or emergencies that could result in damage to persons, property or the environment. The plan should include provisions for exercises to ensure its adequacy, including participation by all relevant persons and concerned governmental institutions.

All the relevant international legal commitments such as those under the CNS, the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency are implemented in the drafted nuclear law. This work should be completed by preparing the decrees of application that should implement the whole system with all the needed mechanisms.

8-ARTICLE 19: OPERATION

Each Contracting Party shall take the appropriate steps to ensure that:

- i. the initial authorization to operate a nuclear installation is based upon an appropriate safety analysis and a commissioning programme demonstrating that the installation, as constructed, is consistent with design and safety requirements;*
- ii. operational limits and conditions derived from the safety analysis, tests and operational experience are defined and revised as necessary for identifying safe boundaries for operation;*
- iii. operation, maintenance, inspection and testing of a nuclear installation are conducted in accordance with approved procedures;*
- iv. procedures are established for responding to anticipated operational occurrences and to accidents;*
- v. necessary engineering and technical support in all safety-related fields is available throughout the lifetime of a nuclear installation;*
- vi. incidents significant to safety are reported in a timely manner by the holder of the relevant licence to the regulatory body;*
- vii. programmes to collect and analyse operating experience are established, the results obtained and the conclusions drawn are acted upon and that existing mechanisms are used to share important experience with international bodies and with other operating organizations and regulatory bodies;*
- viii. the generation of radioactive waste resulting from the operation of a nuclear installation is kept to the minimum practicable for the process concerned, both in activity and in volume, and any necessary treatment and storage of spent fuel and waste directly related to the operation and on the same site as that of the nuclear installation take into consideration conditioning and disposal.*

Provisions dealing with all aspects of operation as described in the CNS are included in the drafted law; the system should be completed by the decrees of application and the establishment of the new regulatory authority.

CONCLUSION

Tunisia has many years of experience in the fields of peaceful uses of nuclear energy and has an ambitious program for the development of applications of nuclear energy and techniques. The legislation and regulations in force in Tunisia reflect the existing nuclear activities and generally fail to meet the international standards. The CNRP acting in practice since more than 34 years as regulatory body got a large experience and human capabilities. It is involved with the national expert group under the coordination of the CNEA in the elaboration of nuclear law and will be integrated within the NCNS to insure the continuity of the regulatory activities. The national expert group aimed to include provisions in the drafted law that

should enforce the provisions of the CNS all the related conventions and international standards. The IAEA is involved in this process by revising the drafted law. This work should be completed by preparing the decrees of application that should implement the whole system with all the needed mechanisms.

The expert group is also following closely all recommendations made by various groups following the Fukushima accident and the IAEA DG report on the matter in order to take them into consideration, if need be, into the decrees of application of the comprehensive nuclear law.

The same approach is adopted with regard to the provisions of Vienna declaration on Nuclear Safety as adopted in the related Diplomatic Conference.

To Summarize Tunisia has decided to establish a new legislative and regulatory framework in line with international conventions and standards especially taking into consideration those conventions and standards related to Nuclear Safety, Security and Safeguards. Within this framework, a draft of a comprehensive nuclear law was prepared and finalized establishing mainly a new regulatory authority with tasks and duties as described in the CNS. Currently the draft of the new comprehensive nuclear law is in the process of adoption. It should be recalled that Tunisia is currently under a transitional period in which the national priority was from 2011 until now the adoption of a new constitution and the promulgation of the constitution implementing laws and regulation. We also making efforts at the level of the Atomic Energy Commission and the ministry of Higher Education and Scientific Research to make the adoption of the comprehensive nuclear law as a National Priority.