Plurinational State of Bolivia
National Report

National Nuclear Safety Report
2020

NUCLEAR SECURITY CONVENTION

National Nuclear Safety Report

Content Page

ABBREVIATIONS	DEFINITIONS
CSN	Convention on Nuclear Safety
AETN	Electricity and Nuclear Technology Control Authority
CIDTN	Center for Research and Development in Nuclear Technology
ABEN	Bolivian Nuclear Energy Agency
INFCIRC/572	IAEA Information Circular Guidelines on national reports prescribed by the Nuclear Safety Convention
MEN	Ministry of Energy
VMATE	Vice Ministry of High Energy Technologies
DGEN	General Directorate of Nuclear Energy
COBOEN	Bolivian Nuclear Energy Commission
CIN	Nuclear Research Center
ClAN	Center for Research and Nuclear Applications
lAEA	International Atomic Energy Agency
IBTEN	Bolivian Institute of Nuclear Science and Technology
PNB	Bolivian Nuclear Program
AE	Electricity Control and Social Control Authority
ICRP	International Commission for Radiological Protection
SISRADE	National System for Risk Reduction and Disaster and Emergency Assistance
CONARADE	National Council for Risk Reduction Disaster and Emergency Assistance
COEN	Operational Committee of National Emergencies

INTRODUCTION AND PREPARATION OF THE NATIONAL REPORT

1. GENERAL CONCEPTS

The Bolivian State ratified by means of Law 1166 of April 11, 2019 the Convention on Nuclear Safety (CSN), which was approved by a Diplomatic Conference in Vienna, Austria, on June 17, 1994, the Convention on Nuclear Safety (CSN, called as “The Convention”) and entered into force for Bolivia since December 15, 2019.

The national policy established in the Patriotic Agenda 2025 and the Economic and Social Development Plan 2016-2020 contemplate the development of nuclear technology that includes the implementation of the Center for Research and Development of Nuclear Technology - CIDTN.

The projected nuclear facilities will be carried out with the highest standards of quality and radiological and nuclear safety, complying with the national and international safety standards, codes and guidelines developed by the IAEA International Atomic Energy Agency.

As established in Article 5 of the Convention, each Contracting Party must submit a National Nuclear Safety Report for consideration on the measures taken to comply with the relevant obligations.

The National Report represents a summary of documents and activities carried out to date in relation to the development of the Nuclear Infrastructure necessary for the implementation of the Nuclear Research Reactor in the Center for Research and Development in Nuclear Technology (CIDTN), located in the Department of La Paz in the city of El Alto, in charge of the Bolivian Nuclear Energy Agency (ABEN), the only nuclear facility to be implemented from 2020 to 2023 in Bolivia.

The National Report is essentially constituted by:

- ✓ The main body of the report, as recommended by INFCIRC / 572 which states that if the contracting party does not have any nuclear facilities planned or in operation, the report may be brief and basically focus on articles 7,8 and 16 of the Convention.

The report was prepared by the Electricity and Nuclear Technology Control Authority (AETN, hereinafter referred to as "the Regulatory Authority"), Bolivian Regulatory authority in this area.

With this document, the Government of Bolivia fully recognizes the commitment to continue applying all the fundamental principles of nuclear, radiological and physical security to national nuclear facilities, in order to maintain and increase the degree of security of the same. From the information presented in this document, it can be concluded that, in the opinion of the Bolivian State, the fundamental commitments of the Convention on Nuclear Safety are satisfied.

ARTICLE 7. LEGISLATIVE AND REGULATORY FRAMEWORK

7.1. INTRODUCTION

This article presents a summary of the Laws, Regulations and requirements that give rise and support to: the Regulatory Authority that is in charge of the regulation, supervision, of nuclear and radiological facilities in the Country. It should be understood that the information cited in this Article is not intended to include in its full extent the aforementioned Laws and Regulations; however, additional information is presented in Annex 1 to this National Report in order to provide a more complete view of the Bolivian regulatory framework.

7.2. NATIONAL LEGISLATIVE FRAMEWORK

The legislative and regulatory framework under which the principles and commitments derived from the Nuclear Safety Convention (CSN) are based on the Political Constitution of the Bolivian State (hereinafter referred to as “the Constitution”), from which a series of Laws, Regulations, Rules, Specific Standards and Regulatory Guides.

In accordance with point 14 of Paragraph I of Article 158 of the Political Constitution of the State, and Paragraph I of Article 35 of Law No. 401 of September 18, 2013, on the Conclusion of Treaties, in accordance with Paragraph II of Article 15 of Supreme Decree No. 2476 of August 5, 2015, Regulation to Law No. 401 on the Conclusion of Treaties, is ratified as “Convention on Nuclear Safety”, approved on June 17, 1994 in a Diplomatic Conference convened by the International Atomic Energy Agency, held at its Headquarters, Vienna, Republic of Austria.

The Constitution, in its Article 7, establishes that the functions and attributions of the organs of public power; It is inalienable and imprescriptible.

Article 145 indicates that the Plurinational Legislative Assembly (composed of two chambers, the Chamber of Deputies and the Chamber of Senators), is the only one with the power to pass and sanction laws that govern the entire Bolivian territory.

The Constitution in its Articles 342 and 344 establish that it is the duty of the State to conserve, protect, prohibit the manufacture of nuclear weapons, the internment, transit and deposit of radioactive waste and regulate the internment, production, and marketing of substances that affect health and to the environment.

Likewise, Articles 347 and 379 establish that the State and society will promote the mitigation of the harmful effects on the environment, and of the environmental liabilities that affect the country and the use of new forms of alternative energy production, compatible with the conservation of environment respectively.

Through Supreme Decree No. 2654 of 2015, national priority is conferred on the Bolivian Nuclear Program (PNB), considered as an instrument through which the State affirms its intention to promote the peaceful use of nuclear energy.

The Government of Bolivia in the 2016 management signs 2 cooperation agreements with the Federal Republic of Russia, with the purpose of developing nuclear technology for peaceful purposes, and to build, implement and operate the Center for Research and Development in Nuclear Technology (CIDTN), the same one that contemplates a Nuclear Research Reactor.

The Bolivian Nuclear sector is made up of a central level, which is the Ministry of Energy, the Regulatory Authority that constitutes the AETN, and an operator, which is the Bolivian Nuclear Energy Agency (ABEN).

The Ministry of Energy was created on January 22, 2017, through Supreme Decree Nº. 3058, whose attributions and competence in the nuclear sector are: Propose and implement policies and programs for the development of research and application of nuclear energy for peaceful purposes in all those sectors that require its use, supervise, control and supervise the companies and institutions under its control.

Law 1003, of December 12, 2017, establishes that the nuclear sector is the exclusive competence of the Central level of the Plurinational State of Bolivia.

The Ministry of Energy through the Vice Ministry of High Energy Technologies (VMATE) and the Directorate General of Nuclear Energy (DGEN), is responsible for executing programs and projects for research and application of nuclear energy in all those sectors that require the use of nuclear techniques and fulfill the official national counterpart functions for all international conventions and relations in this nuclear field at the same time supervise national projects and those carried out within the framework of the Technical Cooperation program with the OIEA.

The paragraph 1 of article 103 of the Political Constitution of the State, determines that the State shall guarantee the development of science and scientific, technical and technological research for the benefit of the general interest.

In 2019, Law No. 1205 is enacted, ‘’Law for the Peaceful Applications of Nuclear Technology’’. (See Annex 1) and under its Article 10 the Nuclear Regulatory Authority (AETN) is created. Said authority is in charge of the function of regulation and supervision of nuclear activity in everything related to radiological and nuclear safety, safeguards and physical protection, and should also advise the National Executive power in matters within its competence.

Law No. 1205 of August 1, 2019 for the Peaceful Applications of Nuclear Technology, establishes the following transitory provisions:

- First. The Executive Power will regulate this Law within a period of up to one hundred and eighty (180) calendar days from its promulgation.
- Second. The regulations of the Radiation Protection Law approved by Supreme Decree Nº 24483, of January 29, 1997, remain in force until the publication of the Regulations cited in the preceding provision.
- Third. Within a period of one (1) year, the regulations referred to in this law shall be approved by Supreme Decree.

Law Nº 1205 establishes that the AETN, is the Competent National Authority that acts as an autarkic entity in the jurisdiction of the Ministry of Energy, has full legal capacity to act in the fields of public and private law.

Article 1 of Law Nº 1205 of August 1, 2019, subsection b) is intended to establish the legal framework of the Regulatory Authority: b) Regulate, control and supervise all facilities and activities that involve applications peaceful nuclear technology, within the framework of technological and physical security, to ensure the protection of present and future generations, as well as the environment, against the risks inherent in ionizing radiation

Through Supreme Decree Nº 0071 of April 9, 2009, the Electricity Fiscalization and Social Control Authority (AE) was created, establishing in Article 4 that the attributions and competence, shall and obligations of the extinguished Sectorial Superintendencies shall be assumed by the Regulation and Social Control Authorities, in what does not contravene the provisions of the Political Constitution of the State.

That paragraph II of article 51 of Supreme Decree No. 0071 of April 9, 2009, as amended by Supreme Decree No. 3892 of May 1, 2019, establishes the attributions and competence of the AETN for the nuclear technology sector, among which are the following:

a) Regulate, control, fiscalization, supervise and monitor all Activities and Facilities that involve the peaceful application of nuclear technology and the fulfillment of its obligations established in current regulations, ensuring Technological Security, Physical Security and Safeguards;

b) Formulate and approve Guidelines, Procedures and Guides in the areas of its competence.

That subsection k) of article 53 of Supreme Decree No. 0071 of April 9, 2009, modified by Supreme Decree No. 3892 of May 1, 2019, establishes that within the attributions and competence of the Executive Director of the AETN is: k) Control, fiscalizate and regulate, throughout the national territory, the application of Nuclear Technology, within the framework of current legal regulations.

Supreme Decree No. 3892 provides support from an administrative point of view, to create the Nuclear Electricity and Technology Control Authority (hereinafter referred to as "the Regulatory Authority"), which being a decentralized body under the Ministry of Energy, serves as Regulatory Body responsible for monitoring nuclear, radiological and physical safety, as well as safeguards within national territory.

From the aforementioned decree the AETN was constituted in the Regulatory Body in radiological and nuclear safety, safeguards and physical protection, with jurisdiction throughout the national territory, exercising all the functions of control and regulation of nuclear activity that until then were by the Bolivian Institute of Nuclear Science and Technology.

The Nuclear Law No. 1205, in its Article 10 establishes that the Regulatory Authority is a technical and operational public institution, with legal personality and its own assets, technical, administrative, financial and legal independence, under the tuition of the Head of Sector Ministry and that it is in charge of the regulation, inspection, supervision and control of the safe use of the activities and facilities framed by current regulations, ensuring the protection of people and the environment.

The Nuclear Law No. 1205, in its Article 27 establishes that the Regulatory Authority shall establish the Technological Security requirements for the Authorization of Activities or Facilities, in accordance with regulations, in the case of Technological Security in Nuclear Activities or Installations, Authorization will be required for each of its stages, which among others must include: location, construction, commissioning, operation, closure and decomissioning.

As established in Article 44 of Nuclear Law No. 1205, on the Management of Radioactive Waste and Nuclear Fuel spent the Regulatory Authority approve guidelines and rules for the safe management of Radioactive Waste and Spent Nuclear Fuel, within the framework of the regulations in force.

The Nuclear Law defines nuclear safety as a set of actions and effective operating conditions, related to the technological safety of nuclear facilities, for accident prevention and mitigation of its consequences, the result of which is the protection of exposed workers and the environment against the undue risk of radiation (Article 20).

In addition, Nuclear Law No. 1205 establishes the difference between a nuclear and a radioactive installation. The first one is defined as "the one in which it is manufactured, processed, used, stored fuel or nuclear material", and the second as "that" where activities are carried out that involve the use of sources of Ionizing Radiation.

7.3. INTERNATIONAL AGREEMENTS

Bolivia State as a member of the IAEA has ratified the following International Conventions and Agreements sponsored by the IAEA:

- IAEA Statutes ratified by Bolivia through Law Nº 197 of November 28, 1962;
- Agreement on Privileges and Immunities of the IAEA ratified by Bolivia through Law Nº 362 of December 11, 1967;
- Convention on Civil Liability for Nuclear Damages signed in Vienna ratified by Bolivia through the same Law Nº 362 of December 11, 1967;
- Agreement on Safeguards signed with the IAEA in the framework of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and the Treaty for the Prohibition of Nuclear Weapons in Latin America, ratified by Bolivia through Law Nº 1581 of August 3, 1994;
- Convention on the Physical Protection of Nuclear Materials ratified by Bolivia through Law Nº 2288 of December 4, 2001;
- Convention on Assistance in the event of a Nuclear Accident or Radiological Emergency ratified by Bolivia through Law Nº 2430 of November 28, 2002;
- Convention on the Early Notification of Nuclear Accidents ratified by Bolivia through Law Nº 2431 of November 28, 2002;
- Amendment of the Convention on the Physical Protection of Nuclear Materials ratified by Bolivia through Law Nº 905 of February 22, 2017;

- Nuclear Safety Convention ratified by Bolivia through Law Nº 1166 of April 11, 2019;
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management ratified by Bolivia through Law Nº 1167 of April 11, 2019;
- Additional Protocol to the Safeguards Agreement signed with the IAEA, This Protocol was signed in September 2019 (for its validity, the ratification process is being carried out through the Law of the Plurinational Legislative Assembly of Bolivia).

7.3.1. Other dispositions not legally binding

It is also important to point out other non-binding instruments sponsored by the IAEA:

- Code of Conduct on Technological and Physical Security of Radioactive Sources, commitment submitted to the IAEA on April 2, 2004;
- Code on the Safety of Research Reactors, implementation commitment submitted to the IAEA on March 21, 2019;
- Import and Export Guidelines for Radioactive Sources, application commitment submitted to the IAEA on March 21, 2019.

7.3.2. OTHER AGREEMENTS

Regarding the international context, technical and scientific cooperation agreements are maintained with the following organizations:

• IAEA (International Atomic Energy Agency), with which there are agreements, treaties and conventions and mainly national and regional technical and scientific cooperation projects.

• Rostechnadzor (Nuclear Regulatory Entity of the Russian Federation) with which there is an agreement for technical cooperation and information exchange for the licensing processes of the research reactor.

7.4. REGULATORY FRAMEWORK

7.4.1. Introduction

Nuclear Law N° 1205 grants the Regulatory Body the attributions and competences to dictate and enforce regulations to control and supervise nuclear activities, mandatory in the entire national territory.

Since September 2019 and the first two months of 2020, a regulatory system covering radiological and nuclear safety, safeguards of nuclear materials and physical protection has been proposed to the Ministry of Energy within the framework of Nuclear Law N° 1205. The Regulatory Authority has developed and proposed regulations as mandated by Nuclear Law N° 1205 in its transitory provisions, the proposal consists of 10 general regulations of which, 7 have to do (directly or indirectly) with the licensing of nuclear facilities in each One of its stages: location, construction, commissioning, operation, closure and decommissioning.

In order to carry out the process of licensing nuclear research reactors, the Regulatory Authority has approved the Specific Requirement for Nuclear Installation R.I. N° 0001, to obtain the Site License for Nuclear Research Reactors.

Below are the proposal for 10 general regulations and a specific requirement for licensing of research reactors, developed under the Nuclear Law N° 1205:

- Radiological Protection;
- Infringements and sanctions;
- Inspections;
- Safety in Nuclear Facilities;
- Safety in Radiological Facilities;
- Physical Security of Nuclear Materials and Installations, and Radioactive Sources;
- Safe Transportation of Radioactive Materials;
- Authorizations;
- Preparation and Response to Nuclear and Radiological Emergencies;
- Radioactive Waste Management, Disused Sealed Sources and Spent Nuclear Fuel Management.

R.I.N No. 0001, Specific Requirement of Nuclear Installation, to obtain the Site License for Nuclear Research Reactors.

7.4.2. Basic concepts

The regulatory framework of Bolivia that will be developed will be based on a set of basic concepts that are part of the philosophy based on the performance approach that underpins the regulatory system in matters of radiological and nuclear safety.

7.4.2.1. Basic Criteria for Radiological and Nuclear Safety

The basic criteria on which radiological and nuclear safety is supported are consistent with the recommendations of the International Commission on Radiological Protection (ICRP) and with the IAEA safety standards.

7.4.2.2. Radiological Emergencies

In the case of radiological emergencies, the Regulatory Authority applies criteria consistent with the recommendations made by the ICRP and the Collection of Safety Standards Emergency Preparedness and Response, No. GSR Part 5, IAEA, Vienna (2010) and the National Law No. 602 of Risk Management.

7.4.2.3. Responsibility for Security

Articles 26 and 27 of the Law 1205, of the regulatory scheme establish that the responsibility for the radiological and nuclear for ensuring safety of a nuclear installation relapses completely in the Headline of the Authorization (from now on named Responsible entity). The single fulfillment of the regulatory standards does not exempt the aforementioned entity of the mentioned responsibility.

Bolivian regulatory norms are not prescriptive but, on the contrary, of performance, that is to say that they establish the fulfillment of safety objectives; the way to achieve these objectives is based on good engineering judgment, on the qualification of designers, builders and operators and on the appropriate decision making by the Authorization Headline. The Authorization Headline must demonstrate and convince the Regulatory Authority that the installation is safe.

7.5. LICENSING SYSTEM

7.5.1. General Features

A fundamental aspect of the regulatory system is the approach adopted for it, in which the Authorization Headline deals with the stages of design, construction, commissioning, closing and decommissioning operation of the reactor and is fully responsible for safety of the installation as well as physical protection and safeguards. Regulatory system establish that the location, construction, operation and decommissioning of service from a nuclear facility cannot be initiated without the corresponding licenses, requested by the Responsible Entity and granted by the Regulatory Authority. The validity of such licenses is subject to compliance with the conditions stipulated therein in the regulations and requirements issued by the Regulatory Authority. The contravention of the regulations, conditions or requirements may be causal for the Regulatory Authority to suspend or cancel the validity of the corresponding term, according to the sanctions regime.

The personnel of a nuclear installation (research reactor) must be properly trained and qualified according to their functions in the installation. The Regulatory Authority also requires that personnel assigned to security related tasks be licensed.

7.5.2. LICENSING PROCESS

7.5.2.1. Licensing of Nuclear Research Reactors

The regulatory system includes licenses for the location, design, construction, commissioning, operation and decommissioning of service from a radiological or nuclear installation. Such licenses establish the conditions to which the Responsible Entity must adjust in each of the stages.

The construction license (The requirements for the construction license for research reactors are expected to be approved by the third quarter of the year 2020) is granted once the requirements applicable to the site, basic design and safety in operating conditions it is a document whereby the Regulatory Authority authorizes the construction of the nuclear research reactor under the stipulated conditions, which must be met by the Responsible Entity.

The Bolivian delineated regulations are consistent with international recommendations on the matter, establish the safety criteria that must be observed in the design of the installation and define the schedule and type of mandatory documentation that will accompany the application for the construction license.

Once the Responsible Entity applies for the construction license, a continuous interaction between the builder or operator of the future installation and the Regulatory Authority begins. It is an iterative process whose complexity corresponds to the magnitude of the demands involved. It should be noted that the capacity of the Responsible Entity to exercise its responsibilities is evaluated from the construction stage.

The requirements for the issuance of construction, commissioning, operation and decommissioning of service licenses, for the licensing of research reactors, as of the date of submission of this report are in the process of being prepared, for which support will be required of the IAEA.

7.5.2.2. Licensing of Radiological and Nuclear Facilities Staff Nuclear

According Nuclear Law N° 1205, the Regulations of Authorizations and the specific requirements for the licensing of personnel for research reactors establish the criteria and

procedures for the granting of individual licenses and training authorizations (intended to perform specific licensed functions) in nuclear facilities.

The specific licensing requirements establish the terms and conditions under which the Regulatory Authority will grant the individual license, prior analysis of its technical-scientific capacity necessary for a person to exercise a certain function within the operating organization chart of a certain type of Installation nuclear, personnel for the operation of a research reactor must be properly trained and qualified according to their functions in the facility.

According to the Authorization Regulations that are under approval management in accordance with the provisions of Nuclear Law N° 1205, three types of conceptually different documents are granted that involve certifications:

- Individual license It is the Authorization issued by the Regulatory Authority, for occupational workers exposed within a nuclear facility.
- Radiation Protection Responsible License. It is the Authorization issued by the Regulatory Authority that enables the holder of an Individual License to exercise responsibility for radiological protection of an installation.
- Physical Security Responsible License. It is the Authorization issued by the Regulatory Authority that enables a worker with an Individual License to exercise responsibility for the physical security of an installation

Whenever the Responsible Entity needs a type of license for its personnel, it must request it from the Regulatory Body by sending the necessary documentation.

People who need to obtain a license or who must renew the latter must meet requirements related to training, work experience, training, retraining and psychophysical fitness, which will depend on the Facility and the level of the function

7.6. INSPECTIONS AND REGULATORY AUDITS

With the purpose of verifying that the Nuclear Facilities satisfy the norms, licenses and requirements in force, the Regulatory Authority will carry out multiple evaluations and various Inspections and regulatory audits as often as it deems necessary.

Nuclear Law N° 1205 empowers the Regulatory Authority to carry out such inspections and regulatory evaluations, which are carried out by its personnel as follows: planned, unplanned, announced and unpublished inspections.

7.7. REGIME OF INFRINGEMENTS AND SANCTIONS

The Nuclear Law N°1205 grants the Regulatory Authority the power to apply sanctions and suspend or cancel the validity of the licenses for placement, construction, commissioning, operation, decommissioning of service, in cases of breach of regulations, requirements, licenses or any other regulatory requirement.

7.8. EVALUATION OF THE DEGREE OF COMPLIANCE WITH THE COMMITMENTS TO THE CONVENTION

As the preceding sections show, the State of Bolivia has a legislative framework and the regulatory framework is under development. In a graduated manner, specific requirements will be established to be able to license the research reactor in the different licensing phases.

The legal and regulatory framework provides for the establishment and application of:

a) The applicable national requirements and regulations regarding security; including what is related to the implementation of international conventions and treaties in the matter subscribed;
b) A licensing system for nuclear facilities, as well as a ban on the operation of a nuclear facility without a license;
c) An inspection system and evaluation of the nuclear facilities to verify the fulfillment of the applicable dispositions according to what's determined in the licenses;
d) The measures to ensure compliance with the applicable provisions and the stipulations of the licenses, including suspension, modification or revocation measures.

Based on the foregoing, it is concluded that the obligations of Article 7 of the CSN are fully satisfied.

ARTICULO 8. REGULATORY BODY

8.1. FUNCTIONS AND COMPETITION OF THE REGULATORY BODY

The Nuclear Law N° 1205 "Law for the Peaceful Applications of Nuclear Technology", establishes that the Regulatory Authority will be in charge of the function of regulation and supervision of nuclear activity in everything related to radiological and nuclear safety, physical protection and Safeguards.

It also provides that the Regulatory Authority is an independent entity that enjoys autarky and will have full legal capacity to act in the fields of public and private law.

Articles 19, 26, 27, 28, 33 and 34 of the aforementioned law establish the functions and responsibilities of the Regulatory Body, which authorizes the issuance of regulatory standards in radiological and nuclear safety, physical protection and safeguards.

The Regulatory Body is empowered to hire specialists who can advise on aspects specifically related to the fulfillment of its functions.

8.2. ATTRIBUTIONS AND RESPONSIBILITIES

In accordance with the provisions of Nuclear Law N° 1205, the main Responsible of the Regulatory Authority are to establish and control the application of rules and regulations for nuclear, radiological, physical safety and safeguards, for the operation of nuclear and radioactive facilities, as well as the use, handling, transport and possession of nuclear and radioactive material, are carried out with the maximum safety of direct users and the general public.

Under these attributions and competence, the AETN performs various activities, including:

- Development of Norms and Regulations Licensing of nuclear and radioactive facilities;
- Evaluation of Quality Assurance Programs and Environmental Radiological Surveillance Programs;
- Conduct audits, supervisions, technical visits, inspections and verifications of nuclear and radioactive facilities;
- Perform inspections and audits related to physical security and safeguards;
- Evaluation and licensing of operators of radiological and nuclear facilities;
- Issuance of licenses and permits for the importation, use, transport, storage of radioactive materials;

- Evaluation and licensing of definitive deposits for radioactive waste;
- Participation in technical assistance and international cooperation agreements;
- Execution of research and development projects independently or by association with other regulatory bodies or research centers.

Figure 8.1 shows the position of the Regulatory Authority and other entities of the national nuclear field, within the National Government.

The Regulatory Authority establishes and maintains close contacts with those organizations that make use of nuclear technology applications. Regarding the national scope, the following organizations can be mentioned:

- Bolivian Nuclear Energy Agency;
- National Institute of Nuclear Medicine;
- National Oncology Institute Caja Petrolera de Salud;
- Oncological Institute of the Bolivian East;

As part of the tasks of Evaluation Verification and assist for the adequate preparation and execution of the Radiological Emergency Plan, they have the authority to assist coordinate and evaluate the behavior of the following government agencies that are part of this Plan:

- Ministry of Government;
- Ministry of Defense;
- Ministry of Health;
- National Police and Firefighters;
- National Customs;
- Ministry of Environment and Water.

8.3. ORGANIZATIONAL STRUCTURE OF THE REGULATORY AUTHORITY

The current organizational structure of the AETN is shown in Figure 8.2, the organizational structure of the Nuclear Technology Directorate of the AETN is currently being updated to date, it is shown in Figure 8.3.

The Regulatory Authority acts as an autonomous entity in the jurisdiction of the Ministry of Energy.

The organization of the Regulatory Authority is based on an essentially matrix basis, where the tasks that involve different groups are configured as projects or activities for a better use of human and economic resources. The activities consist of permanent tasks over time, such as regulatory inspections, issuance of licenses and permits for the importation, use, transport, storage of radioactive materials.

The Executive Directorate of the Electricity and Nuclear Technology Control Authority AETN has the primary responsibility of conducting the executive activities of the Regulatory Authority.

The Nuclear Technology Directorate of the AETN has the primary responsibility for conducting the executive activities of the Regulatory Authority.

The Department of Radiological and Nuclear Safety carries out inspections and regulatory evaluations related to radiological and nuclear safety. It also carries out the technical evaluations associated with the licensing process of nuclear and radiological facilities.

8.4. HUMAN RESOURCES

Currently, the Nuclear Technology Directorate of the Regulatory Authority does not have the necessary human resources to carry out its functions and powers. However, efforts are being made to strengthen it. In this sense, it is necessary for the organization to be composed of highly trained personnel in the areas of nuclear, radiological and physical safety, as well as in other disciplines that support the fundamental activities of the Regulatory Authority.

From the above, great attention is given to strengthening human resources for this biennium 2020-2021, currently with the staff that has the Regulatory Authority is dedicated to the training and updating of its staff, so it requires giving courses and internal seminars and mainly a continuous training in the work itself. Likewise, the staff participates in the largest possible number of technical events, both national and international.

For the 2020 and 2021 management, the Regulatory Authority has National Technical Cooperation projects with the IAEA, such as the BOL9010 Project “Strengthening of the Regulatory Framework in Radiological And Nuclear Safety”, the project focuses on strengthening the capacities of the regulatory authority, considering that there will be new licensing processes in Bolivia (Multipurpose Industrial Irradiation Plant, Preclinical Radiopharmacy Cyclotron Complex, Research Reactor, Nuclear Medicine and Radiotherapy Centers) these regulatory processes will serve as the basis for the

development and strengthening of Nuclear Infrastructure in Bolivia, thus creating the need to train the human resources of the Regulatory Authority.

Currently 70% of the staff of the Regulatory Authority has the Postgraduate Course in Radiation Protection and Nuclear Safety.

The aforementioned Postgraduate Course in Radiation Protection and Nuclear Safety began in 1977 and, since 1981, has an annual frequency and has the cooperation of the University of Buenos Aires, the Ministry of Public Health of the Argentine Republic, the International Organization of Atomic Energy and the National Regulatory Authority (ARN-Argentine Republic) and the ARCAL agreement (The ARCAL agreement, concluded between most of the IAEA Member States of the Latin American and Caribbean region, is a technical cooperation agreement and economic to promote the use of nuclear techniques for peaceful and development purposes).

8.5. COMPLIANCE WITH THE OBLIGATIONS TAXED BY THE CONVENTION

A Regulatory Authority responsible for regulatory control has been designated in the country. Such an agency is endowed with the authority, competence and sufficient human resources to exercise its responsibilities independently of any other entity linked to the promotion or use of nuclear energy.

Based on the foregoing, it is concluded that Bolivia complies with the obligations arising from Article 8 of the Convention on Nuclear Safety.

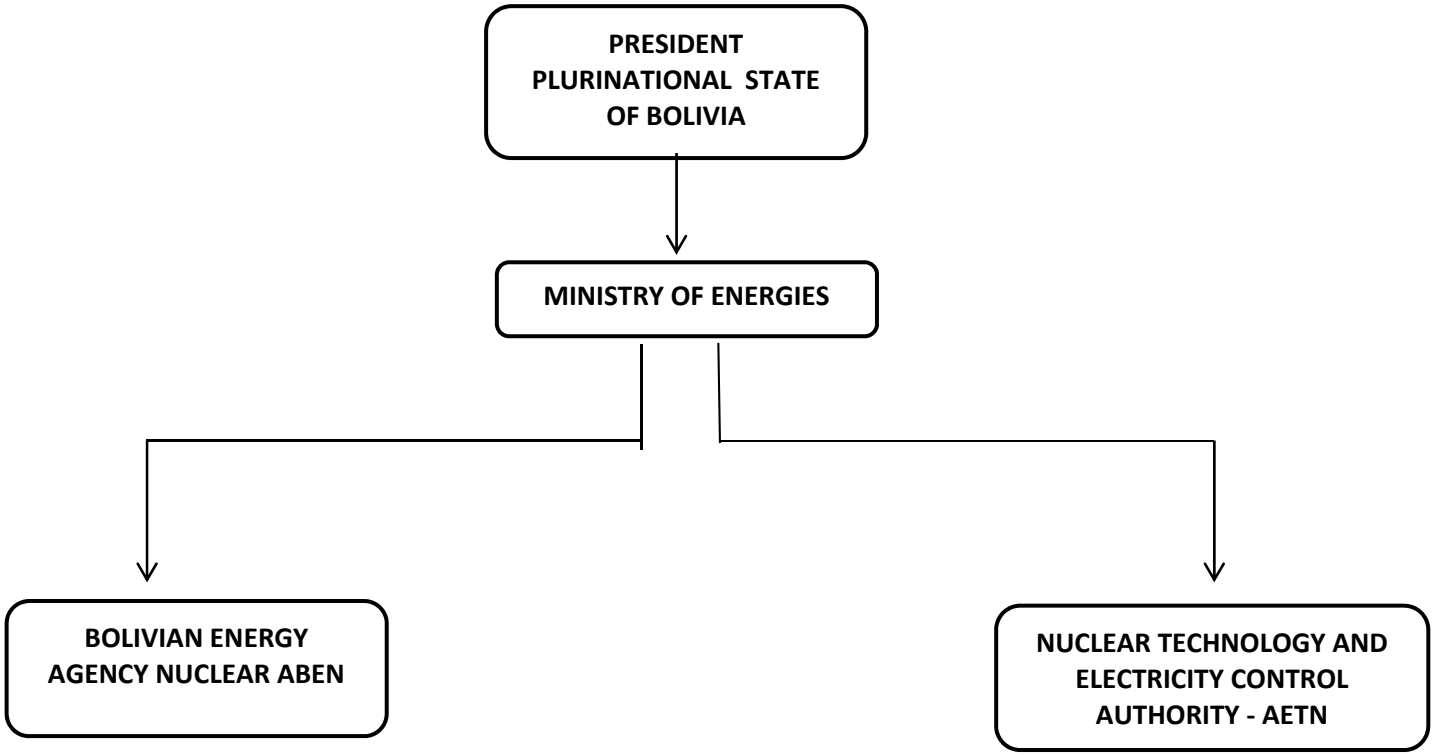

Figure 8.1. Position of the Regulatory Authority within the National Government.

Estructura Organizacional de la Autoridad de Fiscalización de Electricidad y Tecnología Nuclear - AETN

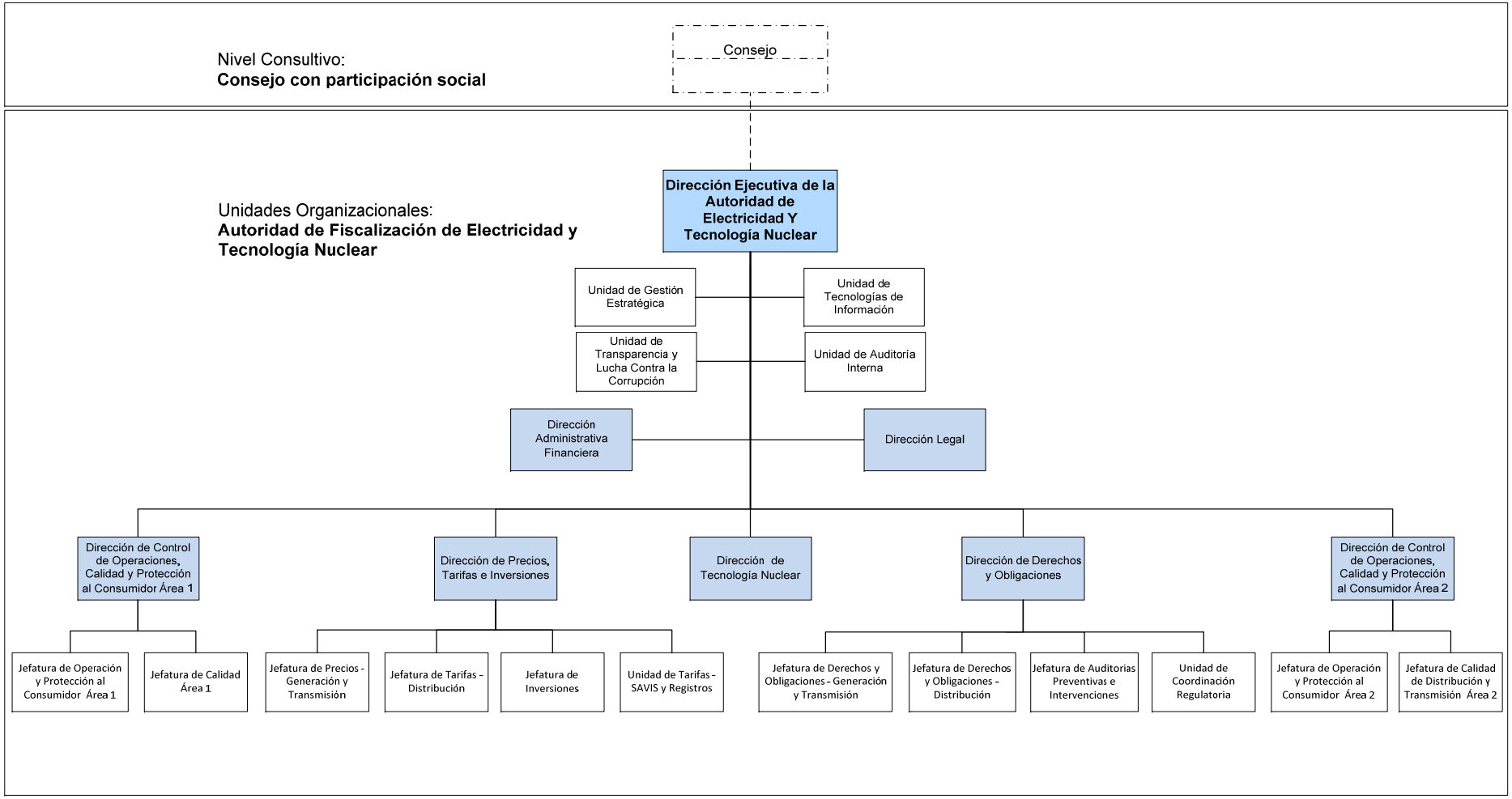

Figure 8.2. Organizational Structure AETN.

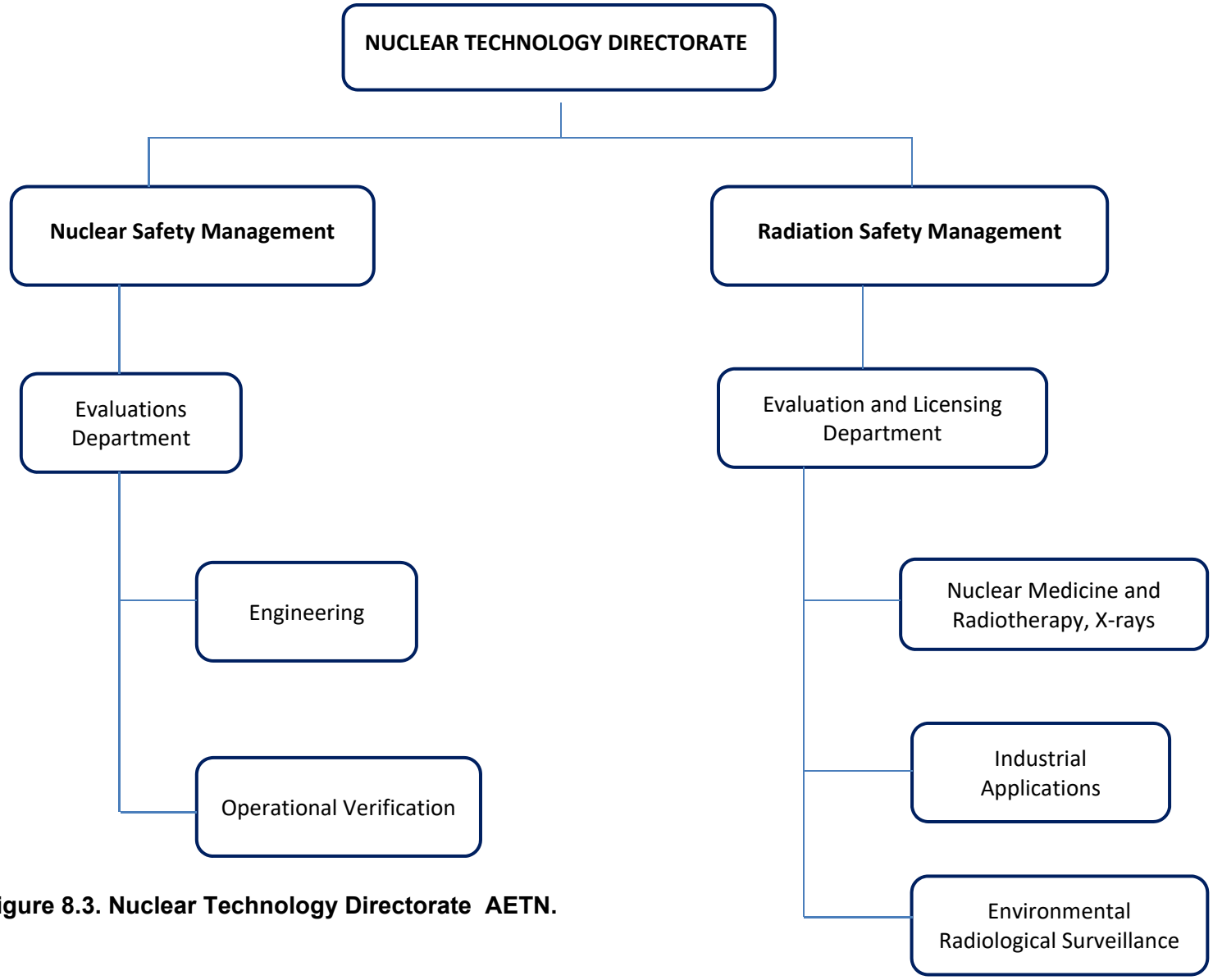

Figure 8.3. Nuclear Technology Directorate AETN.

ARTICLE 16. PREPARATION FOR EMERGENCY SITUATIONS

16.1. INTRODUCTION

The Regulatory Authority requires the Responsible Entity a plan to respond to radiological emergencies both inside and outside the Facility. Said plan, which is usually referred to as the "Emergency Plan" must include aspects related to the strategy to control and limit the consequences of an accident.

The plan is part of the documentation required by the Regulatory Authority to authorize the operation of the nuclear facility (research reactor) and must be approved before that stage begins.

16.2. NATIONAL LAWS, REGULATIONS AND REQUIREMENTS ABOUT EMERGENCY PLANS

Article 49 of Nuclear Law N° 1205 establish that: The authorization headline shall take appropriate measures to prevent incidents or accidents in nuclear facilities, radiological facilities and activities, and mitigate their consequences, in accordance with requirements established by the Regulatory Authority, according to regulations.

Article 50 of Nuclear Law N° 1205 states that: The Regulatory Authority shall prepare, in coordination with other competent institutions, the Sectorial Plan for Radiological and Nuclear Emergencies, and propose it to the competent authorities for approval and subsequent implementation.

In particular, Article 51 of Nuclear Law N° 1205 states that: In accordance with the requirements established by the Regulatory Authority, as part of the authorization process, the authorization holder will be required to prepare an emergency plan that considers the preparation and response to any emergency, as well as the prevention of incidents or accidents in each of the activities that are intended to be carried out, must be updated and periodically tested by the authorization holder, as determined by the Regulatory Authority.

Law N° 602 Risk Management Law, which aims to regulate the institutional and competence framework for risk management that includes risk reduction and disaster and/or emergency care through preparedness, alert, response and rehabilitation against disaster risks caused by natural, socio-natural, technological and anthropic threats, in

article 36 subsection g) classifies a nuclear or radiological emergency as a technological threat.

The Regulatory Authority in accordance with the provisions of Nuclear Law N° 1205 has proposed the "**REGULATION OF PREPARATION AND RESPONSE TO NUCLEAR AND RADIOLOGICAL EMERGENCIES**" which aims to establish the necessary requirements to achieve an adequate level of preparedness and response to nuclear emergencies and radiological that occur in the national territory, in order to mitigate the consequences thereof, it is expected that this regulation will be approved the third quarter of the year 2020 by the Government.

16.3. THE ORGANIZATION OF EMERGENCY RESPONSE

The role of the Regulatory Authority is to advise the preparation to face radiological and nuclear emergencies, and provide the radiological response as soon as they occur.

The Regulatory Authority is a member of the National System of Risk Reduction and Disaster and/or Emergency Assistance - SISRADE (Regulatory Decree N° 2342 of the Risk Management Law, Article 26 II), and participates in the Management of Nuclear and Radiological Risks before National Council for Risk Reduction Disaster and/or Emergency Assistance - CONARADE (Regulatory Decree of the Risk Management Law, Article 6).

The responsibilities of the Regulatory Authority are:

- Carry out evaluation actions in an emergency;
- Perform the measurement of radiation and contamination on the scene;
- Provide radiological advice to the authorities in charge;
- Recommend measures to protect people and the environment, mitigate consequences and recover from the normal situation, in the initial phase, during the emergency and in the post-emergency;
- Coordinate preparedness, activate, conduct and direct the response to emergency situations;
- Provide information to the public and media, in a coordinated manner with other intervening organizations.

Law N° 602 on Risk Management, in its institutional framework established in Chapter II: organizes, structures, shapes and gives powers and responsibilities to the councils and committees that will deal with emergencies, Figure 16.1 shows the Institutional and Competent Framework of the Regulatory Authority for Risk Management.

The Regulatory Authority is a member of SISRADE according to Article 26 of the Regulatory Decree of the Risk Management Law.

16.4. ACTIVATION AND EMERGENCY RESPONSE

The response to an emergency will be done through SISRADE, CONARADE and COEN with the advice of the Regulatory Authority, which will be activated partially or totally according to the Category and Level of the emergency.

16.4.1. Emergency Preparedness Process

To ensure an adequate and permanent response of the organization, preparation activities will be carried out that include the assurance of the availability of equipment, materials, media, personnel skills and response time.

To achieve this goal, within the challenges that the Regulatory Authority and SISRADE have for management 2020-2021, is to prepare the Sectorial Emergency Plan at the national level.

The staff of the Regulatory Authority involved in the response to an emergency and the personnel of the Nuclear Installations, will annually carry out tests to verify the operation and effectiveness of the plan, through exercises, practices or drills, the results of which will be evaluated and recorded for the continuous improvement of the same.

The Authorization Headline of the nuclear installation has the responsibility of having an Emergency Plan of first response within the installation.

16.5. INTERNATIONAL AGREEMENTS

In September 1986, Bolivia signed with the International Atomic Energy Agency the agreements of Prompt Notification of Nuclear Accidents

On the date and year mentioned, Bolivia signed with the International Atomic Energy Agency, the assistance agreements in the event of a Nuclear Accident to Radiological Emergency.

16.6. COMPLIANCE WITH THE OBLIGATIONS TAXED BY THE CONVENTION

The information given above allows us to conclude that there are plans in the country to respond to emergencies in nuclear facilities (research reactor). Likewise, these emergency plans establish the actions to be taken both inside and outside the facilities and that periodic exercises will be carried out for their application. Additional efforts should

be made in response to public response to accidental situations, as well as to improve the response of support organizations in these circumstances. Therefore, and despite these additional efforts, the country complies with the obligations imposed by Chapter 16 of the Nuclear Safety Convention.

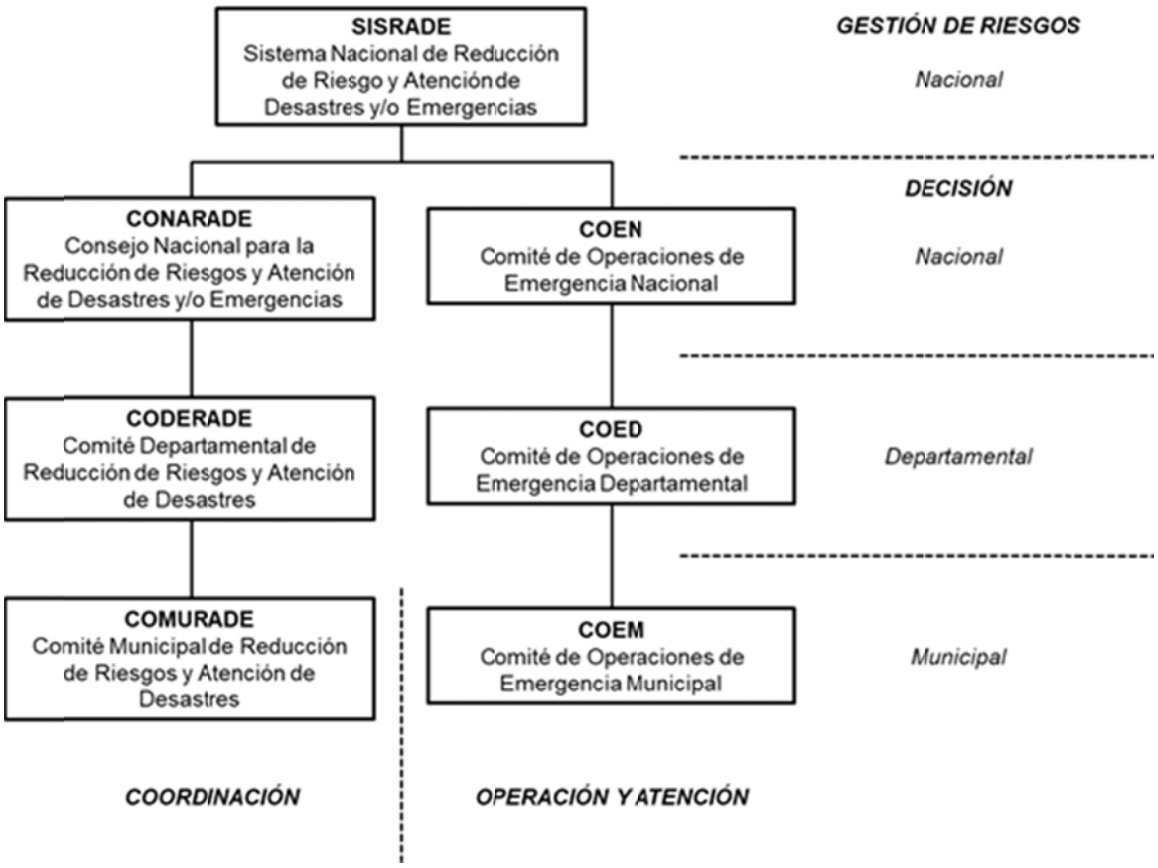

Figure 16.1. Institutional and Competent Framework for Risk Management.

APPENDIX 1

LAW N° 1205 ‘’ LAW FOR THE PEACEFUL APPLICATIONS OF TECHNOLOGY NUCLEAR"