**RESOLUTION**

**On Nuclear and Radiation Safety in the Republic of Slovenia for the period 2013–2023**

**(ReNRS13–23)**

**UNOFFICIAL TRANSLATION**

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# R E S O L U T I O N

**On Nuclear and Radiation Safety in the Republic of Slovenia for the period 2013–2023 (ReNRS13–23)**

1. **INTRODUCTION**

The use of nuclear technologies and different kinds of sources of ionizing radiation is an integral part of other fields of the current society. Production of electricity in nuclear power plants achieves visible and positive macroeconomic results and contributes with the knowledge and innovation to economic competitiveness and to reliable electricity supply. Without X-ray images it is not possible to imagine medical diagnostics, which contributes to the quality of life. In the history of the use of nuclear technologies since the mid-twentieth century, the awareness of the importance of systematic safety ensuring of these technologies, particularly in nuclear energy sector, as well as of the safe use of all types of ionizing radiation, has been increasing from year to year. In Slovenia, like in all other developed countries, legislation that complies with the requirements of international standards in this area, in particular with the standards of the International Atomic Energy Agency (IAEA), was being created since the mid-twentieth century. Since the beginning of the twenty-first century the commitment to ensure nuclear and radiation safety is also highlighted at the highest political level. From 2010, it is written in the basic IAEA GSR Part 1 standard: Governmental Legal and Regulatory Framework for Safety (National legal and administrative framework for (nuclear and radiation safety), ISBN:978-92-0-106410-3, ISSN 1020 -525X. Although the provisions of the IAEA standards are not binding, all the countries, users of nuclear energy, generally comply with them. It was also the main trigger for the preparation of a Resolution on Nuclear and Radiation Safety in the Republic of Slovenia for the period of 2013–2023 (hereinafter: Resolution). Although the Republic of Slovenia already has its legislation and administrative arrangements in the field of nuclear and radiation safety, which are extensively in line with international standards, the Resolution meets the headline gap. It represents a fundamental political orientation and commitment to nuclear and radiation safety as a priority at all other aspects of the use of nuclear technologies and ionizing radiation.

In the first part the Resolution emphasizes ten fundamental safety principles on which legislation of the Republic of Slovenia is focused. Further, it describes the main radiation and nuclear activities in the country, the involvement of Slovenian legislation in the international connections in this area, the existing legislation and the organization of state bodies and emphasizes the need for adequate human resources for nuclear and radiation safety. This is also related to research and development activities, while public participation and commitment to quality, excellence in the leadership and safety culture are of special importance.

Nuclear and radiation safety (including nuclear safety and radiation protection) are terms that are not uniquely defined neither by the domestic legislation and practice nor in the international area. The existing definitions take into account three main principles: safety of nuclear facilities, safe management of radioactive waste and radiation protection with the safety of ionizing radiation sources.

Over the years, various new aspects of safety, for example, system of measures and policies against proliferation of nuclear weapons (and related measures to prevent the export of dual- use items), physical protection of nuclear facilities and materials, protection of people from exposure in healthcare, etc. have incurred. Therefore, the phrase »nuclear and radiation safety« must be understood in the broadest sense of the word. In the Resolution it is used whenever the context allows or requires so.

Ionising Radiation Protection and Nuclear Safety Act (Official Gazette of the Republic of Slovenia No. 67/02, 110/02 – ZGO-1, 24/03, 46/04, 70/08 – ZVO-1B, 60/11; hereinafter ZVISJV) defines »nuclear safety« as technical and organisational measures which result in safe operation of a nuclear facility, radiation facility or less important radiation facility, prevention of emergencies or mitigation of the consequences of emergencies, and protection of exposed workers, the population and the environment against ionising radiation. The third definition says that »radiation protection« shall mean the technical and organisational measures put in place in order to ensure the protection of people against ionising radiation during the use of radiation sources, in carrying out activities in areas of natural radiation sources, during implementation of intervention measures and during the mitigation of the consequences of an emergency, and during radiation protection measures.

From those definitions it follows that the fundamental safety principles are unified and focused on ensuring the protection of the same values: to facilitate the development, production and use of radiation sources and performing of radiation practice and to reduce, as much as possible, damage to human health and radioactive contamination of the environment due to ionizing radiation resulting from the use of ionizing radiation sources at the same time.

In Slovenia there is one operating nuclear power plant and low use of radiation sources in industry, research, education, medicine and veterinary medicine. However, ensuring and maintenance of basic nuclear and radiation safety principles present permanent living and strategic objective of the development of the Republic of Slovenia.

The Resolution highlights broader aspects of nuclear and radiation safety in the country. The management of radioactive waste and spent nuclear fuel is a very important part of a comprehensive radiation and nuclear safety examination, which would substantively fall within this document. However, the Resolution does not discuss this issue in detail, since it is discussed in a special Resolution on the National Programme on Radioactive Waste and Spent Fuel1. By that resolution the Republic of Slovenia, inter alia, meets the requirement of Article 4 of Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste (EU Official Journal, L 199/48, hereinafter: Directive on the management of radioactive waste and spent nuclear fuel), which states that »Member States shall establish and maintain national policies on spent fuel and radioactive waste management«.

The contents of the Resolution partly touch on the content of National Energy Programme for the period until 2030 (2012 in the process of updating), Resolution on University Education2, Resolution on National Security Strategy of the Republic of Slovenia and Resolution on Research and Innovation Strategy3.

Nuclear power plants are the biggest source of radiation (wherein the Krško NPP covers about 40 percent of electricity production in Slovenia). Therefore, the strategy of nuclear and radiation safety depends primarily on whether the country uses nuclear technology to generate electricity or not. The form and substantial concept of the Resolution comply with these as well.

1 Resolution on the 2006-2015 National Programme for Monitoring of Radioactive Waste and Spent Nuclear Fuel, Official Gazette RS, No. 15/06

2 Resolution on National Programme of Higher Education 2011-2020 (ReNPVŠ11-20), Official Gazette RS, No. 41/11

3 Resolution on Research and Innovation Strategy of Slovenia 2011-2020 (ReRIS11-20), Official Gazette RS, No. 43/11

# NUCLEAR AND RADIATION SAFETY PRINCIPLES

In this chapter, »safety« means the protection of people and the environment against radiation risks, and the safety of facilities and activities that give rise to radiation risks.

»Nuclear and Radiation Safety« as used here includes the safety of nuclear installations, radiation safety, the safety of radioactive waste management and safety in the transport of radioactive material. It does not include non-radiation-related aspects of safety.

Safety is concerned with both radiation risks under normal circumstances and radiation risks as a consequence of incidents as well as with other possible events4.

# The fundamental nuclear and radiation safety objective is protection of people and the environment against unnecessary harmful effects of ionizing radiation.

This fundamental safety objective of protecting people — individually and collectively — and the environment has to be achieved without unduly limiting the operation of facilities or the conduct of activities that give rise to radiation risks. To ensure that facilities are operated and activities conducted so as to achieve the highest standards of safety that can reasonably be achieved, measures have to be taken:

1. To control the radiation exposure of people and the release of radioactive material to the environment;
2. To restrict the likelihood of events that might lead to a loss of control over a nuclear reactor core, nuclear chain reaction, radioactive source or any other source of radiation;
3. To mitigate the consequences of such events if they were to occur.

The fundamental safety objective applies for all facilities and activities and for all stages over the lifetime of a facility or radiation source, including planning, siting, design, manufacturing, construction, commissioning and operation, as well as decommissioning and closure. This includes the associated transport of radioactive material and management of radioactive waste.

For achieving the fundamental safety objective, joint efforts of all the major players in this field are necessary because despite the clear division of responsibilities and competences, the individual segments cannot function separately and independently of the overall system.

The facility operator shall be responsible for nuclear safety and for radiation protection of a nuclear facility and the user of a radiation source shall be responsible for radiation protection. The state must provide general conditions for safe operation of nuclear facilities and the safe use of radiation sources, such as radiation monitoring conducted by the state authorities (e.g. the Slovenian Nuclear Safety Administration or the Slovenian Radiation Protection Administration), and the possibility of professional judgment on technical issues of nuclear and radiation safety provided by independent qualified experts (organization). In a broader sense, the state is responsible for maintaining and developing the general level of the profession in this area and for planning the use of nuclear energy, which include mainly research and education work at the academic level.

For achieving the fundamental safety objective the Republic of Slovenia has established a legal framework with the Ionising Radiation Protection and Nuclear Safety Act (hereinafter: Act). The following ten safety principles are incorporated as legal provisions into the Act, its subordinated legal documents or in other legal acts.

4 »Incidents« includes initiating events, accident precursors, near misses, accidents and unauthorized acts (including malicious and non-malicious acts)

# Principle 1: Responsibility for safety

The prime responsibility for safety must rest with the person or organization responsible for facilities and activities that give rise to radiation risks.

The person or organization responsible for any facility or activity that gives rise to radiation risks or for carrying out a programme of actions to reduce radiation exposure has the prime responsibility for safety. In Slovenia this is stipulated by a clear legal requirement in the law, adopted by the Parliament.

Authorization to operate a facility or conduct an activity may be granted to an operating organization or to an individual, known as the licensee.

The licensee retains the prime responsibility for safety throughout the lifetime of facilities and activities, and this responsibility cannot be delegated. Other groups, such as designers, manufacturers and constructors, employers, contractors, and consignors and carriers, also have legal, professional or functional responsibilities with regard to safety.

The licensee is responsible for:

* Establishing and maintaining the necessary competences;
* Providing adequate training and information;
* Establishing procedures and arrangements to maintain safety under all conditions;
* Verifying appropriate design adequate quality of facilities and activities and of their associated equipment;
* Ensuring the safe control of all radioactive material that is used, produced, stored or transported;
* Ensuring the safe control of all radioactive waste that is generated.

These responsibilities are to be fulfilled in accordance with safety objectives and requirements established in the law or subordinated governmental ordinances, ministerial rules or other legal binding documents. The regulatory body has to approve them through the authorisation process. Their fulfilment is to be ensured through the implementation of the management system.

The legal system stipulates considerations for the fulfilment of the licensee’s (and regulator’s) responsibilities in relation to present and likely future operations having in mind that radioactive waste management can span many human generations. By establishment the decommissioning fund and collection of levies from existing operations, the provisions are put in place for the continuity of responsibilities and the fulfilment of funding requirements for the facility decommissioning and the disposal of radioactive waste in the long term.

# Principle 2: Role of government

An effective legal and governmental framework for safety, including an independent regulatory body, is established and sustained.

The Republic of Slovenia has established a legal and governmental framework which provides clear assignment of responsibilities and administrative control for the regulation of facilities and activities that give rise to radiation risks. Through its legislation, the Republic of Slovenia is efficiently fulfilling national responsibilities and international obligations.

As a part of its state public administration the Republic of Slovenia has established an independent regulatory body with adequate legal authority, technical and managerial competence, and human and financial resources to fulfil its responsibilities. The regulatory

body is effectively independent of the licensee and of any other body, so that it is free from any undue pressure from interested parties.

The legislative system in place requests for open informing of the public, other interested parties and the information media about the safety aspects (including health and environmental aspects) of facilities and activities which pose radiation risk. The legislative system also requests that parties in the vicinity, the public and other interested parties are being consulted in an open and inclusive process.

Even in the case when the licensee is a branch of the government or state-owned institution, legal provisions are in place to assure effective independence from the regulatory control of nuclear safety.

# Principle 3: Leadership and management for safety

Effective leadership and management for safety must be established and sustained in organizations concerned with, and facilities and activities that give rise to, radiation risks.

Leadership in safety matters has to be demonstrated at the highest levels in an organization dealing with nuclear or radiological facilities or activities. This is stipulated by legal provisions requesting that every such organisation has an effective management system. Such management system has to integrate all elements of management so that requirements for safety are established and applied coherently with other requirements, including those for human performance, quality and security, and so that safety is not compromised by other requirements or demands.

The management system also has to ensure the promotion of safety culture, the regular assessment of safety performance and the application of lessons learned from experience. Safety culture that governs the attitude and behaviour in relation to safety of all organizations and individuals concerned must be integrated in the management system. Safety culture includes:

* Individual and collective commitment to safety on the part of the leadership, the management and personnel at all levels;
* Accountability of organizations and individuals at all levels for safety;
* Measures to encourage a questioning and learning attitude and to discourage complacency with regard to safety.

To prevent human and organizational failures, human factors have to be taken into account and good performance and good practices have to be supported by the management system.

Safety of all facilities and activities has to be assessed consistent with a graded approach. Safety assessment involves a systematic analysis of normal operation and its effects, of the ways in which failures might occur and of the consequences of such failures. Safety assessments cover the safety measures necessary to control the hazard. The design and engineered safety features have to be assessed to demonstrate that they fulfil the safety functions they should perform. Where control measures or operator actions are called on to maintain safety, an initial safety assessment has to be carried out to demonstrate that the arrangements made are robust and that they can be relied on. A facility may only be constructed and commissioned or an activity may only be commenced after it has been demonstrated to the regulatory body that the proposed safety measures are adequate.

The process of safety assessment of facilities and activities can be repeated in whole or in part as necessary in the conduct of operations in order to take into account changed circumstances (such as the application of new standards or scientific and technological developments), the feedback of operating experience, modifications and the effects of

ageing. For operations that continue over long periods of time, assessments are reviewed and repeated through a periodic safety review. Continuation of such operations is subject to these reassessments demonstrating to the regulatory body that the safety measures remain adequate.

The precursors to potential radiation accidents have to be identified and analysed, and measures have to be taken to prevent the recurrence of accidents. The feedback of operating experience from facilities and activities – and, where relevant, from elsewhere – is a key means of enhancing safety. Processes are in place for the feedback and analysis of operating experience, including initiating events, accident precursors, near misses, accidents and unauthorized acts, so that lessons are learned, shared and acted upon.

# Principle 4: Justification of facilities and activities

Facilities and activities that give rise to radiation risks must yield an overall benefit.

Legislation stipulates that facilities and activities are considered as justified, when the benefits that they yield, outweigh the radiation risks to which they give rise. For the purposes of assessing benefits and risks, all significant consequences of the operation of facilities and the conduct of activities have to be taken into account.

Decisions about the benefits and risks of the biggest infrastructural investments, such as nuclear power plants, that are introducing radiation risk are taken at the government of Slovenia by approval of the State spatial planning process. For proposed facilities and activities posing smaller radiation risk, the regulatory body for nuclear safety can decide whether they are justified.

The justification of medical radiation exposure of patients – whether for diagnostics or treatment – is a special case and should be primarily considered with regard to the specific procedure, and then with regard to the individual patient. The justification relies on clinical judgement whether a diagnostic or therapeutic procedure would be beneficial. Such clinical judgement is mainly a matter for medical practitioners, who must be properly trained in radiation protection.

# Principle 5: Optimization of protection

Protection must be optimized to provide the highest level of safety that can reasonably be achieved.

The legal framework stipulates that the safety measures that are applied to facilities and activities that give rise to radiation risks are considered optimized if they provide the highest level of safety that can reasonably be achieved throughout the lifetime of the facility or activity, without unduly limiting its utilization.

To determine whether radiation risks are as low as reasonably achievable, all such risks, whether arising from normal operations or from abnormal or accident conditions, must be assessed prior to the operation. Periodical reassessments should be performed throughout a lifetime of facilities and activities, using a graded approach. Where there are interdependences between related actions or between their associated risks (e.g. for different stages of the lifetime of facilities and activities, for risks to different groups or for different steps in radioactive waste management), these must also be considered. Uncertainties in knowledge also have to be taken into account.

The optimization of protection requires judgements to be made about the relative significance of various factors, including:

* The number of people (workers and the public) who may be exposed to radiation;
* The likelihood of their incurring exposures;
* The magnitude and distribution of radiation doses received;
* Radiation risks arising from foreseeable events;
* Economic, social and environmental factors.

The optimization of protection also means using good practices and common sense to avoid radiation risks as far as it is practical in day to day activities.

The resources devoted to safety by the licensee, and the scope and stringency of regulations and their application, have to be commensurate with the magnitude of the radiation risks and their amenability to control.

Regulatory control may be very limited where this is not warranted by the magnitude of the radiation risks.

# Principle 6: Limitation of risks to individuals

Measures for controlling radiation risks must ensure that no individual bears an unacceptable risk of harm.

The legal framework stipulates that exposure and radiation risks are controlled within legally prescribed limits. As such dose limits and risk limits represent a legal upper bound of acceptability, they are insufficient in themselves to ensure the best achievable protection under the circumstances. Therefore, they are supplemented by the optimization of protection.

# Principle 7: Protection of present and future generations

People and the environment, present and future, must be protected against radiation risks. Radiation risks may transcend national borders and may persist for long periods of time. The legal framework stipulates that possible consequences, now and in the future, of current actions have to be taken into account in judging the adequacy of measures to control radiation risks. In particular:

* Legal safety requirements apply not only to local populations but also to populations remote from facilities and activities;
* Where effects could span generations, subsequent generations have to be adequately protected without any need for them to take significant protective actions.

Radioactive waste must be managed in such a way as to avoid imposing an undue burden on future generations. The generations that produce the waste have to seek and apply safe, practicable and environmentally acceptable solutions for its long-term management. The generation of radioactive waste must be kept to the minimum practicable level by means of appropriate design measures and procedures, such as the recycling and reuse of material.

National Assembly of the Republic of Slovenia has adopted a long-term radioactive waste management strategy in a form of Resolution on the management of radioactive waste and spent nuclear fuel.

# Principle 8: Prevention of accidents

All practical efforts must be made to prevent and mitigate nuclear or radiation accidents.

To ensure that the likelihood of an accident having harmful consequences is extremely low, the legal framework stipulates measures to be taken:

* To prevent the occurrence of failures or abnormal conditions (including breaches of security) that could lead to such a loss of control;
* To prevent the escalation of any such failures or abnormal conditions if they occur;
* To prevent the loss of, or the loss of control over a radioactive source or other source of radiation.

The primary means of preventing and mitigating the consequences of accidents is »defence in depth«. Defence in depth is implemented primarily through the combination of a number of consecutive and independent levels of protection that would have to fail before harmful effects could be caused to people or to the environment. If one level of protection or barrier were to fail, the subsequent level or barrier would be available. When properly implemented, defence in depth ensures that no single technical, human or organizational failure could lead to harmful effects, and that the combinations of failures that could give rise to significant harmful effects are of very low probability. Independent effectiveness of different levels of defence is a necessary element of defence in depth.

Defence in depth is provided by an appropriate combination of:

* An effective management system with a strong management commitment to safety and strong safety culture;
* Adequate site selection and the incorporation of good design and engineering features providing safety margins, diversity and redundancy, mainly by the use of:
  + Design, technology and materials of high quality and reliability;
  + Control, limiting and protection systems and surveillance features;
  + An appropriate combination of inherent and engineered safety features.
* Comprehensive operational procedures and practices and accident management procedures;
* Establishment and implementation of accident management procedures.

Accident management procedures must be developed in advance to provide the means for regaining control over a nuclear reactor core, nuclear chain reaction or other source of radiation in the event of a loss of control and for mitigating any harmful consequences.

# Principle 9: Emergency preparedness and response

Arrangements must be made for emergency preparedness and response to nuclear or radiation incidents.

The legal framework stipulates primary goals of preparedness and response to a nuclear or radiation emergency:

* To ensure that arrangements are in place for an effective response at the scene and at the local, regional, national and international levels, to a nuclear or radiation emergency;
* To ensure that, for reasonably foreseeable incidents, radiation risks would be minor;
* To take practical measures to mitigate any consequences of human life and health and the environment for any incidents that might occur.

The licensee, the regulatory body and civil protection authority together with other involved branches of the government and with other States, International Atomic Energy Agency and European Commission have established, in advance, arrangements for preparedness and response to a nuclear or radiation emergency at the scene, at local, regional and national levels.

The emergency response plans which assure emergency preparedness and response reflect:

* The likelihood and the possible consequences of a nuclear or radiation emergency;
* The characteristics of radiation risks;
* The nature and location of the facilities and activities.

Such emergency response plans include:

* Decision making competence set by law for determining when to take different protective actions;
* Providing an organized and coordinated implementation of protective measures and informing personnel at the scene, and the public, during an emergency.

In developing the emergency response arrangements, consideration is given to all reasonably foreseeable events. Emergency plans have to be exercised periodically to ensure the preparedness of the organizations having responsibilities in emergency response. When urgent protective actions must be taken promptly in an emergency, it may be acceptable for emergency workers to receive, on the basis of informed consent, doses that exceed the occupational dose limits normally applied – but only up to a predetermined level.

# Principle 10: Protective actions to reduce existing or unregulated radiation risks

Protective actions to reduce existing or unregulated radiation risks must be justified and optimized.

Radiation risks may arise in situations other than in facilities and activities that are in compliance with regulatory control. The legal framework stipulates that in such situations, if the radiation risks are relatively high, consideration has to be given to whether protective actions can reasonably be taken to reduce radiation exposures and to remediate adverse conditions.

One type of situation concerns radiation of essentially natural origin, primarily to radon gas in dwellings and workplaces, for which remedial actions can be taken if necessary. However, in many situations there is little that can practicably be done to reduce exposure to natural sources of radiation.

A second type of situation concerns exposure that arises from human activities conducted in the past that were never subject to regulatory control, or that were subject to an earlier, less rigorous regime of control.

# NUCLEAR AND RADIATION PRACTICES IN SLOVENIA

In the territory of the Republic of Slovenia, the radiation activities were launched almost at the same time as elsewhere in the world. The oldest known source used in a hospital of Ljubljana was already bought in 1902. Later, the use of ionizing radiation expanded in various segments of the society in parallel with the development of society and economy to which it significantly contributed. Shortly after the Second World War, a Nuclear Institute of Jožef Stefan, where the skills necessary for the development of nuclear technologies were developed, was established in Ljubljana. With this, our former state was placed alongside the most developed countries of the world with a clear desire to develop its nuclear programme. In the sixties and seventies, this development culminated with a decision on the construction of a research reactor and then a nuclear power plant.

The largest and the most important nuclear facility in the country is the Krško Nuclear Power Plant (NPP). Construction of the plant, whose supplier was Westinghouse of the United States of America (USA), was launched in 1974. The reactor was for the first time loaded with the fuel in 1981, when the plant was also synchronized to the electricity grid. In 1983, the plant began its commercial operation.

The research reactor TRIGA Mark II, operated by the Jožef Stefan Institute (IJS), is the second nuclear facility in Slovenia. It was built in 1966. It was supplied by General Atomics from the USA, while the reactor vessel and the concrete shielding of the reactor and of the

facility were built by the domestic companies. In 1991, it was reconstructed, renovated and adapted for pulsed operation. It is used for research purposes. In 1999, all spent fuel elements (total of 219) were taken to permanent disposal in the USA.

At Brinje, near the research reactor, the Central Storage for Radioactive Waste (CSRW) is located. Radioactive wastes are substances whose use is no longer possible or reasonable. Their specific activity, i.e. the activity per unit volume, exceeds the legal limit. CSRW is intended for the storage of low- and intermediate- level waste not generated in the NPP. The storehouse is, unlike the repository, intended to store waste until it is transported to the final destination on the permanent disposal.

In the Žirovski Vrh Uranium Mine, established in 1976, uranium ore started to be dug in 1982. In 1984, the production of uranium concentrate known as »yellow cake« started. The production was suspended in June 1990 due to economic and political reasons. The entire complex consisted of an underground mine with all external facilities, processing installation, Jazbec repository site for mine tailings, Boršt repository site for hydrometallurgical tailings and all other necessary facilities.

All works are carried out by the Former Žirovski Vrh Uranium Mine pursuant to the Law5 and the revised programme of implementation of permanent termination of uranium ore exploitation and prevention of mining consequences in the Žirovski Vrh Uranium Mine. Financial resources for implementation are earmarked in the budget of the Republic of Slovenia. The Former Žirovski Vrh Uranium Mine is a radiation facility in accordance with applicable legislation.

In addition to the above-mentioned nuclear and radiation facilities, the following types of radiation sources are also in use in the Republic of Slovenia: sealed sources, open sources, X-ray devices and accelerators. They are used for industry, research, medicine and veterinary medicine purposes. A special group of radiation sources are ionization smoke detectors containing radionuclide 241Am.

Necessary and important condition for rational and safe use of nuclear energy and its associated activities in the country is also social acceptability. It can be achieved with openness, willingness for dialogue and long-term information to the public, which begins with work with young people. Such activities are carried out by the Training Centre for Nuclear Technology (for more then 20 years) in Ljubljana and GEN World of Energy in Krško.

# INTERNATIONAL COOPERATION

International regime of nuclear and radiation safety is based on multilateral and bilateral agreements and participation in international organizations and bodies. Open and unhindered flow of information in the form of an exchange of knowledge and experience (administrative, operational, scientific, technological), as well as the obligation to provide information, support and care for nuclear safety, is the key in all these activities.

Nuclear and radiation safety are of generally accepted principles and clear conventions' provisions6 within the exclusive national competence of individual states. The user of nuclear or radiation facilities and other sources of ionizing radiation and the competent administrative authorities of each country bear formal responsibility. It is undisputed and, unfortunately, several times demonstrated, that the risks and consequences of nuclear accidents (e.g. Chernobyl in 1986, Fukushima in 2011) do not know the administrative boundaries and may

5 Permanent Cessation of the Uranium Ore Exploitation and Prevention of Effects of Mining at the Žirovski Vrh Uranium Mine Act (Official Gazette RS, No. 22/06)

6 For example: Convention on Nuclear Safety (Official Gazette RS – MP, No. 16/96)

have serious and significant cross-border effects also in radiological emergency events (i.e. accidents outside nuclear facilities). After a well-known and notable nuclear accident in a nuclear power plant Three Mile Island in the USA in 1979, and especially after the Chernobyl nuclear accident, awareness on the need for cooperation in this field concretised in the international community with several international treaties whose main purpose was mainly to create effective and easy way of informing and aid7. Later, the scope of »convention« regulation extended to the unification of the fundamental principles of nuclear safety and safe management of spent fuel and radioactive waste8.

## Multilateral agreements

International cooperation in this field is necessary not only because of the potential danger to the peaceful use of nuclear energy. In addition to the commitments under international agreements in the field of nuclear non-proliferation9 and other related agreements on the protection (the so-called safeguards agreements and additional protocols), in the area of physical protection of nuclear material10 or nuclear liability11, daily involvement in the exchange of information, studies, expert knowledge and research achievements in this field and technical assistance that can be provided on the basis of international cooperation are also important for the Republic of Slovenia, which has a small nuclear programme and a relatively small administrative and technical infrastructure.

Ensuring of nuclear and radiation safety is not static and could not be regulated once and for all. It must be tested and improved again and again and this is why there are several mechanisms of its ongoing inspections, reporting and improvements in the international area. The State Party to the Convention on Nuclear Safety and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management has to report on the review meetings organized within the framework of the IAEA every three years. A similar process will be conducted within the European Union through the implementation of two »new« Directives: Council Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations (EU Official Journal, L 172/18; hereinafter: the nuclear safety directive) and Directive on the management of radioactive waste and spent nuclear fuel. National reports on the fulfilment of commitments under these conventions and directives are fundamental commitment of each state, which continues with the so-called process of »peer review« when states can ask questions and request explanations and interpretations on the report of another state, while at review meetings the country should give an oral explanation of the report and any outstanding issues.

## Participation in the institutions of the European Union

Even before the formal accession to the European Union (EU), the Republic of Slovenia and especially the Slovenian Nuclear Safety Administration (SNSA) have been heavily involved

7 For example: Convention on Early Notification of a Nuclear Accident (Official Gazette SFRY, No. 15/89) and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (Official Gazette SFRY, No. 4/91)

8 In addition to the already mentioned Convention on Nuclear Safety, for example, Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Official Gazette RS – MP, No. 3/99)

9 The Treaty on the Non-Proliferation of Nuclear Weapons (Official Gazette SFRY – MP, No. 10/70)

10 Convention on the Physical Protection of Nuclear Material (Official Gazette SFRY – MP, No. 9/85 and Official Gazette RS – MP, No. 14/09)

11 Convention on Third Party Liability in the Field of Nuclear Energy (the Paris Convention, Official Gazette RS – MP, No. 18/00 and 4/09), Protocol to Amend the Convention on Third Party Liability in the Field of Nuclear Energy (the Brussels Convention - Official Gazette RS – MP, No. 9/01 and 4/09), and the Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention (Official Gazette RS – MP, No. 22/94)

and associated with various bodies of the EU in the area of its competence and sphere of activities. Assessment of nuclear and radiation safety was conducted prior to and in the context of accession negotiations for entry of our country into the EU. In 1993, Preparatory Group RAMG (Regulatory Assistance Management Group) took place. RAMG evaluated the situation of administrative organisation and legislation in the field of nuclear and radiation safety in our country under the auspices of the European Commission and in close cooperation with WENRA (Western European Nuclear Regulators' Association), all under the aid programme to the countries of Eastern Europe and the former Soviet Union. Later, during the accession negotiations, European Commission (through the Atomic Question Group - AQG and its Ad Hoc Working Party on Nuclear Safety - WPNS) was preparing reports on nuclear safety in the context of enlargement of all candidate countries which had active nuclear programme.

After the accession of the Republic of Slovenia to the EU, the Slovenian representatives became involved in the bodies established in the framework of the existing institutional framework of the EU on nuclear and radiation safety, especially in the context of the Euratom Treaty of 1957, whose main objectives are: to encourage research and dissemination of technical information; to establish uniform safety standards for protection of the public and workers in nuclear industry; to facilitate research and to ensure that civil nuclear materials are not used for other purposes, mainly military.

Several technical and consultative committees operate under the Euratom Treaty. The Republic of Slovenia fulfils its obligations in: the committee under Article 31 of the Euratom Treaty (which prepares recommendations for the European Commission regarding documents in the field of radiation protection and public health), the committee under Article 35 of the Euratom Treaty (which is intended to monitor the effectiveness of monitoring of radioactivity, i.e. monitoring of levels of radioactivity in the air, water and soil) and the committee under Article 37 of the Euratom Treaty (whose main task is reporting by the member states on planned major reconstruction or construction of new nuclear facilities for which the committee's opinion shall be given).

In addition to the consultative committees under the Euratom Treaty, several other advisory committees operate in the EU, for example: consultative committee of the INSC (Instrument for Nuclear Safety Co-operation), which is an advisory body of the Commission regarding the implementation of the programme and assistance to the third countries in the field of nuclear and radiation safety and operates since the beginning of 2007 when the new financial perspective entered into force, or the consultative committee CCE Fission, formed by a group of experts that advises the Commission on research in the field of nuclear and radiation safety, co-financed by the Commission.

Policy and regulatory framework in the field of nuclear and radiation safety in the EU are formed mainly in the working party of the Council of the EU – Atomic Questions Group (AQG), in which Slovenia is actively involved.

The European Commission has, in accordance with the Euratom Treaty, special powers to control nuclear material. This is consistent with the responsibilities of the International Atomic Energy Agency in this area. Inspectors of the European Commission may at any time verify the status of nuclear materials in our country. Usually they work together with the IAEA inspectors.

ENSREG – European Nuclear Safety Regulator Group, an independent expert body established in 2007 by a decision of the European Commission, has a special role within the institutional framework of the EU in the field of nuclear safety. The group consists of the highest representatives of the administrative authorities responsible for nuclear safety and

radioactive waste from all 27 EU Member States. Representatives of the European Commission equally participate in it.

The ENSREG's role is to help create conditions for continuous improvement and common understanding of nuclear safety and radioactive waste management. So far, the most obvious and most influential role that ENSREG has had, was at the preparation of the nuclear safety directive12 and the Directive on the safety of spent fuel and radioactive waste management13 and during the preparation and implementation of the programme of stress tests of nuclear power plants in the EU in 2011 and 2012.

Operating experience of nuclear power plants is an important source of information for improving nuclear and radiation safety. In the Joint Research Centre of the European Commission (JRC) in Petten, Netherlands, there is a European network for the collection of operating experience of nuclear power plants, called Clearinghouse. Its purpose is to improve nuclear safety with cooperation of the nuclear power plants operators, regulatory bodies and their technical support organizations, to develop operational safety assessment method (methods, software tools) and to collect data from related databases, such as IRS, managed by the IAEA and OECD/NEA.

EURDEP (European Radiological Data Exchange Platform) enables radiological data monitoring from most of the European countries. Radiological data are available almost in real time. Slovenian early warning network consists of stationary monitoring stations across the country and every 30 minutes prepares real-time reports on the radiological situation. If there is elevated radiation, relevant alarms are triggered.

As an EU member, Slovenia is included in the Community Urgent Radiological Information Exchange (ECURIE), which is a system for technical implementation of early warning and information exchange in a radiological or nuclear emergency event. The Council Decision requires that ECURIE Member States immediately notify the European Commission and all Member States which could be affected about the measures they intend to take to protect its population against the effects of a radiological or nuclear incident. The European Commission shall immediately forward this information to all Member States.

Slovenia received aid referred to in the Phare programme also in the field of nuclear safety. In 1999, Slovenia got RODOS software tool for the analysis of the development of radiological emergency. From the programme of 2002, modernisation projects of early warning monitoring stations, modernisation of hot cells at Jožef Stefan Institute and characterization of radioactive waste in storage at Brinje were funded.

ETSON (European Technical Support Organisation Network) is an association of European scientific and professional organisations which supports the decisions of nuclear regulators. Conditions for membership are the long-term research programme and financial independence from operators of nuclear installations. The Jožef Stefan Institute is the Slovenian member.

ENEN (European Nuclear Education Network) integrates more than 60 European providers and users through the research-based education in the field of nuclear engineering and safety. Promotion and provision of quality education belong among the key objectives of the association. Slovenian members are the Jožef Stefan Institute and the Faculty of Mathematics and Physics of the University of Ljubljana.

12 Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations

13 Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste

SNE-TP (Sustainable Nuclear Energy Technology Platform) integrates more than 100 stakeholders from the European nuclear industry and research, and scientific and technical support to the administrative authorities. Within the framework of the platform, stakeholders have coordinated research strategy areas. The European Commission co-finances implementation of the research strategies SNETP under the Euratom Framework Programmes. The Slovenian member is the Jožef Stefan Institute.

NUGENIA is a professional association which deals with the development of nuclear power plants of II and III generation. The vision of the association is to become an incubator and coordinator of European and national research projects. This vision is supported by a research vision of the European Commission »Horizon 2020«. The Slovenian member is the Jožef Stefan Institute.

## Cooperation with the International Atomic Energy Agency (IAEA)

The International Atomic Energy Agency (IAEA) is an independent international organisation of the United Nations, established in 1957 by a decision of the General Assembly of the United Nations. In 2012, 154 countries were included in the IAEA. Tasks under the Statute of the IAEA are to expand and increase the contribution of nuclear energy to peace, health and progress throughout the world, and to promote research and development in the field of peaceful uses of nuclear energy and the exchange of scientific and technical information. Its essential task is to establish and maintain the control system over nuclear materials, i.e. substances from which it is possible to produce nuclear weapons. An important activity of the IAEA is also technical assistance and cooperation, enabling the enforcement of nuclear technologies for the advancement of the Member States which need such assistance. Technical cooperation budget amounts to around a quarter of the regular budget of the IAEA. Globally recognized safety standards relating to the use of nuclear energy, nuclear and radiation safety, radioactive waste management and transport of radioactive material are also prepared by the IAEA.

The Republic of Slovenia was accepted to the membership of the IAEA in 1992. From 1957, Slovenia actively participated as a part of the Socialist Federal Republic of Yugoslavia.

Representatives of the Republic of Slovenia regularly attend the annual General Conference, which is the supreme governing body of the IAEA. The Republic of Slovenia also monitors the work of the Board of Governors, which is the highest body of governance between the two sessions of the General Conference. In the short history of independent cooperation with the IAEA, Slovenian experts chaired the Board of Governors twice; Mr. Miroslav Gregorič in the period 1998-1999 as the Director of the Slovenian Nuclear Safety Administration and Dr. Ernest Petrič in the period 2006-2007 as an Ambassador of the Republic of Slovenia to Vienna.

The Republic of Slovenia has been participating in the following fields of the IAEA activities:

* Technical assistance programme, which was more intensive during the first years of independent membership. Due to the programme, Slovenia gained a lot of technical equipment, trained many of its experts and enabled its experts through various forms of scholarship and scientific visits to be in contact with current trends and scientific knowledge in other developed countries, members of the IAEA. Slovenia and its experts increasingly constructively and actively participate in the programme as contractors;
* Co-financing the research projects;
* Implementation and organisation of trainings (courses or workshops) for Slovenian experts or foreign audience in Slovenia;
* Participation of individual experts in professional missions in nuclear facilities around the world or in administrative authorities of other countries (OSART, IRRS, etc.);
* Participation of Slovenian experts in technical working groups and committees of the IAEA;
* Visits of foreign technical advisory missions in the Slovenian nuclear facilities and other institutions;
* Preparation of new standards in the field of nuclear and radiation safety;
* Use of different IAEA information systems such as a library INIS or more than 130 databases (e.g. database of incidents at nuclear installations IRS, illicit trafficking database, etc.);
* Global information centre for the exchange of information in the event of a nuclear or radiological accident anywhere in the world;
* Establishment and maintenance of international scale for assessing the severity of an emergency nuclear or radiological event INES;

Several times, Slovenia used the option for international reviews of its activities in the field of nuclear and radiation safety by the IAEA. The method and design are more or less standardized and are passing on the grounds that a Member State invites the IAEA to carry out a mission in a certain area. Once the invitation is approved, the IAEA sets up a group of international experts, who visits the host country together with the IAEA Secretariat members to carry out a mission (which does not work as an inspection) and formally reports the country on the results in a special report, which is not publicly available, if this is not pre- agreed by the host country. The report usually contains a brief description of the purpose of performance and the actual situation in the country as well as recommendations and suggestions for improvement, and also gives concrete examples of good practice. It is expected from the host country to prepare an internal action plan on the basis of a report for the implementation of the recommendations and suggestions for improvement, and then to invite the IAEA to carry out a follow-up mission.

In Slovenia, the following IAEA missions were carried out: OSART in the Krško NPP (Operational Safety Review Team) in 1984, 1993 and 2003; IRRS at the SNSA (International Regulatory Review Service) in 1999 and 2011; IPPAS (International Physical Protection Advisory Service) in 1996 and 2010; INSARR (Integrated Safety Assessment of Research Reactors) in 1976, 1985 1992 and 2012; TranSAS (Transport Safety Appraisal Service) in 1999; RAMP (Review of Accident Management Programmes) in 2001; ORPAS (Occupational Radiation Protection Appraisal Service) in 2001.

After the 11 September 2001 events, the IAEA strengthened the area of physical protection of nuclear facilities. Work on international standards and offer of assistance and cooperation programmes by the IAEA commenced.

In addition, the IAEA has a special role under the Non-Proliferation Treaty and related agreements on the protection (the so-called Safeguards Agreements and Additional Protocols). Its inspectors may at any time come into the Republic of Slovenia and independently verify the handling of nuclear materials holders, mainly uranium and plutonium. They work together with the European Commission inspectors with similar powers. The purpose of these inspections is prevention of the proliferation of nuclear weapons. Representatives of the Republic of Slovenia participate in the consultative bodies of this control system over nuclear materials.

## Cooperation with the Nuclear Energy Agency of the Organisation for Economic Cooperation and Development (OECD/NEA)

On 20 December 2001, the Council of the Organisation for Economic Cooperation and Development (OECD) approved the admission of the Republic of Slovenia, as an observer, to the Nuclear Energy Agency (NEA). Representatives of our country participated in all seven NEA committees: Radioactive Waste Management Committee - RWMC; Committee on

Radiation Protection and Public Health - CRPPH; Committee on the Safety of Nuclear Installations - CSNI; Nuclear Science Committee - NSC; Committee on Nuclear Regulatory Activities - CNRA; Committee for Technical and Economic Studies on Nuclear Energy Development and the Fuel Cycle - NDC and Nuclear Law Committee - NLC.

After obtaining full membership in the OECD in 2010, the Republic of Slovenia became a full member of the NEA in 2011 without any substantive problems. However, NEA did carry out an evaluation of compliance with conditions and criteria for membership, but the evaluation was relatively short due to the observer status of the Republic of Slovenia since 2001, and its active participation in NEA committees, by which a reputation of a reliable partner and a credible candidate was acquired.

The Republic of Slovenia continues its work in all seven committees. Slovenia is also included in the NEA Databank, i.e. Bank with the data needed in nuclear research.

Work in the above-mentioned committees and in a larger number of the subcommittees is highly professional – this is where the proposals of technical and organisational solutions that are prepared and subsequently used in the most developed countries of the world are formed. The results are usually summarized in working reports, accessible only to the members. Active participation of Slovenian representatives is extremely important because of the possibility to influence on technical solutions and access to the latest knowledge. OECD/NEA does not finance the participation, so every Member State covers the costs of participation in working meetings and in some cases contributes to the common costs. Therefore, the participation of Slovenian representatives is repeatedly difficult.

The Republic of Slovenia (through the Jožef Stefan Institute) regularly participates in research projects of the OECD/NEA. The most important projects in recent times have been SETH (SESAR Thermal hydraulics) and SERENA (Steam Explosion Resolution for Nuclear Applications).

## Cooperation with other international organizations

Ministries, government agencies and other organisations, active in the field of nuclear and radiation safety, also participate in other independent international organizations as members or otherwise.

Regarding the control of nuclear non-proliferation, the Republic of Slovenia is, as most of the countries in the developed world, a member of the CTBTO - the Comprehensive Test Ban Treaty Organisation, NSG - Nuclear Suppliers Group and the Zanger Committee. CTBTO, with the headquartered in Vienna, maintains a worldwide network of sensors that can detect nuclear explosions anywhere in the world. The other two organisations coordinate international efforts to prevent the export of dual-use goods, i.e. goods, primarily intended for peaceful uses, but might be used for manufacturing nuclear weapons, to those countries, recognized by the international community, that wish to acquire such weapons. Activities of all three organisations represent a kind of concrete »threat« to the countries that would breach the prohibition of the nuclear weapons manufacture.

## Participation in international associations

In addition to formal international organisations and cooperation on the basis of contractual obligations, ministries, government agencies and other organisations from different countries, active in the field of nuclear and radiation safety, also connect in different, less formal ways. Usually, this kind of associations is aimed to improving mutual exchange of information and common development of an area.

The Slovenian Nuclear Safety Administration is a member of WENRA (Western European Nuclear Regulators Association) since 2004. It connects representatives of all regulatory bodies for nuclear safety in Europe (and also outside the EU). The main purpose of this association is coordination of safety standards.

HERCA (Heads of European Radiological Protection Competent Authority), which consists of representatives of the authorities responsible for control of radiation safety and radiation protection, was founded on the example of WENRA. Slovenian member is the Slovenian Radiation Protection Administration. In the area of physical protection, there is an informal association of ENSRA (European Nuclear Security Regulators Association), whose members are representatives of the Slovenian Ministry of the Interior and of the SNSA.

INLA (International Nuclear Law Association) is an international association of legal and other experts in the field of peaceful uses of nuclear energy, whose main purpose is to support and promote knowledge and development of the legal profession and research in this field, exchange of knowledge among the members and cooperation with related associations and institutions.

NERS (Network of Regulators of Countries with Small Nuclear Programmes) is an example of an international association that had been working actively for several years, but the meaning of its existence vanished.

WANO (World Association of Nuclear Operators) integrates all companies that operate nuclear power plants (operators). Slovenian member is the Krško NPP. WANO is an international organisation which is a leader in raising the level of nuclear safety.

IFNEC (International Framework for Nuclear Energy - former GNEP) is an association formed at the initiative of the United States. Within its framework research and development of advanced nuclear fuel cycles and reactors of the fourth generation are carried out under the auspices of the United States. Slovenia is a signatory to the agreement and a member.

## Bilateral agreements with other countries

The most important and certainly the first bilateral agreement concluded by our country in this field is the agreement between the SNSA and the Nuclear Regulatory Commission of the United States of America (U.S. NRC) for the exchange of technical information and cooperation in nuclear safety matters. By this agreement, nuclear profession in the Republic of Slovenia is provided with access to the relevant information about the equipment for the nuclear power plant from supplying country, which is also the leading country in the world regarding the development of nuclear safety. U.S. NRC has an extensive programme of international cooperation since such bilateral agreements had been signed with all nuclear countries. Because Slovenian (and European) legislation does not regulate all the (technical) aspects of nuclear and radiation safety, the U.S. legislation is often used as reference legislation for the Krško NPP.

The Republic Slovenia has signed agreements on early notification in the event of radiological emergency with all the neighbouring countries. In 1995 the agreement was signed with the Republic of Hungary, in 1996 with the Republic of Austria, in 1998 with the Republic of Croatia, while with the Republic of Italy agreement on early notification in the event of radiological emergency was concluded between the SNSA and the Institute for Environmental Protection and Research of the Republic of Italy (Ispra) in 2010. Agreements on early notification mainly provide legal basis for rapid notification of a possible radiological event which could endanger residents in several countries. All these agreements also contain provisions on the exchange of information in the field of nuclear and radiation safety.

According to the circumstances and needs, there were different initiatives in the past, besides those from the neighbouring countries, to conclude bilateral agreements with other countries. In this context, it is worth mentioning the agreement with the related authority of the French Republic. The SNSA maintains regular contacts under a bilateral agreement with the related authority in the Slovak Republic. Bilateral agreements have also been concluded with the Republic of Korea, Canada and South Africa, but in recent time there was no need for their implementation. In recent years, the SNSA has concluded several memorandums of understanding. This kind of memorandums cover similar areas as bilateral agreements, but have hierarchically significant lower legislation status and are therefore easier to conclude. Memorandums of understanding are already concluded with the authorities of the Czech Republic, the Republic of Macedonia, Bosnia and Herzegovina and with the National Nuclear Agency of the Republic of Albania.

In particular it should be mentioned that in 2003, a Treaty between the Government of the Republic of Slovenia and the Government of the Republic of Croatia on the regulation of the status and other legal relations regarding investment, exploitation and decommissioning of the Krško NPP entered into force. By this, both countries regulated their mutual relations concerning the status, exploitation and decommissioning of the Krško NPP. Under this agreement, both countries are responsible to provide material conditions for maintaining a high level of nuclear safety, while legislation and control of nuclear safety are solely and exclusively the responsibility of the Republic of Slovenia.

In addition to the above-mentioned international cooperation, soon after the independence of our country (1992), the government appointed the international commission for an independent safety analysis of the Krško NPP – ICISA. After a year and a half, the commission prepared a comprehensive report, which was, again on the basis of a government decision (of 1994 with which the commission was also resolved), sent to the governments of the neighbouring countries (Austria, Italy, Hungary and Croatia), whose experts (inter alia) participated in the work of the commission.

# LEGISLATION IN FORCE

Chapter 3 of the Constitution of the Republic of Slovenia, which governs the economic and social relations, determines that everyone has the right to a healthy environment, whereby the state takes care of a healthy environment and for this purpose specifies by law the conditions and methods for the performance of economic and other activities. These provisions of the Constitution serve as a basis for legal regulation of nuclear and radiation safety.

Slovenian legislation in the field of nuclear safety and radiation protection is comprehensive and harmonized with international standards. In the narrowest sense of the practical use, the area is regulated by the Ionising Radiation Protection and Nuclear Safety Act (ZVISJV), whose first beginnings date back to the time of our former state. After independence, the Yugoslavian law was still in use for a few years, until ZVISJV was adopted in 2002. By the year 2012, it was supplemented and amended for three times (2003, 2004 and 2011). On its basis, six decrees of the government, ten regulations of the minister of the environment, nine regulations of the minister of health and two regulations of the minister of interior were adopted.

The Republic of Slovenia implemented the basic standards of the International Atomic Energy Agency in its legislation. In the middle of the first decade of the 21st century, SNSA representatives participated in a WENRA group (see previous chapter), which prepared the so-called Reference Levels for nuclear power plants. Reference Levels are concise elaborated standards of the International Atomic Energy Agency, recognized by the administrative authorities of European nuclear countries as suitable for all in Europe. In 2011,

all these European Reference Levels were transferred into the binding Slovenian regulations and in that way Slovenian legislation was harmonised with the best European practice.

Furthermore, a wider field of nuclear and radiation safety is regulated by legislation on liability for nuclear damage, exports of dual-use goods (i.e. goods that could be used for nuclear weapons), transport of dangerous goods; legislation governing the implementation of public service for radioactive waste management, the functioning of the fund for financing the decommissioning of the Krško NPP and for disposal of radioactive waste from the Krško NPP, the permanent cessation of uranium ore exploitation and the prevention of mining consequences of the Žirovski Vrh Uranium Mine, physical protection; regulations on protection and rescue, etc.

Slovenia is a contracting party to a number of international treaties, which are, in accordance with the Constitution of the Republic of Slovenia, directly applicable after ratification and publication (see Chapter 4 International Cooperation).

The area of protection against radiation risks began to be systematically regulated in the fifties and sixties of the previous century. On the basis of the Act on Labour Inspection, Rules on Protective Measures for Work with X-ray Machines and Radioactive Substances (Official Gazette of the FPR of Yugoslavia, No. 100/47) were adopted in 1947. Later on in 1959, the first Ionising Radiation Protection and Nuclear Safety Act (Official Gazette of the FPR of Yugoslavia, No. 16/59) was adopted, and on its basis three regulations were issued in 1962 that substantively identify areas of use of radioactive elements, professional education and training of operators and medical examinations. On the basis of this act, a Decision Authorizing Institutions to Carry out Professional Tasks in the Field of Radiation Protection (Official Gazette of the FPR of Yugoslavia, No. 31/62) and Instructions on the permitted doses of ionizing radiation (Official Gazette of the FPR of Yugoslavia, No. 31/62) were issued as well.

In 1965, the federal Ionising Radiation Protection and Nuclear Safety Act (Official Gazette of SFRY, No. 12/65) was adopted and on its basis nine regulations were accepted. The competent republic administrative authority in the field of radiation protection as defined in Article 31 of the act was the sanitary inspection. According to the federal act, the republic Ionising Radiation Protection and Nuclear Safety Act was adopted (Official Gazette of SRS, No. 21/66) a year later. Both acts were amended in the middle of the seventies with the federal Ionising Radiation Protection and Nuclear Safety Act (Official Gazette of SFRY, No. 54/76). This was also connected with the first employment of the specialist for radiation protection from the Jožef Stefan Institute at the Republic Sanitary Inspectorate in the beginning of the 1977. In 1980, the republic act was amended by the Act on the Protection against Ionizing Radiation and Measures for Safety of Nuclear Installations and Equipment (Official Gazette of SRS, No. 28/80). Due to the planned construction of a nuclear power plant in Slovenia, a narrower scope of radiation protection was extended to the field of nuclear safety, as it is evident from the title of the act.

In 1984, federal act was amended again. The title of this act, which was in force until 2002, was the Act on Ionising Radiation Protection and the Safe Use of Nuclear Energy (Official Gazette of SFRY, No. 62/84). Throughout this period, the Republic Sanitary Inspectorate, after independence renamed into the Health Inspectorate of the Republic of Slovenia, had the competence of control and also some administrative tasks in the field of radiation protection.

Despite the fairly extensive regulation of radiation protection as described above, Slovenia had to harmonise its legislation during the EU accession negotiations with the EU acquis, where the area of radiation protection is regulated by a number of regulations and directives.

The task was satisfactorily resolved with the adoption and enforcement of ZVISJV (2002) and subsequent decrees and regulations in this area.

On the other hand, accession of the Republic of Slovenia to the EU in 2004 did not cause amendments of legislation in the field of nuclear safety, since the EU did not have binding directives in this area at that time. Later, the Republic of Slovenia actively participated in the preparation of the nuclear safety directive12, published in summer 2009. With a few minor amendments, Slovenian legislation was in full compliance with this directive in 2011. The Republic of Slovenia has also harmonised the directive on radioactive waste and spent nuclear fuel13 , which was adopted by the EU in 2011.

The development of the Slovenian legislation in the field of nuclear and radiation safety was significantly influenced by the fact that the only nuclear power plant in Krško is of the USA origin. During the construction, only the beginnings of the relevant legal regulations and standards existed in the former state, so the plant was built in accordance with the legislation of the U.S. as a supplier country. Current legislation takes it into account and allows that regarding the detailed technical requirements and standards, regulations and standards of the supplier country are considered.

The Republic of Slovenia will face a similar challenge when any new, major nuclear facility is going to be built on its territory. Current legislation allows that also for the future facilities, administrative authority for nuclear safety in the country supplying technology or in any other highly developed country is contacted, and that their technical regulations and standards are mainly used.

## Basic solutions in the Ionising Radiation Protection and Nuclear Safety Act

The ZVISJV defines nuclear safety as technical and organisational measures which result in safe operation of a nuclear facility, prevention of emergencies or mitigation of the consequences of emergencies, and which protect exposed workers, the population and the environment against ionising radiation, while radiation safety shall mean technical and organisational measures in a nuclear, radiation or in a less important radiation facility, with which safe operation of the facility is achieved, or which prevent emergencies or mitigate the consequences of such events, as well as ensure the protection of exposed workers, the population and the environment against ionising radiation.

Nuclear safety principles presented in the second chapter above are either transferred to Article 4 of the ZVISJV (the integrity principle, the justification principle, the principle of radiation protection optimisation, the dose limits principle, the principle of peaceful use, the principle of primary responsibility, the causer-pays principle, the preparedness principle, the principle of subsidiary intervention, the publicity principle, a principle of graded approach) or incorporated in other provisions. Concern for nuclear and radiation safety begins in the design phase of a nuclear or radiation facility, where it is necessary to take into account the following principles: the principle of defence in depth; the principle of a single failure; the principle of independence; the principle of diversity; the principle of redundancy; the principle of fail-safe; the principle of proven components and the principle of graded approach.

In addition, when designing the radiation or nuclear facility:

* It is preferred to use passive safety functions and thereby reduce the level of dependence on active safety functions, control and human intervention to ensure safety;
* It is necessary that in all facility states and during all design-basis events, and, in the case of nuclear power plants, also during a severe accident the implementation of the following basic safety functions is ensured: ensuring sub-criticality, where required; heat removal, where required, and confining radioactive material in all facility states and during design- basis;
* Siting should be considered including with the impact of an area on the facility;
* The conditions of normal operation, postulated initiating events, accidents and for the repositories also the scenario of normal and modified development should be taken into account.

The design basis should include postulated initiating events that are internal or external, caused by human activity or natural, whose probability is not negligible or where the potential consequences on the environment, population or personnel are not negligible. Provision of the design basis of a radiation or nuclear facility shall be verified with a safety analysis. The design basis of a radiation or nuclear facility shall be understandable and systematically defined, documented and updated as necessary during the construction, throughout its operating lifetime, during any safe enclosure mode and during decommissioning. The operator of a radiation or nuclear facility shall regularly review the design basis of a facility. Review of the design basis shall be also performed after an operating event that has affected radiation or nuclear safety, or because of new important information about radiation or nuclear safety.

The investor must obtain all relevant approvals and licenses at all stages of the construction of a nuclear or radiation facility as the ZVISJV explicitly prohibits and penalizes carrying out a radiation practice or use of radiation sources without a licence.

According to general international standards and Slovenian legislation14, the user of a radiation source and the operator of a nuclear facility bear responsibility for nuclear and radiation safety. The operator of a radiation or nuclear facility must ensure in the facility operating lifetime to:

* Operate or trial operate in accordance with the approved operational limits and conditions;
* Use written procedures for the operation, the trial operation, the cessation of the operation or decommissioning of a facility, which should cover all states of a facility, foreseen in the safety analyses report;
* Monitor their own and foreign operating experiences;
* Monitor operating indicators that show safety and the operation of a facility;
* Monitor the process of aging of the equipment and implement the measures to reduce or eliminate the effects of these processes;
* Maintain, review and test the systems and facility’s components, thereby ensuring its availability, reliability and ability to fulfil its functions;
* Have a designed and, if necessary, implement protection and rescue plan, which is coordinated and implemented in accordance with other bodies and organizations competent for dealing with a nuclear accident;
* Provide training and improvement of the employees and outside undertakings in a radiation or nuclear facility;
* Handle the radioactive waste in the way to produce as little radioactive waste and its releases into the environment by the activity and the scope and that it is processed and stored in a way, suitable for disposal and coherent with the national management programme for radioactive waste and spent fuel;
* Provide operational monitoring of radioactivity in the vicinity of a radiation or nuclear facility.

Nuclear and radiation safety of facilities is also provided by other institutes and measures (e.g., periodic safety reviews, obligatory implementation of safety improvement, regular reporting, management system, integration of authorized experts, etc.), possible changes or withdrawal of a license and/or shutdown of facility operation and financial penalties for violations. Financial penalties are, of course, the last step and are provided for cases where all other forms of providing nuclear and radiation safety fail.

14 The principle of primary responsibility under Article 4 of ZVISJV

The ZVISJV also prescribes measures for the physical protection of nuclear and radiation facilities and major radiation sources. The facility operator and the user of a radiation source are responsible for physical protection, while the Ministry of the Interior in cooperation with the SNSA supervises them.

In detail the ZVISJV regulates carrying out a radiation practice and use of radiation sources. Any practice for which the license was not obtained or intention reported is forbidden. Similarly as in nuclear or radiation facilities, the person carrying out a radiation practice is primarily responsible for the safety of workers and the population. Prior the license is issued, administrative authority shall verify whether the person carrying out a radiation practice has the necessary knowledge to carry out such practices and whether this knowledge is properly renewed; whether he has the appropriate technical means and whether he has taken all the necessary preparations for action in case of an emergency and for the proper handover of any radioactive waste at the end of the operation to the state commercial public service for radioactive waste management. The state authority shall have registries to track the ionizing radiation sources »from cradle to grave«.

# INSTITUTIONAL FRAMEWORK

In the history of nuclear energy and ionizing radiation sources institutional framework of ministries, state administration bodies and other related institutions has been developed, each carrying out activities necessary for the use of nuclear energy and ensuring nuclear and radiation safety. They are organized in three main sections, pillars, covering the following areas:

1. Development (promotion) of use of nuclear energy (in fact, the development of a broader energy policy of the state), where the lead ministry is the ministry responsible for energy.
2. Independent administrative control for ensuring nuclear and radiation safety, where the leaders are the SNSA of the Ministry of Agriculture and the Environment, the Slovenian Radiation Protection Administration (SRPA) of the Ministry of Health, the Administration for Civil Protection and Disaster Relief of the Ministry of Defence and the Ministry of the Interior and Public Administration.
3. Management of disposal of radioactive waste is the responsibility of the Agency for Radwaste Management under the ministry responsible for energy.

International standards and unfortunate examples from abroad indicate that it is essential to strictly separate departments, which supervise nuclear and radiation safety of the departments, whose main task the promotion of activities. In Slovenia, this separation is reasonably assured in the area of nuclear safety (SNSA as a body within the ministry responsible for the environment is separated from the operators of nuclear facilities). In health care area SRPA is an independent body within the Ministry of Health. The standards also require adequate financial and human resources to perform the tasks of regulatory authorities.

The majority of professional, administrative and inspection decision-making in the field of nuclear and radiation safety15 is entrusted to SNSA (a body within the Ministry of Agriculture and the Environment) and SRPA (a body within the Ministry of Health). In the future the two bodies are planned to be merged into an independent public agency.

15 Also in this chapter the concept of nuclear and radiation safety is understood and used in a broad sense and includes physical security (nuclear facilities and nuclear material), action in the event of an emergency, transport of nuclear and radioactive substances (such as dangerous substances), actions related to non-proliferation of nuclear weapons, etc.

SNSA is responsible for the supervision of nuclear safety, nuclear and radiation facilities and sources of ionizing radiation in the country, with the exception of sources in health care and veterinary medicine. SNSA also covers a major part of international cooperation in the field of nuclear and radiation safety, which has been increasing significantly in recent years.

SRPA is responsible for monitoring the sources of ionizing radiation in health care and veterinary medicine, for the control of radiation exposure due to radon and radiation protection of general population. SRPA also maintains international contacts.

To a large extent the SNSA and SRPA perform similar professional, administrative and inspection tasks on the basis of the same Act (ZVISJV), but in different areas. The reasons for this separation are mostly historical.

Additionally, smaller parts of statutory requirements of ZVISJV are also covered by other bodies: Administration for Civil Protection and Disaster Relief – emergency preparedness, Ministry of the Interior and Public Administration - physical protection of facilities and resources within the jurisdiction of SNSA and SRPA.

Professional, administrative and inspection work in the diversified area of nuclear and radiation safety in Slovenia is carried out only by about 50 to 60 experts.

Notwithstanding the differences in the administrative organization in the area of nuclear and radiation safety of comparable countries (especially the EU countries), the recent years have seen two predominant trends: combining the functions of nuclear and radiation safety (including responsible for the control of sources of ionizing radiation in health care and veterinary medicine) into a single regulatory body and partial or complete independence of financing from the state budget with a system of fees and compensation for work, which are charged to the counterparts according to the "polluter pays"16 principle.

## Ministries and their bodies

**Ministry of Agriculture and the Environment Slovenian Nuclear Safety Administration (SNSA)**

Regulatory body responsible for

“…matters related to nuclear safety and inspection control over the implementation of acts, other regulations and general acts under the republic jurisdiction governing the safety of nuclear installations"…

was established in 1987 by amendment of the Act on the State Administration System and the Executive Council of the Assembly of the Socialist Republic of Slovenia and the Republic Regulatory Bodies17. It became operational on 1 January 1988 as the National Nuclear Safety Administration. According to the 199418 Organization and Competence of Ministries Act the Slovenian Nuclear Safety Administration became part of the Ministry of the Environment and Spatial Planning. The 200319 Decree on Administrative Bodies within Ministries stipulates that

16 »polluter pays principle«

17 Official Gazette SRS, No. 37/87 date 9. 10. 1987

18 Official Gazette RS, No. 71/94, 47/97, 82/97 – odl. US, 60/99, 119/00, 30/01,

30/01 and 52/02 – ZDU-1

19 Official Gazette RS, No. 58/03, 45/04, 86/04 – ZVOP-1, 138/04, 52/05, 82/05, 17/06, 76/06, 132/06,

41/07, 64/08 – ZViS-F, 63/09, 69/10 and 40/11

“…the Slovenian Nuclear Safety Administration performs specialized professional and administrative tasks and tasks of inspection control in the areas of radiation protection and nuclear safety, radiation practices and use of radiation sources, with the exception of health care and veterinary medicine, environmental protection against ionizing radiation, physical protection of nuclear materials and facilities, nuclear non-proliferation and safeguards, radiation monitoring and liability for nuclear damage. ".

With the reorganization of the state administration in 201220 the SNSA became a body within the newly created Ministry of Agriculture and the Environment.

In addition to the ZVISJV and its implementing regulations other regulations also represent the basis of professional and technical competence of the SNSA.

# Ministry responsible for agriculture

In addition to the competence of the SNSA, the Ministry of Agriculture and the Environment is competent in the field of radiation safety for the implementation of the European Council and European Commission regulations governing the import of agricultural products from third countries after the Chernobyl accident (the so-called "post Chernobyl regulations”) or relating to the maximum permitted level of radioactive contamination of foodstuffs and feedingstuffs after a nuclear accident or any other radiological emergency (the so-called “sleeping regulations”).

# Ministry of Health

**Slovenian Radiation Protection Administration**

The Slovenian Radiation Protection Administration is a body within the Ministry of Health. It was founded on the basis of the 2002 ZVISJV. On 1 March 2003, it took over the powers of the Health Inspectorate of the Republic of Slovenia in the field of radiation protection and all administrative tasks, which were within the jurisdiction of the Ministry of Health. As defined in the Decree on Administrative Bodies within Ministries, SRPA is responsible for professional, administrative, supervisory and development tasks as well as inspection control in the field of use of sources of ionizing radiation in health care and veterinary medicine, protection of general population against harmful effects of ionizing radiation, systematic inspection of working and living environments due to exposure to natural radiation sources, monitoring of radioactive contamination of food and drinking water control, restriction, diminishing and prevention of harmful health effects of non-ionising radiation as well as auditing and authorization of radiation protection experts.

# Ministry of Infrastructure and Spatial Planning Energy Directorate

Ministry of Infrastructure and Spatial Planning through the Energy Directorate prepares a comprehensive energy policy in the field of energy supply (the process of obtaining and processing, production, transmission, distribution and supply of energy, efficient energy use and renewable energy sources for heating and transport) and conferring mining rights for exploration and exploitation of raw mineral resources. The Energy Directorate is therefore part of state administration responsible for the development of use of nuclear energy internationally known the "promotion authority". The Directorate monitors the management of state-owned energy enterprises, including GEN energija, the owner of the Slovenian share of

20 On the basis of Article 1 of the Act Amending the Government of the Republic of Slovenia Act (Official Gazette RS, No. 8/12 date 3. 2. 2012), Article 3 of the Decree Amending the Decree on Administrative Bodies within Ministries (Official Gazette RS, No. 17/12 date 5. 3. 2012), Article 5 of the Act Amending the State Administration Act (Official Gazette RS, No. 21/12 date 19. 3. 2012) and the Decision of the Government of the RS number: 00700-10/2012/3 date 29. 3. 2012

the Krško NPP. In this way, the Directorate can also influence on nuclear safety of the facility as assuring long-term nuclear safety of the NPP depends mainly on stable business and financial status.

Under the auspices of the Energy Directorate there is the Agency for Radwaste Management (as the implementing institution). The Directorate also monitors activities of the Financial Fund for Decommissioning of the Nuclear Power Plant Krško (the fund for financing the decommissioning of the NPP and the disposal of radioactive waste from the NPP.

The Ministry monitors and is included in the work of the interstate commission established on the basis of the Treaty between the Government of the Republic of Slovenia and the Government of the Republic of Croatia on the Regulation of the Status and Other Legal Relations Regarding Investment, Exploitation and Decommissioning of the Krško Nuclear Plant21, whose task is to monitor the implementation of this agreement.

# Ministry of the Interior and Public Administration

According to the applicable law the Ministry of the Interior covers the area of physical protection. The operator of a facility in which there is nuclear or radioactive material and the carrier of nuclear material must develop a programme and a plan of physical protection and ensure the implementation of physical protection of facilities or material in accordance with the plan. Such physical protection plan is approved by the Ministry of the Interior, whose administrative body the Inspectorate of the Interior is also responsible for the inspection control of this area.

# Ministry of Education, Science and Sport

The Ministry responsible for education and science provides a basic study and research programmes for education of professionals in science and technical fields relevant to nuclear safety. It takes into account the energy policy of the country and in accordance with the energy roadmap systematically allocates appropriate part of funds to education and research programmes that are crucial for the country. It encourages employers from the appropriate areas to cooperate in the field of education.

The Ministry is also responsible for the maintenance of research infrastructure in the country including the TRIGA MARK II Research Reactor. On behalf of the state the Ministry acts as the owner of the facility and provides adequate financial resources.

# Ministry of Defence

**Administration of the Republic of Slovenia for Civil Protection and Disaster Relief**

The Administration of the Republic of Slovenia for Civil Protection and Disaster Relief performs administrative and professional tasks of protection, rescue and relief and other tasks of protection against natural and other disasters. Within this framework it also prepares the National Plan for the Protection and Rescue Relief in Case of A Nuclear or Radiological Emergency 22 and the National Emergency and Rescue Plan in Case of Use of Weapons or Materials of Mass Destruction for Terrorist Purposes or Terrorist Attacks with Conventional Means23. The Administration for Civil Protection and Disaster Relief also ensures working conditions for the civil protection commander and headquarters to operatively and

21 Official Gazette RS – MP, No. 5/03, date 6. 3. 2003

22 Last revision 3.0 adopted on the session of the Government of the Republic of Slovenia date 22. 7. 2010

23 Last revision 4.0 adopted on the session of the Government of the Republic of Slovenia date 24. 2. 2005

professionally perform civil protection activities and other civil protection forces for the protection, rescue and assistance under national jurisdiction, as well as the guidance and coordination in relation to the situation.

## Broader institutional framework

**Agency for Radwaste Management**

ARAO was established in the beginning of 1991 by a decree of the Executive Council of the Assembly of the Republic of Slovenia24 in order to ensure conditions for permanent safe storage of radioactive waste.

Initially it was organized as a public company. In 1996 it was transformed into a public service agency25. The amendments to the ordinance (in 1999, 2001 and 2009) entrusted the ARAO broader competence and duties:

* Management of radioactive waste storage at Brinje;
* Management of the investment project and management of the future repository of low and intermediate level radioactive waste;
* Collection and transportation of radioactive waste from small producers;
* Information and raising awareness of the general public on radioactive waste;
* Control of the country's infrastructure facilities, i.e. former repositories.

ARAO is the performer of the obligatory public service of management of all radioactive waste from small producers resulting in Slovenia.

Radioactive waste and spent fuel can for a certain period of time be stored and processed by the operator of a nuclear facility in which the waste is produced if it obtains a licence of the authority competent for nuclear safety.

# Financial Fund for Decommissioning of the Nuclear Power Plant Krško

The NEK Fund was established in December 199426 and became operational in 1995. It started systematic financing of the decommissioning of the NPP and permanent disposal of radioactive waste and spent nuclear fuel.

Monthly fees were first provided by the NPP. In 2004, the company ELES GEN, a legal successor of the Slovenian investors in the NPP (now GEN energija) became liable for providing fees to the NEK Fund.

On the basis of legal requirements, a share of price of each kilowatt-hour of electricity produced and sold in the NPP is contributed into the fund. The NEK Fund keeps enriching the financial means and gradually collects the funds needed to meet the targets.

The conclusion of an agreement between the Government of the Republic of Slovenia and the Government of the Republic of Croatia on regulating the status and other legal relations associated with investments in the NPP, its exploitation and degradation is also important. It, inter alia, provides that each state shall provide its half of the necessary funds by making

24 Ordinance on the establishment of a public company for the management of radioactive waste (Official Gazette RS, No. 5/91)

25 Ordinance on transformation of the public company Agencija za radioaktivne odpadke p.o., Hajdrihova 2, Ljubljana into public agency (Official Gazette RS, No. 45/96)

26 Fund for Financing Decommissioning of the Krško Nuclear Power Plant Krško and Disposal of Radioactive Waste from the Krško NPP Act (Official Gazette RS, No. 75/94); beside mandatory explanation of Article 4 (Official Gazette RS, No. 35/96) the Act was amended twice (Official Gazette RS, No. 24/03 and 68/08)

payments into their own special funds. The Republic of Croatia founded its own dedicated fund at the end of 2007 and thus began to raise the funds.

# Nuclear Insurance and Reinsurance Pool

Nuclear Insurance and Reinsurance Pool was established in 1994 as an economic interest group, where the operators of nuclear facilities in the Republic of Slovenia insure and reinsure nuclear threats. The Pool is composed of five insurers and two reinsurers.

Insurance mainly refers to the liability for nuclear damage. The Nuclear Insurance and Reinsurance Pool participates in risks up to the amount of its capacities, the surplus is reinsured at numerous foreign reinsurance pools. The pools from UK, Japan, Germany, France, Nordic countries (Sweden and Finland) have the leading share. The Nuclear Pool together with the Croatian nuclear pool as the co-insurers (the proportion of risk is shared 50:50) insure the assets of the NPP against nuclear, fire and other risks (the risk of terrorism and machinery breakdown). Both nuclear pools insure these risks up to its capacity and the surplus in this case is reinsured with a larger number of foreign nuclear pools.

## Expert councils and commissions27

**Expert Council for Radiation and Nuclear Safety (Expert Council - SSSJV)**

The Expert Council for Radiation and Nuclear Safety (Expert Council - SSSJV) operates on the basis of ZVISJV and Rules of the Expert Council for Radiation and Nuclear Safety28. It provides opinions and proposals on issues related to radiation and nuclear safety, safeguards, radioactivity in the environment, protection of the environment against ionising radiation, intervention measures, remediation of consequences of emergencies and use of radiation sources that are not used in health care and veterinary medicine. The Expert Council also gives opinions and proposals on draft rules based on the ZVISJV, Annual Report on Protection against Ionizing Radiation and Nuclear Safety, annual programme of regulatory bodies and inspectors responsible for tasks according to the ZVISJV and opinions on other issues covered by the council and which are requested by the ministry responsible for the environment and the SNSA.

# Expert Council for the Issues of Ionizing Radiation

The Expert Council for the Issues of Ionizing Radiation acts on the basis of the ZVISJV and Rules on Functioning of the Expert Council on Issues of Ionizing Radiation Protection, Radiological Activities and the Use of Radiation Sources in Human and Veterinary Medicine29. It provides opinions and proposals on protection of the general public against ionizing radiation, radiology procedures and the use of radiation sources in health care and veterinary medicine. Like the Expert Council (SSSJV) it also provides opinions and proposals on draft rules according to the ZVISJV, Annual Report on Protection against Ionizing Radiation and Nuclear Safety, annual programme of regulatory bodies and inspectors responsible for tasks according to the ZVISJV and opinions and proposals on other issues covered by the council and which are requested by the ministry responsible for the environment and the SNSA.

# Commission for Physical Protection of Nuclear Facilities and Nuclear and Radioactive Material

27 For the purpose of this resolution only the so-called inter-ministerial commissions are stated

28 Official Gazette RS, No. 35/03

29 Official Gazette RS, No. 62/03

Based on the ZVISJV the government appointed a commission for physical protection of nuclear facilities and nuclear and radioactive material. The Commission provides opinions and proposals for regulations under preparation in the area of physical protection, opinions on threat assessment, it monitors and coordinates the implementation of physical protection measures and makes recommendations to improve the physical protection measures. The Commission is composed of representatives of the ministries and other state authorities and agencies that are due to their area of work included in physical protection of nuclear facilities and nuclear and radioactive material and of representatives of operators of nuclear installations.

# Commission for the Control of Exports of Dual-Use Goods

The Commission was appointed by the Government on the basis of the Act Regulating the Exports of Dual-Use Goods30 that also defines its basic area of work i.e. coordination and monitoring the control of exports, transfer within the community, brokering and transit of dual- use goods and the provision of technical assistance. Its competence is specified by the Regulation on procedures for issuing authorisations and certificates and on competence of the Commission for the control of exports of dual-use goods31. Namely, it provides opinions prior to issuing a license taking into account the facts referred to in Article 12 of the Council Regulation (EC) No. 428/2009 of 5 May 2009 setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use goods (OJ, L 134/1; hereinafter referred to as the Regulation 428/2009/EC) and provides opinions prior to issuing international import certificates; exchanges information and proposals relevant to the control of export, transfer within the customs territory of the European Union, brokering and transit of dual-use goods and the provision of technical assistance, coordination and cooperation in the implementation of the Regulation 428/2009/EC and the Act.

The Commission is composed of representatives of the ministries and other state authorities that are according to their area of work involved in the control of exports of dual-use goods. It annually reports to the Government of the Republic of Slovenia.

# Inter-ministerial Commission for Monitoring the Implementation of the National Emergency Plan for Nuclear and Radiological Accidents

The Government of the Republic of Slovenia appointed an inter-ministerial commission for the purposes of planning, coordination, monitoring and evaluation of the national emergency plan for nuclear and radiological emergency chaired by a representative of the SNSA. The inter-ministerial commission coordinates activities to ensure the implementation of the national plan, provides advice on the development and coordination of emergency response plans for nuclear or radiological accident at all levels, coordinates collaboration of stakeholders at regional and local levels, establishes the conditions for the implementation of the national plan, participates in the preparation of training programmes and exercises, prepares annual training plans and exercises at the national level, participates in training and exercises, introduces international standards, current international practice and coordinates Slovenia's participation in international exercises and other activities.

## Authorized experts

Since the Republic of Slovenia is too small to maintain the necessary professional support within the government or the public sector, legislation is largely based on expert opinions of the so-called authorized experts. Legislation provides that the regulatory body in a special administrative procedure identifies a particular legal person having appropriate skills to

30 Official Gazette RS, No. 37/04 in 8/10

31 Official Gazette RS, No. 34/10 in 42/12

prepare expert opinions and acquire the status as an authorized expert. Legislation determines when the applicant is obliged to complete the application for acquiring the rights in the area of nuclear and radiation safety with an authorized opinion. If a request for the issuance of a building licence relates to works with environmental impact, it is be necessary to append an environmental impact report to the special section of the project for acquiring the building licence- The applicant alone selects an authorized expert, concludes an agreement, and receives an independent opinion on the subject of the application.

Such arrangements relieve the state of financing and procedures for obtaining such expert opinions. On the other hand, the real independence of such opinions may be doubted. Any such doubts are regulated by legislation in force. Any administrative employee acting on a specific case should not to be connected with the opinion and assessment of the authorized expert and may require another or additional expert opinion.

Practice in this regard quite differs in foreign countries. In some countries technical and research units have been included in regulatory bodies organizational charts to support specific administrative decisions (e.g. Finnish STUK) or an external expert organization (specialist) that provides services exclusively (or mostly) for regulatory bodies (not the market), for example the IRSN for French regulatory body ASN. They do not need external expertise, but rely on their own professional judgment. Elsewhere, there are strong state- owned research or professional institutes preparing expertise for regulatory bodies. In some countries regulatory bodies keep seeking expertise from external organizations.

The European Technical Support Organisations Network (ETSON) that supports decisions of nuclear regulators require from authorized experts to have a long-term research programme and are financially independent from the operators of nuclear installations.

Ionising Radiation Protection and Nuclear Safety Act determines several types of authorized experts whose contribution is needed in administrative procedures:

* authorized experts for radiation and nuclear safety, who give opinions on specific professional issues,
* authorized radiation protection experts to assist in the preparation of risk assessment of workers exposed to radiation and other measures to reduce exposure,
* authorized dosimetric services to perform tasks related to monitoring of individual exposure of workers and measurement of radiation at the workplace,
* authorized medical physics experts to assist in the implementation of radiological procedures in medicine and legal opinion in medicine,
* authorized medical practitioners carrying out medical surveillance of exposed workers,
* authorized workers for monitoring of radioactivity to perform monitoring of radiological contamination in the environment,
* authorized workers for measurement of radioactivity in scrap metal shipments to control shipments during import or shipment into of scrap metal and during domestic transport of such shipments.

## Preventive measures and emergency preparedness

The use of nuclear energy and other radiation activities have benefits as well as some risks. Although everyone involved is constantly trying to avoid unnecessary hazard to people and the environment, the entire system must ensure to be prepared for the worst possible events. The memory of the Chernobyl accident in 1986 is still vivid. The Fukushima accident in Japan occurred quite recently. Around the globe and in Europe the accident re-awakened interest in and opened many issues related to nuclear and radiation safety despite the unusual reason for the accident (tsunami) and a relatively large distance. Even the use of sources of ionizing radiation outside the energy sector, for example in medicine, science

oragriculture may result in an accident (i.e. the accident due to a lost medical source in Goianii, Brazil or the accident in a reprocessing plant in Tokaimura, Japan).

All stakeholders involved in nuclear activities and radiation practices, including state authorities are engaged in the development of preventive activities and emergency preparedness, i.e. nuclear or radiological accident that could have a harmful impact on people and the environment. The Government has therefore adopted a National Plan for the Protection and Rescue Relief in Case of A Nuclear or Radiological Emergency. All second level plans for protection and rescue relief in case of a nuclear or radiological emergency and activities at all levels of planning must be consistent with it. The plan covers any accident in the NPP as well as accidents in other nuclear and radiation facilities in the Republic of Slovenia, nuclear or radiological accidents abroad with a potential impact on Slovenia and other radiological accidents involving ionizing radiation sources.

Peaceful use of nuclear energy and use of radiation sources should in addition to the general planning requirements of protection and rescue relief in case of natural and other disasters also consider aspects arising from the commitment to international conventions32 in the field of liability for nuclear damage and the Act on Liability for Nuclear Damage. This means the system of assessing damage, assuring financial means of the operator of a nuclear facility and the state and the compensation of victims in case of a nuclear accident.

# COMPETENCE OF PROFESSIONAL SUPPORT

A fundamental prerequisite for a high level of nuclear and radiation safety in the country is trained personnel ensuring nuclear safety. International standards in this area (especially the IAEA standards) recognize that providing competent professional support should not be left to market rules.

Any country should ensure adequate and stable long-term provision of such support. Any country with a nuclear programme (the Republic of Slovenia is the smallest country with a nuclear power plant) must maintain sufficient expertise to be at all times and in all circumstances able to ensure the appropriate level of protection of population in its own country and the neighbourhood. Highly-educated and motivated professionals, researchers and scientists, and constant development of new skills are key prerequisites for maintenance and continuous improvement of high level of nuclear safety. Both can in the present time be achieved only with a very well-developed and internationally connected system of research and education. Ensuring conditions for research and education is already part of international obligations which also bind the Republic of Slovenia (Convention on Nuclear Safety, Euratom Treaty). This is also prescribed by the EU Council Directive 2009/71/Euratom, Article 7:

"Member States shall ensure that the national framework in place requires arrangements for education and training to be made by all parties for their staff having responsibilities relating to the nuclear safety of nuclear installations in order to maintain and to further develop expertise and skills in nuclear safety.”

Such a commitment of the directive is partially materialized in the ZVISJV with the provision that the state should provide financial sources for training of authorized radiation protection experts, training of authorized experts of medical physics, training of authorized experts for radiation and nuclear safety and funds for the development studies and independent expert reviews and international cooperation in the field of radiation protection and nuclear safety.

32 Above all Convention on third party liability in the field of Nuclear Energy and Convention of 31 January 1963 Supplementary to the Paris Convention (so-called Brussels Convention)

Unfortunately, due to a financial decrease of the state budget in recent years such funds have been minimized. Consequently, this kind of training or provision of expertise has mostly disappeared.

In addition to the direct provision of training resources, the state can only partially influence on providing the professional support and development of nuclear profession of authorized organizations in the long run. Mostly, it is about private companies performing their activities according to the market rules. The state may influence only on state-established authorized organizations (public institutions). The state can keep encouraging and managing their programmes and requirements that are set as a requirement for authorization.

Trained personnel are required for operators of nuclear and radiation facilities and users of sources of ionizing radiation in appropriate national authorities and institutions as well as in independent organizations and authorized experts. The basis for providing adequate technical support is education and research and development activities.

In recent years the Slovenian organizations active in the field of radiation or nuclear safety (and wider technology) have mainly experienced two problems:

1. Aging of staff in professional organizations outside the NPP as the number of young professionals seeking a job in the profession in the previous two decades was rather small due to uncertain future and the fact that the nuclear area is not popular in the general public. Gradually the situation is improving at a slow pace. Despite the slight positive trend, the generational gap can be noticed. Most of the formerly active leading experts have already retired or will be retiring soon. However, the middle age workers are lacking while a significant number of young professionals are shifting to other professions.
2. The organization of the largest research and authorized institutions in this area is relatively rigid and does not promote the formation of high-tech business centres, which could be competitive on the domestic and world market. On the other hand, small and dynamic companies seeking to be well-known and to be expanded do not have a critical mass of experts in a specific field to form a sufficient core for comprehensive and competent technical support in wider and more complex segments of nuclear and radiation safety.

Support activities in nuclear safety and technology in Slovenia will have to be maintained for at least several decades. For this purpose a stable organizational, personnel and material conditions have to be established to enable long-term existence, development and growth of nuclear profession in the period ahead. Above all, the negative trend in decreasing the existing personnel and material resources has to be stopped immediately.

## Research

The main objective of research is to discover and create new knowledge and to transfer the new knowledge into the world’s fund. Highly developed research in the field of nuclear energy is typical in all countries using nuclear energy. As a rule nuclear safety can be improved only with new knowledge being the result of research.

Today's system of financing science and research in Slovenia gives priority to basic research. Basic research is driven by the curiosity resulting in new scientific information and new theories. Basic research is a necessity allowing international relationships and access to international treasury of knowledge. Basic research is typically fully financed from the public funds, often including partial financing of the European Commission (EURATOM).

Basic research is not necessarily related to immediate problems in operating nuclear facilities. Due to unclear prospects in the field of nuclear energy in the country over the past two decades, and lack of systemic support at the state level, the number of young professional staff in the field has not been adequately maintained. Therefore, the number of competent experts was significantly reduced. In such circumstances the ability of professional institutions to be included in the system of authorized expert organizations is significantly smaller (weaker) than in the past. About 40 percent of electricity in Slovenia is produced in the NPP. Taking into account the future perspectives, for the operation of the NPP it is necessary to ensure sufficient domestic professional support and appropriate system solutions that will improve the conditions and operation of the professional staff for these purposes.

Minor part of research in this area is applicable research. This type of research is primarily aimed at directly supporting industry in pre-competitive development stages. The co- financing of research in public-private partnership is a typical characteristic.

There is also research that has been developed and implemented to directly support the decision-making of nuclear regulators. This kind of research has so far been insufficient in Slovenia.

Financing of science and research with public funds in Slovenia is based on the selection of the most promising international projects and programmes. Projects in the whole energy sector are considered. Therefore, it can occur that nuclear energy research projects lose funding on a temporary or even permanent basis. Such funding arrangements do not guarantee sustainable development of nuclear research.

According to rough estimates sustainable development of nuclear research needs stable financial support in terms of full time employment at least to the minimum extent for the following key research areas:

* 15 for radiation, nuclear and reactor physics;
* 10 for reactor engineering;
* 10 for nuclear safety;
* 5 for heavy disasters with core meltdown;
* 10 for decommissioning and management of radioactive waste.

If a new nuclear power plant is going to be built, the above figures should be doubled at least a few years before the construction.

Full co-financing of cooperation in international research and industry projects should also be ensured. It is also important to ensure employment of young workers, at least one young employee per year in each group of 10 senior researchers. Since the current system of budgetary financing of science is organized in a way that it primarily supports scientific excellence, additional ways have to be found to achieve the objectives set. It is of strategic importance to ensure long-term stable and encouraging financing of research and international connections through the provision of dedicated financing. Given the trends in Europe, this will best be carried out with public-private partnerships that will provide all stakeholders, industry and regulators access to new knowledge under the same conditions.

## Education

In Slovenia, diploma graduate study programme of nuclear engineering and nuclear safety is not arranged within the first Bologna cycle study. Some courses in this area can be selected in higher grades at the Faculty of Electrical Engineering, Faculty of Mechanical Engineering, Faculty of Mathematics and Physics (University of Ljubljana), Faculty of Energy of the

University of Maribor in Krško and the Faculty of Civil Engineering of the University of Maribor.

The second level master's programme "nuclear technology" is provided only at the Faculty of Mathematics and Physics of the University of Ljubljana. The programme is appropriate for graduates of technical and natural science faculties of the first Bologna cycle. The programme mainly consists of courses in the field of reactor engineering and nuclear and reactor physics including the course of nuclear safety. Some courses are common with other programmes of the Faculty of Mathematics and Physics allowing the selection of courses from other faculties of the University of Ljubljana. Among the second cycle university programmes at the Faculty of Mathematics and Physics there is also "medical physics", which includes a relatively wide range of courses in the field of radiation and radiation protection. Both studies are closely linked to the research of JSI. Study at the Faculty of Mathematics and Physics of the University of Ljubljana fully meets the quality requirements of the European Association ENEN and also features regular exchange of students and professors with ENEN members.

Currently, the system of public financing of education does not guarantee sustainable development of studies in nuclear engineering and safety. Implementation of the study is left to the ingenuity and dedication especially of the JSI researchers and professors of the Faculty of Mathematics and Physics of the University of Ljubljana.

In the long run stable and stimulating financing is strategically important. Given the trends in Europe this will be better ensured through public-private partnerships.

## Training

Personnel employed in the field of nuclear energy are trained by the Nuclear Training Centre Milan Čopič at JSI (ICJT) and the Krško NPP. ICJT provides the entire initial theoretical training of future operators and engineers of the NPP and the training of local operators, personnel of support organizations and regulatory bodies.

The NPP is a major employer in the area of nuclear energy in Slovenia and its system of internal training prepares the staff to work in a nuclear facility. Training systems of the NPP and ICJT are mutually consistent and complementary. A sufficient number of students trained at the ICJT and the NPP is the important factor enabling high quality training including regular lectures, regularly maintained learning materials in Slovenian and an established system of quality assurance. Learning materials of the ICJT are also used for emergency planning.

# OBJECTIVES AND ACTIONS FOR THEIR ACHIEVEMENT UNTIL 2023

## Fundamental objectives of nuclear and radiation safety

The primary objective of nuclear and radiation safety is to protect people and the environment from unnecessary harmful effects of ionizing radiation.

All other objectives and actions are subject to this goal and represent the measures to achieve it.

## Objectives of nuclear activities and radiation practices

**Goal 1:**

Nuclear and radiation facilities and providers of radiation practices comply with legal requirements, provide for continuous improvement of nuclear and radiation safety, and closely follow the development in the international arena.

Measures to achieve the objective:

* Operators and providers of radiation activities maintain a high level of radiation and nuclear safety, in particular safety culture;
* National authorities monitor and, if necessary, promote measures proposed by operators and providers of radiation practices to improve nuclear safety;
* National authorities actively promote research, education and training in national and international arena.

## Objectives of international cooperation

**Objective 2:**

In principle the Republic of Slovenia joins the international conventions, agreements or other forms of cooperation that enable rapid and equitable exchange of information and mutual assistance in ensuring nuclear and radiation safety and reduce risks to people and the environment both in the territory of the Republic of Slovenia as well as elsewhere.

Slovenian authorities and other organizations in the area of nuclear and radiation safety and physical protection are involved in the international associations based on needs and benefits that they can gain from this kind of membership. Such associations should contribute to the maintenance of nuclear and radiation safety in Slovenia on a comparable international level.

International cooperation should be encouraged and maintained in all areas of nuclear and radiation safety including in science and education.

The Republic of Slovenia and the Slovenian authorities and other organizations in the area of nuclear and radiation safety conclude bilateral agreements on cooperation in the field of nuclear and radiation safety if in this way the achievement of its objectives is facilitated. Such agreements are especially important as they facilitate quick access to information in the event of a radiological emergency in the territory of another country.

Measures to achieve the objective:

* Slovenian organizations actively monitor and, if necessary, actively participate in international associations;
* Competent organizations regularly report in accordance with commitments of international agreements;
* Representatives of the Republic of Slovenia monitor the development in the international arena and, if necessary, initiate the procedures to conclude any new or amended international agreements;
* The Slovenian authorities maintain the existing bilateral agreements and, where appropriate, conclude the new ones.

# Goal 3:

The Republic of Slovenia will continue to actively participate in all activities within the EU, where its presence is mandatory and where its specific long-term interests can be realized.

Measures to achieve the objective:

* Representatives of the Republic of Slovenia actively participate in meetings of the EU working bodies;
* The Government actively supports and finances the cooperation of Slovenian researchers in research projects of the European Commission (EURATOM).

# Goal 4:

The Republic of Slovenia is and remains an active member of the IAEA. As a member of this agency it pays a mandatory membership fee in accordance with its capabilities. It also contributes additional personnel and financial contributions especially in the areas where the country’s interests can directly or indirectly be realized.

In the field of technical cooperation, Slovenia supports projects that have great development potential especially in countries that are geographically close, in countries with similar programmes or technology, and in particular in the areas where Slovenian experts are able to provide assistance.

The Republic of Slovenia will receive technical assistance especially in the areas lacking domestic skills to achieve certain objectives in nuclear and radiation safety.

The Republic of Slovenia would like to change its status from a recipient country of technical assistance into a donor country.

The Republic of Slovenia will keep promoting experts for professional work in third countries within the framework of the IAEA and invite international expert advisory teams for periodic reviews of its facilities and institutions to independently verify its capabilities. Above all, it will invite the teams that Slovenia is committed to invite.

Measures to achieve the objective:

* The Republic of Slovenia regularly pays membership fee and voluntary contribution to the IAEA technical assistance fund in the amount as proposed annually by the Secretariat of the IAEA;
* Given the financial possibilities Slovenia is increasing its financial support for assistance projects to third countries;
* Organizations and individuals from the Republic of Slovenia compete for the implementation of technical assistance projects and implement them mainly in the countries of the Western Balkans and the Mediterranean, as well as other areas of the world, where the Slovenian experience can contribute to the development;
* Organizations and individuals in the Republic of Slovenia organize working meetings, workshops, courses, seminars and similar events with international participation;
* Organizations in the Republic of Slovenia accept candidates from other countries for training;
* Organizations of the Republic of Slovenia apply for technical cooperation projects at the IAEA in the areas lacking fully developed capabilities;
* Slovenian experts participate in international missions in other countries;
* At intervals of three to five years the Krško NPP invites OSART and WANO international teams to review its operation in all aspects;
* At intervals of not more than ten years the SNSA invites IRRS international team to review its work;
* At intervals of more than ten years the Ministry of the Interior invites IPPAS international team to review measures for physical protection of nuclear facilities and activities;
* If necessary, the Republic of Slovenia invites international groups in diverse fields of work.

# Goal 5:

The Republic of Slovenia remains an active member of the Nuclear Energy Agency (NEA) of the OECD. It contributes the calculated amount of membership fee. In accordance with its human and financial resources it participates in the work of NEA’s committees, the NEA Data Bank and subcommittees important for ensuring a high level of nuclear and radiation safety.

Measures to achieve the objective:

* The Republic of Slovenia regularly pays membership fee for the NEA and Data Bank;
* Slovenian representatives actively participate in meetings of the OECD/NEA committees and selected sub-committees and on the basis of the meeting results suggest improvement in the country;
* Slovenia actively supports and co-finances Slovenian researchers in research projects of the OECD/NEA.

# Goal 6:

Since the Republic of Slovenia does not consider nuclear energy for non- peaceful use it remains firmly committed to respect provisions of the Non-Proliferation Treaty and is thus fully open for inspection controls of nuclear material (safeguards).

The Republic of Slovenia has been participating in international organizations related to non- proliferation of nuclear weapons and dual-use goods, in particular, within its capabilities. It fulfils its commitments on reporting and control of dual-use goods and according to its human and financial resources contributes towards global efforts to prevent the proliferation of nuclear weapons.

Measures to achieve the objective:

* All organizations in the Republic of Slovenia fully support the work of international inspectors in the field of control of nuclear materials (safeguards);
* Slovenian representatives regularly monitor the work of international organizations related to non-proliferation of nuclear weapons and dual-use goods and attend meetings according to available human and financial resources.

## Goals of legislation

**Goal 7:**

The Republic of Slovenia has maintained its legislation in the area of nuclear safety and radiation protection in accordance with international best practice. Legislation provides for priority to nuclear and radiation safety simultaneously enabling the main purpose of the use of nuclear energy and ionizing radiation sources.

Measures to achieve the goal:

* National authorities referred to in subparagraph 6.1 of the Resolution regularly follow international development in the field of nuclear and radiation safety comparing it with domestic legislation and, if necessary, propose amendments.

## 8.6 Goals of institutional framework

**Goal 8:**

The Republic of Slovenia maintains appropriate separation and independence of the regulatory authorities responsible for the supervision of nuclear and radiation safety from

those entities whose primary mission is to promote the use of nuclear energy or ionizing radiation sources. The supervisory authorities have adequate financial resources and appropriate personnel to perform their duties.

Measures to achieve the goal:

* Arrangements of administrative control of radiation protection and nuclear safety will be salutatory and organizationally adjusted in order to effectively and efficiently perform administrative, development or professional tasks in this area of state jurisdiction. The adjustments will relieve the state budget and achieve financial stability of the regulatory body, more cost-effective operations and elimination of administrative barriers, independence of influencing the decision-making on administrative matters and effective human resources and financial flexibility.

# Goal 9:

The system of authorized experts enables the optimum expertise in decision-making of regulatory bodies on radiation and nuclear safety, the producer or applicant bearing the costs of the preparation of an expert opinion.

Measures to achieve the goal:

* By promoting and financing of directed development tasks it is ensured that authorized experts cover all areas of nuclear and radiation safety. Their independence from the operators of nuclear and radiation facilities or providers of radiation practices is thus ensured.

# Goal 10:

In the use of nuclear energy and performance of radiation activities in the Republic of Slovenia emergency preparedness is properly arranged in order to minimize the consequences to people and the environment in case of emergency.

Measures to achieve the goal:

* In case of a nuclear or radiological emergency the inter-ministerial commission for the coordination of harmonization of the national plan takes care of guidance and coordination of the competent national authorities;
* Emergency response system is checked regularly by performing exercises.

## 8.6 Goals of expert support skills

**Goal 11:**

Slovenian educational institutions offer study programmes whose graduates can by gaining appropriate additional training get important positions in organizations where they can ensure nuclear safety.

Measures to achieve the goal:

* Slovenian educational institutions provide appropriate study programmes, the state financially supporting the ones internationally comparable and recognized;
* Operators of radiation and nuclear facilities, contractors of radiation practices and the national authorities responsible for nuclear and radiation safety support and participate in educational programmes in the fields of physics, reactor engineering, nuclear safety, control of severe accidents with core meltdown, technologies, nuclear decommissioning and radioactive waste management.

# Goal 12:

The Republic of Slovenia has established stable conditions for financing and implementation of research and education activities in the field of nuclear and radiation safety, providing a "critical mass" of experts to competently cover all key aspects of the safe use of nuclear energy and ionizing radiation sources.

Measures to achieve the goal:

* The country actively supports and co-finances the participation of Slovenian scientific and research organizations in international research projects and programmes under the auspices of the EU, OECD/NEA, USNRC and similar recognized organizations;
* Research programmes financed from the state budget or other sources enable basic research in the field of nuclear and radiation safety:
* Funds collected from the operators of nuclear and radiation facilities and enriched by means of the state budget enable applied research and development in support of resolving the ongoing challenges in the field of nuclear and radiation safety in the economy. SNSA in cooperation with the users set up a programme of research and development:
* It is necessary to motivate research organizations to participate in applied research for the economy.

# MONITORING OF IMPLEMENTATION OF THE RESOLUTION AND REPORTING ON IT

The provisions of the Resolution are implemented by state authorities and other organizations referred to Chapter 6 of the Resolution. On the annual basis the body responsible for nuclear safety collects information about individual areas covered by the resolution and includes it in its annual report on Ionising Radiation Protection and Nuclear Safety. The report is submitted to the National Assembly of the Republic of Slovenia by the Government. The report must highlight the success of achieving the objectives, and to indicate possible improvement for further resolutions.

# ACRONYMS

ARAO – Agency for Radwaste Management CSRAO – Central Storage of Radioactive Waste EU – Europe Union

EURATOM – European Atomic Energy Community

IJS – Jožef Stefan Institute

IPPAS – International Physical Protection Advisory Service IRRS – Integrated Regulatory Review Service

MAAE – International Atomic Energy Agency NEA – Nuclear Energy Agency

NEK – Krško Nuclear Power Plant

OECD – Organization of Economic Cooperation and Development OSART – Operational Safety Review Teams

RŽV – Žirovski vrh Uranium Mine

URSJV – Slovenian Nuclear Safety Administration URSVS – Slovenian Radiation Protection Administration

URSZR – Administration for Civil Protection and Disaster Relief ZVISJV – Ionising Radiation Protection and Nuclear Safety Act WANO – World Association of Nuclear Operators

WENRA – Western European Nuclear Regulators Association