

Policy, Principles and Strategy for the Further Enhancement of Nuclear Safety

1. Introduction

The safe use of nuclear energy and ionising radiation technologies is beneficial to the development of society, which can contribute significantly to the provision of stable energy resources for development and economic prosperity, as well as support other areas of development. In the past, more than 50% of electricity in the Slovak Republic was generated by nuclear power plants, which contributed to the production of electricity from low-carbon technologies, which is now considered as an important systemic approach in the fight against unwanted climate change.

One of the most important aspects of the operation of nuclear installations and the use of nuclear energy for the benefit of society is their safety, of which nuclear safety is an important part. Nuclear safety is the achievement of proper operating conditions of nuclear installations, including the safe transport of nuclear fuel, the prevention of accidents or the mitigation of the consequences of accidents, resulting in the protection of personnel and the public from the threats arising from ionising radiation from nuclear installations.

The Slovak Republic has already had nuclear energy facilities in operation, including nuclear power plants, at the time of its establishment, in 1993 and fully guaranteed the conditions for their safe operation. Within the framework of the development of international requirements, national requirements in the Slovak Republic have always been set to require a high level of nuclear safety. In view of the above, the objectives of the policy, principles, and strategy for the further enhancement of nuclear safety are not aimed at establishing these principles, but at ensuring the conditions for the continuous improvement and maintenance of a high level of nuclear safety.

The Slovak legislation in the field of nuclear safety has been developed in accordance with the European legislation and in accordance with international recommendations and requirements. One of the key institutions in the international environment is the International Atomic Energy Agency (IAEA), which belongs to the United Nations and plays a crucial role in determining international requirements. The IAEA coordinates activities and provides conditions for international development programmes in the field of peaceful uses of nuclear energy and provides services and support for the implementation of international conventions and treaties in the field of peaceful uses of nuclear energy. The national legislation, infrastructure, supervisory framework, and the implementation of the Slovak Republic's international nuclear safety obligations, are assessed in international fora, e.g., in the framework of Review Meetings:

- a) The Convention on Nuclear Safety,

- b) the Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management,

where it is the IAEA that plays a key role in review missions.

The National Reports for these Review Meetings are submitted periodically at three-yearly intervals to the Government of the Slovak Republic and then submitted by the Nuclear Regulatory Authority of the Slovak Republic to the States Parties to the Convention.

The requirements resulting from Directive 2009/71/EURATOM of 25 June 2009 establishing a Community Framework for the nuclear safety of nuclear installations and 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, have been implemented in Slovak legislation, in particular in Act No. 541/2004 Coll. on the peaceful uses of nuclear energy. That legislation also requires to prepare reports on the fulfilment of the obligations arising from those Directives and to conduct Peer Reviews at least every 10 years. The outcomes of these reviews are also considered in guiding the strategy and further enhancement of nuclear safety.

The policy, principles, and strategy for the further enhancement of nuclear safety, are interlinked with the strategic documents that exist in this field in the Slovak Republic and refer to nuclear safety:

- Programme Statement of the Slovak Government for the period 2012 – 2016,
- Energy Security Strategy of the SR (2008),
- Strategy for the Back-end of Nuclear Energy sector in the SR.

2. Objective

The aim of the policy, principles, and further enhancement of nuclear safety in the Slovak Republic is to summarize, ensure and strengthen the principles for the protection of the population and the environment from the harmful effects of ionizing radiation associated with the peaceful uses of nuclear energy.

Procedure to reach this objective

In the use of nuclear energy, the Slovak Republic shall act in accordance with international requirements and recommendations and shall respect the obligations arising from international treaties to which the Slovak Republic is bound. The Slovak Republic creates favourable conditions for building the necessary infrastructure and guarantees the exercise of independent supervisory activities, which was confirmed by the IAEA IRRS Mission in 2012. The Government of the

Slovak Republic provides sufficient resources for the performance of regulatory activities and guarantees the necessary powers for the regulatory authorities.

3. Nuclear Safety Principles

The national nuclear safety policy and strategy are implemented according to a graded principle in accordance with national specificities and the radiation risk associated with nuclear activities. To achieve the goal, joint action by operators, regulatory authorities and other stakeholders and the application of the following ten safety principles are:

3.1 Principle 1

Any natural or legal person involved in nuclear activities shall, within the scope of their powers, responsibilities, and duties, be responsible for nuclear safety and radiation protection.

3.2 Principle 2

To ensure a high level of nuclear safety, it is necessary to establish a comprehensive, effective and efficient legal and regulatory framework, taking into account feedback from the operation of nuclear installations, international experience and international recommendations.

3.3 Principle 3

To maintain a high level of nuclear safety, effective and efficient management of activities shall be applied to all nuclear activities in accordance with the principles of a safety culture.

3.4 Principle 4

Activities and equipment which cause/may cause a risk of exposure of persons shall be beneficial overall and their benefit must outweigh the risk created.

3.5 Principle 5

Protection against the harmful effects of ionising radiation shall be optimised to provide the highest level of safety that can reasonably be achieved.

3.6 Principle 6

Measures to control the risk of exposure shall ensure that no individual is exposed to an unacceptable risk.

3.7 Principle 7

People and the environment, present and future, shall be protected from the risk of radiation exposure.

3.8 Principle 8

Adequate precautions shall be taken to prevent or mitigate radiation accidents and every effort must be made to consider the principles of defence-in-depth and other measures. Early large releases of radioactive substances shall be eliminated.

3.9 Principle 9

Emergency plans and response to radiation incidents and accidents shall be designed to ensure an effective response when needed.

3.10 Principle 10

Protective measures to reduce existing or unregulated radiation risk shall be justified or optimised.

4. Application of nuclear safety principles

The principles set out in Part 3 shall be considered in all activities of natural and legal persons conducting activities in the field of peaceful uses of nuclear energy. These principles shall apply, in particular:

- When drafting legislation,
- In the performance of supervisory activities,
- in the siting, design, construction, operation and decommissioning of nuclear installations and the application of the principle of continuous improvement of the level of nuclear safety,
- effective implementation of the principles in the management systems and safety culture in operating and supervisory organisations,
- applying the principles of transparency in public information and public education.

The above principles shall also apply, to the extent appropriate to institutions involved in research activities, medical and industrial applications which use nuclear energy for their activities.

The human factor is also an important link in ensuring nuclear safety. Due attention shall be paid to the training of experts, and ensure that their qualifications are based on the latest scientific knowledge, considering operational experience and international recommendations.

The evaluation on how these principles are applied is a task, in particular, for the following entities:

- the Government of the Slovak Republic, which approves the National Report on Nuclear Safety developed under the Convention on Nuclear Safety and the Convention on the Safe Management of Spent Nuclear Fuel and Radioactive Waste and other documents developed at the national level,
- State authorities exercising supervision over nuclear safety in the framework of their review and control activities; and
- All organisations authorised to operate nuclear installations within their internal safety management and assessment systems.

The assessment shall be conducted following national legislation in the Slovak Republic and the internal quality and safety assessment systems of these organisations.

The principles set out in this Nuclear Safety Policy and Strategy are to be applied in such a way that the peaceful use of nuclear energy in the Slovak Republic guarantees the desired benefits for the development of society while respecting the highest achievable safety standards and minimising possible negative impacts on society, the population, and the environment.

5. Ensuring nuclear safety in nuclear installations in the Slovak Republic

The nuclear safety requirements and regulatory framework are set by the rules, requirements and activities established and ensured, in particular, by the following central government authorities:

5.1 Nuclear Regulatory Authority of the Slovak Republic

The Nuclear Regulatory Authority of the Slovak Republic exercises state supervision over the nuclear safety of nuclear installations, including the management of radioactive waste and spent fuel and other phases of the fuel cycle, as well as over nuclear materials, including their control and registration. It ensures the assessment of the intentions of the nuclear energy utilisation programme and the quality of safety-related nuclear equipment and devices and the obligations of the Slovak Republic arising from international treaties relating to nuclear safety of nuclear installations and the management of nuclear materials.

Ministries and other central government authorities whose competences under the law are broader, but also include activities related to nuclear safety, to a certain extent:

5.2 Ministry of Health of the Slovak Republic

The Ministry of Health of the Slovak Republic is the central authority of state administration for health protection and state health supervision.

5.3 Ministry of Economy of the Slovak Republic

The Ministry of Economy of the Slovak Republic is the central government authority for the energy sector, including nuclear fuel management and radioactive waste disposal.

5.4 Ministry of Environment of the Slovak Republic

The Ministry of Environment of the Slovak Republic is the central authority of the state administration for the creation and protection of the environment, which in relation to nuclear safety focuses on the nature conservation and landscape, water, air protection, spatial planning and building regulations, waste management, environmental impact assessment, geological research, and exploration.

5.5 Ministry of Education, Science, Research and Sport of the Slovak Republic

The Ministry of Education, Science, Research and Sport of the Slovak Republic is the central state administration body for education, science and technology.

5.6 Ministry of Foreign and European Affairs of the Slovak Republic

The Ministry of Foreign and European Affairs of the Slovak Republic is the central state administration body for foreign policy and relations of the Slovak Republic with other states and international organisations.

5.7 Ministry of Labour, Social Affairs and Family of the Slovak Republic

The Ministry of Labour, Social Affairs and Family of the Slovak Republic is the central state administration body for occupational health and safety and labour inspection.

5.8 Ministry of Interior of the Slovak Republic

The Ministry of the Interior of the Slovak Republic is the central state administration body for the integrated rescue system, civil protection, and fire protection.

5.9 Ministry of Transport, Construction and Regional Development of the Slovak Republic

The Ministry of Transport, Construction and Regional Development of the Slovak Republic is the central state administration body for road, rail, ship and air transport and the competent public health authority in the transport sector.

6. Main tasks of state authorities to ensure sustainable conditions for a high level of nuclear safety in the Slovak Republic

In accordance with international requirements and obligations of the Slovak Republic, the national nuclear safety requirements and regulatory framework are designed to ensure the highest achievable level of protection of the population and considering possible transboundary impacts also on the population in neighbouring countries in the region. The legislative and regulatory framework also applies the principle of continuous improvement of the level of nuclear safety, which was fully considered in the modernisation programmes of nuclear installations in the Slovak Republic, e.g., EBO V-1, V-2, EMO 1&2, Interim Spent Fuel Storage Facility at Bohunice, etc.

The results of these programmes have been and are presented internationally and independently evaluated e.g., in the framework of Review Meetings under the Convention on Nuclear Safety and the Convention on the Safe Management of Spent Nuclear Fuel and the Safe Management of Radioactive Waste. The Slovak Republic has the legal, technical, and human resources in place for the safe operation of nuclear installations. It can be stated that the Slovak Republic fully implements the recommendations contained in the IAEA GSR Part 1, point 2.2 - *"The government establishes national policy for safety by means of different instruments, statutes and laws. Typically, the regulatory body, as designated by the government, is charged with the implementation of policies by means of a regulatory programme and a strategy set forth in its regulations or in national standards"*.

National legislation, as well as other binding regulations in the field of nuclear safety fully implement and consider the general, as well as specific international recommendations on nuclear safety. The Slovak Republic belongs to the group of countries with advanced nuclear energy, having experience in the operation of nuclear installations and receiving positive evaluations in all international fora.

The legal and regulatory framework in the Slovak Republic is built in accordance with international requirements, such as the Safety Fundamentals or the IAEA General Safety Requirements, and therefore the strategic objective of the application of the principles in the field of nuclear safety assurance in the Slovak Republic at present is in particular the further continuous improvement of the level and further development of nuclear safety.

Based on the above arguments and the division of responsibilities of the state authorities (presented in section 5.), the main tasks under the responsibility of the state authorities (in the short, medium and long term) to ensure the enhancement of nuclear safety are as follows:

6.1. To permanently maintain the nuclear safety legislation of the Slovak Republic so that it is in line with relevant international recommendations and to ensure the achievement of a high level of nuclear safety.

Responsible: ÚJD SR, MV SR, MŠVVŠ SR, MŽP SR, MZ SR, MH SR, MPSVR SR,
MDVRR SR

Deadline: permanent task

6.2. Ensure effective transposition of EU legislation into national legislation and actively cooperate in the development of EU legislation by participating in the work of the EU Working Party on Atomic Questions related to the nuclear safety of nuclear installations and the shipments of nuclear materials.

Responsible: ÚJD SR, MV SR, MŠVVŠ SR, MŽP SR, MZ SR, MH SR, MPSVR SR,
MDVRR SR

Deadline: permanent task

6.3. Ensure the promotion of Slovakia's interests in the development of EU legislation in the field of nuclear safety.

Responsible: ÚJD SR in cooperation with MZVEZ SR, MH SR

Deadline: permanent task

6.4. Evaluate the current legislation and, if necessary, submit a proposal to the Government of the Slovak Republic to amend the Atomic Act to effectively ensure the requirements for new reactors.

Responsible: ÚJD SR in cooperation with MZ SR, MH SR

Deadline: 31 December 2016

6.5. Ensure effective participation in the work of the WENRA group and ensure the promotion of the interests of the Slovak Republic when proposing criteria for assessing the level of nuclear safety.

Responsible: ÚJD SR
Deadline: permanent task

- 6.6. Conduct assessment and authorisation activities in such a way that the risk associated with activities involving the use of nuclear energy is lower than the benefit to society arising from those activities.

Responsible: ÚJD SR
Deadline: permanent task

- 6.7. To conduct inspections so that any deficiencies that could jeopardise a high level of nuclear safety are eliminated.

Responsible: ÚJD SR
Deadline: permanent task

- 6.8. In developing requirements and standards for the protection of health against ionising radiation in the case of nuclear installations, apply/consider the internationally accepted requirements and principles set out in Section 3.

Responsible: MZ SR in cooperation with ÚJD SR
Deadline: permanent task

- 6.9. Fully cooperate with the ÚJD SR in the performance of authorisation and assessment activities in the field of radiation protection for nuclear installations and in the field of nuclear fuel transport.

Responsible: MZ SR, MDVRR SR, in cooperation with ÚJD SR
Deadline: permanent task

- 6.10. To cooperate effectively with the ÚJD SR in the performance of supervisory activities in the radiation protection for nuclear installations and in the field of nuclear fuel shipments.

Responsible: MZ SR, MDVRR SR, in cooperation with ÚJD SR

Deadline: permanent task

- 6.11. In the siting, authorisation, operation, and decommissioning of nuclear installations, effectively assess and establish environmental protection requirements in accordance with nuclear safety requirements.

Responsible: MŤP SR in cooperation with MH SR, ÚJD SR

Deadline: permanent task

- 6.12. Ensure effective coordination of the environmental assessment of nuclear installation projects, as well as the coordination of cross-border cooperation in accordance with the international obligations of the Slovak Republic.

Responsible: MŽP SR, in cooperation with ÚJD SR

Deadline: permanent task

- 6.13. Fully apply the requirements for a high level of nuclear safety in setting the objectives of the back-end of nuclear energy sector strategy.

Responsible: MH SR in cooperation with ÚJD SR

Deadline: permanent task

- 6.14. Occupational health and safety inspections to be conducted in compliance with the principles of nuclear safety.

Responsible: MPSVR SR in cooperation with ÚJD SR

Deadline: permanent task

- 6.15. Within the educational programmes of secondary and higher education establishments, to promote scientific and technical orientation supporting research, development and use of nuclear energy for the benefit of society and to ensure the training of new professionals.

Responsible: MŠVVŠ SR

Deadline: permanent task

6.16. Within the framework of the provision of funds for scientific, research and teaching activities, to support activities aimed at promoting the use of nuclear energy and enhancement of nuclear safety.

Responsible: MŠVVŠ SR

Deadline: permanent task

Ensuring a high level of nuclear safety is one of the basic requirements for the prospective use of nuclear energy for the needs of society. Safe use of nuclear energy in the Slovak Republic is a stabilising factor for the economy, contributes significantly to ensuring energy security and has a positive impact on the environment. In accordance with the strategies of the Slovak Republic in the field of energy and the peaceful use of nuclear energy, the role of each stakeholder is to contribute constructively to ensuring a high level of nuclear safety and to create conditions for the continuous enhancement of nuclear safety.