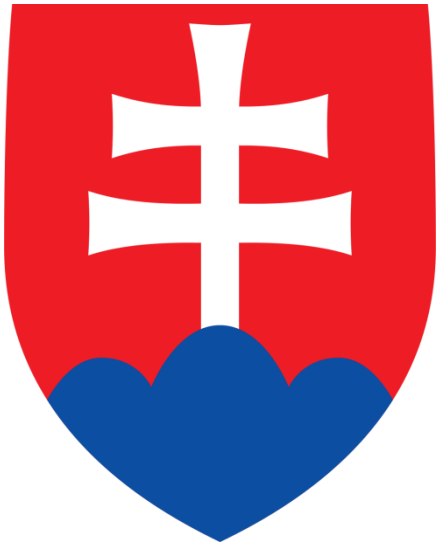
REPORT

OF THE SLOVAK REPUBLIC



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COUNCIL DIRECTIVE 2011/70/EURATOM

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ABBREVIATIONS

BIDSF	Bohunice International Decommissioning Support Fund
BSC	Bohunice Treatment Centre
BSVP	Storage pool for spent nuclear fuel
Coll.	Collection of laws
DS	Long-term storage
EIA	Environmental Impact Assessment
EU	European Union
FS KRAO	Final processing of KRAO
HVB	Main generating unit
HWGCR	Heavy-water Gas-cooled Reactor
IAEA	International Atomic Energy Agency
INES	International Nuclear Event Scale
IRAW	Institutional Radioactive Waste
IS RAW	Integral Storage Facility for Radioactive Waste
ISFS	Interim Spent Fuel Storage Facility
ISM	Integrated Management System
JAVYS, a. s.	Nuclear and Decommissioning Company/Jadrová a vyraďovacia spoločnosť
KRAO	Liquid radioactive waste
L&C	Limits and Conditions for operation
MD SR	Ministry of Transport of the Slovak Republic
MH SR	Ministry of Economy of the Slovak Republic
MPSVR SR	Ministry of Labour, Social Affairs and Family of the Slovak Republic
MV SR	Ministry of Interior of the Slovak Republic
MZ SR	Ministry of Health of the Slovak Republic
MŽP SR	Ministry of Environment of the Slovak Republic
NEA	Nuclear Energy Agency
NI	Nuclear Facility / Installation
NIP	National Labour Inspectorate
NJF	National Nuclear fund
NPP	Nuclear Power Plant
NPP A-1	NPP Bohunice A-1

NPP Mochovce/EMO	NPP Mochovce
NPP V-1	NPP V-1 Jaslovské Bohunice (Units 1&2)
NPP V-2	NPP V-2 Jaslovské Bohunice (Units 3&4)
OECD	Organisation for Economic Co-operation and Development
OIK	Citizens Information Committee
PS	Operational set
Ra	Radioactive
RAW	Radioactive Waste
RF	Russian Federation
RMNP	Radioactive materials of unknown origin
RÚ RAO	National Repository for Radioactive Waste
SAT	Self-Assessment Tool
SE – EBO	Nuclear Power Plants Jaslovské Bohunice
SE – EMO	Nuclear Power Plants Mochovce
SE - VYZ	Decommissioning of NI and radioactive waste and spent fuel management, former plant of SE, a. s.
SE, a. s.	Slovenské elektrárne, a. s.
SIEA	Slovak Innovation and Energy Agency
SKR	I&C System
SNF	Spent nuclear fuel
SR	Slovak Republic
STN	Slovak Technical Standard / Norm
ŠOV	Special Water Treatment
TK	Transportation container
ŤK	Heavy metal
TK C-30	Transportation container for SNF of C-30 type
TSÚ RAW	Technology of treatment and conditioning of RAW
TV	Television
ÚJD SR	Úrad jadrového dozoru SR/Nuclear Regulatory Authority of the SR
ÚpÚPaV SR	Office for Spatial Planning and Construction of the Slovak Republic
USSR	Union of Soviet Socialist Republics
ÚVZ SR	Úrad verejného zdravotníctva SR/Public Health Authority of the SR
VBK	Fibre-concrete container

VRAO	High-level radioactive waste
VUJE, a. s.	VUJE, a. s. Trnava – Engineering, design and research organization
WENRA	Western European Nuclear Regulators
WWER	Water-water power reactor

List of tables and figures

A INTRODUCTION

The purpose of this Report is to fulfil the obligations of the Slovak Republic pursuant to Article 14 par. 1 of the 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. This Directive was transposed by the Act No. 143/2013 Coll., which amended the Act No. 541/2004 Coll. on the peaceful uses of nuclear energy (the Atomic Act), and the Act No. 238/2006 Coll. on the National Nuclear Fund for Decommissioning of Nuclear Installations and for the Management of Spent Nuclear Fuel and Radioactive Waste (Act on Nuclear Fund). *The previous Report of SR was issued in 2018.*

The present report is the fourth report drafted in accordance with Council Directive 2011/70/Euratom. The Report is prepared in accordance with the Guidelines for Member States reporting on Article 14.1 of Council Directive 2011/70/Euratom, compiled by the ENSREG working group in January 2018. The Nuclear Regulatory Authority of the Slovak Republic participated in the process of preparing the Report in the course of 2024, in cooperation with the Public Health Authority of the Slovak Republic, the Ministry of Transport of the Slovak Republic, the Ministry of Economy of the Slovak Republic, the Ministry of Interior of the Slovak Republic, the Ministry of Environment of the Slovak Republic, the Labour Inspectorate Nitra, the National Nuclear Fund and companies JAVYS, a. s. and Slovenské elektrárne, a.s.

Spent Fuel and Radioactive Waste Sources

The types of activities, from which radioactive waste or spent fuel is generated in the SR, include:

- *Operation of nuclear power plants;*
- *Activities related to decommissioning of nuclear installations;*
- *Treatment of foreign radioactive waste;*
- *Use of radioactive sources in health care and other areas of the economy (industry, agriculture, science, research, education, etc.)* (IRAW)

Nuclear Installations

There are *5* units with reactors of WWER-440 type in operation in the Slovak Republic. Two units are located at the Jaslovské Bohunice site (referred to as NPP V-2) and *three* at the Mochovce site (EMO 1,2,*3*). Two of WWER 440 type (NPP V-1) at the Bohunice site are in the decommissioning process. Spent nuclear fuel from these units is being stored in the Interim Spent Fuel Storage Facility (ISFS).

At the Jaslovské Bohunice site there is also the NPP A-1, which was a heavy water reactor cooled with carbon dioxide (HWGCR – 150 MW), fuelled by natural uranium. NPP A-1 was shut-down in 1977 after an accident (INES 4) and currently, *completion of decommissioning stages* 3 and 4 is underway

and preparation of documentation for authorisation of stage 5 of decommissioning. The spent nuclear fuel was exported to the Russian Federation according to the original contract. Transports of spent fuel were completed in 1999.

Technologies for treatment of radioactive waste are located at Jaslovské Bohunice site (called Technology for Treatment and Conditioning of Radioactive Waste (TSÚ RAW), and at the Mochovce site, called Final treatment of Liquid Radioactive Waste (FS KRAO).

Fig. 1: Sites with nuclear installations in the SR and the location of capital Bratislava

The National Repository for low level radioactive waste (RÚ RAO) located at the Mochovce site is in operation since 2001. Part of the RÚ RAO is also a repository for very low level radioactive waste (VLLW), which has been in operation since 2016.

ISFS has been in operation at the Bohunice site since 1987, *where a project to increase the safety, seismic resistance and SNF storage capacity was implemented between 1997 and 1999. In May 2024, new storage facilities, the dry part of ISFS, were put into operation as part of the Investment Project "Completion of SNF storage capacity".*

At the Jaslovské Bohunice site, an integral storage facility for radioactive waste (IS RAW) was built, and has been in operation since December 2017.

Detailed description of the technology for spent nuclear fuel (SNF) and radioactive waste (RAW) management can be found in the following sections of this report. The licence holders for operation and decommissioning of nuclear installations are Slovenské elektrárne, a. s. (hereinafter as SE, a. s.) and Nuclear and Decommissioning Company (Jadrová a vyraďovacia spoločnosť – hereinafter as JAVYS, a. s.).

Two WWER 440 Units in Mochovce (NPP MO3&4) are under construction and the possible construction of a new nuclear power plant in the Jaslovské Bohunice site is being considered in the future.

Sealed and Open Radioactive Sources

The Central Register of Ionizing Radiation Sources, maintained by the Public Health Authority of the Slovak Republic (ÚVZ SR), registered 2,495 operators of sources of ionizing radiation as of 31 December 2023. The number of registered sources as of 31 December 2023 was 6,651, of which 898 as sealed sources and sealed source facilities, 5,173 X-ray machines and generators of ionizing radiation, and 580 open sources.

For the safety of institutional radioactive waste (IRAW) management, including disused sealed sources, the same principles apply as for the management of sources themselves:

- the exposure of staff and the public is as low as reasonably achievable,
- unauthorized handling of sources or radioactive waste is prevented.

Regulatory Bodies

The basic law for peaceful use of nuclear energy is the Act No. 541/2004 Coll. *on the peaceful use of nuclear energy* (Atomic Act) *and on amendments to certain laws as amended (hereinafter only as the "Atomic Act").* The state regulation of nuclear safety for radioactive waste and spent nuclear fuel management is vested in the Nuclear Regulatory Authority (ÚJD SR). ÚJD SR acts also as a special building authority for the construction of nuclear installations under the Act No. 50/1976 Coll. on Spatial Planning and Construction Code (Construction Act) *as amended.*

The state supervision over radiation protection *at all workplaces*, *where sources of ionizing radiation are used, and where radioactive materials are handled, including* nuclear installations, is provided for by the Public Health Authority of the Slovak Republic (ÚVZ SR) *and regional radiation protection authorities* pursuant to Act No. 87/2018 Coll. on Radiation Protection, *as amended*.

Nitra Labour Inspectorate supervises the observance of legislation and other regulations to ensure safety and health at work at workplaces of nuclear facilities in accordance with Act No. 125/2006 Coll. on the Labour Inspection *and on amendments to Act No. 82/2005 Coll. on illegal work and illegal employment, and on amendments to certain laws as amended (hereinafter only as "Act No. 125/2006 Coll.").* Verification of the fulfilment of the safety requirements of classified technical equipment and other technical equipment is carried out by authorized legal entities under the Act No. 124/2006 Coll. on safety and health at work and on amendments to certain laws *as amended.*

Assessment of the impact of NI on the environment is the competence of the Ministry of Environment in compliance with the Act No. 24/2006 Coll. on Environmental Impact Assessment and on amendments to certain laws as amended (hereinafter only as Act 24/2006 Coll.").

Slovak Republic is a contracting party to various international treaties and conventions in the field of peaceful use of nuclear energy (as listed in section E.3).

By the Government resolution No. 256/2014, the “Policy, Principles and Strategy for Further Development of Nuclear Safety” was adopted. The aim of the document is to summarize and strengthen the principles to protect the public and the environment from harmful effects of ionizing radiation associated with peaceful uses of nuclear energy. The document (based on Safety Fundamentals of the International Atomic Energy Agency No. SF-1) is intertwined with other strategic documents that exist in this field:

- Manifesto of the Government for the period 2012 – 2016, 2016 – 2020, 2020 – 2024*, 2023 – 2027,*
- Energy Security Strategy (2008),
- Proposal of National Policy and National Programme for Spent Nuclear Fuel and Radioactive Waste Management in the SR as an update to the paper on the Strategy for the Back-End of the Peaceful Use of Nuclear Energy in the SR.

National Policy and Programme

The basic concept of SNF and RAW management is determined by the National Policy document and the National Programme for the Management of Spent Nuclear Fuel and Radioactive Waste in the SR, *developed in accordance with Directive 2011/70/EURATOM, and adopted by Government Resolution No. 387/2015 dated 8 July 2015*. *This document, comprising both the National Policy and the National Programme, which is monitored and evaluated through Annual Reports, has been updated between 2020 and 2022, and is currently undergoing a strategic environmental assessment (SEA). The updated document consisting of National Policy, National Framework and National Programme sections with the new title "National Programme for Spent Nuclear Fuel and Radioactive Waste Management in the Slovak Republic" contains in the policy section separately for the SNF management and for the RAW management, the starting points, principles and main objectives, which are further elaborated in the National Programme section presenting the actual strategy and the actual programme for the management of SNF and RAW for the period up to 2030.*

Basic features of the current concept for spent nuclear fuel management in SR can be summarized as follows:

- Nuclear reactors operated in the SR have open fuel cycle. Currently, it is not possible to have a closed fuel cycle, because the WWER-440 reactors in the SR are not licenced to use reprocessed MOX fuel.
- For SNF management it is not considered to export SNF for reprocessing abroad and a subsequent return of products from reprocessing (Pu, U, high active RAW) back to the SR. *However, such an option is not excluded within the ongoing update of the National Policy and National Programme for the Management of RAW and SNF.*
- Short-term storage of SNF (3 – 7 years following its removal from the reactor) is provided by storage pools for SNF near reactors (BSVP), located at each reactor.

- Long-term storage of SNF (40 – 50 years and more after its utilization in the reactor) is in the ISFS, which is a separate storage facility for SNF at the Bohunice site.
- The long-term goal in the concept of the SNF management is the enhancement of *storage* capacity of the current ISFS for the needs of the nuclear power plants in the SR with the dry storage technology, *while phase I of the completion of storage capacity with a maximum designed storage capacity of 10,115 pcs of SNF was put into operation in May 2024*, and monitoring of the dual path scenario for the final stage of spent fuel management, namely by developing a national deep *(geological)* repository for direct disposal of spent nuclear fuel and radioactive waste not disposable at the RU RAW in Mochovce, and by participating in activities that could lead to international deep geological repository, i.e. repository jointly owned and operated by several states on the basis of relevant international treaties.
- Future decisions in the field of SNF management will reflect the technical and legislative development that is taking place in the European Union and in the world.

The ISFS in Jaslovske Bohunice (in operation since 1987), is used to store fuel assemblies in a pool filled with water (wet storage). After its reconstruction based on a change in the geometry of the storage arrangement, currently the ISFS has a maximum storage capacity (14,112 of spent fuel assemblies, i. e. approx. 1,700 t of heavy metal). The reconstruction has also provided for a higher seismic resistance and extended operational life-cycle of the ISFS to at least 50 years.

In order to ensure sufficient storage capacity of SNF in the ISFS, the project "Completion of SNF storage capacity" has been implemented since 2017, the aim of which was to expand it in the first phase by 10,115 of SNF. In May 2024, new storage facility – the dry part of the ISFS, was put into operation.

The whole production of SNF from the NPP A1 (HWGCR reactor type, in operation from 1973 till 1977) was exported to the former USSR and later to the Russian Federation until 1999. Small portion of SNF from WWER-440 reactors (697 fuel assemblies) was exported to the former USSR prior to 1987.

Characteristics of the current management of radioactive waste in the SR:

- Maximal use of the current technology equipment for the treatment and conditioning of radioactive waste (RAW), which are located in Jaslovské Bohunice and Mochovce - TSÚ RAW and FS KRAO.
- *The basic method of treatment of liquid RAW (hereinafter referred to as "KRAO") is the fixation of KRAO, radioactive sludge and spent ion exchangers into a mould for final disposal using the technology of cementation and fixation into the SIAL matrix (geopolymer) or incineration. Bituminisation technology is no longer used due to the reduced generation of liquid concentrates and spent ion exchangers from the operating WWER units.*
- The volume of solid RAW is minimized by compacting, incineration and preventive measures *with the aim to optimize or reduce their production*.
- Treated liquid or solid RAW is placed into fiber-concrete containers covered with active sealing, made of cement mixture and liquid radioactive waste (KRAO). These containers are suitable for transport and storage, as well as for disposal in the RU RAO.

- For the treatment of intermediate level RAW or RAW with high trans-uranium content (specific liquid RAW from storage of spent fuel from NPP A1 as sludge and Chrompik – mixture of K_2CrO_4 and $K_2Cr_2O_7$) there is a vitrification technology available.
- Very low level RAW is disposed of at the Mochovce site in the premises of RÚ RAO. The first module of the repository for very low level waste for VLLW from NPP A1 was put into operation in June 2016. Construction of the second module of storage facilities for VLLW from NPP V-1 was *finalized* in 2017.
- In 2019, a third double-row for the disposal of low-level RAW (LLW) was built and put into operation as part of BIDSF Project at the Mochovce site, in the premises of RÚ RAO.
- Available technology (high pressure compacting, cementation, etc.) is used for the treatment and conditioning of metal RAW. Low level metal waste is treated by fragmentation and decontamination, followed by release of decontaminated material into the environment. With regard to the increase in metal RAW that cannot be released into the environment, *the metal RAW melting facility has been built as part of TSÚ RAO, the aim of which is to reduce the amount of metal RAW, its treatment and release of as much metal materials as possible into the environment for their further recovery. It was put into active operation in 2023.*
- Materials contaminated with radioactive substances meeting the criteria for release to the environment (in particular building materials) are separated and treated prior to release (by crushing) with subsequent use.
- IRAW, disused sealed sources and captured radioactive materials (*RMNP*) are stored in the "Facility for the management of IRAW and ZRAM" that was built and was put into operation in February 2016 at the Mochovce site until their final treatment, conditioning and disposal. *IRAW and RMNP containing nuclear materials are stored until their final treatment, conditioning and disposal in dedicated space in the Interim Spent Fuel Storage facility in Jaslovské Bohunice site*. *Some* IRAW and *RMNP* are conditioned into the form acceptable for permanent storage, using standard technology used for RAW from nuclear installations.
- Long-term storage of treated RAW (e.g. Chrompik vitrificate) is provided for in specially adapted premises at the Jaslovské Bohunice site.
- Conditioned RAW from operation and decommissioning of NPPs, as well as conditioned IRAW meeting the acceptance criteria are stored in RÚ RAO in Mochovce.
- Radioactive waste that does not meet the criteria for disposal in RÚ RAO is stored long-term at the site of the nuclear power plants. The IS RAW was built at the Jaslovské Bohunice site for storage of RAW that cannot be disposed at RÚ RAO. The Integral Storage Facility for RAW, *which was put into active operation in February 2018*, consists of a self-standing building of a hall type with modular arrangement with the possible further extension.
- RAW that does not meet the storage criteria for surface type of repository, will be disposed in the deep repository. *Stage 1 of the development of the deep geological repository, stage 2 – Part 1 of*

repository siting. In 2019, the preparation for the Development of deep geological repository stage 2 – Part 2 was initiated.

The costs of transporting and management of RAW from decommissioned nuclear installations *are covered mainly from the National Nuclear Fund. The EU and other donors' funds allocated in the Bohunice International Decommissioning Support Fund (BIDSF) under the European Bank for Reconstruction and Development (EBRD) or in the framework of the national management, the so-called national pathway under the SIEA, are used as co-financing to cover the RAW management activities in the framework of the V-1 NPP decommissioning projects.* The costs of shipments and management of RAW and SNF from the NPP operation are covered from the operational costs of producers of radioactive waste and SNF.

In the updated document "National Programme for the Management of Spent Nuclear Fuel and Radioactive Waste in the Slovak Republic", which is expected to be approved by the Government in early 2025 at the latest, the RAW management strategy also includes data on financial costs and financing, the capacities of the individual technologies in all phases of RAW management up to the final disposal of VLLW and LLW in the Mochovce repository. It also defines the needs for ensuring the management of RAW that cannot be disposed of in this repository, based on the current and future needs determined by the ongoing decommissioning of the A-1 nuclear power plant and the two units of the V-1 nuclear power plant in addition to the existing operation of the units at Jaslovské Bohunice and Mochovce.

B RECENT DEVELOPMENTS

Developments in the area of back-end of the fuel cycle of the peaceful use of nuclear energy in the SR in the period since the last report in *2018,* can be characterized as the continuation of the implementation of the strategy that has been embodied in the national programme **(see section K of this Report)**.

This development is characterized by the continuation in the phased decommissioning of nuclear power plants A-1 and V-1 in Jaslovské Bohunice, storage of SNF from the shut-down Units of NPP V-1 and from the operated units of NPP V-2 and EMO 1&2 in ISFS in Jaslovské Bohunice and the management of RAW from the decommissioning of NPP A-1 and NPP V-1, from the operated Units, as well as the institutional RAW, *abandoned sources and captured radioactive waste* on the existing treatment technology aimed at creating the final form that can be disposed in the National Repository for RAW in Mochovce.

Along that, part of this development was the provision of additional facilities, specified by the strategy and the programme, needed to create conditions for enhancing safety and improving and optimizing the overall process in decommissioning of Nuclear Installations (NI) and management of SNF and RAW.

Such activities include, in particular:

- Completion of storage capacities for SNF in Jaslovské Bohunice.
- *Optimization of treatment capacity for HP compacting*
- Change of the system for treatment of liquid radioactive concentrates in Mochovce NPP in a form of separation of radionuclides from liquid concentrates.
- Implementation of a strategy for deep geological repository, including public involvement/public consultations, site selection criteria, etc.

These core activities, since the last report from 2015, include also the adoption of a new Nuclear Fund Act No. 308/2018 Coll. and new Radiation Protection Act No. 87/2018 Coll.

The main activities in the field of decommissioning of NI include the continuation in stage 3 and 4 of decommissioning *and preparation for stage 5 of decommissioning* of NPP A-1, and continuation in stage 2 of decommissioning of NPP V-1.

These activities are described in more detail in section K of this Report.

C SCOPE AND INVENTORY (Art. 2, 12.1(C), 14.2(b))

Criteria Used to Define and Classify Radioactive Waste

In the Slovak Republic, according to the legal definition contained in Section 5 k) of Act No. 541/2004 Coll. (Atomic Act), radioactive waste shall mean any unusable material in gaseous, liquid or solid form, which due to the content of radio-nuclides or due to the level of their contamination with radionuclides cannot be released into the environment.

The limit of concentrations allowing release radioactive substances to the environment for the individual radionuclides is stated in Annex 5 to the Act No. 87/2018 Coll. on Radiation Protection.

Classification of radioactive waste (according to the IAEA GSG-1 Classification of Radioactive Waste) is based on their activity and is defined by Section 5 of the ÚJD SR Decree No. 30/2012 Coll., laying down the details of the requirements for the management of nuclear materials, radioactive waste and spent nuclear fuel (hereinafter only as "ÚJD SR Decree No. 30/2012. Coll. "):

a) **Transient radioactive wastes** whose activity falls below the limit value for their introduction to the environment during storage;

b) **Very low-level radioactive waste**, whose activity is slightly higher than the limit value for their introduction to the environment, contain mainly radionuclides with a short half-life, or also a low concentration of radionuclides with a long half-life, and which during storage require a lower degree of isolation from the environment through a system of engineered barriers, as in the case of surface-type radioactive waste repositories;

c) **Low-level radioactive waste**, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is less than 400 Bq/g, maximum specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is locally less than 4000 Bq/g, does not produce residual heat, and following treatment meet safe operating limits and conditions for surface-type radioactive waste repositories;

d) **Medium-level radioactive waste**, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is equal to or over 400 Bq/g, may produce residual heat and measures for its removal are less than in the case of highly active radioactive waste, and which following treatment do not meet safe operating limits and conditions for surface-type radioactive waste repositories;

e) **Highly-active radioactive waste**, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, exceeds values specified for low-activity radioactive waste requiring measures for the removal of residual heat and can be deposited only in an underground-type radioactive waste repository.

The inventories of spent nuclear fuel and of radioactive waste is listed in annexes III and IV.

This Report does not deal with waste covered under Directive 2006/21/EC of the EP and of the Council on the management of waste from extractive industries, amending Directive 2004/35/EC.

NPP V-2	Inventory as at 31/12/2023	Activity (GBq)	Future production 40-year operation	Activity (GBq)	Future production 60-year operation	Activity (GBq)
Concentrate (m^3)	*957*	*86,3*	*257*	*32,3*	*1 033*	*84,6*
Sorbents (m^3)	*96,37*	*182*	*69*	*86,4*	*156*	*223*
Compactable (t)	*12,606*	*0,15*	*90*	*1,01*	*194,5*	*2,35*
Combustible (t)	*10,009*	*1,31*	*134*	*17,2*	*305,5*	*41*
Metal (t)	*1,77*	*0,005*	*37*	*0,85*	*74,5*	*2,11*
NPP EMO1&2	**Inventory as at 31/12/2023**	**Activity (GBq)**	**Future production 40-year operation**	**Activity (GBq)**	**Future production 60-year operation**	**Activity (GBq)**
Concentrate (m^3)	*995,4*	*1 455*	*824*	*190*	*1 536,5*	*345*
Sorbents (m^3)	*5,8*	*400*	*214*	*2 740*	*362*	*4 580*
Compactable (t)	*5,716*	*0,13*	*164*	*3,91*	*289*	*6,82*
Combustible (t)	*19,068*	*11,3*	*296*	*182*	*520,25*	*315*
Metal (t)	*5,172*	*0,13*	*42*	*0,058*	*73,25*	*0,077*
NPP MO3&4	**-**	**-**	**Future production 40-year operation**	**Activity (GBq)**	**Future production 60-year operation**	**Activity (GBq)**
Concentrate (m^3)			*1 498*	*190*	*2 210,5*	*345*
Sorbents (m^3)			*302*	*2 240*	*442*	*3 980*
Compactable (t)			*265*	*3,79*	*388*	*6,66*
Combustible (t)			*487*	*179*	*709,5*	*311*
Metal (t)			*70*	*0,058*	*101,3*	*0,077*

Table 1: Examples of estimates of total amounts of RAW from decommissioning of nuclear installations in cubic meters or tonnes. For further data see the National Programme for SNF and RAW management in the SR.

As regards the future prospects of generating radioactive waste and spent nuclear fuel in the SR, this information can be found in the National Programme, which is available on the website of the National Nuclear Fund for Decommissioning of Nuclear Installations and for the Management of Spent Nuclear fuel and Radioactive Waste ("NJF"):

http://www.njf.sk/dokumenty/politika_a_program/The_National_Programme_for_handling_of_SNF_and_RW_in_SR.pdf *In the February 2024, an update of the National Programme for Spent Fuel Management and RAW Management in the SR was released, providing updated estimates of future RAW production. The document is published on the website of NJF: https://www.njf.sk/wp-content/uploads/2024/04/Vnutrostatny-program-aktualizacia-februar-2024.pdf.*

D GENERAL PRINCIPLES AND POLICIES (Art. 4)

1. *Member States shall establish and maintain national policies on spent fuel and radioactive waste management. Without prejudice to Article 2(3), each Member State shall have ultimate responsibility for management of the spent fuel and radioactive waste generated in it. EN L 199/52 Official Journal of the European Union 2.8.2011*

2. *Where radioactive waste or spent fuel is shipped for processing or reprocessing to a Member State or a third country, the ultimate responsibility for the safe and responsible disposal of those materials, including any waste as a by-product, shall remain with the Member State or third country from which the radioactive material was shipped.*

3. *National policies shall be based on all of the following principles:*
   a) *the generation of radioactive waste shall be kept to the minimum which is reasonably practicable, both in terms of activity and volume, by means of appropriate design measures and of operating and decommissioning practices, including the recycling and reuse of materials;*
   b) *the interdependencies between all steps in spent fuel and radioactive waste generation and management shall be taken into account;*
   c) *spent fuel and radioactive waste shall be safely managed, including in the long term with passive safety features;*
   d) *implementation of measures shall follow a graded approach;*
   e) *the costs for the management of spent fuel and radioactive waste shall be borne by those who generated those materials;*
   f) *an evidence-based and documented decision-making process shall be applied with regard to all stages of the management of spent fuel and radioactive waste.*

4. *Radioactive waste shall be disposed of in the Member State in which it was generated, unless at the time of shipment an agreement, taking into account the criteria established by the Commission in accordance with Article 16(2) of Directive 2006/117/Euratom, has entered into force between the Member State concerned and another Member State or a third country to use a disposal facility in one of them.*

   Prior to a shipment to a third country, the exporting Member State shall inform the Commission of the content of any such agreement and take reasonable measures to be assured that:

   a) *the country of destination has concluded an agreement with the Community covering spent fuel and radioactive waste management or is a party to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management ('the Joint Convention');*

   b) *the country of destination has radioactive waste management and disposal programmes with objectives representing a high level of safety equivalent to those established by this Directive;*

c) *the disposal facility in the country of destination is authorised for the radioactive waste to be shipped, is operating prior to the shipment, and is managed in accordance with the requirements set down in the radioactive waste management and disposal programme of that country of destination.*

Act No. 541/2004 Coll. (Atomic Act) in Section 21 (11) defines that all activities in the management of radioactive waste must be directed towards their safe disposal. The Principles of Radioactive Waste Management (IAEA 1995), effective RAW management considers the basic steps in the RAW management process as part of the overall system from production to disposal. As decisions made in one step may preclude certain alternatives in the next step, the RADWASS programme emphasizes the importance of taking into account the interdependence between all steps during the planning, design, construction, operation and decommissioning of RAW management facilities.

In accordance with these IAEA principles, the Act no. 541/2004 Coll. (Atomic Act) in § 21, par. 11 defines that all activities in the management of radioactive waste must be aimed at their safe disposal. Details on the requirements for the management of spent nuclear fuel and radioactive waste, including their treatment, conditioning and disposal, are set out in the ÚJD SR Decree no. 30/2012 Coll. Coordination between supervisory authorities is also specified in Act no. 87/2018 Coll. on radiation protection.

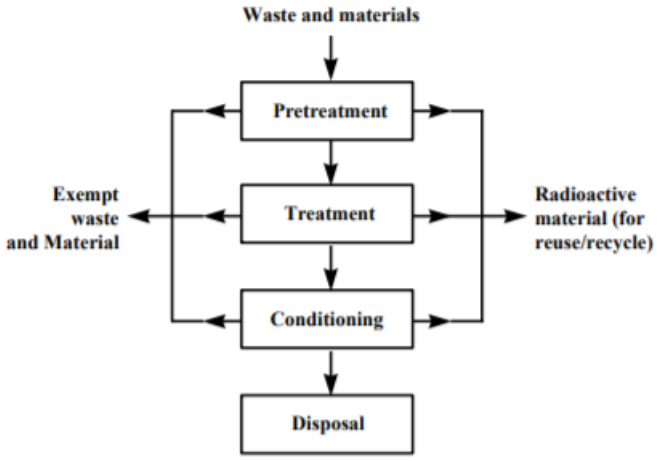

Fig. 2: Basic steps in RAW management. Source: IAEA

National Policy for Spent Fuel Management (SNF) and Radioactive Waste (RAW) Management

The Board of Trustees of the National Nuclear Fund for Decommissioning of Nuclear Installations and for the Management of Spent Nuclear Fuel and Radioactive Waste ("NJF") in cooperation with other stakeholders elaborates:

a) Draft National Policy for the Management of Spent Nuclear Fuel and Radioactive Waste (hereinafter only as the "National Policy") and
b) Draft National Programme for the Implementation of the National Policy (hereinafter only as the "National Programme").

The National Policy is based on the following principles:

a) The Slovak Republic has the ultimate responsibility for the decommissioning of nuclear installations located in the SR, for the safe and responsible long-term storage and disposal of spent nuclear fuel and for the radioactive waste management, which has been produced in its territory after its takeover from the producer,
b) The ultimate responsibility for the safe and responsible disposal of radioactive waste or of spent fuel to be transported from the Slovak Republic for conditioning or reprocessing to a Member State of the European Union or to a third country, including any waste generated as a by-product of conditioning or reprocessing, is borne by the Slovak Republic, unless the international treaty, by which the Slovak Republic is bound, stipulates otherwise,
c) Production of radioactive waste in terms of its activity and volume is maintained at the lowest level, which is reasonably achievable, by means of appropriate design measures and operating procedures and decommissioning practices, including recycling and reuse of materials,
d) The interdependencies between all steps of spent nuclear fuel and radioactive waste management are taken into account,
e) Management of spent nuclear fuel and radioactive waste shall be safe, even in the long-term, especially when applying passive safety features,
f) Graded approach is applied in the management of spent nuclear fuel and radioactive waste, taking into account in particular its activity, amount, type of nuclear installation, in which they are handled and their other hazardous properties,
g) The costs of management of spent nuclear fuel and radioactive waste shall be borne by the person, who produced them, in case of an unknown originator, appropriate measures are taken,
h) Documenting the decision-making process is based on evidence and results of characterization at all stages of management of spent nuclear fuel and radioactive waste.

The National Policy for Spent Nuclear Fuel and Radioactive Waste Management, as well as the National Programme for spent nuclear fuel and radioactive waste management were approved by the Government Resolution No. 387/2015 on 8 July 2015. These documents are available on the website of NJF: https://www.njf.sk/dokumenty/vnutrostatna-politika-a-program/

The following objectives are specified in the policy section of the updated document "National Programme for the Management of Spent Nuclear Fuel and Radioactive Waste in the Slovak Republic" in the area of management of SNF and RAW, management of IRAW and RMNP and decommissioning of nuclear facilities in the Slovak Republic:

1. *Achieve a long-term sustainable and stable direction for the management of SNF and RAW in Slovakia with regard to a high level of safety in the management of spent nuclear fuel, radioactive waste, as well as other sources of ionising radiation and by continuously improving national measures and international cooperation, including technical cooperation in the field of both nuclear and radiation safety.*

2. *Ensure that at all stages of the management of spent nuclear fuel, radioactive waste and other sources of ionising radiation in Slovakia there is effective protection against potential hazards and that radiation protection of individuals, society and the environment is ensured.*
3. *Ensure that future generations are not unduly burdened by the use of nuclear energy in accordance with the principles of sustainability.*
4. *Ensure technically optimal and economically efficient management of spent nuclear fuel, radioactive waste and disused sources of ionising radiation, aimed at their safe permanent disposal, using available technical means and financial resources.*
5. *Safe, reliable and cost-effective decommissioning of nuclear installations at the given time and from available financial resources.*
6. *Ensure transparency in the SNF and RAW management, and timely, systematic and sufficient information to stakeholders, and their effective involvement in the decision-making processes in the management of spent nuclear fuel and radioactive waste.*
7. *Provide for a functional infrastructure, sustainable development of science, research, as well as the preservation and transfer of information, increasing qualification and knowledge in the back-end of the cycle of peaceful uses of nuclear energy, and management of sources of ionizing radiation.*
8. *Continue the development of a deep geological repository in the SR, and possibly other disposal capacities in the future so that in due course, the Slovak Republic would have secured disposal of spent fuel and all types of radioactive waste. Update the plan for a deep geological repository every six years.*
9. *Fulfil Slovakia´s obligations arising from international conventions, recommendations and EU Directives in the field of spent nuclear fuel management and radioactive waste management.*
10. *Create conditions for the acceptability of long-term environmental burden from SNF management or RAW disposal by the public concerned.*
11. *Ensure that sufficient funds are available for all activities of the back-end nuclear energy cycle and the management of RMNP and IRAW so that they area available in the volume and time required. Seek new ways to capitalise on the changing economic fundamentals of the NJF.*
12. *Ensure that disbursement of NNF funds is guided solely by approved strategic, conceptual and up-to-date plans for the activities of back-end of the nuclear energy cycle and the management of RMNP and IRAW.*

The Board of Trustees of NJF, together with relevant stakeholders, elaborates a report on the implementation of the National Programme once a year for the previous year and, together with ÚJD SR´s opinion, submits it for approval to the MH SR.

Radioactive Waste Generation Minimization Program

The requirement for minimization of RAW production is set out in the Act No. 541/2004 Coll. (Atomic Act). The Act No. 87/2018 Coll. on radiation protection requires the licence holder to limit production of radioactive waste to unavoidable level. The principle of minimizing RAW production is applied in accordance with the legislative requirements. Fulfilment of the programs for production and management of RAW is reviewed annually in the "RAW Management Report". This report proposes new measures to minimize RAW production for the following period.

Two documents have been elaborated for radioactive materials containing radioactive nuclides below the clearance level. The "Proposed Procedure for Measuring Low-level Contaminated Materials from the Operation of NPP V-, V2 and their Release into the Environment" and the "Methodology for the Release of Low-level Contaminated Waste from the Operation of NPP V1, V2 to the Environment." Authorization for placing radioactive substances to the environment was issued in 2003 by the Public Health Authority of the SR for the Jaslovské Bohunice site and in 2004 for the Mochovce site. *ÚVZ SR issued also new decisions in December 2023, and January 2024 regarding the release of RA-substances from administrative control.*

Connection between Stages of Radioactive Waste (RAW) Management

Basic information for correct identification and categorization of RAW during packaging and handover, or during takeover for the purpose of treatment and conditioning in the relevant technological facility provides document "Generic Catalogue of Radioactive Waste" (PP 15-INŠ—001, rev. 3), which was prepared by JAVYS, a. s.

The document also defines principles and conditions for RAW acceptance to be treated and conditioned so as to meet the requirements for creating a product during the treatment and conditioning of these RAW, which would comply with criteria for permanent disposal at RÚ RAO Mochovce and would not endanger safety operating personnel during any further manipulations of RAW including transports. The criteria of acceptance are included in limits and conditions of relevant installation.

Responsibility	***Long-term policy***	***Financing of commitments***	***Current practice/installations***	***Planned installations***
Spent fuel	*Two options: deep repository or transnational solution*	*From the National Nuclear Fund*	*Long-term storage in ISFS (Interim Spent Fuel Storage)*	*Dry storage facility, deep repository*
Wastes from fuel cycle	*Deep / surface type repository*	*From the National Nuclear Fund*	*Disposal of low-level RAW* *(National Repository low-level RAW)*	*Deep repository for high-level RAW*
Institutional waste	*Storage facility in operation in Mochovce / repository*	*Repatriation or financial guarantee*	*Storage facility in operation in Mochovce / repository*	*Repository* *(with some exceptions)*

Liabilities for decommissioning	*Immediate continuous decommissioning*	*National Nuclear Fund +* *EU funds*	*Immediate continuous decommissioning;* *Repository for contaminated soil and building materials Mochovce;* *+ Integral storage of RAW in Bohunice*	
Used sealed sources	*Storage facility in operation in Mochovce / repository*	*Repatriation or financial guarantee*	*Storage facility in operation in Mochovce*	*Repository*

Table 2: Overview matrix of long-term management of RAW and SNF

A part of the document "Plan of Radioactive Waste and Spent Nuclear Fuel Management Including their Transport", which is submitted by the operator and reviewed by ÚJD SR prior to construction and operation of RAW management facilities, are also descriptions and analyses of RAW streams containing the following activities:

- Storage of untreated RAW;
- RAW treatment,
- Storage of intermediate products,
- Shipment between individual steps,
- RAW conditioning.

Prior to starting the RAW management itself, it is necessary to characterize the physical and chemical and radiochemical properties of a specific type of RAW, stated on the accompanying sheet of RAW in the packaging (required by the ÚJD SR Decree No.30/2012 Coll.). The accompanying sheet is handed over together with RAW at individual stages of activities relating to RAW management.

Safety requirements on particular activities are listed in the ÚJD SR Decree No. 30/2012 Coll., laying down the details on the requirements for nuclear materials, radioactive waste and spent nuclear fuel management.

Before commissioning and during operation, operational procedures, which take into account relations between individual steps of RAW management, are elaborated and improved. *During the operation of NPP, the process of RAW and SNF management is described in separate documents: RAW Management Plan and SNF Management Plan for the given plant, which are approved by the ÚJD SR*. The handing-over of RAW within JAVYS, a. s., and between the producer of RAW and JAVYS, a. s., is subject to operational procedures and is contractually covered.

The process of SNF and RAW management is schematically described in Fig. 3 and 4.

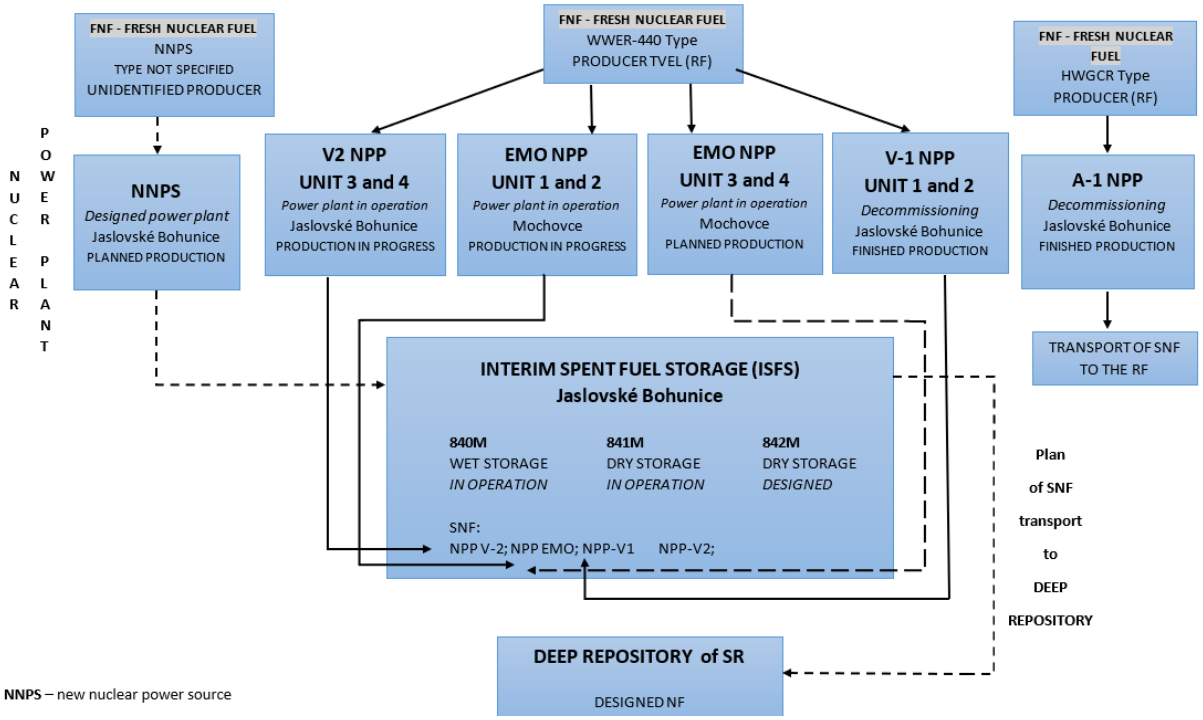

Fig. 3: SNF management scheme

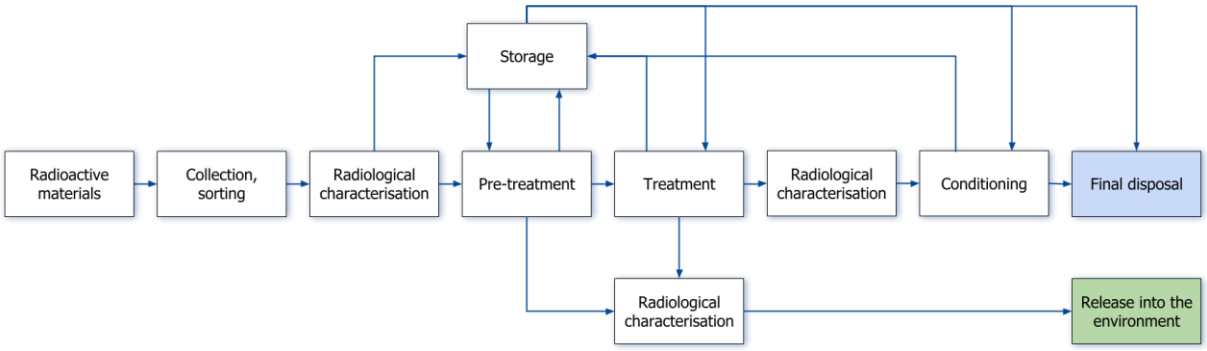

Fig. 4: Basic scheme of management of RA-materials

E NATIONAL FRAMEWORK (Art. 5)

1. *Member States shall establish and maintain a national legislative, regulatory and organisational framework ('national framework') for spent fuel and radioactive waste management that allocates responsibility and provides for coordination between relevant competent bodies. The national framework shall provide for all of the following:*
   a) *a national programme for the implementation of spent fuel and radioactive waste management policy;*
   b) *national arrangements for the safety of spent fuel and radioactive waste management. The determination of how those arrangements are to be adopted and through which instrument they are to be applied rests within the competence of the Member States;*
   c) *a system of licensing of spent fuel and radioactive waste management activities, facilities or both, including the prohibition of spent fuel or radioactive waste management activities, of the operation of a spent fuel or radioactive waste management facility without a licence or both and, if appropriate, prescribing conditions for further management of the activity, facility or both;*
   d) *a system of appropriate control, a management system, regulatory inspections, documentation and reporting obligations for radioactive waste and spent fuel management activities, facilities or both, including appropriate measures for the post-closure periods of disposal facilities;*
   e) *enforcement actions, including the suspension of activities and the modification, expiration or revocation of a licence together with requirements, if appropriate, for alternative solutions that lead to improved safety;*
   f) *the allocation of responsibility to the bodies involved in the different steps of spent fuel and radioactive waste management; in particular, the national framework shall give primary responsibility for the spent fuel and radioactive waste to their generators or, under specific circumstances, to a licence holder to whom this responsibility has been entrusted by competent bodies;*
   g) *national requirements for public information and participation;*
   h) *the financing scheme(s) for spent fuel and radioactive waste management in accordance with Article 9.*
2. *Member States shall ensure that the national framework is improved where appropriate, taking into account operating experience, insights gained from the decision-making process referred to in Article 4(3)(f), and the development of relevant technology and research.*

Introduction

Brief information on the National Programme for the implementation of spent fuel and radioactive waste management policy can be found in sections D. *The scheme of the licensing procedure can be found in Fig. 7 in Section F. Information on informing the public is given in Section J.*

E.1 Legislative and Regulatory Framework

The legal system of the Slovak Republic is divided as follows:

1. The Constitution of the *Slovak Republic (No. 460/1992 Coll. as amended)* as the supreme basic act of the State approved by the National Council of the Slovak Republic, by at least 3/5 majority of all deputies – is generally binding.
2. Constitutional laws – also approved by the National Council of the Slovak Republic by at least 3/5 majority of all the deputies – are generally binding.
3. The Acts stipulate the basic rights and obligations specifying the principles in different areas and are approved by the National Council of the Slovak Republic – *are generally binding. NC SR adopts them by absolute majority of the Members present*.
4. Government Ordinances *are issued by the Government*. *Government Ordinances may not impose obligations, amend or supplement legislation beyond the scope of the law or regulate social relations not governed by law; this does not apply, in case of Government Ordinance under Art. 120 (2) of the Constitution (hereinafter only as the "approximation Government Ordinance"), which transposes or implements legal acts or international treaties*.
5. Decrees and measures are *legal provisions issued by central government bodies to be promulgated in the collection of laws; this designation may not be applied to regulations, which are not of general binding force*.
6. Slovak Technical Standards (STN), European Technical Standards (STN EN) and International Technical Standards (STN ISO) – are recommendatory.
7. Guides (manuals) contain detailed requirements and recommended steps to ensure that requirements are met. They are issued by the regulatory authorities.
8. Internal standards (such as directives and orders) are the internal organizational rules of the supervisor and form the basis for the internal quality assurance system of the regulator – are recommendatory in their nature.

E.2 Acts in the field of State Regulation

The use of nuclear energy is governed by the **Act No. 541/2004 Coll.** (**Atomic Act**). The Atomic Act and the subsequent decrees define the basic rules, including a licensing system for the management of SNF and RAW, and ban of such management without the appropriate authorization. The said legal regulations also define the system of regulatory activities and control of management of this waste. The Act No. 541/2004 Coll. (Atomic Act) came into effect on 1st December 2004 and repealed the previous Atomic Act No. 130/1998 Coll., as well as all its implementing decrees. Since the Act No. 541/2004 Coll. (Atomic Act) is in force, it has been amended twenty-*eight* times.

The Act No. 541/2004 Coll. (Atomic Act) lays down conditions for safe use of nuclear energy exclusively for peaceful purposes in accordance with international treaties binding for the Slovak Republic.

(1) This Act governs inter alia:

a) The peaceful uses of nuclear energy,

b) The state administration, state regulation and the responsibilities of ÚJD SR,

c) Categorization of nuclear materials, conditions for the management of nuclear materials,

d) The safe and responsible management of radioactive waste and spent nuclear fuel, so as to avoid imposing undue burdens on future generations and ensuring the protection of workers and the public,

e) The continuous improvement of nuclear safety,

f) Verification of special professional competence of staff of licence holders,

g) Emergency preparedness.

h) Rights and obligations of natural persons and legal entities in peaceful use of nuclear energy,

i) Offences and other administrative delicts in the field of nuclear regulation.

(2) Cross-border shipments of radioactive waste and spent nuclear fuel including spent nuclear fuel exported for reprocessing, etc.

In accordance with the Atomic Act, the nuclear installation is defined as a set of civil building objects and the necessary technology in the configuration set by the design designed for:

1. Generation of electric energy or for research in the field of nuclear energy, part of which is a nuclear reactor or nuclear reactors, which will utilize, or are utilizing controlled fission chain reaction,
2. Management of nuclear materials in volumes greater than one effective kilogram, except for storage areas, containers and shelters, where nuclear material is used as shielding material for radioactive sources, facilities for treatment of uranium ore and storage of uranium yellowcake,
3. Management of spent nuclear fuel,
4. Management of radioactive waste, or
5. Uranium enrichment or fabrication of nuclear fuel.

The Act No. 143/2013 Coll. amended the Act No. 541/2004 Coll. (Atomic Act) and the Act No. 238/2006 Coll. on the National Nuclear Fund due to a consistent transposition of the Council Directive 2011/70/Euratom of 19 July 2011, establishing the Community framework for the responsible and safe management of spent fuel and radioactive waste.

As a result of transposition of Council Directive 2014/87/Euratom of 08 July 2014, amending Council Directive 2009/71/Euratom, establishing a Community framework for nuclear safety of nuclear installations, ÚJD SR prepared an amendment to the Act No. 541/2004 Coll. (Atomic Act). This amendment to the Atomic Act also partially transposes Council Directive 2013/59/Euratom laying down basic safety standards for protection against the dangers arising from ionizing radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 96/29/Euratom, 97/43/Euratom and 2003/122/Euratom

(the so called “new Basic Safety Standards“), tightens in particular the safety requirements for nuclear installations (in-depth protection, nuclear safety culture, qualified staff, contractors), introduces new definitions (abnormal operation, design basis, design-basis accident, severe conditions),regulates transparency, public access to information, emergency preparedness and response, the contact point and also introduces peer reviews (self-assessment – 10-year cycle and thematic reviews – 6-year cycle). The amendment was published in the Collection of Laws of the SR under No. 96/2017 and entered into force on 01 August 2017.

Further amendments to Act No. 541/2004 Coll. (Atomic Act) introduced by Acts No. 18/2018 Coll., No. 87/2018 Coll. on radiation protection, No. 177/2018 Coll, No. 308/2018 Coll. and No. 279/2019 Coll. were mainly aimed at reflecting partial amendments in relation to radiation protection, the protection of personal data, measures against the red tape, the economy of proceedings, the treatment of information which the Act grants protection, and the uniform regulation of the method of delivery in the licensing process for nuclear installations.

Act No. 363/2021 Coll., amending Act No. 541/2004 Coll. (the Atomic Act) stipulated that the UJD SR issues an authorisation for the siting of a nuclear installation, but only of the reactor type, in terms of nuclear safety, physical protection and radiation protection. As a result, the authorisation process has been tightened, with the addition of an extra step in the administrative procedure, i.e. siting will be a two-step process. In this step it is no longer necessary to submit documentation demonstrating the civil-technical and structural design of the building, no decision is taken on the location of specific nuclear source facilities. This will be dealt with in the subsequent authorisation process (planning and construction procedures) while maintaining the highest level of safety of the new facility according to the scientific evidence at the time. The siting decision will set out the boundary conditions and requirements for the new source (performance, safety, etc.). The prospective contractor will have to comply with all the requirements set out in the siting authorisation, thus ensuring the highest possible level of safety and transparency in the selection of a specific project.

Civil liability for nuclear damage suffered as a consequence of a nuclear accident is governed by the **Act No. 54/2015 Coll. on civil liability for nuclear damage and its financial coverage.** This act entered into force on 01 January 2016. Among others, it sets an amount of EUR 300,000,000 as the operator´s financial liability limit for nuclear damage caused by nuclear incident at a nuclear installation for energy purposes, and an amount of EUR 185,000,000 as a limit of financial liability of the operator for other nuclear installations, the transport of radioactive materials and nuclear installations in decommissioning.

Generally binding legal regulations implementing the Atomic Act and issued by ÚJD SR in a form of decrees are listed in Annex V.

ÚJD SR also issues safety guides to explain and specify in more details the legal requirements (Annex VI.).

The Act No. 575/2001 Coll. on Organization of Governmental Activities and of Central State Administration as amended (hereinafter only as “Act 575/2001 Coll.“) defines the framework of tasks

and responsibilities of central state administration authorities. The provision on ÚJD SR is contained in section 29 of the Competence Act.

The Act No. 251/2012 Coll. on the energy sector, repealed *and replaced* the original Act No. 656/2004 Coll. on the energy sector. The Energy Act governs the terms and conditions for doing business in the nuclear energy sector as well as the rights and obligations of legal entities doing business in this field, as well as the state supervision and control over doing business in the energy sector.

The Act No. 250/2012 Coll. on regulation in network industries governs conditions and the method of regulation in network industries. Network industry covers the power generation sector. Activities performed in the network industries are considered as regulated activities, which require permit from the Regulatory Office for Network Industries. This Act governs the conditions under which regulated activities are performed, the duties of regulated subjects and the rules of the internal electricity and gas market.

The Act No. 24/2006 Coll. on environmental impact assessment with the aim to strengthen and ensure high environmental protection, the Act establishes a procedure for expert and public environmental impact assessment:

1. Strategic documents *during their preparation and* prior to their approval (e. g., concept for radioactive waste and spent nuclear fuel management, the national programme of radioactive waste and spent nuclear fuel management); and
2. Proposed activities prior to the decision on their siting or prior to their approval according to special regulations (construction of nuclear installations and relating activities).

The Act defines activities that are obligatory subject to international assessment from the aspect of their environmental impact, that is transboundary:

- Nuclear power plants and other nuclear reactors (except research installations for the production and conversion of fissile and enriched materials, where the maximal thermal output does not exceed 1 kW of continuous thermal output) including their decommissioning and disposal. Nuclear power plants and nuclear reactors cease to be such facilities when the nuclear fuel and other radioactively contaminated elements are permanently removed from their territory.
- Installations intended solely for the production or enrichment of nuclear fuel, for the reprocessing or storage of spent nuclear fuel, and for the storage and treatment of radioactive waste.

The Ministry of Environment of the Slovak Republic is the competent authority to assess transboundary environmental impacts.

Effective from 1 January 2019, the ***Act No. 308/2018 Coll. on the National Nuclear Fund and on amendments to Act No. 541/2004 Coll. on the peaceful uses of nuclear energy (Atomic Act) as amended (Act on Nuclear Fund), was adopted.*** The Nuclear Fund is an independent legal entity, which is managed by the MH SR. The Fund has its own bodies (Council of Administrators, Supervisors Board, Director, managers of sub-accounts, auditor). The sources of the Nuclear Fund are various – obligatory contributions, obligatory payments, transfer from the expenditure budget account of the Ministry of Economy, as a levy, which is collected by the transmission system operator and distribution

system operator intended to pay historical debt, which is part of the price of electricity supplied to final electricity customers, fines and sanctions imposed by ÚJD SR, income from deposits, subsidies and contributions from EU funds and other international organizations, financial institutions and funds provided to cover the costs of the back-end of the cycle of the peaceful use of nuclear energy, the state budget and others. The details on the method of collection and payment of mandatory contributions, including its calculation is specified by the Government Regulation No. 22/2019 Coll.

The Act No. 87/2018 Coll. on radiation protection and on amendments to certain laws *as amended* regulates the performance of state administration in the field of radiation protection, the conditions for carrying out activities leading to exposure, and activities in the environment with natural sources of radiation, requirements for the management of radioactive substances, institutional radioactive waste and radioactive materials of unknown origin, transit of radioactive materials, protection of staff and the population against radon exposure in the indoor of the buildings, external exposure from building materials and persisting exposure resulting from emergency situation or as a result of human activity in the past, ensuring security of the radioactive source, preparedness for emergency situations from exposure, monitoring of radiation situation and radiation monitoring network, limitation of exposure from drinking water, natural mineral water and spring water, obligations of natural persons and legal entities in the provision of radiation protection, offences, other administrative delicts and sanctions in the field of radiation protection. Performing activities *leading to exposure* and providing services important in terms of radiation protection in relation to the level of potential radiation risk are divided into activities that are excluded from the operation of the law, activities subject to notification obligation, activities and services subject to registration and activities and services performed under the authorization. The Act also defines the requirements to ensure physical protection when using radioactive sources *and during their transport,* to prevent misuse of radioactive sources for illicit handling, including the possibility of their misuse for terrorist purposes. Details on the requirements for ensuring radiation protection for the implementation of the Act are laid down in the implementing decrees of the Ministry of Health of the SR listed in Annex V.

Act No. 87/2018 Coll. on radiation protection was amended in 2023. The amendment of the Act was based on the fulfilment of the requirements defined in the Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against the dangers arising from ionising radiation, and was in line with the requirements of the European Commission set out in the formal Communication No C (2020) 6976 final on Act No 87/2018 Coll. on radiation protection. The aim was to propose new transposition provisions into national law for specific provisions that the European Commission could not identify as being fully transposed.

The Act No. 125/2006 Coll. on labour inspection and on amendments to Act No. 82/2005 Coll. on illegal work and illegal employment, and on amendments to certain laws governs the labour inspection, through which it promotes protection of employees at work and execution of state administration in labour inspection, defines the competencies of bodies of state administration in labour inspection and their competence in executing oversight according to special regulation *(Act No. 56/2018 Coll. on product conformity assessment, making a designated product available on the market and on*

amendments to certain laws), establishes rights and obligations of labour inspector and duties of natural and legal entities. Related generally binding legal regulations are listed in Annex V.

The Act No. 124/2006 Coll. on occupational health and safety and on amendments to certain laws lays down the general principles for prevention and the basic conditions for ensuring occupational health and safety, to exclude risks and factors underlying the emergence of industrial accidents, occupational diseases and other damage to health from work. An integral part of occupational health and safety is the safety of technical equipment. The follow up generally binding legal regulations are listed in Annex V.

Amending the **Act No. 50/1976 Coll. on spatial planning and the construction code** (the Construction Act) effective from 1 December 2004 ÚJD SR became a special building authority for constructions of nuclear installations and construction related to nuclear installation located within the premises of a nuclear installation.

Before issuing a decision on the siting of a building concerning a construction involving a nuclear installation, the Building Authority is obliged to request a binding opinion of the ÚJD SR, which may condition its approval. Act No. 279/2019 Coll., amending Act No. 541/2004 Coll. (Atomic Act) and Act No. 50/1976 Coll. (Building Act) came into force on 1 October 2019. Act No. 50/1976 Coll. was originally replaced with two completely new Acts, namely Act No. 200/2022 Coll. on spatial planning and Act No. 201/2022 Coll. on construction. According to the Act on construction, the ÚJD SR shall be a special building authority for construction of nuclear installations and structures related to nuclear installation. For the construction of nuclear installations and constructions related to a nuclear installation, the construction plan procedure shall be preceded by an environmental impact assessment procedure pursuant to a special regulation. The decision on the environmental impact assessment pursuant to the first sentence shall not replace the decision on the building permit for the construction of nuclear installations and nuclear-related construction. The decision on the environmental impact assessment and the decision on the building permit for the construction of a nuclear installation shall be the basis for the authorisation of activities under the Atomic Act. On 10 January 2024, the Slovak Government adopted the draft bill, amending Act No. 50/1976 Coll. on spatial planning and construction regulations (Building Act) as amended, and which amends certain laws, including abridged legislative procedure. Subsequently, this bill was forwarded to the National Council of the SR, which approved it as the final text on 13 February 2024. Act No. 46/2024 Coll., amending Act No. 50/1976 Coll. on spatial planning and building regulations (Building Act), as amended, and amending certain acts entered into force on 31 March 2024, except for selected articles. The aforementioned Act postponed the effectiveness of the Construction Act to 1 April 2025. The effectiveness of Act No. 200/2022 Coll. on spatial planning remained unchanged, i.e. it is effective from 1 April 2024. Currently, a working group has been set up at the Ministry of Transport of the SR, the aim of which is to prepare a further amendment to the construction legislation in the form of a new Building Act.

Act No. 364/2004 Coll. on waters and on amendments to the Act of the Slovak National Council No. 372/1990 Coll. on offences (Water Act) as amended, establishing the conditions for comprehensive

protection of waters, including acquatic ecosystems, preservation or improvement of the condition of waters, efficient, economical and sustainable use of waters.

Identification of the bodies responsible for the preparation and issuance of national regulations to meet the requirements for nuclear safety

ÚJD SR has prepared the following Bills, for example:

Generally binding legal regulations implementing the Act No. 541/2004 Coll. (Atomic Act) and issued by ÚJD SR in a form of decrees, are listed in Annex V.

ÚJD SR also issues safety guides to explain and specify in more details the legal requirements (Annex VI.).

Overview of the process of developing and revising national nuclear safety requirements, including stakeholder involvement

On 1 January 2016, the Act No. 400/2015 Coll. on development of legislation and on the Collection of Laws of the Slovak Republic and on amendments to certain laws, became effective.

Legislative rules of the Government of the Slovak Republic approved by a Government Resolution No.164 of 4 May 2016, as amended by Government Resolution No.441 of 28 September 2016, Resolution No.251 of 23 May 2018, Resolution No.242 of 29 May 2019, Resolution No.466 of 15 July 2020, Resolution, Resolution No.787 of 14 December 2022, Resolution No.356 of 6 July 2023 and Resolution No. 46 of 1 February 2024 – determine the binding rules for the development of generally binding legal regulations and regulate the procedure for the ministries and other public authorities. According to these documents, the submitter (in case of the Act No. 541/2004 Coll. (Atomic Act) and the implementing decrees it is ÚJD SR) drafts preliminary information on the draft law or decree, and sends it through the web portal Slov-lex to all concerned parties. Subsequently the draft law or decree will be sent for consultation with the business environment.

The submitter shall discuss the draft law with the competent authorities and institutions in the preliminary commenting procedure and then in the inter-ministerial commenting procedure, which is public and accessible via the Slov-lex portal, where the public can also make comments. The draft law shall be submitted for discussion to the Legislative Council of the Slovak Government.

After approval by the Legislative Council of the Slovak Government, the draft law follows the procedure of intra-community commenting within the EU under Art. 30 – 33 of the Euratom Treaty and as a technical regulation in a partially unharmonized area also under Directive of the European Parliament and the Council 2015/1535 of 9 September 2015, laying down a procedure for the provision of information in the field of technical regulations and rules on information society services. After passing this process, the bill is submitted to the Slovak Government.

The bill that has been approved by the Government is submitted to the National Council of the SR.

After the adoption of the law in the National Council of the SR and after signature by the President of the SR, the law is announced by publication in the Collection of Laws of the SR.

A list of selected national laws and implementing regulations is given in Annex V.

E.3 International Treaties and Conventions

The Slovak Republic is a party to various international treaties and conventions in the field of the peaceful use of nuclear energy, for example:

- Treaty on Non-Proliferation of Nuclear Weapons
- Statute of the International Atomic Energy Agency
- Agreement between the CSSR and the IAEA for the Application of Safeguards in connection with Treaty on the non-proliferation of nuclear weapons
- Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-bed and the Ocean Floor and in the Subsoil Thereof (Seabed Treaty)
- Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space and under Water
- Convention on Physical Protection of Nuclear Material
- Amendment to the Convention on Physical Protection of Nuclear Material
- Convention on Early Notification of a Nuclear Accident
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency
- Vienna Convention on Civil Liability for Nuclear Damage
- Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention
- Convention on Nuclear Safety
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management
- Comprehensive Nuclear Test-Ban Treaty

The Slovak Republic has concluded also bilateral intergovernmental agreements on peaceful uses of nuclear energy and information exchange with all neighbouring countries, as well as with other countries. These intergovernmental treaties also include cooperation or exchange of information in the field of spent nuclear fuel and radioactive waste management.

E.4 Regulatory Authorities and their Responsibilities

The system of regulatory authorities is specified in Sections F. The licensing process is specified in more detail in Section F.1.

An overview of the control and enforcement framework is specified in Section F, functionally divided into three main components – nuclear safety oversight, radiation safety oversight and occupational health and safety oversight.

The legislative framework for communication with the public in the field of nuclear energy is formed by the Freedom of Information Act and the Atomic Act for both regulatory authorities and licence holders.

Act No. 308/2018 Coll. in Section 7 defines the sources of funding of the Nuclear Fund. According to par. 1 (a) of that Section, the basic source are mandatory contributions from licence holders for the operation of nuclear installations. At present, Slovenské elektrárne, a. s. is obliged to pay the

contributions. The amount of mandatory contributions is determined and updated directly by the National Council of the SR, based on amendment of the Act on NJF. However, in order to move closer to international practice, it is expedient for the amount of contributions to be determined and updated in the future by an independent and professional body, based on legally established rules.

E.5 Coordination between regulators and improvements in the national framework

The general principles, on which the national policy is based, are as follows:

- The producer of radioactive waste is responsible for ensuring the safe management of radioactive waste in accordance with the national programme until it has been taken over at the repository, and the holder of permit for the management of radwaste is responsible for the safety of radioactive waste management facilities.
- The holder of a permit for the commissioning, operation and decommissioning is responsible for the safety aspects of a nuclear installation, including radioactive waste, it manages. If the licence holder manages radwaste in the nuclear installation, which was produced in a nuclear installation, in relation to which another entity is a licence holder, then at each step of the radioactive waste management, responsibility for the radwaste in the installation must be determined between the two licence holders, in which they are handled.
- IRAO and disused radioactive sources must be handed over to an authorized organization for further management no later than 12 months from their production in case of IRAO, or from the end of their use in case of radioactive sources.
- The management of spent nuclear fuel is the responsibility of the licence holder, who produced it, until it is taken over to the repository.
- In order to ensure nuclear safety and to prevent unjustified accumulation of radioactive waste and spent nuclear fuel, the licence holder is obliged, during commissioning of a nuclear installation and operation of a nuclear installation, to hand over radioactive waste, no later than 12 months after its generation and the spent fuel immediately after meeting the requirements for its safe shipment and disposal, to the legal entity appointed for its further management.
- Disposal of radioactive waste and spent nuclear fuel is the responsibility of a legal entity established or mandated by the Ministry of Economy of the SR, which must be a licence holder for the operation of a repository and the Slovak Republic must hold 100 percent ownership interest, and must not at the same time be a licence holder for the operation of a nuclear installation including a reactor.

As for decommissioning, the Slovak Republic has the ultimate responsibility for decommissioning of all nuclear installations located on its territory. This is implemented through:

- Obligations towards the licence holder for operation of the nuclear installation concerned, who is obliged to provide for its decommissioning, and becomes itself the licence holder for such decommissioning, or through another party, who based on a contract with the licence holder for

operation of the nuclear installation concerned, becomes the licence holder for its decommissioning.

The role of the licence holder in the management of SNF and RAW is specified in the ÚJD SR Decree No. 30/2012, laying down details of requirements for the management of nuclear materials, radioactive waste and spent nuclear fuel. A list of relevant laws and decrees is given in Annex V.

Improvement of the National Framework

Operational experience and knowledge gained in the decision-making process, development in the field of technology and research, and outputs from self-assessments and peer review missions, are used to improve the national framework of the SR. The Slovak Republic has an intense cooperation in particular with the neighbouring states, as well as with international organizations, including the IAEA or the OECD/NEA, participates in projects and ensures the exchange of information in the field of SNF and RAW management. The Slovak Republic invites international peer review missions to review the situation in the field of SNF and RAW management. The licence holder, JAVYS, a. s., uses operational experience as one of the tools to increase the safety of SNF and RAW management.

The role of the National Programme in the national framework

The National Policy of spent fuel and radwaste management in the SR, and the National Programme for the implementation of the National Policy were developed on the basis of Section 3a National Policy and National Programme of Act No. 238/2006 Coll. on the National Nuclear Fund for decommissioning of nuclear installations and for the management of spent nuclear fuel and radioactive waste (Act on Nuclear Fund) and on amendments to certain laws.

The draft update of the National Policy and National Programme for Spent Nuclear Fuel and Radioactive Waste Management in the Slovak Republic was part of the ARTEMIS Mission info-package in February 2023, and the recommendations of the Mission were reflected in the annex of the document. Currently, the process of assessment of the updated "National Programme for Spent Fuel and Radioactive Waste Management in the Slovak Republic" is underway within the SEA process at the Ministry of the Environment, after the inter-ministerial comment process, the document is expected to be approved by the Government of the Slovak Republic early 2025 at the latest.

F STRUCTURE OF GOVERNMENT / REGULATORY BODIES (Art. 6)

1. *Each Member State shall establish and maintain a competent regulatory authority in the field of safety of spent fuel and radioactive waste management.*
2. *Member States shall ensure that the competent regulatory authority is functionally separate from any other body or organisation concerned with the promotion or utilisation of nuclear energy or radioactive material, including electricity production and radioisotope applications, or with the management of spent fuel and radioactive waste, in order to ensure effective independence from undue influence on its regulatory function.*
3. *Member States shall ensure that the competent regulatory authority is given the legal powers and human and financial resources necessary to fulfil its obligations in connection with the national framework as described in Article 5(1)(b), (c), (d) and (e).*

Regulation of the peaceful use of nuclear energy is performed by the governmental bodies and organizations within the framework of their competence defined by the respective acts according to the structure described in figure 6.

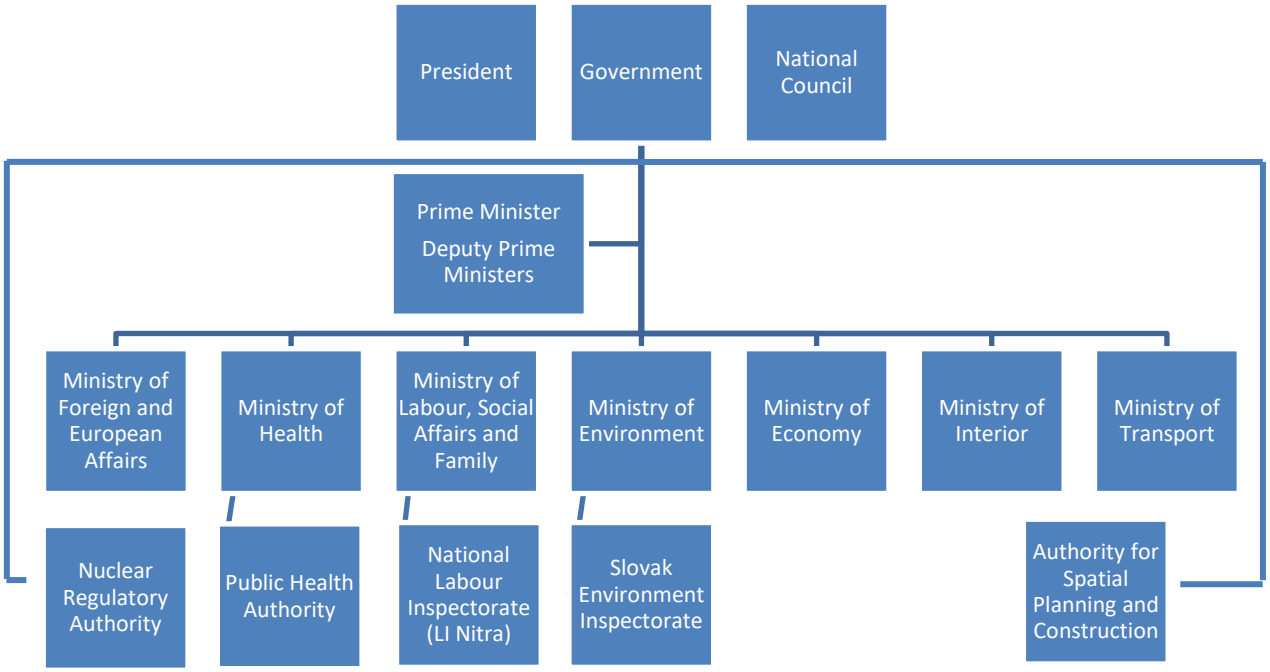

Fig. 5: Structure of government / regulatory bodies in the SR

Nuclear Regulatory Authority of the Slovak Republic (ÚJD SR)

According to Act. No. 575/2001, ÚJD SR is an independent central state administration authority. It executes state regulatory activities in the field of nuclear safety of nuclear installations, including management of radioactive waste, spent fuel and other parts of the fuel cycle, as well as transport and management of nuclear materials including their control and record keeping system. ÚJD SR also executes regulatory activities in the field of physical protection of nuclear facilities and nuclear materials, which is provided by the licence holder. It is responsible for the assessment of goals of nuclear energy program and of quality of the classified equipment, as well as for commitments of the Slovak Republic under international agreements and treaties in the said field. *The competences of the ÚJD SR are more extensively enshrined in Section 4 of Act No. 541/2004 Coll. (Atomic Act) (https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2004/541/20230701#paragraf-4)*.

Ministry of Health of the Slovak Republic (Public Health Authority of SR)

The Ministry of Health of the Slovak Republic is the central authority of the state administration in the field of health care, health protection and other activities within the health care sector. State administration in the field of public health care is carried out by the public health authorities established by Act No. 355/2007 Coll. on the protection, promotion and development of public health and on amendments to certain laws. The state administration in the field of radiation protection is carried out by the radiation protection bodies established by Act No. 87/2018 Coll. on radiation protection and on amendments to certain laws. The competence of the Ministry of Health includes, in accordance with the current knowledge of science on the influence of physical, chemical and biological factors on the public health, establishment of limits and values of permissible stress by these factors. *Based on Act No. 87/2018 Coll., the Ministry of Health of SR determines the fundamental directions and priorities in radiation protection in the provision of health care to the public affected by a radiation accident and ensures within its powers, the training of responders in the field of radiation protection at health care providers.*

Public Health Authority of SR (ÚVZ SR)

State administration in the field of radiation protection is performed by radiation protection authorities established by Act No. 87/2018 Coll. on radiation protection and on amendments to certain laws. The Public Health Authority of the SR is the contact point for communication with the competent authorities of other Member States in the field of radiation protection, participates in the national and international programs important for radiation protection. ÚVZ SR performs state supervision over the activities leading to exposure, including the management of spent nuclear fuel and radioactive waste and the release of radioactive substances and radioactively contaminated objects from administrative control. In nuclear facilities and at workplaces which it authorized for operation, it determines the conditions and authorized limits. ÚVZ SR performs the function of the centre of radiation monitoring network and manages its activity, monitors the radiation situation, collects and processes data on the results of monitoring in the Slovak Republic for evaluation of exposure and assessment of the impact of radiation on the health of population. ÚVZ SR determines the reference levels to optimize exposure in an

emergency situation or for persistent exposure in the existing exposure situation, and determines the conditions for transition from emergency situation to the existing exposure situation.

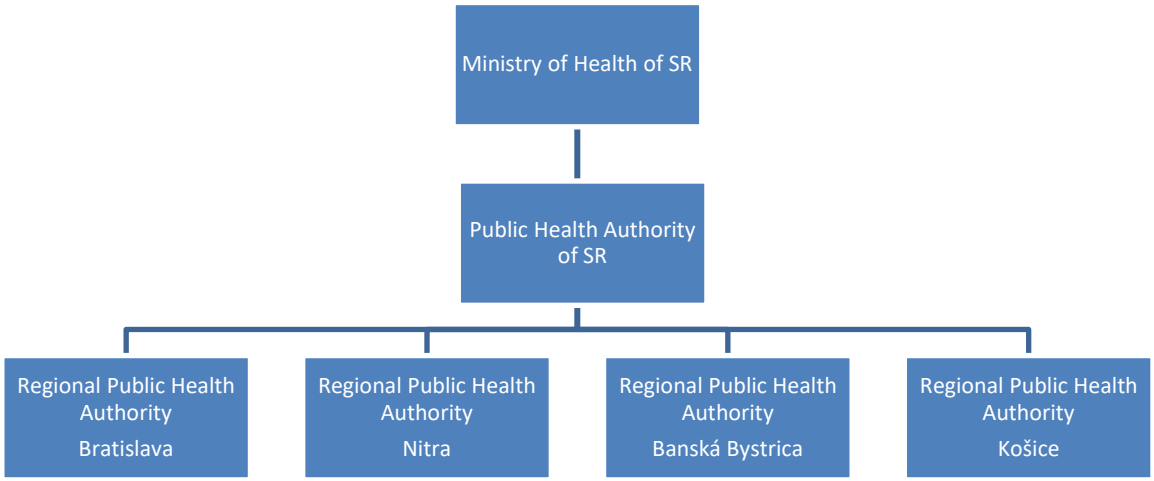

Fig. 6: Structure of state regulation in the field of health protection against radiation

Ministry of Environment of the Slovak Republic (MŽP SR)

MŽP SR is a central body of state administration of the Slovak Republic (inter alia) for the creation and protection of the environment. The following bodies report to the Ministry of Environment:

- The Slovak Environmental Inspectorate, through which MŽP SR fulfils the role of the main state regulator in environmental matters.
- The Slovak Hydro-meteorological Institute and others.

MŽP SR provides, inter alia, the assessment process of strategic documents carried out also under the Protocol on Strategic Environmental Assessment, in conformity with the Convention on the Assessment of Environmental Impacts in a Transboundary Context (Espoo Convention). MŽP SR under the Act governs also the procedure on assessment of anticipated impacts on the environment of proposed activities before deciding about their siting or prior to their authorization pursuant to special regulations in accordance with the Directive 2011/92/EU on the Assessment of the Effects of Certain Public and Private Projects on the Environment, the Directive 2014/52/EU amending Directive 2011/92/EU and under the Espoo Convention. The aim of this procedure is to provide high level environmental protection, including health aspects, i.e.:

a) the protection of the environment, including health, is duly taken into account in the preparation of plans and programs;

b) Promoting respect for the environment, including health whenever possible in the development of policies and legislation;

c) Setting clear, transparent and effective procedures for strategic environmental assessment;

d) Ensuring participation of the public on strategic environmental assessment; and

e) Through this, by subsequent integration of environmental aspects, including health aspects, into measures and instruments proposed for promoting sustainable development.

Ministry of Interior of the Slovak Republic (MV SR)

The Ministry of Interior of the SR, among other things, is the central authority of the state administration for the protection of constitutional order, public order, security of persons and property, integrated rescue system, civil protection and fire protection.

The Ministry of Interior of the SR fulfils the role of a national contact point for the reception and transmission of warning messages, information messages and messages with the request for assistance from the European Emergency Response Coordination Centre (EADRCC), the national contact points of neighbouring and contracting states, international organizations and crisis management bodies of the Slovak Republic, coordinates the operation of crisis management bodies within the scope determined by the government in preparation for crisis situation and its resolution and the activity of businesses and legal entities in the field of civil emergency planning, proposes to the government the request or provision of humanitarian aid, and provides for the operation of the Central Crisis Staff. The Head of the Central Crisis Staff is the Minister of Interior of the Slovak Republic. In case of accidents at a nuclear installation, it is involved in management and carrying out rescue works, organizes and provides for the operation of the notification and warning centre of the Slovak Republic, development, operation and maintenance of information systems for collection of radiation data, operation of the integrated meteorological system, etc. It provides for a 24 hours permanent service, which fulfils the role of the national contact point of the Slovak Republic vis-à-vis the International Atomic Energy Agency in Vienna, the Office for the Coordination of Humanitarian Affairs in Geneva (UN OCHA), the United Nations – Economic Commission for Europe (UN-ECE), the Euro-Atlantic Disaster Relief Coordination Centre at NATO (EADRCC), the EU Emergency Response Coordination Centre (ERCC) and a competent body of the European Commission (ECURIE) in Luxembourg.

Ministry of Economy of the Slovak Republic (MH SR)

The Ministry of Economy of the Slovak Republic is a central state administration authority for, amongst others, nuclear energy industry, including the management of nuclear fuel, storage of radioactive waste, prospecting and exploration of radioactive raw materials and their extraction.

Ministry of Labour, Social Affairs and Family of the Slovak Republic (MPSVR SR)

The Ministry of Labour, Social Affairs and Family of the Slovak Republic is a central state administration authority for, among others, safety and health protection at work and labour inspection. State administration on labour inspection is executed by state administration bodies MPSVR SR, the National Labour Inspectorate and labour inspectorates.

MPSVR SR oversees and controls the National Labour Inspectorate and is responsible for the execution of labour inspection. The National Labour Inspectorate is a governing body for labour inspectorates, which performs supervision of compliance with laws and other regulations to ensure safety and protection of health at work at the workplaces (including nuclear installations) in accordance with Act No. 125/2006 Coll. on labour inspection.

Ministry of Transport and Construction of the Slovak Republic (MD SR)

The Ministry of Transport and Construction of the SR is the central state administration authority for rail, road, water and air transport, electronic communication, postal services, tourism and construction. At the same time, it is also a body for radiation protection in accordance with Section 4 par. 1 d) of the Act No. 87/2018 *Coll*. on radiation protection and the competencies pursuant to Section 8 and 9 of this Act it carries out in the scope of its competence. From the view of radiation protection, it issues permits for the transport of radioactive material shipments with activity higher than the activity of classified shipments in accordance with Section 28 par. 7 of the Act No. 87/2018 *Coll*. on the radiation protection and performs state supervision in the field of radiation protection in the transport of radioactive materials, including transports of nuclear materials (fresh and spent nuclear fuel) and radioactive waste. The Ministry of Transport and Construction of the SR maintains a central register of holders of permits for transport of radioactive materials and register of approved packaging sets.

According to Section 28 par. 15 (c) of the *Act No. 541/2004 Coll. (Atomic Act),* the Ministry of Transport of the SR approves the emergency transport regulations containing measures during incident or accident during transport of radioactive materials, by means of a decision on the approval of the emergency regulation in question.

The Department of Chief Health Officer enforces the requirements of the Radiation Protection Act in the conditions of the Ministry of Transport. *Within its powers, the Department of Chief Health Officer of MD SR in the field of uses of nuclear energy, issues authorisations for shipments of fresh and spent nuclear fuel, as well as radioactive waste, and specifies the conditions for the performance of these activities, supervises radiation protection during shipments of radioactive materials under Act No. 87/2018 Coll., as amended.*

Office for Spatial Planning and Construction of the Slovak Republic (ÚpÚPaV SR)

ÚpÚPaV SR is the other central government authority for spatial planning, except for ecological aspects, construction and expropriation. In the field of spatial planning, the ÚpÚPaV SR procures, discusses and submits to the Government for approval the ToR and the draft Concept of Spatial Development of Slovakia, and any proposals for changes or amendments to the Concept of Spatial Development of Slovakia. Once every four years prepares a report on the status of the Concept of Spatial Development of Slovakia, procures zoning documentation for the procurement and preparation of the Concept document, monitors its timelines and when performing activities under point (a), cooperates with the competent environmental impact assessment authority in proceedings under the Environmental Impact Assessment Act. ÚpÚPaV SR cooperates with the ministries and other central government authorities in development of sectoral concepts, programmes and other strategic documents that have an impact on the territory, and ensures that they take into account the Concept of Spatial Development of Slovakia and the Concept of Spatial Development of Regions.

F.1 Nuclear Safety Regulation – ÚJD SR

ÚJD SR issues various types of decisions: on approval, on licence, on authorization, on sanction or measure imposition, on determination of a new licence holder, on verification of professional competency, on documentation review and other.

The competence of ÚJD SR is provided in the extensive Section 4 of the Atomic Act (https://www.ujd.gov.sk/ujd/WebStore.nsf/viewKey/AA_541_2004_en/$FILE/Atomic_Act_541_2004_consolidated_till%20279_2019_rev_final.pdf).

ÚJD SR issues annual reports on the status of nuclear safety of nuclear installations and on its activities in the previous year. It presents the report once a year, always by 30 April, to the Government of the SR and subsequently to the National Council of the SR. The annual reports are available at http://www.ujd.gov.sk.

Nuclear Installation Authorization Procedure

Povoľovacie konanie pre jadrové zariadenia má šesť hlavných etáp (pri reaktorových zariadeniach) a päť hlavných etáp pri ostatných jadrových zariadeniach: umiestnenie jadrového zariadenia podľa atómového zákona (etapa len pri reaktorových zariadeniach), paralelne sa povoľuje umiestnenie jadrového zariadenia aj podľa stavebného zákona, jeho stavbu, uvádzanie do prevádzky, prevádzku a etapu vyraďovania, resp. uzatvorenie úložiska a inštitucionálnu kontrolu. Pred vydaním povolenia na prevádzku dozorný orgán vykonáva kontroly podľa schváleného harmonogramu programu jednotlivých etáp uvádzania jadrového zariadenia do prevádzky (napr. pre JE – skúšky, zavážanie paliva, fyzikálne spúšťanie, energetické spúšťanie, skúšobná prevádzka). Hlavné dozorné orgány a proces licenčného konania pri vydávaní povolenia na prevádzku je znázornený na obr. č. 7.

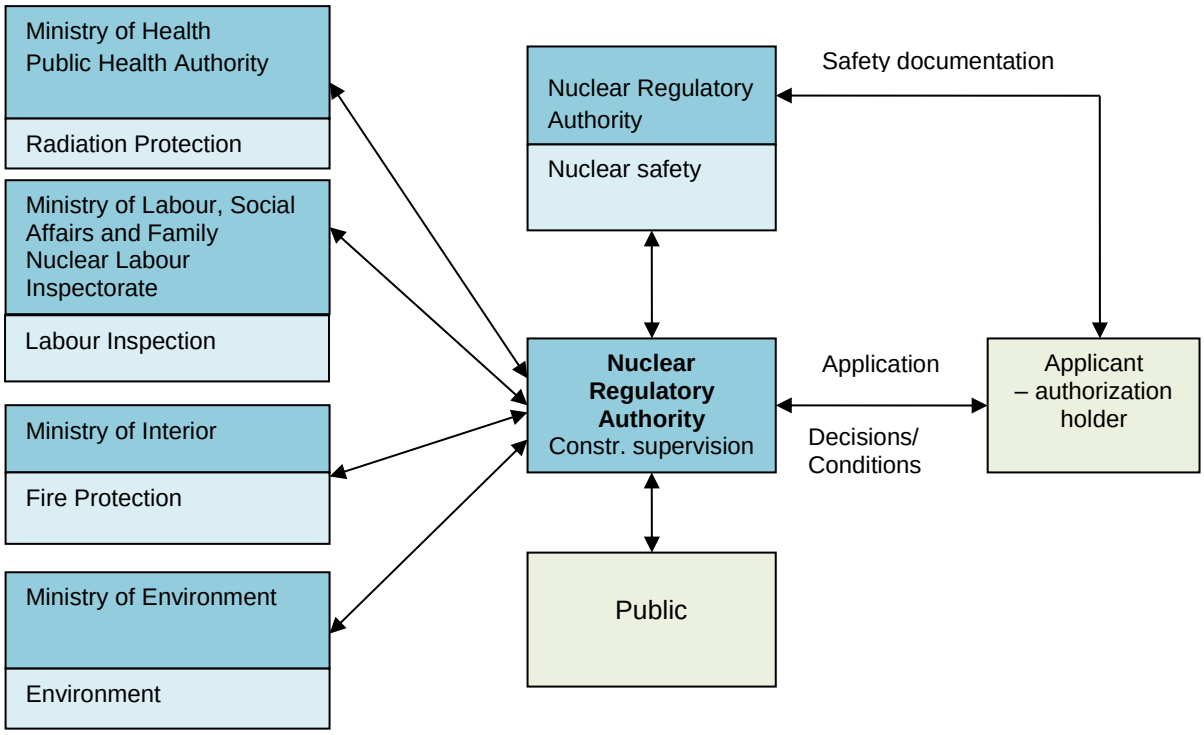

Fig. 7: Authorization procedure of the nuclear installations

The basic conditions for authorization is the elaboration and submission of safety documentation listed in the annexes of the *Act No. 541/2004 Coll. (Atomic Act)*, necessary for issuance of particular types of decisions and for meeting the legislative requirements for nuclear safety. An essential criterion is also the fulfilment of conditions of preceding approval procedures and decisions of regulatory authority.

Authorisation for siting of a nuclear installation under Atomic Act *– Until the entry into force of Act No 363/2021 Coll., amending Act No. 541/2004 Coll. (Atomic Act), the ÚJD SR issued its approval for the siting of the construction of any type of nuclear installation. Following the amendment, the ÚJD SR issues authorisations for the siting of a nuclear installation, but only the reactor type, in terms of nuclear safety, physical protection and radiation protection. As a result, the authorisation process has been tightened up, with the addition of one more step in the administrative procedure, i.e. siting will be a two-step process. In this step it is not yet necessary to submit documentation demonstrating the civil-technical and structural design of the building, no decision is taken on the location of specific nuclear source facilities. This will be dealt with in the subsequent authorisation process (zoning and building procedures), subject to the highest level of safety of the new installation according to the scientific evidence at the time. The siting decision will set out the boundary conditions and requirements for the new source (performance, safety, etc.). The future contractor will have to comply with all the requirements set out in the siting authorisation, thus ensuring the highest possible level of safety and transparency in the selection of a specific design. The primary concern is the siting of the new nuclear power source at the Jaslovské Bohunice site.*

Authorisation for siting the construction under the Building Act *– issued by the Building Authority as a result of zoning procedure. Prior to issuance it is necessary to submit the approval of the ÚJD SR for the siting of construction of a new nuclear installation. In the case of construction of nuclear installations, the siting decision is issued by the regional building authority, which decides based on approval issued by the ÚJD SR, and the opinions of other supervisory bodies (Public Health Authority of SR, labour inspection bodies).*

The following authorisations are issued by the ÚJD SR and require the submission of documentation in accordance with the requirements of the Atomic Act. In all cases, the relevant Safety Analysis Report, prepared to the required level and scope, must be submitted.

Building permit *– in the case of construction of nuclear facilities and structures related to nuclear facility, the ÚJD SR exercises the powers of a building authority, and upon fulfilment of the requirements, issue the permit in question.*

Commissioning authorisation *is a part of the authorisation for early use of the construction - after fulfilling the legislative requirements, the ÚJD SR will issue the authorisation in question. This implements the dual function of the ÚJD SR as a nuclear safety supervisory authority under the Atomic Act, in parallel with the function of the building authority under the Building Act.*

The commissioning of a nuclear installation is divided into several stages, each of which must be approved separately by the ÚJD SR. The approval for the next commissioning stage shall be issued by the Authority after the assessment of the report on the evaluation of the previous stage.

Operating licence *– issued upon written request and after all legal requirements have been met. The operating licence is not time-limited, but the licence holder is required by law to demonstrate the readiness of the installation for continued operation every ten years by means of a periodic nuclear safety assessment. The UJD SR may add conditions to the operating licence or order a reduction in power or shutdown of the nuclear installation.*

Final approval - issued as a result of the final approval procedure, which is initiated at the request of the holder of the building permit after a positive evaluation of the trial operation.

The basic conditions for the issuance of a licence are the preparation and submission of the safety analyses documentation listed in the Annexes to the Atomic Act, necessary for the issuance of the various types of decisions and the fulfilment of the statutory requirements for nuclear safety. Compliance with the conditions of previous approval procedures and supervisory authority decisions is also an essential prerequisite.

Authorisation for the construction of a nuclear installation, authorisation for early use of the construction (including consent for trial operation), authorisation for change of the construction before completion, and the final approval decision (including authorisation for operation of the nuclear installation) are issued by the UJD SR as the building authority. The UJD SR shall exercise its competence as a building authority and a state administration authority for nuclear safety. Its decisions are based on its own decisions, as well as on the opinions of the relevant regulatory authorities - the Public Health Authority of the SR (radiation protection), the National Labour Inspectorate, the Labour Inspectorates (labour

inspection, occupational health and safety of classified technical equipment in nuclear installations), the Ministry of Environment of the SR (environmental impact assessment) and other governmental entities and organisations (fire protection, civil protection).

The documentation that forms part of the application for various types of ÚJD SR decisions, and which must be submitted, is listed in Annex 1 and Annex 2 of *Act No. 541/2004 Coll. (Atomic Act).* Details on the scope, content and method of preparation of documentation on nuclear installations *required for various decisions,* are set out in ÚJD SR Decree No. 58/2006, *establishing the details of the scope, content and method of preparation of documentation of nuclear installations required for individual decisions*.

All initiated, pending and completed administrative proceedings, including decisions of the ÚJD SR, are immediately published on the website of the ÚJD SR, as well as on the central official electronic notice board, which is available to the public 24 hours a day at the headquarters of the ÚJD SR. It is also possible to follow the procedural actions of the ÚJD SR in licensing procedures, in which the parties to the proceedings and the public concerned are given the opportunity to make comments, suggestions for additions or raise objections when issuing decisions at all stages of the licensing process for nuclear installations. During the course of the proceedings, a party may participate in the decision-making process by consulting the file, submitting procedural motions and making comments, and before a decision is rendered, any party to the proceedings shall have the right to comment on the basis of the decision and the manner in which it was obtained, as well as to propose that it be supplemented. After the decision has been issued, any party to the proceedings may lodge an appeal against the first instance decision of the administrative authority. The second-instance proceedings shall be conducted in accordance with the provisions of the first-instance proceedings, with all the rights and obligations of a party to the proceedings. Where a party to proceedings considers that its rights have been infringed in an administrative procedure, it may, within the appropriate time limit, bring an action before a court to review the lawfulness of the administrative decision.

Regulatory Methods to Verify Operator's Compliance with Authorization Conditions

Inspections

The tasks in the field of state regulation are exercised by ÚJD SR´s nuclear safety inspectors. During the fulfilment of their tasks, the nuclear safety inspectors follow ÚJD SR´s internal directive "Inspection Activity of ÚJD SR". The Directive sets a uniform procedure for inspections, for processing and assessment of annual inspection plans, for management of ÚJD SR´s inspection program, for processing of documentation of inspection activities, and for analysis of ÚJD SR´s inspection activities.

Inspection plan is a tool for continuous and systematic evaluation of inspection activities at nuclear installations and during transports *of radioactive materials* and controls of nuclear materials. As a rule, such plans are developed for the period of one year and they cover in a complex way all areas of regulation of nuclear safety.

Inspections follow inspection procedures that are part of the ÚJD´s Inspection Manual. For inspection activities with no developed inspection procedures, individual inspection procedures are conducted.

Types of Inspections

In general, inspections are planned and unplanned – as the first level of division. In the second level, the planned and unplanned inspections are divided to routine, special and team inspections.

Planned Inspections:

By routine inspections, the nuclear safety inspector verifies the assurance of compliance with requirements and conditions of nuclear safety, conditions of the installation, compliance with approved limits and conditions and with selected operational provisions. Routine inspections are performed mainly by site inspectors at the corresponding installation. In case of inspection, focus of which exceeds the professional competencies of the site inspector, inspection is performed by nuclear safety inspectors from the Department of Safety Evaluation and Inspection Activities and Department of Regulatory Activities and International Relations of ÚJD SR. Routine inspections follow the procedures contained in the Inspection Manual.

Special inspections are performed by nuclear safety inspector in accordance with the basic inspection plan. Special inspections focus on specific areas, in particular on the verification of compliance with the requirements and conditions of regulation pursuant to section 31 of the *Atomic Act*.

Special inspections normally follow procedures contained in the Inspection Manual.

Team inspections focus on the verification of compliance with requirements and conditions of regulation pursuant to section 31 of the *Atomic Act*, normally within several areas in parallel. Team inspections are planned for areas selected on the base of long-term assessment of operator's results emerging from the analyses of inspection activities. Team inspection is an inspection, in which several departments participate.

Unplanned Inspections:

Unplanned inspections are performed by nuclear safety inspectors as routine, special or team inspections. These inspections respond to the conditions at the NI (for example, commissioning phases) or events at NI. ÚJD SR thus responds to the situation at NI.

Rules valid for all types of inspections:

- inspections are announced in advance. However, they can also be unannounced, if their focus and nature requires to do so,
- the corresponding site inspector is notified in advance of the inspection. Generally, the site inspector participates in the inspection,
- any inspection performed by more than a single inspector has a head of inspection team appointed.

Inspection Report (Protocol)

Every performed inspection must be documented in a form of a protocol or a record. Binding measures to repair the detected findings are included in the protocol. They must be formulated clearly so as to

impose the responsibility to eliminate detected deficiencies, and must be comprehensible with unambiguously set deadlines for their fulfilment.

Analysis of Inspection Activity

Analysis of inspection activity comprises statistical evaluation of the findings. The objective of the statistical evaluation is to determine the distribution and the frequency of inspection findings. Based on the evaluation of the trends of the inspection findings, it is possible to modify the inspection plan for the upcoming period, particularly in those areas where the most deficiencies have been identified.

Sanction

Pursuant to authorization for operation and RAW management, the requirements and conditions of nuclear safety approved and introduced by the regulatory authority are monitored. The regulatory body may impose fines to the operator, as well as to his employees, when nuclear safety is violated. In case of non-observance of requirements and violation of legal provisions, regulatory body is entitled to impose sanctions including financial fine to the authorization holder.

Financial and human resources of the regulatory body - ÚJD SR

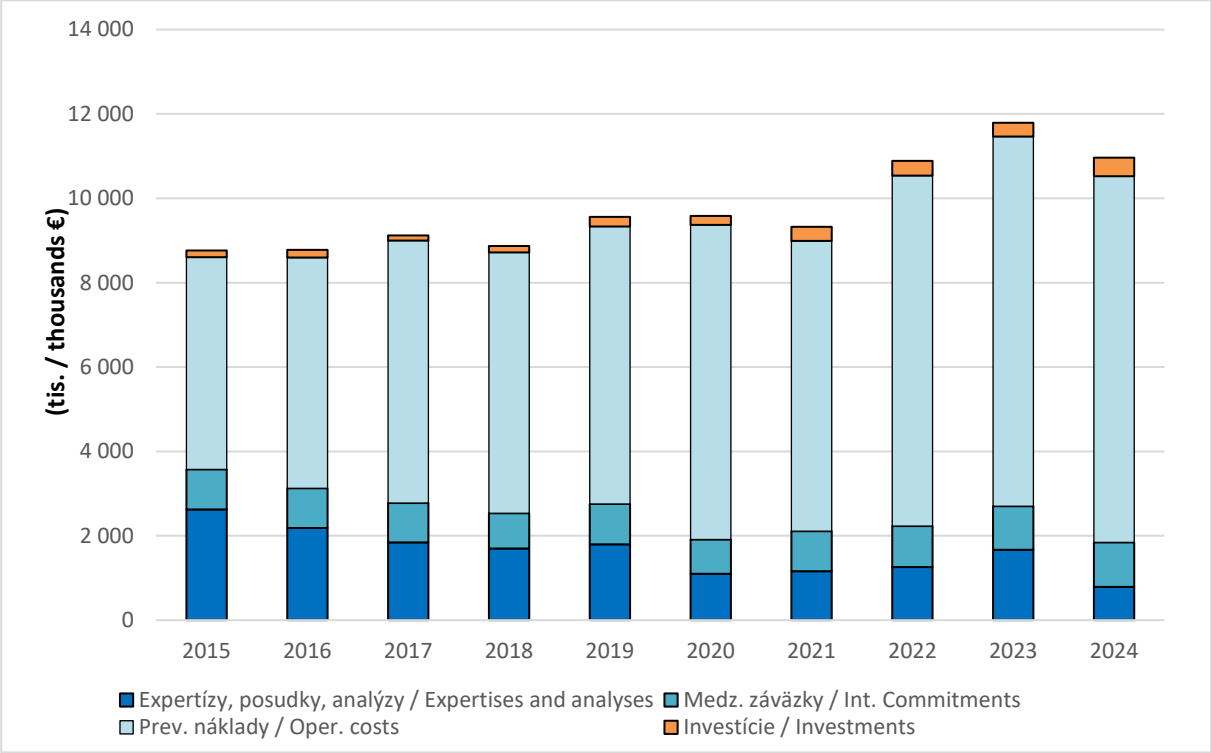

Fig. 8: Structure of the budget chapter of the ÚJD SR

The budget Chapter of ÚJD SR is linked to the state budget with its revenues and expenditures. Since 1 January 2008, annual contributions for execution of state regulation in nuclear safety have been introduced into the legal order of the SR. The Act No.94/2007 Coll. amending *Act No. 541/2004 Coll. (Atomic Act)* imposes an obligation to the licence holders to pay annual contributions for execution of state regulation in nuclear safety. The basic principle of the adopted law is to secure sufficient funding

for regulatory activities relating to nuclear safety, for maintaining the expertise of its staff and for their stabilization, for safety research and it aims at reducing demand on the state budget by raising other external sources. The Act stipulates rules for determining the amount of annual contribution and the method of calculating the contribution. The amount of annual contribution depends on the type of nuclear installation and the type of issued licence.

The *2024* budget breakdown for ÚJD SR stipulated a determined total number of employees *134* of which *121* are civil servants and *13* employees working in public interest.

Capabilities of the Regulator – ÚJD SR (Human Resources)						
Year	1993	1998	2005	2013	2020	*2024*
Headcount	39	81	81	100	128	*134*

Table 3: Human resources of the ÚJD SR

Act No. 55/2017 Coll. on Civil Service and on amendments to certain laws, in Art. 3 sets out the principle of transparent employment through equal opportunities for the candidates for civil service to apply for the competition for a civil servant position. Ensuring adequate human resources through selection procedures is further specified in the Decree of the Government Office No. 127/2017, laying down the details of selection procedures.

F.2 Regulation in the Field of Radiation Protection

Under Act No. 575/2001 Coll. *on the organisation of government activities and the organisation of the central state administration,* the Ministry of Health of the SR (MZ SR) is the central state administration authority for health care, health protection and other activities in the health care sector.

The state administration in the field of radiation protection according to Section 4 of the Act No. 87/2018 Coll. on radiation protection, is performed by the radiation protection authorities, namely:

- Ministry of Health of the SR,
- Public Health Authority of the SR,
- Regional public health authorities,
- Ministry of Transport of the SR,
- Ministry of Defence of the SR,
- Ministry of Interior of the SR and
- Slovak Information Service.

The scope of competence of the Ministry of Health of the SR includes, inter alia, setting limits of exposure and conditions for the management of radioactive waste in terms of their possible impact on public health.

Supervision of radiation protection in the SR is ensured by state supervision pursuant to Section 155 of the Act No. 87/2018 Coll. on radiation protection. The state supervision authority in nuclear facilities is the Public Health Authority of the SR. The state supervision authority for the transport of radioactive materials outside the premises of the nuclear facility is the Ministry of Transport of the SR.

The Public Health Authority of the SR issues various types of decisions, binding opinions, guidelines for elimination of deficiencies found, directives, recommendations, instructions and expert guidelines in the field of radiation protection.

The scope of competence of the Public Health Authority of the SR in the area of radiation protection is anchored in Section 6 of Act No. 87/2018 Coll. on radiation protection (https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2018/87/20180401).

Every year, the Public Health Authority of the SR develops activity reports of ÚVZ SR, which can be found at http://www.uvzsr.sk/index.php?option=com_content&view=category&layout=blog&id=25&Itemid=34.

The Public Health Authority of the SR performs both permanent and continuous state supervision over radiation protection in nuclear facilities and workplaces, where activities are carried out for which it has issued permit, it determines the conditions for performing activities leading to exposure, services important for radiation protection and release of radioactive substances and radioactively contaminated objects and materials under administrative control, determines conditions and authorized limits in nuclear facilities and workplaces for which it issued permit. ÚVZ SR determines the reference levels for the optimization of radiation protection in the emergency radiation situation or for the persistent exposure in the existing exposure situation, conditions for transition from emergency exposure situation to the existing exposure situation and proposes strategy for managing the existing exposure situation. It monitors and guides radiation exposure of workers by checking compliance with the exposure limits and controls the rationale of activities leading to exposure, checks compliance with the limit dose of a representative person for the design, construction and operation of nuclear facility for radioactive discharges into the atmosphere and hydrosphere, evaluates radioactive contamination of individual components of the environment, evaluates the health condition of the population in near and wider neighbourhood of workplaces with sources of ionizing radiation.

In the field of radiation protection, the Public Health Authority, among other things:

- Orders measures to prevent the emergence of diseases and other health problems due to exposure to ionizing radiation;
- Monitors radiation situation and data collection on the territory of the Slovak Republic for the purpose of assessing exposure and influence of the exposure on public health and creates, provides for and manages the activities of the radiation monitoring network;
- Maintains a register of activities leading to exposure, for which it issued permit and activities leading to exposure that it registered on the basis of notification;
- Maintains a central register of sources of ionizing radiation and central register of doses and issues personal radiation cards to external staff;

- Provides expert guidance and information to persons who have come into contact with radioactive source or have been exposed to ionising radiation;
- Provides information to the public on the radiological situation, emergencies and possible exposure, on the risks posed by exposure and on measures and interventions to reduce radiation exposure in radiation accidents;
- Searches for workplaces and facilities, where abandoned radioactive sources can occur;
- Sets up a test committee for the examination and recognition of professional competence,
- Establishes a commission that assesses the compliance with the requirements for recognition of competence of a natural person or a legal entity to work as a radiation protection expert,
- Cooperates with the European Commission and the competent authorities and institutions of the Member States and represents the Slovak Republic in international organizations in radiation protection cases.

Authorization Procedure

The Public Health Authority of the SR, when authorizing an activity leading to exposure or authorizing a service important in terms of radiation protection, proceeds pursuant to Act No. 71/1967 Coll. on administrative procedure *(Administrative Procedure Code)* as amended. The basic prerequisite for issuing an authorization is the submission of the required documentation and the fulfilment of the requirements laid down in the Act No. 87/2018 Coll. on radiation protection.

Authorization of ÚVZ SR for activities leading to exposure in relation to nuclear facilities is not the final granting of a licence, but it is a condition for issuing a licence.

Supervision methods to verify compliance by the licence holder

State supervision in nuclear facilities is carried out by the staff of ÚVZ SR and supervision in transport outside the nuclear facility is carried out by the staff of MD SR.

The person performing state supervision is, among other things, authorized to enter the land, premises, facilities and operations and other areas of supervised entities, to require the necessary accompaniment, to take samples in the amount and to the extent necessary for the analysis and to carry out their expert assessment, to request the necessary information, documentation, data and explanations, accompanying documents, technical and other documentation, to impose measures to eliminate identified deficiencies, and sanctions. The person exercising state supervision may, for example, prohibit the use of instruments and equipment that are imminently hazardous to health, order the closure of a facility or part thereof, if it detects a risk of harm to the health, order the implementation of a measure to limit the exposure of staff and residents, order safe disposal of unused or damaged sources of ionizing radiation, radioactive waste or radioactive substances, to order the development of special operating rules, working procedures and methodologies for carrying out activities leading to exposure, to prohibit activities or operations, to order special measurements, analyses or examinations for the purpose of assessing harmful factors and their impact on health. Supervision of the provision of radiation protection in activities leading to exposure and services important in terms of radiation

protection is carried out primarily by assessing the proposal for activities leading to exposure or the provision of a service important for radiation protection at the stage of its authorization and then continuously according to the nature of the risk it represents.

Radiation protection authorities perform state supervision on the basis of a pre-planned *inspection* plan, which is updated once a year. In its preparation and update, a graded approach is applied, taking into account the extent and nature of the risk associated with the activity that is subject to supervision. Such *inspections* can be done also as unscheduled.

The system of monitoring compliance with radiation protection obligations and requirements as laid down in the legislation and compliance with the conditions and obligations set out in the authorization to conduct the activity leading to exposure is ensured primarily by a system of targeted on-site checks, but a very effective tool and source of information is also a comprehensive system of reports, information and notification on the situation at a nuclear installation, about the exposure of workers, about emergency incidents and on the management of radioactive waste that the licence holder must provide on a continuous basis in writing or electronic form to the regulatory authority within the deadlines specified in the licence.

The on-site inspection shall in particular check:
- The current state of radiation protection,
- State of the equipment,
- Compliance with the regimes,
- State of the monitoring systems, fulfilment of the monitoring plan and records on the results,
- Documentation on the operation,
- Documentation on radiation protection,
- Operating rules,
- Records of deviations, results of investigating incidents.

On-site inspections include taking control measurements of radiation situation and taking control samples by the staff performing supervision.

The *inspections* are mostly focused on a special area important in terms of radiation protection:
- Control of radiation protection during reactor power operation,
- Control of radiation protection during general outage,
- Control of monitoring of discharges, registration of data and assessment of their impact on the dose load on the population,
- Control of implementation of a system and application of ALARA principle,
- Checking the health and professional competence of staff,
- Control of radioactive waste management,
- Control of system to release contaminated materials from administrative control, including control of storage places for such material,
- Control of fulfilment of monitoring plan in the vicinity of a nuclear installation and assessing the impact of operation of a nuclear facility on the radioactivity of components of the environment,
- Control of radiation situation within the premises of a nuclear facility,

- Checking the preparedness to emergency situations and their material provision, inspection of shelters, gathering areas and checking protection of staff in the areas of forced stay during accidents,
- Control of fulfilment of the traumatological plan, etc.

Further *inspections* are carried out according to the need:

- Transport of radioactive materials,
- Events, incidents and accidents,
- Participation in emergency exercises.

Each *inspection* carried out must be documented in a form of a *record*. Binding measures to remedy the deficiencies form part of the *deficiencies report*. They must be clearly formulated so as to impose the elimination of deficiencies found and understandable with clear deadlines for fulfilment.

Financial and human resources of the competent supervisory authorities for radiation protection

In the exercise of its competence, the radiation protection authorities use the human and financial resources necessary to fulfil their obligations according to Act 87/2018 Coll. on radiation protection depending on the state budget resources; in order to support its supervisory functions, radiation protection authorities may use external scientific knowledge and technical resources and expertise.

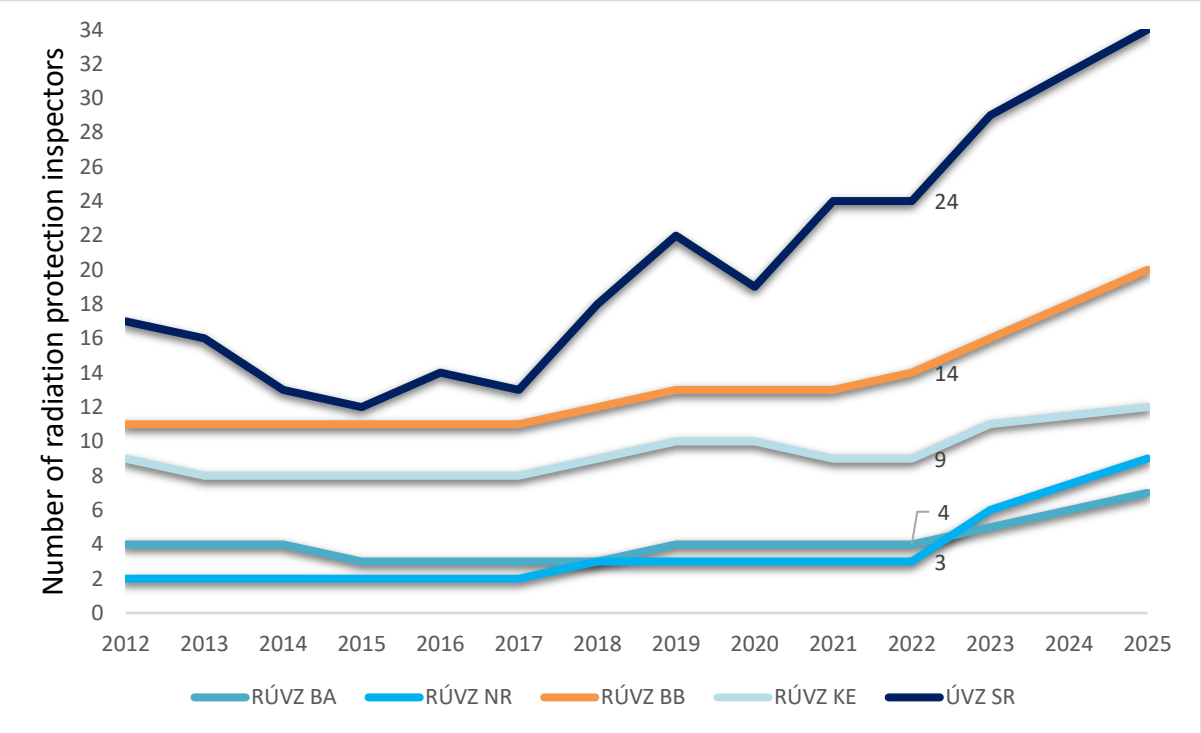

Fig. 9: Number of radiation protection officers

ÚVZ SR is a budgetary organization of the state which is connected with its financial relations to the budget of the Ministry of Health. *In the exercise of its competence, the ÚVZ SR, as the radiation protection authority which supervises activities leading to radiation exposure in nuclear installations, activities in connection with the management of spent nuclear fuel, radioactive waste management and*

the release of radioactive substances and radioactively contaminated objects, which have been produced or used in activities leading to radiation exposure carried out under a licence in a nuclear installation, uses human resources and financial resources necessary for the fulfilment of its obligations under Act No. 87/2018 Coll. on radiation protection, in accordance with the resource possibilities of the state budget; external scientific knowledge and technical resources and expertise may be used by radiation protection authorities to support their oversight functions. The trend in the number of staff of radiation protection authorities in the health department (ÚVZ SR and regional public health authorities) is shown in Fig.9. Its staff performs state supervision in the field of radiation protection pursuant to Act No. 55/2017 Coll. on Civil Service and on amendments to certain laws.

MD SR is a state administration body with a specified budget chapter of the public administration. The total number of employees of the ministry entrusted with the state oversite in the field of radiation protection in *2021-2022 was 3, in 2023 was 2.*

Professional competence to carry out activities leading to exposure according to Act No. 87/2018 Coll. on radiation protection

The professional competence of the radiation protection representative and the training of the guarantor for the provision of services and activities relevant to radiation protection shall be a prerequisite for the issue of an authorisation to carry out activities leading to radiation exposure. Professional competence is demonstrated by the required education and professional experience, completion of training and successful completion of an examination before the panel established by the ÚVZ SR and obtaining a Certificate of Professional Competence.

The required qualifications and professional experience of a radiation protection representative for the purpose of issuing a licence for activities leading to radiation exposure carried out in a nuclear installation shall be the completion of a second cycle university degree in a natural science or a technical discipline and at least 3 years of professional experience.

Vocational training and refresher training are part of continuing vocational education and their scope is laid down by Act No. 87/2018 Coll. on radiation protection.

Refresher training shall be required every 5 years for every person holding a certificate of professional competence.

Vocational training and refresher training comprises of a general part and a specific part.

The general part is aimed at acquiring knowledge of legal regulations, knowledge of the properties and harmful effects of ionising radiation, methods of health protection against ionising radiation, the basic principles, principles and procedures of radiation protection, the organisation of work and the requirements for keeping documentation.

The specific part focuses on specific issues depending on the nature of the activity leading to exposure or the services relevant to radiation protection.

The content of the general part and the specific part of the training and the scope of the knowledge and expertise to be demonstrated in the proficiency test shall be regulated by the competent radiation protection authority in a statute and the requirements shall be published on its website.

Training in radiation protection may only be provided by a natural person - entrepreneur or a legal entity authorised by the ÚVZ SR.

According to Act No 87/2018 Coll. on Radiation Protection, the person with direct responsibility is also required to undergo professional training in order to perform the function of the person with direct responsibility.

The person with direct responsibility shall be required to undergo refresher training every five years from the date of training to a specified extent.

If the person with direct responsibility has not undergone refresher training, he/she cannot carry out continuous supervision in nuclear installations.

To ensure continuous supervision at the workplace, the operator shall designate an appropriate number of persons with direct responsibility for radiation protection, in particular by ensuring that workers at work comply with the safety, technical and administrative requirements for radiation protection. In determining the number of persons with direct responsibility, account shall be taken of the number of working shifts in the operation and the location and accessibility of workplaces with sources of ionising radiation.

The operator of a nuclear installation is also obliged to inform workers, including students, about:

a) the nature and extent of the potential health hazards, the risks associated with their work and the potential health harm associated with exposure,

b) general procedures to ensure radiation protection,

c) procedures corresponding to operating and working conditions relevant to the given activity leading to exposure in general, and to the workplace and work, to which they may be assigned,

d) corresponding parts of the plans, procedures and measures in the emergency response system,

e) the importance to comply with the health, technical and administrative requirements for radiation protection,

f) the importance and need for early notification of pregnancy because of the risk of exposure of the foetus,

g) the importance of notification of the intention to breastfeed the infant, in view of the possible risks of exposure of the infant following the intake of radionuclides or following physical contamination, if the breastfeeding woman-worker may become contaminated with a radioactive substance at work.

The operator is required to maintain records on trainings and verification of knowledge.

F.3 Regulation in the Field of Occupational Health and Safety

Role of the Regulatory Authority

State administration in the field of labour inspection is executed by:

a) Ministry of Labour, Social Affairs and Family of the Slovak Republic;
b) National Labour Inspectorate;
c) Regional Labour Inspectorate Nitra, it oversees compliance with the legal regulations and other regulations to ensure occupational health and safety at the workplaces of a nuclear installation on the whole territory of the Slovak Republic.

Labour inspection means:

a) Supervision of compliance (among others) with:
1. employment regulations governing labour relations;
2. *legal regulations governing civil service relations (Act No. 55/2017 Coll. on civil service and on amendments to certain laws, as amended),*
3. legal regulations and other regulations to ensure occupational health and safety, including regulations governing factors of working environment;
4. legal regulations which regulate the ban on undeclared work and illegal employment,
5. obligations arising from collective agreements and other;
6. *special regulations (Section 5 (2), Section 12 (2), Sec. 13 (3) and Sec. 14 of Act No. 650/2004 Coll. on supplementary pension savings and on amendments to certain laws, as amended) employers in the scope of their obligations to conclude an employer's contract and to pay and make contributions to supplementary pension savings for an employee performing work classified by the state administration in the field of public health in the third category or the fourth category according to a special regulation,*
7. *special regulation (Section 4 of Act No. 351/2015 Coll. on cross-border cooperation in the posting of workers for the performance of works in the provision of services and on amendments to certain laws) for employers, laying down obligations for the posting of workers for the performance of works in the provision of services,*

b) Drawing liability for breaches of regulations contained under letter a) and for breach of obligations under collective agreements;
c) Providing free advice to employers, natural persons as entrepreneurs, but not employers, and to employees within the scope of basic expert information and advice on ways how to effectively comply with the regulations contained under a).

Obligations of the operator of nuclear installations, legal entities and natural persons vis-à-vis bodies of labour inspection arise from the Act No. 124/2006 Coll. on occupational health and safety as amended, Act No. 125/2006 Coll. on labour inspection *as amended* and the implementing regulations to the given acts (listed in Annex V.).

Activity of the Labour Inspectorate Nitra

Labour Inspectorate Nitra ensures labour inspection to the extent as provided by the Act No. 125/2006 Coll. and oversees in particular whether the following conform to the requirements of labour protection:

- *selection, location, arrangement, use, maintenance and control of the workplace, work environment, work equipment, protective equipment, chemical factors, physical factors, biological factors, factors affecting the mental workload and social measures*,
- Workflows, working time, organization of labour protection and system of its management;
- Investigates the causes of an industrial accident which has caused death or serious injury, the causes of major industrial accident, safety, technical and organizational causes of occupational disease and the risk of occupational disease, keeps their records and if necessary, investigates the causes of the occurrence of other work accidents,
- By means of binding opinion imposes requirements for ensuring safety and protection of occupational health when licensing and approving structures and their changes,
- *issues and withdraws a permit for light work by a natural person according to a special regulation, a permit for the performance of sport by a natural person under a special regulation,*
- *withdraws a licence, certificate or document from a natural person to carry out activity under special regulation issued by a natural person or a legal person; an authorisation from an employer to perform activity under a special regulation issued by a legal person*
- *verifies compliance with the scope and conditions of authorisations, certificates and licences issued under this Act and under a special regulation*,
- Discusses offences, takes decisions on imposing fines for offences and on ban of activity according to special regulations.
- Verifies compliance with the scope and conditions of authorizations, certificates and licences issued under this law and special regulations,
- Decides to impose fines under Sections 19 and 20 and under special regulation.

Within the scope of competencies given by the Act No. 125/2006 Coll. on labour inspection, the Labour Inspectorate Nitra performs supervision at all workplaces of nuclear facilities in the Slovak Republic.

The Labour Inspectorate is independent in performing labour inspections and executes labour inspections through labour inspectors.

Labour inspectorates supervise designated products placed on the market and put into operation (Act of the National Council of the SR No. 56/2018 Coll. on conformity assessment of a product, making a designated product available on the market and on amendments of certain laws), which are used by an employer or a natural person who is an entrepreneur and is not an employer, in the course of work and whose requirements for their properties are regulated by special regulations; supervision also includes checking the properties of designated products by means of documentation inspection, physical inspection and, if necessary, physical and laboratory tests.

Besides the classic work of labour inspections the Labour Inspectorate Nitra also performs labour inspections relating to the condition of occupational health and safety, including the safety condition

of the technical equipment - pressure, lifting, electrical and gas - in accordance with the decree of the Ministry of Labour, Social Affairs and Family of the Slovak Republic No. 508/2009 Coll., providing for the technical equipment that is considered as classified technical equipment. It also carries out labour inspection on the technical equipment which are designated products after their placement on the market or making available on the market or after their putting into service.

According to the degree of risk, the types of technical equipment are divided into group A, group B or group C. “Group A” contains technical equipment with high degree of threat, “Group B” are technical equipment with higher degree of threat and “Group C” are technical equipment with lower degree of threat. Technical equipment of Group A and technical equipment of Group B are considered as classified technical equipment.

Based on the content focus of NIP, the Labour Inspectorate Nitra performs annually inspection of compliance with legal and other regulations to ensure OHS and safety of technical equipment at workplaces with installed nuclear installations.

The inspection focuses mainly on compliance with the Act No. 124/2006 Coll. on safety and protection of health at work and on amendments to certain laws as amended, and MPVSR SR Decree No. 508/2009, laying down details for ensuring health and safety at work with pressure, lifting, electrical and gas technical equipment and laying down technical equipment which is considered as reserved technical equipment (VTZ) as amended (Decree No. 508/2009) and relevant Government Ordinances.

The primary objective of the labour inspection within this task is to check the OHS status during the preparation and implementation of new facilities, the general overhaul of individual units of NPPs and participation in the commissioning of facilities and equipment.

IP Nitra sends annually a summary report to NIP evaluating the state of OHS in the nuclear power industry.

Methods of supervision by the labour inspection body

During inspection, the labour inspector is authorized especially to:

- Enter freely and at any time the premises and the workplaces that are subject to labour inspection *(according to Act No. 125/2006 Coll. on labour inspection there is no special regime and labour inspectors are entitled to enter freely and at any time the premises and workplaces subject to labour inspection)*;
- Perform control, test, investigation and other acts aimed at establishing whether the regulations to ensure occupational health and safety are complied with;
- Request documents, information and explanations relating to application of regulations to ensure occupational health and safety;
- Request submission of documentation, records or other documents necessary for labour inspection purposes and to request copies thereof;
- Take the necessary samples of materials or substances that are used or which are being handled, for the purposes of analysis;

- *Use technical means for making photographic documentation, audiovisual recordings and sound recordings necessary for the performance of labour inspection, unless their use is prohibited by special regulations,*
- Require proof of identity from an individual being at the workplace of an employer and to ask for explanation for the presence.

Based on the results of labour inspection and the severity of facts found, the labour inspector is entitled (among others) to:

- Propose technical, organizational and other measures necessary to remedy the situation,
- Order removal of identified deficiencies within the time limits specified,
- prohibit the use of work and operating facilities, premises and workplaces, machinery, equipment and other technical devices and means of work, working practices, substances and the carrying out of activities and work which are imminent threat to the safety and health of employees and other persons staying on the employer's premises or at the employer's workplace with the employer's knowledge,
- order that the workplace or part of the workplace be maintained in its original condition until the investigation is completed or document the condition of the workplace or part of it,
- Order measurements, inspections, tests and other necessary measures,
- *Initiate proceedings for the revocation of an authorisation, certificate, document, licence or permit, imposition of a ban on activity, imposition of a fine under a special regulation,*
- Impose fines for offences under special regulation and other.

The **Nitra Labour Inspectorate** is authorized to carry out labour inspection at workplaces of nuclear installations, focusing on to prevent industrial accidents, safety and health at work, the safety of technical equipment, checking relevant documentation, etc. *If deficiencies are found in the inspected employer or the inspected natural person who is an entrepreneur and is not an employer, the labour inspector is obliged to draw up a report and discuss it with the employer or the employee authorised by the employer or with the natural person who is an entrepreneur and is not an employer.*

Based on the results of inspection the labour inspector proposes measures, imposes measures and obligations to adopt measures for removal of breaches of regulations found and their causes and an obligation to submit to the Labour Inspectorate Nitra information on fulfilment of measures to remove the breaches of regulations found and their causes.

F.4 International Cooperation

Cooperation with the International Atomic Energy Agency (IAEA)

Cooperation between the SR and the IAEA in the field of technical projects has been extraordinarily successful. Part of this cooperation is that expert missions focusing on nuclear safety review, in the health service, on evaluation of material degradation of primary circuit components, etc. are taking place.

Significant part of regional projects related is to issues of nuclear safety. Internships of foreign experts, seminars, workshops and trainings with broad international participation are being organized under regional projects in the SR.

In September 2022, Slovakia invited a full-scale IAEA IRRS Mission to assess the Slovak regulatory framework for nuclear safety and radiation protection against IAEA safety standards. The Mission examined the following areas and cross-cutting themes: Government responsibilities and functions, global nuclear safety regime, responsibilities and functions of regulatory authorities, management system of regulatory authorities, authorization, safety review and assessment, inspections, law enforcement, development of laws, decrees and guidelines, emergency preparedness and response, radiation protection of workers, the public and the environment, radiation protection during medical exposure, transportation of radioactive materials, radioactive waste management and decommissioning of nuclear facilities.

The Mission confirmed that the supervisory framework in the Slovak Republic is mature, but the supervisory oversight of nuclear safety and radiation protection is disproportionate and inconsistent across supervisory authorities. The conclusions of the Mission, categorised as suggestions for improvements and recommendations, were elaborated by the UJD SR in cooperation with other state supervisory authorities into an Action Plan to address the actions from the IRRS Mission, which was approved by a Government Resolution No. 221/2024 in April 2024.

The self-assessment with the follow-up IRRS Mission and the implementation of the Action Plan ensures the streamlining of the activities of the UJD SR and the overall supervisory framework for nuclear safety and radiation protection in the SR, increases the efficiency of activities, service delivery and meeting the legitimate needs and requirements of stakeholders. The relevant provisions of Act No. 541/2004 Coll. (Atomic Act), as well as the requirements of Council Directive 2014/87Euratom of 8 July 2014 amending Directive 2009/71/Euratom establishing a Community framework for the nuclear safety of nuclear installations, the IAEA and the internal normative acts of the ÚJD SR have been fulfilled. It also contributes to the implementation of the National Quality Programme of the Slovak Republic.

Follow-up Mission focusing on checking on the implementation of the Action Plan is expected in 2026.

In February 2023, as a follow-up to the IRRS Mission, an ARTEMIS Mission was conducted in the Slovak Republic, the IAEA's international assessment service for national policy and national programme for the management of SNF and RAW, decommissioning and remediation of nuclear facilities.

The ARTEMIS Mission assessed the compliance of the Slovak Republic with IAEA safety standards. The results of the Mission were summarised in the final report. The ARTEMIS Mission appreciated the high standard of the infrastructure for the RAW management from the decommissioning of nuclear installations, while formulating a number of recommendations and suggestions for further improvements, in particular in the area of the preparation of a deep geological repository for high-level radioactive waste. The findings of the ARTEMIS Mission have been translated into an Action Plan, taken note of by the Slovak Government in August 2023, and are also taken into account in the framework of the updated National Programme for the management of SNF and RAW in the Slovak Republic.

Cooperation with the Organization for Economic Cooperation and Development/ the Nuclear Energy Agency (OECD/NEA)

Based on the Government Resolution No.245/2001, the ÚJD SR, as the sponsor of the cooperation with OECD/NEA, coordinates the cooperation of the Slovak Republic with OECD/NEA and ensures the fulfilment of the obligations of the Slovak Republic arising from this membership. The activities of the OECD/NEA are managed by the Nuclear Energy Steering Committee, which has been chaired by the Chairperson of the UJD SR since 2016. Representatives of the UJD SR regularly participate in the meetings of the OECD/NEA Nuclear Energy Steering Committee, in the meetings of the OECD/NEA Standing Technical Committees and Working and Expert Groups, as well as in OECD/NEA projects.

Cooperation with the European Commission and the countries of the European Union

Representatives of ÚJD SR attend meetings of expert groups of the EU Council and the European Commission on a regular basis with the aim to exchange knowledge on reviews of the level of nuclear safety of nuclear installations in Europe. They participate in developing the EU legislation in selected areas.

Bilateral Cooperation

Formal cooperation (on the basis of international treaties) and informal cooperation exists with all neighbouring countries (Czech Republic, Poland, Ukraine, Hungary and Austria), as well as with other countries (such as Armenia, Bulgaria, Germany, France, Finland, Slovenia, the US). The cooperation focuses on exchange of experience in the field of peaceful use of nuclear energy, developing the system of emergency preparedness, accident analyses, etc.

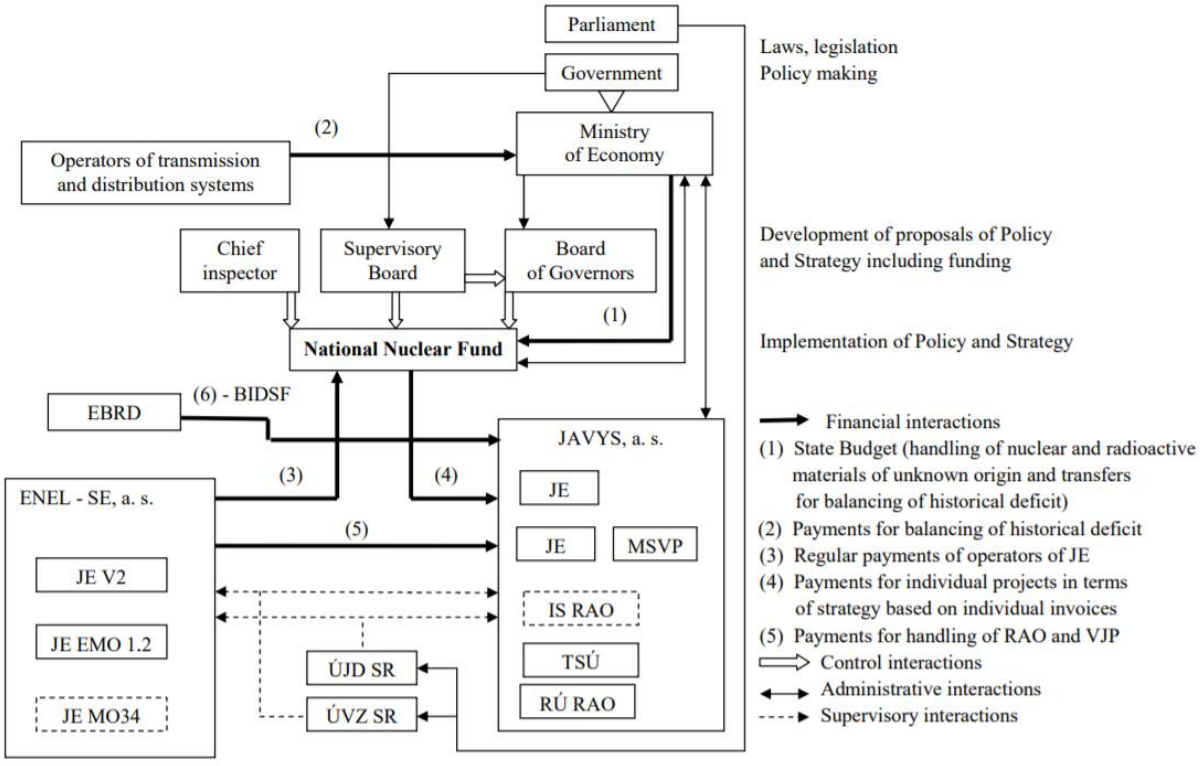

Fig. 10: Infrastructure for RAW and SNF management according to the valid National Programme

International Cooperation in the field of radiation protection

ÚVZ SR is the contact point for communication with the International Atomic Energy Agency in the field of radiation protection and cooperates with ministries and other central state administration bodies, with the bodies of the European Union, with the competent authorities and institutions of other Member States of the European Union and represents the Slovak Republic in the bodies of the European Union and international organisations in the field of radiation protection. ÚVZ SR further ensures international cooperation in the field of radiation protection, including the fulfilment of obligations of the Slovak Republic arising from international treaties to which the Slovak Republic is bound, monitors the fulfilment of obligations arising from international treaties and participates in the implementation of national and international programmes relevant to radiation protection.

Radiation protection officers within international cooperation with:

a) *the European Union: regularly participate in the meetings of the expert groups of the Council of the European Union and the European Commission to exchange knowledge on the assessment of the level of radiation protection in Europe and participate in the development of European Union legislation in selected areas,*
b) *the IAEA: as members of the committees of the International Atomic Energy Agency, cooperate on international projects and regional projects related to radiation protection, provide internships of foreign experts in Slovakia, seminars, workshops and training courses with broad international participation,*
c) *the UN: represent the SR on the UN Scientific Committee on the effects of ionizing radiation,*
d) *the World Health Organisation: ÚVZ SR performs (around the clock) the function of the National Focal Point, which is established in the Department of Radiation Protection to fulfill the obligations arising from international health regulations,*
e) *the Association of European Regulatory Authorities in the field of radiation protection: represent the SR on its Board, committees and expert groups.*

Radiation protection officers continue to cooperate on radiation protection issues with the OECD/NEA, the Food and Agriculture Organisation of the United Nations and with EU Member States and other countries in Europe and worldwide, and regularly participate in formal bilateral negotiations (based on international treaties), informal cooperation with all neighbouring countries as well as with other countries. Cooperation is aimed at exchanging experience in the field of radiation protection.

F.5 Functional Separation of regulatory authorities

Position of a regulatory authority

The position of the regulatory authority in the legal system and organizational structure of the State, as well as the responsibility of the regulatory authority, is described above in Section F. Supervision over the peaceful use of nuclear energy is performed by ministries and other central state administration authorities and organizations within their competence set out in the relevant laws according to the

scheme shown in Fig. 5. The infrastructure for RAW and SNF management according to the valid National Programme is shown in Fig. 9, its updated version with a focus on financing is shown in Fig. 22.

The Nuclear Regulatory Authority of the SR was established on 1 January 1993, and its powers derive from Act No. 575/2001 Coll. on the organization of government activities and the organization of the central state administration as amended. ÚJD SR is an independent state regulatory authority, reporting directly to the Slovak Government, and is headed by a chairperson appointed by the Government. The independence of the regulator from any other authority or organization involved in the development or use of nuclear energy shall apply in all relevant areas.

In the field of radiation protection, the state supervision is provided by the Public Health Authority of the Slovak Republic. ÚVZ SR operates under the Ministry of Health of the Slovak Republic.

Functional separation of the regulator

Functional separation of the regulatory authority is based in legislation, specifically in Act No. 575/2001 Coll. and from the Atomic Act (Act No. 541/2004 Coll.) ÚJD SR is not part of, and is not subordinated to the Ministry of Economy of SR or other ministry, which is supported by provisions of Sections 6 and 29 of Act No. 575/2001 Coll. The other central state administration authorities referred to in Section 21 (d) to (f), (h) and (i) Act No. 575/2001 Coll. are headed by a chairman, who is appointed or recalled by the Government. The chairman of ÚJD SR is accountable to the Government for the performance of his office. The Chairperson of ÚJD SR has been in her office continuously since 2002, since then six parliamentary elections have taken place. The activities of ministries through ministers and the activities of other central state administration authorities through their statutory bodies are managed, coordinated and controlled by the Government.

The functional separation of the regulatory body from the bodies responsible for the promotion or use of energy, including electricity generation, is also underlined by the explicit ban on business activities for the top officials, which is addressed by the Constitutional Act No. 357/2004 Coll. on the protection of the public interest in the performance of the functions of public officials as amended. Under the principle of incompatibility of the function of a public official with the performance of another job or activity, the said regulation explicitly prevents the head of the central state administration authority (chairman of ÚJD SR) and the secretary general of the Service Office from performing business activity and being a statutory body or a member of the statutory body, the member of a management, control or supervisory body of a legal entity established for the performance of business activity, except for the general meeting and the members´ meeting.

Ensuring effective independence in the decision-making of the regulator

Based on Section 4 par. 1 (h) of the Atomic Act (Act No. 541/2004 Coll.) Once a year, always as at 30 April ÚJD SR submits a Report on the state of nuclear safety of NIs in the Slovak Republic and on its activities for the past year to the Slovak Government and then to the National Council of SR.

The financial independence of the regulatory authority is ensured through Act No. 523/2004 Coll. on budgetary rules of public administration and on amendments to certain laws as amended. The Authority is a budgetary organization, which by its revenues and expenditures, is connected to the state budget of the Slovak Republic.

Independence of the decision-making of ÚJD SR is underlined by the fact that in the second-instance administrative proceedings the chairman of ÚJD SR decides without the need for the consent of another authority from the central administration structure. The administrative procedure is subject to the possibility of reviewing the decision in the regime of administrative judiciary.

A more detailed definition of powers, tasks, principles of activity and internal organization of ÚJD SR and its relations to the ministries and other central administration authorities and other bodies and organizations is established by the Statute of ÚJD SR.

G LICENCE HOLDERS (Art. 7)

1. *Member States shall ensure that the prime responsibility for the safety of spent fuel and radioactive waste management facilities and/or activities rest with the licence holder. That responsibility cannot be delegated.*

2. *Member States shall ensure that the national framework in place require licence holders, under the regulatory control of the competent regulatory authority, to regularly assess, verify and continuously improve, as far as is reasonably achievable, the safety of the radioactive waste and spent fuel management facility or activity in a systematic and verifiable manner. This shall be achieved through an appropriate safety assessment, other arguments and evidence.*

3. *As part of the licensing of a facility or activity the safety demonstration shall cover the development and operation of an activity and the development, operation and decommissioning of a facility or closure of a disposal facility as well as the post- closure phase of a disposal facility. The extent of the safety demonstration shall be commensurate with the complexity of the operation and the magnitude of the hazards associated with the radioactive waste and spent fuel, and the facility or activity. The licensing process shall contribute to safety in the facility or activity during normal operating conditions, anticipated operational occurrences and design basis accidents. It shall provide the required assurance of safety in the facility or activity. Measures shall be in place to prevent accidents and mitigate the consequences of accidents, including verification of physical barriers and the licence holder's administrative protection procedures that would have to fail before workers and the general public would be significantly affected by ionising radiation. That approach shall identify and reduce uncertainties.*

4. *Member States shall ensure that the national framework require licence holders to establish and implement integrated management systems, including quality assurance, which give due priority for overall management of spent fuel and radioactive waste to safety and are regularly verified by the competent regulatory authority.*

5. *Member States shall ensure that the national framework require licence holders to provide for and maintain adequate financial and human resources to fulfil their obligations with respect to the safety of spent fuel and radioactive waste management as laid down in paragraphs 1 to 4.*

G.1 Responsibility of the Licence holder

The authorization holder according to the Act No. 541/2004 Coll. ("Atomic Act") is obliged to establish the necessary organizational structure, to define the responsibilities, professional competencies, procedures and resources to ensure quality of nuclear installations and general safety provisions. In compliance with the *Atomic Act*, the authorization holder is obliged to ensure nuclear safety, physical protection, emergency preparedness, including their verification, to comply with the documentation reviewed or approved by the Nuclear Regulatory Authority of the SR, to adhere to the limits and conditions of safe operation or limits and conditions of safe decommissioning. Further he is obliged to

comply with the technical and organizational requirements provided by the generally binding legal regulations.

The authorization holder may authorize performance of work activities only to persons meeting the conditions set in Section 24 of the *Atomic Act* and in compliance with the Decree No. 52/2006 Coll. of the Nuclear Regulatory Authority of the SR on professional competence *(latest amendment effective from 1 January 2024)*, shall identify all job positions, where working activities are being performed that have impact on nuclear safety, and other job positions with direct impact on nuclear safety together with a description of work activities in the documentation of the quality system.

Principles and Definition of Nuclear Safety and Radiation Protection

Under the Atomic Act, nuclear safety shall mean the technical status and ability of a nuclear installation or transport equipment and the status and ability of its staff to prevent the uncontrolled development of a fission chain reaction or the unsanctioned release of radioactive substances or ionising radiation into the workplace environment or the natural environment and the ability to limit the consequences of incidents and accidents at nuclear installations or consequences of nuclear events during shipment of radioactive materials.

The licence holder shall be liable for nuclear safety.

Radiation protection, in accordance with the Act No. 87/2018 Coll. on radiation protection, is defined as a system of technical or organizational measures to limit the exposure of individuals to the effects of ionizing radiation.

The licence holder is obliged to observe the basic principles of radiation protection, requirements to ensure radiation protection of staff and residents during activities leading to exposure and to limit generation of radioactive waste to the necessary extent.

A level of nuclear safety, reliability and health protection at work and safety of technological facilities, radiation protection, psychical protection, emergency preparedness and fire protection must be achieved upon using nuclear energy so as to keep the life, health, working or environment-related hazards as low as reasonably achievable according to the available state-of-the-art knowledge; at the same time, exposure limits shall not be exceeded. Upon new significant information being obtained about the risk and consequences of the use of nuclear energy, the above-mentioned level must be reassessed and necessary measures shall be taken to meet the conditions pursuant to the *Atomic Act*.

In the SR it is possible to dispose only radioactive waste that is produced in its territory.

In case of shipments of radioactive waste and spent nuclear fuel produced on the territory of the SR, for treatment or reprocessing in a Member State or a third country, the ultimate responsibility for safe disposal of these materials, including waste, which is generated as a by-product, is the Slovak Republic. The same principle of Article 4 par. 2 of the Council Directive 2011/70/Euratom also applies to the shipments of radioactive waste and spent fuel produced in the territory of another State for the purposes of its treatment or reprocessing in the territory of the SR, i.e. the ultimate responsibility for the safe and

responsible disposal of these materials, including any waste generated as a by-product, remains with the Member State or a third country, from which the radioactive material was shipped.

Pursuant to Section 34 (7) of Act No. 87/2018 Coll. on radiarion protection, it is prohibited to import radioactive waste produced outside of the SR for incineration. Radioactive waste produced in the SR can be disposed in another Member State or a third country only on the basis of an international treaty concluded between the SR and that other state or a third country, which will enter into force no later than at the time of shipment of radioactive waste and which takes into account the recommendations of the European Community for Atomic Energy, under the conditions contained in the Atomic Act in accordance with the provisions of Sections 16 to 16.1), Section 21 par. 13).

Policy of Nuclear Safety and Radiation Protection

The purpose of the safety policy of nuclear installations for operators is to set safety goals, requirements, fundamentals, principles, responsibility, measures and methods of their performance for all areas of safety, such as nuclear safety and radiation protection, environmental safety, operational safety, technical safety, construction and physical safety, occupational health and safety and fire protection, safety of integrated system and telecommunication network, classified information protection, emergency planning and civil protection, personal safety, administration safety, financial safety, protection of company´ reputation and planning of activity continuity.

The policy of safety is pursued by internal acts as well as by inspection of their observance across all levels of company management.

Compliance with and fulfilment of the safety policy content by all employees is one of the main priorities and objectives; Safety is an integral part of all activities.

The following main requirements, fundamentals and principles of nuclear safety and radiation protection are set to achieve the safety goals:

- Nuclear safety and radiation protection is overriding and superior over any other interests of the company.
- Every employee is responsible for nuclear safety and radiation protection in the scope of his competencies, responsibilities and duties.
- The principles of safety culture apply in all activities relating to nuclear installations.
- Principles of defence in-depth strategy: multi-level, mutually overlapping measures, focused mainly at prevention, but also at accident mitigation, are applied in nuclear installation designs and activities related to the operation of nuclear installations.
- Systems and components of relevance to safety are periodically tested with the aim to verify their functionality and serviceability.
- Safety audits of the respective safety systems are conducted on a periodical basis.
- Integrated management system is developed in line with the requirements of the Slovak legal order, of regulatory authorities, of IAEA recommendations and of the requirements of *STN EN ISO*

9001:2016 Quality Management Systems. Requirements of the STN EN ISO 14001:2016 Environmental Management Systems. Requirements with instructions for use, STN ISO 45001:2018 OHS Management Systems. Requirements with instructions for use, and ISO/IEC 27001:2013 for Information Security Management System.

- The latest knowledge and experience from operation of nuclear installations in the country and abroad are utilized at all times.
- International assessments and reviews are regularly used for independent assessment of nuclear safety and radiation protection level.
- An open dialogue with the public, local and regional state administration and self-governing authorities is applied.
- Currently occurring safety risks concerning nuclear safety and radiation protection are identified, analysed, classified, and managed across all management levels. More serious hazards are submitted to the Nuclear Safety Committee, an advisory body of the top management of the operator.
- Operators invest adequate material and financial resources to deliver the safety goals and meet the safety requirements, fundamentals and principles of nuclear safety and radiation protection, and to improve education and qualification of employees.

The primary responsibility for nuclear safety and radiation protection is with the specific persons listed as statutory body of the licence holders (Boards of Directors in case of joint stock companies), who determine and pursue the application of the main goals, requirements, fundamentals and principles of nuclear safety and radiation protection in all activities related to the nuclear installations, from their siting, design, construction, commissioning, operation until decommissioning, including management of spent nuclear fuel and radioactive waste. The obligations following the primary responsibility are delegated to the executive management through authorization of persons and the description of the organizational rules of the company.

G.2 Safety assessment

G.2.1 List and Description of Spent Fuel Management Facilities

BASIC TECHNICAL DATA FOR ISFS – JAVYS, a. s.	
Maximal storage capacity	14,112 fuel assemblies
Storage capacity as at 31 December 2023	*14,046* fuel assemblies
Number of pools	3 operational + 1 backup
Ground-plan of the building	45m x 70m
Total built up area	95,000 m^3
Possibility of extending it	*Addition to* SNF storage capacity with dry technology for SNF storage, using storage containers (canisters) in two stages

Method of storage	KZ 48 baskets, T-13
Maximal temperature of pool water	50 °C
Capacity of purification system of pool water	25 m^3/h
Method of transportation of spent fuel	Rail wagons, TK C-30 containers
Pool size, length x width x depth	23.4 x 8.4 x 7.2 m
Number of baskets per pool	98 of KZ-48 type

Table 4: Basic technical data for ISFS of JAVYS, a. s.

The ISFS is a nuclear installation intended for *long-term* and safe storage of spent nuclear fuel from WWER-440 reactors. It is designed as a wet storage. It was put into operation in 1986 and *its* active operation began in 1987.

The ISFS is a standalone building without any construction link to the buildings within the premises of other nuclear installations at Jaslovské Bohunice. The building is divided to container section and storage section. The storage section consists of 4 storage pools with one pool designated as a reserve pool. The storage pools are interconnected with a transport channel. Each pool can be separated from the transport channel with hydro locks. The spent fuel is stored inside baskets located in the pools under water, which at the same time is also a shielding and removes the residual heat from the spent fuel assemblies.

Fig. 11: Pool hall in ISFS

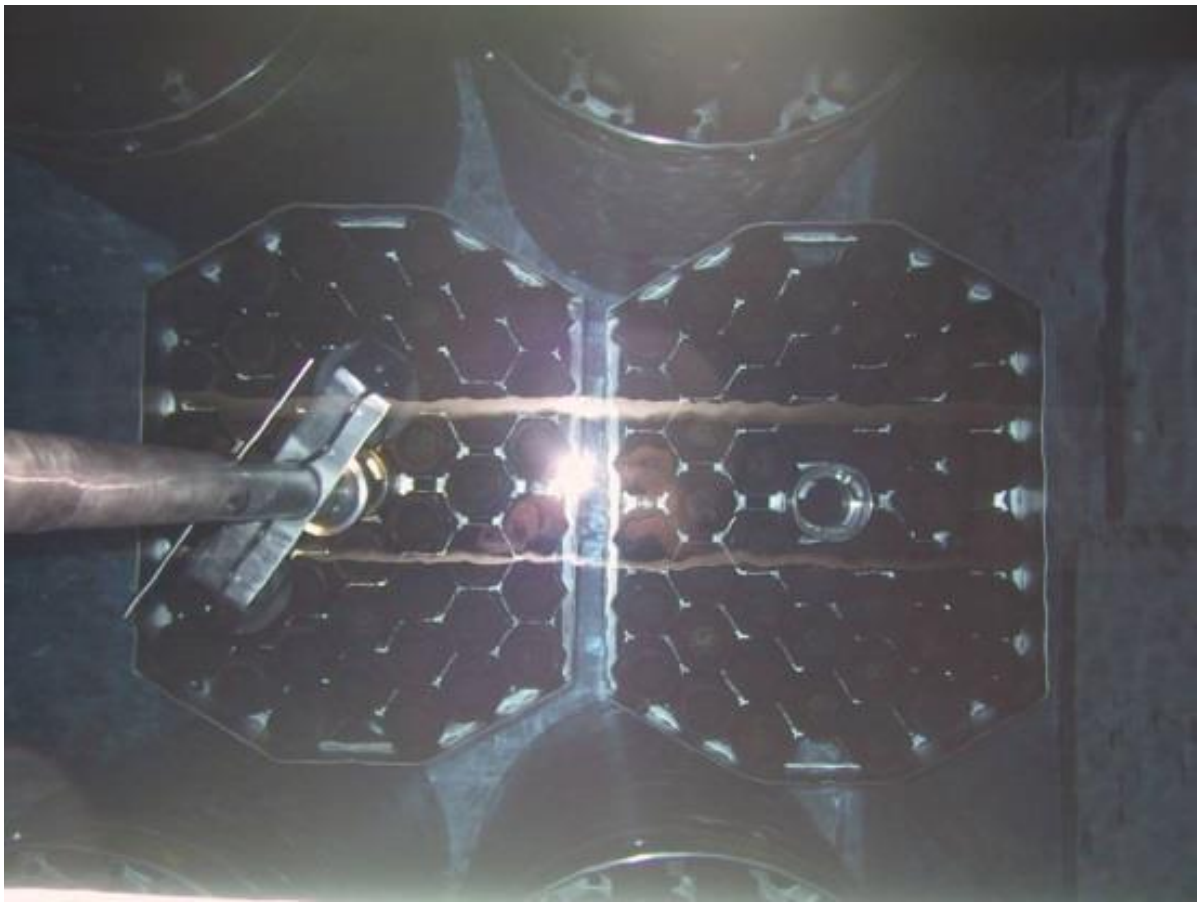

Fig. 12: Spent fuel cask

The pools are equipped with double lining (carbon steel and stainless steel) with an inter-space, from which leaks are draught into the system of leaks.

The ISFS was reconstructed in the period 1997 – 1999 for the purpose of increasing its storage capacity, life extension and enhancing the seismic resistance of the structure. The ISFS has its own **cooling and treatment station**. Due to the increased requirements for the removal of residual heat from the spent *nuclear* fuel (increased fuel burn-up, increased number of SNF) the original cooling system has been replaced by a new system. The overall storage capacity of ISFS after reconstruction and seismic enhancement *was increased* from the original 5 040 to the *maximum of* 14 112 fuel assemblies).

Part of the reconstruction was also the project of seismic reinforcement of ISFS aimed at increasing the resistance of construction and technological structures. The evaluation revealed the necessary modifications of the building structures and technology that were then carried out in the framework of the project of “Seismic reinforcement and extension of storage capacity of ISFS Bohunice”. By implementing this project the achieved status is that even after a seismic event all safety functions of ISFS will be secured up to the level set for the Jaslovské Bohunice site (8° MSK 64) and its life was extended by minimum 50 years following the finalisation of reconstruction.

Apart from the changes and modifications of the original construction solution and technological equipment of the ISFS, which resulted from the requirements for seismic reinforcement and extension

of the storage capacity, further changes and modifications have been made, which increased the safety level of the ISFS, such as:

- Installation of a manipulator MAPP 400 for transferring spent fuel;
- Increasing the capacity of the air-conditioning system of control rooms, ventilation at the entry to the ISFS, modifications to the air-conditioning system,
- Increasing the capacity of the pool water filtration system with a filtration unit to capture micro-organisms in pool water, including disposal of filter inserts,
- Modification of the decontamination system;
- Installation of detection system for fuel assemblies tightness (Sipping in Pool) and monitoring of corrosion on the pools lining;
- Modernization of the system and instrumentation for radiation control of ISFS, etc.

Based on the IAEA document (SSG-15 Storage of Spent Nuclear Fuel) and ÚJD SR Decision No. 152/2000, a **monitoring program** has been progressively implemented since 2001, focusing on:

- Building structures, such as the foundations of the ISFS building, concrete structures of spent fuel pools, supporting steel elements and structures, encasement of the ISFS building,
- Pressure vessels and piping systems (cooling, purification and decontamination system),
- Corrosive damage to equipment and technology that is in contact with the coolant for the spent fuel pools (lining of pools, transport equipment),
- Rotary machines (selected pumps and fans),
- Power supply systems and components (transformers, generators, motors and wiring),
- Spent nuclear fuel (shipping).

Monitoring points were *built* to monitor settlement of the ISFS building, including monitoring *systems* of groundwater level. The ISFS pool lining condition is monitored by assessing the condition of material samples located in the pools and using the acoustic emission method. Monitoring of the fuel condition is performed through the use of the Sipping in Pool system and an inspection stend to monitor the fuel, where non-destructive checks of fuel rods are performed.

Transport container C-30 TK is designed for on-site transportation from Units NPP V-2 to ISFS JAVYS, a. s. at the Jaslovské Bohunice site or off-site transport of SNF from the units of NPP Mochovce. TK C30 is transported on a special railway wagon. At ISFS and the main generating unit, it is moved by transport container hinge.

Fuel stored in the basket is transported in a container in a water environment with a nitrogen cushion (wet transport), or with cooling gas - nitrogen (dry transport). The transport packaging set C-30 is moved by using 130 t crane into the receiving shaft by a special transport suspension from the transportation rail corridor. After performing the necessary handling in the receiving shaft, container de-sealing and lid removal, the basket with the spent fuel is moved to the respective position in the storage pool by a trap and 16 t crane. *The licensing process for the re-approval of the TK C-30 transport equipment type for the period 2025 – 2029 is currently underway at the ÚJD SR.*

Fig. 13: Transport containers TK C-30

Fig. 14: Transport of TK C-30 by special transport hitch

Periodic Assessment of ISFS (ISFS PSR)

From 2018, the second nuclear safety review (PSR) of NI of ISFS has been taking place. The review was carried out in accordance with the legislation valid as of 30 November 2018. The emphasis of the review was placed on meeting the requirements of the ÚJD SR Decree No. 33/2012 and the safety guide of ÚJD SR.

As a result of *carried out* PSR, integrated corrective actions were proposed with low safety significance.

The impact of decommissioning of V-1 NI on the operation of ISFS

Due to the fact that ISFS NI is closely interconnected with the parts of V-1 NPP to be decommissioned, it is necessary to make a modification of selected technological systems of ISFS specified in the BIDSF D4.1 Project "Modification of the power plant and installation of new systems", the implementation phase of which started in February 2017.

The scope of the D4.1 project was divided into seven implementation projects:

1. Construction and technological modifications in SO 800:V1
2. Modification of the system for production of cold water for the air conditioning systems
3. Modification of the cold water supply system and demineralized water for ISFS
4. Modification of cable connection of ISFS for LAN,TIS and EPS
5. Modification of contaminated water discharge from ISFS
6. Installation of tapping station at ISFS, installation of piping routes for regeneration and decontamination solutions in ISFS
7. Disassembly of APK-M and SPK-M ducts, including dismantling of piping routes.

The scope of the project was successfully completed in its entirety on 15 July 2022, and the technological dependency of ISFS on NPP V-1 has been eliminated.
The implementation projects related to ISFS were gradually finalized as follows:

- *Modification of cold water and demineralized water supply system for ISFS:*

The subproject was successfully completed with commissioning and permit for use of the building in November 2019.

- *Modification of contaminated water discharge from ISFS:*

This subproject was completed in May 2022, and system consisting of a new building SO 724 for 2 tanks for emergency pumping of ISFS pool waters and active piping ducts APK-6 (from ISFS to building SO 724) and APK-7 (from building SO 724 to building SO 809), was put into operation.

- *Construction of pumping station for ion exchangers of ISFS, installation of piping routes for tapping regeneration and decontamination solutions in ISFS*

In November 2020, the pre-complex and inactive complex testing of equipment of the tapping station of ISFS, as well as installation of piping for tapping routes for regeneration and decontamination solutions and putting into operation.

- *Disassembly of APK-M and SPK-M ducts, including dismantling of piping routes followed after the system – Modification of discharge of contaminated water – was put into operation between May 2022 and July 2022.*

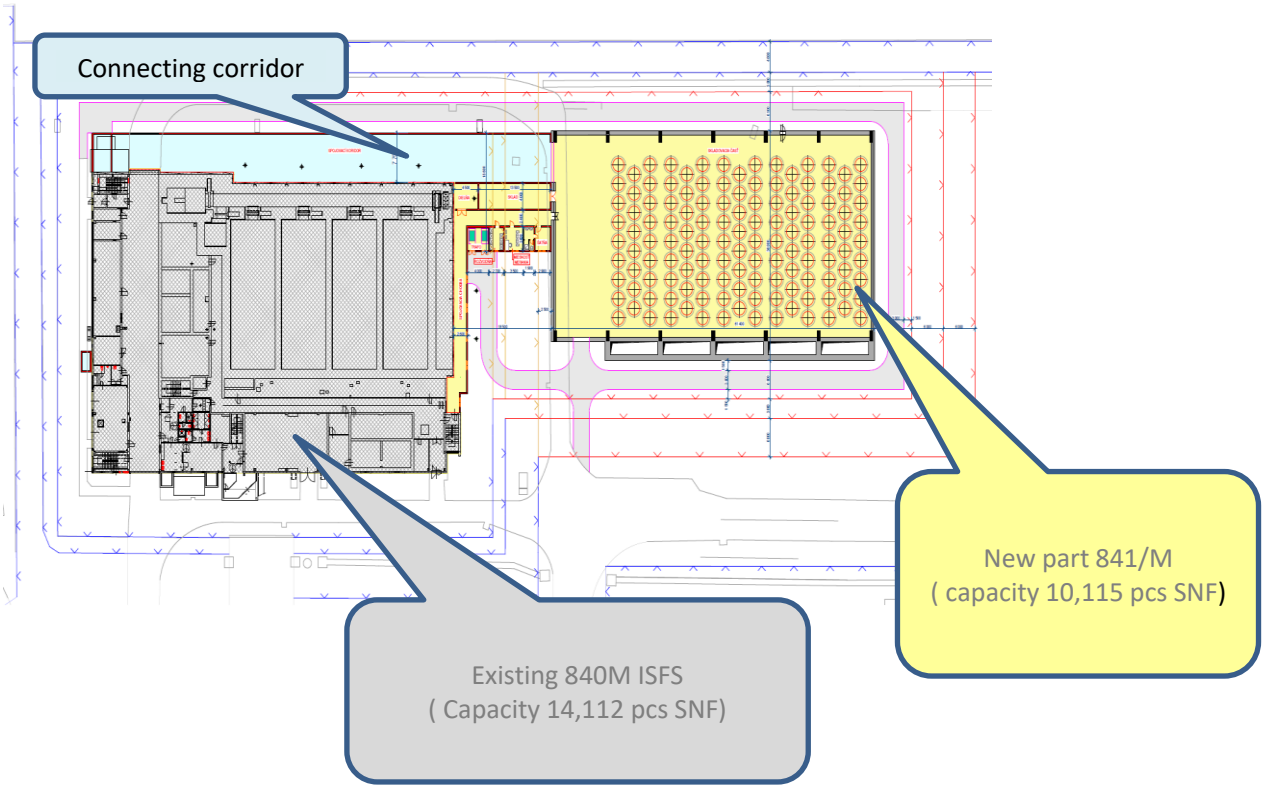

Fig. 15: Scheme of increasing storage capacity for SNF

Increasing storage capacity for SNF

As at 30 April 2024, the ISFS stored 13,912 pcs of SNF, of that 13,657 pcs of SNF in the wet part and in the dry part 255 pcs of SNF.

The dry part of the ISFS with a planned design capacity of 10,115 pcs of SNF has been under construction since 2017 as part of the investment project "Completion of SNF storage capacity in Jaslovské Bohunice site".

The implementation of the project was preceded by the process of environmental impacts assessment of the proposed change pursuant to Act No. 24/2006 Coll., which was completed with the Final Opinion of the Ministry of the Environment of the SR No. 1604/2016-3.4/hp dated 11 February 2016, with the recommended alternative for increasing the storage capacity of SNF by completing the storage capacity of SNF with a dry method, using storage containers (canisters) with a maximum of 85 pieces of SNF placed in reinforced concrete storage modules.

Currently, the project is in the final phase of its implementation, as of 30 April 2024, active comprehensive tests of the technological equipment and systems have been successfully completed, within which 255 pieces of SNF (3 pieces of SNF packaging) have been transferred from the wet part to the dry part of the ISFS.

In May 2024, a 144-hour test run of the ISFS dry section facilities and systems was conducted, resulting in the commercial operation of the ISFS dry section.

G.2.2 List and Description of Facilities for Radioactive Waste (RAW) Management

NPPs in operation with WWER-440 are equipped with the following facilities for collection, transport, basic treatment and storage of RAW:

Facilities for basic treatment of solid RAW are represented by collecting equipment, transport equipment, sorting equipment, washers, dryers, low pressure compactor and fragmentation *and decontamination* equipment. These are used for fragmentation *and decontamination* of metal solid RAW.

Facilities for treatment of liquid RAW are represented by purification (filtration) station with ion exchange resins (ŠOV 3) for purification of waste water, evaporating distillation equipment, treatment plant of contaminated oil, pumping stations and equipment for mechanical filtration of refuelling pool.

Facilities for gaseous RAW management are represented by ventilation systems are provided with filters to capture aerosols and iodine. During 2003 - 2004 replacement of original iodine filters of Soviet provenience with iodine filtration stations took place. As part of completion of the fragmenting workplace a new exhaustion system was installed for the workplace. On the basis of decision of ÚVZ SR the operator of NPP V-1 from 2012 is not obliged to monitor discharges of noble gases and iodine-131 (NPP V-1 is under decommissioning).

Facilities for storage of RAW

RAW storage represents the placement of radwaste into premises, buildings or facilities enabling their isolation, control and protection of the environment, with the intention of their subsequent treatment and disposal.

The method of storage of solid RAW depends on the type and activity of solid RAW and the packaging used.

Approved **solid RAW storage facilities** are storage facilities for RAW where the storage is in packaging means in accordance with the applicable legislation of SR. These storage packaging means include:

- MEVA barrel
- 20“ ISO container,
- Fibre-concrete container,
- EM24 container
- *Metal fence pallet covered with plastic washable foil*
- Shielded containers TK 080,150,210, etc.

Facilities for storage of liquid RAW are tanks for *storage of untreated ion-exchangers and concentrates. Contaminated oils are always stored in double packaging: in flasks placed in MEVA*

drums. Sludge from the tanks can be temporarily stored in double packaging (drum in tub) and operationally contractor-solidified into a matrix. They are then handed over to the treatment facility as solid RAW for cementation.

Technology for Treatment and Conditioning of Radioactive Waste (TSÚ RAW)

Technology for treatment and conditioning of RAW:

- Bohunice RAW Treatment Centre – BSC includes the following technology for the safe treatment and conditioning of RAW:
  - Solid RAW sorting,
  - Liquid RAW concentration,
  - Solid RAW and liquid RAW incineration,
  - Solid RAW high pressure compacting,
  - Liquid RAW and solid RAW cementation,
  - Storage and transport of solid RAW and liquid RAW,
  - The resultant product is fibre-concrete containers for conditioned RAW by cementation, which meets L&Cs for storage, *handling,* transport and final disposal in National Radioactive Waste Repository;
- Bituminous lines designed for treatment of concentrates and sorbents and the purification station for active water for treatment of liquid RAW from NPP V-1 and NPP V-2;
- Discontinuous bituminization line designated for treatment of saturated sorbents,
- *Remelting of metal RAW;*
- Wastewater treatment plant for treatment of liquid RAW from NPP A-1;
- Fragmentation plant and large capacity decontamination plant for metal RAW serve for decontamination and treatment of metal RAW;
- Workplace for processing air filters,
- Workplace *for removing cables and* for crushing of used power cables,
- Line for pre-treatment of fixated RAW,
- Facilities for storage of RAW.

The construction of the facility for remelting of metal RAW from the decommissioning of NPP A-1 and NPP V-1 within the TSU RAO was started after the approval by the Authority in 2017. The purpose of the remelting facility is to minimise the metallic RAW generated from the decommissioning of NPP V-1 and NPP A-1. After successful testing, the remelting facility was put into operation in 2021. The process of assessing the impacts of the change of the proposed activity "Facility for the remelting of metal radioactive waste at the Jaslovské Bohunice site" was completed by the Ministry of Environment of the SR in accordance with Act No 24/2006 Coll., as amended, by issuing a positive Final Opinion in 2015.

Periodic Safety Review of TSÚ RAO

PSR for TSÚ RAO was performed at the reference date 22 January 2019. The review was performed in accordance with the applicable legislation. The licence holder implemented corrective actions to remedy the deficiencies found.

Fig. 16: Bohunice RAW Treatment Centre (BSC)

Facility for Final Treatment and Conditioning of Liquid Radioactive Waste (FS KRAO)

The FS KRAO is situated in the NPP Mochovce site in the immediate vicinity of NPP Mochovce 1&2. It was put into operation in 2007. It includes the following technologies for safe treatment and conditioning of liquid RAW:

- Liquid RAW concentration,
- Bituminisation of concentrates,
- Bituminisation of ion-exchange resins (sludge),
- Cementation of liquid RAW, *spent ion-exchange resins (RA-sludge)* and solid RAW,
- Preparation of fibre-concrete container for transport.
- *Bituminisation technology is no longer used due to reduced generation of liquid concentrates and spent ion-exchange resins from operating WWER units.*

The FS KRAO facility in Mochovce, the following categories of liquid RAW are treated and conditioned:

- Concentrates,
- Ion-exchange resins (sludge).
- *And solid or solidified (fixed) RAW*.

The resultant products is also fibre-concrete container with conditioned RAW with cementation, meeting the L&Cs for storage, transport and disposal in National Radioactive Waste Repository.

Periodic Safety Review of FS KRAO

PSR FS KRAO was performed as at 8 October 2015. The licence holder implemented corrective actions to remedy the deficiencies found. The next PSR of FS KRAO will be performed as at the reference date of 8 October 2025.

Integral Storage Facility for RAW (IS RAW)

Integral Radioactive Waste Storage Facility is a nuclear facility built at Jaslovské Bohunice site in the premises of JAVYS, a. s., for the storage of RAW originating from decommissioning of NPP A-1 and NPP V-1. The IS RAW NI was built in order to ensure sufficient capacity for the needs of long-term or temporary storage of RAW produced from decommissioning of NIs.

IS RAW, which is a free-standing building object of a hall type with modular arrangement, was put into active operation in February 2018 after receiving permit from ÚJD SR for commissioning of October 2017. The expected termination of operation of IS RAW is in 2087.

IS RAW is designed for storage of *following* solid and solidified RAW:

- Solid or solidified RAW prior to their further treatment at facilities within JAVYS, a.s.
- *Solid or solidified RAW* until its permanent *final* disposal,
- Solid *or solidified* RAW for a period, during which their activity is decreasing to a level allowing their release to the environment.

Fig. 17: Integral Radioactive Waste Storage Facility

Facility for Institutional Radioactive Waste Management (IRAW) and Captured Radioactive Substances (ZRAM)

The original centralized system for collection of Institutional Radioactive Waste Management (IRAW) in the SR was disrupted due to the separation of the Czecho-Slovak Republic. Establishment of a new national system was imposed by government resolution No. 610/2009, which has designated responsibility for storing the captured contaminated radioactive materials within the SR to SE, a. s. - VYZ, while from 1 April 2006 the commitments were transferred to Nuclear and Decommissioning Company (JAVYS, a. s.).

The Government of the Slovak Republic by its Resolution No. 610 from 2 September 2009 approved the draft procedure for IRAW management and for captured radioactive materials of unknown origin (RMNP) and charged JAVYS, a. s., with constructing a complex facility for accepting, sorting and long-term safe storage of such materials.

IRAW and RMNP management represents a set of the following activities:

- Collection,
- Characterization,
- Sorting,
- Treatment,
- Conditioning,
- Storage,
- Disposal.

A centralised facility for safe storage of IRAW and RMNP originating from the whole territory of the SR, until the period of their further management was built at Mochovce and put into operation in February 2016. Subsequently, all IRAW stored at the TSÚ RAW facility at Jaslovské Bohunice site was transferred into the facility for IRAW and ZRAM management. As of 1 January 2020, the name ZRAM cased to be used, and a new name RMNP began to be used.

G.2.3 Radioactive Waste Shipments

Facilities for shipment of radioactive waste are necessary to ensure the activities related to the loading of radioactive waste from the nuclear installation, IRAO, abandoned sources, radioactive waste of unknown origin and unused radioactive sources at the place of loading, their shipment and unloading at the destination. In order to ensure the unified concept of treating RAW, IRAW and RMNP, a transport system has been developed in the SR allowing the shipment of:

1. Solid and liquid RAW within Jaslovské Bohunice premises;
2. Solid RAW between Jaslovské Bohunice – Mochovce sites,
3. Institutional RAW and *RMNP* from the whole territory of the SR to Jaslovské Bohunice, resp. Mochovce.

The shipment of RAW is performed in certified transportation equipment on means of transport meeting the conditions of the European Agreement on international carriage of dangerous goods (ADR), or the Regulation concerning international carriage of dangerous goods (RID), the Act No. 541/2004 Coll.

(Atomic Act) and the Decree of ÚJD SR No. 57/2006 Coll., laying down the details of the requirements for shipments of radioactive materials.

RAW shipments are organized in full by JAVYS, a. s.

Fig. 18: Transport of fibre concrete containers to the National Repository of RAW

Fig. 19: Transport of solid RAW at Jaslovské Bohunice site and between Jaslovské Bohunice and Mochovce sites

Fig. 20: Transport of KRAO at Jaslovské Bohunice site

G.2.4 National Repository for Radioactive Waste (RÚ RAO)

The National Repository for Radioactive Waste (put into operation in 2001) is a near-surface type, designed for disposal of solid and solidified low *and very low* activity RAW from operation and from decommissioning of nuclear installations, *as well as of IRAW*. The Repository site is located about 2 km northwest from the NPP Mochovce site.

The basic safety requirement for a repository is that during its operation, period of institutional control and after its completion no leakage of radionuclides to the environment shall occur that would cause radiation exposure exceeding the values of radioactive substance set by valid legal regulations.

The repository is built in a geological formation with low permeability and high sorption capacity *with engineering and geological barriers*.

The current repository structures for the storage of low-level RAW are three operational double rows of concrete boxes. Each of the double rows is divided into five expansion units. A double-row consists of 40 boxes with a capacity of 90 FCCs each. The total capacity of the existing LLW disposal structures in the RU RAO is therefore 10,800 FCCs. Work is currently underway to secure additional LLW disposal

capacity. From 2022 onwards, a 4th double row of storage boxes is being constructed in accordance with Decision No 318/2022 of the UJD SR, with completion expected by the end of 2025 at the latest. The repository area allows for its expansion up to 7.5 disposal double rows, i.e. for the disposal of approx. 27,000 FCCs with RAW.

Fig. 21: VBK after measurements taken at Gamma scanner prior to disposal into disposal boxes of the repository arranged as double-rows

The operation of RÚ RAO has been authorised by the ÚJD SR Decision No.117/2019, by which the Authority authorised operation of the 1st, 2nd and 3rd double-rows of disposal boxes for the disposal of low-level RAW and section for disposal of very low level RAW, Stages 1 and 2.

For the disposal of very low level radioactive waste, i.e. waste, the activity of which is only slightly above the limits for their release into the environment (contaminated soil, crushed concrete from decommissioning) separate storage facilities have been built within the existing National RAW disposal at Mochovce site. In the years 2015 and 2016, the first stage of repository for VLLW was completed with a capacity of 20,000 m^3 VLLW from the decommissioning of NPP A-1, which was put into operation in July 2016. *Since 2017, the 2nd stage of the VLLW repository has also been available. The total storage capacity under Stage 1 and Stage 2 of the VLLW repository is currently 29,000 m³. The implementation of the last, 3rd stage of the VLLW repository has been postponed until 31 December 2033 by the ÚJD SR Decision No 325/2023 in order to follow in time the activities related to the implementation of Stage 5 of the decommissioning of the A-1 NPP. A roofing shed was constructed over the disposal rows in which the VLLW was loaded to provide protection from weather conditions during the disposal of the VLLW, and after its relocation, the first part of the final overlay was installed over the filled rows.*

Fig. 22: Disposal of VLLW in the first stage of VLLW repository with a disposal capacity of 20 000 m³ for RAW from the decommissioning of NPP A-1

Fig. 23: Overlaying the back-fill soil with layers of geotextile

Periodic Safety Review of RÚ RAO

Periodic Safety Review after 10 years of operation from the last PSR was done as at the reference date September 2019. As a result of the PSR, two corrective actions of low safety significance were proposed with a deadline for completion by the end of 2023, the evaluation of which was assessed by the ÚJD SR and Decision No. 212/2024 was issued on 10 May 2024. According to the conclusions from PSR of RÚ RAO the operation of RÚ RAO can be assessed as safe, with negligible impact on the environment.

G.2.5 List and Description of Facilities in Decommissioning and Facilities for Radioactive Waste (RAW) Management from Decommissioning, which are part thereof

NPP V-1 Bohunice – In Decommissioning

Nuclear power plant V-1 (NPP V-1) is located at the Jaslovské Bohunice site.

NPP V-1 *had* 2 pressurized water reactors of WWER-440/230 type. NPP V-1, Unit 1 was commissioned in December 1978 and Unit 2 in March 1980.

In accordance with the Government Resolution No. 809/1998 operation of Unit 1 was terminated by as at 31 December 2006 and the operation of Unit 2 by 31 December 2008.

Following the removal of spent nuclear fuel from NPP V-1 to the ISFS and based on the positive opinion of the European Commission according to Article 37 of the Euratom Treaty, ÚJD SR issued its Decision No. 400/2011 for the stage 1 of decommissioning of this power plant, which came into force on 20 July 2011.

Decommissioning of NPP V-1 has been implemented in two stages.

The scope of works of stage 1 of decommissioning (2011 – 2014) included dismantling of equipment and removal of structures of the secondary circuit that is outside the controlled area of the nuclear power plant, which are not needed or suitable for further use. During this stage, the documentation necessary for obtaining licence for the stage 2 of decommissioning of NPP V-1 was prepared. After reviewing the above documentation, ÚJD SR issued its Decision No. 900/2014 containing:

- Authorization for stage 2 of decommissioning of NI NPP V-1;
- Authorization for the management of RAW;
- Authorization for the management of nuclear materials.

The activities of stage 2 of decommissioning of NPP V-1 (2015 – 2025) are focusing on dismantling of facilities and structures of the primary circuit located in the controlled area, i.e. decommissioning of the nuclear island. Dismantled will be also other not needed external objects at the NPP V-1, tanks, underground piping and cable channels. After the site is restored to its original condition (or demolition) the site will be released from regulatory control according to the Act No. 541/2004 Coll. (Atomic Act).

The decommissioning of NPP V-1 is implemented through sub-projects. Out of a total of 74 BIDSF projects, 5 projects are currently under implementation. The final project D4.7 "Decontamination and demolition of NPP V-1 buildings and restoration of the site to its original condition" is in the procurement phase.

In terms of the implementation of the overall decommissioning of NPP V-1 to reach the end state, the D4.2 project is an important project "Dismantling of large-scale primary circuit components", the main objective of which is the dismantling of activated and contaminated large-scale primary circuit equipment (reactor pressure vessels of both reactor units, reactor internals, steam generators, main circulation pumps, primary circuit piping and other technological components) and linings in the controlled area of the main production unit of NPP V-1.

In parallel with this project, the implementation of project D4.4C.01 "Dismantling of systems in the controlled area of NPP V-1 - Part 2" is also important, which will ensure the dismantling of the remaining technology in the controlled area of NPP V-1. It includes pre-dismantling decontamination, dismantling, fragmentation of all remaining machinery technologies in the controlled area, electrical, air handling systems, removal of linings, decontamination of tanks over 50 m³ to the level of release to the environment, change of power supply to the remaining lifting equipment, etc. During the currently ongoing Phase 2 decommissioning of NPP V-1, the main circulation line was completely decontaminated and separated from the reactor pressure vessel. Subsequently, the steam generators were dismantled and transported to the V-1 turbine hall to a new facility for fragmentation.

The dismantling and fragmentation of the main circulation piping, main circulation pumps, main shut-off valves, auxiliary systems on both Unit 1 and Unit 2 and the reactor pressure vessels of both Units were carried out in the controlled area. The final decommissioning project D4.7 "Decontamination and demolition of NPP V-1 buildings and restoration of the site to its original condition" is under procurement, which has an impact on the planned final date for decommissioning of NPP V-1 in 2027. The completion of the decommissioning depends on careful and targeted planning of the activities and scope of the individual projects and the overall length of the procurement process for these projects.

Fig. 24 and 25: Transport of steam generator PG 11 to SO 490 V-1

NPP A-1 Jaslovské Bohunice – In Decommissioning

Nuclear Power Plant A-1 with heterogeneous reactor KS-150, was designed for electric output of 143 MW. Natural metal uranium was used as fuel, heavy water (D_2O) as moderator and carbon dioxide (CO_2) as coolant - HWGCR.

The A-1 NPP was connected to the power distribution network in December 1972. After an operational accident in January 1976 (first accident) the operation was restored, after another operational accident in February 1977 technical, economical and safety analyses were conducted and on the basis of their results, in 1979 the Government with its Resolution No. 135/79 decided not to continue in operation of NPP A1.

Activities aimed at decommissioning of NPP A-1 have commenced. Due to the absence of legal regulations for decommissioning of nuclear power plants at that time any partial issues were solved on a case-by-case basis and the individual activities were approved as modifications having impact on nuclear safety. The works concentrated on:

- Removal of consequences of the operational event,
- Preparation of fuel export to USSR/RF,
- Development and subsequent implementation of RAW management technologies.

The first integrated documentation for decommissioning of NPP A-1 was developed in 1992. The currently valid concept and the time schedule for decommissioning of NPP A-1 was passed by the Government Resolution No. 227/92. Government Resolutions Nos. 266/93, 524/93, 877/94 and 649/95 approved this time schedule, including a comprehensive procedure. **Updated documentation for the initial stage of decommissioning** was elaborated during 1994 – 1996. In 1999 ÚJD SR issued Decision No. 137/1999 for the **stage 1 of decommissioning**, i. e. to achieve the state declared in this documentation from the current base line:

- All spent fuel is removed from the long-term storage and media representing the highest potential risk are solidified or re-stored into new tanks,
- Most of the liquid RAW from operation has been treated or is safety stored.

On 18 June 2009 an authorization was issued by means of ÚJD SR Decision No. 178/2009 for the second stage of decommissioning of NPP A1 in accordance with the Plan for the Second Stage of Decommissioning of NPP A1, which enabled to continue with a continual alternative in the process of decommissioning of NPP A1. The following period was focused in particular on decommissioning of external objects of the nuclear installation of NPP A1, on the issue of handling contaminated soil and RAW management produced by the main generating Unit of NPP A1. The second stage, which focused mainly on decommissioning of external objects of NPP A-1, the handling of contaminated soils and the RAW management from the main generation Unit of NPP A-1, was completed in September 2016.

Since 1 October 2016, the implementation of Stages 3 and 4 of the decommissioning of the A-1 NPP has been underway, which was authorised by the ÚJD SR Decision No. 369/2016. These stages are

focused in the main production unit mainly on decommissioning of the primary circuit technological equipment, oil management and accessories of the turbocompressors, CO2 cooling systems, heavy water management, fuel cladding control system, 2 steam generators including their accessories, treatment of sludge phases coming from the DS storage facility for SNF A-1, treatment of Chrompik which was used as a cooling medium for SNF and treatment of casings from the storage of SNF from the NPP A-1. The decommissioning activities of the gas management facility, the KRAO storage facility including external tanks, the solid RAW storage facility, the treatment of sludge phases from external tanks, the handling of contaminated soils and the remediation of groundwater continue at the external facilities of the NPP A-1 during these stages.

Planned completion date for stages 3 and 4 of decommissioning of NPP A-1 is 2024.

Preparations for the stage 5 of decommissioning of NPP A-1 are currently underway, within the framework of which the Intention has been elaborated under Act No 24/2006 Coll. for the assessment of impacts on the environment - Stage 5 of the decommissioning of NPP A-1 and the subsequent release of the NPP A-1 site from administrative control, and the characterisation of the premises, equipment and technological systems included in stage 5 of NPP A-1 was carried out. The impact assessment report was assessed by the ÚJD SR and a public hearing was held.

The document General Data according to Annex III of the Commission Recommendation for the application of Article 37 of the Euratom Treaty 'Stage 5 of the decommissioning of NPP A-1 and the subsequent release of the NPP A-1 site from administrative control' has been drawn up".

The main subject of the NPP A-1 decommissioning activities in Stage 5 will be mainly the equipment located in the reactor building, the intermediate plant and the turbine hall (HVB of NPP A-1), in particular the 4 steam generators and the reactor including their accessories.

The end of Stage 5 of decommissioning of NPP A-1 is expected by the end of 2033.

Facilities for Management of Radioactive Waste (RAW) from Decommissioning – part of NPP A1

At present, RAW has been removed, sorted and stored in 200 dm^3 drums. The incinerable RAW is transported to the TSÚ RAW for further management. The sorting facility is used for sorting solid RAW produced from operation of NPP A1 compacted into packages for burnable, not burnable, compactable and metal. Workplaces for RAW management from decommissioning are equipped with different technologies.

Workplace for contaminated concrete (PNKB) management

The workplace is made of PNKB containment, in which large parts of concrete blocks are gradually decontaminated in an abrasive manner.

Vitrification Plant of Chrompik (VICHR)

Vitrification plant is for fixation of radioactive Chrompik into a glass matrix of boric silicate type to achieve significant volume reduction and to enhance the storage safety of this specific radioactive liquid waste.

Manipulation box for handling medium level radioactive materials allows:

- cutting materials and sampling,
- clamping and machining of high level contaminated materials,
- handling samples (insertion, removal from containers),
- detailed visual inspection of objects,
- taking photos of objects.

Fragmentation workplace for long-term storage cases allows:

- fragmenting metal parts of long-term storage without inner content,
- inserting fragments into empty barrels or shielded 200 l barrels (shielding of pre-concrete reinforced barrels and barrels with steel insert),
- measuring the dose rate on the drum surface and overall activity in the drum,
- performing inner rinsing of scissors, knives, working chamber, filling and discharging head,
- trapping the rinsing medium in trapping tanks,
- placing the lid on the drum and putting the drum into transport container for drums

and other technologies.

Mobile Facilities for Radioactive Waste (RAW) Management

Facility for fixation of sludge (**ZFK)**. This facility located in ISO containers and relocatable according to the decommissioning needs, was commissioned in 2007 and it enables fixing RA sludge with specific beta, gamma activity of cca 10^9 Bq.kg^{-1} into a cement matrix. Currently it treats bottom sediments, concentrated from all external tanks of NPP A1.

Facility for sludge fixation SUZA II is designed for treatment of sludge phases from the long-term storage pool, moved to the certified NPN2 tank. The plant treats the sludge phase into a cement matrix at the reactor hall of A1 NPP. The SUZA II technology is sectoral, consisting of four operating modules – a storage module, pumping module, fixation module and transport module.

Mobile fragmentation facility (MFZ) is designed for fragmentation of large scale metal RAW, whose dimensions, weight and material composition meet the required criteria. The facility is secured against atmospheric influences and can be moved within the premises by JAVYS siding. The workplace is a standard four-axle wagon chassis with an atypical container placed on the chassis. The roof of the container can be opened at the point of loading metal RAW. Decontamination and fragmentation of metal RAW is carried out using diamond rope saw.

Facility for handling of large scale materials from decommissioning of NPP A-1

The facility, located in the extension of Building 30, is intended for decontamination and fragmentation of large steel pieces produced within the NPP A-1 Decommissioning Project, which cannot be fragmented at other existing TSU RAO facilities within the NPP A-1 site due to their size and weight. The facility is primarily built for the decontamination and fragmentation of non-operational T-15 containers dismantled from Hx railcars, which were used in the past to transport spent fuel from NPP A-1 to the Russian Federation.

Facilities for separation and preparation of materials from decommissioning of NPP A-1 for treatment technologies

The purpose of the NPP A-1 decommissioning material fragmentation and preparation facilities for treatment technologies is to ensure the fragmentation of the material to sizes and weights suitable for further waste management in the existing treatment plants at JAVYS, a.s., in compliance with the technological, technical, radiation and safety conditions and possibilities of their handling.

Mobile decontamination equipment FRAGIS II. This facility is located in an ISO container, it is transferable according to the decommissioning needs and enables decontamination of metal RAW in-situ. Decontamination is performed by ultrasonic and electrochemical methods. At present the plant is connected to the main generation block of A1 NPP and is used for decontamination of metal materials from the decommissioning of A1 NPP.

Workplace for sorting contaminated soils is an autonomous technology, transportable by regular means of transport; requires power supply. It comprises of 4 functional mutually linked units:

- Preparation of soils,
- Transportation of soils for monitoring,
- Monitoring and sorting of soils,
- Shipment of soils after monitoring and sorting from the workplace.

G.3 Safety demonstration

The operator is obliged to provide for sufficient financial and human resources to ensure nuclear safety, including the necessary engineering and technical support in all areas related to nuclear safety. The licence holder shall give priority to safety aspects over all other aspects of the authorized activity.

The obligations of the operator are provided primarily by the provisions of laws listed under E.2.

Any modifications to nuclear installation affecting nuclear safety during construction, commissioning, operation, decommissioning, closure of repository or after closure of repository may be implemented only after a preceding approval or permission of relevant regulatory authorities has been obtained and in special cases after having obtained the statement (opinion) of the European Commission. Other modifications must be notified by the operator, or submitted for review.

The authorization holder shall issue operating procedures for the performance of activities at a nuclear installation, in particular service, maintenance, control and testing of classified equipment. These procedures shall be in accordance with the conditions of the authorization. The authorization holder shall update and complete these procedures according to the current state of the nuclear installation.

The operator has the obligation to report to the regulatory authorities events at nuclear installations and in case of incidents and accidents also to other organizations and to the public, to take action to prevent recurrence.

The holder of authorization has the obligation to provide information to the public on nuclear safety. This obligation does not change the responsibility of ÚJD SR to provide the public with its own independent assessment.

In practice, the operator of a nuclear installation uses other essential specialized organizations, in the field of maintenance, operation or research. These specialized organizations have the function of so-called technical support organizations and are involved through their activities in supporting reliable and safe operation of nuclear installations, since the works, which they carry out, cannot be provided for by the operator with his own human resources, nor in organizational, technical and knowledge terms.

The licence holder is given the obligation to identify for all radioactive waste a suitable system for their treatment in at least two alternatives justifying the choice of one of them.

The licence holder is required, during operation, to hand over radioactive waste within one year of their production and spent nuclear fuel immediately after fulfilling the requirements for its safe transport and storage, to the legal entity – JAVYS, a. s. – authorized by the MH SR and by ÚJD SR.

The producer of radioactive waste is responsible for safe management of radioactive waste up to their disposal, and the licence holder operating the facilities for the management of radioactive waste and spent fuel is responsible for safety of these facilities.

The licence holder ‘s responsibility is to check and verify before closing the repository its readiness and also the readiness of the staff and the compliance of the documentation with its current status.

G.4 Integrated Management System – IMS

IMS is implemented in accordance with the applicable national legislation, recommendations of IAEA documents*, IAEA Safety Requirements* “*GSR Part 2 Leadership and Management for Safety”*, international standards *STN EN ISO 9001:2016 Quality Management Systems. Requirements (ISO 9001: 2015), STN was released: 1 February 2016 – English version ISO 9001:2015 was released 09/2015*; Requirements *STN EN ISO 9004:2019 Quality Management. Quality of an organisation. Guidance to achieve sustained success (ISO 9004: 2018), STN was released: 1 September 2019 - English version of ISO 9004:2018 was released 04/2018. A guide to performance improvement; STN EN 9001:2016 Quality Management Systems. Requirements; STN EN* ISO 14001*:2016, Environmental Management Systems. Requirements with instruction for use; STN ISO 45001:2018 Occupational Health and Safety Management Systems. Requirements with guidance for use,* and *ISO/IEC 27001:2013 for Information Security Management System*. *Service Management.* Integrated Management System of the operator is process oriented.

The continuous relevance, adequacy and effectiveness of the integrated management system and its ability to achieve the objectives set by the company is reviewed by:

- internal audits conducted within IMS for the fields of safety, quality, environmental protection, in a form of autonomous or combined internal audits,

- supervisory audits of external certificate companies, which have certified integrated management system and
- inspections conducted by the ÚJD SR
- management review of ISM once a year in the form of material for the Director General´s meeting.

Any findings identified during the audits, inspections and reviews are subject to analysis at the corresponding level of the top management. Based on analyses, remedial and preventive measures are taken; their implementation is controlled.

Achieving the required quality of all basic processes and sub-processes and their subsequent continuous improvement is also ensured by:

- identification and management of non-conformities, implementation of activities to eliminate non-conformity found, implementation of corrective actions to eliminate the causes of non-conformities and preventing their recurrence according to the requirements of the basic directive, RS/NE/ZSM Management of non-conformities, corrective actions and measures against risks, improvements;
- identifying, analysing and risk and opportunity assessments, proposing measures against risks, monitoring and risk management related to the Integrated Management System JAVYS, a.s. according to the requirements of the basic directive “RS/IR/ZSM Identification and Risk Management“

Funding of safe operation

One of the principles of nuclear and radiation safety of operators is the commitment to have necessary financial means to meet nuclear and radiation safety and to provide for continuous training and improvement of qualification of the staff. In order to fulfil this commitment, financial strategies of companies were developed that would enable, among the tasks mentioned, also fulfilment of the program for technological development.

Financial strategy of the operators is defined as providing for funding operation and investment needs of the company by optimal utilization of own and external resources (see also Art. 9).

H EXPERTISE AND SKILLS (Art. 8)

Member States shall ensure that the national framework require all parties to make arrangements for education and training for their staff, as well as research and development activities to cover the needs of the national programme for spent fuel and radioactive waste management in order to obtain, maintain and to further develop necessary expertise and skills.

Expertise and skills

Qualified of human resources represent the principal precondition for a safe, reliable, economical and environmentally friendly operation of nuclear installations. The term “qualified human resources” is understood as a set of professional, health-related and mental capacities of the staff to perform activities at nuclear installations. From the aspect of impacts of working activities on nuclear safety, the staff of the authorization holder is classified into two basic groups:

- Employees having direct impact on nuclear safety – licenced employees, whose special competence is verified by an exam (written exam, oral exam and verification of competences on a representative full-scale simulator) and a practical test for licenced employees before an examination commission established by ÚJD SR, which issues Licence of special competence (currently this category is no longer in JAVYS, a. s.);
- Employees with impact on nuclear safety – professionally competent employees, whose Professional competence was verified by a panel established by the operator of specialized facility in a form of written and oral exam and to whom Certificate of Professional competence has been issued.

Special competence of employees according to the Atomic Act means a set of expertise, practical experience, principal attitudes and knowledge of generally binding legal regulations and operating procedures issued by the authorization holder to ensure nuclear safety that is necessary for performing work activities having direct impact on nuclear safety.

Professional competence means a complex of professional knowledge, practical experience, knowledge of generally binding legal regulations and operating procedures issued by the authorization holder, necessary to perform work activities by the employee of an authorization holder. Professional competence is acquired by successful completion of Professional training at a specialized facility.

The overall working (professional, health and mental) competency of staff to carry out working activities at nuclear installations is the responsibility of the authorization holder. The authorization holder authorizes his personnel to perform working activities, based on achieved professional competency. An “Authorization to Perform Working Activities” as part of the Integrated Management System (IMS) for quality assurance of a nuclear installation – an authorization holder. The Authorization to Perform Working Activities is issued for a given position and concrete nuclear installation only for those selected and professionally competent employees of the authorization holder, who have valid Licences of Special

Professional Competency or Certificates of Professional Competency. The authorization is an evidence of working competency of an employee in relation to the regulatory authorities.

Each position within the system of professional training has defined requirements for education, experience, professional training, health or mental capabilities. The direct supervisor of the employee is responsible for meeting these requirements.

The professional training system of the authorization holder staff is updated on the base of operational experience, performed organizational changes, technical solutions (modernization) on installation, requirements of regulatory authorities, audits, reviews and recommendations of IAEA. It is provided for by necessary human, financial and material resources.

The professional training of the authorization holder staff and third parties (third parties represent contractors) is being conducted in accordance with documents of quality assurance management program, which is set up and maintained in accordance with:

- Generally binding legal regulations of the Slovak Republic;
- the IAEA standards, recommendations and guides;
- ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 and ISO/IEC20000-1:*2018* series standards;
- Management documentation in the Quality System.

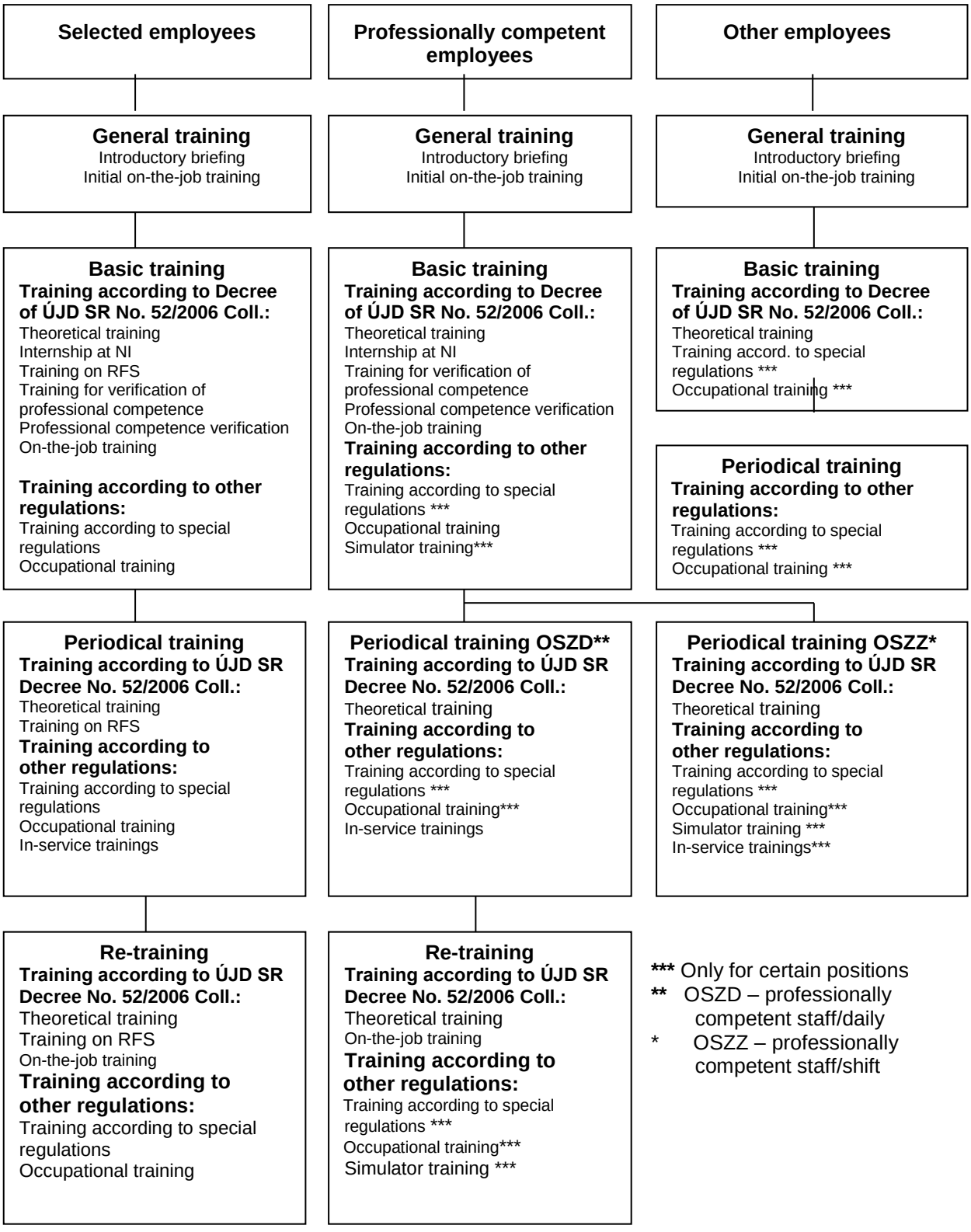

Fig. 26: Chart of Professional training system for employees

In terms of their impact on nuclear safety, the employees are classified into the appropriate type and phase of training and divided accorded to their activities into ten categories, which are further divided into professional groups, according to their professional focus in SE, a.s. (Table 5):

Category I – Selected employees performing work activities with direct impact on nuclear safety: ▪ *Secondary circuit operator* ▪ *Primary circuit operator* ▪ *Head of reactor unit* ▪ *Shift supervisor* ▪ *and OSZ performing work activities with impact on nuclear safety, such as:* ▪ *Lecturer for RP simulator training* ▪ *Specialist for nuclear safety analyses*
Category I – OSZ performing work activities with impact on nuclear safety: ▪ *Safety management engineer – nuclear safety* ▪ *Equipment reliability specialist* ▪ *System engineer* ▪ *Project engineer* ▪ *Basic design configuration specialist*
Category II+ – OSZ performing work activities with impact on nuclear safety: ▪ *Safety management engineer – SZ* ▪ *Component engineer* ▪ *Equipment/simulator administration technician*
Category II – all other OSZ – management employees, specialists, engineers, technicians, technologists, foremen, or others, performing managerial, technical, engineering, inspection, maintenance activities with impact on nuclear safety.
Category III – OSZ – field operator, locksmiths, electricians, mechanics, radiation control technicians and other, performing operator, maintenance and inspection activities with impact on nuclear safety.
Category F – selected employees performing work activities with direct impact on nuclear safety: ▪ *Control physicist*
Category S – selected employees performing work activities with direct impact on nuclear safety: ▪ *Scientific head for start-up without the right of handling*
Category M – OSZ – managerial staff performing work activities with impact on NS: ▪ *Section and Plant Directors* ▪ *Managers of centralized units* ▪ *Senior staff of Procurement Section 30000*
Category T – Foreign OSZ performing work activities with impact on NS in non-managerial positions (technicians, technologists, specialists, etc.).
Category VI – other staff performing work activities without impacting NS.

Table 5: Categories of employees of the licence holder, SE, a. s.

For the licence holder JAVYS, a. s., the employees are divided according to their impact on nuclear safety as follows:

Category V (.a-.e) includes professionally qualified employees of profession groups of the licence holder, performing activities related to the operation of nuclear installations of TSÚ RAO, ISFS, RÚ RAO, IS RAO and FS KRAO, and the decommissioning of NPP A-1 and NPP V-1.

Employees performing activities related to the operation of TSÚ RAO, MSVP, IS RAO, RÚ RAO, FS KRAO and decommissioning of A1 NPP, stage 3 and 4.

V.a) leading and managing staff, specialists and technical-administrative staff of asset management, technical and operational units

V.b) executive staff of units of asset management, technical and operational units

Employees performing activities in stage 2 of decommissioning of V-1 NPP

V. c) leading and managing staff, specialists and technical-administrative staff of asset management, technical and operational units of V-1 NPP,

V. d) executive staff of units of asset management, technical and operational units of NI V-1 NPP

Employees performing activities common for all NIs of JAVYS, a. s.

V. e) leading and managing staff, specialists and other professionally competent staff, performing activities common for all NIs of JAVYS, a. s.

The education of employees and the system of professional training of JAVYS, a. s. employees are defined for all activities of the licence holder JAVYS, a. s. for the decommissioning of NPP A-1 in III. and IV. stage and NPP V-1 in II. stage, operation of NIs TSÚ RAW, ISFS, FS KRAO, RÚ RAO, and IS RAW. The company JAVYS, a. s. considers the current staff training system to be in line with the human resources management programme to ensure a sufficient number of permanent staff with the required skills. The system defines the division of employees according to the nuclear installations and professional activities for the current state and for the activities of the V. stage of decommissioning of the NPP A-1 and final activities of the II. stage of decommissioning of NPP NPP V-1. In accordance with the human resources management programme, changes are being made to the documentation approved by ÚJD SR – changes in the organizational structure and functional scheme, organizational rules and subsequent documentation - PISM, stage programmes and the system of professional training of employees. The documents define the need for human resources, areas of organizational and professional departments, management organization and qualification and work prerequisites for specific job positions for the given state of nuclear facilities of the licence holder JAVYS, a. s.

Operator of specialized facility

Professional education and training of employees of authorization holder, as well as of employees of contractors, is carried out at the operator of a specialized facility, who is a holder of authorization for professional training issued by ÚJD SR upon written application after reviewing the technical equipment used during the training and professional competency of applicant‘s employees. The practical exercise (internship and on-the-job training) is carried out within the premises of the operator on the basis of licence from ÚJD SR for professional staff training. Professional training is carried out in compliance with the ÚJD SR decree No. 52/2006 Coll. on professional competence *as amended* and with the approved system of professional training according to the training programmes.

Regulatory Body

Each year, the ÚJD SR approves and evaluates an annual continuing education plan for all its employees. Continuing education is considered by the ÚJD SR as a systematic process of providing and acquiring knowledge and expertise, maintaining, improving and supplementing the skills, abilities, habits and experience that an employee needs to perform his/her work activities. This process distinguishes between adaptation training and competence training. Adaptation training is designed to ensure that the new employee is quickly integrated into his/her current job position. Competence training

includes vocational training, language training, management training, personal development training and IT training. Particular attention is paid to competency-based training for the UJD SR inspectors in the form of modules focusing on professional areas related to the operation of nuclear installations and activities in the field of nuclear energy utilisation.

The project "Implementation of Knowledge Management" is currently underway at the UJD SR to ensure not only the transfer of knowledge between more and less experienced staff, but also the retention of critical knowledge within the Regulatory Body.

ÚJD SR also utilises modern forms of education, such as self-study or e-learning.

I FINANCIAL RESOURCES (Art. 9)

Member States shall ensure that the national framework require that adequate financial resources be available when needed for the implementation of national programmes referred to in Article 11, especially for the management of spent fuel and radioactive waste, taking due account of the responsibility of spent fuel and radioactive waste generators.

Financing RAW, SNF Management and Decommissioning of Nuclear Installations

Securing of the financing of the National SNF and RAW Management Programme is based on the valuation of the costs of all activities required by the SNF and RAW management system. The specificity of this system is the fact that the need for funds is largely required only after the end of power generation and fund raising.

Act No. 308/2018 Coll. on the National Nuclear Fund, and on amendments to Act No. 541/2004 Coll. on Peaceful Uses of Nuclear Energy (Atomic Act) and on amendments to certain laws as amended (Act on Nuclear Fund) sets rules for management, contributions and the scope of activity of the Fund for Decommissioning of Nuclear Facilities.

The purpose of establishment and activity of the National Nuclear Fund is to collect and administer financial resources (resources of the Fund) determined for the back-end of nuclear energy and grant these resources in sufficient amount in a transparent and non-discriminatory manner to the applicants for covering of lawful expenses incurred in connection with activities related to the back-end of nuclear energy under conditions mentioned in the Act and in compliance with the SR´s commitments resulting from the Joint Convention.

The Fund resources are funds paid as:

a) obligatory contributions
b) *obligatory payments*
c) transfer from the budgetary expenditure account of the MH SR as a levy is collected by the system operators (transmission system and distribution systems), intended to pay for historical debt, and which is part of the electricity price supplied to end customers (Government Ordinance Ordinance No. *478/2022 Coll. (previously Government Ordinance No*.22/2019)*, effective from 1 January 2023,* establishing the amount of annual levy intended for covering of historical debt from supplied electricity to end customers and details on the method of its collection for the National Nuclear Fund, its use and the method and deadlines for its payment),
d) penalties imposed by ÚJD SR according to a specific legal provision *and sanctions,*
e) interest payments (revenues) from deposits on nuclear fund accounts,
f) voluntary contributions from natural and legal entities,
g) subsides and contributions from the EU funds and other international organizations, financial institutions and funds provided to cover the expenses of back-end of nuclear energy cycle,
h) subsides from the state budget,

i) revenues from financial operations,
j) other resources, if required by a special regulation, *or by an international treaty, by which the Slovak Republic is bound,*
k) fees from the applicants for issuing permit for activities leading to exposure by a radioactive source represent a financial guarantee.

Currently, the basic (majority) resources of the Fund include the mandatory contributions *and payments* by the operators of nuclear installations generating electricity, *also transfer from the expenditure budget account of MH SR as levies collected by transmission system and distribution system operators*. *Atomic Act (Act No. 541/2004 Coll.) in Section 34 and 34a stipulates sanction mechanisms and defines contributions from the licence holders for the performance of state supervision. Eligible costs for activities on the back-end of the peaceful use of nuclear energy, are defined in the MH SR Decree No. 31/2019 of 28 January 2019, which lays down the details of the structure and scope of eligible costs, the rules for the pricing and updating the prices of own performance of the beneficiary of funds from the National Nuclear Fund and the structure and scope of the price calculation of own performance.*

The Fund creates targeted sub-accounts from the obtained resources, structured in the following way:

a) sub-account for decommissioning of nuclear installations operated at the Jaslovské Bohunice site including the management of radioactive waste from their decommissioning, structured as analytical accounts for:
   - Nuclear power plant A-1,
   - Nuclear power plant V-1,
   - Nuclear power plant V-2,

b) Sub-account for decommissioning of nuclear installations, including RAW management from this decommissioning, operated at the Mochovce site in the structure of the following analytical accounts:
   a) NPP Mochovce 1&2,
   b) NPP Mochovce 3&4,

c) sub-account for decommissioning of *new* nuclear installations, which *were* commissioned after *1 January 2019*, including the management of radioactive waste from their decommissioning,

d) sub-account for management of nuclear materials of *unknown origin* and radioactive *materials of unknown origin.*

e) Sub-account for site search, geological survey, preparation, design, construction, commissioning, operation and closure of repositories for RAW or SNF, including site monitoring after closure of these repositories and related research and development, public involvement into decision-making processes, communication with the public, economic incentives for the sites concerned and the alleviation of the burdens caused by these activities in the structure of the following analytical accounts:
   a) RÚ RAO at Mochovce site,
   b) Deep geological repository,

f) sub-account for institutional control of repositories,

g) sub-account for *long-term* storage of nuclear spent fuel at the nuclear installations themselves,

h) sub-account for reimbursement of expenses determined for administration of the Fund and expenses related to the administration of the Nuclear Fund,

i) *sub-account for security to cover the costs of management of disused high activity sources,*

j) *sub-account for decommissioning of nuclear installations other than nuclear installations intended for power generation, and closure of RÚ RAO in the structure of the following analytical accounts:*

1. *Technology for treatment and conditioning of radwaste, including buildings and facilities transferred here from NPP A-1,*
2. *Interim Spent Fuel Storage Facility operated at the Jaslovské Bohunice site,*
3. *Final Treatment of Liquid Radwaste operated at the Mochovce site,*
4. *Integral Radwaste Storage Facility operated at the Jaslovské Bohunice site,*
5. *National Radwaste Repository operated at the Mochovce site,*

k) Sub-account for collecting funds from fines and sanctions.

The resources of the Nuclear Fund generated from mandatory contributions or mandatory payments are held in relevant sub-accounts or analytical accounts, for which the mandatory contributions or mandatory payments are intended, together with income from the deposits of these funds in the accounts and yields from financial operation.

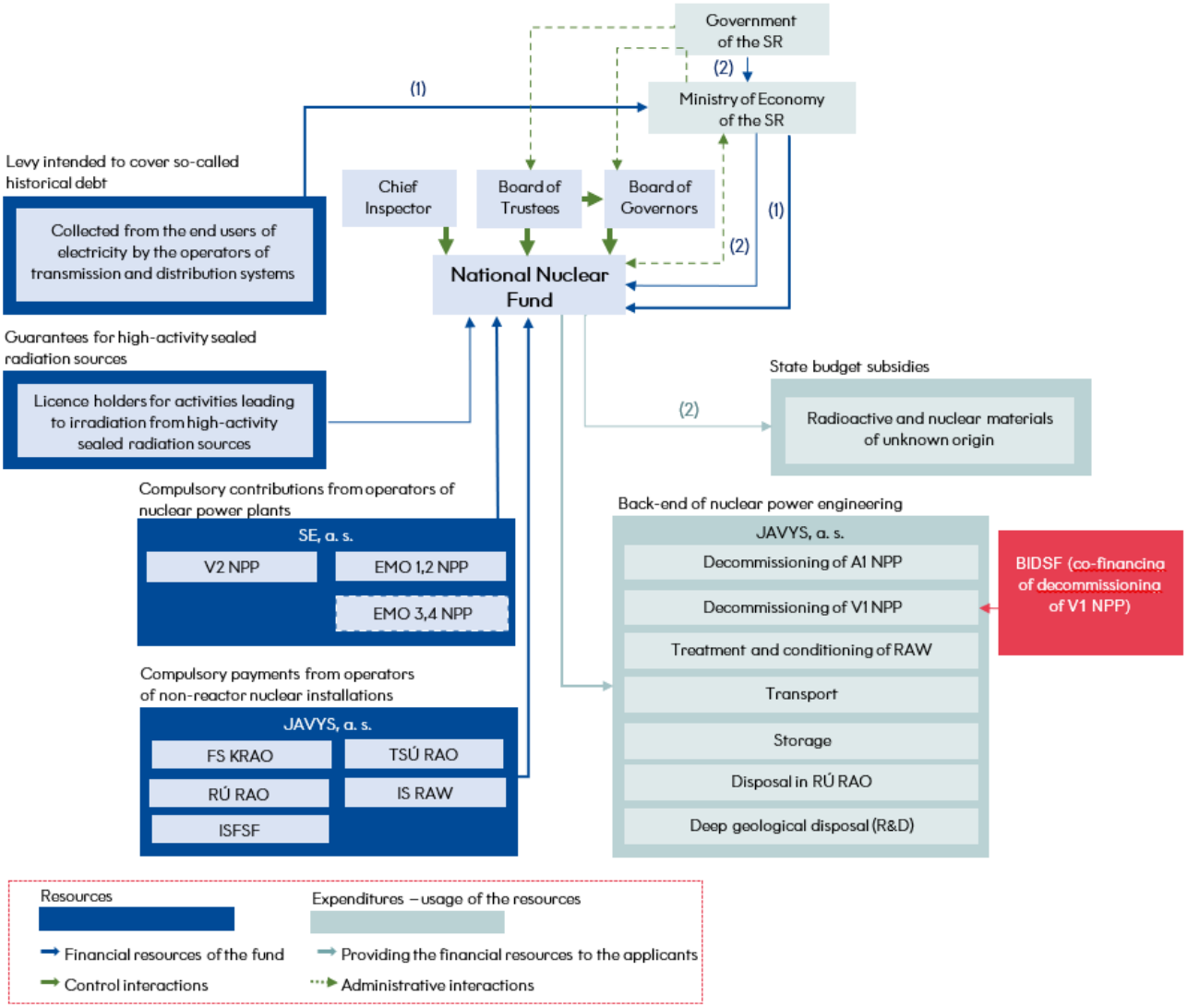

Fig. 27: Scheme of financing the back-end of the nuclear energy cycle

Financial resources from the Fund are provided based on applications. The applicant may be a licence holder for:

1. A stage of decommissioning of a nuclear installation,
2. Operation of a nuclear installation for RAW or SNF disposal,
3. Closure of RAW repository or repositories, and SNF and its institutional control,
4. RAW or SNF management,
5. Handling of nuclear materials inside or outside the nuclear installation, or
6. Export of nuclear materials or shipments of radioactive materials, including their international transport.

The Nuclear Fund is obliged to use funds in accordance with the National Programme to cover eligible costs incurred for activities of the back-end of the peaceful use of nuclear energy cycle, and activities

related to management of nuclear materials of unknown origin, radioactive materials of unknown origin and disused high-activity sources, up to the amount of accumulated funds, in particular for:

a) elaboration of a documentation submitted to ÚJD SR for permitting the decommissioning of a nuclear installation,

b) decommissioning of a nuclear installation, including RAW management from such decommissioning,

c) spent fuel management after the start of decommissioning of a nuclear installation,

d) handling of nuclear materials of an unknown origin and handling of radioactive materials of unknown origin, where the originator or the current owner, according to the statement of the Police Investigator or the statement of the Ministry of Health of the Slovak Republic, is not known; if the originator of nuclear material of an unknown origin or radioactive material of unknown origin is subsequently identified, he is obliged to reimburse the Nuclear Fund for the costs incurred in the handling of nuclear material or radioactive material,

e) the purchase of land for the siting of RAW repository or SNF repository from the decommissioning of nuclear installations,

f) site search, geological survey, preparation, design, construction, commissioning, operation and closure of RAW or SNF repositories, including their monitoring after the closure, institutional control of repositories and related research and development, reasonable costs for public involvement in related decision-making processes, reasonable costs of communication with the public, reasonable costs of economic stimulation of affected localities, and reasonable costs of alleviating the burdens caused by activities under this point,

g) management and activities related to the management of Nuclear Fund up to 1 % of its annual income,

h) payment of insurance premiums for liability insurance of the operator of nuclear installation, which is in decommissioning, for damages caused by nuclear incident,

i) management of disused high-activity sources and related activities from the signing of the proof of receipt of disused high-activity source by the authorized organization up to the amount of the contribution for the financial security,

j) reasonable and purposefully spent costs to support training, qualification and expertise for the preservation and dissemination of knowledge, and support for research and development intended to deal with the back-end of the peaceful uses of nuclear energy cycle, the management of nuclear materials of unknown origin or radioactive materials of unknown origin, RAW produced during activities leading to exposure and the area of disused high-activity sources.

In the context of the accession of the Slovak Republic to the EU, both Units of V-1 NPP were shut-down in 2006 and 2008, based on the decision of the Slovak Government. Completion of the decommissioning of V-1 NPP is planned until 31 December *2027 depending on the completion of the public procurement for the D4.7 Project.*

The costs of decommissioning of V-1 NPP are financed from the following sources:

- *from Slovak resources (from levies paid to the National Nuclear Fund, and from own resources of JAVYS, a. s.),*
- EU and other donor funding, with EU funds managed by two implementing agents, *EBRD and SIEA under the Bohunice Programme. The EBRD manages the* BIDSF, which was established in 2001, under the Framework Agreement between the Slovak Republic and the European Bank for Reconstruction and Development concerning the activities of the Bohunice International Decommissioning Support Fund. Through this Fund, the EU has *also* provided funding for Slovakia to mitigate the economic impacts of the early shutdown of NPP V-1*, namely in a form of non-nuclear projects in the transmission system and energy efficiency in public buildings. However, priority is given to support for NPP V-1 decommissioning projects.* Funding for the decommissioning of NPP V-1 is implemented in a form of grant agreements (GA) *concluded with the fund managers (EBRD and SIEA), who formally represent the donors.*

From the resources of the National Nuclear Fund, national funding is provided for the relevant year based on approved applications for the NPP V-1 decommissioning, for co-financing of selected projects co-financed from EU resources, for financing of consideration for contractors, for financing of induced NPP V-1 decommissioning support costs, and other activities as specified under Act No. 308/2018 Coll. on the National Nuclear Fund.

The costs for the management of SNF and RAW from the operated NPPs (EBO V2, EMO 1,2, and MO 3,4) are covered directly by the NPP operating licence holder (SE, a.s.) either within the operation of its own facilities or as payment for services provided by JAVYS, a.s. on a contractual basis (transports and storage of SNF, transports, storage, treatment, conditioning and disposal of RAW in the RÚ RAO).

J TRANSPARENCY (Art. 10)

1. *Member States shall ensure that necessary information on the management of spent fuel and radioactive waste be made available to workers and the general public. This obligation includes ensuring that the competent regulatory authority informs the public in the fields of its competence. Information shall be made available to the public in accordance with national legislation and international obligations, provided that this does not jeopardise other interests such as, inter alia, security, recognised in national legislation or international obligations.*
2. *Member States shall ensure that the public be given the necessary opportunities to participate effectively in the decision- making process regarding spent fuel and radioactive waste management in accordance with national legislation and international obligations.*

In the Slovak Republic, the right to information is guaranteed by the Constitution and by other documents on human rights since the beginning of 1990s. The Act No. 211/2000 Coll. *and on amendments to certain laws* as amended (the Act on Free Access to Information) provides for the public a legal way to obtain the needed information. This Act together with the *Act No. 541/2004 Coll. (Atomic Act)* and the Act No. 24/2006 Coll. on the Environmental Impact Assessment, form the legislative framework for communication with the public in the field of nuclear energy. Pursuant to the *Act No. 541/2004 Coll. (Atomic Act)* (section 27, par. 4) the operator is obliged to inform ÚJD SR on events in the operated nuclear installations and in case of incident or accident in accordance with section 28 par. 3 of the law, it has to also inform the public. Among the obligations of the holder of authorization, according to the *Atomic Act,* (Section 10, par 1, letter m), is to inform the public also about assessment of nuclear safety at the nuclear installations operated by the holder of authorization. The Act No. 24/2006 Coll. on the environmental impacts assessment transposes the EU Directive in the given field (Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment), and also implements the *Convention on Access to Information, Public Participation in the Decision-Making Process and Access to Justice in Environmental Matters (Notice of the Ministry of Foreign Affairs of SR No. 43/2006)* not only in the field of public information, but also public participation on the decision-making processes concerning environmental issues. The operation, safety improvements at NIs at Jaslovské Bohunice V-2 and Mochovce, as well as construction of Units 3&4 in Mochovce, influenced the life in those regions significantly, which has required necessary intensification in the communication with the regions in the vicinity of NIs, as well as on a national level. Transparent information on all aspects of construction, operation and decommissioning and disclosure of publicly available information channels has become an integral part of an open policy of operator and regulators. Among the most significant communication channels are:

- *Information Centres of JAVYS, a.s., in Mochovce and Jaslovské Bohunice sites, average yearly number of visitors cca 5-thousand + tours organised for selected groups;*

- *Information Centre of Slovenské elektrárne, a.s., Energoland Mochovce (12 – 15-thous. visitors a year) + tours of NPP Mochovce and Jaslovské Bohunice for students of schools with technical disciplines and visits from public concerned – representatives of local government, members of the National Council of SR, members of the parliamentary economic committee, foreign experts, including the Austrian Government, etc.;*
- *Information Centre Energoland organizes also other events for the public, e.g. Night at Energoland, which is part of the European Night of Museums and Galleries, special programmes for summer children´s university, holiday camps, etc.;*

Fig. 28: Night at Energoland Mochovce

- *Periodical "JAVYS U nás/JAVYS with us", published by JAVYS, a.s. – free distributution in the regions of Jaslovské Bohunice and Mochovce + online version;*
- *Periodical "Jadrová energia/Nuclear Energy", co-published by Research Centre Řež and ÚJD SR – distributed to relevant institutions, schools and libraries;*
- *Online version of the Annual Report on Safety and Operation of NPP Jaslovské Bohunice and NPP Mochovce with WANO indicators and other environmental impact indicators;*
- *Online version of the Annual Report of the ÚJD SR informs about the activities of the regulatory body and about the status of nuclear safety of nuclear installations in the Slovak Republic;*
- *Websites of licence holders – www.seas.sk, www.energoland.sk, www.javys.sk, regulatory body ÚJD SR – www.ujd.gov.sk a Národného jadrového fondu – www.njf.sk;*
- *Social networks: Facebook, LinkedIn, YouTube, Instagram, Twitter;*

- *www.slovensko.sk – Central Official Electronic Notice Board (CUET), on which the UJD SR publishes the prescribed information and which acts as a nationwide communication point for all state administration authorities in relation to the public;*
- *Touch-screen information kiosk of the ÚJD SR, which performs the function of the Official Notice Board of the ÚJD SR - allows easy viewing of administrative proceedings and decisions issued by the ÚJD SR, accessible to the public 24 hours a day;*
- *Citizens' Information Commissions (hereinafter referred to as CICs) of Mochovce and Jaslovské Bohunice, which are composed of elected and other representatives of the regional public. The members of the CICs have regular meetings with the management of the licence holders, as well as with representatives of the supervisory authorities and thus receive qualified first-hand information;*
- *Regional associations of towns and municipalities, which also communicate with NI licence holders in the region and with regulatory bodies (www.zmo.sk, www.zdruzeniemochovce.sk);*
- *CSR (Corporate Social Responsibility) programmes of licence holders to help in areas of general benefit (education, health care, charity, culture, sport, environment);*
- *Events for employees and the public organised by Slovenske elektrárne, a.s., on the occasion of the completion of power testing of Unit 3 of NPP Mochovce;*
- *Videos on the commissioning of the new EMO3 Unit, interviews with EMO/MO3&4 managers on the commissioning process, a new 3D model of WWER 440 explaining the process of electricity generation and the operation of safety systems in the power plant, available on: seas.sk, energoland.sk or YouTube channel of Slovenske elektrárne;*
- *External presentations at schools and other events, such as: Ekotopfilm festival, through which Slovenské elektrárne, a.s., will reach more than 15-thousand primary and secondary school students;*

Other: Seminars for journalists, mayors and representatives of local government; press conferences and briefings organized at major events, press releases, active participation in domestic and foreign events (conferences, workshops, etc.).

Fig. 29-32: Examples of periodicals

Information and public participation

Communication and informing the public by all available means and channels is one of the main priorities of the UJD SR, which results from its status and competence. The primary objective of communication with the public is to inform the domestic and foreign public about developments in the scope of responsibility of the UJD SR and to build public confidence in the activities of the UJD SR through up-to-date, objective and comprehensible information and two-way open communication.

ÚJD SR provides information upon request and at the same time is active in disclosing information on the condition of nuclear installations in the SR and on its activity as a regulatory body, by which it allows to the public and the mass-media to check the data and information on nuclear installations, as well as on ÚJD SR.

The main communication channel with the public is the website (www.ujd.gov.sk), therefore, among other things, nuclear safety laws and regulations, related legislation, full texts of safety guides are published and regularly updated. On the website, and also through the open data portal data.slovensko.sk, the UJD SR permanently makes available selected open data files, so-called datasets, such as all orders, contracts, invoices and the list of licence holders.

In addition to the above-mentioned information, all administrative proceedings, as well as decisions issued by the ÚJD SR in full text with reasoning are published on the website of the Authority, thus fulfilling its legal obligation under Section 3(6) of the Act on Administrative Procedure (see also chap. E.2.1.2). In addition, ÚJD SR through its website and also www.slovensko.sk through CUET, fulfils its obligation of an administrative body under Section 26 of Act on Administrative Procedure and Section 8 (10) of the Atomic Act and the Building Act, to serve important documents in administrative proceedings by public notice.

The ÚJD SR has set up a touch-screen information kiosk, acting as the Official Notice Board of the ÚJD SR, where it is also possible to view the pending administrative proceedings of the Authority and the decisions issued by the Authority. Here the website of the Authority is also available to the public. A touch-screen information kiosk is located at the headquarters of the ÚJD SR Bratislava - in front of the

entrance to the building and is accessible to the public 24 hours a day.

Public information on activities related to the peaceful uses of nuclear energy is closely linked to enabling public participation in the decision-making process in the individual authorisation procedures for these activities. Public participation in the decision-making process is ensured at all stages of the nuclear fuel cycle. The authorisation process for the above-mentioned activities clearly recognises and allows for public participation in the decision-making process.

The UJD SR continuously informs the general public about its activities and individual administrative proceedings initiated, pending and completed pursuant to Section 3(6) of Act No 71/1967 Coll. on administrative proceedings (Administrative Procedure Code), on all procedural acts at all stages of the processes through the standard information channels of the ÚJD SR, which are the official notice board of the ÚJD SR, the electronic official notice board of the Office located on the web site of the ÚJD SR (www.ujd.gov.sk), which are available to the public 24 hours a day, as well as through the CUET. This system creates the preconditions for comprehensive and timely information to the public in order to optimally involve them in decision-making processes. Authorisation procedures for activities related to the peaceful uses of nuclear energy are administrative procedures and are governed by Act No 71/1967 Coll. on Administrative Procedure (Administrative Procedure Code), which establishes procedural rights relating to the status of a party to the proceedings. These enable the parties to the proceedings and the public to influence the course of the decision-making process by means of the possibility of making observations, submitting procedural motions and amendments, and applying for legal remedies.

Following the amendment of the Act No. 24/2006 Coll., in 2010 and in 2014 the term “public” was broadened in such a way that it includes any natural or legal person or their organizations and groups. The public concerned is the public that is affected or likely to be affected by the given proceeding, *relating to the environment or has an interest in such proceedings.* Sections 24 and 25 govern the public participation and of the public concerned in the proceedings pursuant to the *Act No. 24/2006 Coll.,* including ensuring participation in the licensing procedure, which follows and which is governed by special regulations. The public is informed of the proceedings through a website of the competent authority. The public concerned has a status of a party in the screening procedure and in the procedure of environmental impacts assessment and consequently a status of a party in the licensing procedure regardless of its legal interest in the matter.

The public has a right to express an interest in the proposed activity by filing a written opinion or comments, as well as the right to appeal, for example against the final opinion issued by MŽP SR.

Subsequently the public may participate and file an appeal also in the subsequent licensing procedure under the *Act No. 541/2004 Coll. (Atomic Act).*

ÚJD SR has competencies in the field of public information regarding nuclear safety and monitors other media sources with the aim to obtain the necessary overview on the information policy of the given entity. ÚJD SR is a regulatory body, which independently from operators of nuclear installations provides information on nuclear safety of nuclear installations including information on the safety of radioactive

waste, spent nuclear fuel management, nuclear materials, their control and record keeping, as well as information on other stages of fuel cycle.

Every year, ÚJD SR prepares an Activity Report according to the *Act No. 541/2004 Coll. (Atomic Act)* on the results of ÚJD SR activities and on the safety of nuclear facilities in the SR for the past year, submitted to the Government meeting and to the National Council of the SR. An Annual Report is published in the Slovak-English version. The Annual Report is published on the ÚJD SR website.

ÚJD SR places extraordinary emphasis on communication with the public in the region with nuclear installations, striving for continuous improvements in a form of cooperation with Civic Information Commission, the representatives of municipalities, as well as by distribution of information materials, such as annual reports, leaflets and by making contributions to the regional press and TV.

In cooperation with Civic Information Commission or with the municipalities discussions are being organized with the public both on nuclear safety, as well as radioactive waste management.

Every year ÚJD SR informs Slovak press agencies, daily newspapers and electronic media about its domestic and foreign activities and organizes press conferences for journalists. ÚJD SR, together with the State Authority for Nuclear Safety of the Czech Republic (SÚJB) was a publisher of specialized magazine, “Safety of the Nuclear Power Engineering“, *aimed at presenting the* latest knowledge in the field of nuclear safety in the Slovak Republic and the Czech Republic*. After changes made by SÚJB, the journal was taken over by Research Centre Řež in the second half of 2019 and in cooperation with the ÚJD SR continues to publish the journal under the original title "Nuclear Energy". The journal is available free of charge online and printed editions are distributed by the UJD SR primarily to relevant institutions, schools and libraries.*

The planning and implementation of the activities of the ÚJD SR towards informing the public is also largely influenced by the results of public opinion surveys, which the Authority carries out on a regular basis at two levels. A nationwide public opinion survey alternates with a local survey at an annual interval, where respondents answer questions on their perception of nuclear safety, the provision of information by the licence holder and the state supervision, or the level of trust towards stakeholders. The results of the surveys are published on the Authority's website in both Slovak and English.

With regard to emergency preparedness the district offices and the municipalities according to the Act No. 42/1004 Coll. on civil protection of the public publish information for the public on the web site or on a public information board, while there is a 30 days period, during which the affected public may file comments. Justified comments are adequately taken into account when developing a public protection plan. Information are reviewed and updated as needed; they are published in the updated form at least once in three years. Information for the public include in particular information on the source of threat, information on the possible extent of an extraordinary event and consequences on the affected area and on the environment, hazardous properties and identification of substances and preparations that may cause an incident, information about the method of warning the public and on rescue works, tasks and measures after an extraordinary event, details on where to obtain further information relating to the public protection plan. Bodies of state administration and of self-government publish manuals for

the public containing advice for the public, the aim of which is to provide as much information as possible on how to proceed and how to behave in case of natural disasters, accidents or disasters.

Informing about incidents and accidents

Act No. 541/2004 Coll. (Atomic Act) in Section 27, par. 4 (f) stipulates that the licence holder is obliged to immediately inform persons that are in the territory of NI about the incident or accident pursuant to par. 3 (b) or (c) of Section 27 of Atomic Act, on health protection measures and on activities to be performed when they occur. Atomic Act in Section 28, par. 22 stipulates that the licence holder and the district offices at the seat of the region affected by the emergency response are obliged to immediately inform the public of the facts concerning the incident or accident, the steps to be taken and if necessary, the measures for the health protection of the public concerned.

Atomic Act in Section 4 (1) stipulates that ÚJD SR informs the public immediately about incidents or accidents of nuclear installations of the SR, the same way, immediately about accidents of nuclear installations outside the territory of SR with a possible impact on the SR. *In the event of a major incident or accident at a nuclear installation, information will be made available to the public on a special - emergency - website of the ÚJD SR, which will be activated in such cases.* The regulator also informs the public about events during shipments of radioactive materials on the territory of the SR or outside of the SR with a possible impact on the territory of the Slovak Republic, on serious deficiencies in nuclear installations and on measures adopted to eliminate them, and on other facts related to nuclear safety of nuclear installations in the SR.

Information in the event of danger

ÚJD SR Decree No. 55/2006 *on the details in emergency planning for an incident or accident* in Section 11 stipulates that for public information the licence holder, pursuant to Section 5 (3) (b) to (d) of the Atomic Act, shall provide information to the Ministry of Interior of SR according to a special regulation. The licence holder shall inform the public through information contact point established pursuant to a special regulation and via the licence holder´s website. The representative of the information point is included in the emergency response organization. The Decree further stipulates in Section 20 that in the case of information about an incident or accident during transport, the licence holder is obliged to immediately report the incident or accident to the Authority by telephone and written information about the incident or accident during transport no later than 45 minutes after its discovery. The public shall be informed no later than within 30 minutes, if the incident or accident during transport has been rated as INES 2 or higher.

Information provided to supervisory authorities of other States

ÚJD SR ensures international cooperation in the field of operation of the Atomic Act, including the fulfilment of SR´s commitments arising from international treaties, by which the Slovak Republic is bound, as well as liaison function, and fulfils other notification obligations towards the IAEA and EU institutions.

Sensitive information

Access to information is limited in case of sensitive information, as well as information that is subject to Act No. 215/2004 Coll. on the Protection of Classified Information and on amendments to certain laws. Act No. 215/2004 Coll. in Section 3, par. 1 defines four categories of classified information – top secret, secret, confidential and reserved. Atomic Act in Section 3, par. 16 defines documentation containing sensitive information as documentation, the disclosure of which could be used to plan or carry out activities aimed at disrupting or destroying a nuclear installation, thereby adversely affecting public safety and causing environmental or economic damage. This documentation is made available after the exclusion of sensitive information. The list of documentation containing sensitive information is specified in Annex 1 and Annex 2 to the Atomic Act.

K Implementation of the national programme (Art. 11 and 12)

Art. 11

1. *Each Member State shall ensure the implementation of its national programme for the management of spent fuel and radioactive waste ('national programme'), covering all types of spent fuel and radioactive waste under its jurisdiction and all stages of spent fuel and radioactive waste management from generation to disposal.*
2. *Each Member State shall regularly review and update its national programme, taking into account technical and scientific progress as appropriate as well as recommendations, lessons learned and good practices from peer reviews.*

Art. 12

1. *The national programmes shall set out how the Member States intend to implement their national policies referred to in Article 4 for the responsible and safe management of spent fuel and radioactive waste to secure the aims of this Directive, and shall include all of the following:*
   a) *the overall objectives of the Member State's national policy in respect of spent fuel and radioactive waste management;*
   b) *the significant milestones and clear timeframes for the achievement of those milestones in light of the over- arching objectives of the national programme;*
   c) *an inventory of all spent fuel and radioactive waste and estimates for future quantities, including those from decommissioning, clearly indicating the location and amount of the radioactive waste and spent fuel in accordance with appropriate classification of the radioactive waste;*
   d) *the concepts or plans and technical solutions for spent fuel and radioactive waste management from generation to disposal;*
   e) *the concepts or plans for the post-closure period of a disposal facility's lifetime, including the period during which appropriate controls are retained and the means to be employed to preserve knowledge of that facility in the longer term;*
   f) *the research, development and demonstration activities that are needed in order to implement solutions for the management of spent fuel and radioactive waste;*
   g) *the responsibility for the implementation of the national programme and the key performance indicators to monitor progress towards implementation;*
   h) *an assessment of the national programme costs and the underlying basis and hypotheses for that assessment, which must include a profile over time;*
   i) *the financing scheme(s) in force;*
   j) *a transparency policy or process as referred to in Article 10;*
   k) *if any, the agreement(s) concluded with a Member State or a third country on management of spent fuel or radioactive waste, including on the use of disposal facilities.*

2. The national programme together with the national policy may be contained in a single document or in a number of documents.

National Programme (Historical Overview)

The Slovak Government approved the “Strategy for the back-end of the nuclear energy in the SR” by its Resolution No. 328 at its session held on 21 May 2008.

Provisions of Section 3 par. 2 (d) of the Act No. 238 on the NJF requires the Board of Trustees of NJF to submit a draft Strategy update to the Ministry of Economy every five years.

The updated document was made public on the web pages of the MŽP SR, MH SR and the NJF (including in mass media) in late 2012. The above mentioned web sites published the entire updated “Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic“.

During the screening procedure no comments have been delivered on the Notice of a strategic document having national importance: The “Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic“. The public did not comment during the screening procedure specifically. A public hearing was held on 22 January 2013.

The Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic was approved by the Government by its Resolution No. 26/2014.

Following the publication of the Council Directive 2011/70/Euratom establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste and its transposition by the Act No. 143/2013 Coll. the Board of Trustees of NJF decided to prepare an update of the document “Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic“.

The Ministry of Economy, in cooperation with the Ministry of Environment according to the Act No. 24/2006 Coll. and after the completion of the screening procedure issued a decision that the update of the “Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic “shall no longer be reviewed according to the Act No. 24/2006 Coll. on environmental impact assessment.

The updated “Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic” according to the Act No. 143/2013 Coll. (transposing Directive No. 2011/70/Euratom) was approved by the Government resolution No. 387/2015 entitled National Policy and the National Programme which replaced the previously valid “Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic”.

The National Programme for management of SNF and RAW is based on the documents:

- the National Policy for the management of SNF and RAW,
- the “Strategy for the back-end of peaceful uses of nuclear energy in the Slovak Republic“ approved by the Government Resolution No. 26/2014,

- Supporting documentation submitted by the *licence* holders for the management of SNF and RAW and decommissioning of NIs.

Contents of National Programme

The document “National Programme for management of spent nuclear fuel and radioactive waste“ (www.economy.gov.sk) contains, inter alia the following objectives (targets):

1. Decommissioning of nuclear installations
2. Spent nuclear fuel and radioactive waste management
3. Access to repositories of radioactive waste and spent nuclear fuel after their closure
4. The need for research, development and demonstration activities
5. Responsibilities, monitoring implementation
6. The cost plan for decommissioning, management, financing scheme
7. Transparency – public information
8. International treaties on the management of spent nuclear fuel and radioactive waste
9. Projected impacts of contributions and levies on electricity prices, prices of other goods and services on the economic and social development of the State
10. Projected impacts of contributions and levies to the competitiveness of electricity producers in nuclear installations on the electricity market in the SR, internal electricity market of the EU
11. The impact of the national programme on balance and operational reliability of the energy system of the Slovak Republic in the EU
12. Opinions of state administration authorities in the field of public health in terms of radiation protection and health protection, and the opinion of MŽP SR in terms of impacts of programme implementation on the environment

Act No.308/2018 Coll. on the National Nuclear Fund, in Section 6, par. 7 stipulates the obligation of the Board of Trustees of NJF to submit to the MH SR a draft national policy and a draft national programme for discussion, prepared in accordance with par. 2 to 6 of Section 6 of Act No. 308/2018 Coll., and every six years a proposal of their updates together with the opinion of ÚJD SR. The MH SR submits the draft national policy and a draft national programme to the Government for approval. An update of the National Policy and the National Programme for the SNF and RAW management in SR is planned for *early 2025.*

Significant targets and the timeframes for achieving these targets with regard to the general objectives of the national programmes

Background

The targets are determined primarily on the historical development which can be summarized as follows:

- Since 1999 ongoing decommissioning of NPP A1 with the need to resolve management of atypical radioactive waste, which due to their content of long-lived radionuclides and higher levels of other safety significant radionuclides cannot be disposed in the existing National Repository;
- NPP V-1 has been in decommissioning since 2011;
- Available RAW repository, where disposable very low level and low-level operational RAW from the VVER power plants and disposable waste from their decommissioning can be disposed, when considering the planned operating life;
- No deep disposal repository available for disposal of SNF, as well as intermediate level of RAW and high-level RAW,
- Centralized collection of IRAW started to operate; most of them are disposable in the National Repository in Mochovce,
- Sufficient technological base is in operation for treatment and conditioning of radioactive waste,
- Spent fuel is stored in the NI ISFS. *Due to the filling of the capacity of ISFS it is necessary to build and put into operation new storage capacities for SNF by 2023*,
- The operator of nuclear power plants declared his intent to operate the existing NPPs for a period of 60 years;
- JAVYS, a. s. is responsible for activities that should lead to implementation of a deep geological repository,
- The preparatory phase of the project for a new nuclear power plant is ongoing in the Jaslovské Bohunice site and the operation of a new NPP being connected to the grid is considered in the horizon of 2029 and a period of operation of 60 years;
- The whole issue of the back-end of peaceful uses of nuclear energy is currently sufficiently covered by legislation.

Significant milestones and the timeframes for their achievement set in the National Programme *from 2015, which are subject to assessment by means of annual reports* are shown in the Table *6* below:

No.	Measure	Deadline	Responsible
For the area of infrastructure and legislation			
1.	Amend the law on the National Nuclear Fund in a principal manner and other related pieces of legislation, in order to: - Ensure that the State assumed responsibility for decommissioning, management of RAW from decommissioning and for the long-term storage of SNF, - Ensure that the amendment introduced a secure way of transferring nuclear facilities by the operator to the organization entrusted by the State for decommissioning, - Ensure that the level of contributions and payments to the NJF is determined by an independent body (NJF) under the rules specified by the legislation,	2016	MH SR

No.	Measure	Deadline	Responsible
	- Ensure that the recipient of NJF funds submitted to NJF eligible costs within the scope and dates given by the legislation, - Ensure that the scope and the structure of eligible costs for activities of back-end of nuclear energy cycle is defined by the legislation, - Ensure that also the operator of non-reactor nuclear facilities makes payments to NJF in order to finance their decommissioning.		
In the field of decommissioning of nuclear installations			
2.	Finalize stage II of NPP A1 decommissioning	2016	JAVYS, a.s.
3.	Implement the next stages of NPP A1 decommissioning	2033	JAVYS, a.s.
4.	Implement stage II of NPP V1 decommissioning	*po roku 2027*	JAVYS, a.s.
5.	Utilize funding from the BIDSF in a maximal extent for projects of decommissioning NPP V1	*po roku 2027*	JAVYS, a.s.
5a.	Priority of drawing saved/available funds from BIDSF in the shortest possible time.	*2023*	*JAVYS, a. s.*
6.	Prepare decommissioning of other NIs	permanent	JAVYS, a.s. SE, a.s.
In the field of radioactive waste and spent fuel management in general			
7.	Build and put into operation an Integrated RAW storage facility in Jaslovské Bohunice	2016	JAVYS, a.s.
8.	Build new storage capacities for SNF	2020	JAVYS, a.s.
9.	Create a database of all radioactive waste from nuclear facilities in the SR and ensure its continuous update	2016	JAVYS, a.s. in cooperation with MH SR and competent regul.bodies
10.	Build a facility for remelt of metal radioactive waste	2018	JAVYS, a.s.
11.	Build and put into operation a facility for IRAW and ZRAM management	2016	JAVYS, a.s.
In the field of radioactive waste and spent nuclear fuel disposal			
12.	Build a repository for very low-level waste	2018	JAVYS, a.s.
13.	Build additional storage structure after filling the second double row at the National RAW Repository	2018	JAVYS, a.s.
14.	Take a decision to continue or stop the double path in development of deep geological disposal – to comprehensively assess the idea of shared international deep repository	2020	MH SR
15.	Develop a plan for next stages of renewed development of deep geological disposal	2016	JAVYS, a.s.
16.	Decision on siting the deep geological repository of the SR (in case of cancelling the dual path)	2030	JAVYS, a.s.
17.	Putting the deep geological repository in operation	≈ 2065	JAVYS, a.s.
In the field of Research and Development			
18.	Develop a framework programme for R&D in the field of deep geological disposal and create internal conditions for its implementation	2018	JAVYS, a.s.
In the field of transparency			
19.	Create and prepare the implementation of a system of economic stimulus for sites affected by the development and operation of repositories Focus only on economic stimulus of sites is not sufficient. There should be a system for informing and working with the public in long-term.	2018	MH SR JAVYS, a.s. National Nuclear Fund

Table 6: Significant milestones and the timeframes for their achievement

Development of a Deep Geological Repository

Directive 2011/70/Euratom recommends that each EU State with a nuclear programme had a comprehensive vision and plans for disposing all types of RAW and SNF, which are produced in the given State, including the creation of resources for implementation. The present document established for disposal of SNF and RAW not disposable in the National Repository this double path:

- Disposal in a deep geological repository in the SR,
- Monitoring and support for building an international repository.

Sub-activities:

1. Development and preparation of a deep geological repository built in the SR.
2. Ensure and guarantee professional and safe solution of a deep geological repository:

- Characterization of the geological properties of selected sites,
- Development of geological models of selected sites,
- Directing geological works to select a suitable site,
- Providing important geological information for solving safety analyses.

3. Cooperation in development of an international repository, if the international repository is feasible, involvement in implementation of international scientific and research projects.
4. When updating this programme to evaluate the development of an international repository and based on the evolution to decide whether the Slovak Republic will continue in the cooperation on the international repository.

Public Participation

- Ensure public information in the field of RAW and SNF management and to ensure public participation in the decision-making process in accordance with applicable legislation.
- Create and prepare the implementation of a system of economic stimulus for sites affected by the development and operation of repositories.

Evaluation of the implementation of programme sub-objectives

The implementation of individual sub-objectives is assessed in the framework of the periodic annual reports on the implementation of the National Programme elaborated in cooperation with the National Nuclear Fund, JAVYS, a.s. and SE, a.s., and submitted for assessment to the MH SR together with the ÚJD SR´s opinion. An assessment of the implementation of the above-mentioned sub-objectives 1 to 19, as well as the objectives for the development of a deep geological repository as of 31 December *2020*, is the following:

1. Fundamentally amend the Act on the National Nuclear Fund and other related documents by the end of 2016

The draft new law on the National Nuclear Fund was submitted to the meeting of top management of MH SR in April 2017. On the basis of comments received from the Energy Employers´ Association to

the amount of contributions of the obliged entities to the National Nuclear Fund under the draft new law, the approval of the law was interrupted following a preliminary commenting procedure, and the activity of the task force composed of representatives of all stakeholders was renewed for the joint approval of the input parameters and the procedure to set the amount of mandatory contributions and compulsory payments to the NJF, as well as the necessary modifications to the text of the law and related documents. As at 31 December 2017, the key input parameters, such as the costs of a deep geological repository, the period of operation of NPP, as well as macroeconomic parameters were agreed and a methodology for setting the amount of mandatory contributions and compulsory payments to the NJF. The inter-ministerial commenting procedure on the draft law was renewed in June 2018. *The new Act on the National Nuclear Fund entered into force on 1 January 2019 and was promulgated in the Collection of Laws of the Slovak Republic under no. 308/2018.*

2. Complete the stage II of decommissioning of A-1 NPP

The task was completed as at 31 *September* 2016.

3. Implement the following stages of decommissioning of A-1 NPP by the end of 2033

In the framework of the implementation of the continuous decommissioning process of A1 NPP, from 1 *October 2016* stages III and IV of decommissioning are in implementation, with the scheduled date of completion in 2024, based on the ÚJD SR Decision No. 369/2016, which granted a permit for the implementation of stages III and IV in the scope indicated in the document "Plan for stages III and IV of decommissioning of A1 NPP". The follow-up stage V of decommissioning is scheduled for the period 2025 – 2033.

The main subject of stages III and IV is the decommissioning of technological equipment and rooms of objects of the *main production unit* – 30 – reactor hall, 32 – intermediate machinery hall, 34 – turbine hall and the main generating unit, external objects, such as object 28 – gas management system, *object 44/20* tanks *and* object 44/10 and treatment of liquid RAW, especially Chrompik and sludge, as well as handling contaminated soil and concrete.

Continuous monitoring of progress in the decommissioning project takes place at the technical level within individual tasks, as well as through monthly reports submitted by the contractor and approved by JAVYS, a. s. These reports are presented at regular monthly project management meetings.

4. Implement stage II of decommissioning of V1 NPP by the end of 2025

Implementation of stage 2 of decommissioning of V-1 NPP started on 1 January 2015 on the basis of ÚJD SR Decision 900/2014 issued on 23 December 2014. *The implementation of the individual activities of stage 2 of NPP V-1 decommissioning is proceeding in accordance with the approved Stage 2 plan. In relation to the date of completion of the decommissioning of NPP V-1, it is necessary to note that the delay in the procurement of the final decommissioning project is also affected by the newly proposed final decommissioning date of 2027.*

Based on the actual status of decommissioning of NPP V-1 at the beginning of 2021, after consideration of the experience from the implementation of decommissioning and after evaluation of all existing risk factors, the schedule for decommissioning of NPP V-1 was revised and approved, revision 4 of Stage 2 Decommissioning Plan for NPP V-1, by the ÚJD SR Decision No. 95/2023 of 22 March 2023, stating that the decommissioning of NPP V-1 will not be completed by the end of 2025 and the new date of completion is foreseen after 2027.

Within the framework of one of the most important NPP V-1 decommissioning projects, project D4.2 (Dismantling of Large Primary Circuit Components), all equipment located in the containment zone (reactor pressure vessels of both units, steam generators, main circulation pumps, main shutdown valves, primary circuit piping, shielding casings, and other process components), including the containment linings, were dismantled in the containment areas of the NPP V-1 RCA.

The operation of the fragmentation sites for activated and contaminated components of the primary circuit ran from May 2020 to August 2022. During this period, remotely controlled fragmentation, characterisation of activated components, transport of shielding packages to the Integral Storage Facility and packages to the RU RAO Mochovce were carried out. Activated concrete was also removed from the reactor shafts during this period. This was followed by the removal of contaminated concrete from the reactor shafts, and work is continuing to remove further contaminated concrete identified following the removal of linings from the SNF storage pools and the boric acid solution emergency tanks.

In parallel with the dismantling activities, there is a continuous process of handling of dismantled materials, their decontamination, management of RAW and release of materials meeting the criteria for release into the environment.

In terms of implementation of the overall NPP V-1 Decommissioning Project for reaching the end state, the significant project is project D4.2 "Dismantling of large-scale components of the primary circuit", whose main objective was met in August 2022. This was the dismantling of activated and contaminated large-scale primary circuit equipment (reactor pressure vessels of both reactor units, reactor internals, steam generators, main circulation pumps, primary circuit piping and other process components) and linings in the controlled area of the main production unit of NPP V-1. Parallel to this project is the implementation of the project D4.4C.01 "Dismantling of systems in the controlled zone of NPP V-1 - Part 2", which ensures the dismantling of the remaining technology in the controlled zone of NPP V-1. It includes pre-dismantling decontamination, dismantling, fragmentation of all remaining mechanical technologies in the controlled zone, electrical, air handling systems, removal of linings, decontamination of tanks over 50 m³ to the level of release to the environment, change of power supply to the remaining lifting equipment, etc.

The final decommissioning project D4.7 "Decontamination and demolition of NPP V-1 buildings and restoration of the site to its original condition" is under procurement. Completion of decommissioning depends on careful and targeted planning of the activities and scope of the individual projects and the overall length of the procurement process for these projects.

As of May 2024, 70 BIDSF projects have been completed and 5 projects are under implementation. The final project Decontamination and Demolition of NPP V-1 buildings and restoration of the site to its original condition is in the preparation phase. In terms of the implementation of the overall NPP V-1 Decommissioning Project to reach the end state, the D4.2 project is a significant project "Dismantling of large-scale primary circuit components", the main objective of which is the dismantling of activated and contaminated large-scale primary circuit equipment (reactor pressure vessels of both reactor units, reactor internals, steam generators, main circulation pumps, primary circuit piping and other process components) and linings in the controlled zone areas of the main production unit of NPP V-1. In parallel with this project, the implementation of project D4.4C.01 "Dismantling of systems in the controlled zone of NPP V-1 - Part 2" is also important, which will ensure the dismantling of the remaining technology in the controlled zone of NPP V-1. It includes pre-dismantling decontamination, dismantling, fragmentation of all remaining engineering technologies in the controlled zone, electrical, air handling systems, removal of linings, decontamination of tanks over 50 m³ to the level of release to the environment, change of power supply to the remaining lifting equipment, etc.

During the ongoing Phase 2 decommissioning of NPP V-1, the main circulation line was completely decontaminated and separated from the reactor pressure vessel. Subsequently, the steam generators were dismantled and transported to the V-1 turbine hall, where they are being fragmented at a newly constructed facility. The dismantling and fragmentation of the main circulation piping, main circulation pumps, main shut-off valves and auxiliary systems on both Unit 1 and Unit 2 are in progress in the controlled zone. The final decommissioning project D4.7 "Decontamination and demolition of NPP V-1 buildings and restoration of the site to its original condition" is under procurement. Completion of decommissioning depends on careful and targeted planning of the activities and scope of the individual projects and the overall length of the procurement process for these projects.

One of the most important decommissioning projects of NPP V-1, namely project D4.2 (Dismantling of large-scale components of the primary circuit), is currently under implementation. This project will mainly dismantle all equipment located in the containment zone (reactor pressure vessels of both units, steam generators, main circulation pumps, main shutdown valves, primary circuit piping and other process components), shielding case treatment, RAW management from the RAW storage facility requiring remote loading, dismantling of the linings in the NPP V-1 control area and others. In parallel with the dismantling activities, the process of management of the generated RAW, its transport and release of materials meeting the criteria for release into the environment is continuously taking place.

The progress of the overall process and individual projects is continuously monitored through regular monthly monitoring reports and meetings of senior employees of individual decommissioning projects of NPP V-1, representatives of the consultant and a representative of the EBRD, *MH SR, SIEA and NJF,* and also through meetings of the Monitoring Committee, which are held twice a year with the participation of the *European Commission, MH SR (alternating in chairing the committee),* JAVYS, a. s., SIEA, NJF, SEPS. *The* meeting of the Assembly of Contributors is held *once* a year, which approves specific projects co-financed by the BIDSF.

5. Maximum use of funds from the BIDSF for the V1 NPP decommissioning projects

To reduce the negative economic impact of the early shutdown of NPP V-1, the EU co-finances the decommissioning of NPP V-1 through the Bohunice Programme. EU funds are managed by two implementing bodies, the EBRD and the SIEA. *For the MH SR, the priority remains the use of unallocated funds from the previous financial perspective 2014 – 2020, and completion of the decommissioning of NPP V-1 in the shortest possible time. Another principle is the widest possible use of the national path.* The EBRD manages the Bohunice International Decommissioning Support Fund – BIDSF, and the funds are drawn on the basis of Grant Agreements concluded between JAVYS, a. s., and the EBRD. The signing of the agreements itself is preceded by the preparation of documentation for individual projects, when JAVYS, a. s., as the recipient of funds from the BIDSF, first identifies individual projects, proposes the method of their technical implementation and financing, presents them to the Joint Committee of the Slovak Republic and the EBRD, and finally submits them to the meeting of the Assembly of Contributors to the BIDSF, which takes place *once* a year.

By the end of 2023 JAVYS, a. s. had 18 grant agreements signed with EBRD, of which only 6 grant agreements are currently active, with a value of EUR 494,787,097. As of the same period, 2 grant agreements worth EUR 185,659,000 have been signed with SIEA. As of 31 December 2023, the total allocation for NPP V-1 decommissioning projects through EBRD and SIEA was EUR 680,446,097.

In August 2016, the activity of the national implementing body for decommissioning of NPP V-1 - Slovak Innovation and Energy Agency (SIEA) - began. The SIEA represents a parallel way of financing V-1 NPP decommissioning projects directly from EU funds, in addition to indirect funding through the BIDSF fund administered by the EBRD. Since 2016, EU funds for the Bohunice Programme have been redistributed between the two implementing bodies. From the start of SIEA activity until 31 December *2023*, *EU funds in the cumulative amount of EUR 222,210,000 were committed to SIEA, of which EUR 181,591,993 were allocated for the decommissioning of NPP V-1.* As at 31 December *2023*, JAVYS, a. s., and SIEA had 2 Grant Agreements signed to finance NPP V-1 decommissioning projects.

Together, funds in the total amount of EUR *675,906,328* were allocated for the decommissioning of NPP V-1. As at 31 December *2023*, a cumulative amount of EUR *479,850,054* was drawn from the BIDSF Fund and through the SIEA. The amount of not committed EU funds in the BIDSF represent as at 31 December *2023* an amount of EUR *2.3* million, not committed funds managed by the national agency, SIEA, are in the amount of EUR *38.3* million *already after deduction of administrative costs*. In the period 2021 – 2027, EUR 55 million are reserved for the Bohunice Programme, *of which the first portion of EUR 27.4 million was allocated to SIEA in 2021, in 2023 EUR 4.7 million was allocated to the BIDSF Fund and another portion of EUR 22.9 million should be allocated in the two years 2026 and 2027*.

The total estimated decommissioning costs for V-1 NPP (expressed in the price level of 2019 and represent 1,237 million €.

6. Prepare decommissioning of other nuclear installations

The procedures, time schedules and the costs of decommissioning of other NIs are set out in the conceptual decommissioning plans of the respective nuclear installations that are developed in

accordance with the requirements of the Act No. 541/2004 Coll. (Atomic Act), and the ÚJD SR Decree No. 58/2006 Coll. The conceptual plans for the decommissioning of NIs are updated in accordance with the requirements of Decree no. 102/2016 Section 22 point 2: “Holder of a permit according to Section 5 par. 3 (b) and (c) of the Act updates the conceptual plan for decommissioning a nuclear installation in connection with modifications in the nuclear installation or site changes, advances in technology, changes in generally binding legal regulations and the National Programme for the implementation of National Policy, events, changes in method of financing and current radiological conditions.“

In 2017, EBO V2 NPP and EMO 1&2 NPP conceptual decommissioning plans were updated, as a result of updated database of NPP facilities, as one of the main inputs for setting the costs of decommissioning according to the ISDC structure, while these conceptual decommissioning plans were developed for the period of operation of V2 NPP and EMO 1&2 NPP for 60 years, which means closure of operation of V2 NPP in 2045 and for EMO 1&2 NPP in 2061.

Conceptual decommissioning plans for TSÚ RAO, FS KRAO, IS RAO, MSVP were updated in 2020 due to implemented modifications at NIs, as well as due to the elaboration of the study “Costs for decommissioning of non-reactor nuclear facilities TSÚ RAO, FS KRAO, IS RAO, MSVP and determination of costs for the closing of the operation of the RU RAO “.

7. Build and commission the Integral Storage Facility for RAW in Jaslovské Bohunice by the end of 2018

In 2017, the construction of the Integral Storage Facility for RAW was completed, the commissioning was based on the ÚJD SR Decision dated 10 October 2017 and the approval decision and permit for use was issued. *The task is fulfilled.*

8. Build a new storage capacity for SNF by the end of 2020

In 2020, activities continued in development of the design documentation (PD). Based on the opinion of ÚJD SR on the prepared PD for the building permit, the PD PSP was supplemented with the latest requirements and recommendations from the relevant IAEA and WENRA documents. The procedure and continuation of the IPR project preparation “Completion of SNF storage capacity“ (*DSKVJP)* was reviewed due to the increase of seismic resistance of the dry ISFS, which was recommended by ÚJD SR on the basis of request from JAVYS, a.s. to comment on the proposed postulation initiation events for the preparation of the safety analysis. The recommended increase in the earthquake characteristics of the RLE revision level by 50 %, i.e. for the maximal horizontal acceleration PGAH = 0.516 g and for the maximal vertical acceleration PGAV = 0.321 g has required reassessment of the already developed construction and technical and technological design of the building. Due to these facts, the contractor re-worked the design for the building permit and subsequently submitted it together with safety documentation to JAVYS, a.s. for comments. In this context, the notification documentation according to Article 37 of EURATOM, concerning the increase of the seismic resistance of the dry ISFS.

The revised design documentation was submitted to ÚJD SR as part of the application for the building permit, while as part of the supplement to the application, EC´s consent was submitted to ÚJD SR to

the General Data processed in accordance with Article 37 of the Euratom Treaty, which were presented to the European Commission in June 2020. The documentation was revised in the light of the comments of the authorities concerned, in particular with regard to the need to increase seismic resistance and was completed in 2020. The application for a building permit was filed in July 2020 including the opinions received from the state administration bodies and the relevant comments from the parties to the administrative proceedings were dealt with on an ongoing basis.

In 2021, preparatory work was carried out based on the approval of the ÚJD SR. On 5 June 2021, Decision No. 76/2021 of the ÚJD SR came into force, authorising the construction. Subsequently, the construction works started with the reinforcement and concreting of the foundation slab. In 2022, the construction works on the ceiling slab SO 841M continued with reinforcement of the bottom and top reinforcement and rebar, formwork and concreting of the monolithic structure of the building in accordance with the technological procedure and schedule for works. The main construction activities were completed at the end of 2022. At the same time, with the issuance of the decision No 283/2022 of the ÚJD SR, the quality documentation of the SNF package was approved.

In the first half of 2023, the buildings of the DSKVJP investment project were structurally and technologically completed and subsequently the precommissioning testing and commissioning testing of the delivered technology were implemented in accordance with the approved programmes with a satisfactory result.

In July 2023, an application for early use of the construction associated with the implementation of the change to the ISFS in the scope of commissioning and operation was submitted to the ÚJD SR. After a detailed assessment of the submitted application and related documentation, the ÚJD SR requested to supplement the documents in accordance with Section 9 of the ÚJD SR Decree No. 431/2011. Following the completion of the documents, an oral hearing was held on 18 September 2023, together with a local survey. On 12 January 2024, after summarising all the opinions and statements of the parties concerned, the ÚJD SR issued Decision No 12/2024 - approval for the implementation of the change to the ISFS and authorisation for early use of the change to the completed construction 'Completion of the SNF storage capacity upgrade' for the period until 31 December 2024.

In 2024, the final phases of the project were implemented. As of 30 April 2024, active comprehensive tests of process equipment and systems were successfully carried out, during which 255 pieces of SNF (3 pieces of SNF packaging) were transferred from the wet section to the dry section of the ISFS. In May 2024, a 144-hour test run of the ISFS dry section equipment and systems was conducted, which resulted in the dry section of the ISFS being placed into commercial operation. Task accomplished.

9. Create a database of all radioactive waste from nuclear facilities in the SR and ensure its continuous update by the end of 2016

The database was developed by JAVYS, a.s. as at 31 December 2016 and its continual update is secured, the task is fulfilled.

10. Build a facility for melting metallic radioactive waste by the end of 2018

Facility for conversion of metal RAW, which is intended for efficient processing of metal waste produced mainly from the NI decommissioning process, with the subsequent release of as much metal material into the environment, was being implemented under the investment project "Facility for conversion of metal RAW". Its implementation began in September 2016 after obtaining the Final Opinion of MŽP SR on the proposed activity No.1775/2015-3.4/hp. The project *was* implemented as part of the decommissioning projects of V-1 NPP (C7-A4) with the share of financing 19 % from the BIDSF, 50.6 % from NJF resources, and 30.4 % from JAVYS, a. s. In 2020, pre-comprehensive individual testing of the components of the plant for conversion of metal RAW were carried out. Putting this facility into active operation, due to changes in the design documentation related to the change of the melting furnace, as well as changes and addition resulting from these tests of equipment, *was* planned by the end of 2021. *From June 2022, active testing started on the treatment facility for remelting of metal RAW PS 37. Active testing continued until the end of 2022. In August 2022, the ÚJD SR accepted by letter the permanent operation of the metal RAW remelting facilities PS 37 within the framework of the valid decision for the operation of the TSU RAO in Jaslovské Bohunice issued by Decision No 498/2010 of the Authority. From January 2023, there is continuous operation of the treatment facility for remelting metal RAW PS 37 according to valid operating documentation. Task accomplished.*

11. Build and put into operation Facility for management of IRAW and ZRAM by the end of 2016

The facility for the management of IRAW and ZRAM built in the premises of RAW repository in Mochovce site was put into operation in February 2016, and is used for storage of IRAW and RMNP. The task is fulfilled.

12. Build a low-level waste repository by the end of 2018

The first module of very low-level waste repository for VLLW from A1 NPP was part of the National Repository for RAW built and put into operation in 06/2016. In 2017, the second module of disposal boxes was constructed for VLLW from V-1 NPP as part of BIDSF project C9.4. The second module (storage boxes with a system of barriers prepared for overlay with sliding shelter) was completed in September 2017 and in October, after testing, it was handed over to the operator of the National Repository for RAW. In December 2017 its approval process took place and the approval decision was issued. The task is fulfilled.

13. Build another storage structure after filling the second double-row of the National Repository for RAW by the end of 2018

Within the project C9.4, the construction of storage boxes of the 3rd double-row LLW repository, including related systems, was completed by successful completion of the relevant tests and taken over by JAVYS, a.s. in November 2018. ÚJD SR, by its Decision No. 117/2019 of 11 April 2019, authorized the operation and on 15 April 2019 by Decision No. 98/2019 permitted the use of the 3rd double row of storage spaces for the LLW. The task is fulfilled.

14. Take a decision on the continuation or suspension of the dual path for development of a deep geological disposal – to fully evaluate the idea of a joint international deep geological repository by the end of 2020.

Based on the assumption that the *proposed location for the siting* of the deep geological repository in the SR will be definitely decided by the end of 2030, the idea of an international deep geological repository remains *as a back-up possibility* for the SR. It is therefore appropriate to *consider also the aspects of* the dual path for the development of the deep geological repository and to temporarily shift the decision on the continuation or suspension of the dual path until 2030, as proposed by the MH SR when submitting a report on the implementation of the national programme for the period as at 31 December 2016.

In order to develop bilateral cooperation and the possibility of implementing joint projects and cooperation in the field of RAW management, including deep repository development programmes, a Memorandum of Understanding was concluded on 4 April 2018 between JAVYS, a.s. and SÚRAO (Radioactive Waste Repositories Administration), whose main task is to ensure the safe operation of radioactive waste repositories and the preparation of a deep repository in the Czech Republic.

15. Develop a plan for further phases of renewed development of deep geological disposal by the end of 2016

In 2016, the implementation of the project "Deep geological repository – site selection, phase 1", including a proposal for further procedure in developing a deep geological repository in the SR".

In 2017, a contract was concluded with a group of contractors (State Institute of Geology of Dionýz Štúr, Bratislava; ÚJV Řež, Husinec, ČR; DECOM, a. s. Trnava), for the delivery of the project "Deep geological repository – site selection, stage 2 – Part 1", part of which was development of the following documents in the period 2017 and 2018:

- Project of a geological task in accordance with Act No.569/2007 Coll. – Geological Act;
- Framework programme for development and research in the field of deep disposal, including requirements for its implementation;
- Creating of a proposal for implementing a system of economic incentives for the localities affected by the development and operation of a deep geological repository;
- Final Report on the task, within which the "Work Plan for the period 2019 – 2024 of development of a deep repository in SR" and the "Draft ToR (detailed technical specification) for the selection of the general contractor to implement the tasks arising from the Work Plan for the period 2019 – 2024 for the Project of "Deep geological repository – site selection, stage 2 – Part 2", were elaborated.

16. Decide on the siting of the deep geological repository of the SR (in case of cancellation of the dual path) by the end of 2030

In 2019, based on a request from MH SR, JAVYS, a.s., elaborated and in December 2019 its management approved a phased schedule for the preparation of a deep geological repository, including a strategy for communication with the public and setting key project milestones, as a basis for the planned update of the National Policy and National Programme for the management of spent nuclear fuel and radioactive waste in SR" and compliance with point B.3 of the Government Resolution No. 402 of 5 September 2018.

At the beginning of 2020, the mentioned document was sent to MH SR for review. *Subsequently, the conclusions of that document were transferred in an update to the relevant part of the National Policy and National Programme for Spent Fuel and Radioactive Waste Management in the Slovak Republic. Following the approval of the document by the Government*, in the following period based on the "Draft staged schedule for the preparation of a deep geological repository and strategy for communication with the public in the field of development of a deep repository in the SR", further work will be included in the investment project "Development of a deep repository, stage 2 – Part 2", covering field survey work, work with the public, etc. in the selected localities, so that by 2030 it will be possible to make a decision on siting the deep geological repository in the SR.

17. Put the deep geological repository into operation by the end of 2065

The implementation of the Project "Deep geological repository – site selection, stage 2 – Part 1", during the period 2017-2018 and completed in December 2018, provided the basic conditions for the steps leading to the site selection for building a deep repository in the SR so that in case of not implementing the dual path scenario, it was possible to ensure building and operation of deep repository in the SR by 2065. Within the project "Deep geological repository – site selection, stage 2 – Part 1" in addition to the "Project of geological task" the following tasks were addressed:

- Framework Program for the development and research in the field of deep disposal for all stages and for all fields of development of a deep repository;
- Development and preparation of implementation of a system of economic incentives for the locations affected by the development and operation of repositories.

Currently work is underway on the continuation of the Project "Development of the deep geological repository stage 2 – Part 2" for the development of a deep repository in the SR by creating a concept of work with the public and preparation of supporting documentation for selection of a contractor for the next stage (see evaluation of measure No. 16).

Further progress in the project implementation will be elaborated in more detail within the update of the relevant part of the National Policy and National Programme for the management of spent fuel and radioactive waste in the SR, *the approval of which is expected early 2025.*

18. Develop a framework program for development and research in deep geological disposal and create internal conditions for its implementation by the end of 2018

As part of the implementation of the project "Deep geological repository – site selection, phase 2 – part I", running in 2017 – 2018, in accordance with the detailed plan of works for the following period, and with the proposal for further procedure in the development of a deep geological repository in the SR, a document "Framework program for development and research in the field of deep geological disposal, including the requirements for its implementation" will be developed, on the basis of which *were created* conditions for its following implementation within the required deadline. *Task completed.*

19. Develop and prepare the implementation of the system of economic stimulation of locations affected by the development and operation of the repositories. Create a comprehensive information system and work with the public for a long period of time, by the end of 2018

A proposal for a comprehensive system of informing the public and working with the public, as well as the proposal for economic stimulation of locations affected by the development and operation of the repository, *was* an output from the activity of the group of contractors within the implementation of the Project "Deep geological repository – site selection, stage 2 – Part 1" by the end of 2018. *Task completed.*

Summarizing the evaluation of implementation of the national program and the plan for the next steps

In May 2017, the European Commission issued a report "Progress of Implementation of Council Directive 2011/70/EURATOM", which is the first report assessing the national programs for the management of RAW and SNF prepared under the Directive 2011/70/EURATOM. This report contains basic data concerning the back-end of the nuclear fuel cycle in the SR. Although this report does not contain a specific assessment of national programs of individual countries, it is possible to identify areas for possible improvements as part of the program update, which was set for the national program of the SR after 6 years from the approval of the national program by the Slovak Government, i.e. in 2021. In November 2017, the EC organized a one-day workshop on the above mentioned report, attended by the representatives of MH SR, ÚJD SR and NJF and where some aspects of the national programs were presented and discussed. In addition to the key issue of development of deep geological repositories, the EC report highlights the aspect of monitoring national programs and their progress under Article 12 of Directive 2011/70/EURATOM, according to which it is necessary to identify responsibilities, milestones and indicators for monitoring and implementation of programs. The setting of key performance indicators and evaluation of programs´ implementation is perceived by the EC as a priority, bearing in mind own assessment of program implementation, the preparation and execution of peer reviews of national programs .

For the purpose of peer review of the national programme in the SR, the Slovak Republic requested that an ARTEMIS Mission, an IAEA service, is conducted, providing expert peer reviews in the field of the management of radioactive waste and spent nuclear fuel, decommissioning and remediation. The ARTEMIS Mission *was carried out in February 2023.*

Monitoring of Key performance indicators

Although the national program does not explicitly state key indicators for monitoring the progress of its implementation, in the conditions of the SR there are applied procedures and tools on the basis of which the progress in the implementation of the national programme can be evaluated and monitored. The annual reports on the implementation of the national programme in accordance with the Act on Nuclear Fund prepared by the NJF Board of Trustees together with the licence holders are evaluated individually for each objective (measure) and the report contains a summary assessment of the national programme. or its impact on other activities of the national program.

In the report evaluating the implementation period of the national programme as of 31 December 2020, out of a total of 19 specified objectives, 9 were met, 7 in the stage of implementation in accordance with the set deadline and 3 in implementation with a delay in time.

Progress can also be monitored by monitoring the volume of funds provided by the National Nuclear Fund on the basis of applications, which also serve as a means of assessing the status quo, which is also part of the national programme implementation report and NJF management report submitted to the Ministry.

In addition to the evaluation of the monitoring of individual objectives, especially in the area of decommissioning of A-1 and V-1 nuclear facilities and in the area of RAW and SF management as key areas of the national programme, the annual reports also provide suggestions for possible improvement, including for updating the national programme.

The objectives and targets for the period 2025 to 2033 with a forecast to the following years, as set out in Chapter C.8 of the updated document, are as follows:

No.	Objective/target	Date	Responsible (+Co-responsible)
	Infrastructure and legislation		
1	*Amend Act No. 541/2004 Coll. (Atomic Act) in provisions concerning decommissioning of NIs, and SNF and RAW management, as well as the relevant implementing regulations.*	*2025*	*R: ÚJD SR CR: MH SR JAVYS, a.s. SE, a.s.*
2	*Update MH SR Decree No. 31/2019 laying down details on the structure and scope of eligible costs, the rules for pricing in-house performance of the recipient of the National Nuclear Fund and the structure and scope of in-house performance pricing.*	*2025*	*R: MH SR CR: NJF*
3	*Analyse possibilities for appreciation of funds in NJF by other means than maintaining deposits with the State Treasury.*	*2025*	*R: MF SR CR: MH SR NJF*
	Decommissioning of nuclear installations		
4	*Complete stages 3 and 4 of decommissioning of NPP A-1 in accordance with the Plan for stages 3 and 4 of NPP A-1 decommissioning.*	*2024*	*JAVYS, a.s.*

No.	Objective/target	Date	Responsible (+Co-responsible)
5	Secure authorisation from state authorities for stage 5 of decommissioning of NPP A-1.	2024	JAVYS, a.s.
6	Start stage 5 of decommissioning of NPP A-1.	2025	JAVYS, a.s.
7	Within the framework of the decommissioning of NPP A-1 to provide monitoring of the radioactivity of the Manivier Channel and the adjacent banks of the Dudváh River with the proposal and implementation of the necessary measures, including possible remediation.	2026	JAVYS, a.s.
8	Complete stage 2 of decommissioning of NPP V-1 in accordance with the schedule of the Plan for stage 2 of decommissioning of NPP V-1.	2029	JAVYS, a.s.
9	Update of conceptual decommissioning plan of EBO V2, EMO1,2 and MO3,4 in order to optimize technical, logistical and management processes in decommissioning of NPPs, to achieve economic efficiency of decommissioning process.	permanent	SE, a.s.
Management of spent nuclear fuel and radioactive waste in general			
10	Analyse the capacity of IS RAO with regard to the real developments in the decommissioning of NIs and if necessary, ensure completion of capacity of IS RAO.	2025	JAVYS, a.s.
11	Ensure maintenance of a database of SNF and RAW from nuclear installations in SR.	permanent	R: JAVYS, a.s CR: SE, a.s., ÚJD SR
12	Ensure update of a IRAW database in SR to be able to propose a system for managing historical IRAW.	2024	R: JAVYS, a.s., CR: MZ SR, ÚVZ SR
13	Put into operation Part I of added storage capacity for 10,115 pcs of SNF in build. 841 of ISFS.	2024	JAVYS, a.s.
14	Analyse and then provide for funding of stage 1 for overlay of the first double-row of LLW.	2025	R: JAVYS, a.s. CR: NJF, MH SR
15	Analyse the possibilities and conditions for storage of RAW in IS RAO originating from the Mochovce site.	2025	R: JAVYS, a.s. CR: ÚJD SR
16	To reassess the prospects for the use of the bituminisation facility of the TSU RAO and, in the event of their continued disuse, to take steps in preparation for their decommissioning.	2025	JAVYS, a.s.
Disposal of spent nuclear fuel and radioactive waste			
17	Continuously analyse and if necessary, ensure the completion of storage structures for disposal of LLW and VLLW at RÚ RAO in due time.	permanent	JAVYS, a.s.

No.	Objective/target	Date	Responsible (+Co-responsible)
18	Establish inter-ministerial working group for the implementation of the framework programme for the deep geological repository.	2025	R: MH SR, CR: MŽP SR, MZ SR, NJF, JAVYS,a.s., SE,a.s., ŠGÚDŠ, ÚJD SR, ÚVZ SR.
19	Update the schedule for the development and construction of a deep geological repository with regard to the current reality and the need for operation of NPPs in SR, including the conditions of the EU taxonomy.	2025	R: JAVYS, .a.s CR: MH SR, MŽP SR, NJF, SE, a.s.,
20	Based on scientific, technical, natural, social and economic values, propose a location for siting deep geological repository in SR.	2030	R: JAVYS CR: MH SR, MŽP SR
21	Ensure updating the feasibility study for the deep geol. repository, as well as technical – economic analysis of the commissioning of the deep geol. repository, taking into account the current facts of back-end of nuclear energy in SR and EU (implications of the adopted Taxonomy, etc.).	2025	JAVYS, a.s.
Research and Development			
22	Draw up a plan for the development and provision of research, development, technical and advancement, provision of professional human resources in the field of nuclear energy and its back-end in the SR.	2025	R: MH SR CR: MŠVVaM SR
Financing of the back-end of nuclear energy cycle			
23	To ensure sufficient financial resources for the back-end of nuclear energy, conduct an expert analysis and prepare a proposal for measures that will result in an appreciation of the NJF's financial resources at least above the inflation rate.	2025	R: NJF, CR: MH SR, MF SR, SE, a.s.,
24	To verify and assess the correctness of the costs of decommissioning of NIs, which are set out in the conceptual plans for decommissioning of NIs, create possibilities to verify the estimated costs with a reputable agency or experts dealing with the costs of back-end of nuclear energy cycle.	2025	NJF

Table 7: Objectives and targets for the period 2025 to 2023 with a forecast to the following years according to the updated document

L PEER REVIEWS AND SELF-ASSESSMENTS (Art. 14.3)

3. *Member States shall periodically, and at least every 10 years, arrange for self-assessments of their national framework, competent regulatory authority, national programme and its implementation, and invite international peer review of their national framework, competent regulatory authority and/or national programme with the aim of ensuring that high safety standards are achieved in the safe management of spent fuel and radioactive waste. The outcomes of any peer review shall be reported to the Commission and the other Member States, and may be made available to the public where there is no conflict with security and proprietary information.*

International Peer Reviews are described in Section F.4 above.

The National Programme of the SR is periodically reviewed through the reports elaborated by the NJF in cooperation with the entities concerned and is submitted to the MH SR. The reports together with ÚJD SR opinions are available on the NJF website (https://www.njf.sk).

M FUTURE PLANS TO IMPROVE SAFE AND RESPONSIBLE MANAGEMENT OF SPENT FUEL AND RADIOACTIVE WASTE

In the coming period, the following measures are planned:

- Construction of a fourth double-row for low level radioactive waste in the National Repository for RAW,
- Construction of a plant for melting metal RAW in Jaslovské Bohunice;
- Continue the implementation of stage III and IV of decommissioning of A-1 NPP;
- *Prepare the implementation of stage V of the decommissioning of NPP A-1, preceded by PSR*;
- Continue in implementation of stage II of decommissioning of V-1 NPP;
- Ensure the optimization of treatment capacity of TSÚ RAW in relation to the current requirements in the field of RAW management,
- Change in the system of treatment liquid radioactive concentrates in Mochovce NPP.

N ANNEXES

I. List of Nuclear Facilities for Spent Nuclear Fuel (SNF) and Radioactive Waste (RAW) Management

II. Matrix

III. Inventory of Stored Spent Nuclear Fuel (t ŤK) (as at 31 December 2020)

IV. Inventory of Stored RAW (as at 31 December 2020)

V. List of National Laws and implementing legislation

VI. List of ÚJD SR Guidelines

Annex I. List of Nuclear Facilities for Spent Nuclear Fuel and Radioactive Waste (RAW) Management

Slovenské elektrárne, a. s. (SE, a. s.) operates:

- Nuclear Power Plants Jaslovské Bohunice, NPP V-2 – Units 3 & 4
- Nuclear Power Plants Mochovce, Units 1 & 2
- *Nuclear Power Plant Mochovce, Units 3 and 4.*

Jadrová a vyraďovacia spoločnosť, a. s. (JAVYS, a. s. Nuclear and Decommissioning Company) operates:

- Interim Spent Fuel Storage (ISFS) at Jaslovské Bohunice
- Technologies for RAW Treatment and Conditioning (TSÚ RAW) at Jaslovské Bohunice;
- Integral Storage of Radioactive Waste (IS RAW);
- National RAW Repository Mochovce;
- Final Treatment of Liquid RAW Mochovce.

List of Nuclear Installations in Decommissioning

Jadrová a vyraďovacia spoločnosť, a. s. (JAVYS, a. s.):

- Nuclear Power Plant Jaslovské Bohunice - NPP A-1 (incl. Technology for RAW management from this NPP installed within its premises),
- Nuclear Power Plant Jaslovské Bohunice - NPP V-1 (Units 1and 2).

Annex II. Matrix

Type of Liability	Long term Management Policy	Funding of Liabilities	Current Practice / Facilities	Planned Facilities
Spent Fuel	Geological disposal or multilat. solution	National Nuclear Fund	Long term storage	Geological Disposal
Nuclear Fuel Cycle Waste	Geological / surface disposal	National Nuclear Fund	Disposal of LLW	Geological disposal for HLW
Application Wastes	Under approval	Re-export or financial guarantee	Storage	Disposal (with some exceptions)
Decommissioning Liabilities	Immediate decommissioning	National Nuclear Fund	Immediate decommissioning	Low active soil and concrete debris dispos. facility
Disused Sealed Sources	Disposal	Re-export or financial guarantee	Storage	Disposal (with some exceptions)

Annex III. Inventory of Stored Spent Nuclear Fuel (as at 31 December 2023)

Inventory of Stored Spent Nuclear Fuel (as at 31 December *2023*)

The ISFS of JAVYS, a. s. as at 31 December *2023* stored *13,840* SNF from the production of NI V-1, V- 2 and NPP Mochovce, in the following breakdown:

- 5,143 fuel assemblies produced by reactor Units of NI V-1,
- *5,961* fuel assemblies produced by reactor Units of NI V-2,
- *2,736* fuel assemblies produced by reactor Units of NI Mochovce.

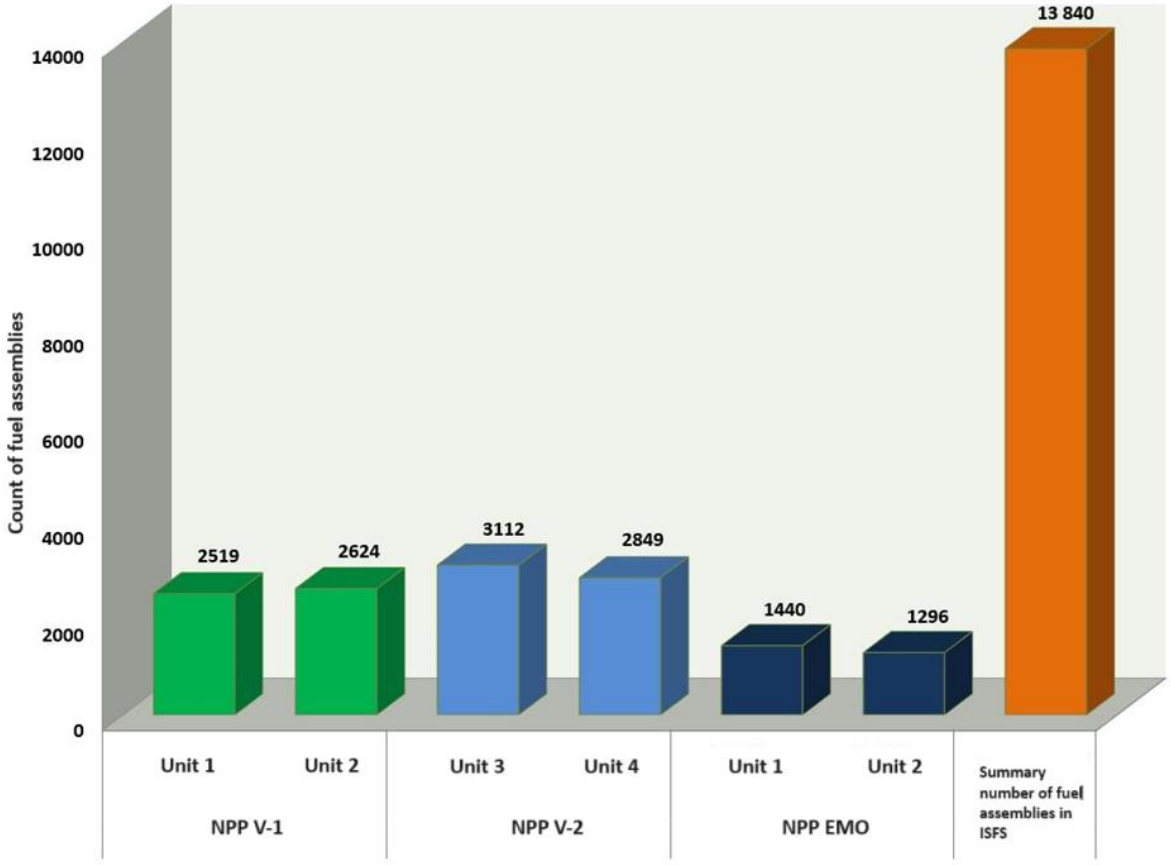

Fig. 33: Quantity of SNF disposed in ISFS structured by individual NIs and Units

Annex IV. Inventory of stored RAW (as at 31 December *2023*)

Criteria Used to Define and Classify Waste

According to the Act No. 541/2004 Coll. (Atomic act) radioactive waste shall mean any unusable material in gaseous, liquid or solid form, which due to the content of radio-nuclides or due to the level of their contamination with radionuclides cannot be released into the environment.

Classification of radioactive waste is based on their ability to be disposed and is defined in Section 5 of Decree of ÚJD SR No. 30/2012 Coll., setting the details of requirements for handling nuclear materials, radioactive waste and spent nuclear fuel. According to this Decree RAW is divided by activity into the following categories: (by IAEA Safety Guide GSG-1 Classification of Radioactive Waste).

Clearance levels allowing release into the environment of individual radionuclides are listed in Annex 5 of the Act No. 87/2018 Coll. on radiation protection.

Transposition table for the types of Radioactive Waste		
ÚJD SR Decree No. 30/2012 Coll.	**IAEA Safety Guide GSC-1**	
	Exempt waste (EW): *Waste that meets the criteria for clearance, exemption or exclusion from regulatory control for radiation protection purposes as described in Ref. [6].*	*
Transient radioactive wastes *whose activity falls below the limit value for their introduction to the environment during storage;*	***Very short lived waste (VSLW):*** *Waste that can be stored for decay over a limited period of up to a few years and subsequently cleared from regulatory control according to arrangements approved by the regulatory body, for uncontrolled disposal, use or discharge. This class includes waste containing primarily radionuclides with very short half-lives often used for research and medical purposes.*	*220 134 kg*

Very low-activity radioactive waste, whose activity is slightly higher than the limit value for their introduction to the environment, contain mainly radionuclides with a short half-life, or also a low concentration of radionuclides with a long half-life, and which during storage require a lower degree of isolation from the environment through a system of engineered barriers, as in the case of surface-type radioactive waste repositories;	***Very low level waste (VLLW)**: Waste that does not necessarily meet the criteria of EW, but that does not need a high level of containment and isolation and, therefore, is suitable for disposal in near surface landfill type facilities with limited regulatory control. Such landfill type facilities may also contain other hazardous waste. Typical waste in this class includes soil and rubble with low levels of activity concentration. Concentrations of longer lived radionuclides in VLLW are generally very limited.*	*1 286 195 kg*
***Low-activity radioactive waste**, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is less than 400 Bq/g, maximum specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is locally less than 4000 Bq/g, does not produce residual heat, and following treatment meet safe operating limits and conditions for surface-type radioactive waste repositories;*	***Low level waste (LLW):** Waste that is above clearance levels, but with limited amounts of long lived radionuclides. Such waste requires robust isolation and containment for periods of up to a few hundred years and is suitable for disposal in engineered near surface facilities. This class covers a very broad range of waste. LLW may include short lived radionuclides at higher levels of activity concentration, and also long lived radionuclides, but only at relatively low levels of activity concentration.*	*297,493 m^3 KRAO + 4 768 934 kg PRAO*
***Medium-activity radioactive waste**, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, is equal to or over 400 Bq/g,*	***Intermediate level waste (ILW):** Waste that, because of its content, particularly of long lived radionuclides, requires a greater degree of containment and isolation than that provided by near surface disposal. However, ILW needs no*	*5,4 m^3 KRAO + 11 986,25 kg*

may produce residual heat and measures for its removal are less than in the case of highly active radioactive waste, and which following treatment do not meet safe operating limits and conditions for surface-type radioactive waste repositories;	*provision, or only limited provision, for heat dissipation during its storage and disposal. ILW may contain long lived radionuclides, in particular, alpha emitting radionuclides that will not decay to a level of activity concentration acceptable for near surface disposal during the time for which institutional controls can be relied upon. Therefore, waste in this class requires disposal at greater depths, of the order of tens of metres to a few hundred metres.*	
***Highly-active radioactive waste**, whose average specific activity of radionuclides with a long half-life, especially radionuclides emitting alpha radiation, exceeds values specified for low-activity radioactive waste requiring measures for the removal of residual heat and can be deposited only in an underground-type radioactive waste repository.*	***High level waste (HLW):** Waste with levels of activity concentration high enough to generate significant quantities of heat by the radioactive decay process or waste with large amounts of long lived radionuclides that need to be considered in the design of a disposal facility for such waste. Disposal in deep, stable geological formations usually several hundred metres or more below the surface is the generally recognized option for disposal of HLW.*	

* Based on the philosophy of RAW classification in SR pursuant to Section 2 (k) of the Atomic Act (Act No. 541/2004 Coll.) the radioactive waste is any unusable materials in gaseous, liquid or solid form, which due to the content of radionuclides in them or due to the level of their contamination by radionuclides, cannot be release to the environment. If the level of contamination by radionuclides is lower than the clearance or exemption levels, the materials are not considered as RAW and may be conditionally or unconditionally released from administrative or regulatory control.

Spent nuclear fuel is not considered as high-level radioactive waste.

Estimates of the amount of future radioactive waste are given in Table Part C of the Report. The total capacity of the three double-rows built so far in the RÚ RAO repository is 10,800 containers with a total volume of 33,480 m^3. In two stages, in the repository for very-low level waste (VLLW) within the RÚ RAO, modules with a total capacity of 29,000 m^3 were built.

Disposal / Type of RAW	Total projected capacity for the disposed RAW in disposal site [m^3]	Current disposable capacity for the disposed RAW in disposal site [m^3]	Disposed in the disposal site as of 31. December *2023* [m^3]
LLW	83 700* / 76 140**	33 480* / 30 456**	*22 933,80* / 20 862,36***
VLLW	68 000	29 000	*23 941,76*
Note	* - theoretically usable internal volume of VBK for RAW - 3,1 m^3 ** - practically usable internal volume of VBK for RAW - 2,82 m^3		

Table 8: Existing and projected capacities for RAW types at RÚ RAO and volumes of RAW types disposed at RÚ RAO as of 31 December 2023 (in m^3)

Annex V. List of Selected National Laws and implementing legal regulations

- Act No. 71/1967 Coll. on Administrative Procedure (Administrative Procedure Code) – the latest amendment as Act No. 177/2018 Coll.
- Act No. 50/1976 Coll. on spatial planning and the construction code (the Construction Act) – the latest amendment as Act No. *46/2024* Coll.
- Act No. 42/1994 Coll. on civil protection of the population – the latest amendment as Act No. *205/2023* Coll.
- Act No. 575/2001 Coll. on organization of government activities and on organization of the central state administration – the latest amendment as Act No. *7/2024* Coll.
- Act No. 215/2004 Coll. on protection of classified information and on amendments to certain laws – the latest amendment as Act No. 364/2020 Coll., Act No. 423/2020 Coll.
- Act No. 220/2004 Coll. on protection and utilization of agricultural land and on amendment to Act No. 245/2003 Coll. on integrated prevention and on environmental pollution control and on amendments to certain laws as amended – last amendment, Act No. *205/2023* Coll.
- *Act No. 364/2004 Coll. on waters and on amendment to Act of SNC No. 372/1990 Coll. on offences as amended (Water Act) as amended – the latest amendment – Act No. 272/2023 Coll.*
- Act No. 541/2004 Coll. on the Peaceful use of nuclear energy (the Atomic Act) and on amendment and alternations of several acts as amended – the latest amendment as Act No. *309/2023* Coll.
- Act No. 24/2006 Coll. on environmental impact assessment and on amendments to certain laws as amended – the latest amendment as Act No. *272/2023* Coll.
- Act No. 124/2006 Coll. on occupational health and safety and on amendments to certain laws – the latest amendment as Act No. *205/2023* Coll.
- Act No. 125/2006 Coll. on labour inspection and on amendment to Act No. 82/2005 Coll. on undeclared work and illegal employment and on amendments to certain laws – the latest amendment as Act No. *113/2022* Coll.
- Act No. 355/2007 Coll. on protection, support and development of public health and on amendments and complements to certain laws – the latest amendment as Act No. *120/2024* Coll.
- Act No. 309/2009 Coll. on promotion of renewable sources of energy and high efficiency cogeneration and on amendments to certain laws – last amendment Act No. *363/2022 Coll.*
- *Act No. 7/2010 Coll. on flood protection as amended – the latest amendment Act No. 272/2023 Coll.*
- Act No. 254/2011 Coll. on transportable pressure equipment and on amendments to certain laws as amended by Act No. 56/2018 Coll.

- Act No. 250/2012 Coll. on regulation in network industries – the last amendment of Act No. *433/2022* Coll.
- Act No. 251/2012 Coll. on energy sector and on amendments and complements to certain laws – the latest amendment as Act No*. 205/2023* Coll.
- Act No. 133/2013 Coll. on building products and on amendments to certain laws as amended by Act No. *177/2018* Coll.
- Act No. 54/2015 Coll. on civil liability for nuclear damage and on its financial coverage and on amendments to certain laws – *the latest amendment as Act No. 363/2021 Coll*.
- Act No. 55/2018 Coll. on the provision of information on technical regulations and on obstacles to the free movement of goods – *the latest amendment as Act No. 259/2021 Coll.*
- Act No. 56/2018 Coll. on assessment of product conformity, making the product available on the market and amending certain laws – *the latest amendment as Act No. 351/2022 Coll.*
- Act No. 87/2018 Coll. on radiation protection and on amendments to certain laws – the latest amendment as Act No. *205/2023* Coll.
- Act No. 308/2018 Coll. on the National Nuclear Fund and on amendments to Act No. 541/2004 Coll. on the peaceful uses of nuclear energy (Atomic Act) and on amendments to certain laws as amended – last amendment Act No. 221/2019 Coll.
- *Act No. 200/2022 Coll. on spatial planning – the latest amendment Act No. 46/2024 Coll.*
- *Act No. 201/2022 Coll. on construction – effective from 1 April 2025 – the latest amendment Act No. 46/2024 Coll.*
- *Act No. 205/2023 Coll. on amendments to certain laws in connection with the reform of building legislation – the latest amendment as Act No. 46/2024 Coll*.
- *Act No. 272/2023 Coll. on amendments to certain laws on environmental protection in the context of the reform of building legislation – the latest amendment as Act No. 46/2024 Coll*.
- Government Ordinance No. 276/2006 Coll. on minimal safety and health requirements for work with display units.
- Government Ordinance No. 387/2006 Coll. on requirements for ensuring safety and health signs at work as amended by Government Ordinance No. 104/2015 Coll.
- Government Ordinance No. 391/2006 Coll. on minimal safety and health requirements for a workplace – *the latest amendment as Act No. 525/2022 Coll.*
- Government Ordinance No. 392/2006 Coll. on minimal safety and health requirements when using work equipment.
- Government Ordinance No. 393/2006 Coll. on minimal requirements for safety and health at work in potentially explosive environment.

- Government Ordinance No. 395/2006 Coll. on minimal requirements for provision and use of personal protective equipment – *the latest amendment as Government Ordinance No. 400/2021 Coll.*
- Government Ordinance No. 396/2006 Coll. on minimal safety and health requirements for a construction site – *the latest amendment as Government Ordinance No. 469/2022 Coll.*
- Government Ordinance No. 436/2008 Coll. laying down the details of technical requirements and conformity assessment procedures for machinery – as amended by Government ordinance No. 140/2011 Coll.
- *Government Ordinance No. 269/2010 Coll., laying down requirements for the achievement of good water status, as amended – the latest amendment as Government Ordinance No. 359/2022 Coll.,*
- Government Ordinance No. 234/2015 Coll. on making available simple pressure vessels on the market.
- Government Ordinance No. 1/2016 Coll. on making available pressure equipment on the market.
- Government Ordinance No. 127/2016 Coll. on electromagnetic compatibility – last amendment Government Ordinance No. 331/2019 Coll.
- Government Ordinance No. 148/2016 Coll. on making available electrical equipment intended for use within certain voltage limits on the market – last amendment Government Ordinance No. 325/2019 Coll.
- Government Ordinance No. 149/2016 Coll. on equipment and protective systems intended for use in potentially explosive atmospheres – *last amendment Government Ordinance No. 333/2019 Coll.*
- Government Ordinance No. 117/2018 Coll., which repeals the Government Ordinance No. 35/2008 Coll. laying down the details of technical requirements and conformity assessment procedures for personal protective equipment.
- *Government Ordinance No. 478/2022 Coll., setting the amount of mandatory contribution and the mandatory payment, and the details of the method of collection and payment of the mandatory contribution and mandatory payment to the account of the National Nuclear Fund.*
- MPSVR SR Decree No. 508/2009 Coll. laying down the details for ensuring occupational health and safety for working with pressure, lifting, electric and gas technical equipment and determining technical equipment considered as classified technical equipment – as amended by MPSVR SR Decree No. 234/2014 Coll.
- MPSVR SR Decree No. 147/2013 Coll., establishing details for ensuring safety and protection of health at construction works and related works, and details on professional competence for performance of certain work activities – the latest amendment MPSVR SR Decree No. 100/2015 Coll.

- MV SR Decree No. 533/2006 Coll. on details regarding protection of the public against effects of hazardous substances as amended by Decree of MV SR No. 160/2012 Coll.
- MZ SR Decree No. 96/2018 Coll., laying down the details of the operation of the radiation monitoring network – *last amendment MZ SR Decree No. 140/2023 Coll.*
- MZ SR Decree No. 98/2018 Coll. on the limitation of exposure of workers and residents from natural sources of ionizing radiation.
- MZ SR Decree No. 99/2018 Coll. on radiation protection.
- MZ SR Decree No. 100/2018 Coll., laying down the details for limiting exposure from drinking water, natural mineral water and spring water.
- MZ SR Decree No. 101/2018 Coll., laying down details of the provision of radiation protection in medical exposure – last amendment MZ SR Decree No. 340/2019 Coll.
- *MZ SR Decree No. 91/2023 Coll., establishing drinking water and hot water quality indicators and limit values, drinking water monitoring procedure, risk management of drinking water supply systems and risk management of domestic water distribution systems.*
- MŽP SR Decree No. 453/2000 Coll. implementing certain provisions of the Construction Act – *effective until 31 March 2025*.
- MŽP SR Decree No. 55/2001 Coll., on land use planning supporting documents and land use planning documentation – *effective until 31 March 2024.*
- SÚBP Decree No. 59/1982 Coll., setting out the basic requirements to ensure safety at work and safety of technical equipment as amended by SÚBP Decree No. 484/1990 Coll.
- SÚBP Decree No. 25/1984 Coll. to ensure safety at work in low pressure boiler houses as amended by the Decree No. 75/1996 Coll.
- SÚBP Decree No. 208/1991 Coll. on safety at work and safety of technical equipment in operation, maintenance and repair of vehicles.
- ÚJD SR Decree No. 48/2006 Coll. laying down the details on the method of notification of operational events and events during transportation and the details on investigating their causes as amended by ÚJD SR Decree No. 32/2012 Coll.
- ÚJD SR Decree No. 51/2006 Coll. laying down the details on the requirements for ensuring physical protection.
- ÚJD SR Decree No. 52/2006 Coll. on professional competence as amended by ÚJD SR Decree No. *355/2023* Coll.
- ÚJD SR Decree No. 54/2006 Coll. on registration and control of nuclear materials and on notification of selected activities.

- ÚJD SR Decree No. 55/2006 Coll. on the details in emergency planning for the case of incident or accident as amended by ÚJD SR Decree No. 9/2018 Coll – *last amendment ÚJD SR Decree No. 310/2022 Coll.*
- ÚJD SR Decree No. 57/2006 Coll. laying down the details on the requirements during transportation of radioactive materials – the latest amendment ÚJD SR Decree No. 105/2016 Coll.
- ÚJD SR Decree No. 58/2006 Coll. laying down the details of the scope, content and the method of preparation of documentation of nuclear installations necessary for individual decisions as amended by ÚJD SR Decree No. *155/2022* Coll.
- ÚJD SR Decree No. 430/2011 Coll. on requirements for nuclear safety – as amended by ÚJD SR Decree No. 103/2016 Coll.
- ÚJD SR Decree No. 431/2011 Coll. on quality management system – as amended by ÚJD SR Decree No. *154/2022* Coll.
- ÚJD SR Decree No. 30/2012 Coll. laying down the details on the requirements for nuclear materials, radioactive waste and spent nuclear fuel management – as amended by ÚJD SR Decree No. 101/2016 Coll.
- ÚJD SR Decree No. 33/2012 Coll. on the regular, comprehensive and systematic assessment of nuclear safety of nuclear installations as amended by ÚJD SR Decree No. 71/2019 Coll.
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- Council Regulation (Euratom) No. 1493/93 of 8 June 1993 on shipments of radioactive substances between member states as amended, *O.J. EC L 148, 16 June 1993.*
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- Council Regulation (EC) 428/2009 of 5 May 2009, setting up a Community regime for the control of exports, transfer, brokering and transit of dual use items – latest amendment – Delegated Commission Regulation (EU) *2020/1749 of 7 October 2020,* amending Council Regulation (EC) 428/2009, setting up a Community regime for the control of exports, transfer, brokering and transit of dual use items, *O.J. EC L 134 29 May 2009.*
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- *Council Regulation (Euratom) 2021/948 of 27 May 2021 establishing a European Instrument for International Nuclear Safety Cooperation complementing the Neighbourhood, Development and International Cooperation Instrument - Global Europe under the Treaty establishing the European Atomic Energy Community and repealing Regulation (Euratom) No. 237/2014*
- *Commission Delegated Regulation (EU) 2022/1 of 20 October 2021 amending Regulation (EC) 2021/821 of the European Parliament and of the Council as regards the list of dual-use items*
- *Commission Delegated Regulation (EU) 2022/699 of 3 May 2022 amending Regulation (EU) 2021/821 of the European Parliament and of the Council by removing Russia as a destination from the scope of Union General Export Authorisations*
- *Commission Delegated Regulation (EU) 2023/66 of 21 October 2022 amending Regulation (EU) 2021/821 of the European Parliament and of the Council as regards the list of dual-use items*
- *Commission Delegated Regulation (EU) 2023/996 of 23 February 2023 amending Regulation (EU) 2021/821 of the European Parliament and of the Council as regards the list of dual-use items*
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- Directive of the European Parliament and the Council 2012/18/EU of 4 July 2012 on the control of major accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC, O.J. EU L 197, 24 July 2012.
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- Commission Recommendation 2009/120/Euratom of 11 February 2009 on implementation of accounting and record keeping and control of nuclear materials by the operators of nuclear installations, O.J. EU L 41, 12 February 2009.
- Commission Recommendation 2009/527/Euratom of 7 July 2009 for safe and effective system of sending documents and information in connection with the provisions of Council Directive 2006/117/Euratom, O.J. EU L 177, 8 July 2009.
- Council Decision 87/600/Euratom of 14 December 1987 on Community arrangements for the early exchange of information in the event of radiological emergency, O.J. EC L 371, 30 December 1987.
- Commission Decision 2008/312/Euratom of 5 March 2008 establishing a standard document on the supervision and control of shipments of radioactive waste and spent nuclear fuel, as provided for in the Council Directive 2006/117/Euratom, O.J. EU L 107, 17 April 2008.
- Council Decision 2013/434/EU of 15 July 2013 authorizing certain Member States to ratify, in the interest of the European Union, the Protocol amending the Vienna Convention on Civil Liability for Damage caused by the nuclear event of 21 May 1963 or to accede to it and make a declaration on the application of the relevant internal rules of the Union law, O.J. EU L 220, 17 August 2013.

Annex VI. List of ÚJD SR Safety Guides

BNS III.4.3/2000	Requirements on assessment for fuel loading.
BNS I.8.1/2005	Specification on the scope of Preliminary plan of physical protection and Plan of physical protection in line with the Decree 186/1999 Coll. laying down the details concerning physical protection of nuclear installations, nuclear materials and radioactive waste.
BNS I.2.5/2005	Requirements of ÚJD SR on chap. 16 of the Pre-operational safety report “Limits and Conditions”.
BNS II.1.1/2008	Registration and control of nuclear materials.
BNS II.5.4/2009	Qualification of systems for non-destructive test in nuclear power engineering. Requirements and instructions.
BNS II.5.6/2009	Rules on design, manufacturing, assembly, repairs, replacements and reconstruction of mechanical and technological components of classified equipment of WWER 440 nuclear power plants.
BNS II.5.5/2009	Examining of mechanical properties, chemical composition a selected characteristics of resistance of material and welded joints against rupture under limit load conditions of mechanical and technological components of equipment of WWER 440 nuclear power plants.
BNS II.3.3/2011	Metallurgical products and spare parts for nuclear installations. Requirements.
BNS II.5.3/2011	Welding materials for welding mechanical-technology components of nuclear power plants. Technical requirements and selection rules.
BNS II.5.2/2012	Control of welding and quality of welds of components of classified equipment of nuclear power plants. Requirements.
BNS II.5.1/2012	Welding of nuclear equipment. Basic requirements and rules.
BNS II.3.1/2016	Evaluation of the permissibility of errors detected during operational inspections of selected equipment of nuclear installations.
BNS II.3.4/2016	Rules for the design, manufacture and operation of systems monitoring degradation of safety relevant components of NI Part 1. Corrosion monitoring.
BNS II.3.5/2016	Rules for the design, manufacture and operation of systems monitoring degradation of safety relevant components of NI Part 2. Monitoring of thermal aging processes of structural materials of NI.
BNS II.3.6/2016	Rules for the design, manufacture and operation of systems monitoring degradation of safety relevant components of NI Part 3. Monitoring of radiation degradation processes of structural materials of NI.

BNS II.9.1/2016	Direct sampling of small samples from safety relevant components of NIs.
BNS II.9.2/2016	Evaluation of mechanical characteristics of materials operated by selected mechanical engineering devices using SPT methodology.
BNS I.9.4/2017	Requirements for the recording of data relevant for the decommissioning of nuclear installation.
BNS I.9.3/2017	Requirements for the content and extent of the documentation for decommissioning, submitted as part of the application in the proceeding for approval pursuant to Section 5 par. 2 of the Atomic Act, and in the proceeding for granting authorization pursuant to Section 5 par. 3 a) to d) of the Atomic Act.
BNS I.9.5/2017	Requirements for safety analyses of activities performed during decommissioning of nuclear installations
BN 1/2019	Requirements for quality assurance of software for safety analyses (4th edition – revised and supplemented)
BN 2/2019	Single failure criterion (3rd edition – revised and supplemented)
BN 3/2019	Requirements for reactor description and its design basis in the safety report (4th edition – revised and supplemented)
BN 4/2019	Requirements for performing and evaluating results of self-assessment of nuclear physical safety culture
BN 5/2019	Requirements for deterministic safety analyses of NIs with VVER-440/V213 (6th edition – revised and supplemented)
BN 1/2020	Comprehensive periodic nuclear safety review (3rd edition – revised and supplemented)
BN 2/2020	Requirements for ensuring fire protection and fire safety of nuclear installations in terms of nuclear safety (4th edition – revised and supplemented)
BN 3/2020	Requirements for the development, implementation and evaluation of the results of the physical tests of the re-start program (3rd edition – revised and supplemented)
BN 1/2022	*Nuclear Safety Glossary of ÚJD SR (2nd edition – revised and supplemented)*
BN 2/2022	*Security requirements for nuclear installations in relation to internal threats*
BN 3/2022	*Security requirements for nuclear installations in relation to external threats (2nd edition – revised and supplemented)*
BN 4/2022	*Requirements for PSA (4th edition – revised and supplemented)*
BN 5/2022	*Scope and content of safety analysis report (3rd edition – revised and supplemented)*

BN 1/2023	*Reporting, investigation of causes and assessment of operational incidents at nuclear installations*
BN 2/2023	*Ageing management and long-term operation of NPPs (3rd edition – revised and supplemented)*