

# Nuclear Regulatory Authority of the Slovak Republic

Technical Meeting on the Management  
and Preservation of SF Data

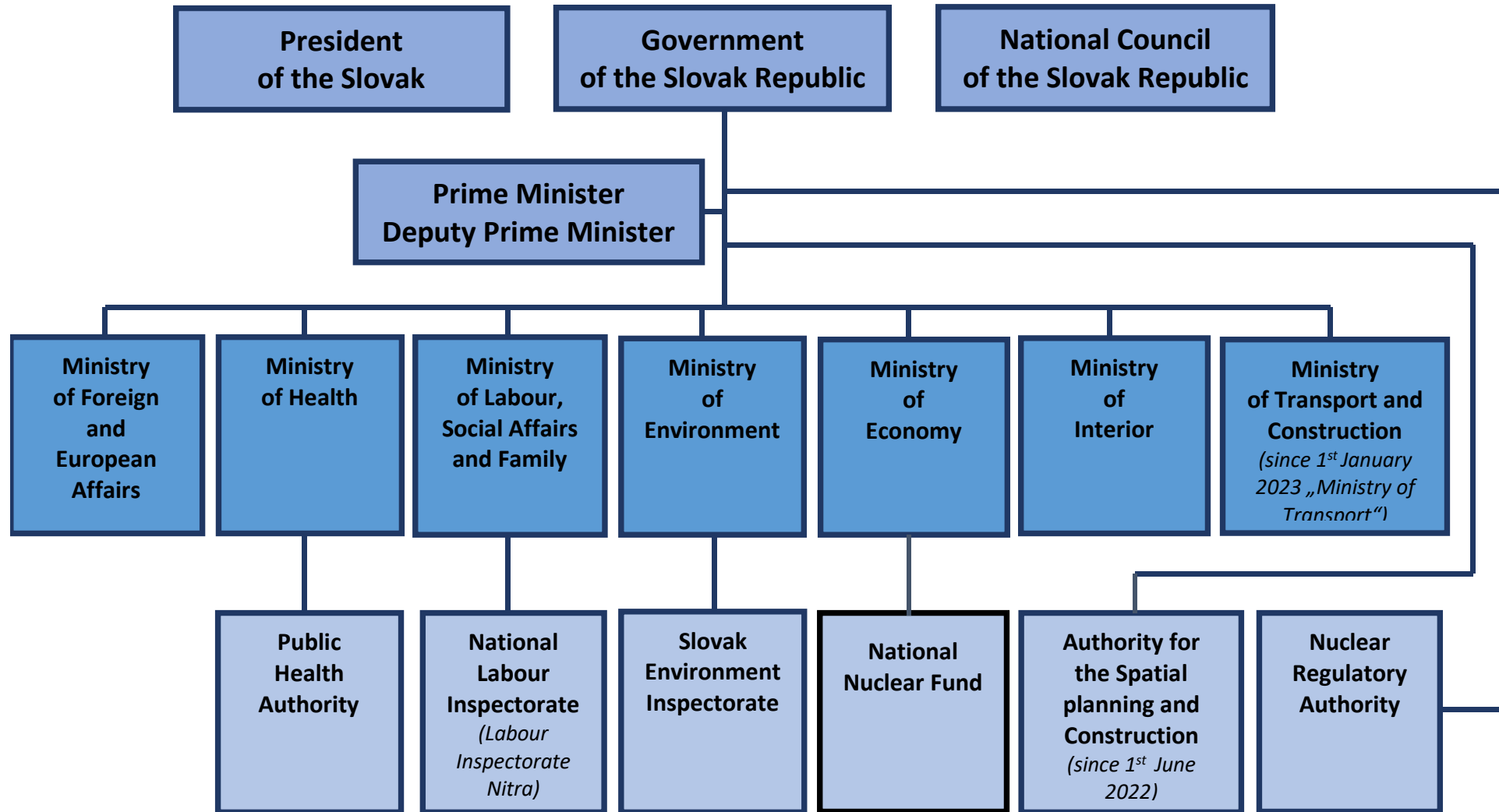
Ing. Marcela Karellová

# Slovakia

- Territory: 49 036 km<sup>2</sup>
- Geographical: mid Europe
- Inhabitants: 5,5 mil.
- First historical evidence: 4th century a.c.
- Independence: 1993
- Capital: Bratislava
- Membership in the EU: 2004
- Currency: Euro
- EU member country: since 1 May 2004



# Structure of Regulatory Authorities in the Slovak Republic



- Central state administration authority responsible for regulatory activities in the field of nuclear safety and nuclear security of nuclear installations
- Supervision of the management of radioactive waste, spent fuel and other fuel cycle phases, as well as of nuclear materials
- Nuclear safety and nuclear security of NI, and safety of transport of nuclear and radioactive waste
- Legislation
- Licensing (including construction)
- Review and assessment
- Inspection and enforcement
- Emergency preparedness
- Nuclear material accounting system
- International cooperation
- Public information

## Existing Nuclear Sites



## Nuclear Installations at Bohunice site

Facility	Type	Status	Licence holder
NPP A1	HWGCR	decommissioned	JAVYS , a. s.
NPP V1 (EBO1,2)	WWER 440/230	decommissioned	JAVYS , a. s.
NPP V2 (EBO3,4)	WWER 440/213	in operation	SE, a. s.
ISFS	wet type	in operation	JAVYS , a. s.
Treatment of RAW	various technologies	in operation	JAVYS , a. s.
New NPP		Licensing process of siting 1/2023	JESS, a. s.
Integral RAW Storage	dry type	in operation	JAVYS, a. s.

## Nuclear Installations at Mochovce site

Facility	Type	Status	Licence holder
NPP EMO1,2	WWER 440/213	in operation	SE, a. s.
NPP EMO3,4	WWER 440/213	under construction/ commissioning	SE, a. s.
Treatment of LQ RAW	Bituminization Cementation	in operation	JAVYS, a. s.
Near Surface Ra-waste Repository	LLW, VLLW	in operation	JAVYS , a. s.

# Relevant Strategies in Energy sector

## 1. National Policy and Programme for Management of Spent Nuclear Fuel and Radioactive Waste

(Notified to EC in 2015 + Harmonised with EC Directive 2011/70/EURATOM)

– approved by the Governmental Resolution No. 387/2015 (update is ongoing )

### National Policy Principles:

- Safe decommissioning and dismantling of nuclear facilities
- Minimization of RAW
- Safe management of RAW and SF
- Safe storage and/or disposal of RAW and spent fuel
- Application of graded approach
- Polluter/originator pays principle
- An evidence-based and documented decision-making process
- Accountability
- Avoid burden of future generations
- Transparency

### National Programme – scope:

- Characteristics of nuclear installations
- Decommissioning concepts
- SNF and RAW management strategies (including instit. RAW)
  - Current and expected inventories
  - Management techniques
- RAW disposal facilities
  - Near-surface repository
  - Deep geological repository
- Financing aspects
- Public involvement, education, research and development

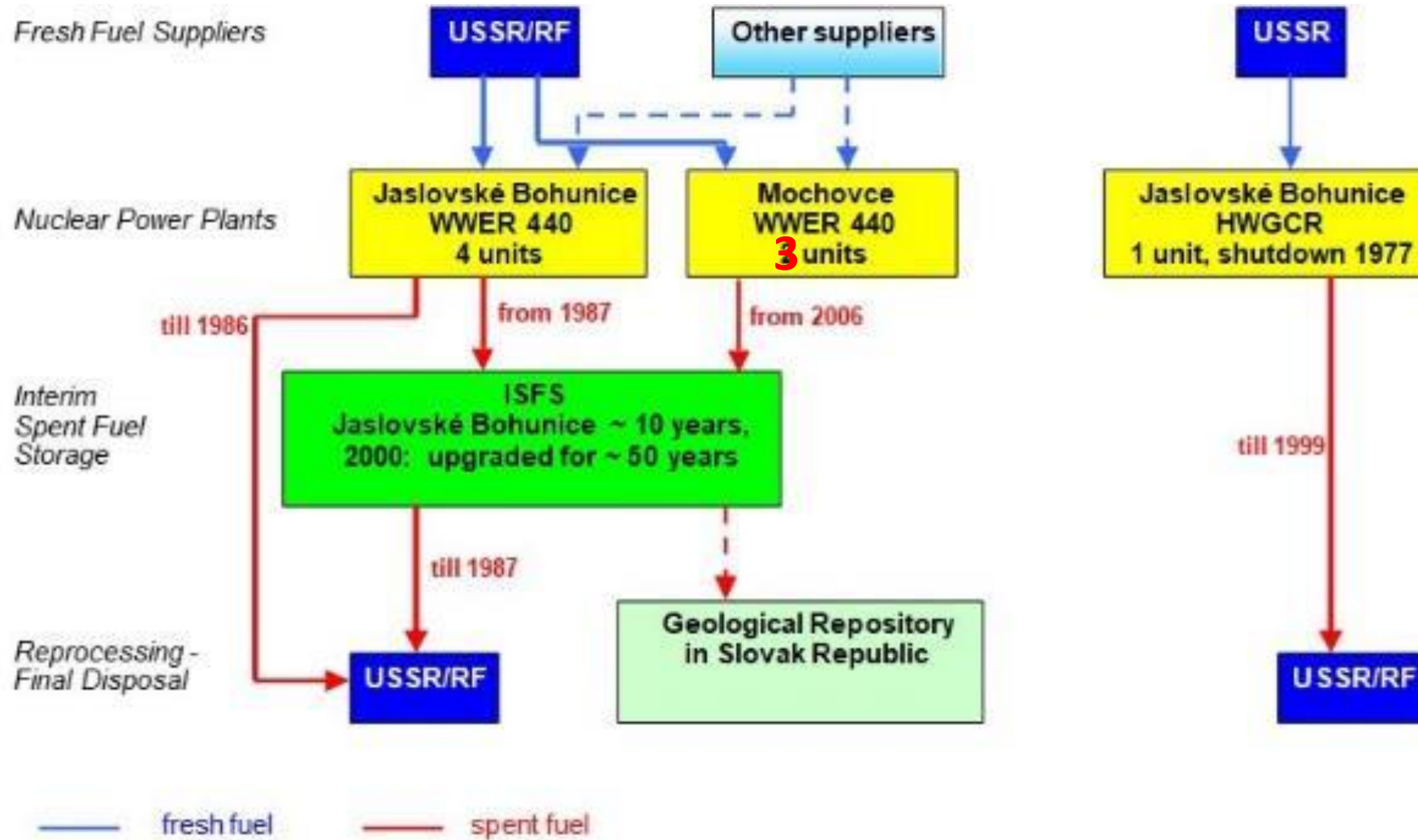
## 2. Policy, Principles and Strategy for Further Development of Nuclear Safety

– approved by Governmental Resolution No. 256/2014

## 3. Energy Security Strategy of the Slovak Republic approved in 2008



# Spent Nuclear Fuel Management



## Spent Nuclear Fuel Management

Spent nuclear fuel is the product of the process of electricity production in nuclear power plants. Spent nuclear fuel management belongs to the most challenging areas of nuclear energy industry in terms of environmental protection and the economy of fuel cycle.

### Phases of Spent Nuclear Fuel Management:

- Short term storage in nuclear power plant – in pools of main reactor building in the vicinity of the reactor (min. 3 years),
- Long term storage in specialized facilities, the so-called interim storages (50 years and more),
- Final disposal

### Fuel Cycle

After partial cooling in the storage pool, there are two ways of further treatment of spent fuel assemblies used. At open fuel cycle these fuel assemblies are moved to the long term storage and wait for their final disposal in a repository or for reprocessing.

**At present, the open fuel cycle is applied in the Slovak Republic.**

## Spent nuclear fuel transports

The company JAVYS, a. s. transports spent nuclear fuel from the reactor units under operation in C-30 type containers on special railway carriages.

- 4 pc, max 48 assemblies per one
- designed for wet transport of SF VVER 440
- nitrogen atmosphere during transport in container

The transports are subject to strict security measures, they are performed in a safe and reliable manner in compliance with legislation requirements and conditions of valid licenses for handling and transport of spent nuclear fuel.



## Interim Spent Fuel Storage (ISFS)

- State Company JAVYS, a. s.
- Since 1987 the SNF from the VVER 440 stored by a method of wet storage for a period of at least 50 years and more.
- A separate building.
- Consists of four pools, connected by a manipulating channel.
- The SNF is stored in KZ-48 (or T13) type casks under a shielding layer of demineralized water which also serves as a cooling medium for the residual heat removal.
- Completion of capacity: The completed storage capacity is structurally connected to the current ISFS building.
- The SNF storing is proposed by a method of dry storage in hermetic canisters placed in the underground reinforced concrete storage modules.



## Development of Deep Geological Repository

Legislation of European Union requires Member Countries to build capacities for disposal of radioactive waste. As a part of solving this problem there are national programs for development of deep geological repositories for spent nuclear fuel and high level radioactive waste. Development of a deep geological repository in the Slovak Republic has been systematically addressed since 1996. Until 2001, five exploration sites were chosen in a process of continuous evaluation and reducing the number of candidate localities, where the basic research was performed.

- Commissioning planned in 2065
- Currently 5 prospective sites under consideration on the basis of available geological data - three granite and two sedimentary rocks

## National Nuclear Fund

The Slovak Republic had to deal with the issue of securing financial resources for the back-end of the peaceful use of nuclear energy.

The principle “polluter pays” results also from the Council Directive No. 2011/70/EURATOM establishing a Community Framework for the Responsible and Safe Management of Spent Nuclear Fuel and Radioactive Waste.

The administrator of the National Nuclear Fund is the Ministry of Economy of the SR.

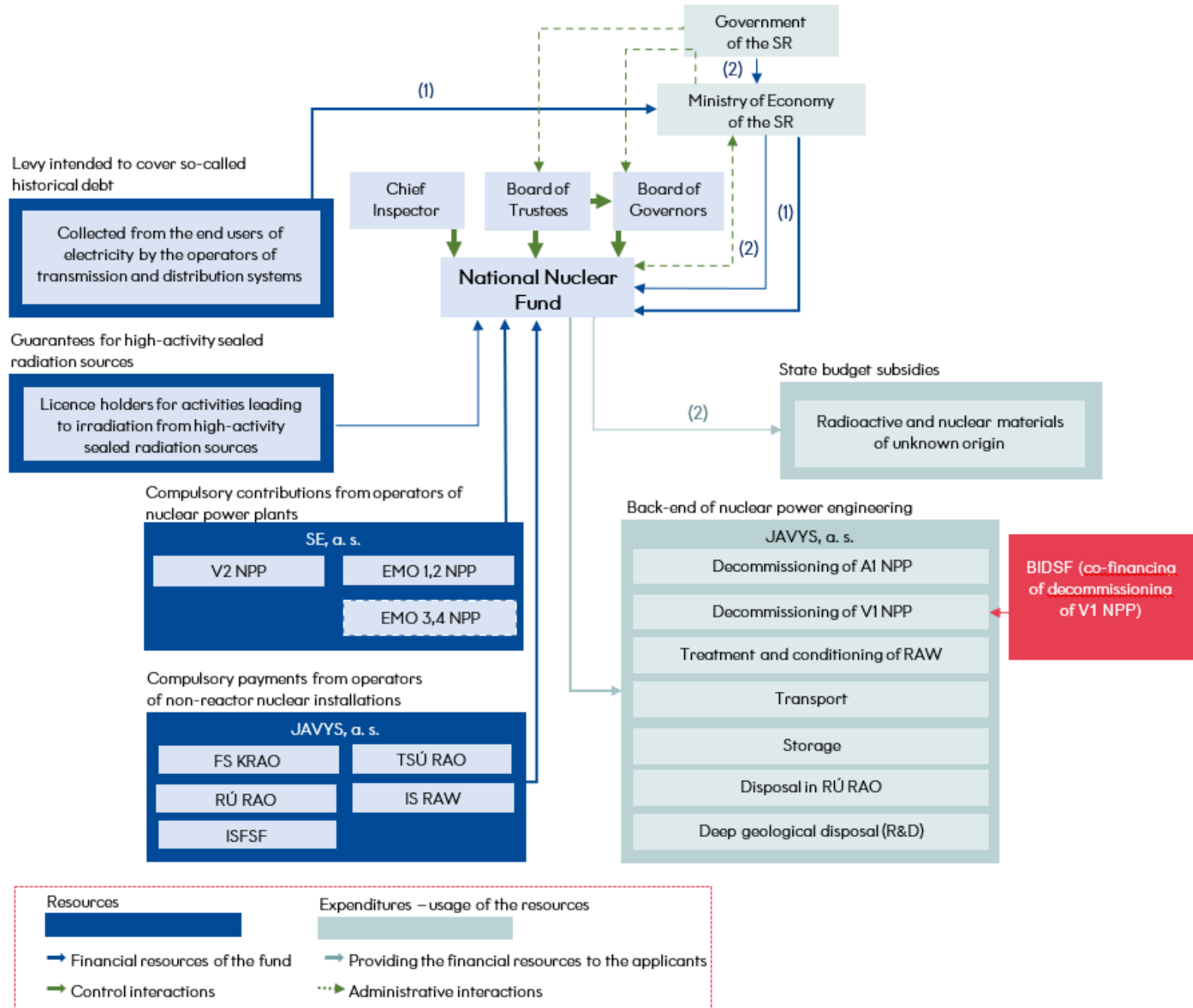
**Usage of the Fund** – to cover the costs for:

- Decommissioning of nuclear installations (NI)
- Management of RAW resulting from NI’s decommissioning
- Management of spent nuclear fuel
- Investment, research and development of repositories including their commissioning, operation, closure and institutional control
- Management of nuclear/radioactive material of unknown origin

# National Nuclear Fund

## Financial Resources

- Compulsory contributions – paid by operator of NPPs



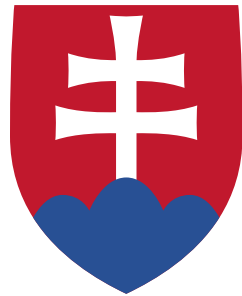
## IAEA

### The Spent Fuel and Radioactive Waste Information System (SRIS)

contains information on national spent fuel and radioactive waste management programmes, spent fuel and radioactive waste inventories and facilities, as well as relevant laws and regulations, policies, plans and activities.

SRIS allows national experts to have full visibility and understanding of their own, as well as of the global situation, regarding spent fuel and radioactive waste management.





# NUCLEAR REGULATORY AUTHORITY OF THE SLOVAK REPUBLIC

Thank you for your attention