BULGARIA

- **National framework for management of spent fuel and radioactive waste – see www. bnra.bg for more information !**

  The policy of the Republic of Bulgaria regarding the management of SF and RAW is defined in the national legislation and is focused to the following essentials:

  - SF and RAW management is subject of state regulation and is carried out only by entities that have received licence and/or permit by the NRA Chairman;
  - SF management is carried out only by entities that have received an operating licence for a nuclear facility;
  - Assigning of responsibility to the entities generating RAW for their safe management until it has been transferred to the SE RAW;
  - Establishing of state monopoly over the RAW management activities - RAW management outside the sites where they are generated is assigned to the SE RAW;
  - The RAW generating organizations shall incur the costs for waste management, including its final disposal, following the principle "the polluter pays";
  - The State is responsible for the management of RAW with unknown owner;
  - RAW import is not allowed in the country, except for the cases defined in the ASUNE (reimport of disused sealed sources of ionising radiation (SIR) manufactured in the Republic of Bulgaria, and if the RAW is generated as a result of the processing of materials performed as a service in favor to the Republic of Bulgaria or a Bulgarian legal entity;
  - Application of the principle for returning back of some categories of disused SIR to the manufacturer;
  - SF may be declared as RAW if conditions are available for its safe storage and disposal in the respective repository, and if the operating organization has made the appropriate payment to the RAW Fund;
  - Timely processing after the generation of RAW until their conditioning for safe storage and disposal.
- **National legal and regulatory framework**

  The Act on the Safe Use of Nuclear Energy (ASUNE) and the secondary legislation regarding its application governs the public relations as regards the safety of spent nuclear fuel management and radioactive waste management.

  Pursuant to the ASUNE the state regulation of the safe use of nuclear energy and ionizing radiation and the safe management of radioactive waste and spent fuel management is

implemented by the NRA Chairman which is an independent specialized body of the executive power and its competencies are defined by a law.

- **Radioactive waste management, decommissioning and spent fuel strategy**

  In 2011 the Council of Ministers approved "Strategy for SF and RAW Management until 2030". In the strategy are defined the long - term specific policies and the main directions until 2030regarding the management of:

  Spent Fuel and High Level Waste

  - The SF fuel generated within the country is a material containing useful components.
  - This material should be re-processed in the country of origin or in a third country in an internationally acceptable and mutually beneficial economic, technological, and environmental friendly, manner.
  - The SF whose reprocessing has been proven economically inappropriate, shall be defined as radioactive waste and may be managed under the concept of "deferred decision for subsequent use", if it is stored in a manner allowing its recovery.
  - In the case of long-term storage under the "deferred decision" scenario, the SF shall be stored using the dry storage technology.
  - The deep geological repository is accepted to be the most suitable option for durably guaranteed safety in the isolation of high level activity and long lived RAW.
  - The country's involvement in regional and international projects for deep geological repository is deemed expedient while the search for international solutions should not jeopardize the current national programme.

  Radioactive Waste

  - Minimization of the RAW generation, reuse and recycling of the waste, and release from regulatory control.
  - Use of approved technologies for RAW processing.
  - Ensuring timely disposal of the waste in the long term plan, as compared to their accumulation.
  - Management of disused sealed radioactive sources;
  - The conditioned low- and intermediate level RAW, including waste from the decommissioning of nuclear facilities and waste from the other sectors of the national industry shall be disposed in one national near-surface repository. The construction of a repository for disposal of low- and intermediate level RAW is the highest priority within the next 5 years.

Table 1 Radioactive Waste In Storage (including spent fuel that is considered waste)

Route Waste Class	Processed (type)/Un processed	Total Current Volume (m3)	Estimated Disposal Volume (m3)	Distribution (%)							Planned Disposal Route (if known)
				RO	FFE	RP	NA	DF	DC/ RE	ND	
All Classes	No	8549.86	8549.86	95	0	0	5	0	0	0	
All Classes	Yes	9788.1	9788.1	100	0	0	0	0	0	0	
Category 2a	No	322.8	322.8	100	0	0	0	0	0	0	
Category 2a	Yes	54.20	54.20	100	0	0	0	0	0	0	
Category 2b	No	450	450	0	0	0	100	0	0	0	
Liquid	No	6163	6163	100	0	0	0	0	0	0	
Liquid	Yes	430	430	100	0	0	0	0	0	0	
Solid - 1&2	No	1511.30	1511.30	100	0	0	0	0	0	0	
Solid - 1&2	Yes	9303.9	9303.9	100	0	0	0	0	0	0	
Solid 3	No	102.76	102.76	100	0	0	0	0	0	0	

NEWMDB waste origin type codes:
RO – reactor operations
FFE – fuel fabrication & enrichment
RP – fuel reprocessing
NA – nuclear applications
DF - defence
DC/RE - decommissioning & remediation
ND - Not Determined

Table 2 Radioactive Waste Disposed (as disposed volume)

Waste Class	Processed (not)	Total Volume (m3)	Distribution (%)							Disposal Route Used
			RO	FFE	RP	NA	DF	DC/RE	ND	
All Classes	No	323	0	0	0	100	0	0	0	
All Classes	Yes	54	5	0	0	95	0	0	0	
Category 2a	No	323	0	0	0	100	0	0	0	
Category 2a	Yes	54	5	0	0	95	0	0	0	

Table 3 Spent fuel in Storage (MTHM)

Type	Current Amount (NPP)	Current Amount (Research Reactors)
Total Spent Fuel Storage	796.519	
Wet storage (AR)	767.388	
Wet storage (AFR)		
Dry storage (AR)	29.131	
Dry storage (AFR)		
Total spent fuel held in storage for other countries (amounts also included above)		

Table 4 Spent fuel sent for reprocessing (in the country or sent to another country) (MTHM)

Type	Current Amount (NPP)	Current Amount (Research Reactors)
Total amount Spent Fuel sent to Reprocessing (in your country)		
Total amount Spent Fuel sent to Reprocessing (in another country)		
Total amount of Spent Fuel received from another country for reprocessing and recycling		
Total amount of Spent Fuel (MTHM) or radioactive waste (cubic metres) returned to country of origin for storage/disposal		

Table 5 Example of a translation matrix (from NEWMDB) that can be used for transition from a national classification system to IAEA classification

National Waste Classification Name	LILW-SL	LILW-LL	HLW
Category 2a	100	0	0
Category 2b	0	100	0
Category 3	0	0	100
Solid - 1&2	100	0	0
Solid 3	100	0	0
Liquid	100	0	0

Table 6 Waste management facilities

Type	Planned	Construct.	Commiss.	In Operation	Shutdown	Decomm.	Other	Total
Spent Fuel				**2**				

Storage – Wet and Dry								
Spent Fuel Reprocessing and Recycling								
Spent Fuel Conditioning								
Spent Fuel disposal								
Waste processing				4				
Waste storage				9				
Waste disposal				0				

Table 7 Summary of major sources of waste

Type	**Planned**	**Construct**	**Commiss.**	**In Operation**	**Shutdown**	**Decomm.**	**Other**	**Total**
Research reactors					1			
Nuclear Power reactors				2	2	2		
Spent Fuel Reprocessing and Recycling								
Other								

Table 8 Future prospects

Type	**Current amount**	**Estimated Current amount when prepared for disposal**	**Current Disposal Capacity**	**Total forecast at 2030**	**Disposal Capacity 2030**	**Total forecast at 2050**	**Disposal Capacity 2050**
Spent Fuel Storage							
Wet storage (AR)							
Wet storage (AFR)							

Dry storage (AR)							
Dry storage (AFR)							
Total amount Spent fuel sent to Reprocessing and Recycling							
Total amount Spent fuel disposed							
Waste in storage							1
Waste disposal					1	2	1