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# Nuclear Waste Governance in Bulgaria

# Quick Facts

- 1 nuclear power plant (2 power reactors Kozloduy 5 and 6) - 1,906 Mwe net
- Volume of waste (2010):  
LILW solid: 1500 m<sup>3</sup>  
LILW liquid: 6900 m<sup>3</sup>  
SF generated (Units 1-6): 1880 tHM (1974-2009)
- Perspectives for nuclear power in the country:
  - Belene project cancelled
  - Kozloduy unit 7?

# Available or planned nuclear waste repositories

- A pool-type used fuel storage facility in Kozloduy since 1990
- A Dry Spent Fuel Storage Facility (DSFSF) for 5 250 VVER-440 used fuel assemblies was constructed in 2011 at the Kozloduy site with plans for its capacity to be increased to 10 500 assemblies
- A 50 000 m<sup>3</sup> near-surface LILW disposal facility is planned to be constructed by State Enterprise “Radioactive Wastes” (SE-RAW) for operation in 2015 on a site adjacent to Kozloduy

# National waste management practice (1)

- SF is not considered waste
- SF is shipped back to Russia (Mayak) for reprocessing, will one day be shipped back to Bulgaria
- Enterprise “Radioactive Wastes” (SE-RAW) is responsible for nuclear waste management
- The activities of SE-RAW Kozloduy are carried out through three main installations: RAW processing plant, Storage facility for conditioned RAW, and Lime storage facility

# The RAW processing plant

- Three main processing lines:
  - for solid radioactive waste with a capacity of around 1300 m<sup>3</sup> per year
  - for liquid radioactive waste with a capacity of 450 m<sup>3</sup> per year
  - installation for decontamination of metal RAW of modular type with a capacity of 25 tons per year

# LILW storage

- Currently an overground facility with a capacity of 1920 reinforced concrete containers - designed for temporary storage
- A new near-surface LILW disposal facility is currently a high priority for the country (2015)
  - capacity of 50 000 m<sup>3</sup> (1<sup>st</sup> module), with later modules up to 138 000 m<sup>3</sup>
  - will accept wastes over the next 60 years and store it for some 300 years
  - €120 million cost
  - Designed by Westinghouse Spain, Enresa (Spain) and DBE Technology (Germany)

# Dry Spent Fuel Storage Facility

- Since 2011
- 5 250 VVER-440 used fuel assemblies with plans for its capacity to be increased to 10 500 assemblies
- will accommodate used fuel from Kozloduy's four closed VVER-440 units, currently in pool storage, and after enlargement from the VVER-1000 units 5 and 6
- Constructed by a joint venture between Nukem Technologies and GNS Germany
- €58 million cost financed by the Kozloduy International Decommissioning Support Fund administered by the EBRD

# Financing

- Two national funds created in 1995 but functional from 1999:
  - for the safe disposal of radioactive waste: €75 - €200 million
  - for the decommissioning of nuclear facilities: €750 million
- > Financed mainly through an electricity price levy specified by the Bulgarian Council of Ministers (3% for the waste management and 7.5% for the decommissioning fund)
- Kozloduy International Decommissioning Support Fund (for decommissioning + energy efficiency): €850 million + further €293 million in 2013 -> by the EU



# National strategy for interim and long-term waste storage

- In 2008 SE-RAW commissioned a study for the selection of a site for deep geological disposal, but project was stopped soon afterwards
- The country still considers the best option to be continuing to transport the fuel back to Russia for reprocessing
- In 2011 “National Strategy for the Management of Spent Nuclear Fuel and Radioactive Waste until 2030”:
  - by 2013 a national program for geological disposal of HLW and ILW category 2b – not developed yet
  - deferred decision solution “to allow enough time for new data and technical solutions to be examined so that mistakes are avoided” by constructing an overground storage facility with a period of administrative control of at least 100 years

# Legislative and regulatory framework

- National - Law on the Safe Use of Nuclear Energy (adopted in 2002, latest modification in 2013)
- International:
  - Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, the Convention on Nuclear Safety and the Vienna Convention on Civil Liability for Nuclear Damage
  - EU legislation: Directives 96/29/EURATOM, 2006/117/EURATOM , 2009/71/EURATOM, **2011/70/EURATOM**

# Institutional framework/Actors

- Regulator: Nuclear Regulatory Agency (NRA)  
- led by a chairman and two deputy chairpeople, one main directorate and four departments
- Operator: State Enterprise “Radioactive Wastes” (SE-RAW) - under supervision of the ministry of Economy and Energy. The licences for Kozloduy 1-4 were transferred to SE-RAW as a preparatory measure for the decommissioning work

# Information policy and participation processes including civil society

- Societal acceptance and transparency are among the main principles in the 2030 Strategy. Just on paper?
- The story of the EIA of the near-surface LILW disposal facility – In November 2013 the Supreme Administrative Court revoked the favourable opinion of the Ministry of Environment and Water for the EIA of the Radiana site after a complaint launched by the environmental organization ND Ecoglasnost. 2015 deadline for the facility unlikely to be met
- The opacity of the Belene project – the lie about the assessment of radioactive waste management of the planned power plant
- The difficulty to obtain information on requests for documents related to the minor accident at NPP "Kozloduy" in 2006

**Thank you for your attention!**

