Nuclear Agency & Radioactive Waste
(AN&DR)

Nuclear and waste activities in Romania

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Legislative and regulatory system

- **NATIONAL COMMISSION FOR NUCLEAR ACTIVITIES CONTROL (CNCAN)**
  - *regulatory body in the nuclear field*

- **NUCLEAR AGENCY & RADIOACTIVE WASTE (AN&DR)**
  - *Promoter of the nuclear energy development in Romania (power and non – power applications), exclusively for peaceful purposes*
  - *Responsible for disposal of radioactive waste (RW) and spent nuclear fuel (SNF), and ensure at national level the coordination of the nuclear installations decommissioning processes*

- **Waste producers**
  - *manage their own radioactive waste from its generation until disposal*

CNCAN

- The national authority competent in exercising regulation, licensing and control in the nuclear field;

- Independent body, reporting to the Prime Minister through the Chief of the Prime Minister's Chancellery

- Elaborates the strategy and the policies for regulation, licensing and control with regard to safe management of radioactive waste and spent nuclear fuel;

AN&DR

- Established in December 2009;
- Specialized body of the central public administration financed by waste producers and from the State Budget;
- Under the coordination of Ministry of Economy, Trade and Business Environment;
- Elaborates and update at least every 5 year the National Strategy for safe management of radioactive waste;
- Develop and implement technical solutions for disposal;
- Maintain an update inventory of RW.

Sources of RW

1. Nuclear Power Plant (NPP)

- *SNN/CNE Cernavoda – U1, CANDU type, 720MWe, in operation from 1996;*
- *SNN/CNE Cernavoda – U2, CANDU type, 720MWe , in operation from 2007;*
- *SNN/CNE Cernavoda –U3&4, CANDU type: to be constructed by 2020;*

2. Research reactors (RR)

- *RAAN/SCN Pitesti, TRIGA type, 14 MW, in operation from 1979*
- *IFIN-HH Magurele, VVR-S type, shutdown in 1997, under decommissioning*

3. Mining and milling (M&M)

- *CNU, various sites/uranium ores extraction mines*
- *CNU/Feldioara, uranium ores processing plant*

4. Nuclear Fuel Plant (NFP)

- *FCN Pitesti, CANDU type fuel fabrication plant*

5. Institutional field

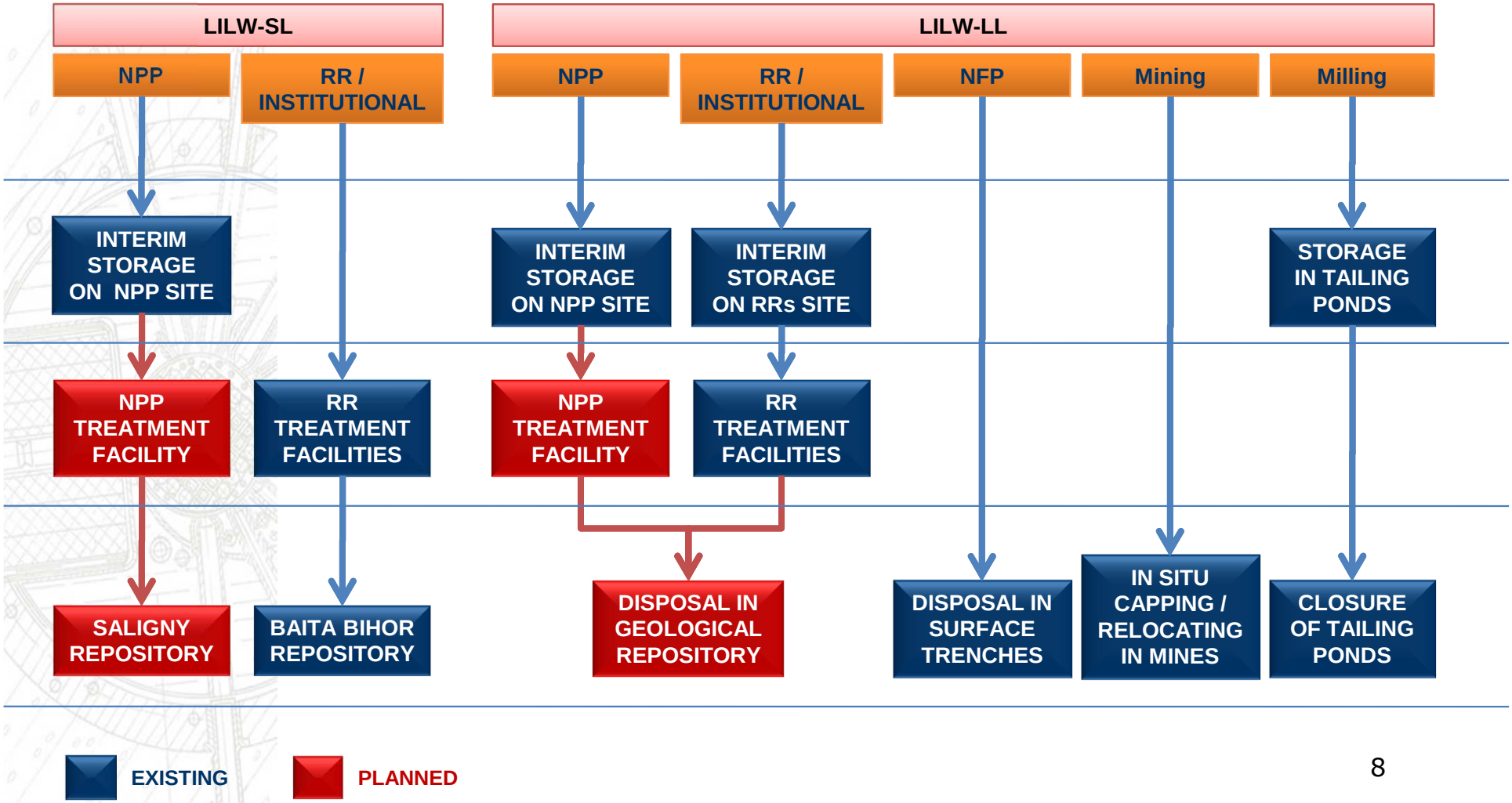
- *Medicine, Industry, Universities, Agricultural*

Basic principle

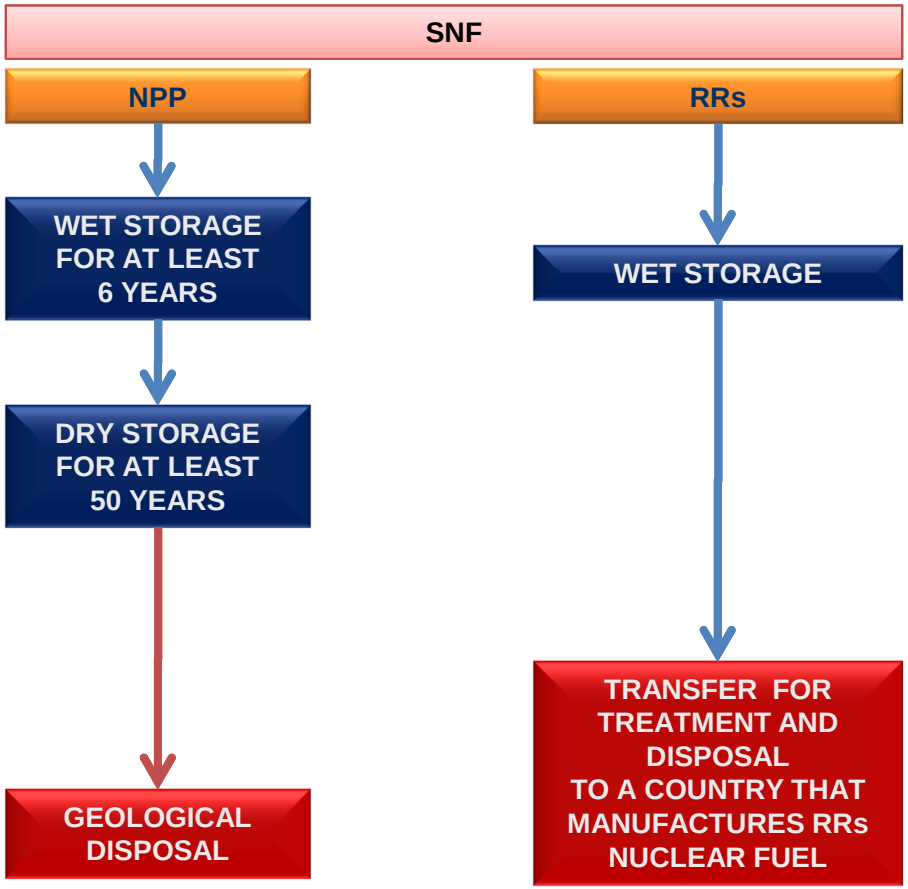
Basic principle of radioactive waste disposal in Romania:

- VLLW: less complex arrangement than LILW-SL;
- LILW-SL: near surface disposal facility;
- LILW-LL and SNF: geological repository;
- SNF is considered RW;
- Import of RW is forbidden.

The National Strategy for Safe Management of Radioactive Waste - LILW -

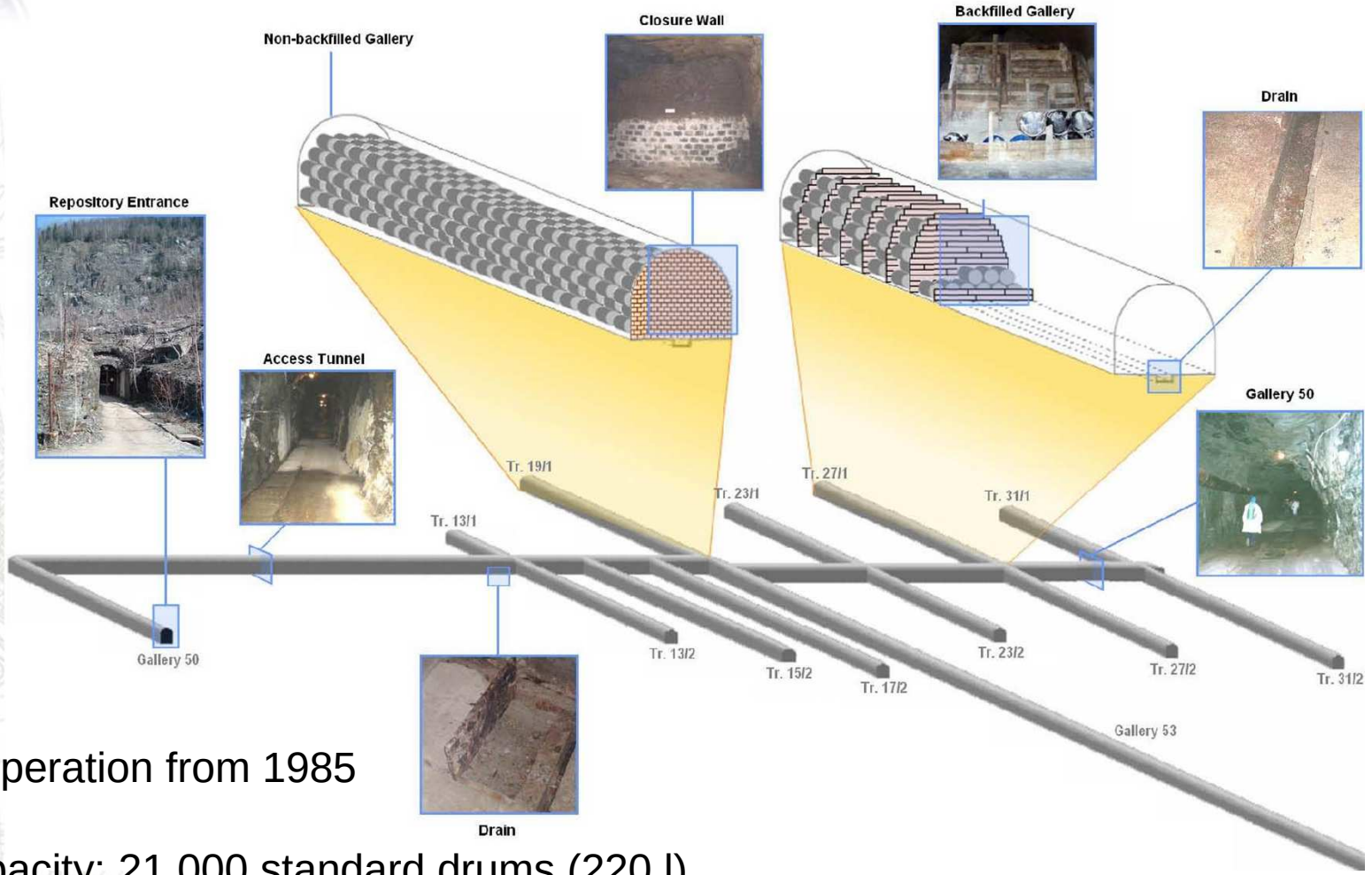


The National Strategy for Safe Management of Radioactive Waste - SNF -



EXISTING PLANNED

Baita Bihor Repository
(existing LILW-SL disposal facility)



- In operation from 1985
- Capacity: 21,000 standard drums (220 l)
- Type: an old exhausted uranium mine

Baita Bihor Repository

Repository entrance

Entrance of Access Tunnel (looking out of the tunnel)

Access Tunnel with Covered Drainage Channel

Baita Bihor Repository

View of Gallery 50

- **No general reinforcement or waterproofing of the walls in the disposal galleries;**
- **Most of the interior surfaces of the repository are covered by gunite (sprayed concrete)**

Baita Bihor Repository

Bentonite Backfilling and Wooden Shuttering

View of Non-backfilled Disposal Gallery showing the Stacking of the Waste Drums

220 Litre Drums showing the Bentonite Backfilling and Wooden Shuttering

- Prior to 1996: the waste drums were simply stacked
- In 1996: powder bentonite was selected as backfilling materials (potential backfilling materials: sand, bentonite, clay and concrete/bentonite mix)
- Wooden shuttering: used in the bentonite backfilled to form and contain bentonite

Baita Bihor Repository

Block Wall Sealing

View of the Block Wall Sealing Disposal Gallery 17/2

Saligny Repository
(future LILW-SL disposal facility)

- The proposed disposal concept: a near-surface facility with multiple barriers;
- Preferred site : the Cernavoda NPP area (Saligny);
- Site surface: 67 ha;
- Repository surface: 22 ha;
- RW: LILW-SL with certain quantities of LILW-LL generated by operation and decommissioning of 4 Units at Cernavoda NPP;
- Maximum capacity: about 122.000 m^3
- Cells: 64 cells, 27,9m x 15,23 m x 5,7 m
- Disposal modules: 24.576 DM, CBF-K type, 1,7 m x 1,7 m x 1,7 m
- Estimated cost: 263 MEuro (2009 price)

Deep Geological Repository

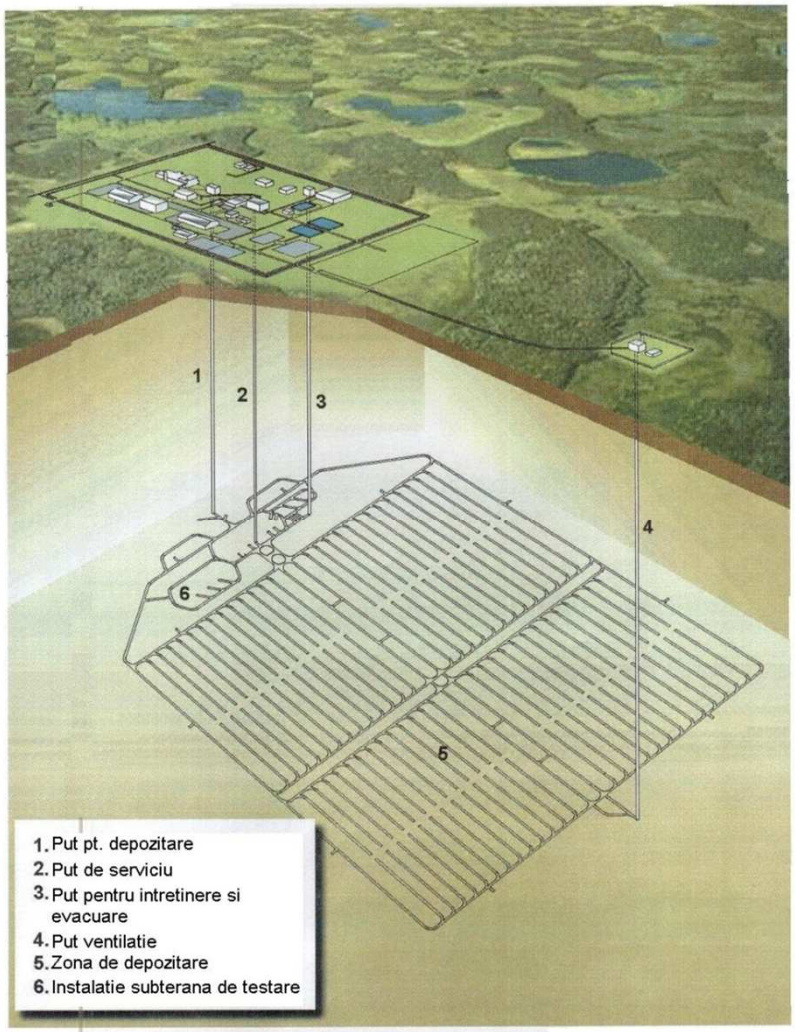
(future SNF/LILW-LL disposal facility)

- The DGR proposed concept will implement an existing and proven technology, adapted to local conditions.

- The proposal assumes the similarity of Canadian Concept for a Deep Geological Repository for CANDU spent fuel.

- DGR facility will dispose:
  - ✓ **Spent fuel**: 14,550 HMT (3,550 HMT/unit);

  - ✓ **Long lived wastes**: 15,660 standard drums from operation and 19,000 standard drums from decommissioning.



The way ahead (1)

- 3 new regulations will issue by the end of 2012:
  - ✓ Storage of radioactive waste,
  - ✓ Storage of spent nuclear fuel,
  - ✓ Decommissioning of nuclear installations;
- Geological repository: CNCAN intends to endorse the IAEA relevant publications;
- Improvement of the Legal Framework in order to clarify specific issues regarding the Radioactive Waste Management;
- Up-dating the Medium and Long Term National Strategy for Safe Management of Radioactive Waste;
- Elaboration of the AN&DR's Institutional Development Strategy in order to enhance the capacity to achieve its mission;

The way ahead (2)

- Licensing the Saligny Repository Site;
- Refurbishment of existing conditioning facilities;
- Upgrading of Baita-Bihor national repository;
- Licensing of a new conditioning facility;
- Approval of the Road Map for Geological Repository Development;
- Strengthening the efforts to increase the Public Acceptance for Radioactive Waste Repositories;

Thank you for your attention!