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# Application and adaptation of mature geological disposal concepts to less advanced programmes

**SÚRAO – Radioactive Waste Repository Authority**

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IGD-TP 7th Exchange Forum, October 26th, 2016, Cordoba, Spain

# Content - section

- 1. A case study of country with less advanced programme - CZ DGR programme development**
- 2. TRACK project proposal – how to support countries with less advanced programmes to build own R&D capability and implement DGR Development programme**

# The CZ DGR Development Case Study

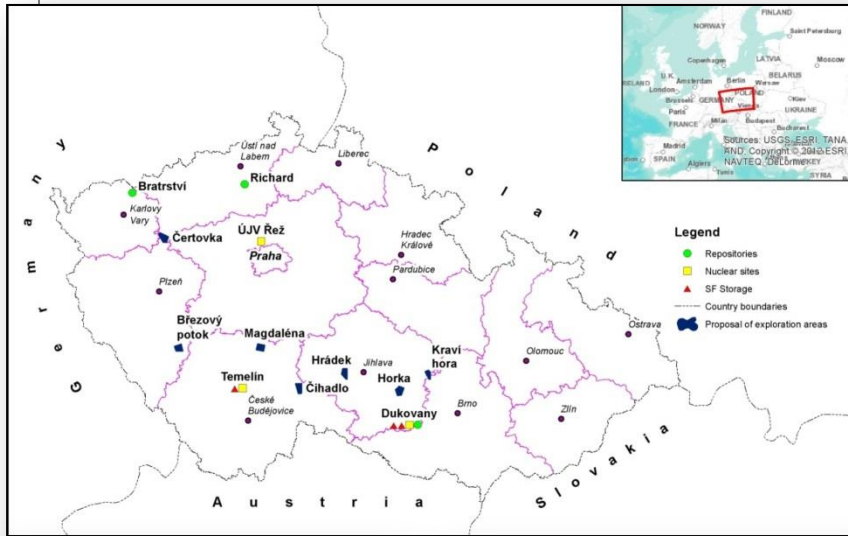
## Legislative Principles and Responsibility in RW Management

### Atomic act – 18/1997 Coll.

#### The main principles:

- **The state guarantees** the safe disposal of all radioactive waste.
- **Producers** of radioactive waste **are required to bear all the costs** associated with its management from the time of origin to its disposal.
- In order to provide for activities associated with radioactive waste disposal, the Ministry of Industry and Trade set up the **Radioactive Waste Repository Authority (RAWRA)** as a state organization - established on 1st June 1997
- Nuclear facility operator is responsible for decommissioning and the processing of RAW prior to its final disposal
- **Nuclear account** - Ministry of Finance, Czech National Bank
- The import of radioactive waste to the Czech Republic is forbidden

# National Strategic Documents and latest Government Decisions



2002 – Government approved the **CR RAWM concept**

12/2014 – Government takes into account the **Update of the RAWM Concept (Policy)**

- final approval - SEA – public hearings expected in the first half of 2016

5 and 9/2015 – Minister of the Env. approved licences for the 1st stage of **geo. surveys for a DGR at 7 sites**

5/2015 – Government approval of the **Update of the National Energy Strategy**

- 4 new NPP units (Dukovany 2 + Temelin 2)
- **2025 start of new NPP construction**
- Commissioning between 2033 - 2037



# Two decades of DGR development in the Czech Republic



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First decade 1992 – 2002	What happened, what has been done
<p><b>1992 - 1997</b></p> <ul style="list-style-type: none"><li>• UJV Řež</li><li>• CZ Geological Survey</li><li>• Institutions of Academy of Science</li><li>• Universities (CTU, TU Liberec, MU Brno, Mining University Ostrava )</li><li>• ČEZ</li><li>• MIT, MEnvi</li></ul>	<ul style="list-style-type: none"><li>• Project management</li><li>• Project development strategy</li><li>• Screening of the country</li><li>• Geology – potential host rock studies → CRYSTALLINE or CLAYSTONE</li><li>• First generic DGR design / disposal concept</li><li>• First design of Disposal container</li><li>• Generic studies on disposal concept used CZ materials and technologies</li><li>• Cost analyses and predictions of the DGR development</li></ul>
<p><b>1998 – 2002</b></p> <ul style="list-style-type: none"><li>• SÚRAO</li><li>• ÚJV Řež</li></ul>	<ul style="list-style-type: none"><li>• First Reference Design (1999) apply KBS 3 disposal concept, use CZ design of Disposal concept</li><li>• Revision of all screening geo analyses<ul style="list-style-type: none"><li>• 12 disposal areas</li></ul></li><li>• Ruprechtov NA Study - started</li><li>• Decision on only 6 areas – in Crystalline (granites) for exploration</li></ul>



# Two decades of DGR development in the Czech Republic



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Second decade 2003 – 2014 (1)	What happened, what has been done
2003 – 2005	<ul style="list-style-type: none"><li>• Starting GeoBariera project – 6 sites, only airborne geological survey<ul style="list-style-type: none"><li>• From the beginning - strong local public opposition on sites</li></ul></li><li>• Melechov test site – testing geological survey methods</li></ul>
2005	<ul style="list-style-type: none"><li>• First government decision to the DGR prgm = Gov. reaction – to stop all geological work for „... to find local public acceptance...“</li></ul>
2008	<ul style="list-style-type: none"><li>• Second Gov. decision - focus on military (and others) areas<ul style="list-style-type: none"><li>• Military area Boletice site as back site</li><li>• Geological research and FS on Kravi hora site</li></ul></li><li>• Far field and near field studies</li></ul>
2010	<ul style="list-style-type: none"><li>• New additional site (7) – Kraví hora – near U-mining</li><li>• New strategy for selection of 4 sites for firsts stage og geo survey based on VOLUNTARY participation of local municipalities (not agree!!)</li><li>• Establishing of Working Group for Dialogue about DGR in the CzR</li></ul>



# Two decades of DGR development in the Czech Republic



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Second decade 2003 – 2013 (2)	What happened, what has been done
2008- 2011	<ul style="list-style-type: none"><li>• New Reference design 2011 – close Cooperation with SKB (SKB Int.)</li><li>• Involving in international RDD projects – Decovalex 2011, EC projects,</li><li>• Systematic support of CZ organisation in EC projects</li><li>• SÚRAO as a member of IGD-TP – a member of EG</li></ul>
2012	<ul style="list-style-type: none"><li>• New strategy (2010) showed up be unworkable option<ul style="list-style-type: none"><li>• responsibility is not possible to give to municipalities – responsibility is role of the state</li></ul></li></ul>
2013	<ul style="list-style-type: none"><li>• Third Government influence - Modification of the site selection strategy ..... (7) → (4) → (2) → (1)</li><li>• 3 stages of the investigation, first stage to narrow down number of sites as well as affected municipalities by only surface geological survey</li><li>• Application for GEO survey for all 7 sites for first stage of Geo survey</li></ul>
2014	<ul style="list-style-type: none"><li>• Starting geo survey – investigation at all 7 sites using only limited survey methods</li><li>• DOPAS project and SÚRAO and our CZ partners participation in the project</li></ul>

# Lesson learn from two decades of DGR<sup>SÚRAO</sup> Development

## First decade (1992 – 2002)

- Generic studies, generic research
  - Analyses: **what, how and where**

## Second decade (2003 – 2014)

- Used to perform a data
- Used to decide against strong local opposition
- Building own capabilities, building a responsible and capable team
- Building a trust of local public
- Strong political (government) influence into decision making
- Lost of trust
- **Building an international collaboration and cooperation**

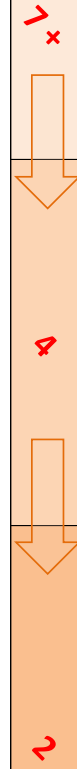
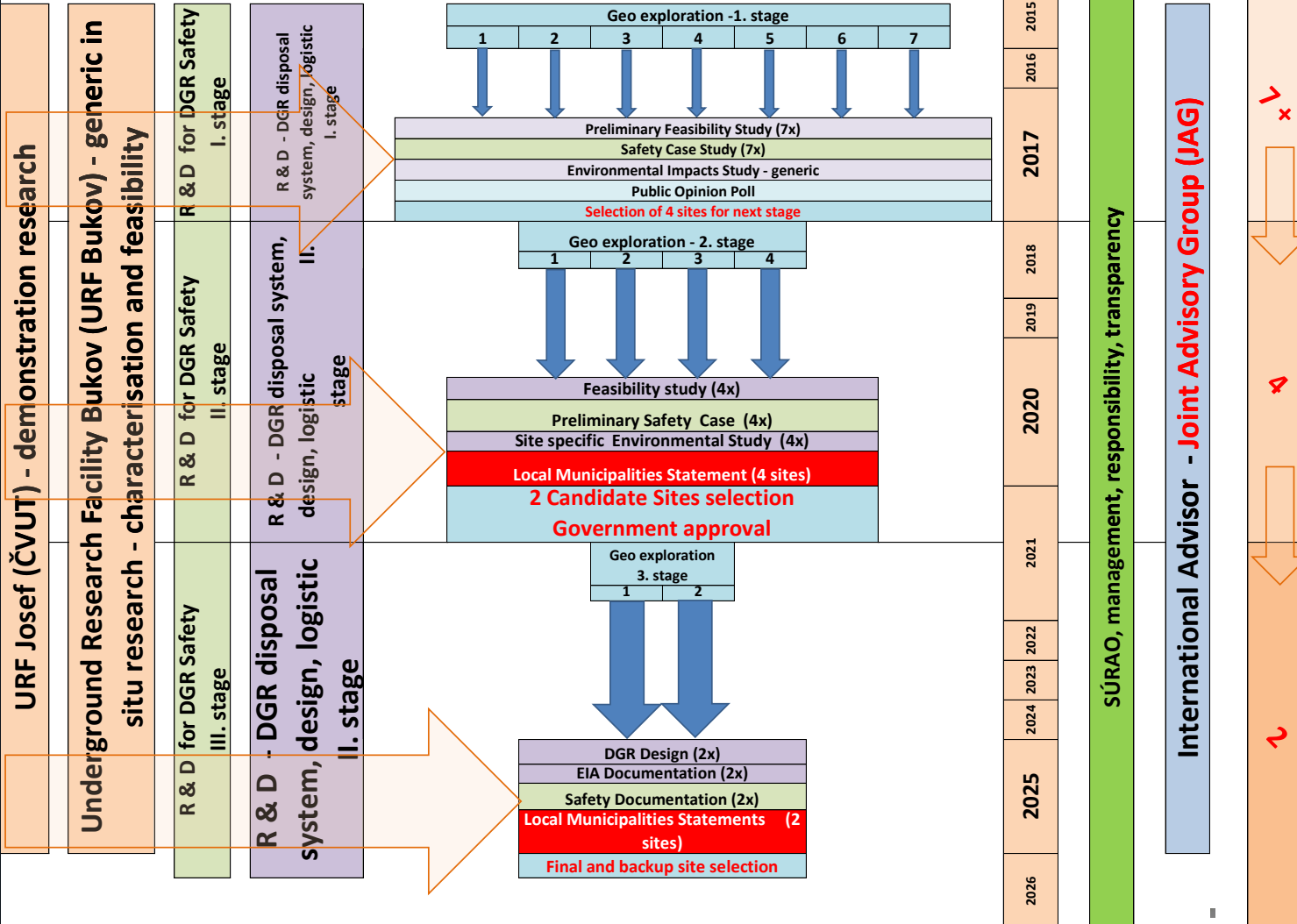


# Where are we today?

- DGR development and site selection strategy already exist
  - 7→4→2→1+1
  - Plans for RD&D
  - Established research in CZ underground facilities – Josef Gallery, URF Bukov
- Capable team with more than 30 organisation
- **Strong international cooperation**
  - A member of IGD-TP – EG
  - Bilateral cooperation with Nagra, ANDRA, Sogin
  - Direct participation in many EC projects
  - Direct participation in many bilateral and multilateral international projects (Decovalex 2019, ISCO, EBS Task Force, ...)
- International Advisory team leading by Posiva, in cooperation with SKB to support building a trust
- **Clear political task - to select site for DGR till 2025 –with public acceptance**



# The Czech Republic DGR Site Selection Strategy

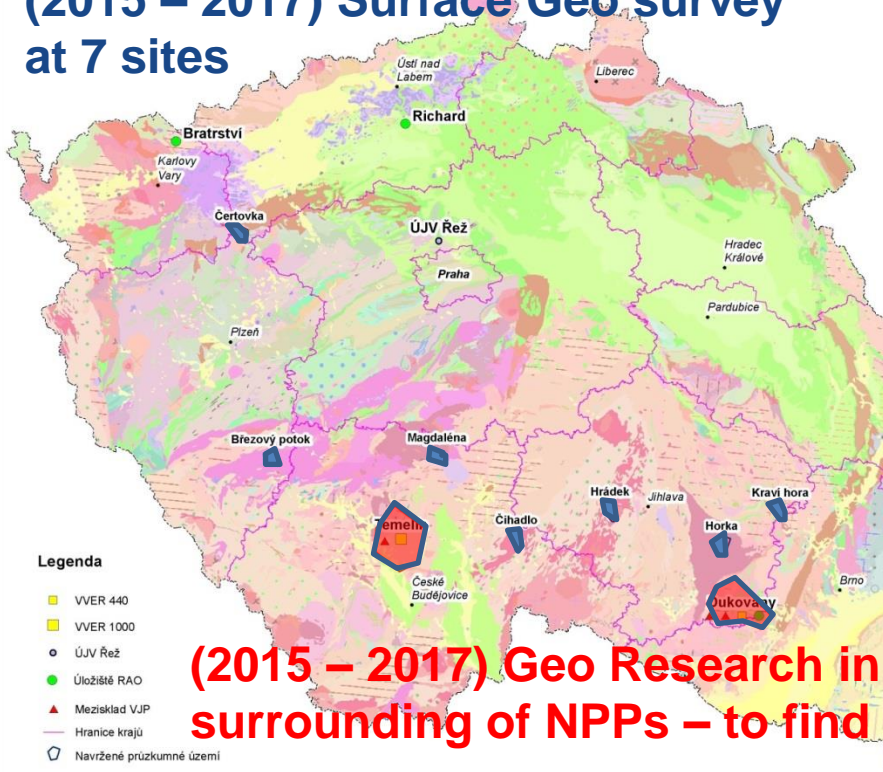


# Current DGR Site Selection Strategy SÚRAO

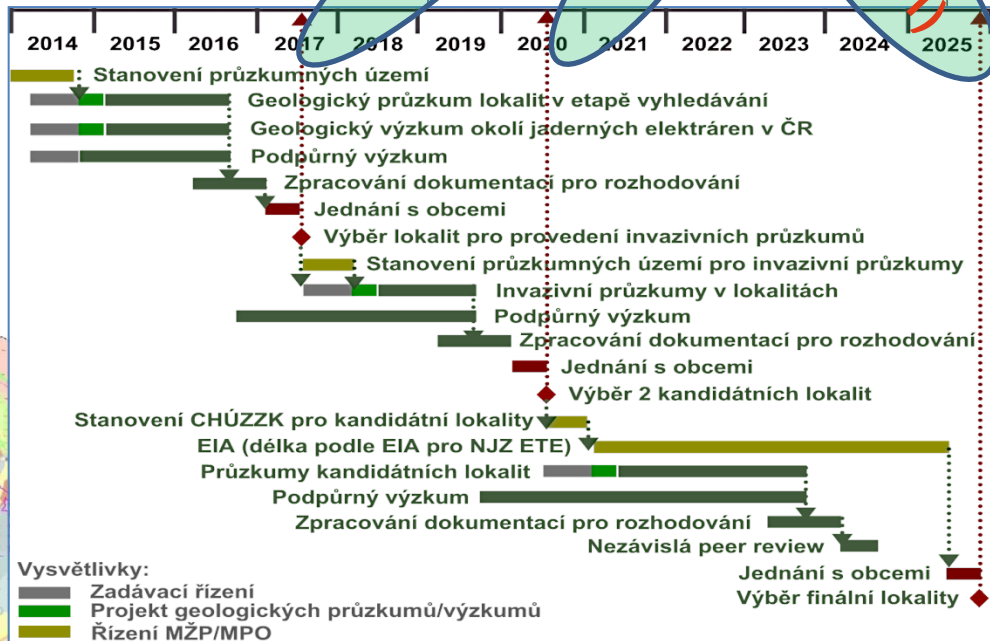
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(2015 – 2017) Surface Geo survey at 7 sites



(2015 – 2017) Geo Research in the surrounding of NPPs – to find (2) new sites

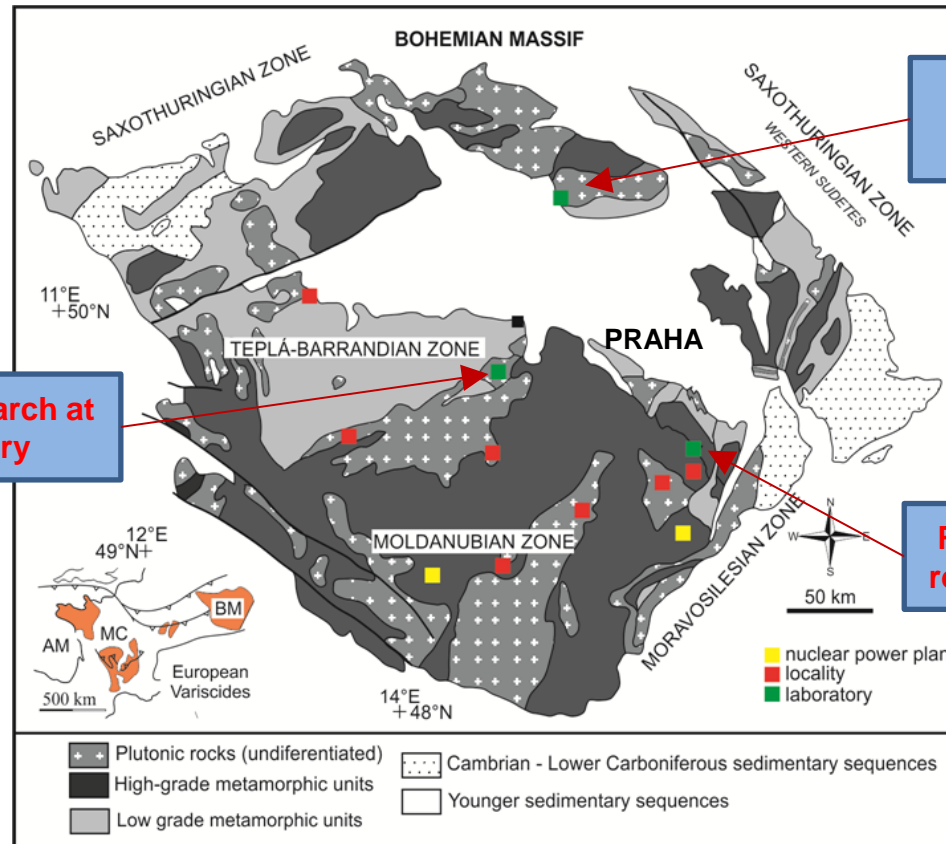


# The role of URL research in the DGR development programme



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**Demonstration research at CTU Josef Gallery**

**Generic research in Bedřichov Water Supply Tunnel**

**Rock characterisation research at Bukov URL**

# Content - section



1. **A case study of country with less advanced programme - CZ DGR programme development**
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**Name of the Project proposal:**  
**Tracking and sharing radioactive waste  
management knowledge**  
**TRACK**

- H2020, TOPIC : Pan-European knowledge sharing and development of competence in radioactive waste management
- Goal: to further develop **scientific, technical and managerial knowledge and competences** in RWM, encompassing the whole range of waste types and forms and origins
- **The focus** should be on the **development and transfer of knowledge and competence building** rather than the actual elaboration and harmonisation of national strategies and programmes



# Project objectives

- To assist countries with less advanced programmes (LAP's) in **retrieving existing knowledge** regarding RWM in general and geological disposal in particular.
- To enhance the development of **scientific, technical and managerial knowledge and competences** in RWM at pan-European level
- The project is seen as an action bridging the transition period regarding the activities on knowledge management that will be proposed as a part of the future European Joint Programming in RWM



# Project partners

**SÚRAO** (Coordinator), **CV Rez**, Czech Republic

**ANDRA** (WP Leader), France

**JRC-ITU** (WP Leader), EU

**PURAM** (WP Leader), **REC**, **ENERCON**, Hungary

**ARAO**, Slovenia

**COVRA**, The Netherlands

**RATEN**, Romania

**SOGIN**, Italy

Expert support anticipated from advanced programmes

# Main tasks

- WP 1 – Management and coordination (SÚRAO)
- WP 2 – RD&D capacity building (ANDRA)
- WP 3 – Identification of RD&D and strategic/management needs of LAPs (ANDRA)
- WP 4 – Methodology for knowledge transfer (PURAM)
- WP 5 – State-of-Knowledge documents (JRC)
- WP 6 – Dissemination and sharing information (SÚRAO)

**Goal:** Specification of prerequisites for creating national repository development programmes

**Output:** A guide document describing a common understanding and vision of different stages in a GDF project and listing prerequisites for performing necessary RD&D associated with each project stage

# WP3 Identification of R&D, strategic, and management needs of LAP



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**Goal:** Compiling the RD&D and strategic/management needs in the different stages of a GDF development programme

**Output:** A guide document providing an overview of R&D activities to be performed in different stages of repository development

# WP4 Methodology for knowledge transfer



**Goal:** Proposal of methodology, approaches and mechanism for transfer of knowledge and skills between MAP and LAP

**Output:** A guide document on knowledge transfer opportunities that may better serve the RD&D needs of LAP countries

# WP5 State-of knowledge documents

**Goal:** Enhancing access to and understanding of usefulness of results of completed EURATOM projects

**Output:** Managing the IKMS WEB space and publishing State-of-Knowledge documents on:

- Links between pre-disposal and disposal
- Site characterization methods: Status and prospects for RD&D
- Safety Case communication and uncertainties, incl. views and preferences of different stakeholders

**Goal:** Dissemination of project outcomes

**Outputs:**

- Distributed guidance documents (WP2-4) and state-of-knowledge documents (WP5),
- Final workshop for end-users of the project results
- A module for JRC Summer School on Decommissioning and Waste Management.

- **2 year long project (anticipated start mid 2017)**
- **EC grant 1,4 M €**
- **Project outcomes include:**
  - ✓ 3 guidance documents
  - ✓ 3 state-of-knowledge documents
  - ✓ Final workshop for end-users of the project results
  - ✓ A module for JRC Summer School on Decommissioning and Waste Management.





**Thank you for your attention**

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