

# EUROPEAN AND INTERNATIONAL STATUS ON THE MANAGEMENT AND DISPOSAL OF RADIOACTIVE WASTE, DEVELOPMENT AND CHALLENGES AHEAD

*Focus on Deep Geological Repositories*

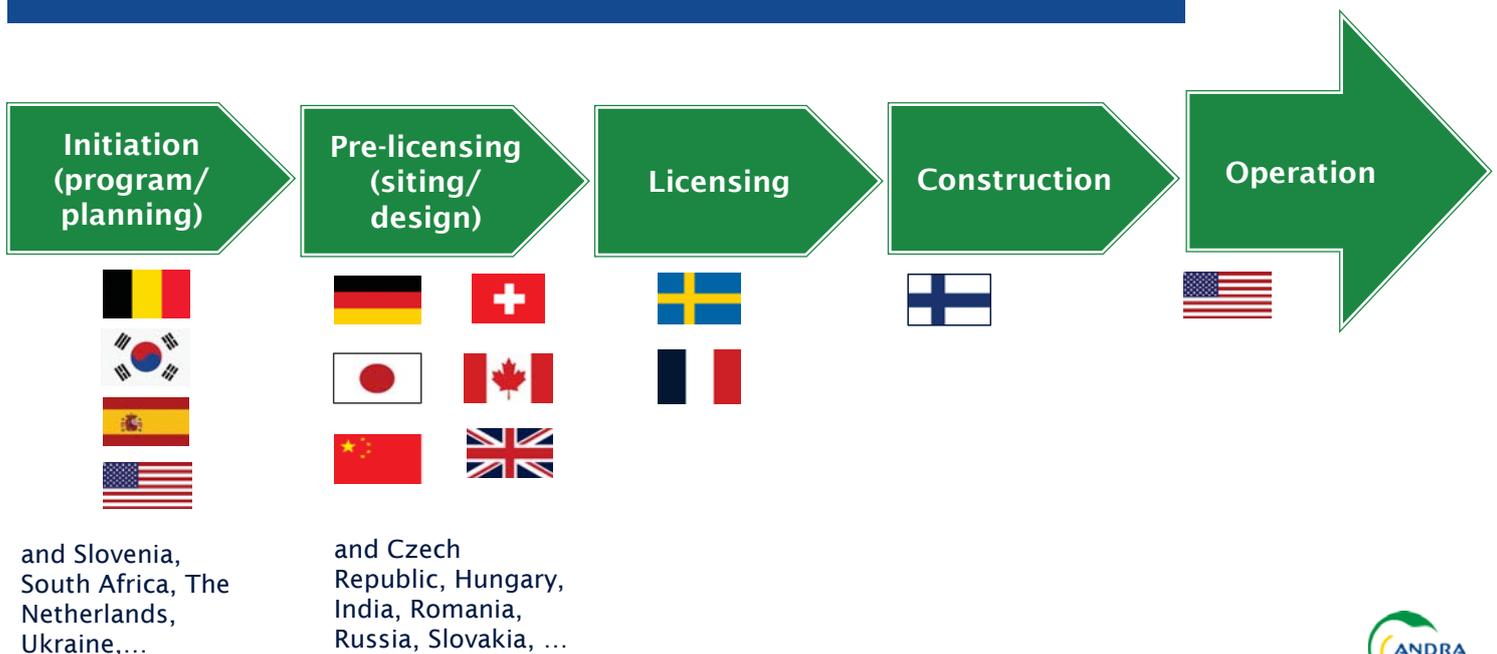


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## Geological disposal for HLW : Situation at a glance



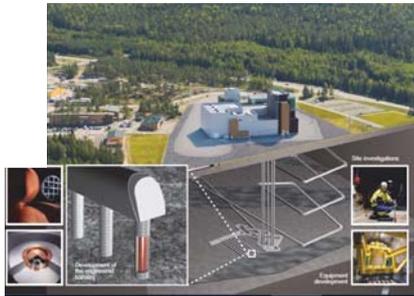
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# Focus on some projects...



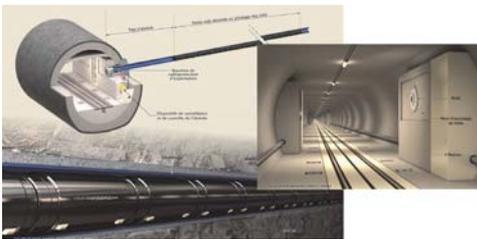
**Onkalo**  
Under construction



**Forsmark**  
Licence application



**Cigéo**  
Licence application



2 potential locations Ignace and South Bruce (Ontario) – investigations for decision in 2023



3 potential locations North Switzerland : Decision expected in 2022



Inshore project : near to coast  
Consent-based : 3 localities to investigate (near Sellafeld or SE England)

# Success factors in a DGR program

Governance and interactions between stakeholders

Why ? Who? How ? ...

Roadmap and milestones

Clear decisional process, What and When

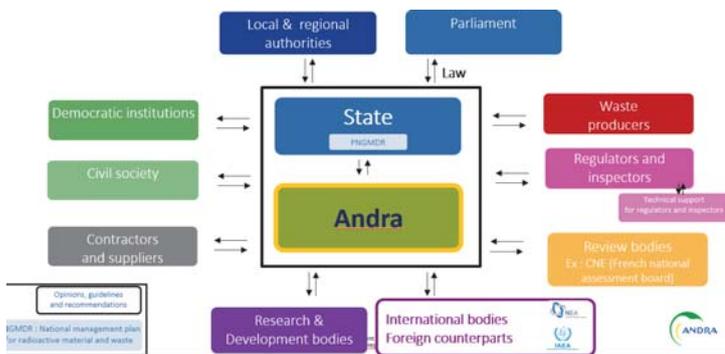
R&D programme

Research and Development Programme to follow the roadmap

# Key success factors

## Governance and interactions between stakeholders

### Example of France and Sweden

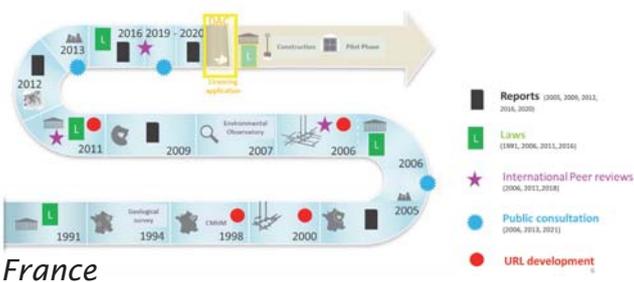


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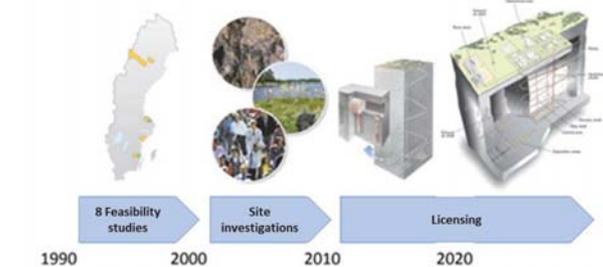


# Key success factors

## Roadmap and milestones



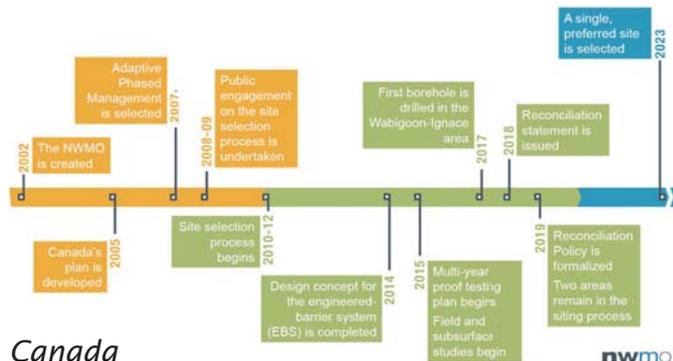
France



Sweden



Finland



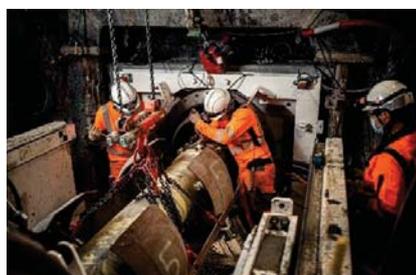
Canada



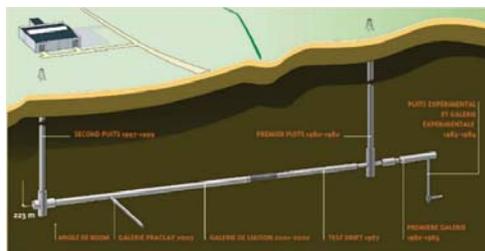
# Key success factors

R&D programme

Underground research laboratory, research, technical innovation...



Andra URL (France)



HADES laboratory (Belgium)



Grimsel laboratory (Switzerland)



Beishan URL (China)



# Key success factors

R&D programme

Underground research laboratory, research, technical innovation...



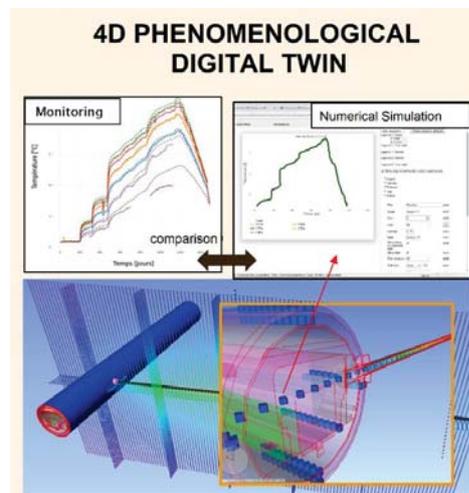
Copper canister for spent nuclear fuel (Finland)



Automated transfer system to disposal tunnel (France)



Fire resistance test (France)



France



## Challenges ahead

Licensing and construction of DGR

Licensing – Permitting : numerous procedures to follow (safety and environmental assessment) before getting autorisation)

Commissioning and starting operation of DGR

Numerous steps before a first package can be disposed of

Dialogue and stakeholders involvement

Civil society awarness, interest and participation - Get in touch and involve young generations,

Knowledge Management

KM methodology, importance to keep the right knowledge and transmission

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## Challenges : licencing, construction and starting operations

Licensing and construction of DGR

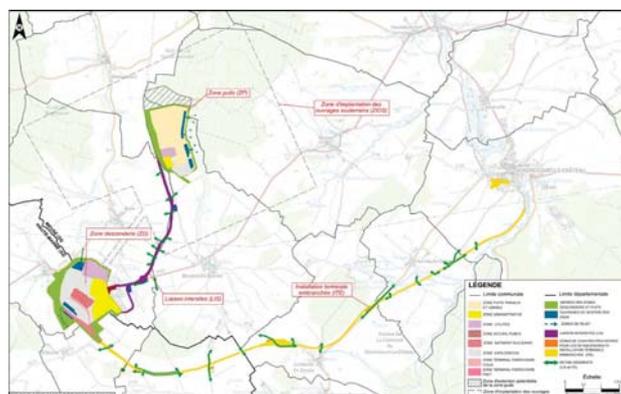
Commissioning and starting operation of DGR

- Safety assessment
- Environmental assessment
- connecting infrastructures to anticipate : train route, roads, water supply, power supply etc...

→ Unique type of project due to their

- Sizes (and depths) and costs
- Timeframes (from preparatory works to closure)...

➔ Long licencing procedures / challenging longlife project management



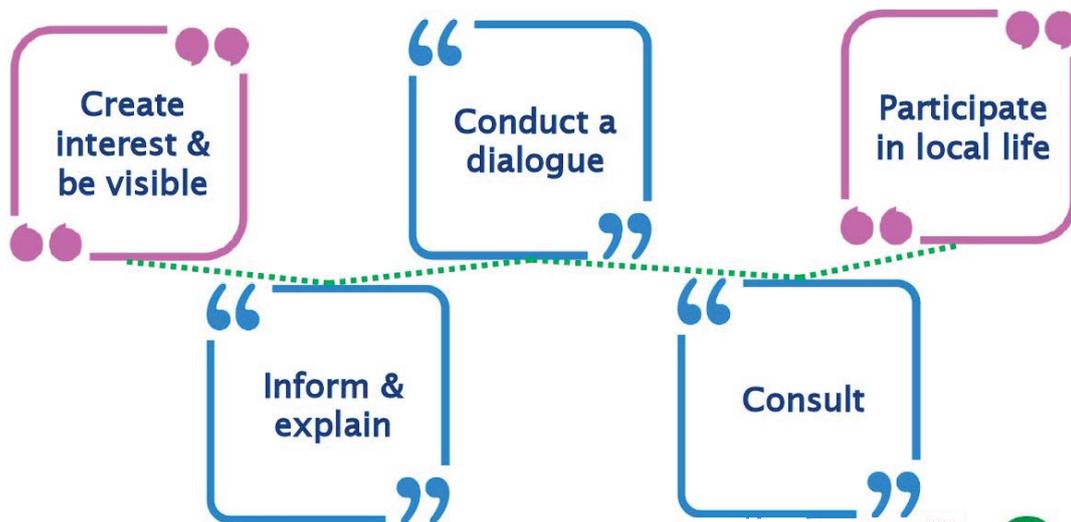
Ex : France, railway connection to Cigéo

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## Challenges : Dialogue & stakeholder involvement

Informing, communicating, involving public on RWM's activities and projects :  
**Numerous actions, interactions and innovations**



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## Challenges : Young generation

**Innovations to get in touch** : Street art, conferences, podcasts, games, webinars, partnerships with youth associations and social media influencers, ...



Cartoon characters UK



Street art France

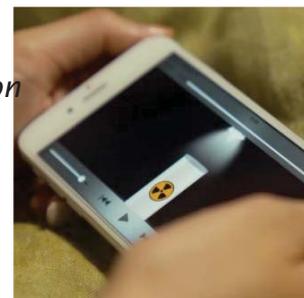


Escape Game Spain



Conference Belgium

video production contest Japan



# International Cooperation : EURAD



## European Joint Programme on Radioactive Waste Management

### 23 European countries

### 116 organisations

- Waste Management Organisations
- Technical Support Organisations
- Research Entities
- 51 Mandated Actors, 62 linked third parties & 3 international partners



### Objectives :

- Implement a robust and sustained state-of-the-art **Science and Technology Programme**
- Identify and elaborate upon complex issues by bringing together interested actors to jointly conduct **Strategic Studies**
- Consolidate efforts across Member-States, organisations and generations on **Knowledge Management**
- Foster mutual **understanding and trust** between participants (incl. from Civil Society) and other stakeholders

### Looking ahead:

- 2 remaining years in the current programme
- Preparation of the next EJP started yesterday (workshop)

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## Conclusions

- Deep geological disposal is the reference solution for HLW management
- DGR programs are lasting a few decades from initiation to commissioning : several generations concerned
- Earlier stakeholder involvement in recent programs
- 10 years from now DGR should be in operation



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