

# Examples of Multinational Repository Financing Proposals

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Financing a Multinational Repository –  
Challenges and Alternate Approaches  
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# Costing and Financing

- Geological repositories are **expensive** – several or many billions of USD
- The high **project costs** have been estimated by the scientists and engineers in numerous national programs and in a few multinational projects (these are described in the presentation by Neil Chapman)
- The **financing approaches in national programs** normally assume direct financing by waste producers, often via a segregated fund with strong government control
- The **financing of a private multinational repository (MNR)** is a more complex issue

# Financing an MNR

- Some financing suggestions have been made in the MNR initiatives briefly described in this presentation
- Some guidance may be obtained from examining other multinational technical undertakings; a list of examples is given
- **BUT a prime goal of this meeting is to see what innovative MNR financing proposals can be made for ensuring the required flows of revenues from numerous user countries to a repository host over long time periods involved**

# MNR Studies that address financing approaches

- Hensing 1996
  - Looks at costs and at financing models
- Pangea 1998-2001
  - Presents relatively detailed “Service Provider” business case – including financing scheme
- Arius/ERDO 2011
  - Focuses on “Shared Repository” scenario and on how Partners could organise financing
- South Australia 2017
  - Focus on business case - including financial risks

# National vs Multinational Issues

- IAEA Joint Convention obligates all Member States to have disposal programme (incl. financing, Art 22) – but not necessarily nationally sited
- IAEA, EC etc. advice: *“Pursuit of a multinational approach must however always include a commitment to a national solution (cf. IAEA Draft costing/financing doc)”*
- What effect can this have on financing proposals for an MNR?
  - Do the provider and the users need government approval?
  - At what stage does MNR become realistic enough to devote all financing to this option?

# Hensing 1996

- German disposal costs of 22 billion DM could be reduced to around 8 billion DM by sharing costs with other disposers; profit of 16 to 26 billion DM by charging foreigners for disposal in Germany
- Looks also at financing systems
  - Establishing a common Fund
  - Include front end service (leasing)
  - Interim storage service
  - Include reprocessing
  - Risk categories: inventory, costing, accidents

Hensing (1996) *Ansatz einer international Entsorgung hochradioaktiver Abfälle*

# Pangea 1998-2001

- Business case done in detail and reviewed externally
- Includes disposal AND other services (e.g. transport)
- Fixed base price of 1M USD/tonne for spent fuel and 250K USD/canister for HLW
- Total turnover 99B USD; IRR 51%
- Financing:
  - Advanced pre- payments representing 10% of disposal contract value and 5% of transport contract value, are assumed to be received over a 20 year period
  - Option offered to acquire shares in Pangea

# Arius/ERDO-WG 2006-

- Focus on shared repository concept - partnering
- Accepts diversity of wastes not just spent fuel
- Sharing by 14 small EU MS results in ~ 15 - 25 BEUR savings to Europe
- Financing
  - Suggests wastefrom-specific cost allocation algorithms for NPP owners and others with no NPP
  - Financing proposals formulated for preparatory phase (15y) and for implementation phase (60y)
  - Financing of Management Costs – equal for all
  - Financing of Project Costs – inventory dependent



# South Australia 2017

- Focus specifically on business case – storage and disposal (SF; HLW; LL-ILW)
- Reference disposal cost assumed 1.75M AUD
- Over 120y, total estimated revenue 257B AUD; expenditures 145B AUD
- Financing:
  - Early payments for storage finance expensive repository construction phase
  - Establish reserve account to cover costs after import stops
  - Segregated State Wealth Fund receives 15% of revenues
  - Reserve Fund for decommissioning and closure phases

# Other Multinational Financing Examples

- Eurochemic (1967-74): 13 OECD Member Countries
- Cogema: Base Load Customers; construction and operation costs shared on cost plus basis
- Slovenia-Croatia Joint NPP: each 50% ownership
- Acceptance of foreign wastes by reprocessors: as part of reprocessing service
- Disposal of Chemotoxic Wastes (e.g. Germany)
- (National DGR with independent Users, e.g. CH)

# The End