



Considerations on the Financing of a Multinational Repository

*IFNEC Workshop on Approaches to Financing a Multinational Repository –
Challenges and Alternate Approaches*

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THRESHOLD ASSUMPTIONS



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- Suitable country has been identified
 - Good site (geology)
 - Good location (transport logistics)
 - Stable / favorable leadership
 - Geopolitical considerations
 - Evidence of sustained government commitment
 - Public support (esp. local)
 - Creditworthy sovereign
 - Respect for Rule of Law



THE ECONOMIC CASE



THRESHOLD ECONOMIC / PROJECT ISSUES

- In order to fund the Project, there has to be an economic case for the business in order to raise both debt and equity
- What would financiers consider in their decision to finance the Project?
 - Political risk (incl. broader issues, such as non-proliferation and change in political leadership)
 - Regulatory risk (incl. licensing)
 - First-of-a-kind (FOAK) risk
 - Nuclear liability
 - Strength/durability of commitment from host country and participating countries
 - Overall deal structure and supporting contracts (incl. participant rights and sovereign guarantees)
 - Anticipated revenue stream, including existing set-asides at national level per national law
 - Note impact of potential variations in the revenue stream due to changes in volume and in pricing
 - Cancellation of project; default by participant

➤ *Given such concerns, hard to envision private finance (both debt and equity) during construction*



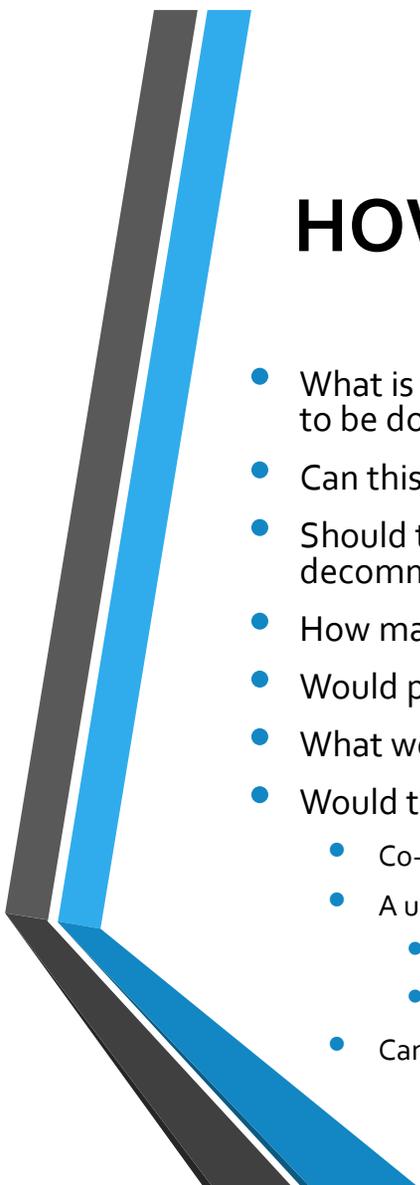
COST & REVENUE

COST

- Country Infrastructure / Program Development
- Project Development (incl. feasibility and sustainability studies)
- Construction (EPC)
- Operations & Maintenance (incl. security)
- Insurance
- Transportation

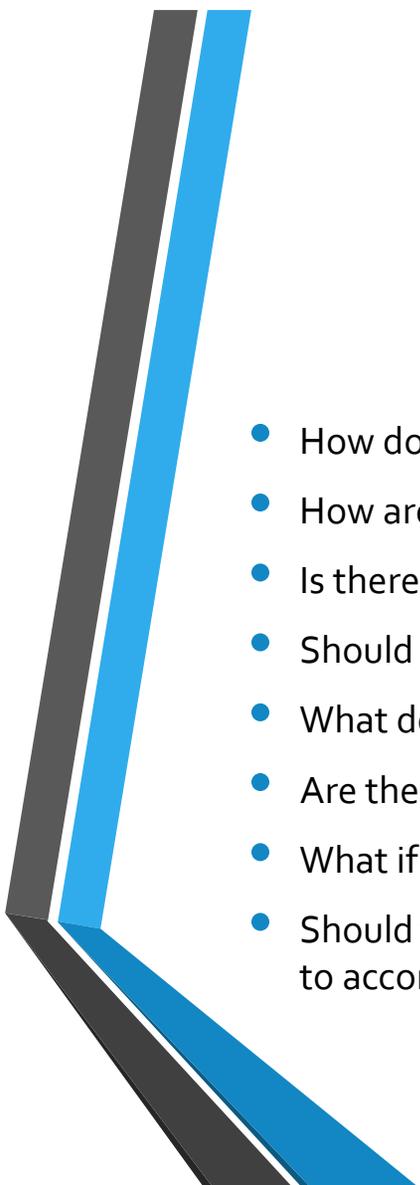
SOURCES & REVENUE

- Existing reserves held at national levels (either by the government or by the licensed operators)
- Membership fees by prospective users
- Usage fees by actual users



HOW MUCH MONEY IS ALREADY OUT THERE?

- What is the pool of money that countries have already set aside? How “liquid” is such money? What needs to be done legally to transfer such money?
- Can this pool of money be the equity? Should it be the equity?
- Should this pool of money simply be contributed to the endeavor, sort of how the new nuclear decommissioning transfer models are being structured?
- How many of those countries would participate?
- Would prospective and/or newcomer countries participate?
- What would the “entry fee” be?
- Would the best model be a:
 - Co-ownership model?
 - A user fee?
 - Capacity reservation?
 - Usage charge?
 - Can this be a privately owned model or is this unrealistic?



ADDITIONAL CONSIDERATIONS

- How do you build the economics to take care of the full life of the Project?
- How are construction overrun risks handled?
- Is there a problem with delayed completion?
- Should an interim storage facility be an option or a precursor?
- What does the insurance industry have to say about all this?
- Are there any issues related to transport that need to be considered for the financing?
- What if a participant wants to withdraw?
- Should the facility be sized for a certain number of members, or should excess capacity be established to accommodate additional future members (new nuclear programs, expanded programs)?



ALTERNATIVES FOR FINANCING

Initial Thoughts



GOVERNMENT LEADERSHIP TO DRIVE PROJECT DEVELOPMENT

- Host country will need to provide overall leadership
 - Legal & Regulatory Regimes
 - Public Support
 - Infrastructure Development
- Initial participations, while evidenced by commercial contracts, will be facilitated by government-to-government dialogue
 - Contractual commitments would be backstopped by sovereign guarantees



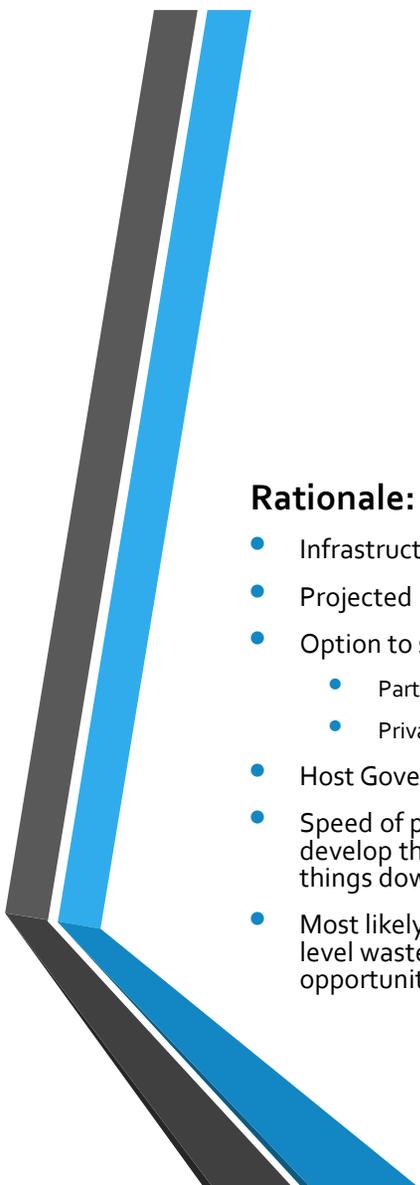
FINANCING – OPTION 1

Host Government as Anchor Financier



ROLE OF HOST GOVERNMENT

- Host Government would fund ownership interest for base case, as well as completion facility for cost overruns (i.e., completion risk)
- Debt would be sourced from Export Credit Agencies (ECAs), to the extent of foreign content and allowed local content financing
 - Host Government would provide sovereign guarantee
- Possible initial debt from local or international banks (speculative), also backstopped by a sovereign guarantee, or a loan from the Host Government to the Project (more realistic)
- Refinancing structure after commercial operation, as part of overall financing plan



OPTION 1: ANALYSIS & ISSUES

Rationale:

- Infrastructure development to country (and region of country)
- Projected revenues from participants
- Option to sell down once facility is in operation
 - Participating countries as equity holders
 - Private capital
- Host Government ownership logical, given nature of asset
- Speed of project development (easier for Host Government to develop the project, instead of having multiple participants slow things down)
- Most likely scenario: host country already has to develop a high level waste solution and sees the scaling as an economic opportunity

Concerns:

- Size of equity contribution; cost of equity
- Impact of sovereign guarantees
- Contract formation for users
- Expertise of Host Government (FOAK concerns)



FINANCING – OPTION 2

Membership Approach

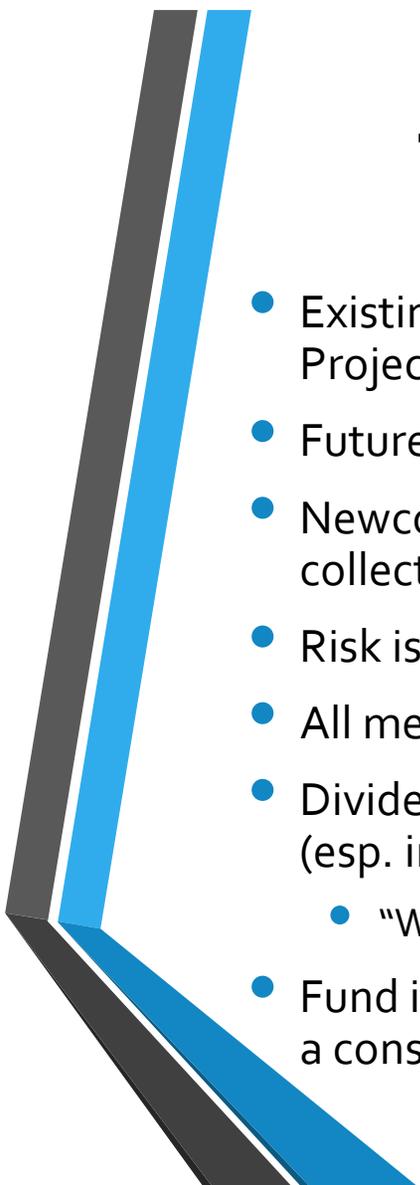
MEMBERSHIP

MEMBERSHIP

- Each participating Member State would hold buy a membership share in the Project
- Such share would be funded at financial close, utilizing existing set-asides or new funding
 - FUND would hold such contributions, to be disbursed by achievement of Project milestones
 - Each share would be assessed, based on actual costs determined on a "pass through" basis (to include overrun considerations and sizing for excess capacity)
- Host country would have "golden share" status with special rights
- Each share would entitle user to a reserved capacity in the facility
- Size of equity share would be based on desired reserved capacity
- By analogy:
 - utility power plant with multiple owners and participation agreements
 - Mankala model with members and an operating company
- Most likely scenario:
 - host country does not necessarily have to provide a solution for its own high level waste
 - as was the case with South Australia, there was a connection to the nuclear industry already (uranium); however, such a connection is not essential

EQUITY & FEE CONTRIBUTIONS FROM MEMBERSHIP

- Initial debt-to-equity structure would be targeted at 70-30 (which could then vary over time)
- Usage fees would be charged based on actual material stored
- Usage fees would be secured by amounts assigned to a managed FUND
- Operating costs would be passed through to the members, to be satisfied out of the FUND
- Such FUND would hold:
 - Existing contributions, net of initial equity contribution to build the facility, held by participating Member States directly or indirectly
 - Continuing fee collection from operating units
 - FUND would be managed on an arm's length basis to de-risk the project and protect members' interests
 - FUND would need to be comprised of an experienced team of financial managers



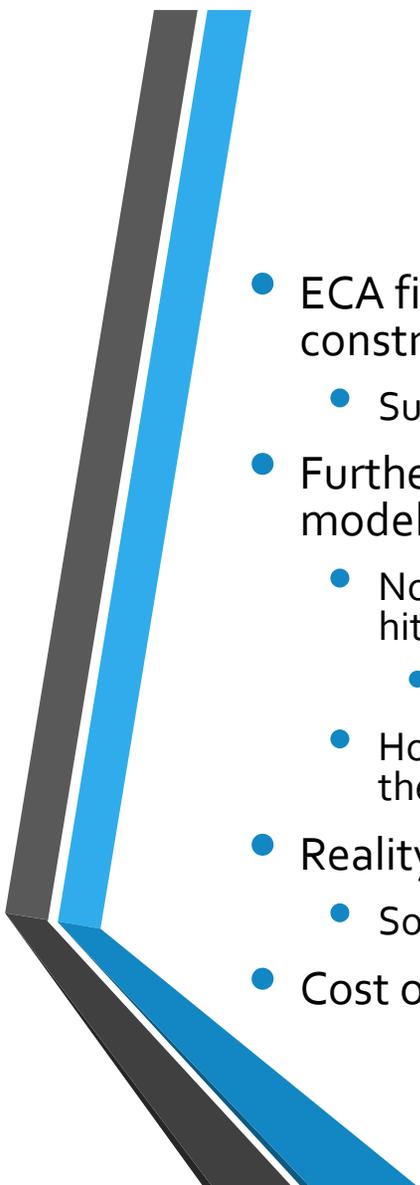
THE FUND AND ITS MANAGEMENT

- Existing country reserves are moved into the FUND at financial close for the Project
- Future fee collections (at agreed levels) are moved into the FUND
- Newcomer countries pay small entry fee for membership, with future fee collections then transferred to the FUND
- Risk is shared pro rata to membership interest
- All membership obligations are backstopped by sovereign guarantees
- Dividends are returned based on membership interest and level of contributions (esp. in “over-funding” scenarios)
 - “Waterfall” account structure
- Fund is managed by third party trust (i.e., for the benefit of the members), utilizing a conservative investment strategy



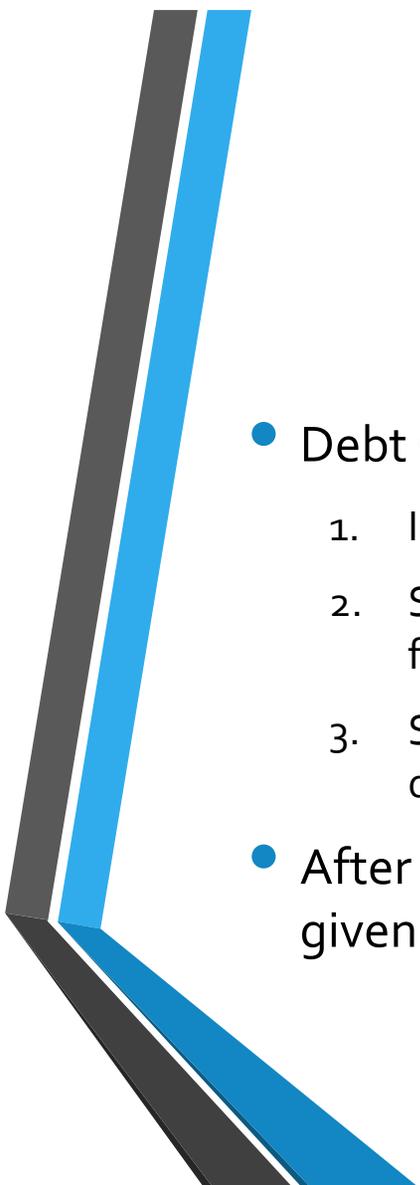
FUTURE PARTICIPANTS

- Economic benefits are realized ...
 - First, through economies of scale aggregation of participants
 - Such benefits would be returned over time
 - Second, through future participant users that wish to join the Project (if sized for excess capacity)
 - If the first wave can adequately capitalize the Project, but then size it for additional capacity for future users, then such additional membership contributions and fees can be distributed among the original equity holders when the additional participants join the project
 - Something to consider: *Would private investors (i.e., shareholders that are not also users) be interested in equity stakes in the project? Could that take the form of subordinated debt (depending on risk appetite)?*



DEBT STRUCTURE

- ECA financing, based on national content participations for development and construction of the facility
 - Such ECA financing would include local content, up to authorized limits
- Further debt financing to cover ECA funding gaps, if any, in the base case financial model
 - Note: Host Country might have a willingness to cover such funding gaps, if ECA content hits national content funding limits (to be discussed with participating ECAs)
 - Opens up concept of a “managing member”
 - However, preferred assumption is that membership contributions would adequately fund the equity portion of the base case financial model
- Reality: commercial bank debt highly unlikely at this stage
 - Sovereign guarantees would be essential to support any commercial bank tranche
- Cost overrun facility would come from the FUND



DEBT SERVICE

- Debt service would be secured at three levels:
 1. Initial transfers into the FUND, net of initial equity to fund the Project
 2. Scheduled contributions into the FUND, based on collections from operating NPPs from participating member states
 3. Several (and not joint) sovereign guarantees from participating Member States of debt payments
- After commercial operation, debt could be refinanced (in whole or in part), given reduced risk profile of the Project



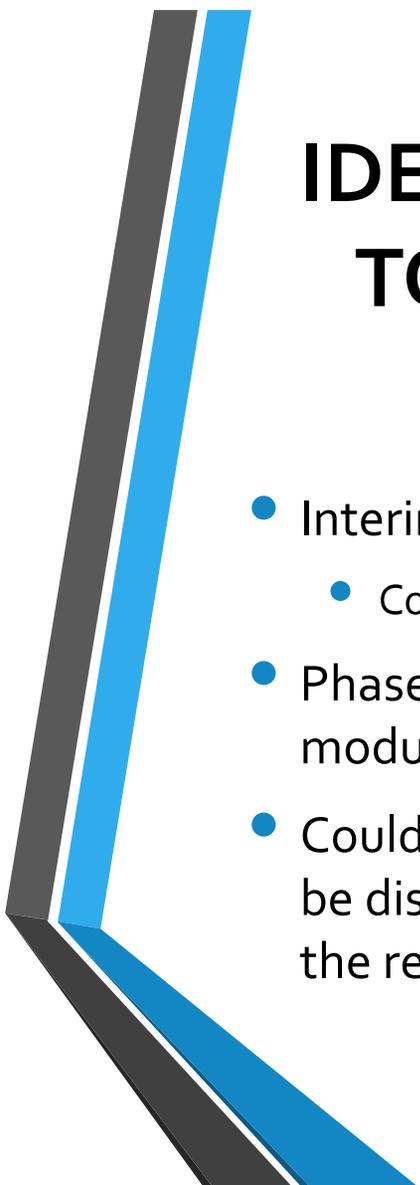
MOTIVATIONS FOR MEMBERSHIP

- For Member States
 - Reservation of capacity; usage of capacity
 - Economies of scale by joint participation
 - Removal of need for national facility
- Equity “upside”
 - Project finance-fashioned account waterfall from the FUND, based on profitability of the FUND and pro rata share
 - Further shared revenue from the FUND, arising from future participants
 - Net effect: coupon clipping based on economies of scale savings and aggregations in the FUND
 - Private investors would have an interest in the coupon from the FUND, as a secure and stable long-term investment security



POTENTIAL ASPECTS OF PRIVATE SECTOR PARTICIPATION

- Given FOAK nature of project, hard to see private sector being a source of initial financing, whether debt or equity
 - Potential for pension funds and insurance companies under refinancing structures after commercial operation has been achieved
- Initial private sector participation will be at the project development and delivery level: the feasibility study, project management, EPC contract, and O&M contract
 - Such roles can be supported by ECA financing
 - ECA financing would, most likely, require sovereign guarantees over the debt



IDEAS FOR IMPROVING THE ECONOMICS TO FACILITATE FINANCING PACKAGES

- Interim surface dry cask facility (S. Australia model)
 - Commercial analysis would need to be run, as would local sensitivities on siting
- Phased / expandable capacity of deep geological repository (optionality / modularity)
- Could initial membership interest (comprised of access/usage and revenue) be disaggregated, such that a member could monetize its future rights to the revenue stream?



CONCLUDING THOUGHTS



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- Host government leadership is essential, as is local government & community support
- Establishment of contingent but binding commitments by users is critical
 - Contract formation and negotiation will be challenging
 - Need for national law enactments to support participation
 - Deal formation to financial close will be time consuming
 - FUND management will be important
- Financing relies on economies of scale achieved on the facility's sizing, together with the aggregation of contributions into a FUND that will provide base equity, completion support, user fees (also from further charges to NPP licensed operators), and then a return on investment from the FUND
- Refinancing strategy and structure should be part of base case model
- As of today, a deep geological repository is still a "first of a kind" project



QUESTIONS

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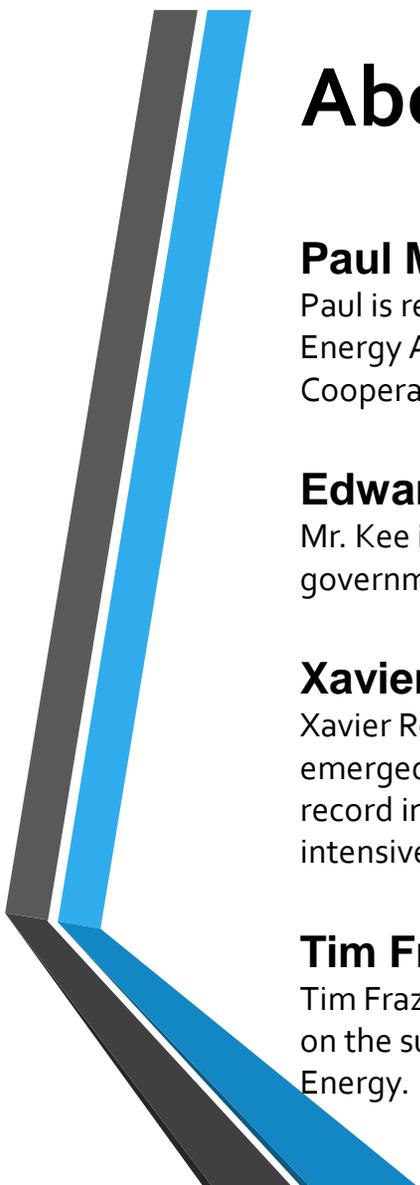
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Paul is recognized as an expert in the development and financing of nuclear power programs by the International Atomic Energy Agency (IAEA), the OECD's Nuclear Energy Agency (NEA), the International Framework for Nuclear Energy Cooperation (IFNEC), and the U.S. Government.

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Mr. Kee is an expert on nuclear power economics providing strategic and economic advice to companies and governments on nuclear industry issues.

Xavier Rollat

Xavier Rollat is a seasoned senior financier with a comprehensive experience developed during his 29-year career in emerged and emerging countries, primarily in banking and financial advisory services. Xavier has built a solid track record in originating, structuring and arranging single- and multi-source long-term funding solutions to finance capital-intensive investments in the power industry, with a focus on the nuclear power sector.

Tim Frazier

Tim Frazier is a recognized international expert on the back end of the nuclear fuel cycle and has spoken internationally on the subject. He managed the President's Blue Ribbon Commission on America's Nuclear Future for the Department of Energy.