FINANCING NEW NUCLEAR AND RISK ALLOCATION

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• NPP PROJECT OBJECTIVES
• GOVERNMENT SUPPORT
• RISK
• SMRS
• BRINGING IN INVESTORS
ESTABLISHING CLEAR OBJECTIVES

- Long term relationship/partnership
- Reasonable and achievable project schedule and budget
- Comply with all regulatory obligations – work with regulator to ensure a safe project
- Electricity to the grid? Local industry?
Many of the benefits of nuclear energy are sovereign in nature

- Energy security
- Energy diversification
- Climate change mitigation
- Industrial development
- Promoting higher education, highly trained workforces
- Promoting research and development

Only governments can properly value these benefits
- Experience shows that no nuclear project will go ahead without significant host government involvement
- Government involvement can take different forms, including long term PPAs/sovereign guarantees and investment
...HOWEVER

Pure reliance on government funding may lead to lack of fiscal discipline/ lack of accountability/ inefficiency

Government funding and support should be seen as a bridge to private sector support with government support decreasing over time

Attracting private sector funding requires governments/ developers to begin planning and thinking as private investors would

Analyzing nuclear projects based on project financing models will help identify and mitigate the risks just like a prudent/conservative financial institution would
SO YOU NEED TO GO BACK TO BASICS

• First answer the following 5 questions:
  • Do you need a nuclear power plant?
  • Do you want a nuclear power plant?
  • Can you afford it?
  • How will you pay for it?
  • Can you manage and support it?

• Once you answer these questions then you also need to answer HOW:
  • Will you build it?
  • Will you operate it and generate the power?
  • Will you maintain it in the long term and continue generating the power?
  • Will you decommission it and clean up the site at the end of its life?

• Answering these questions will allow you to develop a plan to procure/construct/finance and operate nuclear power project
## Nuclear Project Risks – Investor Perspectives

### Financial Risk – Primarily Driven By
- Historical/current experience of project delay and cost overruns
- Long-term regulatory and power market uncertainty
- Need for long-term human resources development
- Significant amount of finance and long development/construction periods
- Nuclear liability

### Reputational Risk – Primarily Driven By
- Social perceptions associated with nuclear
- Political risk and public acceptance issues
- Post-Fukushima environment and nuclear safety concerns
- Nuclear non-proliferation
- Radioactive waste management/disposal **AND**
- Historical/current experience of project delay and cost overruns
WHAT SHOULD BE (BUT NOT ALWAYS IS) THE EASY PART: DE-RISKING YOUR PROJECTS

**SAFETY**
Demonstrable safety culture – in absence, regulators will delay projects

**DESIGN**
Complete detailed design, recently constructed reference plant using proven supply chain and construction team

**VENDOR MANAGEMENT**
Integrated project delivery team with key personnel experience in building nuclear power projects and experienced sub-contractor networks

**OWNER MANAGEMENT**
Owner experience in managing large construction projects

**PROJECT MANAGEMENT**
Sound project management is best way to minimize risk. Vendor implemented with "hands off leadership by owner" (as stated by one of the most experienced project managers I know)

**OWNER-VENDOR PARTNERSHIP AND TEAMWORK**
A good contract should be your guide, not a manual for filing claims
WHAT SHOULD BE (BUT NOT ALWAYS IS) THE EASY PART: DE-RISKING YOUR PROJECTS (CONT.)

**REGULATORY PROCESS AND INTERFACE**
Clear and established interface mechanisms with the regulator; capacity and capability of regulator; cooperation between regulatory authorities; country of origin licensing

**HOST GOVERNMENT AND EXPORT GOVERNMENT SUPPORTING STRUCTURES**
Bilateral nuclear cooperation on export controls, nuclear liability, industry participation and human resource development

**HUMAN RESOURCE DEVELOPMENT**
Long-lead item
SMR PROJECT RISKS – FROM AN INVESTOR’S PERSPECTIVE

KEY CHALLENGES

• FOAK Risk
• No Reference Plant
• Untested regulatory structure/licensing risk and cost
• Other challenges are no different that existing LWRs (reputational, completion risk, nuclear liability) but without the benefit of economies of scale

KEY BENEFITS

• Shorter construction period
• Lower cost
• Simpler and enhanced safety/passive systems
• Can be built in series
• Phased financing
• Grid suitability
• Other applications such as desalination and mining
SO WHAT DOES THIS MEAN?

Will SMRs be easier to finance/develop?

NOT REALLY (at least not for now)

ABSOLUTELY

Do they present a unique first-mover opportunity?
BRINGING IN INVESTORS

Engagement

- Engage with investors at the early stage of project development

Understand and explain risks

- Demystify
- Speak in plain terms
- Apply practical perspective on likelihood and potential impact

Develop Solutions

- “Lessons learned”
- Explain what you will do differently to avoid past challenges and deal with new challenges
- Detailed risk identification/allocation/mitigation
Industry says…
“Latest technology”

Industry says…
“Proven safety record”

Industry says…
“Consortium”

Industry says…
“Construction schedule”

...Bank hears
FOAK risk

...Bank remembers
Chernobyl, TMI, Fukushima

...Bank thinks
Internal disputes

...Bank worries about
Historical delays/cost varruns
Industry says…
“Channeling of liability”

...Bank hears Gaps, inconsistencies – DEAL-BREAKER

Industry says…
“Peaceful use”

...Bank thinks of Iran, North Korea

Industry says…
“Localisation”

...Bank hears Supply chain risk

Industry says… “Highly regulated - regulated industry”

...Bank hears Regulatory risk