

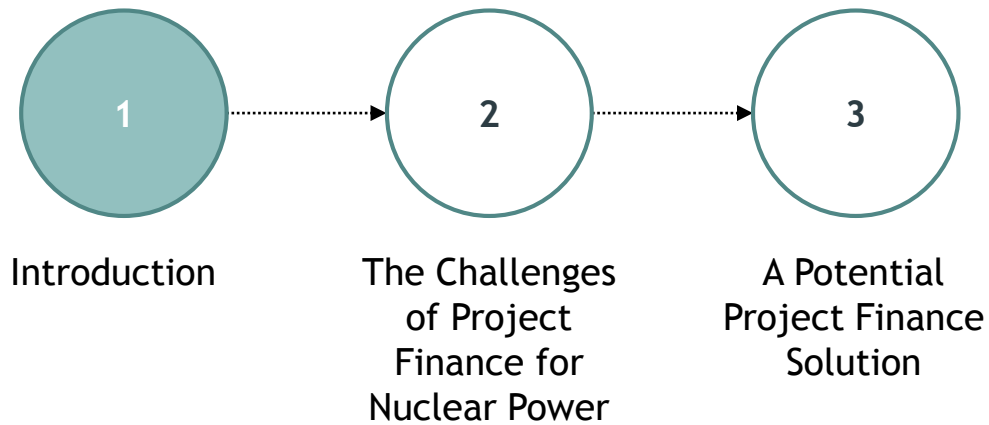
# Project Finance Structures for Nuclear Power Plants

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June 6, 2016

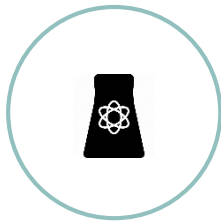
# Agenda



# Nuclear Power Plants Are Among the Most Complex Infrastructure Projects to Develop

## Complicated Stakeholder Interfaces

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Technology  
Exporters & Other  
Project  
Participants



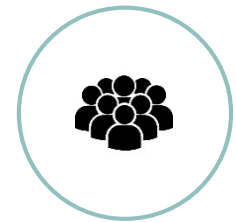
Shareholders &  
Prospective  
Equity Investors



Host & Exporting  
Country  
Governments &  
Governmental  
Authorities



Special Interest  
Non-  
Governmental  
Organizations



Local & Global  
Communities &  
Citizens

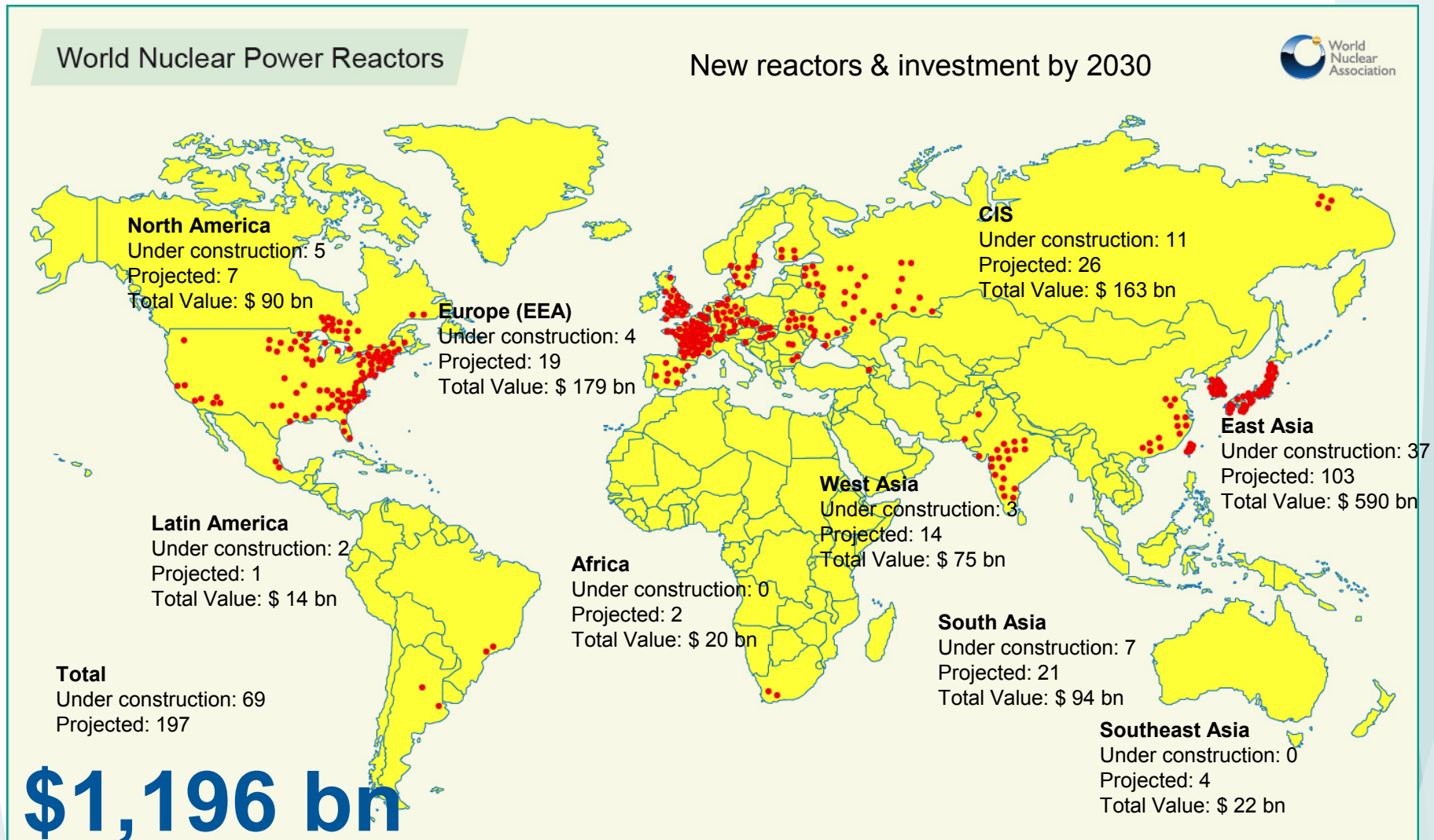
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# Nuclear Power is a Uniquely Government Undertaking

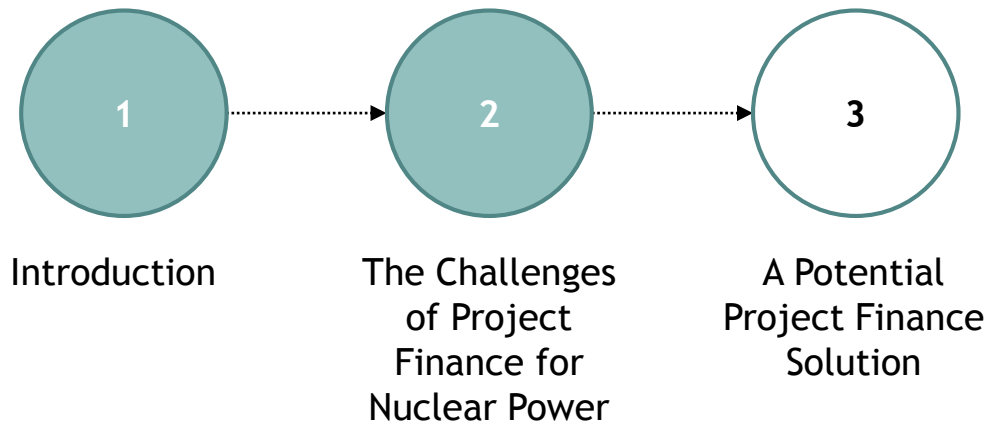


- ▶ Some form of Governmental financial support will be required because few project sponsors have the balance sheet capacity to independently raise capital required for a new nuclear power project
  - ▶ Subsidies
  - ▶ Completion guarantees
  - ▶ Equity
  - ▶ Nuclear liability protection
- ▶ The manner in which government support is provided will be challenged if viewed as an unfair subsidy or structured as a “bail-out”
  - ▶ E.g., State Aid rules in the EU

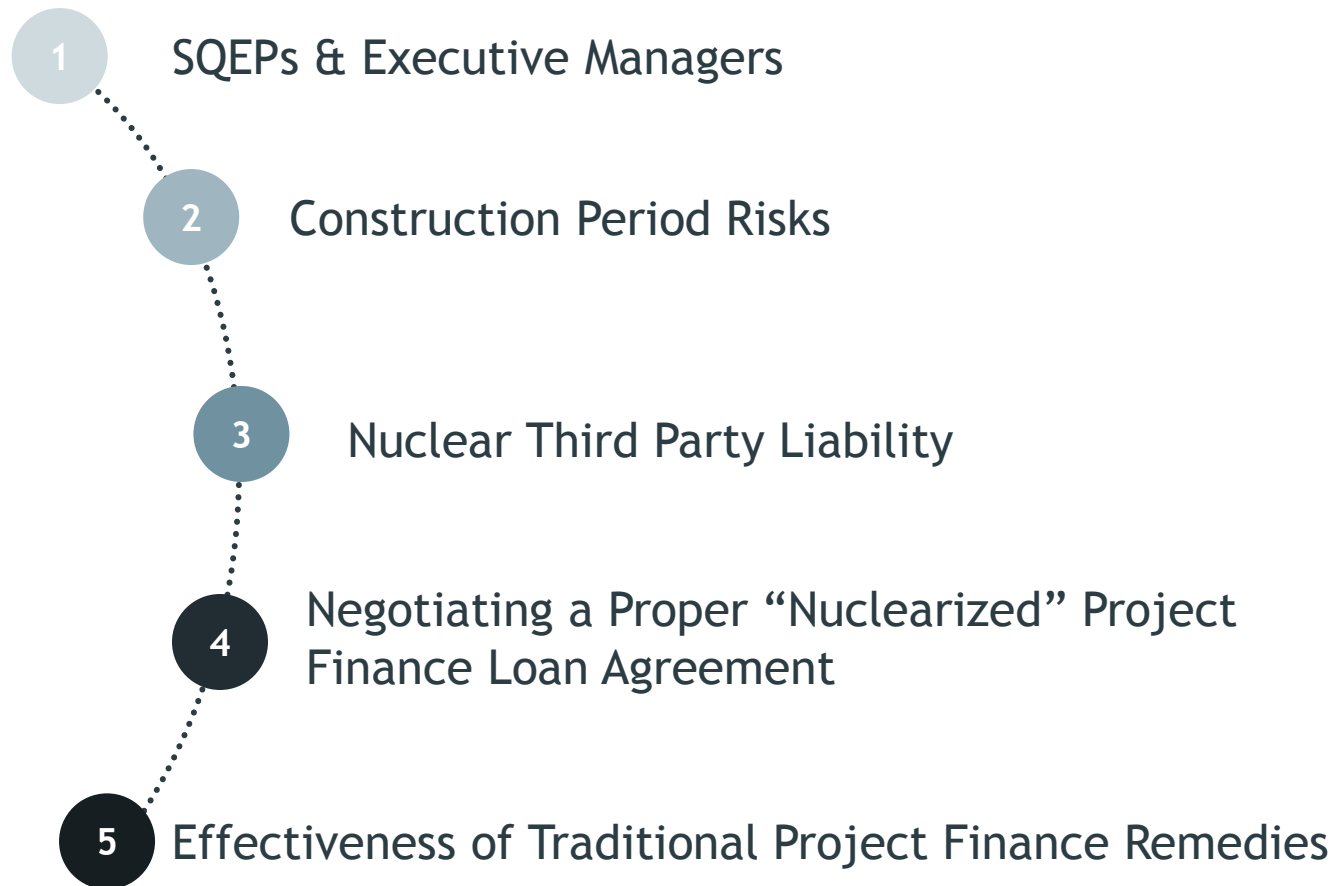
# Market Size - Under Construction and Projected



# Can Project Finance Principles be Adapted & Applied to Finance a Nuclear Power Plant?



# Key Areas Where Traditional Project Finance Approaches Require Re-Examination in the Context of Nuclear Power Projects



# Lenders Must Consider Extending Credit to a Business Enterprise Rather Than a Physical Asset

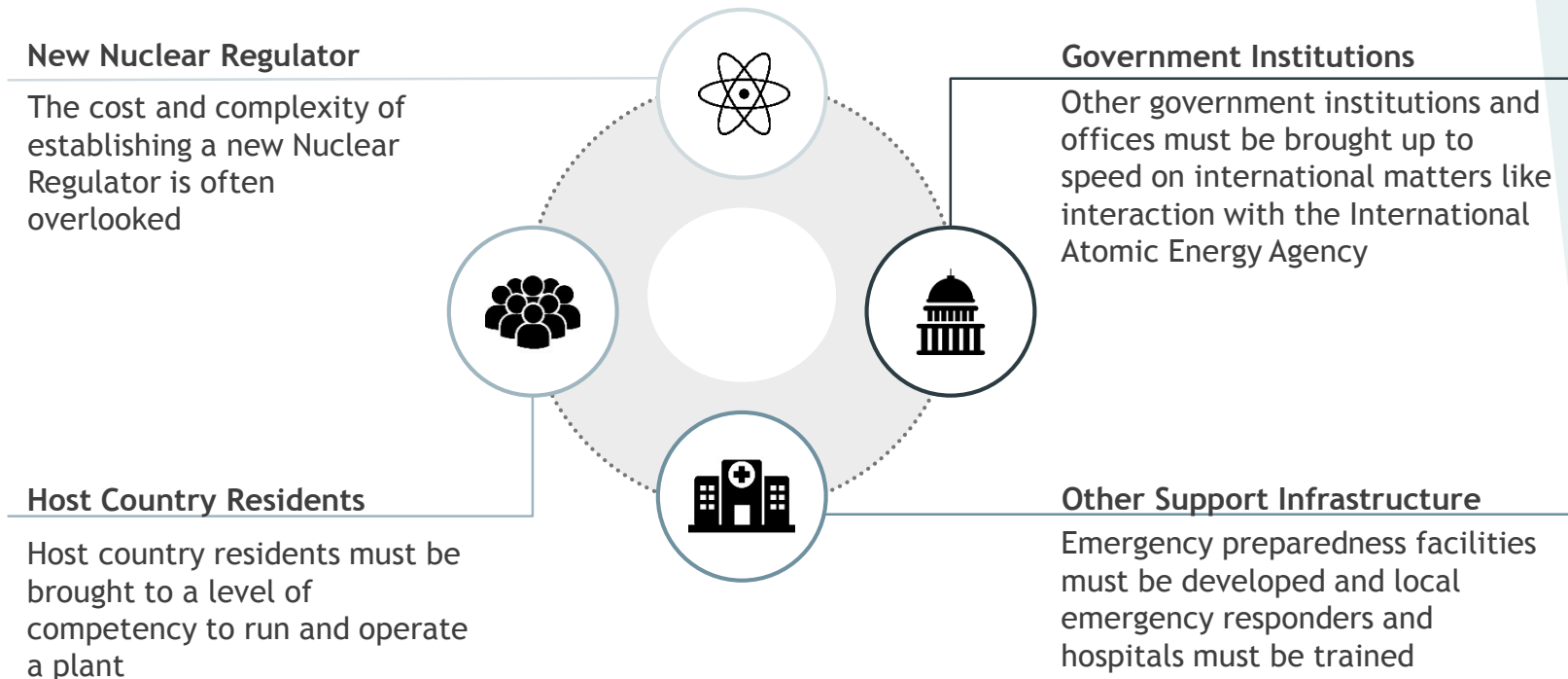


- ▶ A 2- to 4-unit nuclear power station will employ thousands of highly skilled employees, many of whom are operators which are individually licensed to perform safety-related functions
- ▶ Those employees are managed by a team of executives dedicated specifically to safe and efficient operation of the nuclear plant, and who are approved to do so by the applicable nuclear regulator



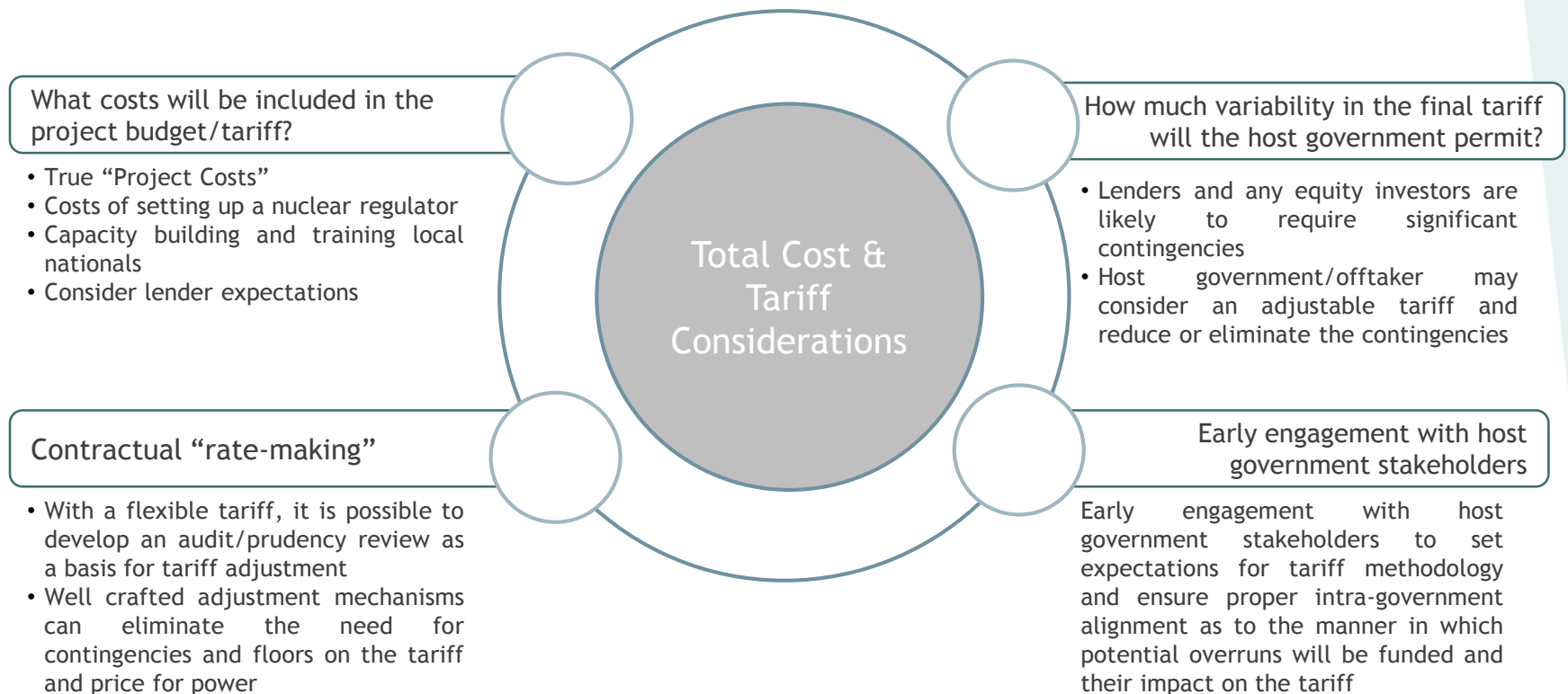
# Construction Period Risks Demand Additional Credit Enhancements

## ► Sources & uses analysis overlooks



- Nuclear power plants are notoriously late and over-budget
- First of a kind risks

# Total Cost & Tariff Considerations



# Nuclear Third Party Liability (NTPL)

- ▶ Lender concern focuses on extra-territorial non-convention claims - i.e., claims for nuclear damage brought by claimants domiciled or suffering harm in a “non-convention state”
- ▶ Changes in legislation and treaty framework (such as adoption of CSC, revised Paris/Brussels Conventions, the Vienna Convention, and the Joint Protocol) could mitigate some lender concerns, but lender NTPL risk cannot be fully addressed under current international frameworks absent some form of indemnity or other similar financial security

## Nuclear development is an international business

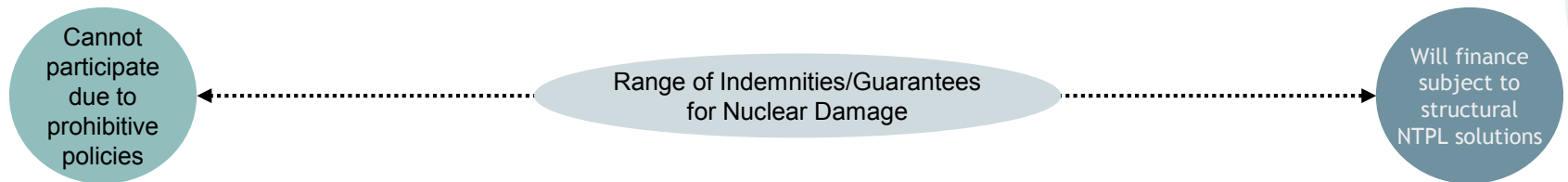


### Nuclear Liability Laws & Treaties

- ▶ Vienna Convention on Civil Liability
- ▶ Paris Convention on Nuclear Third Party Liability
- ▶ Joint Protocol
- ▶ Convention on Supplementary Compensation

# Negotiating a Proper “Nuclearized” Project Finance Loan Agreement

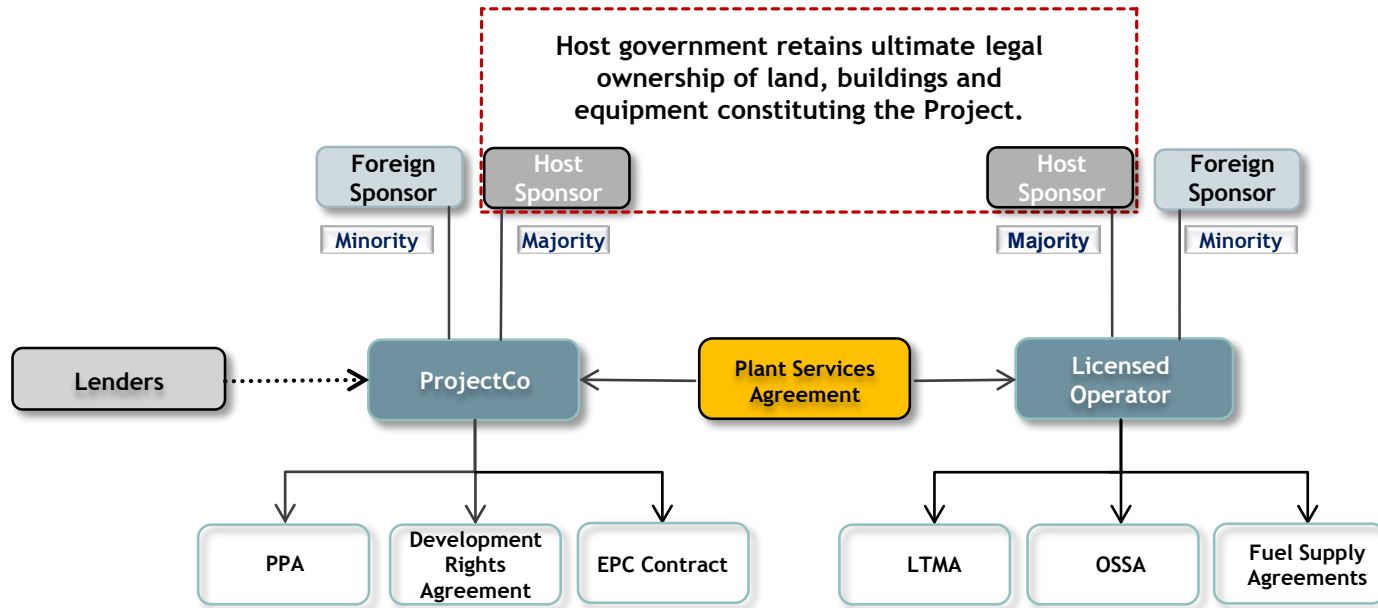
- ▶ The two most significant “nuclear issues” for lenders
  - ▶ Potential NTPL in case of a nuclear incident
  - ▶ Reputational considerations associated with lending to a nuclear project
- ▶ Spectrum of appetite for “nuclear issues”



- ▶ Some lenders will not provide financing for a nuclear project at all
- ▶ All lenders will require NTPL concerns to be addressed
  - ▶ Indemnities or guarantees for all nuclear damage, “extraterritorial” nuclear damage from claims in “non-convention” states, and/or litigation cost protection
  - ▶ Structural solutions ranging from split-entity structure to credit constructs that obviate the need to look to project performance for repayment of the debt

# Structural Considerations

## Dual-Entity & Concession-Like Arrangement



Host Sponsor	ProjectCo	Licensed Operator
<ul style="list-style-type: none"> <li>Local company/corporation owned by the host government or by the utility</li> <li><b><u>Owns legal title to the land and physical assets comprising the Project</u></b></li> <li>Grants a concession/development rights to the JV ProjectCo</li> </ul>	<ul style="list-style-type: none"> <li>Borrower under loan facilities</li> <li>Holds the commercial and economic entitlements of the Project, including the PPA</li> <li>Loan covenants and lender rights largely ring-fenced to ProjectCo's "commercial" and "economic" rights</li> <li><b><u>Structurally isolated from "nuclear liability" by separation from the Licensed Operator and operating activities</u></b></li> </ul>	<ul style="list-style-type: none"> <li>Licensed operator and fully staffed</li> <li>Nuclear liability channeled to Licensed Operator under relevant conventions</li> <li>Named insured under nuclear liability policies</li> <li>Has the ability to operate additional nuclear units in the future, subject to regulatory requirements</li> </ul>

# Challenges with the Regulator

- ▶ Nuclear Regulation varies from country to country
- ▶ In the United States, for example, the regulatory regime is very prescribed
  - ▶ More certainty on the licensing process
  - ▶ Less flexible for new designs that depart from the traditional light water reactors
  - ▶ Operator need not be the owner
- ▶ In the UK, the regulatory regime is less prescriptive and more “Goal Oriented”
  - ▶ More flexible but less prescriptive
  - ▶ Licensee must prove design is safe
  - ▶ Operator is typically the owner
- ▶ Some Countries, such as the UAE, have a mix of both the US and UK systems

# Selecting Lenders

- ▶ Lender concerns over nuclear liability and reputational considerations associated with nuclear power projects will undoubtedly drive transaction structure and the scope of viable options

*Some lenders have more tolerance for “nuclear” transaction attributes than others*

Export Credit Agencies  
(ECAs)

Commercial Banks

Prospective Lenders  
Considering the Issues for  
the First Time

*There is no uniform or universal approach*

- ▶ It is important to ensure that host government stakeholders are aligned with lender expectations on the level of credit support and/or nuclear liability protection

# Due Diligence/Pre-requisites to Closing

- ▶ Offtake arrangements
- ▶ Nuclear Regulator
- ▶ Nuclear liability
- ▶ Environmental
- ▶ Compelling “story” for operation & maintenance and fuel supply
- ▶ Explanation and plan for resolution of anything still in development
- ▶ Quality assurance and oversight of construction activities





# Joint Venture Considerations vis-à-vis Financing

## Financial Guarantees to Lenders

- ▶ Completion guarantees
- ▶ Debt service reserve undertakings

## Nuclear-specific Default Triggers

- ▶ Host country compliance with international nuclear treaties, including compliance issues that may not be directly related to the specific project being financed
- ▶ “CFSI”
- ▶ Credit-related defaults of the host government or technology exporter (e.g., solvency, x-defaults MAEs, etc.)
- ▶ Defaults by the technology exporter under the EPC contract

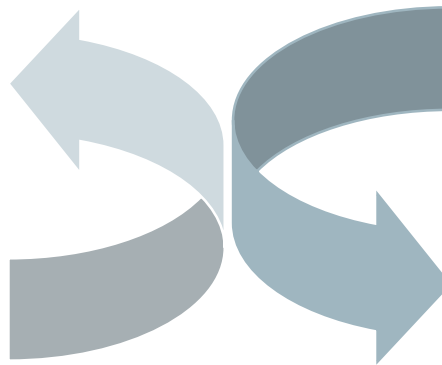
## Credit Support From Sponsor & Technology Exporter

- ▶ Measuring proportionate liabilities at any point in time
- ▶ Are all claims under the credit support documents treated the same? Does the technology exporter bear loan repayment risk in case of defaults within the control of the host government and/or does the host government bear repayment risk in case of defaults in the control of the technology exporter?
- ▶ The creditworthiness and balance sheet of the respective parties can impact the amount of risk that lenders will allow a minority shareholder to bear under credit supports

# Other Considerations

## Regulatory infrastructure and people

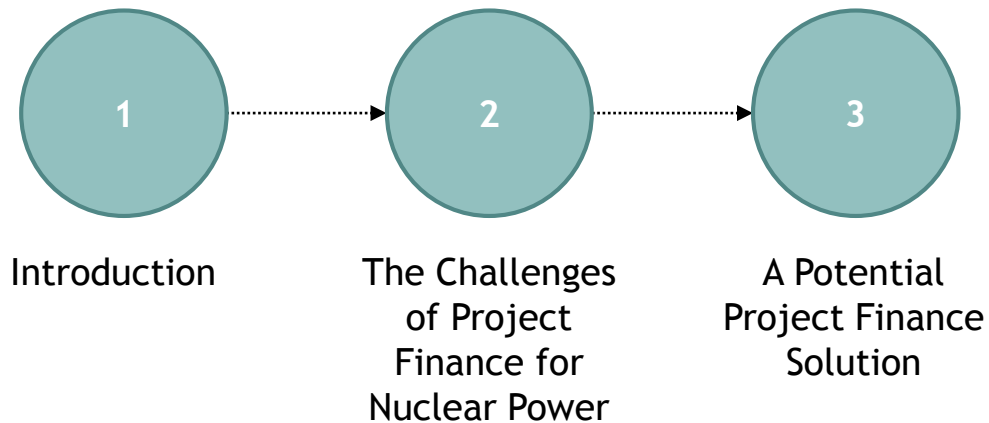
- ▶ Rights of all parties under project agreements and financing documents are likely to be subject to regulatory compliance
- ▶ Lender due diligence
  - ▶ Management team
  - ▶ Succession planning
  - ▶ Scope of regulations at the time of financing
  - ▶ Regulatory risk/delays due to capacity of the regulator
- ▶ Independence from the developer
- ▶ Construction License(s)



## Informational Requirements

- ▶ Is the specific plant-type proven and operational elsewhere?
- ▶ Periodic reporting and inspections
- ▶ Early reporting of any matters that may give rise to “reputational” issues given the propensity for nuclear incidents or issues potentially affecting safety or security to command media attention

# A Potential Project Finance Solution



# Effectiveness of Traditional Project Finance Remedies

## “Step-in” remedies

“Step-in” remedies allow lenders to step into the shoes of the project owner to remedy project-level failures

Controversial for two key reasons:

1

Skeptical view toward the notion that substitute plant operators would be available

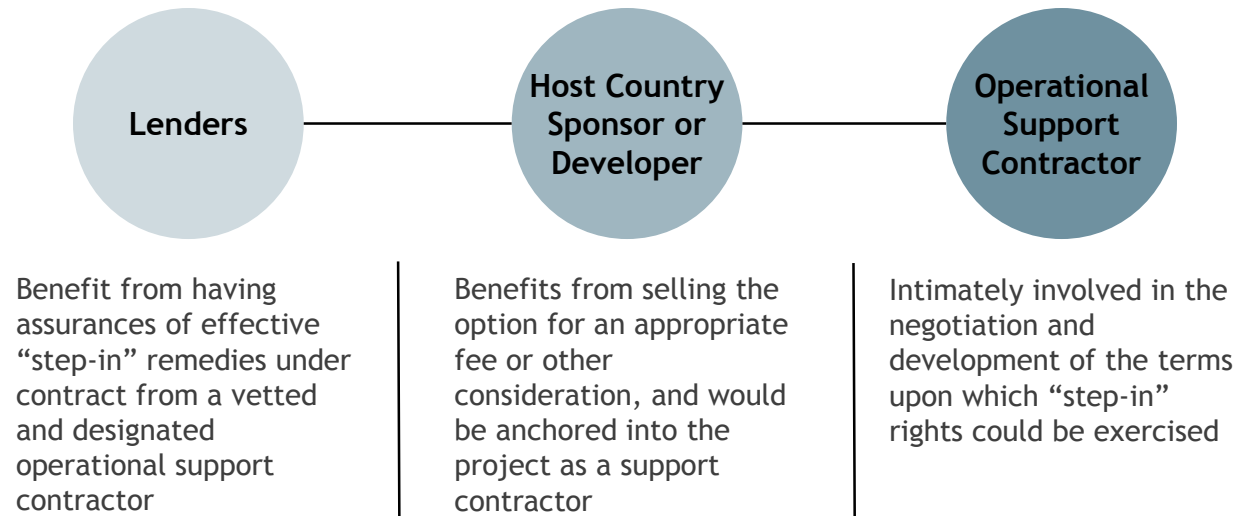
Even assuming “step-in remedies are viable:

2

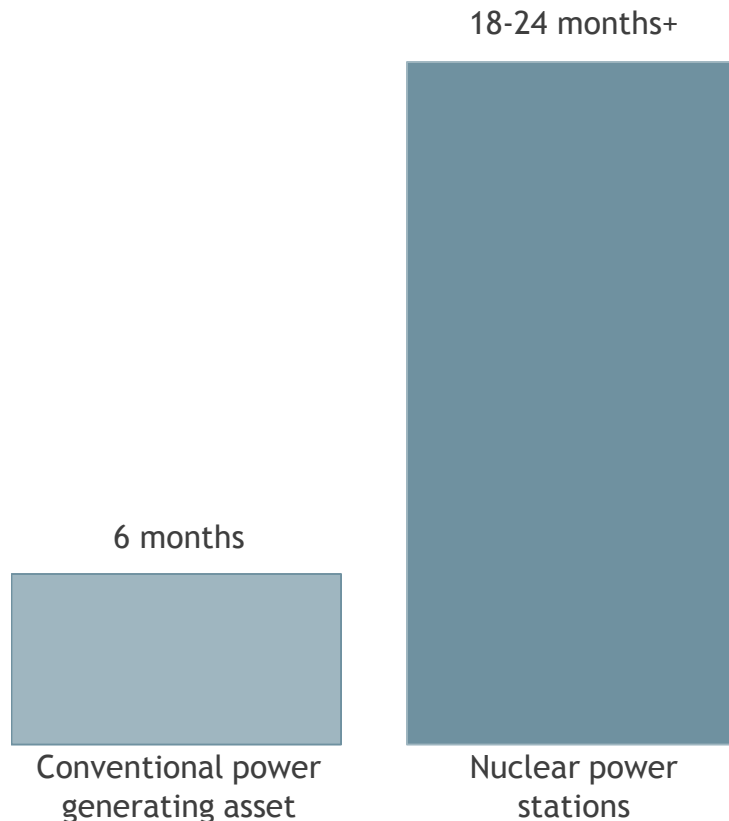
1. Changes in operational management or control would be time consuming and costly
2. Lenders potentially assume an inappropriate level of nuclear liability risk

# Alternatives to “Step-In” Rights During Plant Operations

- ▶ Pre-arrange “step-in” remedies under contractual option agreements
- ▶ Experienced plant operators that are in the business of selling their management models and making management teams available to support operations
- ▶ An arrangement could be crafted that benefits all parties:



# Debt Service Reserves



Nuclear power stations will require longer debt reserves

- ▶ Prolonged outages if there is a shutdown for regulatory review and corrective action
- ▶ Replacing an executive team and deploying a new management model will generally require approval by the nuclear regulator

Reserves may come in the form of guarantees, cash reserves or other credit support mechanisms

# Conclusion

We believe that a group of enterprising project sponsors will successfully secure project finance loan commitments to fund the construction, development, operation and maintenance of a new nuclear power plant for which the inaccessibility of other financing sources would otherwise make pursuit of the project itself futile

# Questions & Answers

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