USAID-Funded Nepal Hydropower Development Project (NHDP)

Hydropower Financing: Traditional Project Finance, EPC and EPC-F

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Training Objectives

By the end of this session, participants should be able to:

- Growing role of Chinese Infrastructure funding
- Understanding Engineering, Procurement, Construction and Financing (EPC-F contract)
- EPC vs EPC-F
- EPC –F: Nepal Context

Growing role of Chinese Infrastructure Funding

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Introduction

- China is a major funder of developing country infrastructure, lending ~$40 billion annually through policy banks.
- Starting in 2013 China “branded” the program under Belt and Road Initiative (BRI)
- The BRI consists of two major components:
  - Silk Route Economic Belt: overland rail and pipeline connections between China and Europe via Western China and Central Asia; and
  - 21st Century Maritime Silk Road: a seaborne trade route linking China to Europe via South Asia and the Horn of Africa
- Growing appetite for debt among developing countries driving demand for additional funds including Chinese financing
  - Increased borrowing to bridge budget deficits (Demand side factor)
  - Increased Infrastructure spending (Demand side factor)
  - Increased appetite for debt of developing countries due to prospect of higher returns (Supply side factor)

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Rising preference for Chinese financing

- Chinese financing is been preferred
  - China provides funding in situations where many other traditional countries are not willing to provide finance
  - Chinese government interaction with developing countries does not prescribe solutions and does not present itself as a expert on developing countries problems
  - China frames its interactions in the context of Infrastructure cooperation and multilateral engagement with bodies and emphasises its developing country status

Reasons for increased China lending to developing countries

- Chinese funding provides business opportunities for Chinese contractors
  - it creates a situation where countries are getting into debt with China and China then pays itself through contracting
- Securing resources: China's financing to in many developing countries is linked to securing the continent's natural resources by providing infrastructure paid for by commodity backed loans
- Enables faster and cheaper transportation of natural resources to the Chinese economy.
- Better infrastructure in developing countries will facilitate the penetration of Chinese goods deeper into the continent
- To further its geopolitical control over the continent and pursue strategic interests. Countries has often consider this as "Debt trap"
- Financing from China opens economies up to Chinese entrepreneurs.

Understanding Engineering, Procurement, Construction and Financing [EPC-F]

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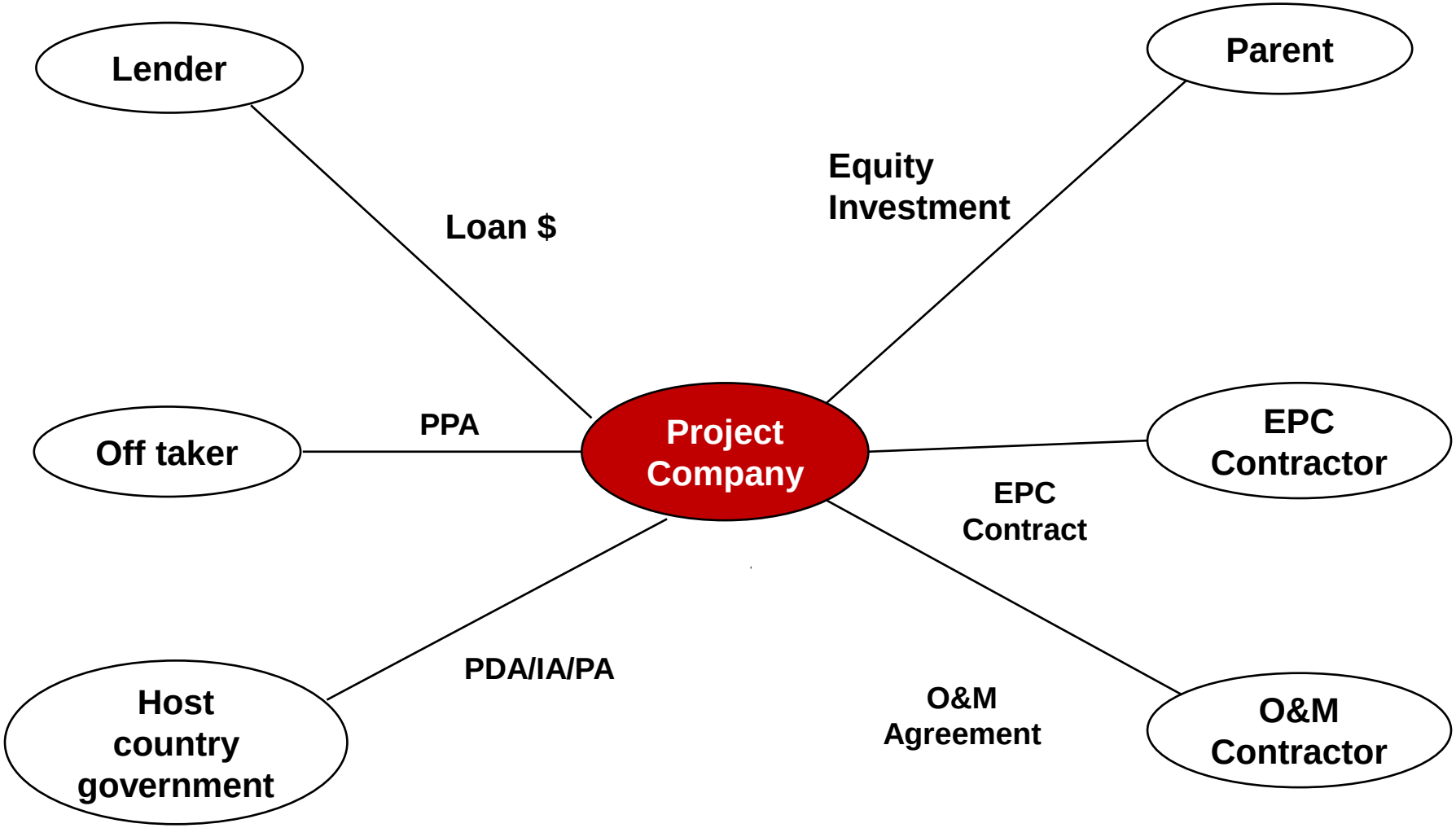
Introduction to EPC-F

- Project financing mechanism in which the EPC contractor also arranges financing for the project, through tie-ups with financing institutions.
- This model has been implemented for project development, especially in developing countries.
- It is useful when EPC contractors have better access to low cost financing, including EXIM financing (In China, Japan, Korea)
- Some examples of proposed EPCF financing in Nepal
  - 48.8 MW Khimti -2 Hydro Power Project by Chongqing Water Turbine Works
  - 1200 MW Budhigandaki Hydro Electric Project by China Gezhouba Group Corporation (Reservoir based project)

Traditional Project Financing



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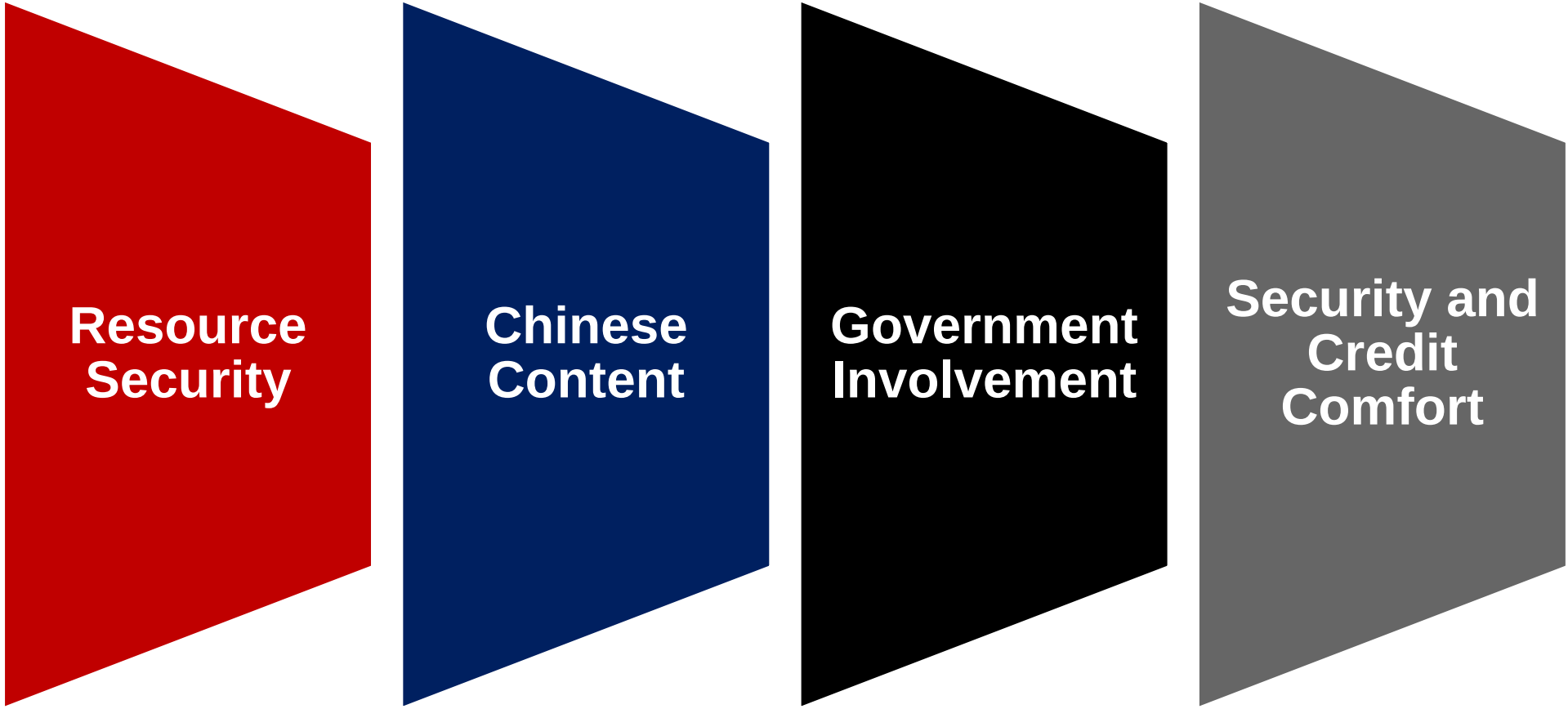
Distinguishing Features of Chinese Financing



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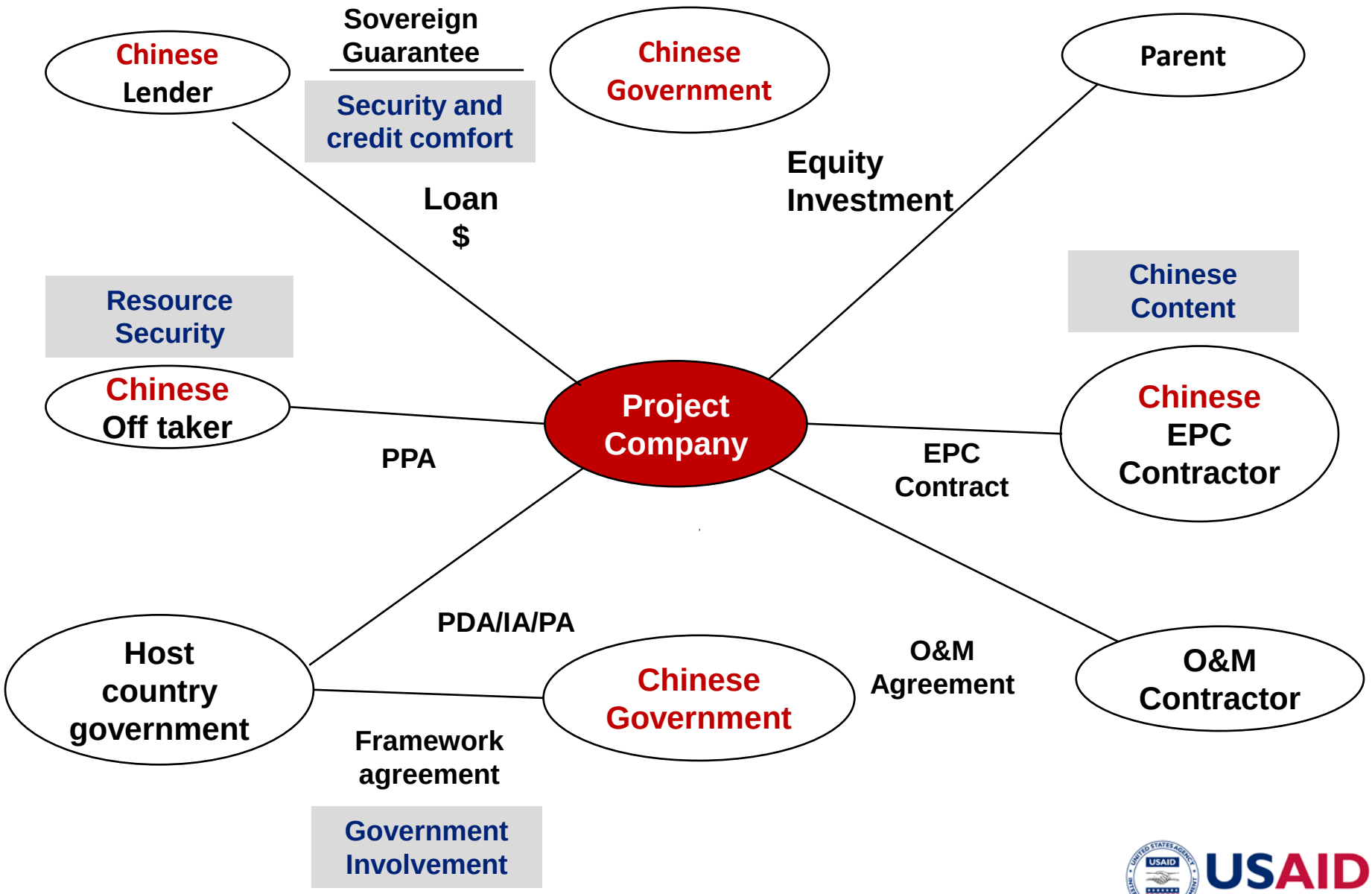
Typical Chinese EPC-F Funding



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EPC vs. EPC-F

Difference between EPC and EPC-F

S No	Parameter	Project Finance Model (EPC)	EPCF Model
1	Developer selection	Developer for the project is selected by the Government either through Memorandum of Understanding (MoU) or open competitive bid process (QCBS/ least cost, etc.). The developer could be a public sector or private sector company.	The developer would generally be a public sector company/ authority in the host country responsible for project development and sale of electricity. Government can extend same type of concessions/ benefits made available to the private developer under a concession agreement.
2	Project Financing	The project financing is the responsibility of project developer which owns the project company and has to mobilize debt and equity as per the requirements of project. Government is expected to provide sovereign guarantees but not mandatory.	The project financing is generally tied and provided by a foreign country/ National Bank of the foreign country/ development agencies affiliated to a foreign country. Host Government is responsible for arranging the counterpart funding and for providing sovereign guarantees to the project and lenders.
3	Contractor selection	There are a number of variations to the traditional project finance model. Under the traditional model, the EPC contractor will be selected by the SPV and subsequently approved by the lenders prior to financial close (FC) on the basis of cost, schedule, and outputs. At a minimum, Lenders' advisors will review and approve the final EPC contract.	The EPC contractor will be responsible to finance a large portion of the project. The EPC selection criteria is determined on the basis of the availability of finance which may be offered by EPC or available through a separate framework/ arrangement. The selection process tends to be restrictive to a particular country or set of manufacturers

Difference between EPC and EPC-F

S No	Parameter	Project Finance Model (EPC)	EPCF Model
4	Off-taker risk	Developer needs to factor the off-taker risk in the bid process/ negotiations. The lenders tend to be directly exposed to the off-taker risk and hence do their own due diligence and also require step-in rights for the project	The off-taker risk is responsibility of the project company and the host government.
5	Project Contract framework	Concession Agreement, PPA, TSA. Lenders can enter into a separate agreement with Government to safeguard their investment. The lenders to not typically have any financial liabilities to the government under the Lender's Agreement.	Concession Agreement (optional), PPA, TSA, Government to Government Agreement. Government has to provide sovereign guarantee to safeguard lenders' interests and provide payment security guarantees on behalf of off-taker, usually government owned entity.
6	Financing Cost	Directly related to project risk and market rates. These costs are negotiated between the Lender and the Developer.	Linked to MOU/Bilateral Agreement between the Host Government and Government of country extending the EPC tied financing. The expectation is that it would be concessional loan.
7	Loan terms	Because project finance is on a non-recourse basis, payment of the loan must be covered by the steam of income generated by the SPV. The lenders must therefore find their loan repayment security in the project's feasibility, additional security such as partial risk guarantees. Lenders are mainly interested in security through the loan repayment period.	There is generally a guarantee mechanism for the lenders. The arrangement has to be set out in the bilateral agreement between the two Governments.

Difference between EPC and EPC-F

S No	Parameter	Project Finance Model (EPC)	EPCF Model
8	Project cost	The EPC contracts are fixed price with limited scope for cost and schedule variation. Project costs will be monitored by the lenders and the SPV's engineers. The ability to pass through escalated costs are determined by the regulatory framework.	The project cost is set by the SPV on the basis of the EPC bids. Pass through of additional costs will be determined by the regulatory framework. In a competitive bid situation escalated costs resulting from geology or hydrology will normally be passed through to end consumers.
9	O&M performance	O&M performance parameters are generally included in the PPA; they are also made applicable to the O&M contractor by way of the O&M contract between the SPV and the contractor. Failure to achieve the required performance parameters may result in liquidated damages.	O&M is the responsibility of the project company and is generally not the responsibility of EPC contract.
10	Conflict resolution	Usually by way of independent arbitration or mechanism of the regulator.	Part of the EPC contract. Needs to be defined to cover all penalties.

EPC-F: Nepal Context

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Suitability of EPC-F for various types of projects

Type of Project	Financing Requirement	Technology and expertise required	Commercial risks	Environmental Risks
Reservoir based Hydro – Up to 100 MW	◖ - Medium	◖ - Medium	○ - Low	◖ - Medium
Reservoir based Hydro – More than 100 MW and less than 500 MW	● - High	● - High	◖ - Medium	● - High
Reservoir based Hydro – More than 500 MW	● - High	● - High	● - High	● - High
Run of River Hydro – Up to 100 MW	○ - Low	○ - Low	○ - Low	○ - Low
Run of River Hydro – More than 100 MW and less than 500 MW	◖ - Medium	○ - Low	◖ - Medium	◖ - Medium
Run of River Hydro – More than 500 MW	◖ - Medium	◖ - Medium	● - High	◖ - Medium

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Evaluation of EPC-F Proposals: Technical and financial capability

Technical Capability	Financial Capability
a) Expertise, evidenced by experience, in managing similar EPC contracts for HPPs	a) The historical net worth of the EPC-F contractor as compared to project cost
b) Expertise, evidenced by experience, in providing services under EPC-F model	b) Historical average annual turnover of the EPC-F contractor as compared to project cost
c) Expertise, evidenced by experience, in managing hydrological risks	c) The EPC-F contractor's ability to provide a bank guarantee in respect of the construction works

Evaluation of EPC-F Proposals: Commercial Evaluation

Models	Evaluation Criteria	Remarks
Model 1: EPC + Debt Financing	Based solely on the EPC costs. The bidder with lowest EPC costs will have the highest commercial score	This model is preferred in more mature financing markets where equity funding is not a concern and the debt market is more mature. Under this Model, negotiations on financing arrangements are preferred rather than considering financing costs during the evaluation
Model 2: EPC + Debt Financing	This model considers a combination of EPC costs and debt financing costs. NPV of cash flows related to financing of EPC cost is calculated. The bidder with lowest NPV will have the highest commercial score	This model is preferred in developing countries where debt markets are less mature and where there may be wide variations in the availability and cost of debt financing
Model 3: EPC+ Debt Financing + Equity	This model considers a combination of the EPC cost and the overall financing costs. The NPV of cash flows related to overall financing of EPC cost is calculated. The bidder with lowest NPV will have the highest commercial score	financing is a concern and the contractor is expected to bring in both equity and debt.

Elements of EPC-F Framework for consideration

Key Elements	Remarks
Project Development Activities including Land acquisition etc.	Project Development activities to be undertaken by Project sponsor including clearance land acquisition, R&R, clearance etc.
Project Selection	ROR projects >100 MW to be preferred initially. Other hydro projects including reservoir based projects to be considered post successful implementation of initial projects
Availability of DPR and engineering specifications	DPR and engineering specifications must be prepared before the issue of tender for EPC-F
Bankability of PPA	The project should have a bankable PPA at the time of issue of tender for EPC-F
Sovereign guarantee	The financing for the project must be backed by sovereign guarantee
Special purpose vehicle (SPV)	The project must be owned by a separate SPV
Equity infusion by GoN	GoN shall infuse equity equivalent to at least 20-25% of the project cost.
Handover of project	The project will be handed over to the Project SPV after commissioning and stabilisation, after satisfactory performance trials have been conducted
Payment to EPC-F contractor	Milestone based payments, linked to progress in project construction and commissioning. Only 10-15% of the cost should be held back after project handover, for an additional period of 1-2 years.

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