



Risk Management in Infrastructure Projects

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Risk Management in Infrastructure Projects

- Degree of unfavorable variations in cash flows is quantum of risk of a particular project
- Underlying Principles of Risk Management
 - Risk should be borne by the party best able to manage/control/hedge/mitigate the risks as well as influence its outcome.
 - The financing scheme does not alter the fundamental risks associated with it.



Risks Management of IP -contd

- Shifting of risks away from Government.
- Proper regulatory and control mechanism required through clear cut contract agreements.



Risks Management of IP -contd

- An infrastructure project may fail to generate enough revenues to meet the cost of operation, maintenance and debt repayment.
- Developer (concessionaire) may then ask Government to bail him/them out.
- Agreements should provide clear cut responsibilities for all the parties involved.



Risks Management of IP -contd

- Prospective bidders will indicate commercial conditions associated with the project.
- Invite comments/ clarification of bidders on the same and obtain alternate proposals from them.
- Incorporate reasonable clauses which assign the risks more equitably among the stake holders.



Risks Management of IP -contd

Precautions

- Send a **draft concession agreement** to bidders with an invitation for comment.
- Arrange for a pre-bid meeting with all the bidders.
- The clarifications sought by them during meeting should be sent to them in writing promptly.



Precautions -contd

- As the concessionaire will continue to seek ways to deliver reasonable quality services at the lowest cost and on schedule as his money is at stake, **alternative proposals** submitted by them should be given **due consideration**, with an **open mind**.
- In this way, a new proposal may come up for the proposed infrastructure project.
- It will provide ample scope to make the concession agreement workable and encourage risk sharing.



Risk Identification

- The identification and management of risks play a key role in the structuring and financing of major infrastructure projects.
- Concessionaire and other investors to the project want reasonable return on their investments
- Lenders want full security of their money.



Risk Identification-contd

Category of Risks

General (country) risks

- Associated with the political, economic and legal environment of the host country, on which project sponsors generally have little or no control .
- Vary from country to country and from project to project



Risk Identification-contd

Project Specific Risks

- Controllable, to some extent , by the project sponsors.
- Closely associated with management capabilities of various players, such as
 - Development risk
 - Construction risk
 - O & M risk.



Project Specific Risks---contd

- Govt. support to the project company, felt necessary if the the minimum level of demand/revenue is not expected to materialize (as per the assessment of private sector).
- Risks are considered to be very high if the financial returns are untested.



Project Specific Risks-contd

- Government support reduced after maturity of the concept.
- Success of first project is **extremely essential.**



Risk Analysis

- Infrastructure projects are exposed to a wide variety of risks. These could be broadly as under--
 - Pre-Construction risks
 - Construction and Completion risks
 - Development risks
 - Traffic/demand risks
 - Supply risks
 - Management risks
 - Force majeure risks,
 - Political risks



Risk Mitigation

- Risks are to be adequately addressed at
- Project development, construction and implementation, operation and maintenance during concession period.
- Risks are to be allocated to parties who are capable of managing the same.
- Risks must be contractually mitigated to the full satisfaction of debt and equity providers before they commit to project funding leading to financial closure.



Risk Analysis and Mitigation---contd

- Identifying the categories of risks and specific risks within each category necessary task before selection of risk mitigation strategies or options.
- Each participant in a project (sponsor, concessionaire, concerned Govt. etc) will, at each stage, identify, allocate and mitigate risks for the successful development, construction and operation & management of the project.



Risk Analysis and Mitigation---contd

- Final risk allocation and mitigation agreement reflect negotiation and agreements(acceptance) between relevant parties.



Risk Analysis and Mitigation---

contd

- Appropriate risk mitigation policy needed
- Each strategic partner is to agree on mutually acceptable mechanisms, including arbitration.
- Need to reduce the gap between the perception and the reality of risks.
- Unbundling various risks.

Risk Coverage Mechanism

| Project phase/Risk | Participant | Mechanism |
|---------------------|-------------|--|
| Developmental phase | | |
| Technology risk | Sponsors | Subscription of equity or subordinate debt by sponsors |

Risk Coverage Mechanism-- contd

| | | |
|--------------------|---|---|
| Credit risk | Banks/developers /sponsors | Letter of credit /credit rating |
| Bid risk | Sponsors, financial advisers | Equity, success fee |
| Construction phase | | |
| Completion risk | Contractor, Sponsor, Supplier | Performance guarantee, Turnkey contracts, performance guarantee |

Risk Coverage Mechanism-- contd

| | | |
|--------------------|-----------------|--|
| Cost over run risk | Sponsors | Fixed price contract, completion bonds |
| | Sub contractors | --do--- |
| Performance risk | Sponsors | Performance guarantee |
| Political risk | Sponsors | JV with Government |

contd

| | | |
|-------------------------------------|------------------------------|---|
| Operating Phase | | |
| Performance risk | O&M Contractors | Equity, Performance guarantee |
| Cost overrun risk Liability Risk | Govt. Insurance companies | Insurance policy |
| Off-take risk(Market risk) | Sponsors Consumers | Take or pay ,Take and pay, advance payment |
| Force majeure | Insurance company | Insurance company |

Risk Coverage Mechanism-- cotnd

| | | |
|---|---------------------------|--|
| Operating Phase | | |
| Performance risk | O&M Contractors | Equity, Performance guarantee |
| Cost overrun risk Liability Risk | Govt. Insurance companies | Insurance policy |
| Off-take risk(Market risk) | Sponsors consensus | Take or pay Take and pay , advance payment |
| Force Majeur(earth quake,epidemic,Natural. Disasters) | Insurance company | Insurance company |



Development Risks

Risk event

- 1) Non availability of Land, Right of Way (R OW) and access to the project Site

Allocation

- Concerned Govt

Consequences

- Delay in the commencement of project construction

Mitigation

- Approvals, availability of land, access, ROW, certification by the concerned



Development Risks-Contd.

Risk event

2) Social unrest due to non-compliance with environmental and social norms.

Allocation

SPV

Consequences

- Material adverse effect
- Delay in the project implementation and increase in the project cost.
- Social resistance to the project road



Development Risks--contd

Mitigation

- The environmental and social risk assessment and mitigation plan conforming to guidelines provided by multilateral lending agencies.
- Budget for Resettlement Action Plan, provided by the SPV, as part of the Total Cost of Project.
- Monitoring of implementation by SPV through an NGO.



Development Risks--contd

Risk event

3) Unforeseen social risks

Allcation

- Concerned Govt

Consequences

- Delay in the project implementation and increase in project cost.

Mitigation

- Formation of a project monitoring committee by the concerned Govt. through its local agencies to ensure public interest.



Construction Risks--contd

Risk event

1) Abandonment of project by the EPC Contractor

Allocation

- EPC Contractor

Consequences

- Cost incurred on project development to be written off
- Additional cost and time spent on appointing anew EPC Contractor

Mitigation

- SPV to terminate the contract with the EPC contractor and hold retention money
- SPV to demand security against abandonment from the EPC contractor



Construction Risks- Contd.

Risk event

2) - Design Risk

Allocation

- EPC Contractor

Consequences

- Inadequate performance
- Additional repair and modification cost
- Additional Operations & Maintenance Costs.

Mitigation

- Rigorous performance testing prior to take over.
- Defects liability period with a warranty period for the defect rectified.
- Design insurance by contractors.



Construction Risks-contd

Risk event

3) Increase in Cost during construction on account of changes in course of detailed engineering.

Allocation

- EPC Contractor

Consequences

- Increase in the project cost

Mitigation

- Only **owner** induced changes to have a price impact.
- EPC Contractor to absorb all other Cost and Schedule impact.
- SPV to award a Lump sum-Turnkey-Time Certain Contract to avoid cost overrun.



Construction Risks-contd

Risk event

4) Delays in completion due to non performance by the EPC Contractors.

Allocation

- EPC Contractors

Consequences

- Time and cost overrun.



Construction Risks-contd

Mitigation

- SPV to monitor compliance with construction plan and activate early warning mechanisms.
- Liquidated damages to account for all time over runs payable by EPC Contractors to SPV.
- Cost over runs to be absorbed by SPV only when the event leading to **delay is owner induced** and other specific events which are outside the control of the EPC Contractors.



Construction Risks-contd

Risk event

5) Delays in rectifying defects detected.

Allocation

- EPC Contractor Contractor

Consequences

- Time and cost over run

Mitigation

- Performance security of specified amount maintained and invoked.



Construction Risks-contd

Risk event

6) Non availability of material, labour and plant and machinery needed for construction.

Allocation

- EPC Contractor

Consequences

- Time and cost over run

Mitigation

- Appropriate penalties to be levied for delays. EPC Contractor is to bear the additional cost as per terms and condition of the contract.



Construction Risks-contd

Risk event

7) - Delay in completion leading to cost over run.

Allocation

- EPC Contractor

Consequences

- Recovery not possible during Concession Period and Lower Rate of Return on Investment.

Mitigation

- Risk passed on to EPC Contractor through a fixed price (lump sum) turnkey contract (LSTK contract).
- Appropriate penalties to be levied for delays.



O & M Risks

Risk event

- 1) Non adherence to Performance standards and technical specifications

Allocation

- EPC/O&M Contractors

Consequences

- Low –quality services

Mitigation

- Defects as indicated by the IE to be rectified at the cost of EPC Contractor
- Passing of operation risk to O&M Contractor



O & M Risks --contd

Risk event

2) Restriction on toll collection due to political/ local agitations etc.

Allocation

- Concerned Govt.

Consequences

- less revenue/loss to O&M contractor/SPV.

Mitigation

- Concerned Govt's obligation to amend concession agreement.
- Concessionaire's right to collect toll/reimbursement of loss



O & M Risks -contd

Risk event

3) Insufficient revenue due to lower demand

Allocation

-SPV(Wrong projection through Traffic Survey)

Consequences

- Project rendered unviable

Mitigation

- Concerned Govt. guarantee



O & M Risks --contd

Risk event

- 4) SPV unable to transfer the facility at the end of concession period due to failure of Govt.

Allocation

- Concerned Government

Consequences

- The concerned Government on termination has not discharged their obligations

Mitigation

- Concerned Government liable for the breach of contract.



O & M Risks ---contd

Risk event

5) Concessionaire unable to transfer the project

Allocation

- SPV

Consequences

- SPV on termination have not discharged its obligation

Mitigation

- SPV liable for breach of contract.



Revenue Risks

Risk event

- 1) Revenue and Traffic Risks (actual realization less than estimated)

Allocation

- SPV

Consequences

- Poor demand build up leading to shortfalls revenues.
- The project may not turn out to be commercially viable



Revenue Risks--contd

Mitigation

- Ongoing toll rate adjustment based on predetermined formula and indices.
- Cash flow control mechanism envisaged. Security and Hypothecation of Receivables in the Collection Account envisaged.
- Revenue short falls dealt with by extension of Concession period.



Revenue risks---contd

Risk event

2) Inefficient Collection

Allocation

- SPV

Consequences

- Revenue Loss

Mitigation

- Appropriate mechanism for fee/toll collection
- Incentives for improving collection efficiency



Revenue Risks---contd

Risk event

3) Revenue loss due to leakage

Allocation

- O&M Contractor

Consequences

- Revenue loss

Mitigation

- Draw down from performance security for non-compliance of obligations by the O&M Contractor



Financing (currency and interest rate risks)

Instruments for hedging of currency and interest risks

- **Swap-**An agreement to exchange specified amounts of foreign exchange for an agreed period at a specified exchange rate. (currency/interest swap)
- **Forward-** An agreement to buy or sell a currency at an agreed exchange rate on a future date (exchange rate)
- **Option-** Right to purchase or sell a certain asset at a pre-set price on (or before) a specified date (cross-currency options)
- **Future-** Standardized forward contract in a future contract



Economic and Political Risks

- These originate from the nature of the economy and country in which firms do business.
- There is no hard and fast rule for measuring economic and political risks.
- But any analysis should include Inflation, economic growth rates, the balance of payments, country risks (Commercial, legal) and political risks.



Force Majeure Risks

Risk event

1) Calamities including strikes, lock outs etc.

Allocation

- Insurance agencies

Consequences

- Impedance in project implementation/operation
- Problems for inhabitants/local people
- Increase in project cost

Mitigation

- Insurance cover for loss of physical damage as well as for business interruption.



Force Majeure

Risk event

2) Other events

Allocation

- **Concerned Government**

Consequences

- **Problems in project implementation.**

Mitigation

- **Premature Termination of Concession**
- **The concerned government shall pay SPV an amount equal to the sum of :a) all sums due and owing to the lenders;b)total cost of the project and assumed returns.**



Force Majeure Risks

Risk event

3) Change in Legislation

Allocation

- Concerned Government

Consequences

- Material adverse effect



Force Majeure--contd

Mitigation

- Maintenance of reasonably similar provision of agreements
- Timely approvals/certification by the concerned government to be made a condition precedent to the Concession Agreement.
- The concerned government has an obligation to consult SPV to decide on measures to mitigate the effect of the same.



Conclusion

- Risk Management essential to ensure the profitability of the project.
- Transparency needed.
- Mid-term correction options to be made available.
- Interests of stakeholders to be protected.