Risk Matrix for Toll Roads

Full Description

In selecting appropriate toll roads for asset recycling, the selected toll roads should have an operating track record, thereby **de-risking the private sector of upstream risks**, such as land acquisition, project planning, design risk, construction risks (time and cost-overrun risk), and development-related approvals.

Checklists of issues to consider when preparing or reviewing sector-specific asset recycling guidelines for toll roads risk sector:

- Operating Risk
- Demand / Revenue Risks
- Financial Risk
- Change in Law
- Force Majeure
- E&S Risks
- Climate Risks

Sample risk matrix – Toll Roads

Risk		Description	Public	Private	Shared	Mitigation
OPERATING RISKS	**Inadequate performance**	**The risk of service quality provided by the concessionaire not meeting the toll road minimum service standard and any additional contracted service standards or availability.[1]**		**x**		**Ensuring the appointment of a competent concessionaire w could remediate inadequacies in performance.** **Periodic monitor and reporting of compliance with toll road minimu service standard**

Risk		Description	Public	Private	Shared	Mitigation
O&M costs overrun	**Risk of O&M costs being higher than forecast or budgeted.**		**x**		**Appointment of competent concessionaire and management putting into place timely remedial steps.**	

Risk		Description	Public	Private	Shared	Mitigation
Life cycle costs overrun	**Risk of lifecycle costs being higher than forecast or budgeted.**		**x**			**Appointment of competent concessionaire and management putting into place timely remedial steps to manage increased costs; passing of increased costs to end-users within the parameters of toll setting regime.**

Risk	Description	Public	Private	Shared	Mitigation
Utilities costs overrun	**Risks of utility costs being higher than estimated or budgeted due to inefficiencies or increased charges.**		**x**		**Appointment of competent concessionaire; proactive asset management to ensure that assets are maintained in a manner that optimises costs.**

Risk		Description	Public	Private	Shared	Mitigation
Latent Defects and Existing Liabilities	**Risks of latent defects and existing liabilities in the road assets.**			**x**	**Conduct adequate technical due diligence; the concessionaire to bear the risk up to a certain threshold beyond which the risk will be borne by the public sector.**	
DEMAND / REVENUE RISKS	**Demand and traffic risk**	**Actual traffic is lower than forecast causing a shortfall in toll revenue against budgeted revenue.**		**x**		**Ensure that traff survey and forec are conducted by competent advis defer timing of capacity-driven capital expenditu program; re-deployment of st and re-calibratio of level and intensity of operational functions.**

Risk	Description	Public	Private	Shared	Mitigation
Failure to collect toll charges	**Due to failure or non-optimality of collection system from users.**		**x**		**Proven toll collection system and good operational performance.**
Toll setting risk (1)	**Risk that toll charges indexation does not match inflation or cost increases and escalations, thereby impacting margins or that the relevant authority does not approve escalation as per agreed fee and charges escalation mechanism.**			**x**	**Clear regulations or contract terms that regulate the rate and adjustments of toll charges.**

Risk		Description	Public	Private	Shared	Mitigation
Toll Setting Risk (2)	**Risk that that the relevant authority does not comply with the toll escalation mechanism and fails to allow for the indexation/increm to the toll charges (even where allowed).**	**x**			**This would constitute a default on the part of the relevant authority; such the occurrence of such an event would require compensation.**	
FINANCIAL RISK	**Failure to achieve financial close**	**Inability to achieve financial close due to market uncertainty or the project capital structure is not optimal.**		**x**		**Good coordinati with potential an credible lenders.**
	Foreign exchange rate risk	**Fluctuation of foreign exchange rate.**		**x**		**Financing in loca currency to the extent possible; taking into accou currency fluctuation hedgi instruments; suc as future contrac and currency options.**

Risk		Description	Public	Private	Shared	Mitigation
Inflation and interest rate risk	**Increase of inflation rate used for estimating life-cycle costs and interest rate.**		**x**		**Fee and charges indexation factor; interest rate hedging.**	
CHANGE IN LAW	**General change in law**	**Change in law such as taxation which impacts all businesses and industries.**		**x**		**General change i law risk should b borne by the concessionaire.**
	Discriminatory or project specific change in law	**Change in project/sector-specific law or regulation such as fee and charges setting.**	**x**			**Mediation, negotiation, polit risk insurance.**
FORCE MAJEURE	**Natural disasters**	**The occurrence of natural disasters disrupting operations.**			**x**	**Insurance, to ext possible. In extended FM, parties will have right to terminat** **Climate adaptati plan.** **Emergency Preparedness an Response plan (E plan) / Disaster R Management pla (DRM plan).** **Incorporate Qualified Climat Risk Events.**

Risk		Description	Public	Private	Shared	Mitigation
Political force majeure	**Government action and inactions.**	**x**			**Insurance, to extent possible; termination with compensation if settlement cannot be reached.**	
Prolonged force majeure	**If above prolongs for 6 to 12 months, may cause economic problems to the affected party (esp. if insurance does not exist).**			**x**	**Either party should be able to terminate the contract and trigger an early termination.**	

Risk		Description	Public	Private	Shared	Mitigation
E&S Risks	**E&S risks management**	**Road development and operation create many E&S impacts and risks, which if not appropriately managed, can result in impact on the social and natural environment.**		**x**		**The party in cha for construction Operation and Maintenance (O&M) should h undertaken E&S Studies prepared management pla to mitigate any adverse impacts risks and consist with applicable laws.** **Replanting trees and mitigating th cutting of trees i the road area.** **Reducing the use electricity by usi renewable energ and introducing energy efficiency measures and reducing fuel consumption by using environmentally friendly equipme** **Design and implementation noise control measures (e.g., n barriers along th border of the rig of way such as earthen mounds, walls, and vegetation).** **Solid waste management pla** **Integrated vegetation management (IV** **Management practices to prev**

Risk	Description	Public	Private	Shared	Mitigation
Risk of noncompliance on the E&S aspect of the concession agreement.		**x**	**The parties to review compliance of the E&S aspect of the Concession Agreement, during construction and O&M.**		

Risk		Description	Public	Private	Shared	Mitigation
Climate risks *	**Deterioration of road surface integrity.** **Thermal expansion of bridge joints and paved surfaces.** **Damage to highways, roads, underground tunnels and bridges due to flooding, inundation of coastal areas and coastal erosion.** **Increased scour of bridges.** **Increased instability of embankments.** **Damage to road infrastructure due to landslides.** **Increased susceptibility to wildfires.**				**Enhance design criteria to withstand extreme heat.** **Improve emergency repair procedures.** **Upgrade and reinforce drainage systems.** **Integrate climate resilience in maintenance regimes and road surface specifications.** **Using permeable paving surfaces to reduce run-off during heavy rainfalls.** **Road slope and side cliff design with high water**

**Based on "WB (2016) - "Emerging Trends in Mainstreaming Climate Resilience in Large Scale, Multi-sector Infrastructure PPPs"*

Key variables to monitor on climate risks and its impacts, in particular for toll roads assets:

- Pavement cracks / potholes (road area affected)
- Embankment failure / Landslides (road length affected)
- Asphalt wear (roughness)
- Wildfires Events in 100 km surrounding area (# of events)
- Bridge joints expansion (in millimetres)
- Scour (road area affected)
- Maximum temperature and deviation vs. average monthly max temperature (in °C)
- Sea level rise (in meters)
- Flooding (road length affected)
- Intense precipitation events (in millimetres)
- Storm surge (# events and intensity)
- Climate related accidents (# of events)
- Paint peeling (road length affected)
- Road unavailability (days per year)
- GHG emissions (tons CO2 e.g., per year)

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PPP CYCLE
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The Guidelines have not been prepared with any specific transaction in mind and are meant to serve only as general guidance. It is therefore critical that the Guidelines be reviewed and adapted for specific transactions To find more, visit the Guidelines to Implementing Asset Recycling Transactions Section Overview and Content Outline, or Download the Full Report.