UN GLOBAL COMPACT
Network India

Risk Assessment and Mitigation Toolkit for Infrastructure Sector in India

Acknowledgement

Centre of Excellence for Governance, Ethics and Transparency would like to express its sincere appreciation to the Siemens Integrity Initiative. The work on Risk Assessment and Mitigation at Global Compact Network India – Centre of Excellence for Governance, Ethics and Transparency (GCNI-CEGET) could not have been possible without their consistent support.

CEGET is thankful to **VMC Management Consulting** for undertaking extensive first and second hand research work on this publication, and putting it all together. Thanks are also due to **Neville Gandhi, Michael Fine, Kunal Kumar Ghosh, Rishi Sher Singh, Ashutosh Kumar Mishra, and Dr. Yamini Suvarna** for reviewing this publication.

Finally, special acknowledgement is due to the CEGET team that worked on this publication **Somnath Singh and Arya Dev** for their tireless efforts in bringing out this publication.

Disclaimer

This publication is intended strictly for the purposes of knowledge transformation. Reference to names of organizations, products and processes does not imply their endorsement by GCNI, and any failure to mention any particular organization, product or process is not a sign of disapproval.

Global Compact Network India (GCNI) will not be liable for any financial loss arising out of the usage of this toolkit/s. The users should use this toolkit/s after having proper knowledge about Risk Management and this toolkit/s should be used in conjunction with the Risk framework provided.

 This publication is brought out through the generous support of the Siemens Integrity Initiative.

Edited by: Shabnam Siddiqui, Director, CEGET

Designed and Printed by: Litmus Communication

Table of Contents

LIST OF ACRONYMS USED

AMRUT	Atal Mission for Rejuvenation and Urban Transformation
BMRCL	Bangalore Metro Rail Corporation Limited
BOT	Build Operate and Transfer
CEGET	Center of Excellence for Governance, Ethics and Transparency
CRO	Chief Risk Officer
ESMP	Environmental and Social Mitigation Project
EU	European Union
FY	Financial Year
GDP	Gross Domestic Product
GoI	Government of India
GoK	Government of Karnataka
ID	Industrial Disputes
IPR	Intellectual Property Rights
IT	Information Technology
JV	Joint Venture
MoU	Memorandum of Understanding
RAP	Risk Assessment Process
RBI	Reserve Bank of India
RC	Risk Coordinators
RFP	Request For Proposal
RMSC	Risk Management Steering Committee
RO	Risk Owners
SME	Small and Medium Enterprises
SOP	Standard Operating Procedure

FIGURES IN THE DOCUMENT

TABLES IN THE DOCUMENT

Executive Summary

India plans to invest approx. Rs. 5.97 Lakh Crores (Rs. 5.97 trillion) in creating and upgrading infrastructure in FY 2018 – 19; about 20% more than last year's budget allocation. Infrastructure expansion is a key focus area for India as it has a requirement of investments worth INR 50 trillion (US$ 777.73 billion) in infrastructure projects by 2022 for driving sustainable development. Sectors like power transmission, roads & highways and renewable energy will drive investments in the coming years. With initiatives like 'Housing for All' and 'Smart Cities Mission' Government of India is working on reducing bottlenecks and impeding growth in the infrastructure sector.[1] INR 2.05 Lakh Crores (US$ 31.81 billion) is expected to be invested in Smart Cities Mission.[2]

Furthermore, Housing for all could never garner the much needed attention of the Policy Makers in the past. However, infrastructure expansion at the macro-level, primarily involving roads, highways, transport and railways, attract a large chunk of India's GDP. Much of India's infrastructure investment share in total investment that has risen from 23.3% in 2007 to 32.5% in 2015 has come from public sector financing.[3]

Against the backdrop of India's promising growth story and an intensified impetus to infrastructure development in the country; both domestic and international players have been showing tremendous interest towards investing and operating in India. Our economy has become the cynosure of all eyes. Amidst all this, where on one hand, the Private sector is emerging as a key player across various infrastructure segments, ranging from roads and communications to power and airports, on the other hand, to provide focused momentum boost, Government of India has decided to come up with single window clearance to accord speedy approval of construction projects.

However, Infrastructure programs are extraordinarily complex: they can take many years, have many stakeholders and often have to be executed while connected infrastructure is still in public use. For this reason, being a business is perhaps as much about controlling risk as it is about controlling cost. Assessing, managing and mitigating the risk and change arising from risk can be challenging and can be quite a task in itself. Risk assessment is an important first step towards realizing larger goals in this direction. It is the most crucial and the most effective as it will initiate the direction you have chosen for managing and mitigating the risks associated with infrastructure sector in India.

Simply put, Risk Assessment is an essential tool to identify risks pertaining to your business and employees; after identification, analysis & evaluation of the risk. Subsequently, Risk mitigation strategy may be decided to eliminate or control risk from occurring.

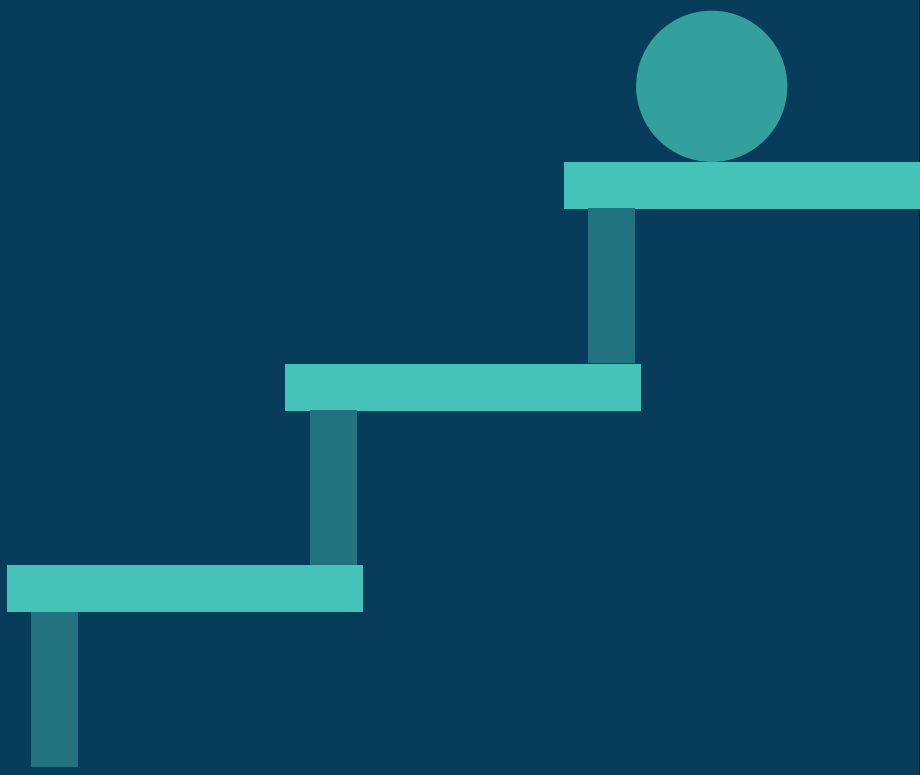
This Risk Assessment and Mitigation Toolkit for Infrastructure Sector in India will not only be useful in understanding the severity of the risk but also in application of mitigation measures. In a shifting business environment, it will be a guidance tool for organizations, both domestic and international, that are planning to invest and operate in infrastructure sector in India. Broadly, the 'Toolkit for Risk assessment' has been divided into two parts:

- **Risk Assessment and Mitigation Toolkit** – This contains an introduction & background on risk analysis, purpose and intended audience for this toolkit as well as scope of the toolkit. Methodology used for developing this Toolkit has also been explained. Risk Lifecycle elucidates risk assessment process, risk management approach, risk participants, risk identification, rating risk, risk matrix, and establishing context for risk assessment. Every sub-risk has been explained via risk identification, findings from primary research, and various stakeholders of risk, decision roadmap with critical factors related to risk and risk mitigation strategies from business perspective. Policy Makers shall find Special notes on risk mitigation mechanisms. Case studies have been included for practical analysis, focusing on types of project risks and their impact.

- **Excel Toolkit for Risk Assessment** – This toolkit will help the user in identifying the potential risks to his/her organization. Based on the users' answers to the self-assessment questions, the toolkit highlights areas that require immediate attention and action as well as providing solutions on getting to grips with the concern areas.

SECTION – I

1. Introduction and Setting the Context
2. Identification and Assessment of Risk Factors



1. Introduction and Setting the Context

1.1 Introduction and Background

There are enormous opportunities for businesses in the Infrastructure Sector in India. However, undertaking infrastructure business in the country involves many risks and teething problems that arise from a number of factors including the market conditions . Infrastructure projects usually suffer from significant under management of risk throughout the life cycle of a project, as the management of risk is not properly accounted for in the planning. It is crucial for businesses to undertake Risk Analysis and manage the critical risks associated with investments. Risk analysis incorporates three components: risk assessment, risk management and risk communication.

- Risk Assessment, consists of scientific analysis, the results of which could be either quantitative or qualitative expressions of the likelihood and consequences associated with exposure to a risk. The assessment of infrastructure risk requires identification, compilation and integration of information on the sub risk factors within the infrastructure framework, their relationships to organizational vulnerabilities and adverse effects. Though acquisition of information appropriate to a scenario of interest is a fundamental challenge in risk assessment, numerous sources of such information can be readily found through literature searches facilitated by electronic tools.

- Risk Management, which is the second component, is a process, distinct from risk assessment, of weighing policy alternatives, in consultation with all interested parties, considering risk assessment and other factors relevant for the mitigation of risk and business sustainability and continuity by choosing appropriate prevention and control options.

- Risk Communication involves the interactive exchange of information and opinions throughout the risk analysis process concerning risk, risk-related factors and risk perceptions, among various concerned stakeholders; including the explanation of risk assessment findings and the foundation of risk management decisions.

The use of risk analysis methodology facilitates consistent and orderly decision making.

1.1.1 Scope of the Toolkit

This Toolkit is a manual on identifying and characterizing risks in Infrastructure Sector in India, assessing exposures to these risks and determining whether these exposures are hazardous to the organizational growth. The Toolkit focuses on assessment of various projects related risks for businesses as well as Government Policy Makers. To assist with performance of a risk assessment, this Toolkit provides:

- Road maps for conducting Infrastructure Sector risk assessments,

- Identifies information that must be gathered to complete an assessment,

- Provides MS – Excel based live tools for obtaining information at the ground level from various stakeholders and compiling them into the tool to obtain risk scores based on perceptions of likelihood and impact of those risk factors.

The description of infrastructure sector risk assessment in the context of the Toolkit depicts the starting and ending points of an assessment and the pathways that connect various types of information. The Toolkit is focused on identification, assessment of various risk areas, analysis of the same by assigning scores based on likelihood and impact and thus predicts the criticality or severity of the risk to enable decision makers to make informed choices about treatment or mitigation of the risk.

1.1.2 Purpose and Intended Audience

This Infrastructure Sector Risk Assessment Toolkit has been developed to help organizations make informed decisions about doing business and doing it the right way, by assessing the magnitude of potential risks in Infrastructure sector in India. In so doing, the Toolkit helps its users to:

1. Identify and acquire the information needed to assess current and forthcoming challenges, exposures and risks and

2. Use that information to estimate potential exposure/vulnerabilities to challenges and growth dampeners as well as the corresponding risks.

It is envisioned that the Toolkit will be used to address a wide range of circumstances that are relevant to the people at the helm of the Businesses, Industry Bodies as well as Government Policy Makers. The Toolkit alone cannot answer all of the questions regarding risks arising out of a particular project, however it can certainly cover a common set of major risk factors that may occur oft – times in businesses operating in this Sector in India, thus, establishing a base on which all other kinds of risks to can be considered and tabulated for a better risk response planning. It will also provide important information to the Businesses, Industry Bodies, Government Policy Makers, Specialists, Regulators, operation managers, line managers and other decision-makers involved with infrastructure sector.

The Toolkit alone cannot answer all the questions regarding risks arising out of a particular project, however it can certainly cover a common set of major risk factors that may occur oft – times in businesses operating in this Sector in India.

1.2 Setting The Context

Establishing the context refers to defining the scope for the risk management process and setting the criteria against which the risks have been assessed. It includes a selection of key objectives within the business through an evaluation of the external and internal factors that may currently impact the sector. A review of both the external and internal contexts at the commencement of the risk assessment planning assists in identifying the processes which may be subject to increased risks and, as such, would derive the greatest value from the risk assessment.

1.2.1 Establishing the External Context

The external context is the environment in which the businesses in the sector operate and seek to achieve their objectives. Consideration is given to the following as they relate to the business, social, regulatory, legislative, cultural, competitive, financial, and political environment, including:

- Strengths, Weaknesses, Opportunities and Threats (SWOT Analysis)

- Relationships with, Perceptions and Values of External Stakeholders such as Clients

1.2.2 Establishing the Internal Context

The internal context is the internal environment in which the businesses in the sector, function and seek to achieve their objectives. Consideration is given to the factors such as:

Strategies in Place to Achieve Objectives: It is important to ensure that the management goals and objectives are consistent with and supportive of the businesses' perceived objectives and strategies. The parameters that helped inform this Toolkit and can be used as part of business process for defining relevant risk factors include:

1. Designing and executing a risk management process integrated with strategic management process.

2. Ensuring that process ownership questions are addressed with clarity so that roles, responsibilities and authorities are properly understood.

3. Designing and executing a process to monitor and reassess the best risk profile and identify gaps in the management of those risks, based upon changes in business objectives and in the external and internal operating environment.

4. Defining risk management strategies, accountabilities and action steps clearly for building executing risk management capacities and improving upon these continuously.

5. Monitoring information provided to decision-makers in order to assist them as they manage key risks and protect the interests of shareholders on a continuous basis.

Governance Structure: Governance structure is none of the major factors to consider when establishing the risk assessment process for businesses in the infrastructure sector. Governance will maintain the designed risk assessment process in place so that the business can comprehend and determine the risk.

1.3 Toolkit Roadmap

The risks, posed by internal and external factors that may or may not be controllable, are based on varied factors and the extent to which the organization is exposed to these risks and uncertainties. Eventually, each of these considerations must be evaluated to determine the infrastructure risks and the subsequent risk management. Risk managers and other Toolkit users will be able to draw on this information and determine how to mitigate the possible risks and to protect their businesses from these challenges.

For the purpose of the Toolkit, the risk assessment paradigm is presented as a road map that extends from risk or problem identification to risk characterization. Each step in the paradigm is represented by a set of critical factors that an assessor can follow through information and resources that are appropriate for estimating risk. A generic road map that an assessor can follow to address these factors is presented for each step in the sections below. The data gathering and analysis associated with these steps for the purposes of the Toolkit may differ somewhat from a de novo assessment of risk conducted for any organization in infrastructure sector that plans to establish its operations in India or to diversify over a period of time.

1.3.1 Categorizations

The infrastructure sub- sectors covered in this Toolkit are based on the notification by Ministry of Housing and Urban Affairs and include;

1. Transportation
2. Energy
3. Water & Sanitation
4. Communication
5. Social & Commercial Infrastructure

1.3.2 The Journey

The activities undertaken as part of the Risk Assessment Toolkit are described as under:

1. Identification of major risks: Four major risks that were identified in infrastructure sector and also used for this toolkit are as follows:

a. Market Entry Risk,
b. Operational Risk,
c. Strategic Risk,
d. Finance Risk

2. Identification of sub-risks: For every major risk sub - risks were identified and for every sub- risk critical factors which affect risk were identified. On the basis of these critical factors, a questionnaire was formulated.

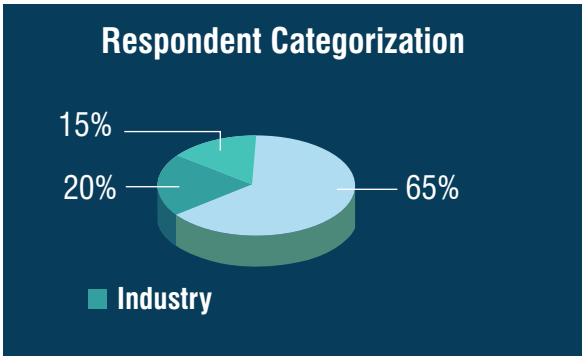
3. Focus group discussions: Two (2) Focus Group Discussions (FGDs) were conducted; one each in Chennai and Bengaluru; with key players from the Industry participating and sharing their opinion about various concern areas under consideration. The objectives of the FGDs were:

a. Ensure active participation and ownership of stakeholders in the study focusing on risks of doing business in the infrastructure sector in India;

b. Understand measures to mitigate and overcome risks such as Market Entry Risks, Operation Risks, Strategic and Financial Risks;

c. Ascertain stakeholders' perceptions about the industry and to solicit their comments and suggestions;

d. Discuss Market Entry Risk in India, which would comprise of: Political Environment, Government Policies for Ease of Doing Business, Market Condition, and Collaboration & Partnership Risks etc.



e. Discuss Operational Risks, which would comprise of: Pre-Operative Risks, Procurement & Vendor Risk, Internal Fraud Risk, Construction Phase Risk, Logistics Risk, Technology Risk, Labour Risk, Geographical Risk etc.

f. Discuss Strategic Risk, which would comprise of: Social & Environmental Risk, Compliance Risk, Strategic Forecast Risk, Innovation Risk, IP Risk etc.

g. Discuss Financial Risk, which would comprise of: Interest Rate Risk, Credit Risk, Liquidity Risk, Inflationary Risk etc.

h. Understand the procurement guidelines, negotiation and contract management;

I. Discuss the new controls and processes to address newly emerging business risks.

j. Obtain feedback and comments on findings/measures and develop consensus on the way forward.

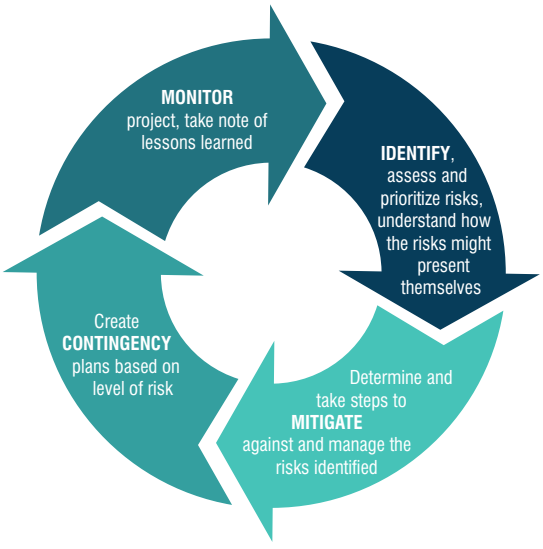
4. Interviews with Policy makers: Furthermore, interviews of various key Policy Makers from Tamil Nadu and Karnataka were conducted to understand their perspective on the risks in infrastructure sector in India, the challenges and concerns as well as the measures taken by the Government in this regard.

5. Collection of Primary data: Questionnaires were shared with respondents from industry, academia and bureaucracy in the state of Tamil Nadu and Karnataka, out of which 65% of respondents were from the industry, 20% were research/academia and another 15% were the Policy Makers. Their feedback helped firm up the document by providing a first – hand account of the likelihood and possible impact of ever y sub-risk in infrastructure sector. The Likelihood and impact of risks was then converted into Risk score, which was further used to understand overall impact of risk and to determine the appropriate risk mitigation strategy.

6. A review of Secondary data: This comprised of a review of National and international journals, publications, reports, Sectoral reports, media databases, government policy documents and any other relevant information that was available in public domain with a view to strengthen the risk assessment tool kit.

Analysis: The information gathered through the above mentioned processes was analysed using various analytics tools such as Monte Carlo Analysis.

The Risk Assessment Cycle



ADAPTED FROM THE CHARITY COMMISSION

2. Identification and Assessment of Risk Factors

The toolkit focuses upon risk of doing business in the infrastructure sector in India as well as the measures to mitigate and overcome these risks. The identification of key risk factors and assessing them further to ascertain their likelihood and consequently ranking or rating them is essential for arriving at the Risk score. The overall process of identification and assessment of risk factors can be described through the following flow chart:

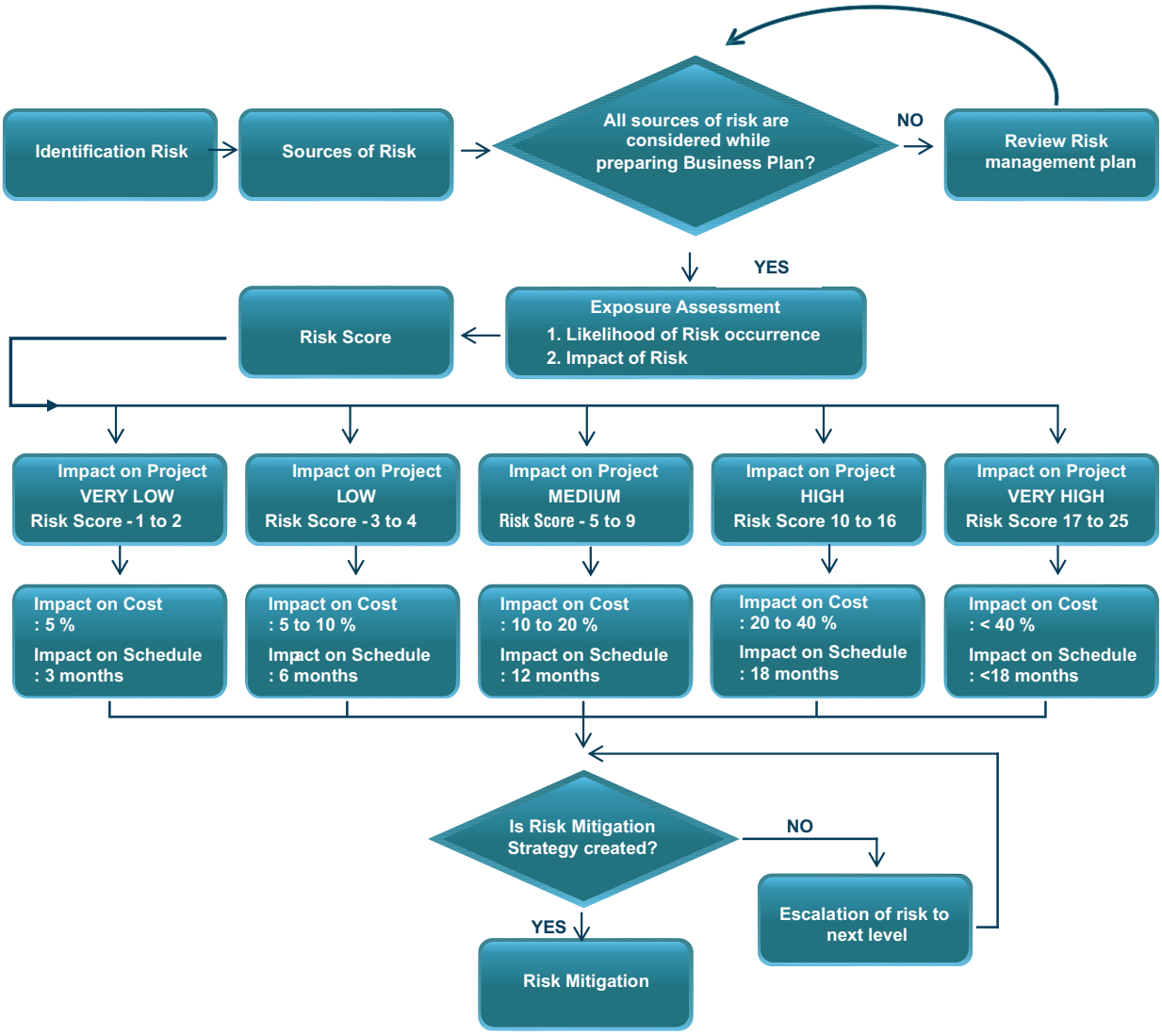


Figure No. 1 – Risk Identification and Assessment Process

2.1 Risk Identification

The purpose of this step is to identify what could go wrong (likelihood) and what are the consequence (loss or damage) if it happens.

The underlying questions/concerns that need to be addressed include:

1. What can happen? What could be the risks, incidents or accidents that might happen by systematically working through each competition, activity or stage of the event to identify what might happen at each stage.

2. How and why can it happen? What are the possible causes and scenarios and/or description of the risk, incident or accident?

3. What is the likelihood of these occurring / happening?

4. What will be the consequences if these actually occur/happen?

The risks need to be documented; key elements such as the risk event, the potential cause and the potential impact should the risk be realized need to be included. Thorough identification of potential risks is critical to the success of any risk assessment. It is important to not be too narrow or constrained. Often referred to as a 'failure of imagination', care needs to be taken to ensure that the identification process does not just focus on today's challenges but also considers a diverse range of sources including risk events that are emerging or may unfold in the future.

It is important to identify actions, scenarios, events and other external factors that may give rise to risks. For each risk identified, it is essential to ensure that its source or cause is well understood and documented. A number of techniques can be used during risk identification and assist in the discovery process. These can be sophisticated and highly structured, or more informal, depending on the purpose and context of the assessment being undertaken. Common techniques include:

1. The use of risk categories or linking risks to each objective identified in the context setting phase.

2. To begin thinking of the threats and opportunities the entity faces, and use these to identify relevant risks.

2.1.1 Data Collection

1. Desk Research

Desk research refers to an analysis of secondary data or data which can be collected without fieldwork. This included searching libraries and the internet as well as speaking to stakeholders at trade associations and carrying out interviews with experts. The sources of desk research that can be used are:

a. Internal data within organizations:
Customer lists; sales figures; trends of sales over time; enquiries; sources of enquiries; complaints; sales representatives' reports; market reports on the company's shelves; information in people's heads

It is important to identify actions, scenarios, events and other external factors that may give rise to risks. For each risk identified, it is important to ensure that its source or cause is well understood and documented.

b. Libraries:
Journals; newspapers; directories; clippings; reports; government statistics; EU statistics; industry statistics; atlases; dictionaries; books on products and processes

c. Trade-associations:
Industry statistics; lists of members; technical papers; reports; informed opinion

d. Government departments:
Official statistics on output, population, and employment; white papers; monopolies and mergers reports; census data and lists; country reports; export and import data

e. On-line databases:
Such as Dialog Data Star or Reuters for articles, reports and company information

f. Internet:
Company web sites for product and company information; articles; access to market research reports (or at least abstracts from them); lists of companies; government statistics; population statistics

2. Interviews
Interviews allow more detail probe than surveys and offer opportunity to ask additional questions, exploring risks in more detail. Interviews are conducted one-on-one and in small groups so that individual insights were not excluded due to dominant personalities or group dynamics. Face-to-face interviews were favored method for collecting information from experienced people and senior government officials.

3. Focus Group Discussions
This is the most widely used qualitative research technique where the discussions last for two to three hours and are audio taped. The facilitator or moderator guides the discussion so that the focus is not lost. For this project, two focus groups were conducted to cover for the possibility that one of the groups could have been swayed by a dominant respondent or failed to gel and generate sufficient ideas. The research team reviewed and documented the proceedings.

4. Depth Interview
The term 'depth' or 'in-depth' implies that the interview is longer rather than shorter, unstructured rather than structured and face-to-face rather than telephonic. As the subject is covered in depth, the interviewer digs deeper for answers, speak more freely and so true facts, perceptions and motivations are discovered. Interviews are tape recorded as well as written down. Depth interviews are used where it is important to ensure that there is no 'contamination' of respondents' views in terms of one person's view influencing another as may happen in group discussions.

2.1.2 Output of Risk Identification Process

The outputs of the risk identification are recorded in a document called risk register. The risk register typically contains the following information:

1. List of identified risks

2. List of potential responses: The potential responses if identified for a risk, then it can be a useful input for risk mitigation planning.

3. Root causes of risk: These are the fundamental conditions or events that may give rise to the identified risk.

4. Updated risk categories: New risk categories may be identified during identification process, which need to be added to list of existing categories.

The Risk register is a key tool for the risk management process. A Risk register records and identifies the risk in a structured manner to facilitate assessment and evaluation of risks, and provide a transparent and comprehensive tool for communicating the risks to key stakeholders and decision makers. The output of risk register not only forms an important input for the subsequent risk management process such as risk analysis, but is also built into project's financial models.

2.2 Rating the Risk

Likelihood

Likelihood is a qualitative description of the probability of an event occurring. The process of determining likelihood involves combining information about estimated or calculated probability, history or experience. Wherever possible it is based on past records, relevant experience, industry practice and experience, published literature or expert judgment. Likelihood depicts the probability of risk occurring in infrastructure projects.

Risk Likelihood Descriptors

Depending on the likelihood of occurrence the risk is categorized into following 5 types:

Rating	Description	Likelihood of Occurrence
1	Remote	Might occur once in 10 years
2	Unlikely	Might occur once in 5 years
3	Occasional	Might occur once in 3 years
4	Likely	Likely to occur once per year
5	Frequent	Likely to occur many times per year

Table No. 1 – Likelihood Descriptors

Consequence/ Impact

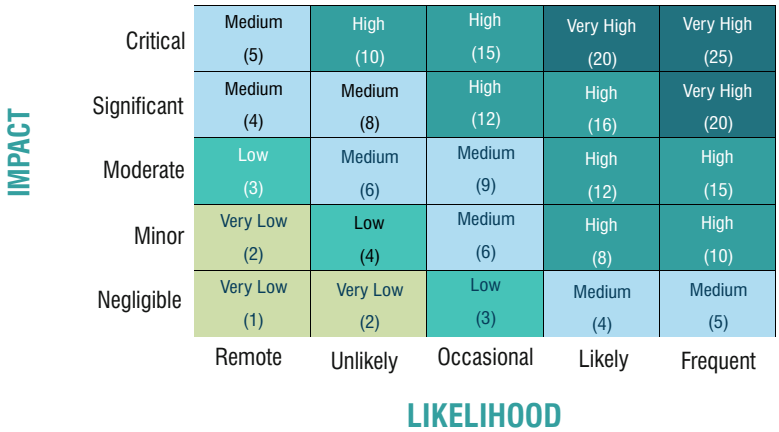
Impact is a qualitative description of the effect of the event. The process of determining Impact involves combining information about estimated or calculated effects, history and experience. The impact of risk or its effect on the overall project is shown or calculated here.

Rating	Description	Impact on Project Schedule	Impact on Cost	Reputation & Image	Business Interruption
1	Negligible	Delays/ Anticipation above 18 months	More than 40% & above increase in budget	Negligible impact	Negligible: Critical systems unavailable for less than one hour
2	Minor	Delays/ Anticipation between 12 to 18 months	20 - 40% increase in budget	Adverse local media coverage only	Inconvenient: Critical systems unavailable for several hours
3	Moderate	Delays/ Anticipation between 6 to 12 months	10 - 20% increase in budget	Adverse national media coverage	Client dissatisfaction: Critical systems unavailable for less than one day
4	Significant	Delays/ Anticipation between 3 to 6 months	5 - 10% increase in budget	Adverse and extended national media coverage	Significant: Critical systems unavailable for 1day or a series of prolonged outages
5	Critical	Less than 3 months delays/ anticipation	Less than 5% increase in budget	International media coverage & demand for high level inquiry	Disastrous: Critical systems unavailable for more than a day (at a crucial time

Table No. 2 – Risk consequence descriptors

2.3 Risk Matrix

Figure No. 2 – Risk Matrix



SECTION – II

1. Market Entry Risk
2. Operational Risk
3. Strategic Risk
4. Financial Risk

1. Market Entry Risk

There are many rewards to expanding business globally. One major roadblock preventing organizations from growing their businesses in a new market outside of their home country is the inherent risks involved in market entry. Various related risks impact how and where new entrants do business. Market entry risk has been further categorized into 5 sub-risks. The detailed process businesses need to follow to analyze and decide market entry strategies are as follows:

Figure No. 3 – Market Entry Risk Identification and Assessment

1.1 Political Environment Risk

Indian political system is a multi-party federal structure with different areas of businesses defined in the constitution under purview of different governments (state and central). With political parties with significantly different ideologies ruling in the central and state governments, it becomes essential for entities looking to enter the market to be aware of the political landscape as well as the working of central, state and local administrations, which otherwise may turn out to be a major roadblock for the businesses.

Findings from Primary Research:

Risk Score	:	12
Risk Level	:	High

Risk Identification

1. Investment's returns could suffer as a result of political changes or instability in a country.

2. Instability could stem from change in government, foreign policy or military control.

3. It could drag-down overall project or even go so far as to remove ability to withdraw capital from an investment.

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Occasional'	28%
Risk Occurrence 'Likely'	24%
IMPACT	
Impact 'Significant'	43%
Impact 'Critical'	31%

Stakeholders:

1. Risk Owners
a) Business - Senior Management
b) Government Entity
c) Project Director

2. Risk contributors
a) Political Parties
b) Contractors, Subcontractors, and Suppliers with political connection

Decision Roadmap with Critical Factors

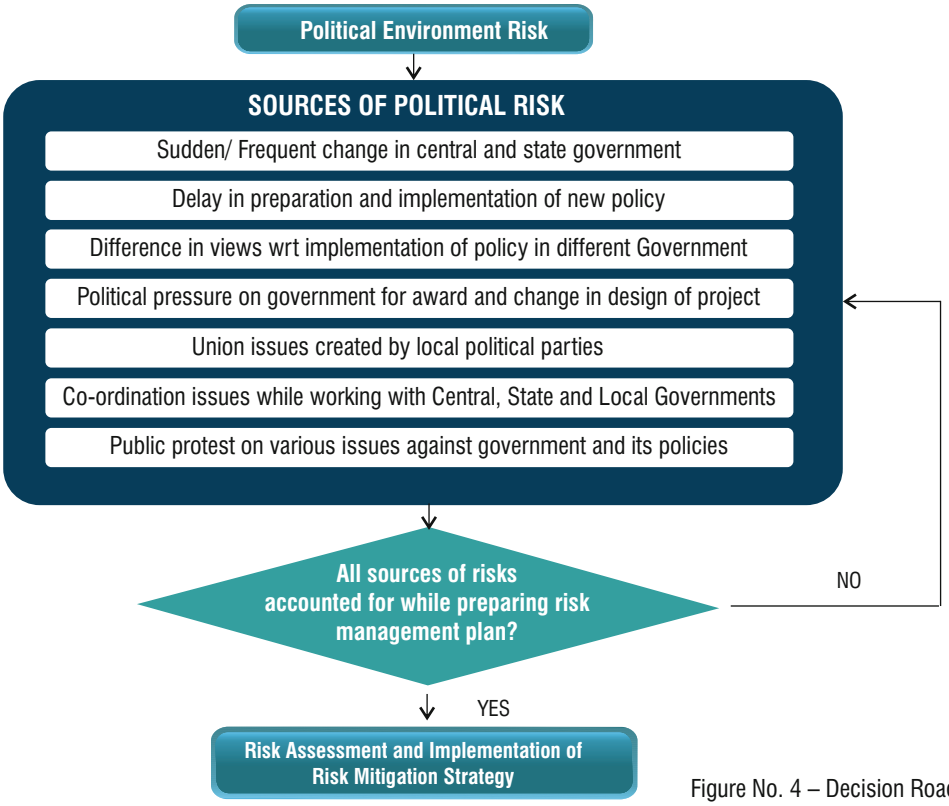


Figure No. 4 – Decision Roadmap of Political risk

1.2 Government Policies for Ease of Doing Business

According to the World Bank report on Ease of Doing Business 2018, India moved up by thirty places from the 2017 rankings to be positioned at 100 out of total 190 countries. India is looking forward to reach the 30th position by 2020.A better rank in ease of doing business globally, which is mostly fueled by Government policies and greater awareness about opportunities in India in infrastructure sector would lead to tremendous growth in this sector. However, Government policies can pose huge risk to the sustenance of business.

Risk Identification

1. India is facing challenges in 3 criteria: enforcing contracts, dealing with permits and registering properties.

2. India fairs particularly well in terms of 'Protecting interests of Minority Investors'. India's ranking improved in the Starting a business, getting electricity by making positive changes.

Findings from Primary Research:

Risk Score	:	12
Risk Level	:	High

Stakeholders:

1. Risk Owners
a) Top Management
b) Government Entity
c) Project Team

2.Risk contributors
a) Policy-decision Makers
b) Political Parties

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Occasional'	25%
Risk Occurrence 'Likely'	22%
IMPACT	
Impact 'Significant'	34%
Impact 'Critical'	22%

Decision Roadmap with Critical Factors

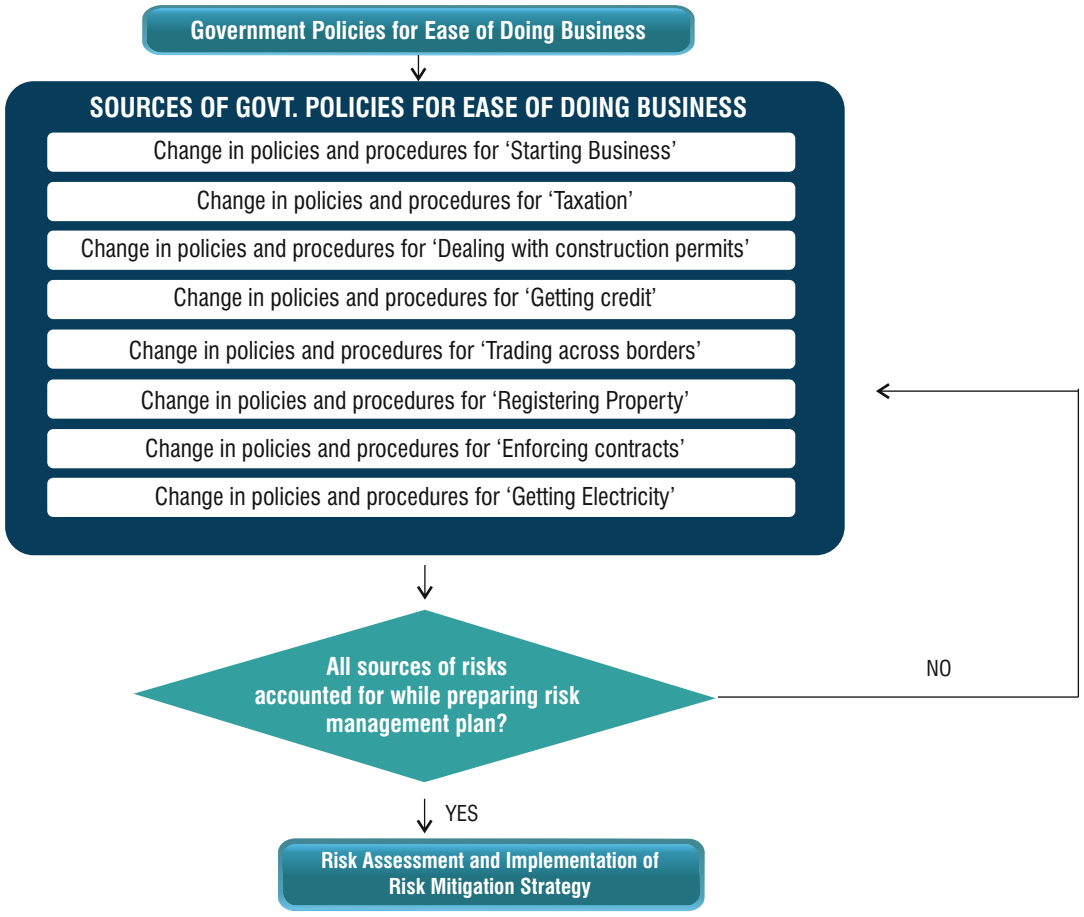


Figure No. 5 – Decision Roadmap of Ease of Doing Business

1.3 Market Condition

Estimating an over Rs.50 Trillion investment to increase the GDP growth and connect the nation with a network of roads, airports, railways, ports and inland waterways, the Finance Minister announced an increase of budgetary allocation on infrastructure for 2018-19 to Rs.5.97 Trillion against estimated expenditure of Rs.4.94 Trillion in 2017-18.

Risk Identification

1. This risk is the possibility of a project and investor experiencing losses due to factors that affect the overall performance of the infrastructure sector in which the company is involved.

2. Also called 'systematic risk", it cannot be eliminated through diversification, though it can be hedged against this.

3. This risk arises due to improper estimations regarding size of market and growth rate of infrastructure services.

Findings from Primary Research:

Risk Score	:	12
Risk Level	:	High

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Occasional'	29%
Risk Occurrence 'Likely'	23%
IMPACT	
Impact 'Significant'	30%
Impact 'Critical'	27%

Stakeholders:

1. Risk Owners
a) Top Management
b) Marketing Director
c) Project Director
d) Project Team

2. Risk contributors
a) Contractors, Subcontractors, and Suppliers
b) Competitors
c) Customers

Decision Roadmap with Critical Factors

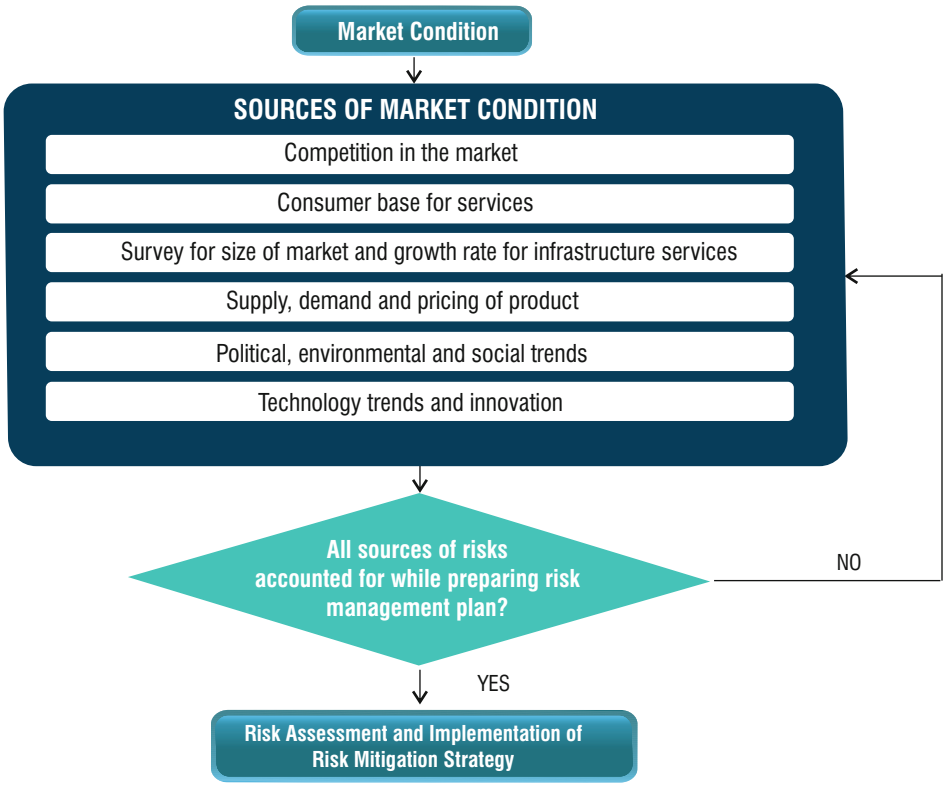


Figure No. 6 – Decision Roadmap of Market Condition

1.4 Collaboration and Partnership risk

This section details the risks of getting into collaborations with indigenous partners without proper due diligence and various risks associated with it that may pose challenge to businesses looking to get into infrastructure business in India.

Risk Identification

1. Joint Ventures or partnership for project execution may face risks due to conflicts between the organizations; mismanagement of capital; lack of contractual clarity in scope, obligations and responsibilities of each partner.

2. Failed collaborations affect the ability of the company to operate effectively in the long run or exhaust the valuable resources of the company that are needed for mission critical activities.

3. Collaboration risk leads to conflict of interest or cultural mismatch among the employees which affects the growth and overall environment of the company.

4. The changing norms in FDI may pose a risk.

Findings from Primary Research:

Risk Score : 09
Risk Level : Medium

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Occasional'	38%
Risk Occurrence 'Likely'	28%
IMPACT	
Impact 'Minor'	29%
Impact 'Moderate'	20%

Stakeholders:

1. Risk Owners
a) Top Management
b) Project Head
c) International Company
d) Domestic Corporate Partner
e) Resource Managers

2. Risk Contributors
a) Other party in Collaboration or Joint Venture
b) Clients of Other Party

Decision Roadmap with Critical Factors

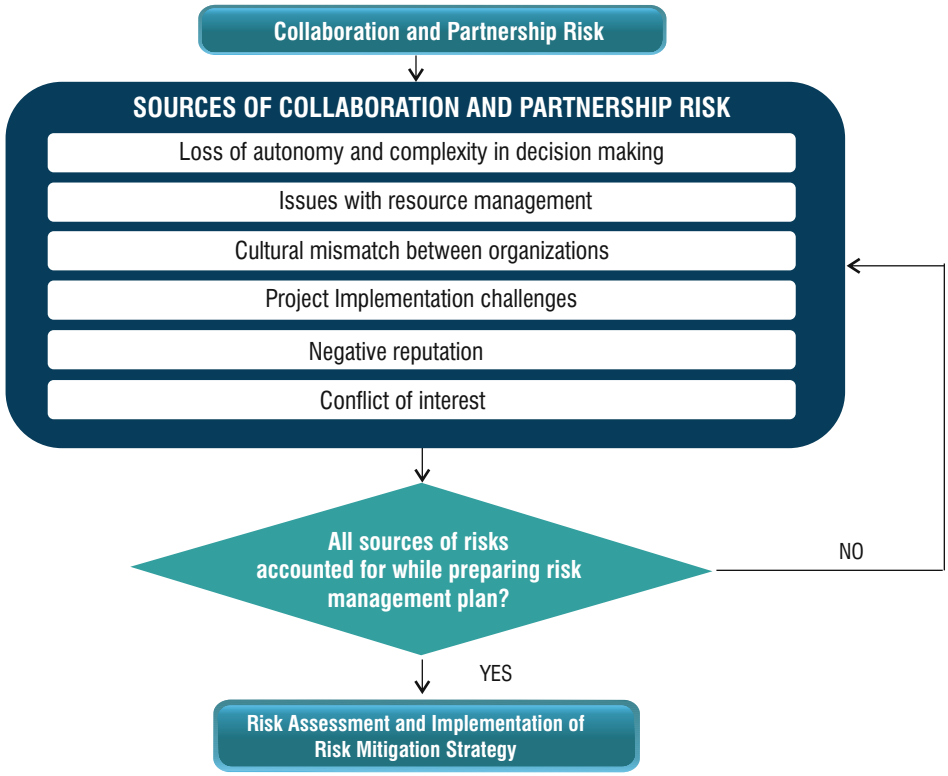


Figure No. 7 – Decision Roadmap of Collaboration and Partnership Risk

Conclusion

Market entry risk is one of the four significant risk areas defined in this document. The details of findings post a thorough market research is as follows. This shall work as a guiding light for businesses looking to use this toolkit as a strategic decision making tool.

However risk perception varies from organization to organization and individual businesses may use the MS-Excel tools provided along with this toolkit to change their perception scores and take decision accordingly.

Market Entry Risk in India	Risk	Likelihood	Impact	Risk Score	Risk Level	Impact of Risk on Schedule	Impact of Risk on Cost
Political Environment	R1	3	4	12	High	Delays/anticipation between 12 to 18 months	20% - 40% increase in budget
Government Policies for Ease of doing Business	R2	3	4	12	High	Delays/anticipation between 12 to 18 months	20% - 40% increase in budget
Market Condition	R3	3	4	12	High	Delays/anticipation between 12 to 18 months	20% - 40% increase in budget
Collaboration and Partnership Risk	R4	3	3	9	Medium	Delays/anticipation between 6 to 12 months	10% - 20% increase in budget
Average Market Entry Risk	**R5**	**3**	**4**	**12**	**High**	**Delays/anticipation between 12 to 18 months**	**20% - 40% increase in budget**

Table No. 3 – Market Entry Risk Assessment

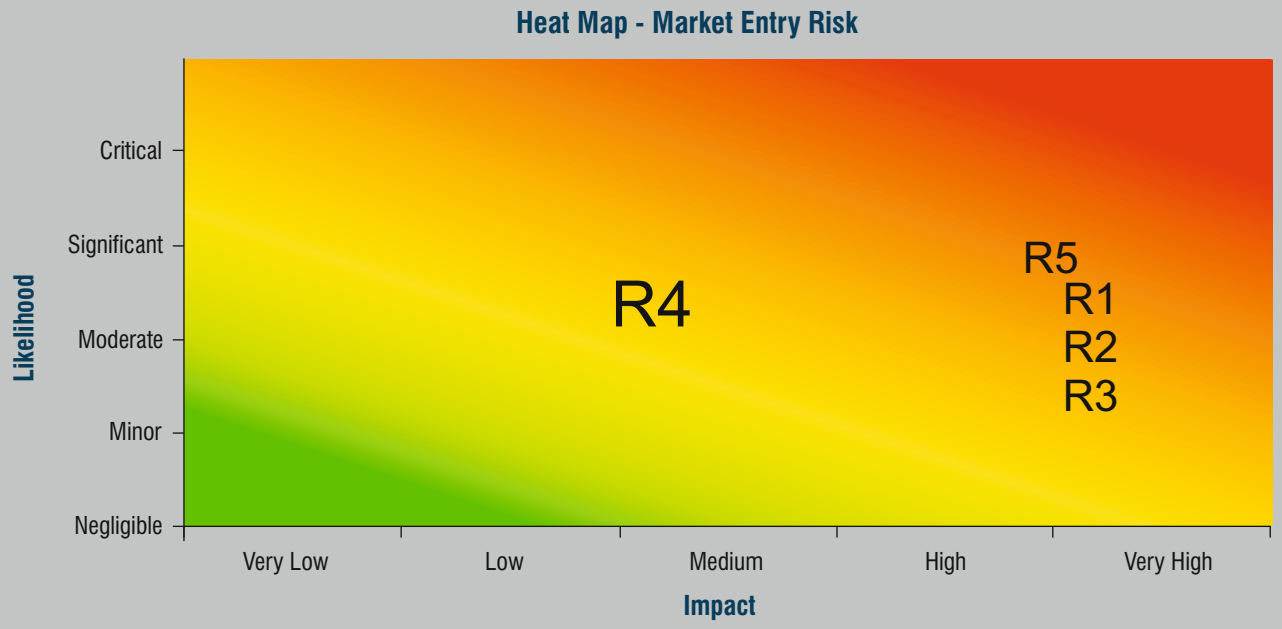


Figure No. 8 – Market Entry Risk Heat Map

1. From the above table we can conclude that Market Entry Risk has high level of risk and significant impact on project schedule and cost.

2. The likelihood and impact of all the sub risks is almost similar to one another.

2. Operational Risk

Operational risk is the prospect of loss resulting from inadequate or failed procedures, systems or policies. Operational risk is associated with uncertainty about operations when implementing the project and the performance of infrastructure once it has been constructed, during long-life operating phase of infrastructure projects. Predicting and managing operational risks is critical for results. The risks vary greatly depending on the type of contract and the compensation model. The degree of risk is proportionate to the size of the project and also depends on how well risk management is performed. Most organizations rely on professionals with a clear understanding of business processes. Problems can arise if processes are new or complex, if a key member of the team leaves, or if the specific competencies of a team are in doubt. This risk leads to financial loss, delay in project and sometimes legal action which can damage reputation of company in market.

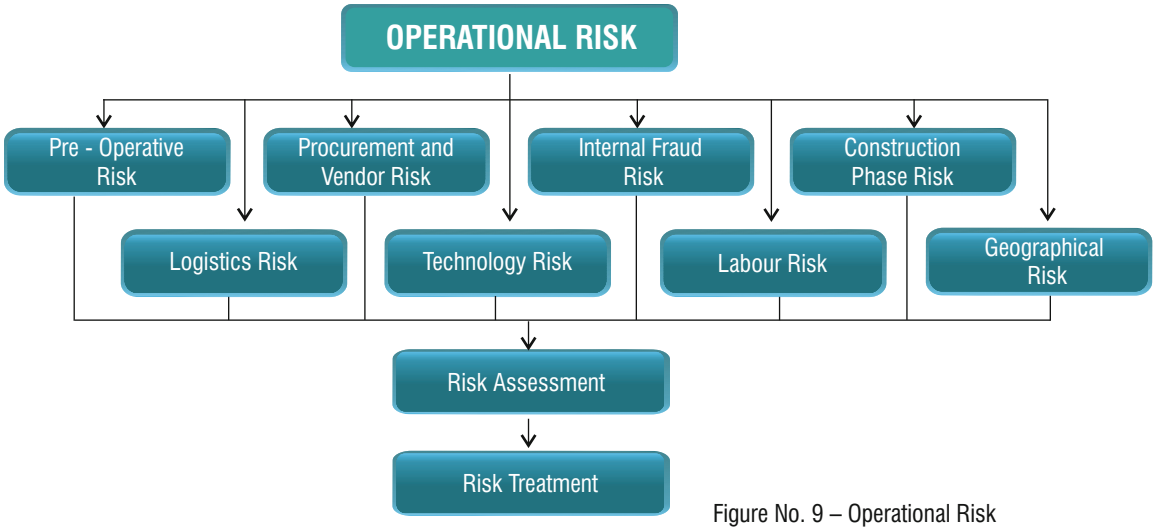


Figure No. 9 – Operational Risk

2.1 Pre-Operative Risk

India faces serious challenges in creating development processes that generate economic growth while being socially inclusive, ecologically sustainable, politically feasible, and in accordance with the Rule of Law. Equitable and efficient acquisition of land by the state for economic development projects, including infrastructure and industry, lies at the heart of these challenges.

Risk Identification

1. Land acquisition risk emerges due to low monetary compensations, Rehabilitation and Resettlement.

2. Some of the amendments made to the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Bill (RFCTLRR) are aimed at facilitating industry and developing a robust infrastructure but government is facing difficulty in implementation of this act.

3. Difficulty in financial closure occurs due to inability to raise the funds for project execution. This happens due to the lack of investor interest in funding the projects.

4. If a company does not follow all environmental procedures while implementing the project, public unrest which builds up may attract legal action against the project

---

Findings from Primary Research:

Risk Score : 20
Risk Level : Very High

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Likely'	35%
Risk Occurrence 'Occasional'	28%
IMPACT	
Impact 'Significant'	47%
Impact 'Moderate'	50%

Stakeholders:

1. Risk Owners
a) Top Management
b) Project Head and Project Team
c) Finance / Resource Managers
d) Government Entity

2. Risk contributors
a) Contractors, Subcontractors, and Suppliers
b) Policy Makers and Political Parties
c) Citizens

Decision Roadmap with Critical Factors:

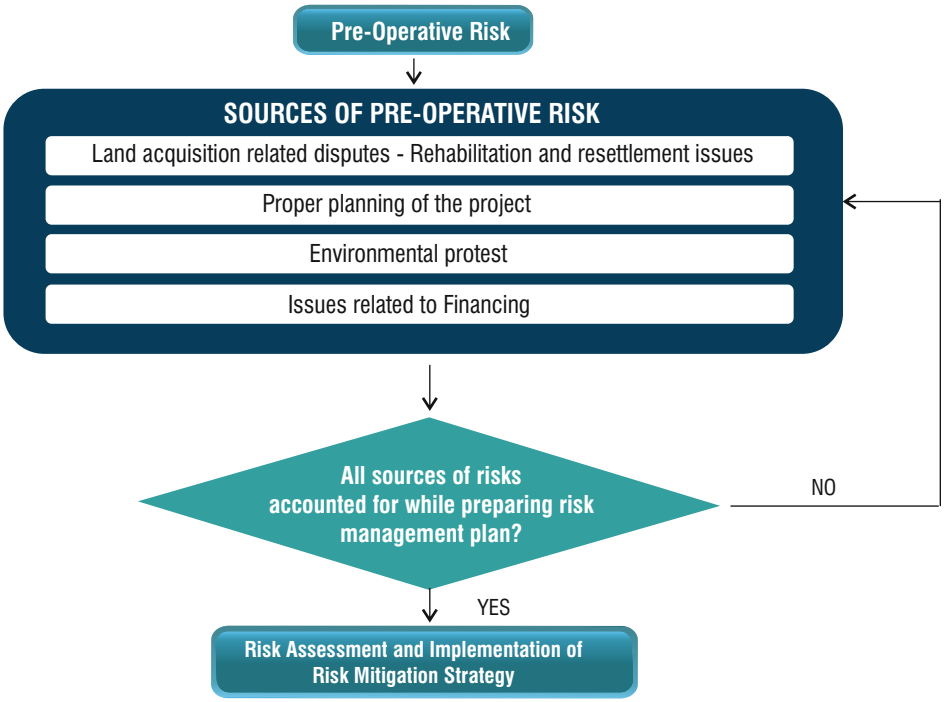


Figure No. 10 – Decision Roadmap of Pre-operative Risk

2.2 Procurement and Vendor Risk

The organization of business is a dynamic operation with evolving needs that cannot always be met through in-house resources. Vendors play a crucial role in the economic production chain, providing goods, services or business support systems so that organizations can function at optimum efficiency. The interplay between vendors and clients is a critical cog in the machine, yet vendor management may be taken for granted when procurement system seems to work smoothly.

Risk Identification

1. Procurement risk is the potential for failures of the procurement process designed to purchase services, products or resources.

2. Procurement risk occurs due to nar row specification of products or services in RFP which eliminates competition within bidders.

3. Delays in supply, lower quality of products at higher cost supplied by vendor leads to Vendor risk.

4. Understatement of goods and services may have effect on project implementation due to material shortage or rise in price of material at that time.

5. Overstatement of goods and services will lead to unnecessary investment in inventory and shortage of funds for other purpose.

Findings from Primary Research:

Risk Score : 12
Risk Level : High

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Likely'	25%
Risk Occurrence 'Occasional'	35%
IMPACT	
Impact 'Significant'	43%
Impact 'Critical'	32%

Stakeholders:

1. Risk Owners
a) Top Management
b) Project Head and Project Team
c) Procurement Manager
d) Resource Manager

2. Risk contributors
a) Contractors, Subcontractors, and Suppliers
b) Competitors
c) Government Employees
d) Policy Makers
e) Political Parties

Decision Roadmap with Critical Factors:

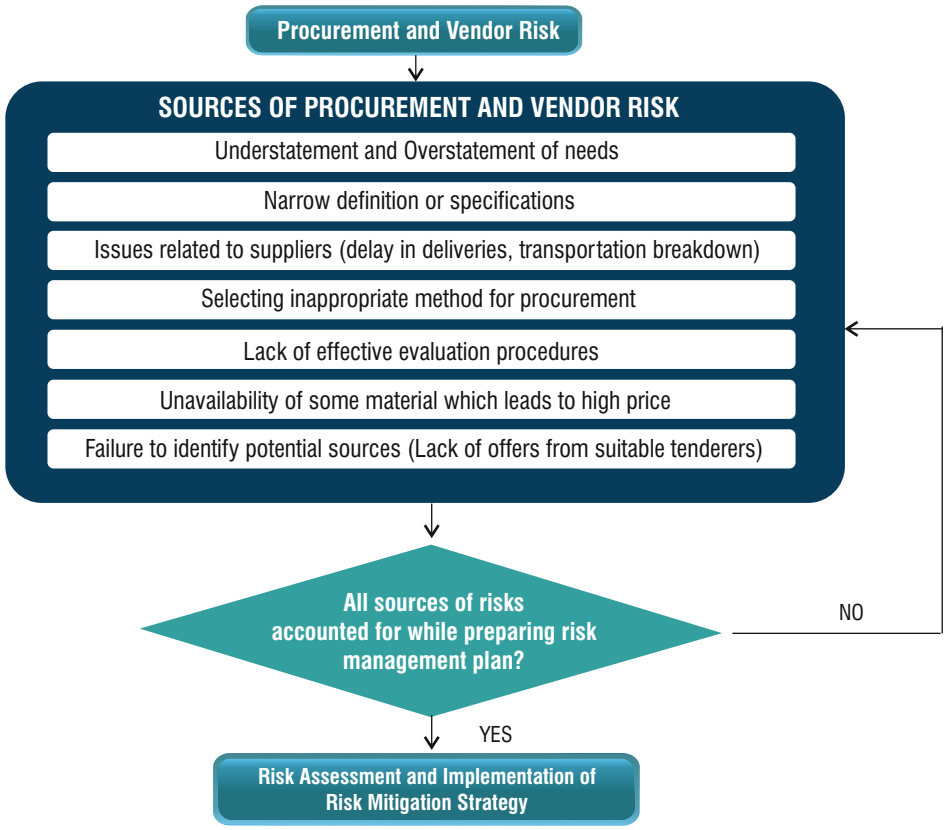


Figure No. 11 – Decision Roadmap of Procurement and Vendor Risk

2.3 Internal Fraud Risk

The term internal fraud is commonly used to describe a wide variety of dishonest behaviors such as deception, bribery, corruption, forgery, false representation, collusion and concealment of material facts.

Risk Identification

1. Ever-increasing use of technology in every sphere of business, is leading to more sophisticated and complex frauds than before.

2. Inflating the bills, data breach etc. done by employee of the company may lead to strict actions and the project may be stopped, affecting the company's brand image and profits.

3. Subcontractor using lower grade material gives rise to internal fraud.

4. A well-thought-out and comprehensive anti-corruption compliance programme is the benchmark that leading companies are utilizing to manage their corruption risks.

5. The top five fraud risks that emerged from a survey, having potential to pose threats to businesses in India are Data or information theft and IP infringement; Bribery and corruption; Fraud perpetrated by management; Vendor fraud and Regulatory non-compliance.

Findings from Primary Research:

Risk Score : 06
Risk Level : Medium

Significant Finding:

	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Unlikely'	37%
Risk Occurrence 'Occasional'	27%
IMPACT	
Impact 'Minor'	31%
Impact 'Critical'	19%

Stakeholders:

1. Risk Owners
a) Top Management
b) Compliance Officer
c) Auditors
d) Project Head
e) Project Team
f) IT Team

2. Risk contributors
a) Contractors, Subcontractors, and Suppliers
b) Employees of Company
c) HR Manager

Decision Roadmap with Critical Factors

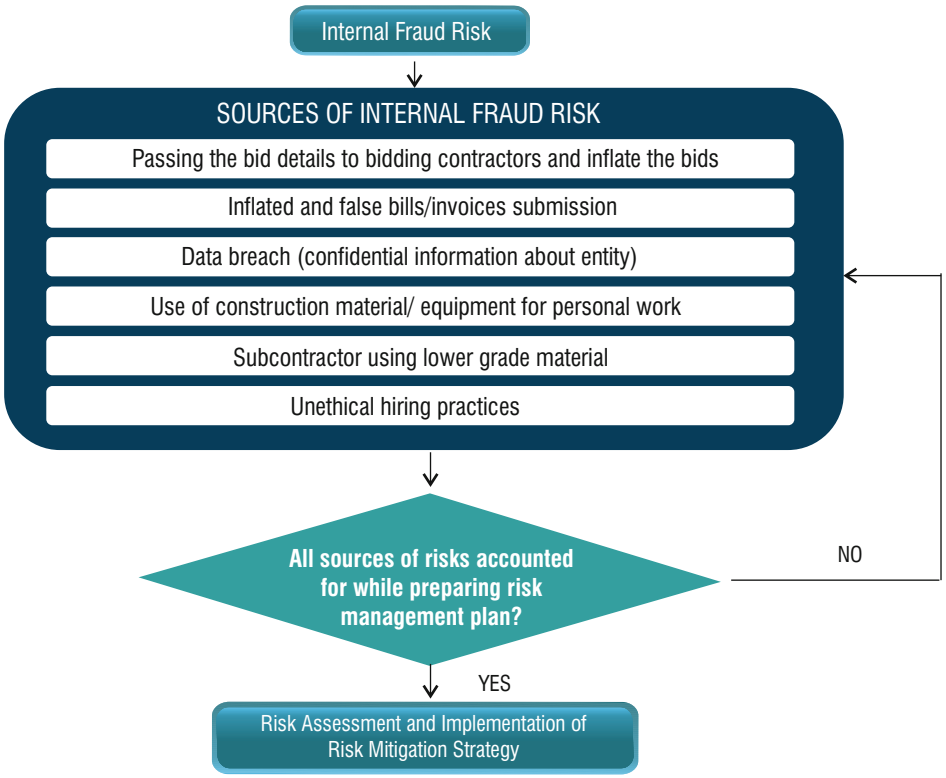


Figure No. 12 – Decision Roadmap of Internal Fraud Risk

2.4 Construction Phase Risk

Construction projects are very complex and can pose various internal and external risks. A strict set of codes, laws, and regulations must be followed during the construction process to best avoid these risks. Unfortunately, there is no way to avoid risks as unknown factors are bound to arise over course of a project. One of the best ways to manage risks is to know the types and how to manage them.

Risk Identification

1. It is defined as exposure to possible loss as every project is different, each offers a multitude of varying risks.

2. To ensure success of a project, the contractor starting a construction project must be able to recognize and assess those risks. The contractor must also be able to manage those risks.

3. It includes the possibility of actual project costs or time exceeding those projected.

4. Construction cost overrun is one of the critical risks faced in project development.

Findings from Primary Research:

Risk Score	:	12
Risk Level	:	High

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Likely'	23%
Risk Occurrence 'Occasional'	28%
IMPACT	
Impact 'Significant'	35%
Impact 'Critical'	29%

Stakeholders:

1. Risk Owners
a) Top Management
b) Technical Head
c) Project Head and Project Team
d) Resource and Finance Managers

2. Risk contributor
a) Contractors, Subcontractors, and Supplier
b) Resource Manager
c) Government Entity (related to approvals)

Decision Roadmap with Critical Factors:

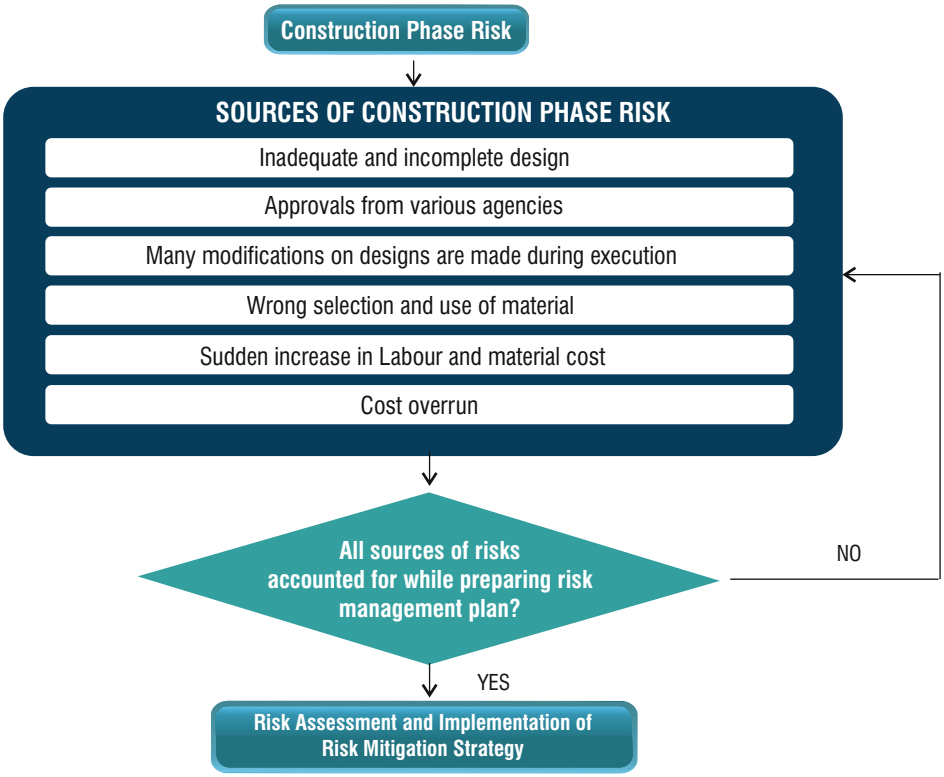


Figure No. 13 – Decision Roadmap of Construction Phase Risk

2.5 Logistics Risk

Logistics refers to the general management of resources procurement, storage and transportation to their final destination. Logistics management involves identifying prospective distributors and suppliers, and determining their effectiveness and accessibility. Ultimately, management establishes a relationship with the concerned companies or handles its own logistics if this proves to be more cost-effective. The risk arising due to the inefficiency in the logistics leads to logistics risk.

Risk Identification

1. It is defined as the risk arising during the process of planning, implementing and controlling efficient, cost-effective flow and storage of raw materials, goods, equipment and personnel from the point of origin until completion of an activity, as per end-user's requirements.

2. Logistic risk is highly dependent on fuel prices in international markets which sometimes make difficulty in estimation.

3. Strike by transportation companies and repeated vehicle failure increase the logistic cost varying the impact of logistic risk.

4. Logistics costs are high due to poor physical and communication infrastructure; high dwell time at ports; low levels of containerization; and a multi-layered tax system.

Findings from Primary Research:

Risk Score : 09
Risk Level : Medium

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Likely'	34%
Risk Occurrence 'Occasional'	31%
IMPACT	
Impact 'Significant'	27%
Impact 'Minor'	25%

Stakeholders:

1. Risk Owners
a) Top Management
b) Project Head and Project Team
c) Technical Head
d) Resource Managers

2. Risk contributors
a) Contractors, Subcontractors, and Suppliers
b) Government (policies related to fuel, tolls and condition of roads across country)
c) Transport Unions

Decision Roadmap with Critical Factors

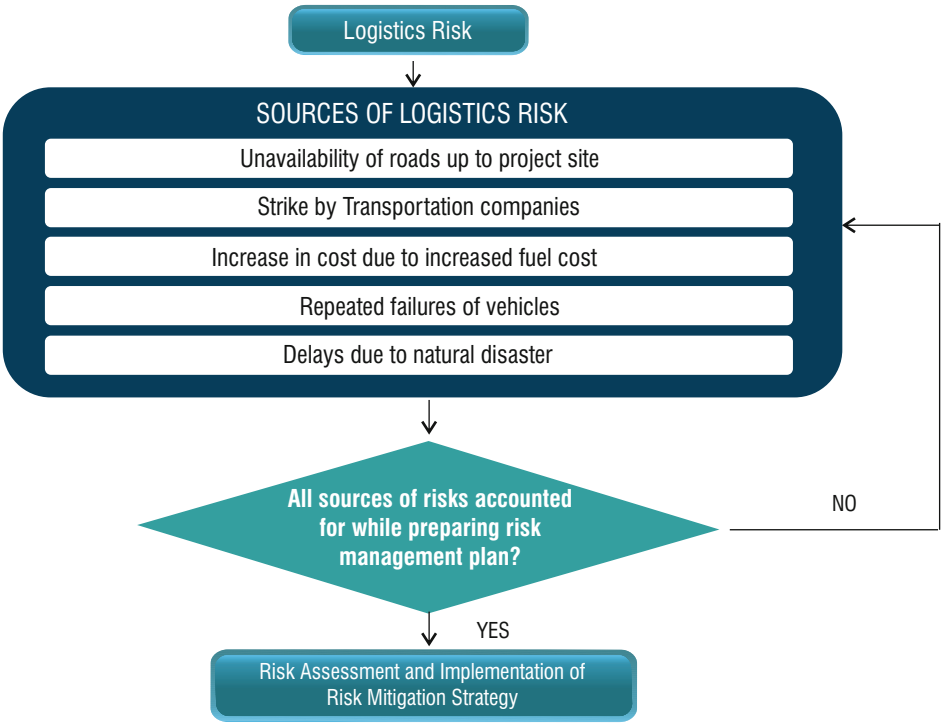


Figure No. 14 – Decision Roadmap of Logistic Risk

2.6 Technology Risk

Technology risk is the potential for technology failures to disrupt business such as information security incidents or service outages. A bad technology decision can derail or destroy an otherwise compelling project.

Risk Identification

1. Technology risk is any potential for technology failures to disrupt a business such as information security incidents or service outages.

2. Technology risks threaten assets and processes vital to business and may prevent compliance with regulations, impact profitability and may damage reputation in the marketplace.

3. It is important to identify and verify events such as data breaches, network failure, electronic fraud, and other suspicious activities before they result in fines and expenses, damage brand or personal reputation, prevent you from reaching your business goals, or even lead to a lawsuit.

4. Repeated equipment failure will halt the progress of project implementation.

Findings from Primary Research:

Risk Score : 04
Risk Level : Low

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Unlikely'	34%
Risk Occurrence 'Remote'	31%
IMPACT	
Impact 'Minor'	43%
Impact 'Negligible'	26%

Stakeholders:

1. Risk Owners
a) Top Management
b) Technical Director
c) Project Head and Project Team
d) Resource Managers
e) IT Team

2. Risk contributors
a) Competitors
b) Maintenance Team
c) Employees (misuse of data)

Decision Roadmap with Critical Factors

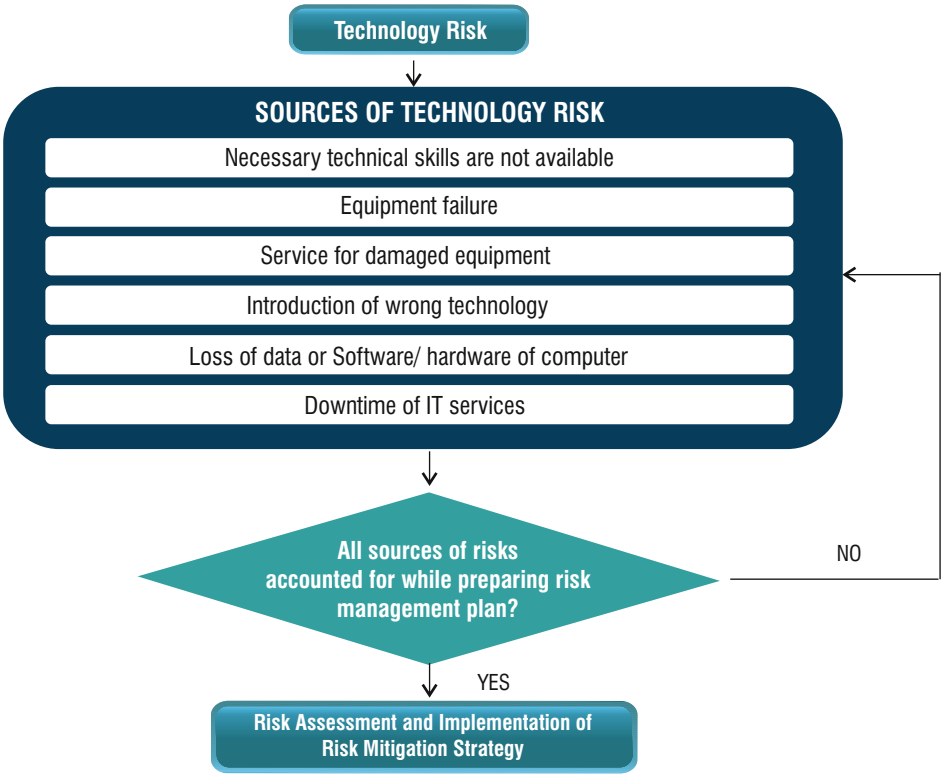


Figure No. 15 – Decision Roadmap of Technology Risk

2.7 Labour Risk

Labour related risks in an infrastructure project can take many forms. The most visible, and that which receives the most attention, is labour disputation in the form of strikes, stop work meetings and "manufactured" disputes. But this is only the tip of the labour-related risk iceberg. There are a host of other factors that contribute to the make-up of the labour relations risk iceberg, all of which contribute to low labour productivity, scheduled slippage, increased labour costs and delayed cash flow.

Risk Identification

1. Low productivity, irregular working hours or disputes among labourers are the factors leading to labour risk.

2. Reforms in labour laws are an ongoing process to update legislative system to make them more effective and contemporary to the emerging economic and industrial scenario.

3. Labour is key to most supply chains. If they do not work properly, it affects working of the organization.

Findings from Primary Research:

Risk Score : 12
Risk Level : High

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Occasional'	31%
Risk Occurrence 'Likely'	27%
IMPACT	
Impact 'Significant'	37%
Impact 'Critical'	23%

Stakeholders:

1. Risk Owners
a) Top Management
b) Project Head and Project Team
c) HR Manager

2. Risk contributors
a) Contractors or Sub-Contractors
b) Labour Unions

Decision Roadmap with Critical Factors

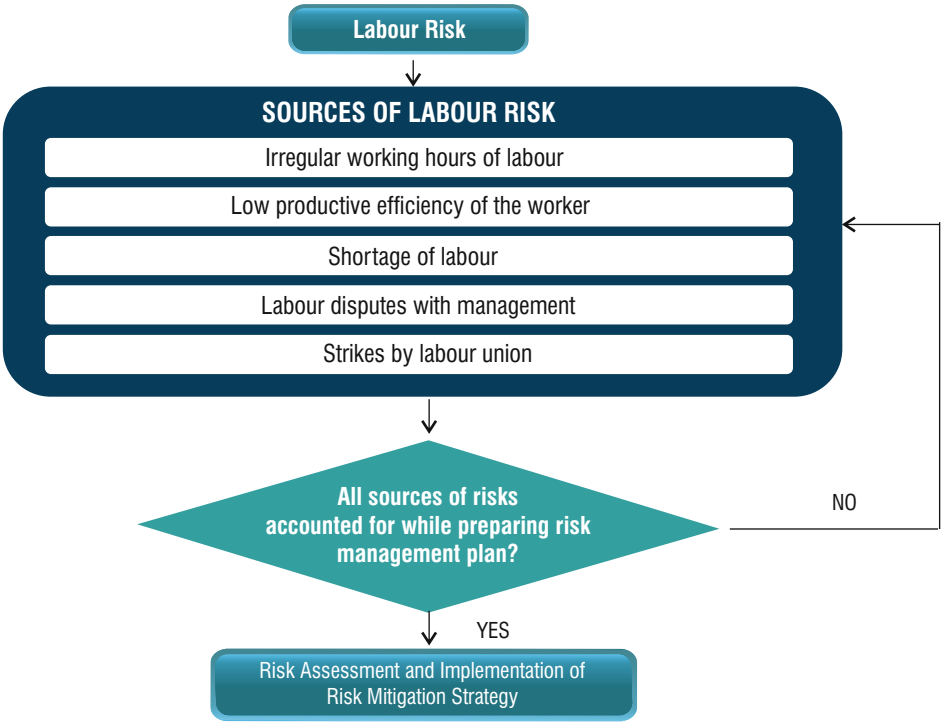


Figure No. 16 – Decision Roadmap of Labour Risk

2.8 Geographical Risk

Geographic risks may arises when an issuer releases policies concentrated within a certain geographic area. Geographical risk sometimes is unavoidable. The impact of this depends upon the area of project construction. Specifically, it refers to the possibility that a natural disaster to which an area is prone will negatively impact an investment.

Risk Identification

1. This risk arises when an issuer releases policies concentrated within certain geographic areas.

2. There are several authorities, policies and funds for prevention, mitigation and management of disasters.

3. Unfavorable climatic conditions and disturbed area affect project construction and implementation.

Findings from Primary Research:

Risk Score : 04
Risk Level : Low

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Unlikely'	40%
Risk Occurrence 'Occasional'	32%
IMPACT	
Impact 'Minor'	38%
Impact 'Negligible'	26%

Stakeholders:

1. Risk Owners
a) Top Management
b) Project Head
c) HR Manager

2. Risk contributors
a) Political Parties
b) Climate Conditions

Decision Roadmap with Critical Factors

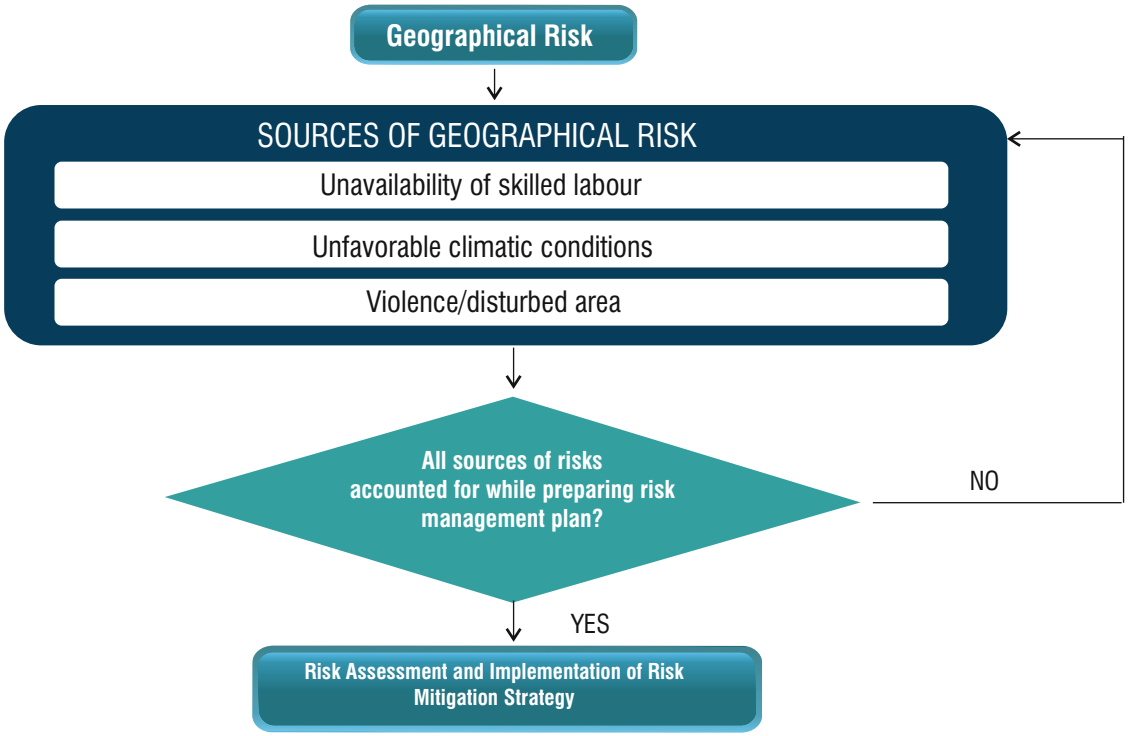


Figure No. 17 – Decision Roadmap of Geographical Risk

Conclusion

Operational Risk is one of the most dynamic risk in the infrastructure sector as the predictability of the sub risk areas within this category is highly volatile and any wrong risk perception may jeopardize the fate of the entire project. The following table illustrates the risk scores and their criticality basing on the outcome of the primary research conducted for this toolkit. However risk perception varies from organization to organization and individual businesses may use the MS-Excel tools provided along with this toolkit to change their perception scores and take decision accordingly.

Operational Risk	Risk	Likelihood	Impact	Risk Score	Risk Level	Impact of Risk on Schedule	Impact of Risk on Cost
Pre-Operative Risk	R6	4	5	20	Very High	Delays/anticipation above 18 months	More than 40% increase in budget
Procurement and Vendor Risk	R7	3	4	12	High	Delays/anticipation between 12 to 18 months	20% - 40% increase in budget
Internal Fraud Risk	R8	2	3	6	Medium	Delays/anticipation between 6 to 12 months	10% - 20% increase in budget
Construction Phase Risk	R9	3	4	12	High	Delays/anticipation between 12 to 18 months	20% - 40% increase in budget
Logistics Risk	R10	3	3	9	Medium	Delays/anticipation between 6 to 12 months	10% - 20% increase in budget
Technology Risk	R11	2	2	4	Low	Delays/anticipation between 3 to 6 months	5% - 10% increase in budget
Labour Risk	R12	3	4	12	High	Delays/anticipation between 12 to 18 months	20% - 40% increase in budget
Geographical Risk	R13	2	2	4	Low	Delays/anticipation between 3 to 6 months	5% - 10% increase in budget
Average Operational Risk	**R14**	**3**	**3**	**10**	**High**	**Delays/anticipation between 12 to 18 months**	**20% - 40% increase in budget**

Table No. 4 – Operational Risk Assessment

1. Concluded that operational risk has high level of risk and significant impact on project schedule and cost.

2. The Pre-operative Risk has the highest risk score and critical impact on schedule and cost of project.

3. Procurement and labour risk issues are likely to occur a lot during the project and have high level of impact on schedule and cost.

4. Geographical Risk and Technology Risk have low impact and risk score compared to all other risks.

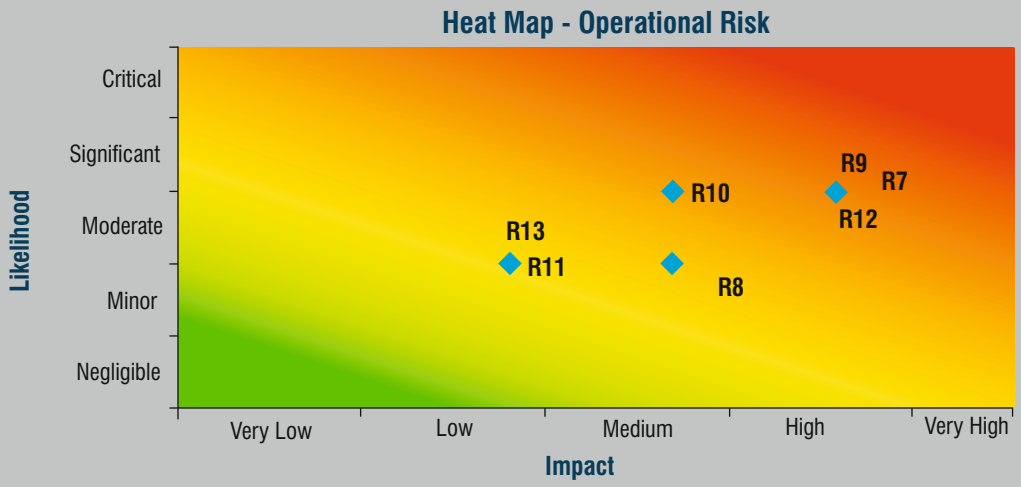


Figure No. 18 – Heat Map - Operational Risk

From the Heat Map, it is clear that most of the sub risks of Operational Risk have high risk score. Also collectively we can conclude that Operational Risk has high level of risk.

3. Strategic Risk

Strategic risk is related to the compatibility of an organization's strategic goals to the business strategy development by management for achieve those goals, resources deployed against these goals and the quality of implementation. Strategic risk might arise from making poor business decisions, substandard execution of decisions, inadequate resource allocation, or a failure to respond well to changes in the business environment. Strategic risk arises when implementation of a business is not in accordance to the business model or plan.

Figure No. 19 – Strategic Risk

3.1 Social and Environmental Risk

Major infrastructure projects are developed with a view to have long term and significant effects on society. Numerous social and environmental risks arise when such projects are planned, designed, constructed and operated.

Along with known environmental and sustainability issues (e.g. waste management and disposal, carbon emissions, resource depletion, ecosystem change), social factors (such as worker rights, safety, child labour, human rights, community relations) play g an increasingly important role in shaping the perceptions of the public and government with regard to the businesses involved.

Risk Identification

1. This risk occurs during the Construction and Operation phase.

2. Government policy defines procedures required for environmental clearance for projects.

3. Pollution of air, water or excessive ground water depletion affects the natural habitat and leads to social and environmental risk.

4. Environmental Impact Assessment (EIA) is a critical management tool for ensuring optimal use of natural resources for sustainable development

Findings from Primary Research:

Risk Score : 16
Risk Level : High

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Likely'	39%
Risk Occurrence 'Frequent'	37%
IMPACT	
Impact 'Significant'	32%
Impact 'Critical'	21%

Stakeholders:

1. Risk Owners
a) Top Management
b) Technical/Project Director
c) Project Head and Project Team
d) Public Entity

2. Risk contributors
a) Political Parties
b) Policy Makers
c) Citizens

Decision Roadmap with Critical Factors

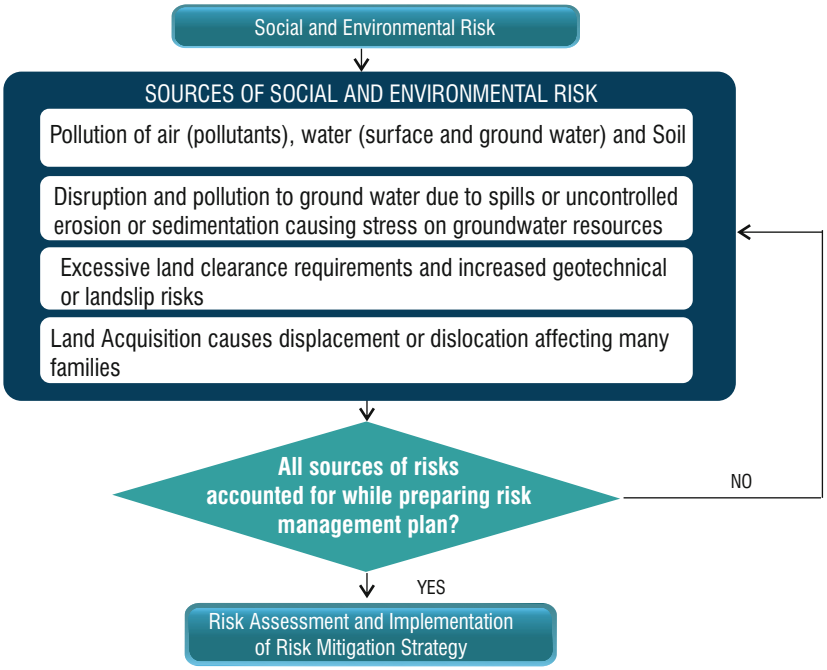


Figure No. 20 – Decision Roadmap of Social and Environmental Risk

3.2 Compliance Risk

India has a complex web of compliances needed for businesses to adhere to when operating within the country. These include regulatory change, maintenance of compliance records, penalties for non-compliance and business continuation just to name a few.

Many compliance regulations are enacted to ensure that organizations operate fairly and ethically. Penalties for compliance violations include payments for damages, fines and voided contracts, which can lead to the organization's loss of reputation and business opportunities, as well as the devaluation of its franchises.

Risk Identification

1. Compliance risk results from legal penalties, financial forfeiture and material loss to any organization which fails to act in accordance with industry laws and regulations, internal policies or prescribed best practices.

2. An organization's understanding of the full range of its risk exposure, including the likelihood that a risk event may occur, the reasons it may occur, and the potential severity of its impact can reduce compliance related risks.

3. An effectively designed compliance risk assessment also helps organizations prioritize risks, map these risks to the applicable risk owners, and effectively allocate resources to risk mitigation.

4. Failure to standard operating process or ignorance in maintenance of compliance records as per set law will lead to compliance risk.

Findings from Primary Research

Risk Score : 15
Risk Level : High

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Occasional'	31%
Risk Occurrence 'Likely'	25%
IMPACT	
Impact 'Critical'	56%
Impact 'Significant'	38%

Stakeholders

1. Risk Owners

a) Top Management
b) Project Head
c) Project Team
d) Compliance Officer
e) Auditors
f) HR & Finance Managers

2. Risk contributors

a) Employees
b) Contractors, Suppliers (non - compliance by them)
c) Compliance Team (non-compliance)

Decision Roadmap with Critical Factors

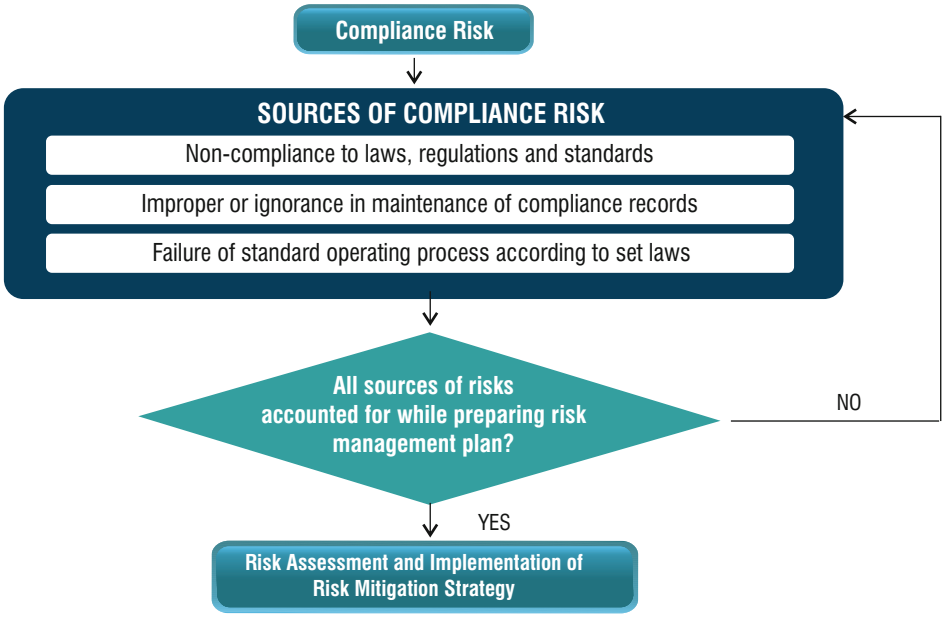


Figure No. 21 – Decision Roadmap of Compliance Risk

3.3 Strategic Risk Forecast

With companies operating in the 60-70 percent range of certainty (versus 80-90 percent previously) strategic planning should employ an array of scenarios that have costs, schedules, benefits, financial impacts and risks identified. Strategic Forecast risk is the risk that arises during the process to determine the future trends and uncertainty which might arise by using the current and historical data.

Risk Identification

1. Strategic forecasts will affect the short and long-term investment plans, sales and production.

2. Improper project planning and budgeting or issues with estimation of operation and construction cost leads to strategic forecast risk.

3. Strategic Risk Forecast analyses and forecasts the effects of developments on business environments and how they can affect the company's operations, assets, infrastructure and supply chain.

4. Strategic Risk Forecast also assesses the company's risks through past performance of similar cases that allow us to estimate the probabilities of future outcomes

Strategic Forecast risk is the risk that arises during the process to determine the future trends and uncertainty which might arise by using the current and historical data.

Findings from Primary Research

Risk Score : 09
Risk Level : Medium

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Occasional'	34%
Risk Occurrence 'Unlikely'	29%
IMPACT	
Impact 'Moderate'	30%
Impact 'Minor'	27%

Stakeholders:

1. Risk Owners
a) Top Management
b) Project Head and Project Team
c) Resource Manager
d) Marketing Head
e) Finance and HR Managers

2. Risk contributors
a) Contractors, Subcontractors, and Suppliers
b) Policy Makers
c) Government Entity

Decision Roadmap with Critical Factors

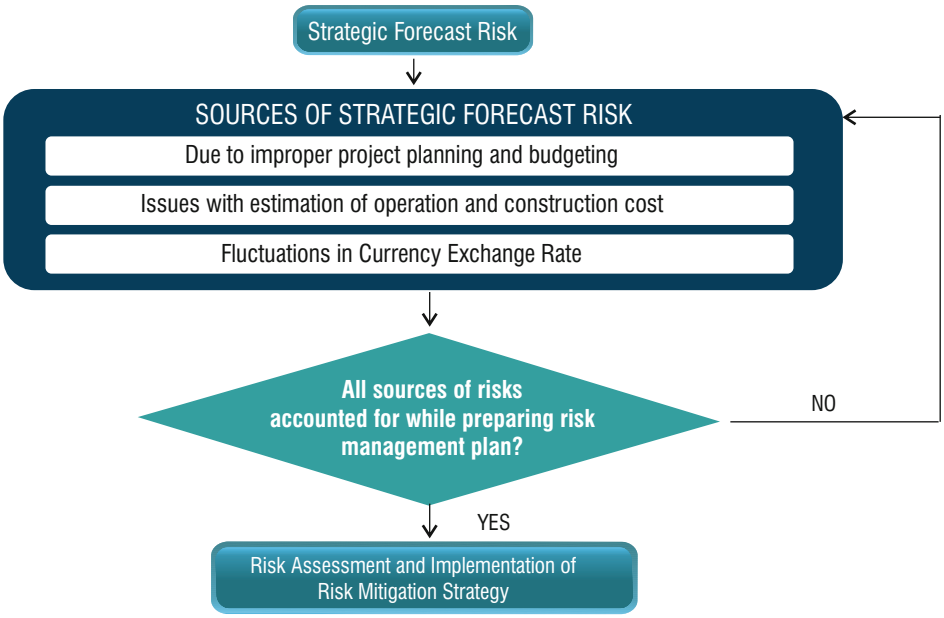


Figure No. 22 – Decision Roadmap of Strategic Forecast Risk

3.4 Innovation Risk

Innovations basically have a wide range of risks that depend on attempting to foresee the unknown. Even though organizations have dedicated extensive resources to manage these risks; uncertainty surrounding innovation continues to plague many under-prepared innovators who jump quickly into market without studying It fully.

When managers engage in minimizing innovation risk, they usually do so under a flawed decision model or imperfect context. As a result, many innovation failures do not necessarily stem from the innovation itself but from the process used to determine how the innovation is introduced.

Risk Identification

1. This is considered a special category of risk whereby a business expects regular failures as it tries many things to see what works.

2. Managing total innovation risk involves integrating a shared belief of risk appetite, closing the gap of an ideal balance and actual balance of risks, and continuous communication of innovation objectives and goals.

3. Innovation risk also arises due to wrong or economically unviable technology being picked.

4. Changing demand of customers making current technology obsolete leading to innovation risk.

Findings from Primary Research:

Risk Score : 04
Risk Level : Low

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Unlikely'	45%
Risk Occurrence 'Remote'	31%
IMPACT	
Impact 'Minor'	50%
Impact 'Negligible'	22%

Stakeholders:

1. Risk Owners
a) Top Management
b) Marketing Director
c) Technical Head
d) Project Head
e) Resource Managers
f) Finance Manager

2. Risk contributors
a) Competitors
b) Technical Team (for picking up wrong technology)

Decision Roadmap with Critical Factors

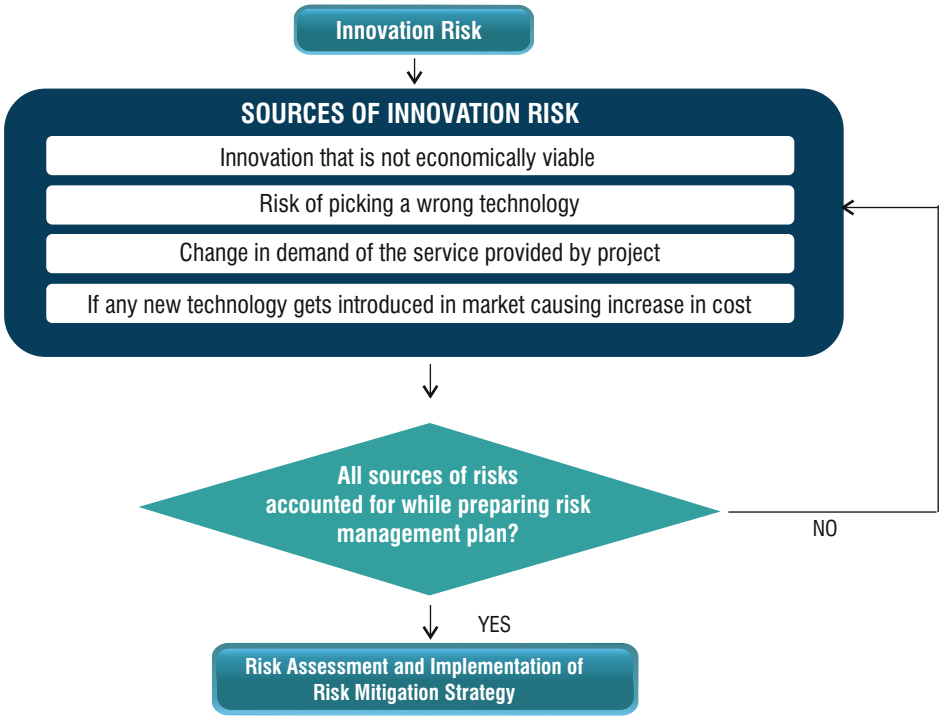


Figure No. 23 – Decision Roadmap of Innovation Risk

3.5 Intellectual Property Risk

IP risks are significant because the value of companies has been shifting from tangible to intangible assets in recent years. Many assume that IP risks originate from competitors. In fact, they arise from the actions of one's own people and suppliers, partners, distributors and customers.

Risk Identification

1. Intellectual Property Risk arises if legal rights that protect creations and/or inventions resulting from intellectual activity in the industrial, scientific, literary or artistic fields are not met.

2. Among the common types are copyright, patent, trademark and designs.

3. Patent pirates, brand impersonators, patent flouters and trade-secret thieves are major threats.

4. There includes a risk of legal costs for protecting and enforcing intellectual property rights.

5. Patent trolls are companies that make money on patent-infringement lawsuits and typically threaten businesses with a lawsuit if they do not comply

---

Findings from Primary Research

Risk Score : 04
Risk Level : Low

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Unlikely'	50%
Risk Occurrence 'Remote'	31%
IMPACT	
Impact 'Minor'	47%
Impact 'Negligible'	32%

Stakeholders:

1. Risk Owners
a) Top Management
b) Project Head
c) IPR and Legal Team

2. Risk contributors
a) Employees
b) Patent Troll

Decision Roadmap with Critical Factors

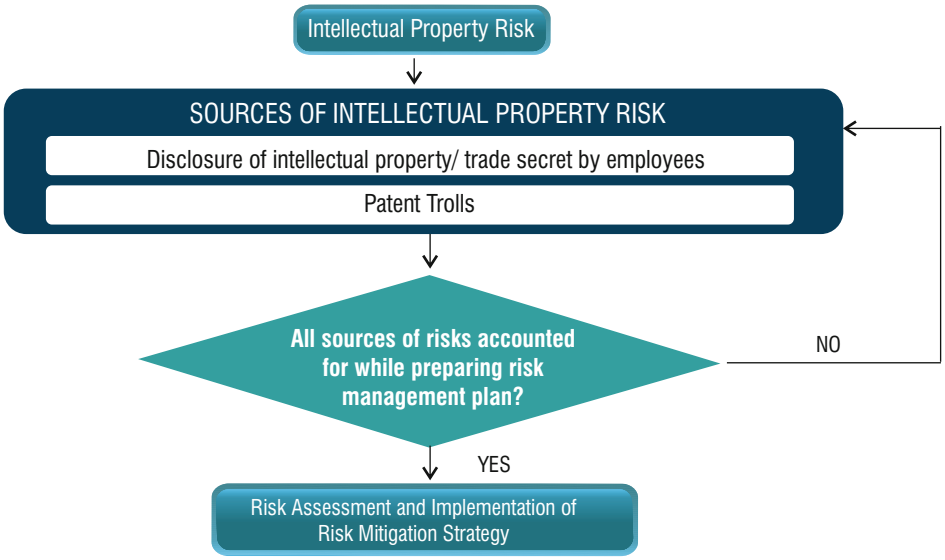


Figure No. 24 – Decision Roadmap of Intellectual Property Risk

Conclusion

Strategic risks can be the key driver and decision maker for the success and failure of projects in the infrastructure sector, hence they need to be handled delicately. The following table illustrates the risk scores and their criticality basing on the outcome of the primary research conducted for this toolkit.

However risk perception varies from organization to organization and individual businesses may use the MS-Excel tools provided along with this toolkit to change their perception scores and take decision accordingly.

Strategic Risk	Risk	Likelihood	Impact	Risk Score	Risk Level	Impact of Risk on Schedule	Impact of Risk on Cost
Social & Environmental Risk	R15	4	4	15	High	Delays/anticipation between 12 to 18 months	20% - 40% increase in budget
Compliance Risk	R16	3	5	15	High	Delays/anticipation between 12 to 18 months	20% - 40% increase in budget
Strategic Forecast Risk	R17	3	3	9	Medium	Delays/anticipation between 6 to 12 months	10% - 20% increase in budget
Innovation Risk	R18	2	2	4	Low	Delays/anticipation between 3 to 6 months	5% - 10% increase in budget
Intellectual Property Risk	R19	2	2	4	Low	Delays/anticipation between 3 to 6 months	5% - 10% increase in budget
Average Strategic Risk	**R20**	**3**	**3**	**12**	**High**	**Delays/anticipation between 12 to 18 months**	**20% - 40% increase in budget**

Table No. 5 – Strategic Risk Assessment

1. From the above table we can conclude that Strategic Risk has high level of risk and a significant impact on project schedule and cost

2. Innovation and Intellectual Property Risk have low impact on schedule and cost as their occurrence is unlikely during the infrastructure projects.

3. Social & Environmental and the Compliance Risks have high impact on the project and should be given attention. Companies should follow all rules and regulations to minimize this type of risk.

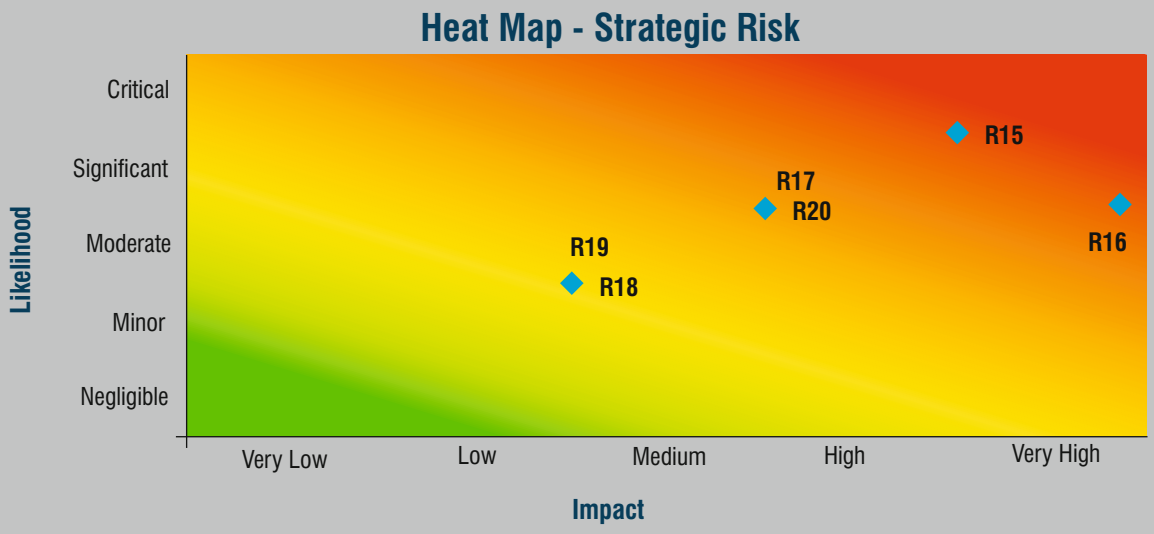


Figure No. 25 – Heat Map - Strategic Risk

From the Heat Map, it can be summarized that almost all sub risks of Strategic risk have high risk score. Overall it can be concluded that Strategic Risk has high level of risks.

4. Financial Risk

Financial risk is any of various types of risk associated with financing, including financial transactions that include company loans in risk of default. Often it is understood to include only downside risk, meaning the potential for financial loss and uncertainty about its extent. Financial Risk is that the company will be unable to meet its financial obligations. Understanding roles of various parties to the transaction as well as contractual, legal, and regulatory requirements, currency and sovereign risks, and other characteristics of these investments can be a hurdle for lenders and investors. Companies experience financial difficulties that would impact its ability to operate and manage the system. Financial risk identification as well as assessment process can be denoted as in the following flow chart.

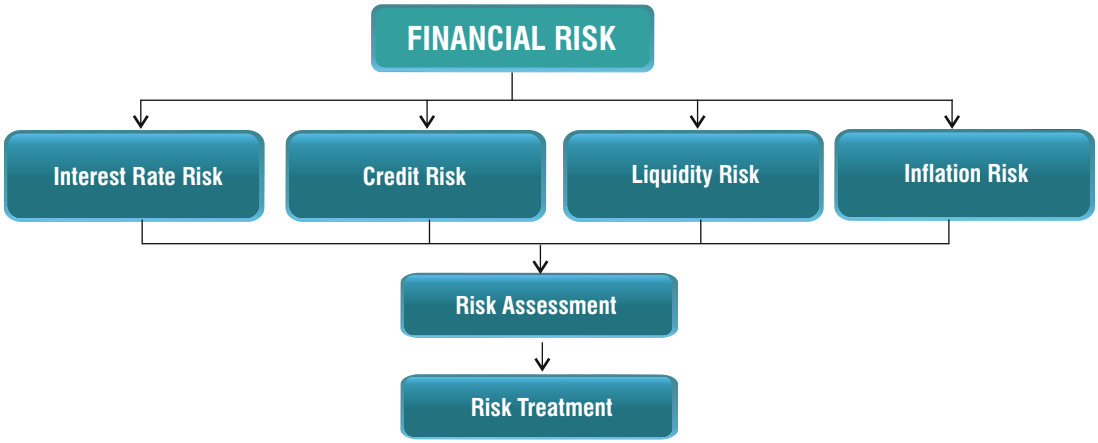


Figure No. 26 – Financial Risk

4.1 Interest Rate Risk

The interest rate risk is the risk that an investment's value will change due to a change in the absolute level of interest rates. Interest rate risk accounts for approximately 90% of the risk involved with fixed income investing, according to research by BARRA International.

Risk Identification

1. The interest rate risk is the risk that an investment's value will change due to a change in the absolute level of interest rates.

2. Interest rate risk accounts for approximately 90% of the risk involved with fixed income investing, according to research by BARRA International.

3. When the interest rate is low, lending by banking system becomes a bit cheaper, leading to a fall in EMI, thereby providing a boost to industry and economy in overall.

4. When interest rates increase, it becomes costly for company to borrow money which will force them to use more of their earnings to pay interest on their loans.

Findings from Primary Research:

Risk Score : 08
Risk Level : Medium

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Unlikely'	37%
Risk Occurrence 'Occasional'	36%
IMPACT	
Impact 'Significant'	37%
Impact 'Moderate'	34%

Stakeholders:

1. Risk Owners
a) Top Management
b) Project Head
c) Finance Manager

2. Risk contributors
a) Monetary Policy of RBI
b) Bank

Decision Roadmap with Critical Factors

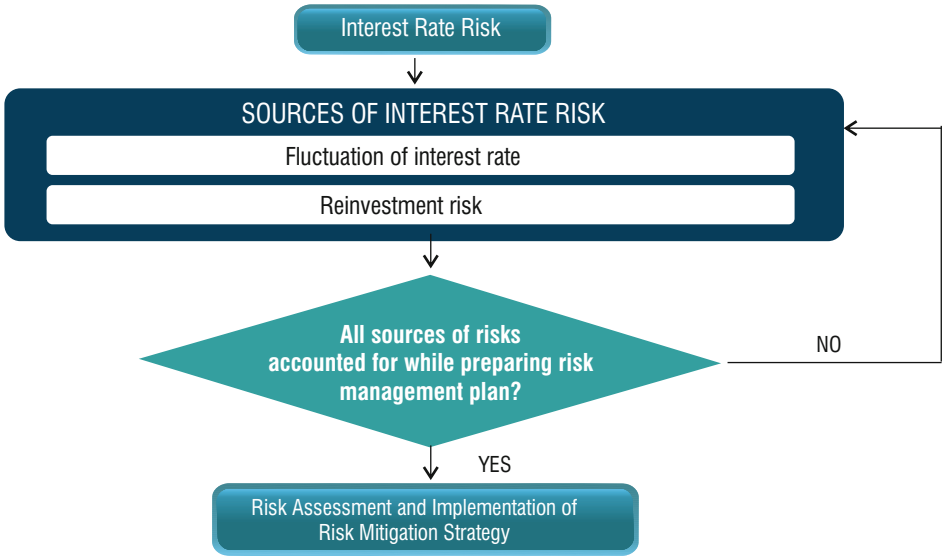


Figure No. 27 – Decision Roadmap of Interest Rate Risk

4.2 Credit Risk

A credit risk is the risk of default on a debt that may arise from a borrower failing to make required payments. In the first resort, the risk is that of the lender and includes lost principal and interest, disruption to cash flows, and increased collection costs. The loss may be complete or partial. In an efficient market, higher levels of credit risk will be associated with higher borrowing costs. Due to this, measures of borrowing costs such as yield spreads can be used to infer credit risk levels based on assessments by market participants.

Risk Identification

1. Credit risk arises because borrowers expect to use future cash flows to pay current debts; it's almost never possible to ensure that borrowers will definitely have funds to repay their debts.

2. In case of higher level of perceived credit risk, investors / lenders demand higher rate of interest for capital.
50

3. If debtors delay or default on payment to the company it will lead to credit risk.

Findings from Primary Research:

Risk Score : 08
Risk Level : Medium

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Unlikely'	32%
Risk Occurrence 'Occasional'	32%
IMPACT	
Impact 'Significant'	25%
Impact 'Moderate'	36%

Stakeholders:

1. Risk Owners
a) Top Management
b) Project Head
c) Finance Manager

2. Risk contributors
a) Debtors

Decision Roadmap with Critical Factors

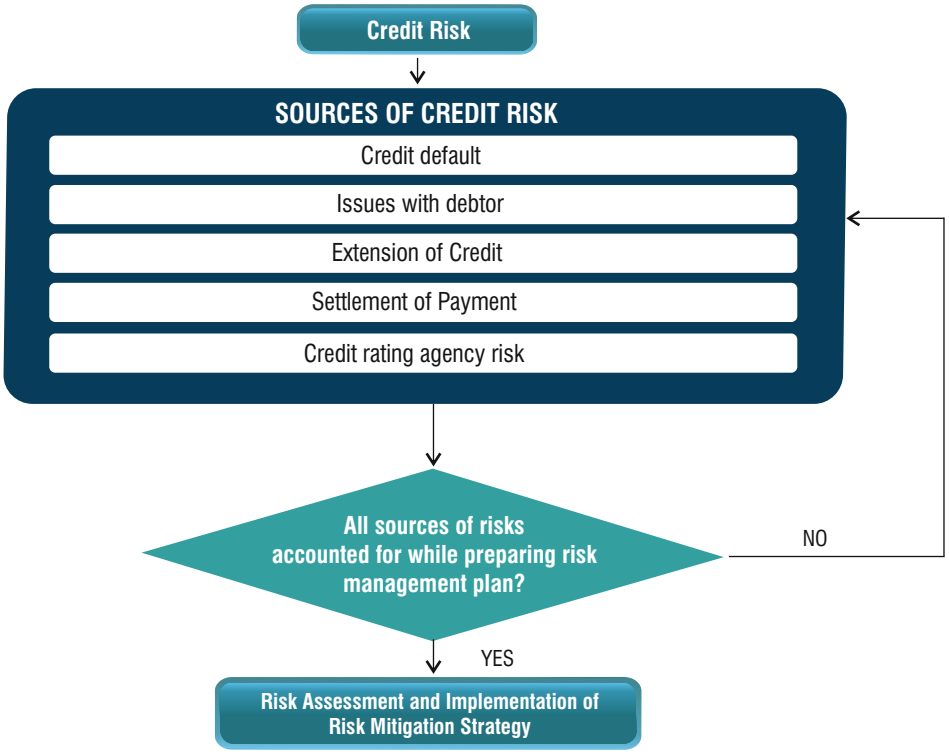


Figure No. 28 – Decision Roadmap of Credit Risk

4.3 Liquidity Risk

Liquidity risk is the risk to an institution's financial condition or safety and soundness arising from its inability (whether real or perceived) to meet its contractual obligations. The primary role of liquidity-risk management is to (1) prospectively assess the need for funds to meet obligations and (2) ensure the availability of cash or collateral to fulfill those needs at the appropriate time by coordinating the various sources of funds available to the institution under normal and stressed conditions.

Risk Identification

1. Liquidity risk is the risk that a company may be unable to meet short term financial demands.

2. Liquidity risk generally arises when a business or individual with immediate cash needs holds a valuable asset that it cannot trade or sell at market value due to lack of buyers, or due to an inefficient market where it is difficult to bring buyers and sellers together.

3. If a business has too much liquidity risk, it must sell assets, bring in additional revenue or find another method of shrinking the difference between available cash and debt obligations.

4. Companies that have higher liquidity risks are more likely to face default and receive poor credit ratings.

Findings from Primary Research:

Risk Score : 08
Risk Level : Medium

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Unlikely'	34%
Risk Occurrence 'Occasional'	31%
IMPACT	
Impact 'Significant'	33%
Impact 'Moderate'	38%

Stakeholders:

1. Risk Owners
a) Top Management
b) Project Head
c) Finance Manager

2. Risk contributors
a) Debtors
b) Banks (Policies related to loan)

Decision Roadmap with Critical Factors

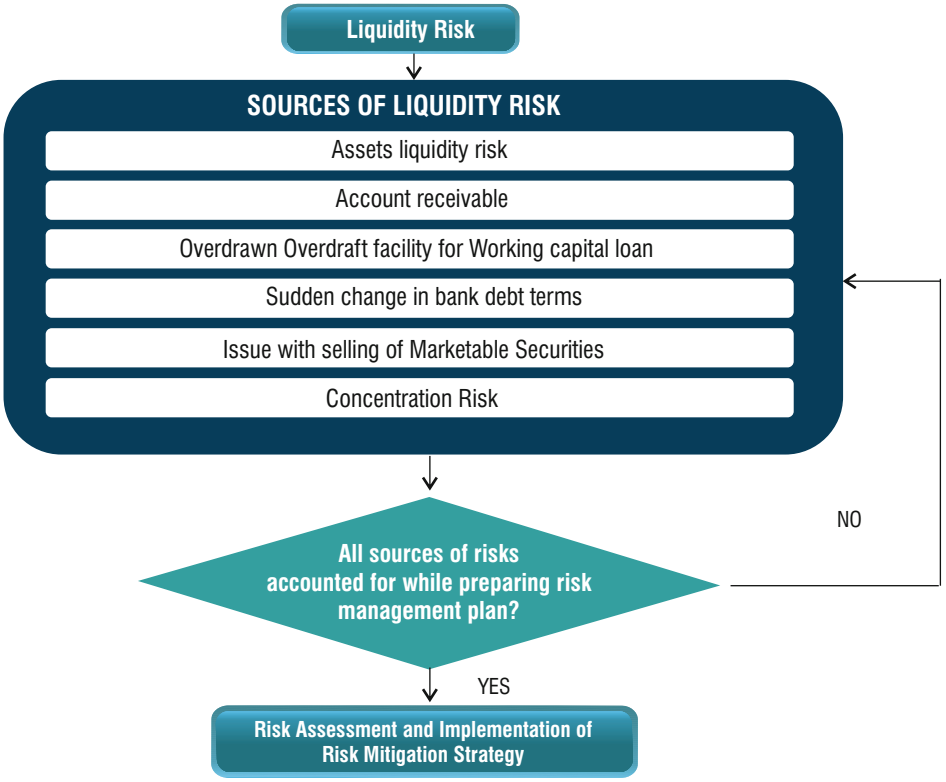


Figure No. 29 – Decision Roadmap of Liquidity Risk

4.4 Inflation Risk

The risk that the rate of inflation will exceed the rate of return on an investment. This is the risk that inflation will undermine the performance of investment. Also called as purchasing power risk, is the chance that cash flows from an investment won't be worth as much in future because of changes in purchasing power.

Risk Identification

1. Inflation risk, also called purchasing power risk, is the chance that the cash flows from an investment won't be worth as much in the future because of changes in purchasing power due to inflation.

2. The most straightforward policy approach to lower inflation is to adopt a tighter monetary policy supplemented by a tight fiscal policy, which calls for fiscal-monetary coordination.

3. Close coordination between fiscal and monetary policy is critical to maintain financial stability, the absence of which can lead to higher-than-desired interest rates, pressures on exchange rates, and rising inflation, all of which can impact growth and the effectiveness of the policies.

Findings from Primary Research

Risk Score : 08
Risk Level : Medium

Significant Finding:

Criterion	Percentage of Respondents
LIKELIHOOD	
Risk Occurrence 'Likely'	41%
Risk Occurrence 'Occasional'	35%
IMPACT	
Impact 'Significant'	40%
Impact 'Moderate'	30%

Stakeholders:

1. Risk Owners
a) Top Management
b) Project Head
c) Finance Manager

2. Risk contributors
a) RBI Policy
b) International Crude Price

Decision Roadmap with Critical Factors

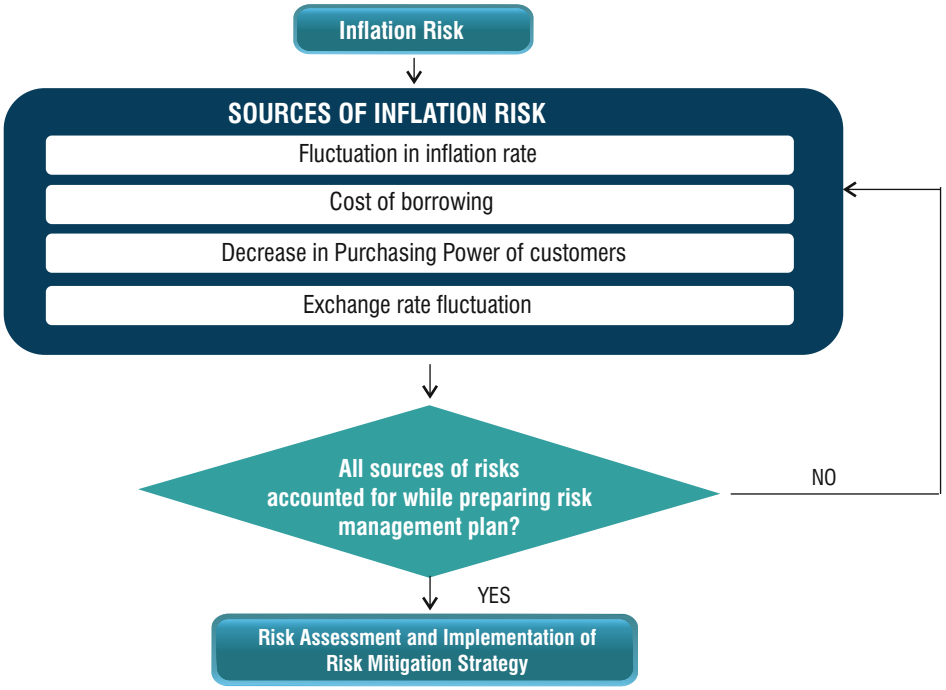


Figure No. 30 – Decision Roadmap of Inflation Risk

Conclusion

Financial risk is one of the high-priority risk types for every business. The following table illustrates the risk scores and their criticality basing on the outcome of the primary research conducted for this toolkit. However risk perception varies from organization to organization and individual businesses may use the MS-Excel tools provided along with this toolkit to change their perception scores and take decision accordingly.

Financial Risk	Risk	Likelihood	Impact	Risk Score	Risk Level	Impact of Risk on Schedule	Impact of Risk on Cost
Interest Rate Risk	R21	2	4	8	Medium	Delays/anticipation between 6 to 12 months	10% - 20% increase in budget
Credit Risk	R22	2	4	8	Medium	Delays/anticipation between 6 to 12 months	10% - 20% increase in budget
Liquidity Risk	R23	2	4	8	Medium	Delays/anticipation between 6 to 12 months	10% - 20% increase in budget
Inflation Risk	R24	3	4	12	High	Delays/anticipation between 12 to 18 months	20% - 40% increase in budget
Average Financial Risk	**R25**	**2**	**4**	**9**	**Medium**	**Delays/anticipation between 6 to 12 months**	**10% - 20% increase in budget**

Table No. 6 – Financial Risk Assessment

From the above table we can conclude that financial risk has medium level of risk and moderate impact on project schedule and cost, whereas the likelihood and impact of all the sub risks is almost similar to one another.

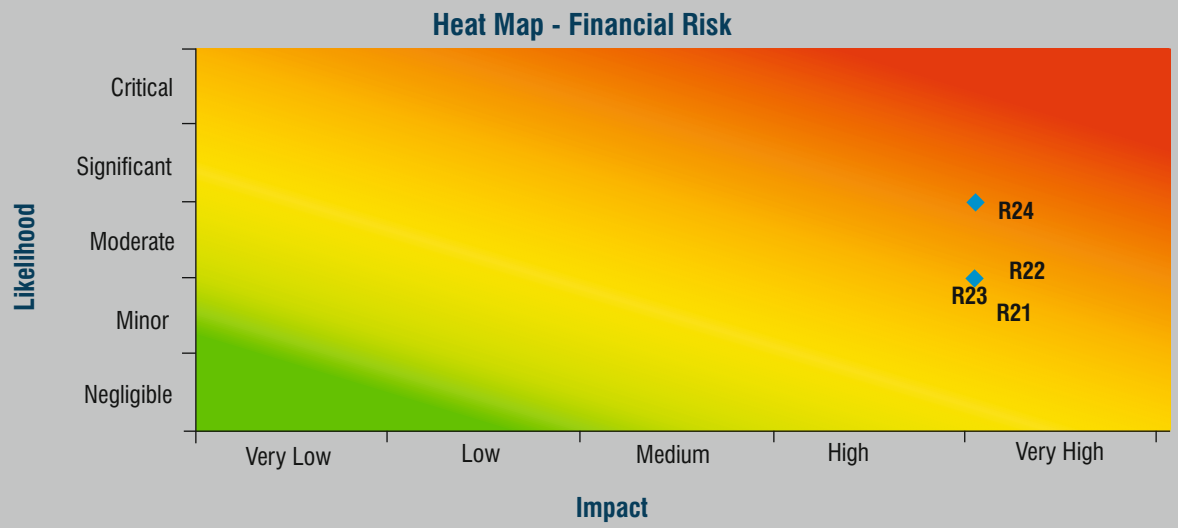


Figure No. 31 – Financial Risk Heat Map

From the Heat Map, it appears that all the sub risks of financial risk have high risk score. Also collectively after comparing the data from Risk matrix, we can conclude that financial risk has moderate impact.

SECTION – III

1. Risk Management
2. Special Notes for Policy Makers

1. Risk Management

In general, this risk refers to the likelihood of an event that could cause undesirable effect. These events may be predictable or not, controllable or not, and may have been caused by internal or external variables. Risk is a spectrum, and for this reason, identical events may be deemed more or less risky based on the eye of the beholder. In short, risk is relative. While the existence of risk is objective, the choices one makes in the face of that risk are profoundly between 'risk culture' and 'risk management'. Risk culture refers to the concept of risk as a subjective choice. Risk culture speaks about an organization's willingness to take certain risks. In contrast, risk management speaks about the objective existence of risk, regardless of one's appetite or tolerance for taking it. Risk management, therefore, is solely concerned with the prevention of undesirable or harmful consequences in the face of existing risks. In both risk culture and risk management, there is no such thing as zero risk.

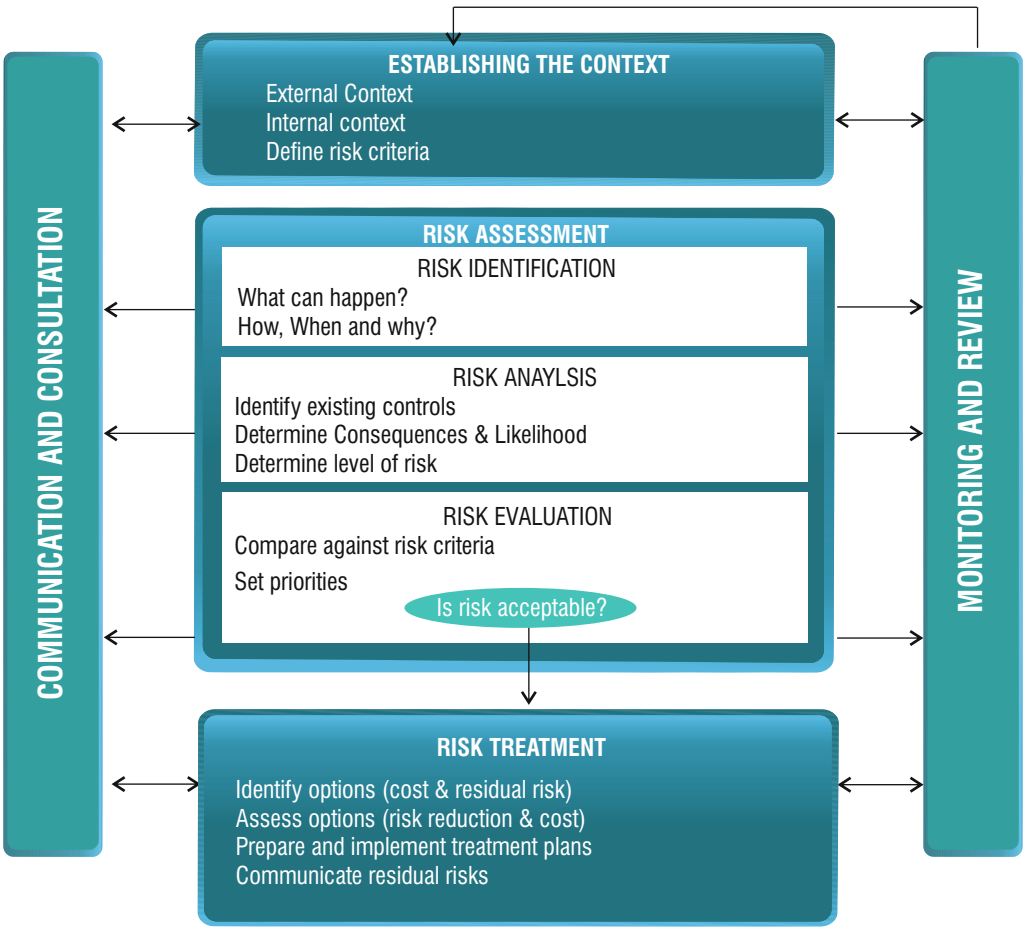


Figure No. 32 – Risk Assessment Process

The Risk Management Process is a systematic application of management policies, procedures and practices to the tasks of establishing the context, identifying, analyzing, assessing, treating, monitoring and communicating. Generally, this involves reviewing operations of the organization, identifying potential threats to the organization and the likelihood of their occurrence, and then taking appropriate actions to address the most likely threats.

Typical Risk Management Approaches

Step 1: Establishing the Context

Establishing the context defines the scope for the risk management process and sets the criteria against which the risks will be assessed. In establishing the context, the organization articulates its objectives, defines the external and internal parameters to be taken into account when managing the risk, and sets the scope and risk criteria for the remaining progress.

Step 2: Risk Identification

Risk Identification is the process of determining risks that could potentially prevent the enterprise from achieving its objectives. It includes documenting and communicating the concern. Risks can be identified by finding the answer to a basic question.

Step 3: Risk Analysis

Once risks are identified the likelihood and consequence of each risk is determined. An understanding of the nature of the risk and its potential to affect project goals and objectives is developed. This information is recorded in a Risk Register and a risk score is calculated based on the likelihood and impact of the identified risks.

Step 4: Risk Evaluation

Evaluation or ranking of a risk is done by determining the risk level/risk score, which is the combination of likelihood and consequence. The decisions about the risk are then made depending on whether the risk is acceptable or whether it is serious enough to warrant treatment. The risk level is also recorded in the Risk Register.

Step 5: Risk Treatment / Mitigation

This is also referred to as Risk Response Planning. During this step the organization assesses the high ranking risks and sets out a plan to treat these risks so that acceptable risk levels are achieved. Risk mitigation strategies are created, preventive plans and contingency plans are also executed during this step.

Step 6: Monitoring & Reviewing the Risk

Monitoring and Reviewing is a cardinal and integral step in the process of managing risk. It is necessary to monitor risks, the effectiveness of any plans, strategies and management systems that have been established to control implementation of risk management actions. In this step, the organization uses the Risk Register to continuously monitor, track and review risks.

Step 7: Communication & Consultation

This is a 'continual and iterative process' that an organization conducts to provide, share or obtain information and to engage in dialogue with stakeholders regarding the management of risk. The Company should ensure that specific issues are promptly communicated and followed up appropriately. Every employee of the organization has the onus of identifying and communicating the risks to appropriate levels within the company.

The Risk Management Process is a systematic application of management policies, procedures and practices to the tasks of establishing the context, identifying, analyzing, assessing, treating, monitoring and communicating.

Risk Participants

Risk Participant	Responsibilities
Board of Directors	• Approving the risk management policy • Reviewing and approving risk management process and provide inputs to executive management • Setting Risk Appetite for the Company
Risk Management Steering Committee (RMSC)	• Leading the Risk management initiative within the company • Setting standards for risk documentation and monitoring • Recommending training programs for staff with specific risk management responsibilities • Reviewing and approving the risk management report including selection of critical risks to be put before the Board
Chief Risk Officer (CRO)	• Implementing the initiative across the entire company/organization. • Liaising with the Risk Coordinators to coordinate the flow of information and escalating the key risk issues/concerns between the RMSC and Risk Coordinators • Ensuring that meetings of the RMSC are held regularly • Presenting relevant documents to the BoD of the Company.
Risk Coordinators (RC)	• Liaising with Risk Owners to coordinate flow of information and escalation of key risk issues / concerns between RMC and Risk owners • Preparing and maintaining relevant documentation and submitting the same to CRO
Risk Owners (RO)	• Ensuring implementation of suitable risk mitigation plan keeping in mind the current controls mechanism in place, proposed mitigation measures and organizational priorities • Ensuring that the risk profiles are filled and key risks are escalated to the CRO/RMSC for their approval of proposed mitigation plan • Ensuring that the approved plans are implemented within the target timeframes and reported regularly
Employees	• Assisting in complying with risk management policy • Responsible for identifying and escalating risks to the next level • Exercising reasonable care to prevent loss, to maximize opportunity and ensuring that all the operations, reputation and assets are not adversely affected.
Internal Audit	• Developing a risk-based internal audit program • Auditing the risk processes across the organization • Receiving and providing assurance on the management of risk • Reporting on the efficiency and effectiveness of internal controls

Table No. 7 – Risk Participants

Risk Mitigation

RISK	RISK MITIGATION MEASURE
	1. MARKET ENTRY RISK
1.1 Political Environment Risk	1. Insurance for this risk comes at quite a cost but can be used as a fail-safe along with other measures 2. Dealing with risks on ongoing basis while keeping a watch on areas where risk occurs incessantly 3. Organizations should understand micro & macro-economics of country 4. Partnering with local company that understands political risk environment in India; can be advantageous 5. Diversifying political risk by opening business centers in different geographical regions in India
1.2 Government Policies for Ease of Doing Business	1. Engaging Indian Legal and chartered accountancy firms for compliance and availing permissions 2. Pertinent to tender out 'availing permits and various permissions' to legible third party for availing the said ones as required. 3. Planning to minimize the time required for adopting the policy changes in the business.
1.3 Market Condition	1. For surveys, Indian researchers or Indian research firms should preferably be engaged, as they will, most certainly, have more understanding of local market conditions 2. Company should discern the customer base and its buying power 3. Competitor analysis to apprehend competitor's products/services, market strategy is essential. 4. Developing a price strategy that is competitive 5. Managing high risk areas through innovative solutions 6. Engaging actuaries for understanding & mitigating the financial impact on the organization 7. Adequate R & D activities for developing innovative products & services

RISK	RISK MITIGATION MEASURE
1.4 Collaboration and Partnership Risk	1. International organizations should ideally have a tie-up/collaboration with an established Indian brand that doesn't have any established political links 2. For the Joint Venture, new policies should be devised by both companies keeping in mind that they are not adversely impacting the employees of both the organizations involved 3. Joint Introduction & training sessions should be an absolute must for the employees of both the organizations for providing opportunities to them to develop camaraderie amongst each other 4. Companies in the JV should have common strategies pertaining to implementation of project 5. Change process should be formalized to guide employees through transition 6. Keeping employees in confidence is paramount; therefore communication channels should be kept open with employees regarding JV & collaboration 7. Conducting brainstorming sessions to prepare robust and realistic strategies 8. Establishing culture and values at the beginning of the process

RISK	RISK MITIGATION MEASURE
	2. OPERATIONAL RISK
2.1 Pre-Operative Risk	1. Only If 80% of land is acquired by Government or private firm; the project should get started. 2. Due diligence process should be conducted as per United Nations guiding principles on Business & Human Rights 3. Procuring or designing in such a way that land required/procured for the project is litigation free 4. Use of better quality raw material & products 5. Proper financial planning, which will provide financing at every stage of project.
2.2 Procurement and Vendor Risk	1. Company should always have alternate suppliers for every material & product 2. The financial status of the company & vendors with whom the organization is desirous to do business; should be thoroughly verified/checked/assessed 3. Developing list of order qualifiers 4. Procurement strategy & process should be in line with government norms & international practices 5. The project plan should include a detailed checklist pertaining to the requirement of raw material & all other required products and services
2.3 Internal Fraud Risk	1. Strict legal action should be taken for all internal frauds in company 2. Proper screening of employees via due diligence & background checks 3. Implementing fraud risk management strategies and effective anti-fraud technology 4. Anti-fraud/ethics training to employees at regular intervals

RISK	RISK MITIGATION MEASURE
2.4 Construction Phase Risk	1. Business should develop a mechanism for centralized storage of data so that it becomes uncomplicated and trouble free for others during construction of their site 2. Appoint some peer review consultants who can cross verify and suggest improvements 3. Same quality substitute material can be used for project, with relevant approvals from all concerned authorities. This might help in reducing cost of project. 4. Companies should study customers/needs/buying behaviour, which will avoid adding extra features & increasing cost of the project 5. Using warehousing solutions to avoid impact of fluctuating cost of raw material 6. Considering all possible scenarios while planning
2.5 Logistics Risk	1. Choosing the right suppliers. Also, they must be regularly re-evaluated as business strategies & evaluation parameters often change with time 2. Keeping time on your side. This strategy focuses on compressing global shipping time and cycle time variation so that project doesn't get delayed 3. Using Tools. Organizations can use visibility tools to closely track global shipments and take action whenever and wherever necessary 4. Keeping Reserve inventory so that raw material supply won't get affected due to logistics risk 5. Disaster preparation. This may involve establishing a crisis team that is responsible for making decisions and communicating those decisions throughout the supply chain 6. Forward buying or hedging may also be advantageous

RISK	RISK MITIGATION MEASURE
2.6 Technology Risk	1. Disaster Recovery & Business Continuity Planning (BCP) 2. Security best practices should be implemented at both the physical and infrastructure levels 3. Creating secure online presence, for instance using SSL (secure socket layer) technology for purpose of encryption of data and other information 4. Training new and existing staff in the organization's IT policies, procedures and codes of conduct 5. Business insurance should never be ignored 6. Organization should be aware of the legal and legislative requirements of business owners 7. Companies should follow GDPR (General Data Protection Regulation) even though this regulation is not applicable in India.
2.7 Labour Risk	1. Always sign written contracts with all sub-contractors that include indemnification and hold harmless language, as well as safety language 2. Make sure inexperienced workers have trainings they need, and help keep the workers' skills up to date with ongoing training and mentoring opportunities 3. Offering better pay and benefits/compensation packages 4. Quick and fair dispute resolution mechanism can do wonders for organization growth and harmony 5. Treating employees with respect and creating an environment of mutual trust and assurance 6. The human rights rules & regulations/guidelines as laid down by the Government should be followed
2.8 Geographical Risk	1. Transportation facilities to the workers 2. Accommodation, food and safety of workers specifically need the organizational attention at all times 3. Proper warehouse management 4. Innovative Technologies, utilization and development of environmentally sound technologies is seen as a means to combat the adverse effects of climate change

RISK	RISK MITIGATION MEASURE
	3. STRATEGIC RISK
3.1 Social and Environmental Risk	1. Minimize facility footprint - harmonization of the project design with the natural landscape - erosion, re- vegetation and reforestation 2. Emissions management - use of modern machinery and implementation of appropriate maintenance schedules to ensure operation in accordance with design specifications - Dust, noise and vibration reduction measures leading to compliance with discharge limits - Noise and Vibration Management Plan 3. Company should provide Occupational Health and Safety Management System for its workers. 4. Resettlement and relocation management – including development of compensation schemes, restoration of livelihoods and living standards 5. Appropriate procedures and protocols should be laid down strictly for storage, handling and use of hazardous materials 6. Waste management plans - implementation of appropriate waste identification, segregation and disposal protocols and procedures 7. Community/stakeholder relations management 8. Human resource policies - maximization of local employment 9. Social baseline assessment - ensure appropriate consultation completed during design process
3.2 Compliance Risk	1. At the start of every large infrastructure project SOPs & record maintaining formats should be prepared and followed. 2. Employees should be clearly conveyed organization's principles, polices and trained accordingly. 3. Organization should perform internal audits on regular basis to look for gaps in compliance. 4. There should be a thorough background check to ensure that the third party is qualified and has a healthy and robust reputation as far as business integrity is concerned.

RISK	RISK MITIGATION MEASURE
3.3 Strategic Forecasting Risk	1. Monitoring market trends by communicating with competitors, customers, bankers etc. 2. By using existing processes and technology company can measure outputs of forecasting more efficiently and methodically. 3. Proper estimation and allocation of time to reduce project delays and maintain timeliness. 4. Company should have strategy related to the procurement of materials when the cost escalation is likely. 5. In the currency fluctuation kind of scenario, the price of the goods or services may be escalated reasonably to beat the adverse effects on the profit margins and to secure the organizational coffers.
3.4 Innovation Risk	1. Current Market demand and competitors involved should be analyzed or reviewed to develop an appropriate and circumstantially consistent technology 2. Depending on the target audience pricing and quantity must be decided or fixed 3. New innovations within a specified time should be introduced to avoid stagnation and to keep the brand alive and kicking. This helps in beating the competition from time to time
3.5 Intellectual Property Risk	1. Getting a good IP legal team which can provide an opinion on non-infringement by assessing your position, and advising accordingly on the appropriate action to be taken. 2. Proactively monitoring others in the marketplace and assessing if they are infringing on your IP. 3. IP Insurance policy could provide adequate funds and level the playing field with companies that have significantly greater financial resources than you. 4. Ensuring that all your employees sign a confidentiality agreement for non-disclosure of IP. 5. Create a log that keeps track of every discussion where your intellectual property was revealed.

RISK	RISK MITIGATION MEASURE
	4. FINANCIAL RISK
4.1 Interest Rate Risk	1. Company can retain the risk and try to implement internal procedures for control and prevention of the risk. 2. The risk can be transferred to SPV or to insurance companies who can manage larger risk portfolios against the payment of risk premium. 3. Selling bonds which tend to see their prices fall as yields rise. 4. Companies can purchase futures contracts on government bonds or interest rate futures. 5. Transitioning bond portfolios from long-term to short-term bonds, like high yield, or floating rate bonds.
4.2 Credit Risk	1. Loan requirements should be included in the agreement intended to help lender minimize construction risk. 2. Lenders may request monthly updates on potential future cost escalation and schedules. 3. Following all notices and recording timelines 4. Not performing any services prior to gaining a complete understanding of the status and assuring compliance with notice requirements. 5. Before initiating any financial analysis, understanding the reason for debtor borrowing money. 6. One should know how the requested funds are going to be used and how they are anticipated to be repaid.

RISK	RISK MITIGATION MEASURE
4.3 Liquidity Risk	1. Minimizing debt. Borrowing only as much as needed to cover short-term debt and making plans to sell off investments in the future is a cardinal rule 2. There should be a clear understanding of time horizon to make the most effective investments that will limit organizational liquidity risk. 3. Keeping enough of assets liquid to cover short-term obligations. 4. Maintaining a sufficient liquidity buffer in form of cash or liquid assets that is readily available. 5. Continual monitoring of the expected cash flows of the organization/entity and comparing said cash flows against the annual operating budget.
4.4 Inflation Risk	1. Avoiding a concentration of Long-Term Bonds in Portfolio as most long term bonds have fixed coupon rate. 2. Company can increase the pricing of the products or services. 3. For minimizing risk of economic uncertainty company can start construction process quickly. 4. Pre-ordering of raw materials to avoid delays and unwanted loss by conducting proper estimation. 5. Using the contractors savvy with minimizing the cost of materials.

2. Special Notes for Policy Makers

2.1 Market Entry Risk in India

Political Risk

1. Creating Zone wise development indexes and projects to be taken up depending on the index.

2. For large infrastructure projects, creation of a separate approval body that has all necessary powers

3. Investing significant amount in infrastructure projects which raises the confidence/credence of foreign investors

4. Insurance against Political Risk should be considered

Ease of Doing Business

1. Standard approval process for every infrastructure project can be introduced with single window system.

2. Digitizing the maps and records such as that of sewage, telecom, drinking water, electric etc.

Market Condition

1. Government should consider controlling price competition as it leads to sub-standard delivery many a times.

2. Tax benefits and/or other benefits/lucrative packages shouldn't be given to international companies for the sake of keeping infrastructure sector competitive.

Collaboration and Partnership Risk

1. Encouraging international companies to conduct thorough back-ground check of companies by providing required data.

2.2 Operational Risk

Pre-Operative Risk

1. Government should consider introducing new mechanisms to decide market value before announcing the project to avoid any sudden increase in land pricing.

2. Enhanced compensation should be given to the original owner to bring down speculative pricing if land is bought by someone after the project announcement.

3. If 80% of the land is acquired by Government or private firm; the project should get started to avoid project delay

4. Government should procure or identify the property that is litigation free before proposing RFP

5. Government should have master planning team which at the start or planning stage of the project should identify areas which may be grey or may go wrong

6. Government/company should have rehabilitation plan for people whose land will be acquired for the project

7. Government should perform due diligence in order to examine or determine environmental site conditions.

Procurement and Vendor Risk

1. Government should consider launching an online portal where all the Government departments and PSUs can enlist blacklisted vendors for the ready reckoner purpose

2. Government may have many empanelled vendors to fast-track the procurement process.

Internal Fraud Risk

1. Providing annual training on current trends and company policies, practices and procedures associated with fraud and internal controls.

2. Conducting regular inspections of materials and project site as many contractors use low quality products or raw materials.

3. Thorough and systematic auditing process to keep an eye on inflated and false bills for goods and services submitted by contractors

Construction Phase Risk

1. Appointing some peer review consultants who can cross verify and suggest improvements from time to time

2. Developing a robust mechanism for centralized storage of data

3. Properly examining and considering all scenarios before executing/implementing the project.

Logistics Risk

1. Providing warehousing options to companies to resolve the concerns pertaining to the unavailability of material and fluctuation in prices.

2. Developing efficient logistics solutions, so that material can reach the project site on time.

3. Providing effective shipping solutions for material imported from foreign countries

Technology Risk

1. Providing assistance for transfer of technology from international countries to India.

2. There should be a clear disaster recovery and business continuity plan to protect systems and overall business from succumbing to an outage or disruption.

3. Strict and enforceable policies should be adhered to regarding access control and information security management

Labour Risk

1. A well planned mechanism for skill development or training of workers to improve work efficiency

2. Mandatory training and mentoring opportunities for new and old employees to work efficiently

Geographical Risk

1. Government is expected to maintain law and order in the area in which the project shall be executed.

2. Providing transportation facilities to the workers so that they are readily available for work in any of the site areas/locations

2.3 Strategic Risk

Social and Environmental Risk

1. Providing sewage and drainage lines to the completed project with all the necessary approvals

2. Government may consider formulating a policy on reuse of construction waste material

3. Conducting proper survey and tests to approve projects to avoid issues/hindrances faced by the contractors

4. Strong focus on erosion, re-vegetation and reforestation is the need of hour and cannot be overlooked

5. Government should review waste management plan for every infrastructure project

Compliance Risk

1. A noticeable mention in the RFP that SOPs need to be compulsorily prepared for project, followed by a quarterly review regarding its implementation

2. Third party reviewing implementation of various laws and regulations should be made mandatory to avoid major non-compliance issues arising in future

Strategic Forecasting Risk

1. Reviewing Feasibility Studies for project as a number of times it has been observed that data available in feasibility study for Project site does not match and appears to be inconsistent/ incoherent

Innovation Risk

1. Government should review and check feasibility in implementation and use of current and advanced technology in India

Intellectual Property Risk

1. Government should have a reasonable policy to protect intellectual property rights of companies working in India.

2.4 Financial risk

Interest Rate Risk, Credit Risk, Liquidity Risk and Inflation Risk

1. Government should have strong macro-economic policy to control interest rate risk, Liquidity risk, credit risk and Inflation risk in the country

Summing It Up

Although the Toolkit alone cannot answer all questions regarding risks arising out of a particular project, it can certainly cover the common set of risk factors that occur frequently in businesses operating in this Sector in India, and provide a strong base for effective risk management mechanism for such businesses while also serving as a helping mechanism for the policy makers to facilitate business growth in this sector. The Toolkit has been developed specifically for people with some training or awareness of the principles of risk assessment and are responsible for conducting risk assessments and taking decisions management of the related risks.

The Toolkit has been developed recognising that complementary initiatives are under way within UNGC and other international organizations. It includes interactive tools intended to enable the use of risk-based approaches for prioritizing and managing existing risks. The Toolkit is intended to facilitate interactions and transfer of knowledge between networks of people involved in the management of businesses and related functional areas within the organization while also supporting the decision making framework of Government decision makers and/or Policy advisors.

The findings from the primary research related to risk distribution in infrastructure sector can be summarized as follows:

1. The pie-chart illustrates the percentage of different types of major risks in terms of how they affect the success of businesses in infrastructure sector

2. The risk percentage is calculated by dividing individual risk score with the average of all the sub risks

3. It can safely be inferred that Operational Risk has maximum risk score in terms of impact and likelihood of occurrence, hence it remains as one of the most key concern areas for businesses

4. Strategic Risk and Market Entry Risk have almost similar risk score

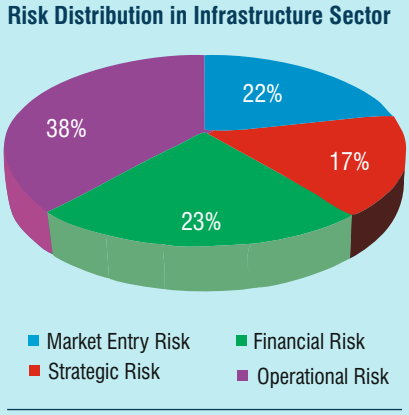


Figure No. 33 – Risk Distribution

5. Financial Risk seems to have the minimum risk score even though its impact is more but its likelihood of occurrence is less

Inferences that can be drawn from the whole risk assessment exercise that covers four major risks in Infrastructure sector can be listed as follows:

- Market Entry Risk, Operational Risk, Strategic risk are 'high' in nature with significant impact on schedule and cost of project

- Financial risk is 'medium' in nature with moderate impact on schedule and cost

The Toolkit is intended to facilitate interactions and transfer of knowledge between networks of people involved in the management of businesses and related functional areas within the organization and also the entire decision-making framework of Government decision makers and/or Policy advisors

Annexures

Annexure 1: Case Studies
Annexure 2: Ramifications of Risks on Projects
Annexure 3: Questionnaire for Risk Assessment Toolkit
Annexure 4: Risk Management MS-Excel Toolkit Usage

ANNEXURE - 1

Case Studies

1. Bangalore Metro (Namma Metro)

The Bangalore Metro project, popularly known as 'Namma Metro', is being implemented by the Bangalore Metro Rail Corporation Limited (BMRCL) – a joint venture of the Government of India and the Government of Karnataka. The BMRCL is a Special Purpose Vehicle entrusted with the responsibility of implementing the Bangalore Metro Rail Project. Bangalore metro phase two is still under construction and is expected to reach completion by 2021.

Current Status: Partially Operational

RISK	ASSESSMENT	MITIGATING MEASURE
Environmental and Social: High social impact and re-settlement and rehabilitation activities. About 838 house-holds (126 residential and 712 commercial house-holds) are expected to be affected. Need to revise resettlement allowances in the RPF with reference to national standards in a timely manner. Area specific environmental impacts.	High	RPF to be complemented by a series of RAPs. The Bank and the EIB will closely monitor the application of the RPF, preparation of the RAPs and their implementation. BMRCL, with support of the GoK, has agreed to revise the resettlement allowances prior to signing of the Loan and Project Agreements. Environmental and social mitigation and monitoring measures will be included in the ESMP.
Project Implementation: Long stretch of underground tunneling and hard rock ground condition.	Low	A total of 12 TBMs will be deployed to expedite the tunneling and mitigate un-foreseen risks, such as breakdown of a TBM or encountering hard rocks. In addition, geotechnical investigations and surveys were carried out every 25 km along the corridor. The high number of TBMs for the short length of tunneling and the intensive ground survey will mitigate the risk.
Project Implementation: Timely execution of the Project	High	Phase I project implementation was delayed for both the elevated and under-ground sections. BMRCL has formulated the Phase II execution plan based on lessons from Phase I. However, the Project implementation period planned by BMRCL is too optimistic. Therefore, the Bank considers that the implementation period will be longer. The Bank will monitor implementation progress through BMRCL's progress report, the Bank consultant's report and supervision missions.
Financial risks: Project cost overrun due to higher land acquisition cost than estimated.	Low	As per the MoU, the GoK will provide the required contribution for any cost escalations in the Project (the land price escalation was entirely financed by the GoK for Phase I). The GoK will also extend structural support to BMRCL to ensure financial buoyancy. In addition, the land acquisition and RandR cost has been estimated conservatively in comparison to Phase I.

2. Tiruchi Bypass

The project motive was to build a bypass road connecting the Tiruchi-Madurai, Tiruchi-Dindigul, and Tiruchi-Karur national highways. The road was to run from Panchapur on the NH45 via Thayanur to Jeeyapuram on NH 67 and being executed on Build Operate and Transfer (BOT) basis.

Current status - Ongoing

RISK	ASSESSMENT	ISSUE
Technical Risk	High	Initially the project was taken up for widening of NH67 and designed accordingly which further led to social risk. Later an alternative elevated structure which will not affect the irrigation sources to solve the issue was proposed.
Environmental and Social Risk:	High	The farmers alleged that laying the road across the tanks would affect irrigation and their livelihood. This led to a petition signed by farmers that led to delay in the project.

3. Chennai Port - Maduravoyal Corridor

The Chennai Port-Maduravoyal Expressway is a 19-kilometre long, six lane, elevated expressway under construction in the city of Chennai, India. The corridor begins at Chennai Port Gate No. 10 and travels along the bank of the Cooum River till it reaches Koyambedu and along the median of NH4 thereon till it reaches Maduravoyal.

Current status- Ongoing

RISK	ASSESSMENT	ISSUE
Political Risk	High	The project was scrapped by the ruling party because it was initiated by the previous regime.
Technical Risk	High	There was alignment conflict between the National Highway Authority of India (NHAI) and the Water Resources Department. It was suggested to take the alignment to the edge of Cooum River than the bed itself which was earlier objected by the state.
Pre-operative Risk	High	There is a need to acquire 1.47 hectares of private land which was not acquired as the government did not release funds. As a result, compensation has to be paid now as per the new Land Acquisition Act, which could cost the exchequer dearly.

4. Sterlite Copper Project - Tuticorin, Tamil Nadu

Vedanta's Sterlite Copper plant is a business unit of Vedanta Limited with copper production capacity of 4 lakh tones in year. Continuous protest of public for more than 100 days against existing and planned expansion in capacity which was causing environmental damage to surrounding area, Tamil Nadu goverment has ordered complete close-down of plant.

Current Status: Long Term Shut Down (because of Environmental Impact)

RISK	ASSESSMENT	ISSUES IN PROJECT
Environmental and Social Risk:	High	Ministry of environment and Tamil Nadu Pollution control board (TNPCB) gave approval without Environmental Impact Assessment in 1995. Sterlite violated set approved limit from TNPCB for production, operating at higher capacity causing more environmental damage. A massive gas leak that occurred twice in single day affected 10,000 people in surrounding area High level of iron, arsenic, cadmium, and nickel, all toxic elements, were found in soil surrounding plant Sulphur and cadmium found in water indicating that company had contaminated water in surrounding area making the water unfit for human consumption and agriculture
Political Risk	High	People have protested against project from start of project with support from local political leaders From inception of project various government has given all necessary approvals going beyond the law. Increase in plant capacity from to double its production and 160 MW thermal power plant was approved by government amid protest from public

ANNEXURE - 2

Ramifications of Risks on Projects

1. Market Entry Risk in India

Political Environment in Country

a) Delay and cost overrun in most of the infrastructure projects under implementation and in planning stage

b) Loss of revenue for businesses due to policy changes

c) Economy of country gets affected due to sudden and frequent changes in policies

d) Cautious or wait and watch approach of investors while investing in projects

e) Non-implementation of decisions taken by preceding Government

f) Change in design of project as per new Government requirement

g) Political leaders influence people against some projects. They instill fear regarding project for their own gain

h) Non-payment of project or work done by contractor when Government changes

I) Service users might have to pay extra due to non-existent policy or delay in formulation of new policy.

j) Corrupt practices by Government officials as well as various political parties which affects quality of delivery

Government Policies for ease of doing business

a) Absence of Single window system for major projects hampers schedule and cost of project.

b) Delay in procedures to legally start and operate the company

c) Time and cost required to complete each procedure

d) Tax rate on companies affects profitability

e) Credit availability to business in India, time required to complete process

f) Procedures to legally transfer title on immovable property and time required to complete the process

Market Condition

a) Affects companies' future plans; company may possibly run into losses at early stage of operations

b) Lower estimations for market potential and growth rate also finds company lagging behind in production and services to be provided

c) Potential for reduced revenue due to competition in market

d) Cost for growth of company keeps rising

e) Competition in market leads to mergers

f) Decline in revenue of company due to change in consumers' ability to spend

g) Sudden increase in consumer base puts pressure on company's resources for operation

h) Supply, demand and pricing of product affects operating cost and profit of company

Collaboration and partnership risk

a) Loss of autonomy while taking decisions

b) Time required to take decisions increases significantly that leads to increase in cost

c) Resource management for new and existing project gets affected

d) Employees on both sides are reluctant to work with each other

e) Impact on client handling as both companies can have different strategies

f) Implementation of project gets affected due to difference in decision making processes, culture, operation strategy, marketing strategy and HR strategy

g) Loss of revenue, blemished brand image, damaged brand association

h) Conflict of interest affects legal proceedings, legal biding

2. Operational Risk

Pre-operative Risk

a) If compensation and benefits given by Government are not acceptable to land owners, they will be against giving up their land and also may protest against Government

b) Delay in project implementation schedule may occur as a small portion of the total land to be acquired could not get acquired due to the protests

c) Delay in project implementation schedule, increases the cost, that results in revenue loss as the project is pushed/completed behind schedule

d) Improper Scheduling of project causes delay in project, failure in strategy, cost overrun, total abandonment of project as well as financing issues

e) Environmental protest erupts in case the project doesn't follow environmental norms of the Government. This leads to the time delay and financial losses to company

f) If sufficient finance is not secured for all phases, project gets delayed and cost for project execution keeps increasing

Procurement and Vendor Risk

a) Delay in project implementation schedule and financial losses

b) Shortage of raw material for construction of project

c) High cost of raw material due to wrong procurement method and unavailability in market

d) Unavailability of funds due to understatement or overstatement of project needs

e) No competition for project bids, which eliminates many competent organizations that are capable of executing the project

f) More spending on raw material due to narrow definition and specification of material

g) Use of sub-standard quality of product for project

Internal Fraud Risk

a) Company with low technical skill may get selected for executing project, which can affect quality of work done.

b) Legal enquiry by independent Government agencies may halt the progress of project and may delay the project indefinitely

c) Government ends up paying much more for goods and services than actual work carried out; due to inflated bills invoices submission

d) Project gets stalled due to internal fraud inquiry by various agencies

e) Increase in overall budget of project as material and equipment are used for personal use

f) Safety of people gets risked and maintenance cost increases due to use of sub-standard use of raw material

g) Quality of work done gets affected due to lack of knowledge by employee

h) Data breach affects value of company in share market and brand image. This affects future project of company

i) If project fails due to wrong design, calculation or expert advisory; the organization may face major financial losses as well as legal actions

j) Banking data as well as employees' personal data gets risked that may be used adversely

Construction Phase Risk

a) If changes in design takes time, it may lead to increase in cost of project and further delays

b) If these approvals are not given in prescribed time, project gets delayed

c) Financial fines and legal actions if any accident occurs due to wrong selection and use of material

d) Any change in material and labour cost adversely impacts the operating and production cost of the project

Logistics Risk

a) Health and safety of workers will be at high risk

b) Delay in project schedule as well as increase in cost of project.

c) Transportation of various raw material required for project

d) Repeated failure of vehicles also affects performance of vehicles

Technology Risk

a) Requirement of external consultant might arise to complete project this will increase cost for project and may also delay project schedule

b) Significant increase in cost of equipment repair and maintenance cost, decrease in efficiency of equipment

c) New technology might not be economically viable for company, which may adversely affect customer satisfaction; eroding the profitability of company

d) Designs, Intellectual property, financial models and other confidential data may get leaked in public domain

e) Data breach affects the value of the company in share market and brand image in market, employees' personal data may also get risked

f) If IT services are not working or are down; all dependant activities end up getting delayed, impacting the implementation

Labour Risk

a) Irregular working hour lead to conflicts, inefficiency in work, distress etc.

b) When these resources produce a relatively low amount of goods, services or sales for the money spent on them the profit margins of the company starts depleting

c) Massive and sudden increase in cost of labour due to shortage of labour

d) Labour disputes majorly impacts the efficiency and quality of work

Geographical Risk

a) Delay in schedule of project, due to unavailability of skilled labour in some geographical areas

b) Health and safety of the workers is at risk due to constant dust, rain, too hot, or too cold climate

c) Climatic conditions also affect the quality, design, construction and performance of buildings

d) If the situation gets violent then mob may cause damage to the construction work which will cause huge loss to the company

e) Communication can become very difficult in violent prone areas and some very harsh geographical conditions

3. Strategic Risk

Social and Environmental Risk

a) Contributes to greenhouse effect and global warming.

b) Affects human health in form of radiation poisoning, cancer and numerous lung diseases

c) Ecosystems are destroyed, causing an ecologically damaging shift of the affected area.

d) Groundwater depletion affects water usage for agricultural use, daily usage or drinking purposes

e) Disruption in daily socio-cultural activities in surrounding area due to land acquisition.

Compliance Risk

a) Damages Company's reputation in the market affecting revenue, share price and brand image.

b) Non-compliance leads to corrupt practices such as fraud by employees.

c) State or country may revoke operational license of the organization and penalize it or even dissolve it.

d) Company may have to undergo scrutiny by different Government departments.

e) Non-compliance of the SOPs attracts legal action as well as financial penalties.

Strategic Forecasting Risk

a) Affects the progress of project causing cost overrun, project delay or financial loss.

b) Improper HR planning leads to issues such as decreased productivity, ineffective recruitment, and non-compliance.

c) Business gets affected due to sudden increase in labor cost and raw material cost causing company to spend more than expected.

d) Increase in logistics cost affects prices of raw material, machines etc. adversely affecting budget of the project.

e) Import of raw material increases the production cost due to rise in currency exchange rates.

Innovation Risk

a) Improper feasibility and desirability of product and services affects brands reputation in market, share price and profitability of company.

b) Return on investment may get affected leading to financial loss due to fluctuation in demand.

c) Difficulty in integration of new technology with available machines renders new technology ineffective by delaying project.

Intellectual Property Risk

a) Company finds itself unable to recover invested money in research leading to monetary losses

b) Competitor might misuse the data from patent to make more advanced product causing loss to original patent holder company.

c) Licensing fees for patent trolls is very high due to which business may get threatened.

4. Financial Risk

Interest Rate Risk

a) Cost of borrowing increases which leads to decrease in profit and hamper the growth of company.

b) Purchasing power of customers reduces as they pay more interest on their loans.

c) Difficulty in investing money in business for small term affecting investment plans.

Credit Risk

a) Missing payments and defaulting on the loans negatively impacts the credit score of business

b) Higher interest rate could affect the ongoing loans as well as future loans the organization plans to seek.

c) Foreclosure or seizing of property and collateral.

d) Company may face financial penalties, legal action and higher interest rate when they will seek loan for another project.

e) If credit rating agency gives lower rating to the company it becomes very difficult for the company to issue bonds to raise funds for projects.

f) Lower credit rating damages companies overall brand image in market, which has an adverse impact on the customers and investors.

Liquidity Risk

a) Causes financial distress which may lead to bankruptcy or forced liquidation as the company is unable to pay its creditors.

b) The organization may face issue of funds for loan repayment or carrying out other financial transactions.

c) Lack of funds results in loan requirements that incurs finance charges.

d) Company may face financial penalty or legal action if over draft is overdrawn.

e) Company may stop production or services due to issues with the working capital, affecting revenue of company

f) Increase in EMI amount affects liquidity and profitability of company.

Inflation Risk

a) Affects the cost/prices that the businesses have to pay/shell out for materials and inventory leading to inventory shortages.

b) A fall in exports can trigger negative multiplier effect on national income and employment.

c) High inflation can lead to an increase in pay claims as people look to protect their real incomes.

d) Cost of living climbs higher as borrowing cost increases.

e) Demand for the goods decreases accordingly leading to substantial loss.

f) If its native currency is weaker, the cost of goods purchased overseas becomes dearer and that raises the business's cost of doing business.

ANNEXURE - 3

Questionnaire for Risk Assessment Toolkit

Assumptions

	Likelihood	Occurance
1	Remote	Might occur once in ten years
2	Unlikely	Might occur once in five years
3	Occasional	Might occur once in three years
4	Likely	Likely to occur once per year
5	Frequent	Likely to occur many times per year

	Impact
1	Negligible
2	Minor
3	Moderate
4	Significant
5	Critical

Level	Risk Score
Very High	25
High	16
Medium	9
Low	4
Very Low	2

Risk Matrix

Impact \ Likelihood	Remote	Unlikely	Occasional	Likely	Frequent
Critical	Medium (5)	High (10)	High (15)	Very High (20)	Very High (25)
Significant	Medium (4)	Medium (8)	High (12)	High (16)	Very High (20)
Moderate	Low (3)	Medium (6)	Medium (9)	High (12)	High (15)
Minor	Very Low (2)	Low (4)	Medium (6)	High (8)	High (10)
Negligible	Very Low (1)	Very Low (2)	Low (3)	Medium (4)	Medium (5)

Risk Score	Risk
17 - 25	Very High
10 - 16	High
5 - 9	Medium
3 - 4	Low
1 - 2	Very Low

Impact on Project Schedule

Level	Risk Score	Description
Very High	17 - 25	Delays/ anticipation above 18 months
High	10 - 16	Delays/ anticipation of 18 months
Medium	5 - 9	Delays/ anticipation of 12 months
Low	3 - 4	Delays/ anticipation of 6 months
Very Low	1 - 2	Delays/ anticipation of 3 months

Impact on Cost

Level	Risk Score	Description
Very High	17 - 25	More than 40 % increase in budget
High	10 - 16	20 - 40 % increase in budget
Medium	5 - 9	10 - 20 % increase in budget
Low	3 - 4	5 - 10 % increase in budget
Very Low	1 - 2	Less than 5 % increase in budget

ANNEXURE - 4

Risk Management MS-Excel Toolkit Usage

The live Toolkit is free and can be downloaded from:
ceget.in/wp-content/uploads/2016/10/risk-assessment-toolkits.zip

Risk Assessment Toolkit for Businesses

• For risk assessment at different stages of project, comparison can be done by selecting Percentage of project completed. Open the 1st sheet (Assumptions) in the Toolkit and assign the percentage of 'Project Completed', in a drop-down list.

• For Market entry risk, Operational risk, Strategic risk and Finance risk; likelihood and impact should be selected from the drop-down list.

• The entries will change the values of the 'Risk Score'. You can assess the magnitude of risk by referring to the 'Risk matrix' provided in the 'Assumptions' sheet.

• Risk assessment can be analyzed via. Graphs, Pie chart, Heat maps, comparative data generated in various sheets.

Various Sheets in Toolkit

Sheet No. 1 - Assumptions

a. This sheet contains the list of overall flow of the toolkit and different sheets required to build the toolkit.

b. There is a Project Completed drop box for users containing the levels or stages of project from initial stage till the end of project. This will help to find out risk level at different stages of project.

c. This sheet is linked to 'Risk at Different Stages' sheet where we can see actual results after selecting project stage from drop box. We can also compare data obtained for different stages.

d. Likelihood of risk occurrence, impact of risk on Schedule and cost of project is mentioned in sheet.

e. The 5*5 impact-likelihood matrix explains different levels of risk.

Likelihood Categories	
Remote	- 1
Unlikely	- 2
Occasional	- 3
Likely	- 4
Frequent	- 5

Impact Categories	
Negligible	- 1
Minor	- 2
Moderate	- 3
Significant	- 4
Critical	- 5

f. The risk level is categorized into below 5 levels and accordingly colors are assigned to each level

- Very Low ..... 0 - 2
- Low ..... 3 - 4
- Medium .....5 - 9
- High .....10 - 16
- Very High .....17 - 25

g. Impact on Schedule for Risk score:

- Delays/ anticipation above 18 months .....17 – 25
- Delays/ anticipation of 18 months.....10 – 16
- Delays/ anticipation of 12 months.....5 – 9
- Delays/ anticipation of 6 months.....3 – 4
- Delays/ anticipation of 3 months.....1 – 2

h. Impact on Schedule for Risk score:

- More than 40 % increase in budget .....17 – 25
- 20 - 40 % increase in budget .....10 – 16
- 10 - 20 % increase in budget .....5 – 9
- 5 - 10 % increase in budget .....3 – 4
- Less than 5 % increase in budget .....1 – 2

Sheet No. 2 - Market Entry Risk in India
Sheet No. 3 - Operational Risk
Sheet No. 4 - Strategic Risk
Sheet No. 5 - Financial Risk

a. User should select likelihood and impact from the given drop box. The next table will show numerical data of the selected likelihood and impact.

b. Average for likelihood and impact is calculated for every sub-risk.

c. Risk score indicates overall nature of risk. Mitigation strategy to be decided as per nature and severity of risk.

Sheet No. 2: Market Entry Risk in India

This sheet contains different sub-risks of market entry risk which are

- Political Environment
- Government Policies for Ease of doing business
- Market Condition
- Collaboration and Partnership Risk

Sheet No. 3: Operational Risk

This sheet contains different sub-risks of Operational Risk which are

- Pre-operative Risk
- Procurement and Vendor Risk
- Internal Fraud Risk
- Construction Phase Risk
- Logistics Risk
- Technology Risk
- Labour Risk
- Geographical Risk

Sheet No. 4: Strategic Risk

This sheet contains different sub-risks of Strategic Risk which are

- Social and Environmental Risks
- Compliance Risks
- Strategic Forecast Risks
- Innovation Risk
- Intellectual Property Risks

Sheet No. 5: Financial Risk

This sheet contains different sub-risks of Financial Risk which are

- Interest Rate Risk
- Credit Risk
- Liquidity Risk
- Inflationary Risk

Sheet No. 6: Qualitative - Risk Data

a. This sheet shows the impact of all the risks on schedule and time using the qualitative data obtained from the 'Market Entry Risk in India', 'Operational Risk', 'Strategic Risk' and 'Financial Risk' sheets mentioned above.

b. Risk level is calculated in this sheet by comparing the Risk score obtained with the 'data' sheet.

c. Impact of Risk on Schedule is calculated by comparing the risk score with the 'data' sheet where the details are mentioned about the delays caused according to particular risk score.

d. Similarly, Impact of Risk on Cost is calculated by comparing the risk score with the 'data' sheet where the details are mentioned about the impact on budget caused due to particular risk score.

Sheet No. 7: Prioritization

a. This sheet shows the prioritization of all the sub risks by segregating the risks depending on their risk score.

b. The sheet contains a button on which user has to click for prioritizing the risk.

Sheet No. 8: Heat Map - Market Entry
Sheet No. 9: Heat Map - Operational
Sheet No. 10: Heat Map - Strategic
Sheet No. 11: Heat Map - Financial

a. Heat map is generated by using the market entry risk's likelihood and impact from Qualitative - Risk Data.

b. It contains impact on X-axis and likelihood on Y- axis. Depending on the data available (x, y coordinates), the points are plotted accordingly.

Sheet No. 12: Pie - chart Risk Assessment

a. This sheet contains 5 pie-charts one with the major four risks and others showing individual risk containing its sub risks.

b. The pie-charts show risk percentage of different risks obtained from data. This helps to easily find out the percentage impact of individual risk and its comparison with others.

Sheet No. 13: Graphs - Risk Assessment

a. The four graphs of every major risk are generated by taking sub risks on X-axis, impact and likelihood on Y-axis and Risk score on adjacent Y-axis.

Sheet No. 14: Risk at different stages

a. Risk assessment is should be done at different stages of project. Percentage of project completed can be selected in Assumption sheet.

b. In this sheet risk at different stages of project can be compared for analysis.

Risk Assessment Toolkit for Policy Makers

- Policy makers will distribute Questionnaire to various departments and at all level to get feedback on questionnaire.

- 60 such feedbacks can be entered into toolkit for analysis.

- For Market entry risk, Operational risk, Strategic risk and Finance risk; likelihood and impact should be selected.

- Risk assessment can be analysed via. Graphs, Pie chart, Heat maps, comparative data generated in various sheets.

About Us

The United Nations Global Compact

United Nations Global Compact (UNGC) is the largest voluntary corporate citizenship initiative in the world offering a unique platform to engage companies in responsible business behavior through the Ten Principles focusing on human rights, labour standards, the environment and anticorruption.

These principles are derived from the Universal Declaration of Human Rights, the International Labor Organization's Declaration on Fundamental Principles and Rights at Work, the Rio Declaration on Environment and Development, and the United Nations Convention Against Corruption.

By incorporating these Global Compact principles into strategies, policies and procedures, and establishing a culture of integrity, companies will be able to not only uphold their basic responsibilities to people and planet, but also set the stage for long-term success.

Global Compact Network India

The Global Compact Network (GCN) India, was formed in 2000 and registered as non-profit society in November 2003 to function as the Indian Local Network of the UNGC.

The Global Compact Network India works towards mainstreaming the ten universally acceptable principles in business activities around the world, catalysing action in support of broader UN goals.

With 400 renowned organizations as GCNI pivotal members/ signatories, the local India network in the last 14 years of its functioning has created a strong niche for itself.nctioning has created a strong niche for itself.

Centre of Excellence for Governance, Ethics and Transparency (CEGET)

GCNI established the Centre of Excellence for Governance, Ethics and Transparency (CEGET) in 2015, with the overall objective of developing a premier knowledge repository that conducts innovative action research and training, provides a platform for dialogue and communication and facilitates systematic policy initiatives for strengthening transparency and ethics in business.

The goal of CEGET is to bring in diverse stakeholders on a common platform to exchange best practices, deliberate upon challenges and make policy recommendations to promote responsible business standards and transparency and ethics in general.

The activities of the GCNI CEGET are centered along following three objectives:

- Develop pragmatic approaches around the 10th UNGC principle to challenging business decisions through creation of a Knowledge Hub.
- Provide enabling platforms to businesses, policymakers, civil society, industry associations, UN agencies and academia.
- Improve organisational decision making through a stakeholder management framework that integrates transparency and integrity.

The Ten Principles of the United Nations Global Compact

The UN Global Compact asks companies to embrace, support and enact,within their sphere of influence, a set of core values in the areas of human rights, labour standards, the environment, and anti-corruption:

HUMAN RIGHTS

Principle 1 Businesses should support and respect the protection of internationally proclaimed human rights; and

Principle 2 make sure that they are not complicit in human rights abuses.

LABOUR

Principle 3 Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;

Principle 4 the elimination of all forms of forced and compulsory labour;

Principle 5 the effective abolition of child labour; and

Principle 6 the elimination of discrimination in respect of employment and occupation.

ENVIRONMENT

Principle 7 Businesses should support a precautionary approach to environmental challenges;

Principle 8 undertake initiatives to promote greater environmental responsibility; and

Principle 9 encourage the development and diffusion of environmentally friendly technologies.

ANTI-CORRUPTION

Principle 10 Businesses should work against corruption in all its forms, including extortion and bribery.

Network India

Global Compact Network India
Scope Minar, Core 3, 5th floor
Laxmi Nagar, Delhi - 110092
Contact us: director.ceget@globalcompact.in
www.ceget.in