Risk Management Policy

North Eastern Electric Power Corporation

August 2024

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1. Introduction

1.1. About organization

North Eastern Electric Power Corporation Limited (NEEPCO), a Mini Ratna Schedule "A" Government of India Enterprise under the Ministry of Power was set up on the 2nd of April 1976 to plan, investigate, design, construct, generate, operate and maintain power stations in the North Eastern Region of the country. At present, NEEPCO is a Wholly Owned Subsidiary of NTPC Limited wherein 100% equity shares of the Company are held by NTPC Limited. NEEPCO has an installed capacity of 2057 MW which is 39% of the total installed capacity of the N.E Region.

MISSION OF ORGANIZATION

- To harness the vast hydro, thermal and renewable power potential
- To produce pollution free and inexhaustible power through planned development of power generation projects.
- To play a significant role in the integration and development of hydroelectric and thermal power in the Central Sector covering all aspects such as investigation, planning, designs, construction, operation, and maintenance of hydroelectric and thermal projects which in turn would effectively promote the development of the nation as a whole.

1.2. Need for policy

In today's dynamic business environment risk landscape is evolving very rapidly, and it has become imperative for NEEPCO to take a structured approach for risk management to ensure that all the risks are managed effectively. In the alternative, these risks have the potential to disrupt achievement of NEEPCO's strategic and operational objectives.

Enterprise risk management helps organizations to identify events and measure, prioritize and respond to the risks challenging its most critical objectives and related projects, initiatives and day-to-day operating practices. The objective is to protect stakeholders' value through the establishment of an integrated Enterprise Risk Management Framework to provide clear and strong basis for informed decision making at all levels of the organization. In addition to this, regulatory requirements such as DPE and SEBI guidelines on Corporate Governance and Companies Act 2013 have been imposed on the organization to have a robust enterprise risk management framework which shall be reviewed periodically. In view of these requirements NEEPCO had implemented Risk Management Policy within the organization.

This policy is a formal acknowledgement of the commitment of the organization to risk management. The aim of the policy is not to have risk eliminated completely from NEEPCO's activities, but rather to ensure that every effort is made by the organization to manage risk appropriately to maximize potential opportunities and minimize the adverse effects of risk. The organization aims to use risk management to take better informed decisions and improve the probability of achieving its strategic and operational objectives.

1.3. Risk management policy statement

NEEPCO recognizes that it is exposed to several uncertainties, which is inherent for the power sector that it operates in. The volatility of the power sector affects the financial and non-financial results of the business. To increase confidence in the achievement of organization's objectives, NEEPCO has developed Risk Management Policy to remain a competitive and sustainable organization and enhance its operational effectiveness.

The policy statement is as given below:

1. To ensure protection of shareholder value through the establishment of an integrated Risk Management Framework for identifying, assessing, mitigating, monitoring, evaluating and reporting of all risks.

2. To provide clear and strong basis for informed decision making at all levels of the organization.

3. To continually strive towards strengthening the Risk Management System through continuous learning and improvement and to achieve the objectives of this policy through proper implementation and monitoring.

4. To ensure that new emerging risks are identified and managed effectively.

5. To put in place systems for effective implementation for achievement of policy objectives through systematic monitoring and effecting course corrections from time to time.

1.4. Objectives of policy

The main objective of this policy is to ensure sustainable business growth with stability and to promote a pro-active approach in identifying, evaluating, reporting and managing risks associated with the business. In order to achieve the key business objectives, the policy establishes a structured and disciplined approach to Risk Management, including the development of the Risk Register, Key Risk Indicator Monitoring Sheet and Action Plan Status Report, in order to guide decisions on risk related issues. The specific objectives of the Risk Management Policy are:

1. To provide an overview of the principles of risk management
2. To explain the approach adopted by the organization for risk management.
3. To define the organizational structure for effective risk management
4. To identify business objectives that reflect the interests of all beneficiaries and stakeholders.
5. To identify the threats to the achievement of business objectives
6. To regularly review the risk landscape as a result of business activities and of the business and economic climate in which the Company is operating
7. To regularly review exposure to all forms of risk and reduce it as far as reasonably practicable or achievable
8. To identify and regularly measure key risk indicators and take appropriate action to reduce the risk exposure
9. To regularly review the key risk controls to ensure that they remain relevant, robust and effective
10. To control and manage risk by appropriate risk reduction and mitigation actions

To achieve these objectives, NEEPCO shall adhere to the following core principles:

1. Effective Accountability: The Board has the overall responsibility to ensure an effective risk management process within the company.

2. Team's commitment: Every function/ department/ project site/ office in the organization shall work in coordination to ensure the effective implementation of this enterprise risk management policy.

3. Proactive Leadership: Risk identification (including identification of the risk of lost opportunities), risk assessment and risk monitoring are ongoing activities and shall form an integral part of the company's operations, management and decision-making process. All the identified risks shall be updated in the

central repository.

4. Risk Culture: Informed and consistent risk related decisions shall be taken; non-compliant behaviors shall not be tolerated and risk management shall be dealt professionally.

5. Transparency and Compliance: The risk management activities along with the most significant risks shall be reported and the material failures in mitigation measures shall be escalated through reporting line to the relevant levels of organization structure.

1.5. Scope and applicability

The policy guidelines are devised in the context of the organization's growth objectives, business profile envisaged and new business endeavors including new projects that may be necessary to achieve these goals and the emerging global standards and leading practices amongst comparable organizations. This policy is meant to ensure the continuity of business and protection of the interests of the investors and thus covers all the activities within the organization and events outside which have a bearing on the organization's business to the extent of risk exposure of NEEPCO.

The policy shall operate in conjunction with other business policies and shall integrate risk management into organizational processes, including policy development, planning, and change management.

Accordingly, this policy will be a guiding document for risk management with an endeavor to facilitate the decisions at NEEPCO.

Scope of the Policy shall cover:

- All key functions and departments of NEEPCO
- All Projects (Under Construction) of NEEPCO within and outside the country
- All Operational Power Stations of NEEPCO
- All events, both external and internal which shall have an impact on the business objectives of the organization

Applicability of the Policy: - The Risk Management Policy is applicable to the Corporate Office, Regional offices, Power Stations, and Project Sites of NEEPCO.

2. Risk governance

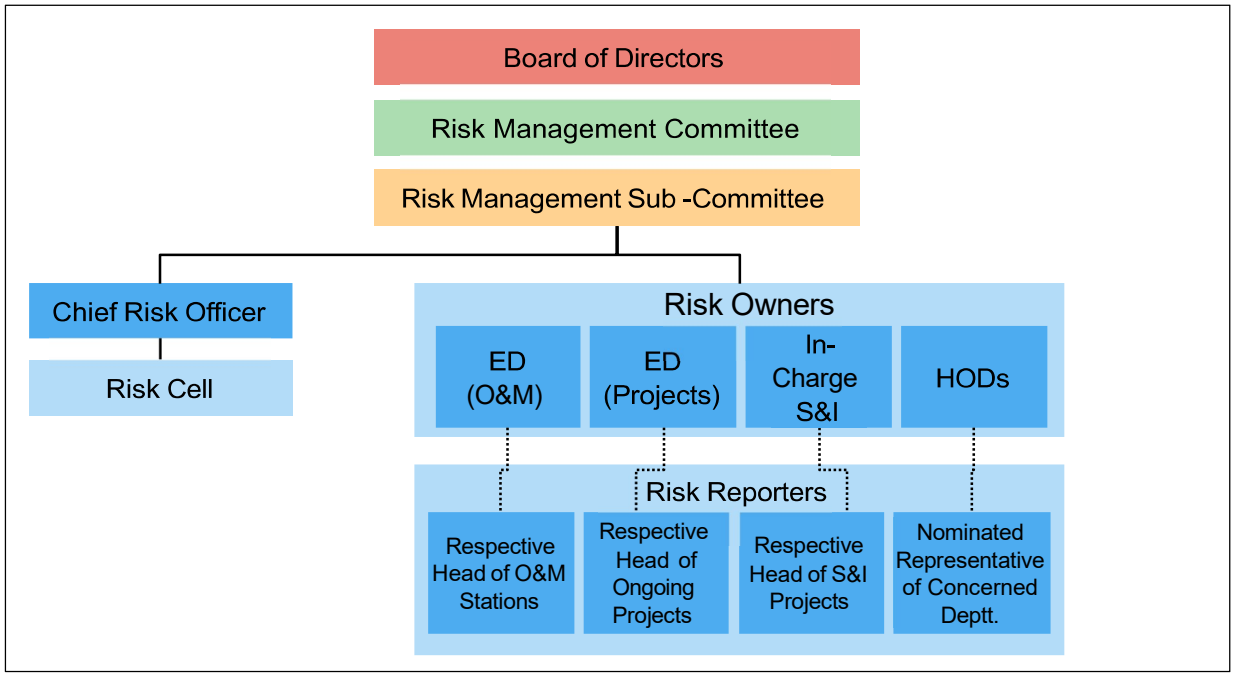
2.1. Risk governance structure

A well-defined risk governance structure serves to communicate the approach of risk management throughout the organization by establishing clear allocation of roles and responsibilities for the management of risks on a day-to-day basis. In order to develop and implement an Enterprise Risk Management framework, NEEPCO constituted Risk Management Committee to be supported by Risk Management Sub-Committee.

The Risk Management Committee shall comprise of the Director (Technical), NEEPCO as Chairperson and nominated representative of NTPC, an Independent Director, Director (Personnel), NEEPCO as Members and shall appraise key risks to the Board. Risk Management Sub-Committee shall comprise of Chief Risk Officer (CRO), Risk Owners & Risk Reporters.

The CRO shall report the key risk to the Risk Management Committee which shall ensure that risk management activities are undertaken as per this policy. The main objective of Risk Management Sub-Committee shall be to provide an enterprise-wide view of key risks within the organization to the Risk Management Committee.

Risk Governance Structure



2.1.1 Risk Management Committee

Constitution of Risk Management Committee

1. Director (Technical), NEEPCO - Chairperson
2. Nominated representative of NTPC - Member
3. Independent Director - Member
4. Director (Personnel), NEEPCO - Member

The Risk Management Committee has the key role of aligning the strategic objectives with the organization's operations in order to achieve intended outcomes.

Role and Responsibilities of the Risk Management Committee:

As per Part (D) of the Schedule II of the SEBI (Listing Obligations & Disclosure Requirements) Regulations The role of the Risk Management Committee shall, inter-alia, include the following:

1. To formulate a detailed risk management policy which shall include:
   (a) A framework for identification of internal and external risks specifically faced by the listed entity, particularly including financial, operational, sectoral, sustainability (particularly, ESG related risks), information, cyber security risks or any other risk as may be determined by the Committee.
   (b) Measures for risk mitigation including systems and processes for internal control of identified risks.
   (c) Business continuity plan.
2. To ensure that appropriate methodology, processes and systems are in place to monitor and evaluate risks associated with the business of the Company;
3. To monitor and oversee implementation of the risk management policy, including evaluating the adequacy of risk management systems;
4. To periodically review the risk management policy, at least once in two years, including by considering the changing industry dynamics and evolving complexity;
5. To keep the board of directors informed about the nature and content of its discussions, recommendations and actions to be taken;
6. The appointment, removal and terms of remuneration of the Chief Risk Officer (if any) shall be subject to review by the Risk management Committee.

The Risk Management Committee shall coordinate its activities with other committees, in instances where there is any overlap with activities of such committees, as per the framework laid down by the Board of Directors

Risk Management Committee shall meet at least twice in a year. The meetings of the Risk Management Committee shall be conducted in such a manner that on a continuous basis not more than 210 days shall elapse between any two consecutive meetings.

Risk Management Committee shall have powers to seek information from any employee, obtain outside legal or other professional advice and secure attendance of outsiders with relevant expertise, if it considers necessary.

2.1.2 Risk Management Sub-Committee

Constitution of Risk Management Sub-Committee:

The following shall form part of the Sub-Committee. Further, their roles have been defined below:

1. The Chief Risk Officer (CRO) – CGM QSHE
2. All the Risk Owners & Risk Reporters – ED (O&M), ED (Projects), In-Charge S&I & respective HODs

Role and Responsibilities of Risk Management Sub-Committee:

Risk Management Sub-Committee shall have the key role of identifying the key risks, suggest mitigation measures, monitoring and supervising the implementation of the Risk Management Policy and maintain enterprise-wide view of the key risks faced by the organization.

- Identify the key risks anticipated for the organization and suggest mitigation measures to the concerned departments/project sites on bi-annual basis.

- Ensure that effective risk mitigation plans are in place and the results are evaluated and acted upon.
- Report the key risks faced by the organization and the mitigation plans to the Risk Management Committee on bi-annual basis.
- Ensure that the Risk Management Committee is informed about any new/emerging risks faced by the organization in case of exigencies/emergent conditions.
- Assist the Risk Management Committee in overseeing and monitoring the development and implementation of the Risk Management Policy.
- Assist the Risk Management Committee in decision making for risk management responses for identified key risks.
- Map the risks reported according to their ratings on a regular basis.

2.1.3 Chief Risk Officer

The Chief Risk Officer (CRO) shall coordinate with the departments/project site/power station heads in establishing and implementing the risk management process effectively in their areas of responsibilities.

Role and Responsibilities of the CRO:

- Communicating and managing the establishment and ongoing maintenance of risk management policy pursuant to the organization's risk management vision.
- Designing and reviewing processes for risk management.
- Communicating with the Risk Management Committee regarding the status of risk management and reporting the key risks faced by the organization.
- Facilitating discussions among the Risk Management Sub-Committee to fulfill its responsibilities.
- Validating that the risk management policy is implemented in key department/ project site/ power station and that all significant risks are being recognized and effectively managed in a timely manner and conduct reassessment of the same, if required.
- Risks identified shall be widely circulated within the organization.

2.1.4 Risk Cell

Risk Cell shall be a team of dedicated members who shall report directly to the CRO.

Roles and Responsibilities of the risk cell shall include:

- Assist the CRO in organizing Risk Management Sub-Committee and Risk Management Committee meetings.
- Record the key risks and their mitigation plans in the risk register as agreed by the 'Risk Management Sub-Committee' and put up for the perusal of the CRO on regular basis who shall report it to the Risk Management Committee.

2.1.5 Risk Owners

Following officials are the Risk Owners as nominated by the RMC:

1. The ED(O&M) is Risk Owner for risks pertaining to all O&M Stations.
2. The ED(Projects) is Risk Owner for risks pertaining to all Ongoing Projects.
3. In-charge S&I is Risk Owner for risks pertaining to all S&I Projects.
4. The HODs of Departments are Risk Owners for risks pertaining to their respective departments.

Role and Responsibilities of the Risk Owners:

- Identification and assessment of risks within their area of operation by conducting likelihood & potential impact assessment.
- Development and implementation of mitigation strategies in consultation with Chief Risk Officer.
- To Ensure regular monitoring and reporting of risks to detect changes in emerging risks and measure the effectiveness of mitigation plans
- Communication of issues related to specific risks to the Risk Management Committee through Chief Risk Officer and ensure compliance with management practices.

2.1.6 Risk Reporters

Following officials are the Risk Reporters as nominated by the RMC:

1. The respective Head of O&M Station shall act as Risk Reporter of the concerned Power Station
2. The respective Head of Project shall act as Risk Reporter of the concerned Ongoing Project.
3. The respective Head of S&I Project shall act as Risk Reporter of the concerned S&I Project.
4. The nominated representative shall act as Risk Reporter of the concerned department.

Role and Responsibilities of the Risk Reporters:

- Detection and Documentation of risk details, including potential causes, context, and any immediate observations.
- Implementation of identified mitigation measures.
- To provide status updates on risks, including changes in conditions and effectiveness of implemented controls.
- To incorporate feedback from risk owners to refine risk reporting process and assist in implementation of risk responses where applicable.
- To Maintain & submit records of all identified risks.
- To promote risk awareness and best practices among team members.

2.2 Risk Reporting Structure

The following risk reporting structure shall be followed by the organization:

First Line of Reporting:

- The Risk reporters, in association with respective Risk Owners, shall identify key risks of their respective departments.
- The Risk reporters, in association with respective Risk Owners, shall ensure the implementation of risk mitigation plan within their respective departments/ power stations/ project sites.
- The Risk reporters (with due endorsement by the respective Risk Owners)/Risk Owners shall send the report on status of risks and mitigation measures taken on quarterly basis to the CRO.

Second Line of Reporting:

- The Chief Risk Officer along with the other members of the Risk Management Sub-Committee shall bi–annually identify risks and decide upon the key risks which shall be reported to the Risk Management Committee.
- After the Risk Management Sub-Committee decides the mitigation plan, Risk Owners/ Risk reporters (with due endorsement by the respective Risk Owners) shall record it in the risk register and report the key risk with their mitigation plans to the CRO.
- Upon deciding and implementing the mitigation plan the Risk Management Sub-Committee through the

CRO shall present it to the Risk Management Committee. The risk register shall contain:

- Function/ department wise record of top risks
- Risk category wise record of top risks
- Treatment plans for the top risks

Third Line of Reporting:

- The Risk Management Committee shall apprise the Board on the key risks faced by the organization and the mitigation measures taken.
- The Risk Management Committee shall also apprise the Board for decision on any new/emerging risks faced by the organization in case of exigencies/emergent conditions.
- The Risk Management Committee will present the relevant findings to the Board of Directors for approvals/actions.

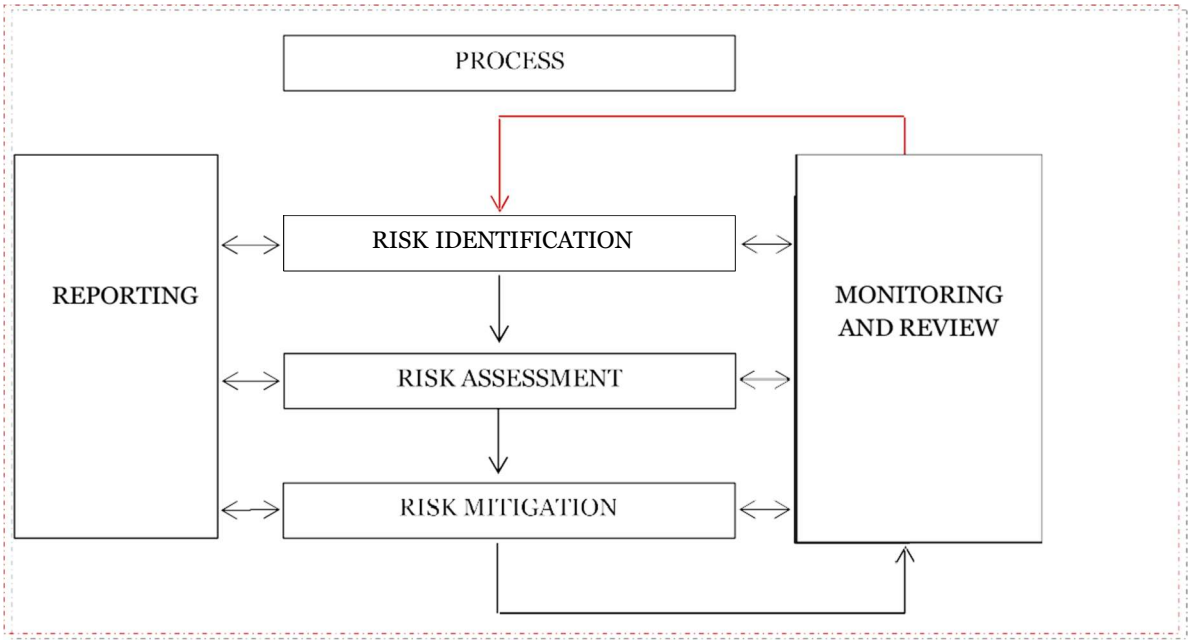
3 Risk management approach

Risk Management is the process which shall enable the organization to identify, assess and treat risks. It is the responsibility of everyone in the organization viz. Board, Management Team and all NEEPCO personnel. Risk Management applies to key functions, departments and operations within the organization.

The primary objective(s) of establishing a Risk Management Process is to ensure that:

- Risks faced by the organization shall be identified and collected in a central repository, enabling the top management to take a comprehensive view of the same
- Risks identified shall be assessed, mitigated, monitored, reviewed and reported on an ongoing basis.

The Risk Management Process is depicted below:



3.1 Risk identification

Risk identification sets out to identify an organization's exposure to uncertainty. This requires an in-depth knowledge of the organization, the market in which it operates, the economic, legal, regulatory, social, political, technological and cultural environment in which it exists, as well as the development of a sound understanding of its strategic and operational objectives, including factors critical to its success and the threats and opportunities related to the achievement of these objectives.

Risk identification shall be approached in a methodical way to ensure that all significant activities within the organization have been identified and all the risks flowing from these activities defined.

The following methodologies can be used to identify risks:

Methodology	Brief Description
Questionnaires and checklists	Use of structured questionnaires and checklists to collect information to assist with the recognition of the significant risks
Workshops and brainstorming	Collection and sharing of ideas and discussion of the events that could impact the objectives, stakeholder expectations or key dependencies
Inspections and audits	Physical inspections of premises and activities and audit of compliances with established systems and procedures
Flowchart and dependency analysis	Analysis of processes and operations within the organization to identify critical components that are key to success
HAZOP and FMEA approaches	Hazard and Operability studies and Failure Modes Effects Analysis are quantitative technical failure analysis techniques
SWOT and PESTLE analyses	Strengths, Weaknesses, Opportunities and Threats (SWOT) and Political, Economic, Social, Technological, Legal and Environmental (PESTLE) analysis offer structured approaches to risk recognition

3.1.1 Risk categorization

All the risks that have been identified shall be classified under the following risk categories:

- **Strategic & Governance Risk** - Risk involving threats to long term goals of the organization resulting from business factors and execution of stakeholders' strategic objectives. Further, risks associated with the effectiveness of an organization's governance structure, processes, and controls, including issues related to decision-making, compliance, transparency, and accountability. These risks adversely affect the achievement of strategic objectives and may impair overall enterprise value.

- **Financial & Commercial Risk** - Risk directly impacting the financial stability and performance, including risks associated with funding, capital structure, market fluctuations, currency exchange rates, interest rates, credit, liquidity, and investment decisions.

- **Human resource Risk -** Risk directly impacting the workforce and affecting the workforce, including recruitment, retention, labor laws compliance, employee health & safety, employee productivity, performance & appraisal.

- **Operational Risk** - Risk of loss resulting from challenges related to production, maintenance, supply chain, technology, and workforce management, among others, which could impact the company's operational efficiency and effectiveness.

- **Legal, Regulatory & Compliance Risk -** Risk of loss arising from non-compliance with relevant laws, regulations, standards, and internal policies governing its operations. This includes risks related to legal penalties, reputational damage, loss of licenses, and financial liabilities stemming from failure to adhere to applicable regulatory compliances.

- **IT & Cybersecurity Risk -** Risk arising from breaches, attacks & other security incidents that affect information technology systems and networks. This includes risks related to unauthorized access to confidential data, IT service disruptions, phishing attacks, viruses, malwares etc.

3.2 Risk assessment

Risk assessment allows an entity to consider the extent to which potential events have an impact on achievement of objectives. The events are assessed from two perspectives – likelihood and impact. The positive and negative

impacts of potential events are to be examined, individually or by category, across the entity.

Risk Rating is the result of the product of impact and likelihood of occurrence of a risk with the consideration of controls in place.

The risks identified shall be evaluated by their likelihood and impact parameters as per the following methodology:

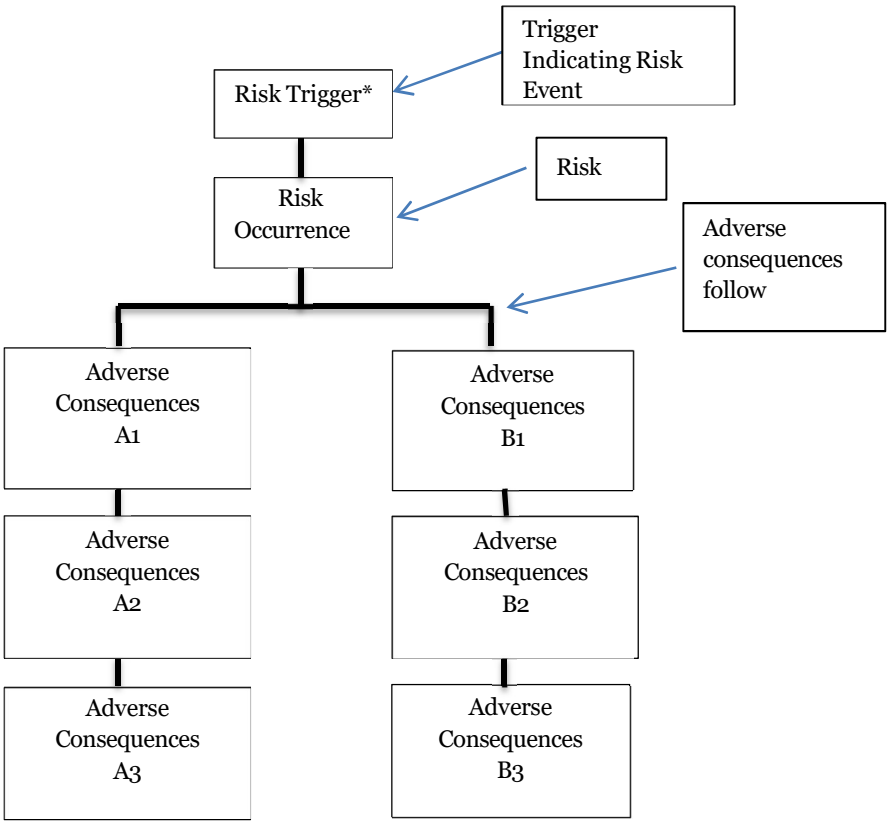
Impact Rating: Determination of impact due to risk occurrence				
Risk Category	Category Classifications	Measurement Reference		
		Low (Rating 1)	Medium (Rating 2)	High (Rating 3)
Financial & Commercial	Risks that directly impact key company financials including P&L or Balance sheet	Insignificant impact on company financials – operating revenue (Cost of impact is likely to be less than Rs. 5 Crores p.a.)	Moderate impact on company financials - operating revenue (Cost of impact is likely to be between Rs. 5 - 50 Crores p.a.)	Significant impact on company financials - operating revenue (Cost of impact is likely to exceed Rs. 50 Crores p.a.)
Strategic & Governance	Impact on key stakeholders such as shareholders, employees, customers and vendors.	Minor concerns raised by stakeholders, which can be rectified without significant effort or impact on stakeholder relationships (Cost of impact is likely to be less than Rs. 5 Crores p.a.)	Concerns from stakeholders requiring formal response, temporary disruption in relationship if not addressed (Cost of impact is likely to be between Rs. 5 - 50 Crores p.a.)	Serious concerns from major stakeholders, leading to long-term loss of trust, loss of business, market position. (Cost of impact is likely to exceed Rs. 50 Crores p.a.)
Human Resource	Impact on employee productivity and company reputation.	Minimal impact on employee productivity and company reputation. (Cost of impact is likely to be less than Rs. 5 Crores p.a.)	Significant concerns raised by employees and media, which if not addressed may lead to manpower unavailability. (Cost of impact is likely to be between Rs. 5 - 50 Crores p.a.)	Potential financial, operational, and legal implications due to employee concerns, long term damage to company reputation (Cost of impact is likely to exceed Rs. 50 Crores p.a.)
Operational	Impact on service availability, productivity, third party relationships, brand value and reputation.	Expected reduction in annual PLF < 0.1% (Cost of impact is likely to be less than Rs. 5 Crores p.a.)	Expected annual PLF reduction >0.1% but <5% (Cost of impact is likely to be between Rs. 5 - 50 Crores p.a.)	Expected annual PLF reduction >5% (Cost of impact is likely to exceed Rs. 50 Crores p.a.)

Legal Regulatory & Compliance	Legal and Regulatory breach and its consequences due to non-compliance to legal and regulatory requirements.	No significant violations or fines; minor issues rectifiable without external intervention (Cost of impact is likely to be less than Rs. 5 Crores p.a.)	Moderate compliance failures detected, limited penalties but not resulting in long-term regulatory problems (Cost of impact is likely to be between Rs. 5 - 50 Crores p.a.)	Significant compliance failures detected, show cause notice or Significant penalties, involving long-term scrutiny or modification of licenses etc. (Cost of impact is likely to exceed Rs. 50 Crores p.a.)
IT & Cybersecurity	Potential for cyberattack and data breach	Breaches that result in minimal damage with no significant disruption to operations or company data (Cost of impact is likely to be less than Rs. 5 Crores p.a.)	Breaches that result in moderate disruptions and access to non-sensitive data, requiring efforts for correction but having low impact (Cost of impact is likely to be between Rs. 5-50 Crores p.a.)	Major breaches leading to operational shut downs, significant financial losses and/or legal consequences (Cost of impact is likely to exceed Rs. 50 Crores p.a.)

* Cost of Impact should be reviewed and updated periodically during the periodic RMP review meeting in accordance with company's revenues. Low risk impact rating is assigned where cost of impact is less than 0.1% of company revenues, Medium impact rating is assigned where cost of impact is equal to or greater than 0.1% of company revenues but less than 1% of revenues, High risk impact rating is assigned where cost of impact is greater than or equal to 1% of company revenues.

Estimate impact of event:

Process of impact of risk quantification for the company has to be qualitative, supported by quantitative impact analysis. To apply this approach, the chain of adverse consequences, which may occur in case the identified risk materializes, shall be enlisted. For each of the chains of adverse consequences, the cost impact needs to be calculated and attributed to the particular risk. In such an exercise, actual cost impacts (like claims by contractor, loss of equipment value, etc.) as well as opportunity costs (like loss in realization of revenue, delay in commission of project etc.) must be captured to arrive at the total cost impact of materialization of the risk. This has been based on OHSAS, QMS guidelines as well as industry standards.



**Risk Trigger means the incident at which the effect of risk transforms from one level to other level i.e. Change of Risk from "Low" to "Medium" / "High".*

In case, the rating based on different parameters are different, higher of the two or more ratings shall be considered as the final risk rating.

E.g., For a particular risk, Impact rating is 3 based on the Financial parameter and 2 based on the Operations parameter, the final impact rating shall be taken to be as 3.

Estimate Likelihood of occurrence:

Process of likelihood of risk quantification for the company has to be qualitative based on stakeholder discussions and supported by the data on the occurrence of similar risk events in the past. To assess the likelihood, the following classification matrix shall be considered as below:

Likelihood Rating: **Determination of risk occurrence**		
Risk Measurement Score (Likelihood)	Classification	Supplement information to determine the score of Likelihood
1	Unlikely	Rare occurrence based on history
2	Likely	Annual occurrence
3	Very Likely	More than once in a year

The following table shall be used to analyze and calculate the Risk exposure:

Calculation/Analysis of risk exposure									
Sl No	Risk Description	Risk Impact			Likelihood rating	Risk Exposure	Mitigation Plan	Mitigation Status	Remarks
		A			B	C= A X B			
		Risk Category	Rating	Final impact rating (Highest of impact ratings)	Based on stakeholder r r views				
1		Financial & Commercial							
		Strategic & Governance							
		Human Resource							
		Operational							
		Legal, Regulatory & Compliance							
		IT & Cybersecurity							
2									

Estimate Likelihood of occurrence is amended after approval of Board of Directors in its meeting held on 10.05.2019

Risk Exposure:

The risk assessment methodology adopted defines risk exposure as a product of Impact (rating) of the risk and the Likelihood of occurrence (rating) of the risk.

Impact	X	Likelihood	=	Exposure
(Rating from 1 to 3)		(Rating from 1 to 3)		(Rating from 1 to 9)

The ratings of risk exposure are as follows:

Risk Exposure Rating	
Risk Exposure Score	Classification
<=3	Low
>3 & <=6	Medium
>6 & <=9	High

Probability ↓			
High			
Medium			
Low			
Impact →	Low	Medium	High

Risk Exposure ↓		
High		• Major stakeholder concern • Major impact on strategy or operational activities • Cost of impact is likely to be or exceed ₹ 50 Crores p.a.
Medium		• Major stakeholder concern • Major impact on strategy or operational activities • Cost of impact is likely to be ₹ 5 Crores or more but less than ₹ 50 Crores p.a.
Low		• Major stakeholder concern • Major impact on strategy or operational activities • Cost of impact is likely to be less than ₹ 5 Crores p.a.

3.3 Risk mitigation

There are four common strategies for treating risk. There is no single "best" response strategy, and each risk must be considered on its own merits. Some risks may require a combination of strategies and multiple responses, whereas others may need only one strategy with a single response.

- **Risk avoidance/ termination:** This involves doing things differently and thus removing the risk (i.e. divestments). This is particularly important in terms of project risk, market risk or customer risk but often wishful thinking in terms of the strategic risks.

- **Risk reduction/ treatment:** Reduce or Treat the risk. This is the most widely used approach. The purpose of treating a risk is to continue with the activity which gives rise to the risk but to bring the risk to an acceptable level by taking action to control it in some way through either:
  - Containment actions (lessen the likelihood or consequences and applied before the risk materializes) or;
  - Contingent actions (put into action after the risk has happened, i.e. reducing the impact. Must be pre-planned)

- **Risk acceptance/ retention:** Accept and tolerate the risk. Risk Management doesn't necessarily mean risk reduction and there could be certain risks within the organization that it might be willing to accept and continue with its operational activities. NEEPCO shall tolerate such risks that are considered to be acceptable, for example:

  - a risk that cannot be mitigated cost effectively
  - a risk that opens up greater benefits than loss
  - uncontrollable risks

  It's the role of Risk Management Sub-Committee to decide to tolerate a risk, and when such a decision is taken, the rationale behind it shall be fully documented. In addition, the risk shall continue to be monitored and contingency plans shall be in place in the event of the risk occurring.

- **Risk transfer:** Transfer some aspects of the risk to a third party. Examples of risk transfer include insurance and hedging. This option is particularly good for mitigating financial risks or risks to assets.
  a) The following aspects shall be considered for the transfer of identified risks to the transferring party:
     - Internal processes of NEEPCO for managing and mitigating the identified risks.
     - Cost benefit of transferring the risk to the third party.

  b) Insurance can be used as one of the instruments for transferring risk.

Risk Reduction/ Mitigation Process

The risks are identified, and the risk mitigation mechanism selected is risk treatment or risk transfer. The next step shall be to review and revise existing controls to mitigate the risks falling beyond the risk appetite and also identify new and improved controls.

Risk Mitigation Process:

Identify controls

New control activities are designed in addition to existing controls post assessment of risk exposure at current level to ensure that the risks are within the accepted risk appetite.

Control activities are categorized into Preventive or Detective on the basis of their nature and timing:

- Preventive controls – focus on preventing an error or irregularity
- Detective controls – focus on identifying when an error or irregularity has occurred. It also focuses on recovering from, repairing the damage from, or minimizing the cost of an error or irregularity.

Evaluate Controls

The controls identified for each risk event shall be evaluated to assess their effectiveness in mitigating the risks falling beyond the risk appetite.

Implement Controls

It is the responsibility of the Risk Management Sub-Committee to ensure that the risk mitigation plan for key function/department/power station/project site is in place and is reviewed regularly.

3.4 Risk updation process

The following process should be adopted for listing down a risk in the risk register:

1. Identification of New Risk: Based on the methodologies listed above risks can be identified and the initial details of the risks should be recorded, including the potential source, nature of risk and any immediate impact or observations due to the risks.

2. Preliminary Screening: This step would involve checking the relevance of the risks with the organization's strategy / operations / financials or compliance. Additionally, an initial impact and likelihood assessment should be estimated for risk categorization.

3. Avoidance of Duplicity: Once the risk is clearly defined and preliminary screening is done check the existing risk register for same or similar type of risks. In case of duplicity of risk avoid new entry. In case of similarity of risk, prefer updation of existing risk entry to include the new information and update the risk levels and profile accordingly.

4. Criteria Validation: Validate the impact of the newly identified risk with the risk appetite threshold defined for the organization. Only risks that meet or exceed this threshold should be considered for addition or updation in the risk register.

5. Detailed Risk Assessment: Conduct a thorough assessment of the risks and assign key parameters and numbers to find out probability and impact of the identified risks. Categorize the risks according to the risk categories defined in the risk management plan document. Assess the necessary actions that would be required for mitigation of the risks and a preliminary analysis of the new risk level after the mitigation plan is implemented. Define tentative timelines for implementation of the mitigation process / processes identified.

6. Review and Approval: Present the detailed risks analysis to the risk management committee as per the reporting structure defined in this document and take the necessary approvals prior to addition of the risks.

7. Registration: Update the risk register with the relevant approved entries and assign responsibilities for monitoring, mitigation, and review of the action plans.

8. Communication and Monitoring: Communicate with the relevant stakeholders regarding the updation of the risk register, ensuring they understand their roles and responsibilities. Set up mechanism for continuous monitoring of the risk with quarterly reviews. Update the status and impact of the risks based on latest data and organizational changes.

3.5 Risk management and review

The Risk Management Sub-Committee is the key group which shall work on an ongoing basis within the risk management framework outlined in this policy to mitigate the risks to the Organization's business as it may evolve over time.

3.5.1 Risk monitoring

As the risk exposure of any business may undergo change from time to time due to continuously changing environment, the risks with their mitigation measures shall be updated on a regular basis.

The following process shall be followed:

Quarterly

1. The Risk Reporters & Risk Owners shall review the status of risks and treatment actions.
2. Any new or changed risks shall be identified and escalated, if deemed necessary to the Chief Risk Officer (CRO).

Bi - Annually

1. The CRO along with the other members of the Risk Management Sub-Committee shall identify the key risks to be put up in the Risk Management Committee meeting.
2. The Risk Management Sub-Committee shall monitor and supervise the development and implementation of the Risk Management Policy and maintain enterprise-wide view of the key risks and their mitigation measures faced by the organization.
3. The Risk Management Sub-Committee shall report the key risks and their mitigation plans to the Risk Management Committee on bi-annual basis.

Annually

The Risk Management Committee shall apprise the Board, at least once annually, on the key risks faced by the organization, the mitigation measures taken and relevant findings for approval/action.

3.5.2 Risk review

Effective risk management requires a reporting and review structure to ensure that risks are effectively identified and assessed, and that appropriate controls and responses are in place. Regular audits of policy and standards compliance shall be carried out and standards performance reviewed to identify opportunities for improvement. It shall be remembered that organization is dynamic and operate in dynamic environment. Changes in the organization and the environment in which it operates must be identified and appropriate modifications made to risk management practices. The monitoring process shall provide assurance that there are appropriate controls in place for the organization's activities and that the procedures are properly understood and followed.

Any monitoring and review process shall also determine whether:

- The measures adopted resulted in what was intended.
- The procedures adopted and information gathered for undertaking the assessment was appropriate.
- The acceptability of each identified risk and their mitigation plan shall be assessed, and risks shall then be ranked to identify key risks for the organization.
- Proposed actions to eliminate, reduce or manage each material risk shall be considered and agreed.
- Responsibilities for the mitigation measures for key risks management of each risk shall be assigned to appropriate department/power station/project site heads.

The Risk Owners/Risk Reporters shall review progress on the actions agreed to mitigate the risk and assess the current level of risk including:

- Establishing whether actions have been completed or are on target for completion.
- Report the status of implementation of mitigation plans to the Risk Management Sub-Committee.

4 Operation of risk management policy

4.1 Approval of the Policy

The Board shall be the approving authority for the company's overall Risk Management Policy. The Board shall, therefore, monitor the compliance and approve the Risk Management Policy and any amendments thereto from time to time.

4.2 Review of the Policy

The risk management policy shall be reviewed as and when required but not later than 2 years based on changes in the business environment/ regulations/ standards/ best practices in the industry by an outside consultant/ organization or in-house that would present their recommendations to the Chief Risk Officer.

4.3 Maintenance of Risk Register

- Centralized Risk register with their mitigation plan shall be maintained by CRO/ Risk Cell and shall be reviewed and updated as per the policy guidelines.
- Manual reporting would be undertaken by each business unit which will be upgraded to tool-based reporting post enterprise risk management implementation.

Appendix 1 A - Appendices

Reporting formats

For Risk reporting it is advisable to monitor quarter-on-quarter change in risk level for each risk category. Additionally, risk level should be monitored by risk owners. Post completion of mitigation steps, revised risk level should be assessed, and risk rating should be revisited and re-evaluated. Key Insights for the risk from each risk owner needs to be captured in the reporting presentation and actions need to be taken up based on prioritization done by the respective risk owners.

Risk reporting shall include risk wise quarter on quarter parametric monitoring for tracking overall risk impact and evaluating level of impact is within permissible (risk appetite levels). This will also enable monitoring and tracking of impact of mitigation plans to map their effectiveness.

Key Risk Indicators for quarterly and annual monitoring are as follows:

1. Financial Parameters
    - Debt-Equity ratio
    - Under recovery of pending dues & receivables
2. Operational Parameters
    - Inadequate fuel supply
    - Shortage in rainfall and water levels
    - Fuel Costs Overruns
    - Spares Shortages
    - Low Generation Schedule & Under recovery of operational costs (AFC, O&M, Fuel Costs etc.)
3. Legal, Regulatory & Compliance Parameters
    - Legal Risks (Arbitration)
    - Emissions & Regulatory Compliance
4. Strategic & Governance Parameters
    - Project delays due to challenges and increased costs in land acquisition
5. HR Parameters
    - Threat to safety of employee safety
    - Skilled Manpower availability
6. IT & Cybersecurity Parameters
    - Cyber-incidents
    - System Availability

Following the above the updation in the “risk register” should require grouping of reasons into 1 risk based on similarity rather than identification of each risk as separate. This would enable easier risk mapping and tracking.

The format for Risk register is as follows:

S. No.	Risk Description	Risk Exposure	Mitigation Plan	Target Mitigation Date	Decision of RMC sub-committee meeting if any	Present Status	Risk Owner	Remarks

An illustrative *KRI Monitoring sheet* and *Action Plan Report* is described below for periodic tracking of identified Key Risks and monitoring mitigation measures/Action Plan on the key Risks. However, it may vary based on the actual risks identified during implementation stage.

The format for KRI Monitoring Sheet is as follows:

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 1 – Debt Equity Ratio	**Quarter**	April-June 2024	
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Ratio of Debt to Equity in Capital Structure of the company	Ratio			
Interest Coverage Ratio	Ratio			
Debt Service Coverage Ratio	Ratio			
FCF to debt ratio	Ratio			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 2 – Recovery of pending dues & receivables	**Quarter**	April-June 2024	
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Days sales outstanding	Days			
Accounts receivable aging	Days			
Percentage of pending receivables overdue	%			
Customer average credit risk rating	Rating			
Cash flow coverage ratio	Ratio			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 3 – Fuel Supply shortage	**Quarter**	April-June 2024	
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Average Fuel inventory levels at powerplant (as percentage of capacity)	%			
Supplier Reliability Rating	%			
Average lead time for fuel delivery	Minutes			
Contract Coverage Ratio	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 4 – Reservoir Water Level Shortfall	**Quarter**	April-June 2024	
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Cumulative Rainfall Deviation (from long-term average)	%			
Reservoir water levels	meters			
Streamflow rate as a percentage of long-term average	%			
Drought Index	Number			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 5 – Fuel Supply Cost Overruns	**Quarter**	April-June 2024	
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Fuel price volatility index	%			
Average fuel cost per unit of energy generated	INR/kWh			
Percentage of supply under fixed price contracts	%			
Fuel Consumption Efficiency	%			
Deviation from budgeted fuel cost	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 6 – Spares Shortage	**Quarter**	April-June 2024	
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Stockout Rate	%			
Lead time for critical spares	Days			
Percentage of scheduled maintenance activities delayed due to spares unavailability	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 7 – Under recovery of operational costs	**Quarter**	April-June 2024	
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Revenue Variance	%			
Operating Margin	%			
Fixed Cost % of Total Cost	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 8 – Arbitration risks	**Quarter**	April-June 2024	
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Average duration of ongoing arbitration cases	Days			
Percentage of contracts under arbitration	%			
Financial impact of arbitration cases including legal fees and penalties	INR Cr.			
Resolution rate of Arbitration Cases in a year	%			
Frequency of Arbitration initiation	Days			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 9 – Emissions compliance		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Number of times emission levels have been exceeded in the quarter	Number			
Frequency of emissions monitoring	No. of times / day			
Time to resolve emissions issues	Hours			
Cost of Non-compliance penalties paid	INR Cr.			
Percentage of equipment compliant with regulations	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 10 – Project delays due to challenges and increased costs in land acquisition		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Schedule Variance with projected timelines	%			
Percentage of milestones completed on-time	%			
Resource utilization rate	%			
Cost Implication due to delay in Land acquisition	INR Cr			
Contractor performance rating	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 11 – Delays in S&I Projects		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Average time taken for approval process	Days			
Percentage of Land acquired vs. Planned as per the mentioned timeline	%			
Number of approvals and clearances pending	Numbers			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 12 – Turnover rate		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Voluntary Turnover Rate	%			
Involuntary Turnover Rate	%			
Total Turnover Rate	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 13 – Time to Fill Positions		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Average Time to Fill	Days			
Time to Accept Offer	Days			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 14 – Employee Satisfaction Score		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Employee Net Promoter Score	Score			
Annual Employee Satisfaction Survey Score	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 15 – Number of Compliance Violations		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Total Compliance Violations	Number			
Serious Compliance Violations	Number			
Repeated Compliance Violations	Number			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 16 – Cost of Legal Settlements		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Average Cost per Legal Settlement	Rs Cr			
Legal Fees as a Percentage of Revenue	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 17 – Incident Rate		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Lost time Incident rate	Number			
Total Incident Rate	Number			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 18 – Days Lost Due to Injury		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Total Days lost	Days			
Average Days Lost per Injury	Days			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 19 – Threat to employee safety		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Lost time Injury rate	Number			
Near Miss Frequency	Number			
Safety Training Completion Rate	%			
Number of Workplace safety inspections	Number			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 20 – Employee Diversity Rate		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Gender Diversity Rate	%			
Ethnic Diversity Rate	%			
Age Diversity Rate	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 21 – Completion Rate of Performance Reviews		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Annual Performance Review Completion Rate	%			
Probation Period Review Completion Rate	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 22 – Succession Planning Coverage		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Successor Readiness	%			
Key Position Coverage	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 23 – Lack of Skilled manpower		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Employee turnover ratio	%			
Average time to fill open positions	Days			
Training & Development hours per technical employee	Hours			
Employee Satisfaction and Engagement Scores	Marks			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 24 – Resource Allocation Efficiency		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Resource Utilization Rate	%			
Project Delivery on Budget	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 25 – Market Competitiveness of Compensation		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Salary Benchmarking Index	%			
Compensation Quartile	Quartile (1-4)			
Salary Growth Rate	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 26 – Change Impact on Productivity		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Productivity Rate Post-Change	%			
Employee Turnover Post-Change	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 27 – Employer Rating on Job Sites		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Number of Reviews	Number			
Average Rating on Indeed	Rating (1-5)			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 28 – Turnover Rate of Key Leaders		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Key Leader Turnover Rate	%			
Retention Rate of Key Leaders	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 29 – Cyber Incident		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Average time taken to resolve complaints for information security	Hours/Days			
Instances of unauthorized access/information leakage through vendors/intrusions	Number			
Are the current mitigating controls sufficient to address the current risk?	Yes/No			
Average Delay in data backup	Days			
Instances of user rights being inconsistent with job requirements	Number			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 30 – System Availability		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Number of unplanned downtime issues reported	Number			
Total duration of unplanned downtime in the quarter	Hours			
Mean time between failures	Days			
Mean time to repair	Hours			
Percentage of critical spares available in inventory	%			
Employee trainings completion rate	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 31 – Low Schedule of Generation		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Schedule obtained against Declared Capacity (Schedule / DC)	%			
Generation Schedule Adherence Rate (Actual/Schedule)	%			
Mean Time Between Failures	Hours			
Auxiliary Power Consumption	%			

KRI Monitoring Sheet (Illustrative)				
Risk Definition	Risk 32 – Under recovery of fuel cost due to low schedule		**Quarter**	April-June 2024
Key Risk Indicator	Unit of Measurement	Current KRI Measure	Comments	Suggested Action Plan
Under recovery of fuel cost due to low schedule	INR Cr			
Fuel cost per unit of generation	Rs/Unit			
Scheduled vs. Actual Fuel Consumption	%			
Fuel cost recovery rate through energy sales	%			

The illustrative format for the Action Plan Report is as follows:

Action Plan Report – Unfavorable debt-equity ratio (Illustrative)

Risk Number	1
Department	Finance
Risk Description	Unfavorable debt-equity ratio
Risk Reporter	ED (Finance)
Risk Owner	ED (Finance)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Over-reliance on debt financing for operations, expansion & acquisitions	(1) Develop a balanced financing strategy (2) Establish a debt ceiling for borrowing (3) Consider restructuring existing debt to more favorable terms	(1) Conduct a financial review to assess current financing mix and create a balanced financing plan (2) Establish and enforce a debt ceiling policy	Wednesday, April 3, 2024	Pending	
2. Insufficient Equity financing	(1) Issue new shares to raise capital (2) Retain higher portion of earnings for financing needs (3) Reevaluate and adjust dividend payouts	(1) Plan and execute equity issuance to raise funds (2) Revise the retained earnings policy to allocate more profits to retained earnings (3) Develop strategy to reinvest earnings into high-return projects	Wednesday, April 3, 2024	Pending	
3. Declining profitability	(1) Implement cost-cutting measures to improve profitability (2) Explore new markets and products to diversify revenue sources	(1) Identify and reduce unnecessary expenses (2) Conduct operational audits and implement efficiency improvement (3) Conduct market research and develop new revenue streams	Wednesday, April 3, 2024	Pending	
4. Adverse Market Conditions	(1) Diversify revenues to reduce dependency on single streams (2) Develop strategy to hedge against financial volatility	(1) Identify and enter new markets to spread risk (2) Use financial instruments to hedge against financing volatility and structure loans accordingly	Wednesday, April 3, 2024	Pending	

Action Plan Report – Recovery of power purchase dues (Illustrative)

Risk Number	2
Department	Commercial
Risk Description	Recovery of pending power purchase dues
Risk Reporter	GM (Commercial)
Risk Owner	ED (Commercial)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Economic Recession or downturn	(1) Diversify customer base to include more financially stable clients (2) Implement flexible payment terms during economic hardships	(1) Identify and target new customer segments less impacted by economic cycles (2) Develop and offer flexible payment plans for affected customers	Wednesday, April 3, 2024	Pending	
2. Poor credit rating of customers	(1) Conduct thorough credit checks before onboarding new customers (2) Regularly review and update credit risk assessments for existing customers	(1) Implement mandatory credit checks for all new customers (2) Perform quarterly reviews of customer creditworthiness	Wednesday, April 3, 2024	Pending	

3. Inefficient or ineffective collection processes leading to delays in payment	(1) Streamline and automate the billing and collection process (2) Establish payment security mechanisms as compulsion in contracts	(1) Implement an automated billing and collection system (2) Provide training on effective collection strategies and customer communication (3) Establish checklist to ensure critical mechanisms during execution of contracts (4) Implement an automated billing and collection system	Wednesday, April 3, 2024	Pending	

Action Plan Report – Fuel Supply Shortage (Illustrative)

Risk Number	3
Department	O&M
Risk Description	Fuel Supply Shortage
Risk Reporter	Head of Power Station
Risk Owner	ED (O&M)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Inconsistent or unreliable suppliers failing to deliver fuel on time	(1) Establish contracts with performance guarantees and penalties for late deliveries (2) Develop relationships with multiple suppliers to avoid dependence on a single source	(1) Implement a comprehensive supplier evaluation process (2) Negotiate contracts that include performance guarantees and penalties (3) Identify and establish relationships with multiple reliable suppliers (4) Establish fuel storage at site for backup fuel supply	Wednesday, April 3, 2024	Pending	
2. Disruptions in fuel transportation and logistics	(1) Develop contingency plans for transportation disruptions (2) Use multiple transportation routes and methods	(1) Develop and implement contingency plans for transportation disruptions (2) Identify and utilize alternative transportation routes and methods (3) Establish contracts with multiple logistics providers to ensure flexibility	Wednesday, April 3, 2024	Pending	
3. Natural disasters and adverse weather conditions	(1) Ensure up-to-date disaster and business continuity plans (2) Establish strategic fuel reserves to cover periods of disruption (3) Predictive analytics to anticipate and mitigate weather-related risks	(1) Create and implement disaster recovery and business continuity plans (2) Maintain strategic fuel reserves to ensure supply during disruptions (3) Use predictive analytics to forecast and mitigate weather-related risks	Wednesday, April 3, 2024	Pending	

Action Plan Report – Reservoir Water Level Shortfall (Illustrative)

Risk Number	4
Department	O&M
Risk Description	Reservoir Water Level Shortfall
Risk Reporter	Head of Power Station
Risk Owner	ED (O&M)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Long-term changes in climate patterns	(1) Implement climate-resilient water management practices (2) Invest in climate monitoring and forecasting tools	(1) Develop and integrate water management practices that can withstand climatic variations	Wednesday, April 3, 2024	Pending	

	(3) Explore alternate revenue streams from the reservoir in case of irreversible impact	(2) Acquire and utilize tools for better climate monitoring and forecasting (3) Create and implement long-term strategies to adapt to climate changes (4) Collaborate with local authorities to make and implement alternate revenue plans in case of irreversible impact			
2. Changes in land use and deforestation affecting local microclimates	(1) Support reforestation and afforestation projects (2) Engage in sustainable land use planning (3) Collaborate with local authorities on environmental conservation	(1) Fund and participate in reforestation initiatives (2) Advocate and implement sustainable land use practices (3) Partner with local governments and communities to promote conservation	Wednesday, April 3, 2024	Pending	
3. Inefficient water management leading to inadequate water storage and utilization	(1) Optimize reservoir management practices (2) Implement advanced water conservation techniques (3) Conduct regular audits of water usage	(1) Review and improve reservoir management practices for better water retention (2) Introduce and adopt water-saving technologies and practices (3) Perform periodic audits to identify and rectify inefficiencies in water use	Wednesday, April 3, 2024	Pending	

Action Plan Report – Fuel Supply Cost Overruns (Illustrative)

Risk Number	5
Department	O&M
Risk Description	Fuel Supply Cost Overruns
Risk Reporter	Head of Power Station
Risk Owner	ED (O&M)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Fluctuations in global fuel prices	(1) Implement hedging strategies to lock in fuel prices (2) Diversify fuel sources and suppliers across markets	(1) Enter into fuel price hedging contracts to stabilize costs (2) Identify and contract with multiple fuel suppliers from different regions (3) Establish fixed price contracts to minimize fluctuation risk	Wednesday, April 3, 2024	Pending	
2. Low Operational Efficiency causing higher fuel consumption per unit of energy	(1) Implement regular maintenance schedules (2) Train staff on best practices for fuel-efficient operations	(1) Develop and adhere to a preventive maintenance schedule (2) Conduct training programs on fuel-efficient operations and practices (3) Consider upgradation of equipment to more fuel-efficient ones	Wednesday, April 3, 2024	Pending	
3. Changes in regulations affecting fuel costs, such as new taxes or environmental regulations	(1) Monitor regulatory environment regularly (2) Engage in policy advocacy and compliance planning	(1) Establish a regulatory monitoring system to stay informed about changes (2) Participate in industry groups and advocacy efforts to influence policy	Wednesday, April 3, 2024	Pending	
4. Over-reliance on a single type of fuel which may be subject to price spikes	(1) Diversify fuel mix to include alternative fuels	(1) Upgrade required equipment to operate on alternate fuels (2) Incorporate alternative fuels such as natural gas, biomass, or renewables	Wednesday, April 3, 2024	Pending	

Action Plan Report – Spares Shortages (Illustrative)

Risk Number	6
Department	O&M
Risk Description	Shortages in spares causing generation downtime
Risk Reporter	Head of Power Station
Risk Owner	ED (O&M)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Deficient Forecasting	(1) Implement advanced forecasting and predictive data analysis (2) Regularly review and update forecast based on usage and demand trends	(1) Adopt predictive analytics tools to improve forecasting (2) Conduct forecast at regular frequency (3) Update forecast models frequently based on data gathered during forecasting	Wednesday, April 3, 2024	Pending	
2. Supplier issues and delays	(1) Establish relations with reliable suppliers (2) Diversify supplier base	(1) Develop LTA's with regular communication with suppliers (2) Identify and onboard additional suppliers to ensure diversified supply chain	Wednesday, April 3, 2024	Pending	
3. High variability in demand	(1) Use historical data for forecasting demand frequency of critical spares (2) Implement flexible inventory policies	(1) Utilize predictive analytics for advance orders (2) Develop flexible inventory policy to accommodate for change in demand patterns	Wednesday, April 3, 2024	Pending	
4. Weak inter-department communication	(1) Regular cross department meetings (2) Integrated communication platform	(1) Schedule regular meetings between maintenance, procurement and inventory management teams. (2) Implement communication platform to integrate all relevant departments (3) Ensure centralized procurement platform	Wednesday, April 3, 2024	Pending	
5. Inadequate budget for spares	(1) Advocate for increase in budget (2) Optimize inventory to balance cost and availability	(1) Present a cost-benefit analysis to justify increased budget for spares (2) Review and optimize inventory levels to ensure cost effectiveness	Wednesday, April 3, 2024	Pending	

Action Plan Report – Regulatory Risks (Illustrative)

Risk Number	7
Department	O&M
Risk Description	Under recovery of operational costs
Risk Reporter	Head of Power Station
Risk Owner	ED (O&M)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Inadequate contract management practices	(1) Implement robust contract management. (2) Ensure clear and detailed instructions	(1) Develop and enforce standardized procedures for contracts (2) Review and revise contracts to counteract ambiguities	Wednesday, April 3, 2024	Pending	
2. Ineffective dispute resolutions	(1) Ensure robust dispute resolution mechanism	(1) Ensure all contracts adhere to robust dispute resolution mechanism (2) Create a team specialized in managing and resolving disputes	Wednesday, April 3, 2024	Pending	
3. Regulatory changes	(1) Stay updated with regulatory changes and ensure compliance (2) Include clauses for regulatory changes in contracts	(1) Establish a process for regular monitoring of relevant regulations. (2) Add clauses in contracts to address potential regulatory changes	Wednesday, April 3, 2024	Pending	

Action Plan Report – Legal Risks (Illustrative)	
Risk Number	8
Department	Arbitration Wing
Risk Description	Risks arising out of arbitration cases
Risk Reporter	In-charge (Arbitration)
Risk Owner	ED-Projects (Hydro)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Inadequate contract management practices	(3) Implement robust contract management. (4) Ensure clear and detailed instructions	(3) Develop and enforce standardized procedures for contracts (4) Review and revise contracts to counteract ambiguities	Wednesday, April 3, 2024	Pending	
2. Ineffective dispute resolutions	(2) Ensure robust dispute resolution mechanism	(3) Ensure all contracts adhere to robust dispute resolution mechanism (4) Create a team specialized in managing and resolving disputes	Wednesday, April 3, 2024	Pending	
3. Regulatory changes	(3) Stay updated with regulatory changes and ensure compliance (4) Include clauses for regulatory changes in contracts	(3) Establish a process for regular monitoring of relevant regulations. (4) Add clauses in contracts to address potential regulatory changes	Wednesday, April 3, 2024	Pending	

Action Plan Report – Emissions Risks (Illustrative)	
Risk Number	9
Department	O&M
Risk Description	Non-Compliance with NOx Emissions norms
Risk Reporter	Head of Power Station
Risk Owner	ED (O&M)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Use of inefficient equipment	(1) Upgrade equipment regularly (2) Implement rigorous maintenance schedules	(1) Identify and prioritize replacement of outdated equipment (2) Develop and follow a comprehensive maintenance schedule	Wednesday, April 3, 2024	Pending	
2. Inadequate systems for monitoring and reporting	(1) Deploy continuous emissions monitoring systems (CEMS) (2) Establish regular reporting protocols	(1) Procure and install CEMS across relevant operations (2) Develop and implement a schedule for regular emissions reporting	Wednesday, April 3, 2024	Pending	
3. Lack of awareness or failure to implement changes based on updated regulations	(1) Establish a system for monitoring regulatory updates (2) Conduct regular audits to ensure compliance with current regulations	(1) Subscribe to regulatory update services and assign responsibility for monitoring (2) Schedule and perform compliance audits at regular intervals	Wednesday, April 3, 2024	Pending	
4. Use of emissions control technology that is insufficient to meet standards	(1) Upgrade to advanced emissions control technologies (2) Periodically review and assess the effectiveness of existing technologies	(1) Identify and invest in state-of-the-art emissions control technologies (2) Conduct periodic reviews of current emissions control technologies	Wednesday, April 3, 2024	Pending	

Action Plan Report – Project delays due to challenges and increased costs in land acquisition (Illustrative)	
Risk Number	10
Department	ED-Projects (Hydro)
Risk Description	Delay in execution of projects under construction stage
Risk Reporter	Head of Project
Risk Owner	ED-Projects (Hydro)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Poor initial project planning	(1) Comprehensive project planning & feasibility studies (2) Use of project management tools to develop detailed project plans (3) Reasonable margin for contingency to be developed within proposed timelines	(1) Conduct thorough feasibility studies and detailed project planning sessions (2) Implement and train staff on advanced project management software (e.g., MS Project, Primavera) (3) Conduct detailed assessment of all processes required for implementation of the projects and explore the required contingency margin for each stage	Wednesday, April 3, 2024	Pending	
2. Insufficient or misallocated resources	(1) Resource allocation planning and management (2) Regular resource utilization reviews and adjustments	(1) Develop a resource management plan detailing required resources and allocation (2) Conduct weekly reviews of resource utilization and make necessary adjustments	Wednesday, April 3, 2024	Pending	
3. Scope Creep due to uncontrolled changes	(1) Strict scope management and change control processes (2) Regular stakeholder engagement to manage expectations	(1) Implement a change control process to evaluate and approve scope changes (2) Schedule regular meetings with stakeholders to review project progress and manage expectations	Wednesday, April 3, 2024	Pending	
4. Delays in approvals and compliance	(1) Early and proactive engagement with regulatory authorities (2) Ensure thorough understanding and planning for compliance requirements	(1) Engage with regulatory bodies early in the project lifecycle (2) Develop a compliance plan covering all regulatory requirements	Wednesday, April 3, 2024	Pending	

Action Plan Report – Delay in land acquisition (Illustrative)

Risk Number	11
Department	ED(PABD)/In-charge S&I
Risk Description	Delay in acquisition of land for projects under pre- construction stage
Risk Reporter	Head of Project
Risk Owner	ED(PABD)/In-charge S&I

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Bureaucratic and regulatory hurdles	(1) Establish a dedicated regulatory liaison team (2) Streamline the approval process through early engagement with regulatory bodies	(1) Form a team to interact with government agencies and expedite approvals (2) Schedule meetings with relevant authorities before project initiation to understand requirements and timelines	Wednesday, April 3, 2024	Pending	
2. Resistance from local communities, landowners, or other stakeholders	(1) Conduct thorough stakeholder analysis and engagement (2) Implement a robust community relations program	(1) Identify key stakeholders and engage them through regular meetings and consultations (2) Develop and implement programs to address community concerns and foster positive relationships	Wednesday, April 3, 2024	Pending	
3. Delays in completing required Environmental & Social Impact Assessments (ESIAs)	(1) Hire experienced environmental consultants (2) Start ESIA processes early in the project timeline	(1) Engage experienced consultants to expedite ESIA processes (2) Initiate ESIA activities as soon as project planning begins	Wednesday, April 3, 2024	Pending	

Action Plan Report – Talent Acquisition and Retention Risk (Illustrative)

Risk Number	12
Department	Human Resource
Risk Description	Turnover Rate
Risk Reporter	Unit HR Head
Risk Owner	ED(HR)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No

Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Lack of career advancement	(1) Implement clear career progression paths	(1) Develop and communicate a career development plan	Wednesday, April 3, 2024	Pending	
2. Insufficient recognition and rewards	(1) Establish a formal employee recognition program	(1) Implement regular awards and recognition events	Wednesday, April 3, 2024	Pending	

Action Plan Report – Talent Acquisition and Retention Risk (Illustrative)

Risk Number	13
Department	Human Resource
Risk Description	Time to Fill Positions
Risk Reporter	Unit HR Head
Risk Owner	ED(HR)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Unclear job descriptions	(1) Standardize job descriptions and role requirements	(1) Develop and review job descriptions with hiring managers	Wednesday, April 3, 2024	Pending	
2. Slow internal approval processes	(1) Streamline internal approval workflows	(1) Implement electronic approval systems and set clear deadlines	Wednesday, April 3, 2024	Pending	

Action Plan Report – Employee Engagement & Morale Risk (Illustrative)

Risk Number	14
Department	Human Resource
Risk Description	Employee Satisfaction Score
Risk Reporter	Unit HR Head
Risk Owner	ED(HR)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Unclear job descriptions	(1) Standardize job descriptions and role requirements	(1) Develop and review job descriptions with hiring managers	Wednesday, April 3, 2024	Pending	
2. Unhealthy work environment	(1) Foster a positive organizational culture	(1) Conduct team-building activities, address workplace issues promptly	Wednesday, April 3, 2024	Pending	

Action Plan Report – Compliance and Legal Risks (Illustrative)

Risk Number	15
Department	Human Resource
Risk Description	Number of Compliance Violations
Risk Reporter	Unit HR Head
Risk Owner	ED(HR)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Poor internal controls	(1) Establish and strengthen internal control mechanisms	(1) Implement regular audits and internal checks	Wednesday, April 3, 2024	Pending	
2. Inadequate risk assessment	(1) Conduct thorough risk assessments and update regularly	(1) Perform regular risk assessments and update mitigation plans	Wednesday, April 3, 2024	Pending	

Action Plan Report – Compliance and Legal Risks (Illustrative)	
Risk Number	16
Department	Human Resource
Risk Description	Cost of Legal Settlements
Unit HR Head	Unit HR Head
Risk Owner	ED(HR)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Poor internal controls	(1) Establish and strengthen internal control mechanisms	(1) Implement regular audits and internal checks	Wednesday, April 3, 2024	Pending	
2. Inadequate risk assessment	(1) Conduct thorough risk assessments and update regularly	(1) Perform regular risk assessments and update mitigation plans	Wednesday, April 3, 2024	Pending	

Action Plan Report – Health & Safety Risk (Illustrative)	
Risk Number	17
Department	Human Resource
Risk Description	High Incident Rate
Risk Reporter	Head of Power Station
Risk Owner	ED(O&M)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Inadequate Safety training	(1) Develop comprehensive safety training plans (2) Ensure regular mandatory safety drills and trainings	(1) Design detailed training programs covering all aspects of workplace safety (2) Schedule and conduct regular training sessions (3) Develop tracker to track completion rate of all safety trainings	Wednesday, April 3, 2024	Pending	
2. Lack of PPE compliance	(1) Ensure availability of PPE in usable condition within inventory (2) Ensure PPE compliance checks are met (3) Train employee on PPE usage and importance	(1) Ensure all necessary PPE is available in good condition and at an accessible place in case of emergency (2) Perform routine checks for PPE compliance (3) Conduct required training sessions for correct usage of PPE	Wednesday, April 3, 2024	Pending	

Action Plan Report – Health & Safety Risk (Illustrative)	
Risk Number	18
Department	O&M
Risk Description	Days Lost Due to Injury
Risk Reporter	Head of Power Station
Risk Owner	ED(O&M)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No

Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Inadequate Safety training	(3) Develop comprehensive safety training plans (4) Ensure regular mandatory safety drills and trainings	(4) Design detailed training programs covering all aspects of workplace safety (5) Schedule and conduct regular training sessions (6) Develop tracker to track completion rate of all safety trainings	Wednesday, April 3, 2024	Pending	
2. Lack of PPE compliance	(4) Ensure availability of PPE in usable condition within inventory (5) Ensure PPE compliance checks are met (6) Train employee on PPE usage and importance	(4) Ensure all necessary PPE is available in good condition and at an accessible place in case of emergency (5) Perform routine checks for PPE compliance (6) Conduct required training sessions for correct usage of PPE	Wednesday, April 3, 2024	Pending	

Action Plan Report – Health & Safety Risk (Illustrative)	
Risk Number	19
Department	O&M
Risk Description	Threat to employee safety
Risk Reporter	Head of Power Station
Risk Owner	ED(O&M)

Key Risk Indicator	Units of Measurement
Have all phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Inadequate Safety training	(5) Develop comprehensive safety training plans (6) Ensure regular mandatory safety drills and trainings	(7) Design detailed training programs covering all aspects of workplace safety (8) Schedule and conduct regular training sessions (9) Develop tracker to track completion rate of all safety trainings	Wednesday, April 3, 2024	Pending	
2. Lack of PPE compliance	(7) Ensure availability of PPE in usable condition within inventory (8) Ensure PPE compliance checks are met (9) Train employee on PPE usage and importance	(7) Ensure all necessary PPE is available in good condition and at an accessible place in case of emergency (8) Perform routine checks for PPE compliance (9) Conduct required training sessions for correct usage of PPE	Wednesday, April 3, 2024	Pending	
3. Improper workstation setup and risky practices	(1) Conduct ergonomics and processes assessment (2) Provide ergonomic and process training and equipment	(1) Evaluate workstations and tasks for ergonomic risks (2) Train employees on ergonomic best practices and provide necessary equipment	Wednesday, April 3, 2024	Pending	

Action Plan Report – Diversity, Equity & Inclusion Risk (Illustrative)	
Risk Number	20
Department	Human Resource
Risk Description	Low Employee Diversity Rate
Risk Reporter	Unit HR Head
Risk Owner	ED(HR)

Key Risk Indicator	Units of Measurement
Has DEI risk assessment completed as per plan?	Yes/No
Has the report been submitted for DEI risk assessment?	Yes/No
Have any unresolved DEI related issues reported in the HR review meeting?	Yes/No
Are the current DEI risk mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Bias in recruitment and hiring	(1) Implement unbiased recruitment and hiring practices	(1) Use innovative recruitment techniques and diverse hiring panels	Wednesday, April 3, 2024	Pending	
2. Lack of accountability for diversity	(1) Establish clear accountability and metrics for diversity goals	(1) Set diversity targets and hold leaders accountable	Wednesday, April 3, 2024	Pending	

Action Plan Report – Performance Management Risk (Illustrative)	
Risk Number	21
Department	Human Resource
Risk Description	Low Completion Rate of Performance Reviews
Risk Reporter	Unit HR Head
Risk Owner	ED(HR)

Key Risk Indicator	Units of Measurement
Has Performance management related risk assessment completed as per plan?	Yes/No
Has the report been submitted for Performance management risk assessment?	Yes/No
Have any unresolved Performance management related issues reported in the HR review meeting?	Yes/No
Are the current Performance management risk mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Inconsistent follow-up on performance	(1) Ensure continuous follow-up on performance improvement plans	(1) Develop and monitor individual development plans (IDPs)	Wednesday, April 3, 2024	Pending	
2. Poor documentation and record-keeping	(1) Improve documentation and record-keeping practices	(1) Implement a performance management software system	Wednesday, April 3, 2024	Pending	

Action Plan Report – Performance Management Risk (Illustrative)	
Risk Number	22
Department	Human Resource
Risk Description	Succession Planning Coverage
Risk Reporter	Unit HR Head
Risk Owner	ED(HR)

Key Risk Indicator	Units of Measurement
Has Performance management related risk assessment completed as per plan?	Yes/No
Has the report been submitted for Performance management risk assessment?	Yes/No
Have any unresolved Performance management related issues reported in the HR review meeting?	Yes/No
Are the current Performance management risk mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Insufficient talent pipeline	(1) Build a robust talent pipeline	(1) Develop and monitor individual development plans (IDPs)	Wednesday, April 3, 2024	Pending	
2. Poor documentation and record-keeping	(1) Improve documentation and record-keeping practices	(1) Implement a performance management software system	Wednesday, April 3, 2024	Pending	

Action Plan Report – Training & Development Risk (Illustrative)	
Risk Number	23
Department	Human Resource
Risk Description	Lack of skilled manpower causing technical and operational efficiency reduction and also increasing risk of hazards
Risk Reporter	Unit HR Head
Risk Owner	ED(HR)

Key Risk Indicator	Units of Measurement
Has T&D related risk assessment completed as per plan?	Yes/No
Has the report been submitted for T&D risk assessment?	Yes/No
Have any unresolved T&D related issues reported in the HR review meeting?	Yes/No
Are the current T&D risk mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. High employee turnover	(1) Enhance employee engagement through initiatives like recognition programs, team-building activities, and regular feedback (2) Offer competitive salaries, benefits, and incentives to retain employees	(1) Develop and execute a comprehensive employee engagement strategy (2) Conduct a market analysis to ensure competitive compensation and adjust as needed	Wednesday, April 3, 2024	Pending	
2. Prolonged Time to Fill Open Positions	(1) Simplify and accelerate the recruitment process (2) Utilize recruitment agencies and headhunters for specialized roles	(1) Review and optimize the recruitment workflow to reduce time-to-hire (2) Partner with reputable recruitment agencies for faster hiring of critical positions	Wednesday, April 3, 2024	Pending	

3. Weak employer brand making it difficult to attract top talent	(1) Develop and execute a strong employer branding strategy (2) Leverage employee testimonials and success stories to attract talent	(1) Create a comprehensive strategy to improve the company's reputation as an employer (2) Use employee success stories in recruitment marketing efforts	Wednesday, April 3, 2024	Pending	

Action Plan Report –Workforce Planning & Flexibility Risk (Illustrative)

Risk Number	24
Department	Human Resource
Risk Description	Resource Allocation Efficiency
Risk Reporter	Unit HR Head
Risk Owner	ED(HR)

Key Risk Indicator	Units of Measurement
Has WP&F related risk assessment completed as per plan?	Yes/No
Has the report been submitted for WP&F risk assessment?	Yes/No
Have any unresolved WP&F related issues reported in the HR review meeting?	Yes/No
Are the current WP&F risk mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Lack of clear resource allocation policies	(1) Develop and implement clear resource allocation policies	(1) Create and document resource allocation guidelines	Wednesday, April 3, 2024	Pending	
2. Poor project prioritization	(1) Establish clear project prioritization criteria	(1) Develop a project prioritization matrix and review process	Wednesday, April 3, 2024	Pending	

Action Plan Report –Compensation & Benefits Risk (Illustrative)

Risk Number	25
Department	Human Resource
Risk Description	Market Competitiveness of Compensation
Risk Reporter	Unit HR Head
Risk Owner	ED(HR)

Key Risk Indicator	Units of Measurement
Has C&B related risk assessment completed as per plan?	Yes/No
Has the report been submitted for C&B risk assessment?	Yes/No
Have any unresolved C&B related issues reported in the HR review meeting?	Yes/No
Are the current C&B risk mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Inequitable compensation structures	(1) Implement equitable compensation frameworks	(1) Develop and maintain a structured pay scale and conduct pay equity audits	Wednesday, April 3, 2024	Pending	
2. Lack of transparency in compensation	(1) Enhance transparency in compensation policies and practices	(1) Communicate compensation structures and decision-making processes clearly	Wednesday, April 3, 2024	Pending	

Action Plan Report –Change Management Risk (Illustrative)

Risk Number	26
Department	Human Resource
Risk Description	Change Impact on Productivity
Risk Reporter	Unit HR Head
Risk Owner	ED(HR)

Key Risk Indicator	Units of Measurement
Has CM related risk assessment completed as per plan?	Yes/No
Has the report been submitted for CM risk assessment?	Yes/No
Have any unresolved CM related issues reported in the HR review meeting?	Yes/No
Are the current CM risk mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Inadequate change management training	(1) Provide change management training for leaders and employees	(1) Develop and deliver change management training programs	Wednesday, April 3, 2024	Pending	
2. Unclear change objectives and benefits	(1) Clearly define and communicate the objectives and benefits of the change	(1) Develop detailed change documentation and share it with all stakeholders	Wednesday, April 3, 2024	Pending	

Action Plan Report –Reputation & Employee Branding Risk (Illustrative)

Risk Number	27
Department	Human Resource
Risk Description	Employer Rating on Job Sites
Risk Reporter	Unit HR Head
Risk Owner	ED(HR)

Key Risk Indicator	Units of Measurement
Has R&EB related risk assessment completed as per plan?	Yes/No
Has the report been submitted for R&EB risk assessment?	Yes/No
Have any unresolved R&EB related issues reported in the HR review meeting?	Yes/No
Are the current R&EB risk mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Poor employee engagement	(1) Foster a culture of engagement and recognition	(1) Conduct regular employee engagement surveys and act on feedback	Wednesday, April 3, 2024	Pending	
2. Inadequate leadership	(1) Improve leadership effectiveness through training and development	(1) Provide leadership training and development programs	Wednesday, April 3, 2024	Pending	

Action Plan Report –Leadership Risk (Illustrative)

Risk Number	28
Department	Human Resource
Risk Description	High Turnover Rate of Key Leaders
Risk Reporter	Unit HR Head
Risk Owner	ED(HR)

Key Risk Indicator	Units of Measurement
Has Leadership risk assessment completed as per plan?	Yes/No
Has the report been submitted for Leadership risk assessment?	Yes/No
Have any unresolved Leadership issues reported in the HR review meeting?	Yes/No
Are the current Leadership risk mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Lack of career growth opportunities	(1) Provide clear career progression paths and development opportunities	(1) Develop and communicate leadership development plans	Wednesday, April 3, 2024	Pending	
2. Poor work-life balance	(1) Promote work-life balance through flexible work options	(1) Introduce remote work policies, flexible hours, and wellness programs	Wednesday, April 3, 2024	Pending	

Action Plan Report – Breach of Information Security (Illustrative)

Risk Number	29
Department	IT
Risk Description	Cyber Incident
Risk Reporter	CGM/GM (IT)
Risk Owner	ED (IT)

Key Risk Indicator	Units of Measurement
Has both phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Unauthorized Access to Information	(1) Access to information based on carefully defined roles and authorization (2) Storage of critical information with secured access	(1) Periodic review of authorization by respective HOD's	Wednesday, April 3, 2024	Pending	
2. Inadequate controls over agencies providing outsourced hardware/software support	(1) Service Level Agreements with external agencies for maintaining adequate confidentiality of information	(1) Inclusion of confidentiality clause as a part of SLA in Tender specifications.	Wednesday, April 3, 2024	Pending	
3. Inadequate logical / physical access controls could result in unauthorized access/ modification to information systems	(1) Access to servers and critical IT equipment is restricted to authorized users only (2) Physical access to critical servers through access control systems	(1) Password control at all levels for accessing systems	Wednesday, April 3, 2024	Pending	

4. Inadequate password control	(1) Cyber security training for all officials including password security and multi-factor authentication if required	(1) Auto lock and password controls to be installed in all systems	Wednesday, April 3, 2024	Pending	

Action Plan Report – System Availability (Illustrative)

Risk Number	30
Department	IT
Risk Description	System Availability
Risk Reporter	CGM/GM (IT)
Risk Owner	ED (IT)

Key Risk Indicator	Units of Measurement
Has both phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Aging infrastructure	(1) Comprehensive maintenance schedule (2) Regular Inspection & monitoring of condition of IT infrastructure (3) Upgrade or replace aging equipment	(1) Develop a detailed preventive maintenance schedule (2) Conduct monthly inspections and use condition monitoring software / technologies	Wednesday, April 3, 2024	Pending	
2. Irregular maintenance schedule	(1) Ensure adherence to maintenance protocols & audits (2) Conduct regular trainings for maintenance staff	(1) Implement tracking system to monitor maintenance & audit activities (2) Develop training programs based on industry best practices	Wednesday, April 3, 2024	Pending	
3. Manufacturer defects	(1) Thorough inspection of IT equipment at delivery (2) Work with suppliers that have strong quality assurance processes and assurance	(1) Develop an inspection checklist for delivery of equipment (2) Vet suppliers based on their quality assurance processes and track performance	Wednesday, April 3, 2024	Pending	
4. Insufficient spares	(1) Implement an inventory management system to ensure critical spare parts are always available (2) Establish agreements with suppliers for quick delivery of critical spare parts	(1) Implement an inventory management system for spare parts (2) Develop and maintain a critical parts list and ensure required inventory levels are met (3) Negotiate and establish agreements with suppliers for expedited delivery	Wednesday, April 3, 2024	Pending	

Action Plan Report – Low Schedule of generation (Illustrative)

Risk Number	31
Department	O&M
Risk Description	Low Schedule of generation
Risk Reporter	Head of Power Station
Risk Owner	ED (O&M)

Key Risk Indicator	Units of Measurement
Has both phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Inadequate fuel supply	(1) Secure long-term fuel contracts. (2) Develop fuel diversification strategies.	(1) Negotiate and finalize long-term fuel supply agreements with multiple suppliers to ensure a steady and reliable fuel supply. (2) Identify and develop alternative fuel sources such as renewable energy options (biomass, solar, wind) to reduce dependency on a single fuel type.	Wednesday, April 3, 2024	Pending	
2. Mechanical Failures and Unplanned Outages	(1) Ensure adherence to maintenance protocols & audits (2) Conduct regular trainings for maintenance staff	(1) Implement tracking system to monitor maintenance & audit activities (2) Develop training programs based on industry best practices	Wednesday, April 3, 2024	Pending	
3. Inaccurate Load Forecasting	(1) Improve load forecasting models. (2) Integrate advanced analytics and AI.	(1) Utilize advanced forecasting tools and analytics to enhance the accuracy of load predictions, incorporating factors such as weather patterns, historical data, and real-time market conditions. (2) Conduct regular training for forecasting personnel on the latest forecasting techniques and tools to ensure they are well-equipped to produce accurate load forecasts.	Wednesday, April 3, 2024	Pending	

4. Insufficient spares	(1) Implement an inventory management system to ensure critical spare parts are always available (2) Establish agreements with suppliers for quick delivery of critical spare parts	(1) Implement an inventory management system for spare parts (2) Develop and maintain a critical parts list and ensure required inventory levels are met (3) Negotiate and establish agreements with suppliers for expedited delivery	Wednesday, April 3, 2024	Pending	

Action Plan Report – Under recovery of fuel cost due to low schedule (Illustrative)	
Risk Number	32
Department	O&M
Risk Description	Under recovery of fuel cost due to low schedule
Risk Reporter	Head of Power Station
Risk Owner	ED (O&M)

Key Risk Indicator	Units of Measurement
Has both phases of internal audit completed as per approved plan	Yes/No
Has the internal control framework testing been carried out as per schedule & report submitted?	Yes/No
Has the unresolved expectations arisen out of internal audit been summarized and reported in the CMD review meeting?	Yes/No
Have the audit inspection reports of Govt auditors along with the management's replies placed before the audit committee?	Yes/No
Are the current mitigation controls sufficient to address the current risk?	Yes/No

Root Causes	Mitigating Controls	Action Plans	Target Date	Risk Owner status	Risk Owner Comments
1. Volatile Fuel Prices	(1) Implement hedging strategies. (2) Diversify fuel supply sources.	(1) Develop and execute fuel price hedging contracts to stabilize fuel costs and reduce exposure to price volatility. (2) Identify and secure multiple fuel suppliers to reduce dependency on a single source and mitigate the impact of price fluctuations.	Wednesday, April 3, 2024	Pending	
2. Inaccurate Fuel Cost Forecasting	(1) Enhance fuel cost forecasting accuracy. (2) Implement predictive analytics.	(1) Utilize advanced analytics and historical data to improve the accuracy of fuel cost forecasts, incorporating real-time market conditions and trends. (2) Conduct regular training for forecasting personnel on the latest forecasting techniques and tools to ensure they produce accurate and reliable fuel cost estimates.	Wednesday, April 3, 2024	Pending	
3. Inaccurate Load Forecasting	(1) Improve load forecasting models. (2) Integrate advanced analytics and AI.	(1) Utilize advanced forecasting tools and analytics to enhance the accuracy of load predictions, incorporating factors such as weather patterns, historical data, and real-time market conditions. (2) Conduct regular training for forecasting personnel on the latest forecasting techniques and tools to ensure they are well-equipped to produce accurate load forecasts.	Wednesday, April 3, 2024	Pending	
4. Insufficient spares	(1) Implement an inventory management system to ensure critical spare parts are always available (2) Establish agreements with suppliers for quick delivery of critical spare parts	(1) Implement an inventory management system for spare parts (2) Develop and maintain a critical parts list and ensure required inventory levels are met (3) Negotiate and establish agreements with suppliers for expedited delivery	Wednesday, April 3, 2024	Pending	

Key definitions

Risk

Risk is the effect of uncertainty on objectives. It is expressed as a combination of the probability of an event over a given period and its consequence. Events with a negative impact represent risks, which can prevent value creation or erode existing value.

Risk Management

Risk management is a set of coordinated activities to direct and control an organization with regard to risk. Risk management includes risk identification, risk assessment, risk mitigation, risk acceptance and risk communication.

Risk Identification

Risk identification is the process of identifying the organization's exposure to uncertainty.

Risk Assessment

Risk assessment is the overall process of risk analysis and risk evaluation. It allows an entity to consider the extent to which potential risk events have an impact on achievement of objectives.

Risk Mitigation

Risk mitigation determines the way to deal with risk. Various mechanisms to mitigate risk are:

I. Risk avoidance/ termination – decision not to become involved in, or action to withdraw from, a risk situation.

II. Risk transfer – sharing with another party the burden of loss or benefit or gain, for a risk.

III. Risk reduction/ treatment – actions taken to lessen the probability, negative consequence, or both, associated with a risk.

IV. Risk acceptance/ retention – the acceptance of the burden of loss or benefit or gain, for a risk.

Risk Appetite

Risk Appetite is the broad-based amount of risk a company or other entity is willing to accept in pursuit of its business objectives and goals.

Risk Register

A 'Risk Register' is a document for recording the risks in a standardized format.

Abbreviations

This document uses a number of abbreviations which has been described as under:

i. RMP – Risk Management Policy
ii. C&P – Contract and Procurement
iii. CA – Corporate Affairs
iv. CGM – Chief General Manager
v. CMD – Chairman and Managing Director
vi. CRO – Chief Risk Officer
vii. CVO – Chief Vigilance Officer
viii. DMP/EAP – Disaster Management Plan/Emergency Action Plan
ix. E (Maintenance) – Engineer Maintenance
x. E (Ops) – Engineer Operations
xi. ED – Executive Director
xii. GM – General Manager
xiii. HOP – Head of Plant
xiv. HR – Human Resource
xv. IT – Information Technology
xvi. M&HS – Medical and Health Services
xvii. O&M – Operations & Maintenance
xviii. PR – Public Relations
xix. QSHE – Quality Safety Health
xx. R&R – Rehabilitation & Resettlement
xxi. S&I – Survey and Investigation

Tools for quantification and prioritization of risks

Every company in varying sectors have different approaches for quantification of risks. Some of the practices are illustrated below for reference:

1. Economic Capital

Management must understand the organization's overall risk and whether taking that risk provides an adequate return. Capital frameworks measure exposure across quantifiable risks. Economic capital models can align with the organization's specific risks and objectives, provide a consistent view on the capital required to support those risks, and help inform management about risk and return trade-offs.

Economic capital is commonly understood to utilize a value-at risk measure on the potential loss of market value balance sheet surplus. Regardless of the precise methodology, any economic capital framework seeks to determine how much capital should be held to support the actual risks the company faces. The capital definition should be aligned to a company's risk appetite definition and its unique objectives.

Some key related methodologies are as below-

(a) Valuation framework: Commonly economic capital frameworks utilize observable market variables to value assets and liabilities. Alternatively, an economic balance sheet can be defined with a discounted cash flow approach using current, but not necessarily market-consistent, assumptions. Because of their book value principles, GAAP and statutory balance sheets do not capture risk if required capital is quantified in terms of short-term losses.

(b) Time horizon: Most commonly economic capital is defined by the potential loss over a one-year horizon, where the market value at each point in time reflects the full tail of the liabilities and the applicable risk margins. A run-off approach is sometimes used that could focus on how cash flow or surplus emerges over a long-term projection, but companies typically prefer the simplicity of a short-term approach. The time horizon should be linked to the valuation framework. For example, a market-consistent valuation framework is commonly used with a short-term horizon, where a statutory-based framework may be utilized with a long-term run-off approach.

(c) Risk measure and confidence level: Regardless of the balance sheet and time horizon, a company must decide to what part of the tail it plans to measure exposure. While 99.5% value at risk is common, different confidence levels and risk measures (e.g., CTE98) could also be considered, depending on the valuation framework. Ultimately, the risk metric and confidence level should align to the unique objectives of each organization.

2. Stress Testing

Stress testing is a powerful tool to supplement a company's internal capital model due to its conceptual simplicity. Stress-testing results are easy to explain to senior management and can drive home an understanding of a company's most material risk exposures. The approach does not attempt to capture all quantifiable risks, but instead illustrates the future financial impact over several periods of adverse, yet plausible, scenarios involving one or more risk factors. Executives hesitate to act on measures they do not fully comprehend — like a diversified 99.5% value-at-risk measure on an economic balance sheet, for example. Conversely, "If this economic scenario unfolds over the next several years, here's how our balance sheet will look" can be powerful enough to drive management actions. A typical process flow for stress testing is as follows:

(a) **Identify Key Risks:** Determine the major risks that are faced by the organization (Prioritized list of risks).
(b) **Develop Scenarios:** Create hypothetical but plausible scenarios that would put significant stress on the organization for instance currency devaluation, economic downturn, non-recovery of tariffs.
(c) **Quantify the Impact:** Assess potential impact of each scenario on various aspects of the organization including performance, operations, reputation, and compliance through simulations and financial models considering a reasonable projection period preferably <1 years for short term projections, 1-3 years for

medium term projection & 3-5 years for long term projections

(d) Evaluate Response: Analyze how the current risk management strategies would perform under each scenario. Identify potential gaps in the existing plan.

(e) Document Findings: Record results of stress testing, highlight the areas where organization is vulnerable and potential consequences of the stress scenarios

(f) Adjust Plans: Based on the findings, update and improve the risk management plan, including enhancing existing controls, developing new risk mitigation strategies, or reallocation of resources to better manage the risks

(g) Review & Re-test: Regularly review and repeat stress test to ensure risk management plan remains effective

(h) Reporting: Communicate results of stress test with senior management and risk management committee

A forward-looking stress test projects a balance sheet for a given adverse deterministic scenario. Consider the following example:

(a) Risk Scenario: Consider the risk for unfavourable debt-equity ratio.

(b) Scenario: An economic downturn leads to reduced revenues and reduced cash flows thereby prompting NEEPCO to rely majorly on debt financing. This results in unfavourable debt-equity ratio, subsequently increasing credit risk & future cost of borrowings.

(c) Quantification: Assumptions can be considered such as-

a. Decline in revenue by 20%
b. Increased borrowings by 30% of existing debt
c. Interest rate on new borrowing increases by 2% points due to higher credit risk
d. Equity value declines due to lower profitability & higher leverage

Based on these assumptions impact is calculated as follows:

- Existing debt is INR 700 Cr. at 70:30 debt-equity ratio, revised debt equity ratio due to new borrowing of INR 210 Cr. becomes 75.2:24.8 which may decrease the credit rating of EESL from AA+ to A+
- Present average interest rate of existing loan is 8%, but increased interest rate becomes 10% for new borrowing
- Increased interest expense due to new borrowing would therefore become INR 21 Cr. annually

Impact of the above stress scenario would be increased credit risk, higher borrowing costs & reduced financial flexibility. Therefore appropriate response needs to be devised to mitigate or minimize impact of these possible scenarios.

(d) Response Evaluation & Adjustment of Plans: Mitigation strategies presently include Cost reduction suggestions, Debt restructuring, equity financing options. These address the impact of borrowing cost and credit risk, however, fails to address the issue of financial flexibility which may have primarily caused the issues. Therefore through business diversification, the issue of financial flexibility can also be addressed.

(e) Review & Re-test: After the above adjustment & response a revised stress test needs to be conducted. Debt restructuring may help decrease cost of existing borrowing or increase tenure of existing loans thereby easing cost burden by maybe 0.5%, NEEPCO may be able to attain 3% cost reduction in overall costs through cost cutting measures thereby reducing overall requirement of new borrowings by the amount of cost reduced. Similarly revised impact needs to be evaluated after implementation of each response measure and revised risk level for each strategy needs to be evaluated for effectiveness & revised risk level evaluation.

Presently, in industry multiple IT based tools are present which can be used by NEEPCO in effective implementation as well as quantification of risk

Prioritized list of risks

S No.	Classification	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
1.	Financial & Commercial	Commercial	Non recovery of tariffs / outstanding dues from state governments / beneficiaries leading to cash flow and growth restrictions on the organization - Around 1500 Crores pending with State governments (As on Mar, 2014)	High	High	1. Appropriate payment security mechanisms needs to be enforced in case of utility default in payment. Renewable sources are expected to have maximum priority in payment by utilities. Hence stringent payment security mechanisms can be enforced. 2. In case of state utilities defaulting, liaison with state and central government for clearance of dues. 3. Liaison with Ministry of power to form a policy on realizing outstanding dues from the beneficiaries through Central Plan Assistance which will help in getting pending payments. 4. Create alternate modes/plan for power sale in case utility defaults. 5. Create early warning system for defaulting entity based on recovery of dues in last six months.	ED (Commercial)
2.	Financial & Commercial	Financial Risks	Unfavourable Debt-Equity ratio would lead to increased credit risk and deteriorated credit rating thereby increasing cost of future borrowing.	Medium	High	1. Regularly monitor debt and debt repayment to avoid default and ensure timely payment of dues. 2. Ensure timely collection from creditors for maintaining sufficient liquidity to service debt obligations 3. Regularly monitor returns on investments and collection efficiency to ensure debt service obligations are met. 4. Discuss debt-restructuring options with debtors if debt appears to be increasing significantly.	ED (Finance)

S No.	Classification	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
3.	Operational	Project Risk	Qualitative & Quantitative variation in fuel may adversely impact plant output	Medium	High	1. Look for inclusion of adequate protection clauses in Gas Supply Agreement which can prevent supplier to undertake quality reduction in gas 2. Look for alternate solutions (Plan B) in case the gas supply from one source is of lower quality or quantity to prevent stranded assets	HOPs/ED (O&M)
4.	Operational	Operational Risk	Changes in weather conditions at project location can lead to lower units getting generated than envisaged at the bidding stage Weather constraints leads to disruptions in generation from the plant - Events of Force Majeure	Medium	High	1. Adequate due diligence via reputed third parties need to be undertaken before implementation starts on ground. 2. Protection in PPAs for recovery of fixed charges in case of 15% reduction in units generated due to weather constraints. 3. Use for higher grade technology with reflectors and tracking devices for maximum power generation from the plant. 4. Cost Benefit analysis would be needed for ensuring that the project remains viable and technology change leads to return enhancement. 5. In case of weather constraints impacting the project progress/output, relevant clauses in force majeure can be activated. 6. Such clauses would need to be activated within 7 days of the event in case the event qualifies as force majeure. 7. Delay file needs to be prepared for the project schedule delays by the organization. This is needed at the project level.	HOP/ED(Projects)/ In-charge RE

S No.	Classification	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
5.	Operational	Inventory Risk	Availability of spares impacts operational efficiency through plant downtime	Medium	High	1. Maintain strategic inventory of critical spares based on historical usage and wear pattern. 2. Forecast and track spare availability through software / database for advance planning 3. Implement predictive maintenance and identify alternative quality parts and vendors to reduce dependency on single source 4. Develop strong supplier relationships to ensure reliable supply chain and shorter lead time for spares.	HOPs/ED (O&M)
6.	Strategic & Governance	Project Risk	Delays in acquisition of land, getting clearances for various locations of the project such as dam, power house, switching yard etc. ineffective R&R efforts leading to project execution challenges	High	High	1. Liaison with State Government departments through the Relationship Management Committee to develop a provision for land acquisition. 2. Apart from direct compensation for assets lost to land acquisition, benefit sharing programs should be designed to sensitize the indirect benefits of development projects to the impacted stakeholders. 3. Create large pool of locally available skilled and employable people to ascertain less resistance from local people for land acquisition, as they will get employment from the project. 4. Monitor the effectiveness of compensation, relocation, and assistance programs provided at the time of Rehabilitation & Resettlement. 5. The Contracts division shall ensure all legal documents related to clearances and land acquisitions are approved by the authority and are in place before awarding the contract. 6. Land acquisition can be started as a parallel	ED-(Projects)/ED (PABD)/ HOP/ GM (Env.)/Land Acquisition Cell

S No.	Classification	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
						activity to clearances thus allowing for issues related with land acquisition to settle in due course of time. 7. Follow GoI land acquisition guideline (FY 2015) to recalculate compensation under new scheme- Land acquisition 8. Take adequate provisioning at the time of design of the plant. 9. File additional petitions on "Change in Law" for tariff revision of the plant. 10. Follow the R&R policy for preventing delays on account of R&R issues. 11. To liaise with State Government's R&R department/directorate and with District collector/ administration through the Relationship Management Committee. 12. Constitute a Community Relationship Cell which shall actively engage with local administration as part of local area development committee to discuss the modalities of the company's social responsibility. 13. Carry out proactive CSR activities in key areas including communicating benefits of projects to the public at large in the project area to ensure public buy-in for land acquisition and R&R activities.	
7.	Legal, Regulatory & Compliance	Regulatory Risk	Lack of adequate process to ensure that all State and Central laws and regulations are tracked and complied.	High	High	1. Compliance Management Process shall be in place to identify/review periodically all national/state laws and regulations which NEEPCO shall comply to avoid the risk of any legal proceeding and being non- compliant.	Head of Legal Department

S No.	Classification	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
8.	Human Resource	People Risk	Lack of adequate safety measures at project site/stations may cause injuries / threat to life of personnel	Medium	High	1. For safety measures at project sites/ stations, all persons on at sites must comply with Personal Protective Equipment (PPE). 2. Mandatory PPE requirements for project sites/ stations shall include: • Hard hat • Safety glasses • High visibility clothing (long sleeves and long pants) • Safety boots • Hearing protection and gloves carried and used where required 3. Safety Officer or Dedicated personnel in charge of safety measures shall be posted at the power station/project that will ensure compliance to the PPE requirements.	HOPS/ ED(O&M)
9.	Human Resource	People Risk	Lack of skilled manpower resources at supervisory and mid management levels due to reduced recruitment and aging workforce and lack of adequate quality of outsourced resource at workman/labor level	High	High	1. Manpower planning/assessment and Succession Planning shall be performed annually to establish staffing levels and a systematic process shall be followed for identification of required human capital resources, adequate competencies and the development of strategies necessary to meet these requirements. 2. Key demographic employment data and characteristics (e.g. sex, average age, occupational groups, skills/competency profiles, etc.), internal workforce trends (e.g. retirement eligibility, vacancy rates, turnover, etc.) and inputs from various departments are important factors which should be considered when conducting a comprehensive manpower analysis. 3. Adopt HR tools like employee satisfaction survey, exit interviews and external	Head of HR

S No.	Classification	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
						benchmark study to frame and implement a companywide retention policy to prevent loss of business skills and check attrition. 4. Monitor effectiveness of employee trainings and training completion rate among employees.	
10.	IT & Cybersecurity	Cybersecurity	Unauthorized access, disruption, alteration, or misuse of information technology systems, networks, or data, that can impact through significant financial losses due to theft of financial assets, intellectual property, or sensitive data	Low	High	1. Implementation of robust cybersecurity measures like firewall, anti-virus, intrusion detection systems, and regular security audits 2. Alignment with NIST, DPDPA, ISO 27000 for up-to-date cybersecurity measures	CGM(IT)/ ED(IT)
11.	IT & Cybersecurity	IT Systems	Loss or significant disruption resulting from the unavailability of critical IT systems that are essential for daily operations	Medium	High	1. Proactive maintenance and readiness of Redundancy & failover systems 2. Regular maintenance and updates of all IT systems 3. Regular training of employees on relevant IT systems. 4. IT Disaster recovery planning, training and off-site backups and manual controls 5. IT vendor support will enable quicker & robust disaster recovery efforts	CGM(IT)/ ED(IT)

Comprehensive list of risks

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
1.	Operations	Projects-Hydro	Geological Risk	1. Land Slide during construction stage leading to stopping of work in the following area: a. Approach Road b. Excavated Area in Dam, Surge Shaft, Valve House, Surface Penstock, Vertical Shaft and Power House 2. Land slide in reservoir area in O&M stage	High	High	1. Landslide hazard zonation mapping of the project 2. Assess their impact on the project and make necessary provisions 3. Build a Knowledge Management System which will be the repository of all projects related information. This System can be used to understand the reasons for cost and time overruns on account of uncertain geological conditions. Estimation for new projects should take these learning into account. 4. Ensure detailed surveys / studies are carried out by competent personnel / consultants during the detailed Investigation (DPR) stage to address geological challenges anticipated in the feasibility stage. 5. Ensure effective implementation of project design in line with the DPR prepared during the detailed Investigation stage of the project. 6. Ensure a comprehensive analysis is performed to ascertain the causes of adverse events with regard to geological aspects. 7. Ensure that standards defined at the project conception are strictly adhered to in project implementation	ED(Projects)/ ED(O&M)/ HOPs/HOP

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
2.	Strategic & Governance	Corporate	Competition Risk	Delay in process of decision making leading to opportunity loss for NEEPCO	High	High	1. Design a system workflow for the approval of files or procedures to improve coordination between various departments and enable quick response and prompt decision. 2. The estimated turnaround time for these decisions and the responsibility centres for decision making shall be clearly identified. Notification mails and alerts shall be inbuilt in the workflow which will send alerts to the personnel as the deadline for decision making approaches. 3. Undertake tendering to empanel agencies for bidding for projects.	ED(CP)/ ED(PABD)
3.	Operations	Projects-Hydro/ Projects-Thermal/ Projects-Renewable	Project Risk	Law and Order issues, risk of militant attack, unanticipated regulatory changes or lack of infrastructure at sites leading to project time and cost overruns	High	High	1. Proactively liaison with Government departments and maintain healthy relations. Ensure discussions take place prior to policy changes. 2. Ensure operational security equipment like CCTV, Reinforced Barbed Tape (RBT) on-site with regular maintenance. 3. Intrusion detection and easy warning systems (button) to be installed in place & regularly monitored & maintained. 4. All vulnerable areas to be installed with high mast lights. 5. Inspection/ patrolling at night to be carried out to avoid any mishap at the power station. 6. Emergency response measures such as immediate medical aid and ambulance facilities shall be made available at project sites/power stations. 7. The power station shall be indemnified	ED(S)/ ED(Projects)

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
							for such kind of risk under Industrial risk policy 8. Ensure issues are taken up timely with regulator so that costs due to such regulatory changes are passed on to the beneficiaries	
4.	Operational	Projects-Thermal	Project Risk	Inadequate lighting maintenance in critical areas	High	Low	1. Ensuring safety procedures are followed 2. Regular maintenance of lighting of critical areas in line with safety procedures	HOPS/HOP
5.	Strategic & Governance	Projects-Renewable / Projects-Hydro	Capability/ Feasibility Risk	Lack of expertise in new areas of growth like renewables/ JVs and lack of adequate social, environmental and technical feasibility assessment before taking up projects and posing project implementation challenges	High	High	1. A dedicated team shall be assigned to gain thorough knowledge of the Thermal, Solar & Wind Power sector. 2. The team shall be adequately trained to develop competency in these sectors. 3. Encourage employees to learn the renewable skills via deputation in JV projects. Such employees can work on NEEPCO's pay roll and can learn from private sector in renewable project implementation on design, implementation and O&M side. 4. Tie up with industrial training houses like NPTI etc. for training in project implementation for interested /deputed employees 5. A framework shall be created for taking up new projects. Only projects passing the filter defined within the framework should be taken up. 6. Knowledge repository shall be built in NEEPCO for supporting creation, capture, storage and dissemination of information related to Thermal, Solar	ED(PABD)/ ED(CP) / In-charge S&I/In-charge RE

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
							& Wind Power sector. This will enable employees to have ready access to the organization's documented base of facts, sources of information, and solutions. 7. Engagement with technical and management consultants with the perspective of capacity building in the domain 8. Before taking up projects, rapid study on preliminary feasibility to be carried out. The study should encompass the following aspects: • Displacement and social appreciation • Probability of obtaining and status of various statutory clearances • Engineering and Geology • Considering the following select parameters in feasibility assessment: • Dam Height • HRT tunnel length • Maximum tunnel height • Tariff • Geological conditions of Dam, Tunnel • Construction Material • Diversion Design Flood • Sediment Risk and Management • Power evacuation and construction power availability	

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
6.	Operations	Projects-Hydro/ Projects-Thermal/ Projects-Renewable	Disaster Risk	Lack of sensitization on disaster management policies at corporate and plant level	High	High	1. Disaster management policy for the organization incorporating the best in industry as well as taking into account the local conditions and the technology under implementation for NEEPCO 2. Training workshops on disaster management at the plant with quarterly drills for implementation of learnings from the workshops	HOPS/ HOD
7.	Operational	Projects-Hydro	Environment Risk	Risk of flooding of power house, dam breakage, loss of human animal life, material, machinery etc. due to floods and unprecedented rains	Medium	High	1. Indemnify the company against possible losses by insuring the projects /power plants under natural calamity risk insurance policy. 2. Develop Disaster Management plan for each power plant / project with delegation of responsibility and set up nodal disaster Management committee to provide guidance at the corporate office to prevent any such loss. 3. Ensure that the company's disaster Management plan is captured in the State's Master disaster Management Plan. 4. Establish Gauge and Discharge sites at upstream of barrage to have prior information of flow sufficiently before flood reaches the barrage sites. 5. Complete shutdown of power house shall be ensured whenever the ppm of inflow water of river increases beyond the permissible level. 6. Pre and post monsoon inspections by Dam Safety Team shall be carried out regarding the health status of Dam and their remedial measures shall be implemented. 7. NEEPCO shall ensure following	ED(Projects) /ED(O&M)/ HOPS/HOP

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
							steps for information regarding release of water in downstream: • Establish a siren with an appropriate blow range. • Notice boards to be erected in the downstream area. • Additional communication systems like calls, letters, circulars to local authorities, announcements on speakers etc. to be used during monsoon period and reservoir flushing. 8. In addition NEEPCO can also look at :- (a) Development of Flood early warning system (b) Development of inundation simulation for flood plain zonation as mitigation measure of Dam Break analysis	
8.	Operations	Projects-Hydro/ Projects-Thermal/ Projects-Renewable	Project Risk	Non-availability of contractors in case of breakdown at site	High	High	1. Identify Contractors having specialized capabilities to attend major breakdown of the machines. 2. Empanel the contractors that would be available at short notice for attending breakdowns at project sites in remote areas. 3. Develop Contractors development programme to encourage and train contractors in execution of specialized maintenance requirements.	ED(Projects)/ ED(O&M)/ HOPS/HOP
9.	Operations	Projects-Hydro/ Projects-	Project Risk/ Performance Risk	Lack of performance and technical audit for power plants leading	High	High	1. Plant performance audits have not been conducted for plants which have been in operation for years	HOPS/ED (O&M)

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
		Thermal		to sub optimal performance			2. Technical reviews and performance audits can optimize the plant performance- Can also reduce any penalties that the organization is paying for reduction in plant performance with age of the plant 3. Technical/ Plant performance audits can improve the PLF of the plant along with enhanced preventive maintenance of equipment thereby increasing the life of the plant.	
10.	Strategic & Governance / Financial	Corporate	Legal	Lack of standard processes to handle claims/ litigations leading to possible liabilities for organisation	Medium	Medium	1. Prepare a claim management manual for use uniformly across the organization. 2. Empanel reputed firms for providing case as well as expert witnesses for taking up in case of national/ international arbitrations 3. Encourage plant heads to prepare delay files for documenting all delays from contractors/ suppliers in case of claims at the time of plant commissioning	ED(Projects) / In-charge Arbitration/ HOP
11.	Strategic & Governance	Corporate	Project Risk/ Time Risk	Lack of proper monitoring and project management tools leading to project delays	High	High	1. Develop an internal mechanism for proper monitoring of project execution (Integrated Scheduling, regular updation and corrective actions, cost components). Review the effectiveness of procedures in case project is delayed by 5% of the project time schedule to improve the planning and execution to avoid time or cost overruns. 2. Ensure adequate resource allocation and efficient mobilization to overcome manpower shortage through effective project monitoring.	ED(Projects)/ ED(CPM)/ HOP

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
							3. Implement a system to regularly review costs and fix appropriate responsibility centers for managing costs of the project. 4. Continuous monitoring of the controllable delays to protect the company from adverse effects of time and cost overruns. Uncontrollable delays to be recorded and passed onto the beneficiaries via tariff as per CERC guidelines. 5. Implement Management information systems (MIS) that would improve coordination between various departments and enable quick response and prompt decision making as well as bring to attention areas of short-fall impeding the projects.	
12.	Strategic & Governance	Corporate	People Risk	Lack of Succession Planning, Manpower attrition and non - development of core competency.	High	High	1. Manpower planning/assessment and Succession Planning shall be performed annually to establish staffing levels 2. Adopt various mechanisms via Financial/Non-financial reward & recognition systems including Performance related incentive based on individual/ group performance which would lead to an increased organizational productivity, 3. Adopt HR tools like employee satisfaction survey, exit interviews and external benchmark study to frame and implement a companywide retention policy to prevent loss of business skills and check attrition.	ED HR

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
13.	Strategic & Governance	Corporate	Competition Risk	Lack of experience in competitive bidding and increased competition from private and government non-hydro power companies entering into hydro power sector may result in the loss of projects	High	High	1. Identify skill gap and seek assistance from external consultants/ hire resources with adequate knowledge/experience in competitive bidding. 2. Adequate training/exposure to be provided to the existing resources to build competencies in competitive bidding. 3. Plan to build capabilities for participating in competitive bids, by creating a Knowledge Management System which will have repository of all project bids by NEEPCO or by its competitors in order to identify areas where NEEPCO can improve (such as cost and time reduction).	ED(CP)/ED (PABD)
14.	Strategic & Governance	Projects-Thermal	Information Risk	Information flow is not organized between employees of same team and inter-department. This leads to difficulty in resolving technical issues in a timely manner due to communication barriers, lack of familiarity with SEC equipment and absence of local support from SEC	High	High	1. Knowledge repository / Knowledge Management System shall be built in NEEPCO for supporting creation, capture, storage and dissemination of information. This will enable easy transfer of knowledge between employees and departments who will have ready access to the organization's documented base of facts, sources of information, and solutions. 2. Knowledge sharing, proper and elaborate handholding of records should be ensured at the time of relieving/ transfer of personnel. 3. The organization's documented base of facts, sources of information, and solutions will enable quick decision making in case the same uncontrollable event has occurred in past.	ED (O&M) / ED (Commercial) / HR Department

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
							4. Regular workshops shall be conducted to discuss learnings from past experiences on how delays in decision making have impacted time and cost and how Knowledge Management System can enable them to promote quicker decision making. 5. Develop an internal monitoring mechanism for the approval of files or procedures. Identify the key decision points, the delays which will be detrimental to the overall project. The estimated turnaround time for this decision and the responsibility centers for decision making shall be clearly identified. 6. Management information systems (MIS) shall be implemented that shall improve coordination between various departments and enable quick response and prompt decision making as well as bring to attention areas of short-fall.	
15.	Operational	Projects-Thermal	Inventory Risk	High cost of spares/inventory due to sticking with OEM for most of the spares under the threat of revoking of warranty by OEM if indigenous spares are used.	Medium	High	1. Follow VFD/ ABC level inventory management system for decreasing lead time in procurement 2. At the time of design look for decreasing the lead time of procurement via preference for domestic equipment 3. Keep high lead time items above normative limits to prevent such equipment leading to plant operation constraints.	HOPS/ED (O&M)

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
16.	Strategic & Governance	Projects-Renewable/ Projects-Thermal/ Projects-Hydro	Political Risk	Abandoning of projects midway due to: (i) Change in Government regulations. (ii) Change in Government policies. (iii) Change in Government directives.	Low	High	1. Do proactive liaising with State Government departments via Relationship Management Committee to maintain healthy relations where discussions can take place prior to regulatory/ policy changes. 2. Closely monitor future policy/ regulatory developments and adopt advocacy to facilitate that framing of any changes in policy/ regulations take note of the NEEPCO's concerns.	ED(Projects)
17.	Strategic & Governance	Projects-Renewable	Technology Risk	Maturity of the technology used for the plant can lead to issues in performance in medium term	Low	High	1. Use stringent norms as prescribed by MNRE for taking up the project. Put the norms as prerequisite for bidding. 2. Empanel reputed agencies for partnership in project implementation selected via tendering processes.	In-charge RE
18.	Human Resource	Corporate	People Risk	Lack of training to keep employees abreast with the industry's latest technologies or with evolving industry demands/international standards	High	Medium	1. NEEPCO shall define mandatory training hours per employee and shall review and revise the training curriculum periodically to develop employees' core competencies. 2. Perform Training Need Analysis exercise to design the training curriculum for all the organizational roles. 3. All parameters shall be considered while drafting of training calendar including appraisal forms of employees, special request from Department Heads, request from employee, new business line, new system implementation etc. 4. The record of training conducted	Head of HR

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
							during the year shall be compared with the approved training calendar. Identify whether there were any delays in imparting the training vis-à-vis the approved plan.	
19.	Strategic & Governance	Corporate	Commercial	Client concentration risk - Lack of diversified portfolio of clients.	High	Medium	1. NEEPCO may consider participation in tariff-based bidding to get the projects from State government and other agencies in addition to the allocation from the Central government. - NEEPCO may also consider taking projects from the neighboring countries.	ED(PABD)/ ED(CP)
20.	Strategic & Governance	Corporate	Market Risk	Allocation of difficult projects to NEEPCO and easier projects to private players	High	Medium	1. Do proactive liaising with the Government departments via Relationship Management Committee to maintain healthy relations where discussions can take place prior to award of projects. 2. Ensure timely completion of approval process with Government support and enter into PPAs to reduce offtake risk.	ED(PABD)/ ED(CP)
21.	Strategic & Governance	Projects-Hydro	Operations	Non - availability of defined operational strategy for power stations working in cascade causing generation loss.	Medium	Medium	1. NEEPCO shall create a joint monitoring and remote-control center in consultation with other stakeholders for joint operations for the cascaded plants. This would entail real time monitoring of reservoir head for optimized generation besides facilitating regulation of flow in downstream areas of dams which will also ensure the safety measures to avoid downstream mishaps. 2. NEEPCO shall use supervisory control and data acquisition system (SCADA) for real time monitoring.	ED(O&M)/ HOPS

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
							3. NEEPCO through proactive liaisoning should ensure that such projects which may be detrimental to operation of company's projects do not get sanctioned. 4. NEEPCO shall form a relationship team at the Power stations which will proactively liaison with other company's power projects in case of dependency on them to mitigate the risk of loss generation.	
22.	Legal Regulatory & Compliance	Corporate	Regulatory	Unanticipated changes in the regulations/ policies on river water release by State/ Central government could affect the operations of the Power stations	Medium	Medium	1. Keep a provision in the MoU with State Governments for ensuring minimum guaranteed discharge of water in river. 2. In the eventualities of such reduction in water discharge in river, appropriate authority i.e. CEA/CWC etc. shall be approached for review of designated parameters of hydro generating stations i.e. capacity, design energy etc.	ED(CP)
23.	Strategic & Governance	Projects-Thermal	Strategy Risk	Choosing in-house O&M can lead to issues in cost management for the project	Medium	Medium	1. NEEPCO's strategy to undertake O&M internally can lead to issues in cost management in medium/long term. This can be prevented by partly outsourcing O&M in areas where NEEPCO has developed expertise - Hydro and Thermal 2. Can improve management of the plant as well as improve bottom line for the company. NEEPCO personnel involved in O&M currently can be moved to supervisor role for O&M contracts	ED(O&M)/ HOPS

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
24.	Operational	Corporate	Political Risk	Time and cost overrun due to lack of adequate/ timely clearances/ approvals from the respective Ministries	High	High	1. Identify the various State Government departments such as Environment and Forests which contribute mainly towards the delays and sensitize them about the various issues relating to the project. 2. Analyze the procedures involved in various clearances and interactions with thzne Government and suggest improvement opportunities.	ED(PABD) /ED(CP)/ GM(Env)
25.	Operational	Projects-Thermal	Power Generation and Offtake	Inability to supply power under existing PPA due to transmission capacity constraints leading to under recovery of capacity charges For e.g.:- 1. Power evacuation may be a challenge in near future For E.g. 2: . Island mode operation during grid disturbances reduces power generation	High	High	1. Medium term solution: Look for alternate methods for power evacuation For e.g. Bangladesh line (100 MW) work is under progress and might help in this situation 2. Contractually look to safeguard the organization via clauses leading to recovery of part/full fixed charges in case of transmission constraints. This is prevalent in new DBFOO framework for power sale.	ED(O&M)/ED (Commercial)

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
26.	Operational	Projects-Hydro	Project Risk	Risk of damage to underground structures and vital installations due to fire	Medium	High	For safety against fire, a fire protection program (FPP) shall be in place which consists of the following: 1. Staff positions responsible for management and implementation of the FPP. 2. Administrative policy, procedures, and practices for training of general plant personnel. 3. Adequate firefighting and smoke masks shall be stored at the power stations. 4. Periodic inspection, testing and maintenance of fire protection systems shall be conducted to ensure the fire equipment readiness at all times. 5. Design the plant to ensure availability of fire hydrant pressure. This can be done via booster compressor at appropriate plant locations. 6. Cover fire security as a part of disaster management policy of the organization and undertake trainings of the same on a quarterly basis for employees. 7. Ensure proper illumination to GT rooms 8. GT cabin for ensuring proper fire system to be operational in case of disasters. 9. Maintain water availability for fire systems to work properly at the plant location. Proper warnings should be displayed at the control room in case of fire system not working at the site.	HOPS/ ED(O&M)

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
							10. Installation of automatic fire detection, alarm, and suppression systems, including fire water supply and distribution systems • Manual suppression capability including portable fire extinguishers, standpipes, fire hydrants, hose stations. • Regular fire mock drills shall be conducted to the train the personnel. • Alternate escape routes especially near transformer gallery and proper ventilation to minimize risk to human lives. • Emergency response measures such as immediate medical aid and ambulance facilities shall be made available at project sites/power stations.	

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
27.	Operational	Corporate	Contracting Risk	Shortfall in JV partners / EPC Contractors anticipated performance may be due to his own reasons or local/ forced conditions, disagreement with JV partners / EPC Contractor - leading to project delays / inadequate performance	Medium	High	1. Upon signing the agreement with the vendor, define Service Level agreement (SLAs) against key performance indicators along with intermediate milestone penalty matrix which shall form part of agreement and shall be continuously monitored to evaluate vendor performance. 2. Adequate contractual protection of the organization should be ensured. Impose stringent LD penalties on contractors in case of delays in mobilization. Keep milestone wise payments. 3. There shall be a provision in the contract that shall ensure the waiver of intermediate milestone penalties if the contractor meets the final deadline. 4. Additional clauses seeking approval from NEEPCO in case of further sub-contracting of work on the engagement. 5. Stringent binding penalty clauses shall be included in the contract with the JV partners/ contractors to ensure their optimal performance. 6. Develop a mechanism to ensure payment from contractor to sub-contract and from sub-contractor to labors is happening on a timely basis. 7. The Engineer in charge at the power stations/ project sites shall ensure minimum wages are being paid to the labors on a timely basis.	ED(C&P) For JVs – ED(CP)/ ED(RE)

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
28.	Operational	Projects-Hydro	Project Risk	Lack of adequate monitoring controls/studies regarding collection of silt data which may lead to decreasing capacity of the reservoir/ damage to the turbines.	Medium	High	1. Silt Level at Operating power stations shall be continuously monitored, and Silt flushing shall be carried out as preventive measure. 2. Silt to be measured preferably at the confluence points of tributary/ nallah and quantum of Silt should be monitored in the reservoir and to take remedial measures as warranted. 3. Checking of Silt content should be carried out in Site laboratory by taking water sample from time to time so that machine can be stopped if Silt content goes beyond permissible limit. 4. Anti-corrosion compound coating of underwater components for reduction of damage due to silt. 5. Reservoir Capacity of power stations shall be monitored regularly and corrective actions such as excavation; dredging, siphoning, draining, flushing, flood sluicing etc. shall be taken, wherever required. 6. Periodic flushing shall be carried out on monthly basis during monsoon season for de-silting of reservoir as per reservoir flushing guidelines.	HOPS/ ED(O&M)

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
29.	Operational	Projects-Thermal	Project Risk	Commissioning activities - Lack of Punch list awareness can lead to ad hoc commissioning in thermal units which in turn can lead to constraints in project operations	Medium	High	1. Create a list of commissioning activities for effective tracking. 2. Use tools for commissioning activities tracking in MS projects.	HOP
30.	Operational	Projects-Hydro	Project Risk	Inadequate/lack of timely equipment and civil maintenance exercise which may result in loss of power generation due to frequent equipment breakdowns.	Medium	High	1. Annual preventive maintenance and minimum inventory plan for spares to be adhered to minimize breakdown losses in power generation. 2. Conduct an analysis of past data to check if maintenance schedules and norms are effective. 3. Link individual incentives for reducing failures which can be avoided by high quality maintenance.	HOPS/ ED(O&M)
31.	Operational	Projects-Renewable	Project Risk	Grid connectivity & Transmission constraints and delays can lead to project delays, issues in power sale and thereby lead to penalties in PPAs	High	High	1. Provide notice and applications (CEA) to authorities 3-4 months before the project expected commissioning date 2. Liaison with local authorities in getting final approval for grid connectivity 1 month in advance of actual commissioning of the project. 3. Plan renewable projects by keeping into account availability of transmission for evacuation 4. Add additional clauses in the PPA with utilities for getting part of fixed charge recovery in case of transmission constraints. This is the prevalent practice in new DBFOO power sale bids in conventional energy. Can also be implemented in	ED(CP)/ ED(PABD)/ ED(Projects)

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
							solar/wind projects. SECI standard PPA can be used for adequate clauses protection.	
32.	Operational	Projects-Renewable	Technology Risk	Selection of improper construction equipment/ technology especially for panels/Inverters by the EPC contractor	Low	High	1. Selection of contractor/EPC player with substantial experience in the area of project installation through Quality based selection process in tendering 2. Ability of the contractor to handle local constraints in technology implementation to also be an input in contractor selection by the project team	In-charge RE
33.	Operational	Corporate	Contracting Risk	Non-settlement of claims of various contractors leading to disputes resulting into arbitration and legal complications besides delay in projects.	High	Medium	1. Resolve delays in contractor payment and cost escalation, if any on account of force majeure event immediately to prevent project delays and cost implications. 2. A dedicated dispute resolution committee shall be constituted for every project by corporate Contracts division to Ensure early settlement of claims. 3. The committee shall work on an ongoing basis throughout the project with adequate financial powers for early detection and settlement of the contractual dispute.	HOP/ ED(Projects) / In-charge Arbitration
34.	IT & Cybersecurity	Corporate	Technology Risk	Insecure IT and Communication systems may result in its exposure to cyber threats.	High	Medium	1. Information security Management System (ISMS) shall be implemented in order to eliminate or minimize the impact that various security related threats and vulnerabilities might have	CGM(IT)/ ED(IT)

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
							on NEEPCO. 2. IT security policy should be developed/ reviewed and implemented to minimize disruption of IT services due to malware attacks and also pilferage of information. 3. The organization shall determine its requirements for the continuity of IT infrastructure in adverse situations, e.g. during a crisis or disaster. A disaster Recovery Site as part of business continuity plan shall be developed at an alternate location.	
35.	Operational	Projects-Renewable	Contracting Risk	Award of Turn Key contracts can lead to higher capital costs and lead to return reduction for NEEPCO	High	Medium	1. NEEPCO can look to award turnkey contracts in the initial stages of portfolio development 2. When 2-3 projects have been implemented through this route, NEEPCO can look to award specific element wise contracts for return optimization. NEEPCO can also use existing JVs with WAAREE for bidding in new projects via separate SPV	ED(PABD)/ ED(Projects)/ In-charge RE
36.	Financial & Commercial	Projects-Renewable	Financing Risk	Renewable projects with local constraints can have financing risk associated with them leading to higher cost of raising funds for the organization	High	Medium	1. Create separate SPVs for effective handling of the renewable project portfolio. 2. Undertake joint projects with reputed private companies E.g. JVs undertaken by NEEPCO in Wind and Solar space.	ED(PABD)/ In-charge RE

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
37.	Operational	Projects-Renewable	Environment Risk	Delays due to:- (a) Emissions / Pollution / Contaminations (b) Disaster (c) Destruction / Damage (force majeure) (d) Objections by third parties	High	Medium	1. Use appropriate testing for the technology to be used. Permits /Clearances needs to be assessed beforehand to provision for environmental clearances at the bidding stage. 2. Environmental Audit - Post project implementation, undertaken environmental audit for assessing the impact of the project. Follow appropriate measures as per R&R policy of the organization.	ED(CP)/ ED(O&M)/ GM(Env)
38.	Operational	Projects-Thermal	Procurement Risks	High lead time of ODC components due to transportation challenges in North eastern states For E.g. in TGBPP: - ODC comes to Kolkata from Hyderabad through sea route then from Kolkata to Badarpur through river route and then from Badarpur to TGBPP through road.	High	Medium	1. Prepare procurement plan for each quarter based on inputs from the project management team which in turn would be based on actual progress of the project on ground. 2. Based on the information provided in procurement plan, resources on ground plan actual execution of logistics in case of ODC components in advance. 3. When ODC components are available at nearest point of delivery as per contract, hire suitable third parties for transportation to the plant location 4. Engage with suitable insurers for taking up transportation risks. File claims on a priority in case of damage to equipment.	ED(Projects)/ HOP
39.	Operational	Projects-Thermal	Procurement Risks	Transportation is dependent on seasons; river transportation is not possible in winter and road transportation is not possible in	High	Medium	1. Customize project plan taking into account delays in equipment transportation. 2. Engage with reputed third parties to transportation - These third parties can be empanelled via tendering.	ED (Projects)/ HOP

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
				monsoon due to land slide and other conditions.				
40.	Human Resource	Projects-Thermal	Project Risk	Burn and Trauma Centers are not present in some units. For e.g. Burn unit and Trauma center is not there in Agartala, people are rushed to Kolkata in case of any eventuality	High	Medium	1. Follow guidelines for setting up burn and trauma center for the project. 2. Integrate the centers in safety policy of the organization. 3. Undertake burn and trauma insurance for employees via reputed agencies	ED(Projects)/ HOP
41.	Operational	Projects-Thermal	People Risk	Lack of skilled laborers/contractors: The laborers and contractors who are carrying out the construction work at the project site are local to Arunachal and may not have required skills for the activities they are assigned. Key activities like welding require highly specialized worker, bringing them to the project site would involve higher cost. They are also not aware of the safe operating procedures for the activities.	High	Medium	1. It is necessitated by the state government to employ workers from local place; it also helps maintain relationship with the local people for smooth construction operations 2. It may not be easy to substitute the working staff from outside the local area. However, skill development training for livelihood would be imparted to suitable local people. 3. Updation of CSR policy in line with major industry standards 4. Collaborate with the State Ministry to set up cells with the objective to sensitize the people and create awareness regarding the benefits and inherent advantages of hydropower projects. 5. Take up the matter of Law and order due to local agitation with the concerned administration highlighting the importance of such projects for the development of State or region. 6. Constitute a Social Responsibility Cell to actively engage with local administration as part of local area	HOP/HR Dept.

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
							development committee to discuss the modalities of the company's social. 7. Social Responsibility Cell shall factor in the social costs as part of its CSR/R&R activities to create employment opportunities	
42.	Operational	Projects-Thermal	Quality Risks	Dependence on the contractors for completion of the job, lack of monitoring/ supervision of the activities: Activities like construction of tunnel requires round the clock work. Construction site has many activities going on simultaneously; NEEPCO staff may not be sufficient/available at the site for monitoring the same. There are no early triggers, poor construction work may face up during the life of the project	High	Medium	1. There is higher number of senior staff in the project site, whereas there is shortage of junior staff in the project site. 2. In most of companies the ratio of junior staff is significantly higher than the senior staff. 3. Recruitment should be carried out in order to fill the vacancies of the officers. Junior staff can also be transferred from other completed/under construction site. Higher number of qualified people would ensure that standard of work being carried out is maintained at good level.	Head of HR

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
43.	Operational	Projects-Hydro	Environment Risk	Uncertain working environment due to extreme weather conditions/ difficult access to site may lead to subsequent delays in the project.	Medium	Medium	1. Estimate project timelines taking into consideration the past weather conditions data. Continuously monitor weather forecast by recording weather patterns via weather maps	ED (In-charge of projects)/ HOP
44.	Operational	Corporate	Project Risk	Non-maintenance of proper records, notes and documents leading to claims by contractors.	Medium	Medium	1. Implement an electronic Record Management System which shall digitize and store all documents/records at a Central location using a VSAT network at all project sites/power stations. 2. The documents/records at the Central location can then be duplicated onto tapes and kept at a storage location. 3. The head of each department shall ensure that all the data and documentation with their relevant correspondence shall be updated in the system. 4. The HOD's shall ensure that the correspondence/ claims by contractors shall be replied promptly with appropriate response/ counter claims wherever applicable.	HOP

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
45.	Operational	Corporate	Project Risk	Delays in power equipment supply which may lead to delays in commissioning of the project.	Medium	Medium	1. Introduce appropriate penalty clause in the power equipment purchase agreement for delay in delivery of project critical power equipment. 2. Consider suppliers with proven technologies for supply of power equipment to reduce dependence on its existing source of power equipment. 3. Liaison with Ministry of power, Government of India for timely delivery of power equipment by the Public Sector Undertaking (PSU) supplier in case the delay is hampering the on-time completion of its project.	ED(Projects)/ED (C&P)/ HOP
46.	Operational	Projects-Thermal	Contracting Risk	Lack of adequate protection clauses in GSA protecting NEEPCO from delays in gas supply by contractors.	Medium	Medium	1. File petition seeking compensation to be filed with APTEL/ Consumer Court on the legality of GSA. 2. If criticality arises in contract agreement, the same may be examined by the Contract & Procurement Wing/ Legal Wing.	ED(Commercial)/ ED(O&M)/HOPS

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
47.	Operational	Corporate	Project Risk	Delays in award of contracts/ retendering.	High	Low	1. Develop a uniform tender approval procedure for avoiding contract litigations that arise due to issues raised on tendering procedures. 2. All Contracts shall cover the scope of work in details clearly defining roles and responsibilities of the contractor to avoid litigations due to difference of understanding of scope. 3. Feedback mechanism shall be developed wherein learnings from various Contracts shall be updated and carried forward to other Contracts to make them more robust.	ED(C&P)/ HOP
48.	IT & Cybersecurity	Projects-Hydro	Technology Risk	Unreliable communication link with RLDC for telemetry of data shall lead to deduction of 1% ROE for the period of deficiency.	Medium	Low	1. Review/ Augmentation of existing communication system between Power Stations and RLDCs to ensure 100% availability of link for continuous data transfer to RLDCs. 2. The Power Stations shall continuously keep in touch with the RLDC to ensure there is no breakdown in their communication link and the data is being transferred diligently.	HOPS/ ED (O&M)
49.	Operational	Corporate	Contracting Risk	Risk of warranty lapses on account of delays in project commissioning subsequently leading to cost overruns.	Medium	Low	1. The contract shall include suitable amendment for critical power equipment, so that warranty remains valid from the date of commissioning of the project. 2. Have an Integrated plan for each project execution so that issues do not arise due to project Management loop holes. 3. All equipment, spares contractor warranties etc. to be maintained in a digital repository.	ED(C&P)/ HOPS/HOP

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
50.	Financial & Commercial	Projects-Thermal	Contracting Risk	Lack of proper insurance policies can lead to ad hoc decisions in risk transference leading to constraints in project returns over medium term	High	High	1. Renegotiate the contract with consulting company that is assisting corporate team in selection of right insurance cover and insurance companies. 2. Float tender for engagement of international consultants in the area - Run reverse bidding for engagement of reputed companies providing insurance policies	ED(C&P)
51.	Financial & Commercial	Projects-Thermal	Contracting Risk	Contracting and Procurement division has not been consulted in signing various contracts by the organization exposing firm to contractual risks in future as well as contractor claims	High	High	1. If criticality arises in contract agreement, the same may be examined by the Contract & Procurement Wing/Legal Wing. 2. Standard guidelines may be issued by Contracts and Procurement Cell to ease the signing of contracts by various divisions across the organization	ED(Projects)/ ED(C&P)

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
52.	Operational	Corporate	Financial Risks	Non - utilization of approved additional capital expenditures and its capitalization (For power stations).	Medium	High	1. Develop an internal mechanism for effecting proper plan to fully utilize the approved capital expenditure. 2. Regular monitoring of capex budget shall be done to improve the execution to avoid penalties. 3. Regular review of expenditure shall be done and if deviations are found, the issues concerning deviations shall be attended promptly. - Implement a system for regular review of costs and fix responsibility for delays in decision making. 4. Mails and alerts shall be sent to the personnel as the deadline for decision making approaches. The system shall be enabled to escalate it to higher authority once the decision-making deadline has not been met.	ED(O&M)/ HOPS
53.	Financial & Commercial	Projects-Thermal	Regulatory Risk	Risk of under recovery of fuel charges in case plant is not able to meet minimum standards for operation (SHR variations)	Medium	High	1. Look for technology up gradation of the plant to meet conditions as per PPA and CERC tariff regulations for the control period. 2. In cases of PPA under MoU route file petitions for allowance of 100% energy charges on actuals. 3. In case of PPA with state government on concessional rates, ensure that PPA includes minimal penalty clauses for not meeting design conditions over time. 4. File petitions with relevant authority seeking relevant rebates in meeting technical conditions based on design of the plant/year of commissioning	ED(O&M)/ ED (Commercial)

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
54.	Financial & Commercial	Projects-Thermal	Commercial Risk	No mechanism of tracking under/over recovery from tariff leading to issues in financial progress tracking for the organization	Medium	High	1. Development of internal matrix for tracking over/under recovery of fuel charges in PPAs 2. File appropriate petitions in case of under recovery of fuel charges and look for true up in the next control period of the plant	ED (Commercial)
55.	Financial & Commercial	Corporate	Liquidity Risks	Lack of Investments for financing projects due to high gestation period of projects and lower returns.	High	Medium	1. Encourage the availability of longer–term finance at low cost from international sources, including ECAs, and through the use of credit enhancement mechanisms such as the World Bank Partial Risk and Partial Credit Guarantees. 2. Ensure that projects offered for funding have been adequately prepared in advance, based upon detailed technical studies and site investigation, with a clear contractual framework and security package already in place.	ED (Finance)
56.	Financial & Commercial	Projects-Hydro	Project Risk	Delays in projects due to problems of cash flow with the working contractors.	Medium	Medium	1. Establish appropriate governance structure at the project level to help the working contractors resolve their cash flow problems by providing support in day-to-day supplier management activities such as contract management and financial management. 2. A dedicated dispute resolution committee shall be constituted for every project by corporate contracts division to ensure early settlement of claims.	ED(Finance)

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
57.	Financial & Commercial	Corporate	Market Risk	Ineffective management of foreign currency fluctuation.	Medium	Medium	1. Develop a foreign exchange exposure management policy that will minimize the effects of adverse exchange rate fluctuations on the financial position of the company. 2. Report the details of foreign exchange exposures and the steps taken by management to limit the risks of adverse exchange rate movement to the board on quarterly basis.	ED(Finance)
58.	Financial & Commercial	Projects-Renewable	Project Risk	O&M costs can escalate at a higher rate than anticipated in the project feasibility studies	Medium	Medium	1. Take conservative scenarios in bidding for new field projects like renewable 2. Look at long term scenarios via hiring of employees for cost reduction provisioning 3. Look at long term fixed rate contracts for O&M. This would ensure sustainability of rates.	ED(Projects)/ In-charge RE
59.	Compliance	Corporate	Commercial	Adverse regulatory policy development, Loss of securitization mechanism by 2016	High	High	1. Closely monitor future policy/ regulatory developments and adopt advocacy to facilitate that framing of any changes in policy/ regulations take note of the NEEPCO's concerns. 2. Get credit rating of the beneficiary assessed prior to signing the PPA so that the company can take a balanced view about the financial status of State utilities and State Government and their ability to pay accrued dues. 3. Adopt Escrow mechanism, if the situation so warrants, for power sale realization beyond 2016. 4. Possibilities to be explored to make an amendment in PPAs with procurers to ensure that the lien on escrow post	ED (Commercial)

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
							2016 would be based upon the pair passu basis. 5. PPAs with State Governments to have a clause entitling the company to stop supply of power in case of payment default.	
60.	Legal, Regulatory & Compliance	Projects-Renewable	Regulatory Risk	Tariff Changes post project commissioning via regulatory changes or changes in regulatory benefits received at the time of bidding can lead to return reduction for renewable projects	Low	High	1. Regulatory commissions can look to reduce/predetermine renewable tariffs provided in the PPA in case of drastic changes/fall in PV panels globally. E.g. Gujarat utilities have filed for redetermination of renewable tariffs in projects. 2. Although this has not been quashed by APTEL currently, however risk exists for the renewable projects. 3. In such cases, NEEPCO can look to file petitions with APTEL in case any utility looks for redetermination of tariffs by PPA opening. 4. A case can also be made for change in law in case of tariff redetermination. However the scenario will vary case by case. 5. File a petition with relevant authorities under "Change in Law" consideration in the PPA for recovery in case PPA tariffs are reduced	ED(Commercial)
61.	Financial & Commercial	Corporate	Commercial	Absence of security mechanism for Unscheduled Interchange (UI) Charges.	Low	Medium	1. Pursue the Regional Power Committees who is finalizing and verifying the UI charges and adhere to CERC norms being issued from time to time in respect of security mechanism of UI charges. 2. The generating station, as far as possible, shall generate electricity as	ED(O&M)/ ED (Commercial)/ HOP

S No.	Classification	Category	Sub-Category	Description	Probability	Impact	Risk mitigation	Responsibility
							per the day- ahead generation schedule finalized by the Regional Load Dispatch Centre in accordance with Grid Code.	
62.	Legal Regulatory & Compliance	Corporate	Commercial	Non-adherence to CERC guidelines for tariff petition may lead to financial implications.	Low	Medium	1. The commercial Team shall ensure that the tariff petitions are as per the CERC guidelines. 2. The tariffs, before getting finalized, shall be internally reviewed at different levels between the commercial departments to ensure that they are in line with the CERC guidelines.	ED (Commercial)
63.	Operational	Project - Thermal	Performance Risk	Shortage of Water for Cooling system in combined cycle Gas based power plant	Low	High	1. Multiple sources of water intake (River / Ground Water / Municipal body etc) needs to be maintained. 2. Deficiency in intake of any of the sources for continuous two years needs to be monitored. 3. Alternative reliable arrangements needs to be explored for multiple incidents.	HOPS/ ED(O&M)

Appendix 1 B – Key Risk Indicators

S No.	Classification	Sub-Category	KRIs	KRI Description	UoM	Desired Target	Low Risk Trigger	Medium Risk Trigger	High Risk Trigger	Current KRI Measure	Comments	Suggested Action Plan
1	Financial & Commercial	Financing Risk	Debt-Equity Ratio	The ratio of debt to equity in the capital structure of the company	Ratio	= 70:30	70:30	71:29	78:22			
2	Financial & Commercial	Commercial Risk	Days pending receivables	Average number of receivable days	Days	< 45	45	49	108			
			Recovery of Power Purchase dues	The amount of Power Purchase dues pending recovery from State Govt/DISCOMs on account of delay in payment	%	<= 10%	12%	13.5%	29.5%			
3	Operational	Generation Risk	Fuel Supply Shortage	Difference in requested to received fuel supply divided by requested fuel supply	%	<= 1%	>1% and <=3%	>3% and <=5%	.>5%			
4	Operational	Generation Risk	Reservoir Water Level Shortfall	The percentage shortfall of the actual water level in the reservoir compared to the optimal or forecasted water level necessary for efficient power generation.	%	Nil	<10%	>=10% and <20%	>=20%			
5	Operational	Generation Risk	Fuel Supply Cost Overruns	Difference in cost of fuel supply and budget for fuel cost in the quarter divided by the budgeted cost	%	<= 5%	1%	3%	5%			
6	Operational	Supply Chain Risk	Spare Shortage reported	No. of incidents of spare shortages reported	No. of incidents	Nil	1	2	5			
7	Operational	Commercial Risk	Under recovery of operational cost	Shortfall in recovering the fixed costs, operational expenses etc. due to lower-than-expected revenue or production levels	Rs Cr	Nil	<= Rs 5 Crs	> Rs5 Cr and <=Rs50 Crs	> Rs 50 Crs			
8	Legal, Regulatory & Compliance	Legal Risk	Arbitration Risks	Net Cost of Arbitration cases pending	Rs Cr	Nil	<= Rs 5 Crs	> Rs5 Cr and <=Rs50 Crs	> Rs 50 Crs			
9	Legal, Regulatory & Compliance	Compliance Risk	Compliance to Emission Norms	Average PPM of NOx Emissions	PPM	<= 50	-n/a-	-n/a-	51			
10	Strategic & Governance	Project Risk	% Delay in Project	% delay in project COD as compared to estimates	%	<= 5%	1%	3%	5%			
11	Strategic & Governance	Land Risk	Cost Implication due to delay in Land acquisition	Financial Impact on Project/Operations due to delay in acquisition of Land	Rs Cr	Nil	<= Rs 5 Crs	> Rs5 Cr and <=Rs50 Crs	> Rs 50 Crs			

S No.	Classification	Sub-Category	KRIs	KRI Description	UoM	Desired Target	Low Risk Trigger	Medium Risk Trigger	High Risk Trigger	Current KRI Measure	Comments	Suggested Action Plan
			% of Land acquisition not completed	Ratio of Non-acquired Land parcels and Total land requirement	%	= 0%	1%	2%	3%			
12	Human Resource	Talent Acquisition and Retention Risk	Turnover Rate	Number of employees leaving per year / Average total employees per year.	No.	Nil	<10%	10-20%	>20%			
13			Time to Fill Positions	Average number of days taken to fill open positions	Days	Nil	<30	30-60	>60			
14		Employee Engagement & Morale Risk	Employee Satisfaction Score	Rating of employees on overall employee satisfaction score	Score	>8	7-8	5-6	<5			
15		Compliance and Legal Risks	Number of Compliance Violations	Total number of legal or regulatory violations reported annually.	No.	Nil	1	2-4	>4			
16			Cost of Legal Settlements	Total annual cost of legal settlements related to HR issues.	Rs Cr	Nil	<50K	50K-200K	>200K			
17	Operational	Health & Safety Risk	Incident Rate	Number of workplace accidents or incidents per 100 employees annually	No.	Nil	<1	1-3	>3			
18			Days Lost Due to Injury	Total days lost due to workplace injuries per year	Days	Nil	<10	10-50	>50			
19			Threat to safety of employees	No. of Near-Miss Incidents	No.	Nil	1	50	300			
				No. of Minor Accidents	No.	Nil	1	5	29			
				No. of Fatal Accidents	No.	Nil	-n/a-	-n/a-	1			
				Frequency Rate	Per million man-hours worked	Nil	-n/a-	-n/a-	0.80			
20	Human Resource	Diversity, Equity & Inclusion Risk	Employee Diversity Rate	Ratio of employees from diverse backgrounds to total number of employees	%	>=40%	>=30% & <40%	>=20% & <30%	<20%			

S No.	Classification	Sub-Category	KRIs	KRI Description	UoM	Desired Target	Low Risk Trigger	Medium Risk Trigger	High Risk Trigger	Current KRI Measure	Comments	Suggested Action Plan
21		Performance Management Risk	Completion Rate of Performance Reviews	Ratio of number of scheduled performance reviews and the number of reviews completed within the designated timeframe.	%	100%	>=90% & <100%	>=70% & <90%	<70%			
22			Succession Planning Coverage	Ratio of number of identified successors to total number of key positions in the organization	%	>80%	>=70% & <80%	>=50% & <70%	<50%			
23		Training & Development Risk	Skilled manpower availability	Attrition Rate	%	< 5%	5%	10%	15%			
				Average age of employees in a unit	No.	<45	>=45 and <50	>=50 and <55	=55			
24		Workforce Planning & Flexibility Risk	Resource Allocation Efficiency	Measure the efficiency of resource allocation to different projects and departments	%	100%	>=90% & <100%	>=70% & <90%	<70%			
25		Compensation & Benefits Risk	Market Competitiveness of Compensation	Ratio of compensation to market benchmarks.	%	In line with market benchmark	>=90% & <100% of market benchmark	>=70% & <90% of market benchmark	<70% of market benchmark			
26		Change Management Risk	Change Impact on Productivity	Measures the impact of change initiatives on overall productivity (e.g., PLF/Operating cost per MWh/Generation output etc.)	%	Positive impact of 5%	Negative Impact 5% to 10%	Negative Impact 10% to 20%	Negative Impact above 20%			
27		Reputation & Employee Branding Risk	Employer Rating on Job Sites	Rating on Job portals/websites	Score	>4	>3.5 to <=4	>2.5 to <=3.5	<2.5			
28		Leadership Risk	Turnover Rate of Key Leaders	Number of key leaders leaving the organization to total number of key leaders identified	%	<5%	>=5% to <10%	>=10% to <15%	>=15%			
29	IT & Cybersecurity	Cyber Risk	Cyber Incidents	No. of cyber incidents reported	No.	Nil	-n/a-	-n/a-	1			
				Risk Score of Incidents reported	Type	Green Zone	Green Zone	Yellow Zone	Red Zone			
30	IT & Cybersecurity	IT Risk	System Availability	No. of NC's in audits conducted	No.	Nil	-n/a-	1	5			
				System down time	%	< 5%	0.1%	1%	10%			

S No.	Classification	Sub-Category	KRIs	KRI Description	UoM	Desired Target	Low Risk Trigger	Medium Risk Trigger	High Risk Trigger	Current KRI Measure	Comments	Suggested Action Plan
31	Operational	Generation Risk	Low Schedule of generation	Schedule obtained against Declared Capacity (Schedule / DC)	%	=100%	>=95%	<95% and >=90%	<90%			
32	Operational	Generation Risk	Under recovery of fuel cost due to low schedule	Under recovery of fuel cost due to low schedule	Rs Cr	Nil	<=1 Cr	> 1Cr and <=5 Cr	> 5 Cr			