



# CORPORATE INDIA RISK INDEX

2023

Intelligence partner

FROST & SULLIVAN

## SECTOR REPORT 2023

### METALS & MINING



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# Preface

Corporate India Risk Index is primarily an academic exercise to understand the level of risk that companies are facing and also assist in developing a successful risk aversion plan, CIRI is a first-of-its-kind risk measurement tool to gauge the level of a company's risk exposure and preparedness.

This Corporate risk comprises of various aspects of the business—spanning customer, competition, regulatory environment, business operations, technology finances, environmental factors etc. The impact of unprecedented events is significantly higher now.

This Index is a comprehensive framework that draws upon global risk management best practices and comprises of 32 risk elements across 6 broad dimensions. The Risk Index is based on the principles of Lean and Six Sigma that qualify business processes by measuring effectiveness and efficiency.

ICICI Lombard's Corporate India Risk Index provides a crucial tool for assessing and addressing risks, fostering resilience and adaptability in the ever-evolving global landscape. In the current climate of increasing macroeconomic uncertainties, it is essential for corporates to prioritize robust risk management. We believe that a proactive approach to risk management not only fortifies individual businesses but also contributes significantly to India's overall economic growth and stability.

## Executive Summary

The mining and metals sector in India stands as a linchpin of the nation's economy, playing a pivotal role in employment generation and contributing significantly to GDP. Despite its crucial position, the sector faces a myriad of risks spanning environmental, social, operational, regulatory, financial, and technological domains.

In FY 2023, India's mining industry witnessed robust growth, with a notable 4.7% increase in overall production. However, this growth was accompanied by numerous challenges and risks, including critical business continuity risks such as water scarcity and land acquisition challenges. Workplace accidents remained a significant concern, with potential implications on worker safety and community well-being.

Environmental risks, including pollution and habitat degradation, highlighted the imperative for sustainable mining practices and stringent adherence to environmental standards. Supply chain disruptions, often exacerbated by geopolitical tensions, posed threats to operational continuity, while the volatility of commodity prices and demand dynamics underscored financial uncertainties.

Technological advancements presented both opportunities and risks, with the adoption of AI, machine learning, and digital twin technology offering avenues for improving productivity and operational efficiency. However, failing to keep pace with technological advancements risked obsolescence and loss of competitiveness.

Mitigating these risks necessitated proactive risk management strategies, including implementing robust cybersecurity measures, diversifying supply sources, and embracing sustainable mining practices. Regulatory compliance and adherence to environmental standards were imperative, with policy support such as the Mines and Minerals (Development and Regulation) Amendment Act, 2021, offering avenues for growth and innovation.

Looking ahead, experts anticipate a 3% increase in mineral demand in 2023, driven by India's economic expansion and electrification efforts. However, navigating the dynamic landscape of the mining and metals sector requires continual innovation, resilience, and strategic risk management to ensure sustainable growth and competitiveness.



# Introduction

ICICI Lombard Corporate India Risk Index is a one of its kind, unified, credible, standardized corporate Risk Index that spans over the country level, the industry level, and the company level. The index has a comprehensive sector coverage.

Aerospace and Defence, Agriculture and Food Processing, Automotive and Ancillary, BFSI, Biotech & Life sciences, Chemicals and Petrochemicals, Education Skill Development, Energy, FMCG, Healthcare Delivery, Infra and Realty, IT/ITES, Manufacturing, Media and Gaming, Metals and Mining, New Age & Startup, Pharmaceuticals, Telecom and Communication Technology, Tourism and Hospitality, Transportation and Logistics.



The impact is identified across key business risk (internal and external) under the following ‘Strategic Risk Areas’, The ICICI Lombard Corporate India Risk Index Framework comprises of 32 risk elements across 6 broad dimensions.



## Market and Economic Risk

Corporate Risks arising due to market and economy related factors, such as internal or external political uncertainty, global slowdown, taxation-regulatory changes etc. Market and economy related risks are also identified as ‘Systematic Risks’, we have further classified the risks into below mentioned categories.

- **Inflation:** Inflation is the general increase in prices within the economy. The rising prices for businesses could result in bigger production spending and a fall in profitability. The companies should be attentive, acute, and responsive to changes in inflation to efficiently manage the prices of final products.
- **Taxation:** In a large democracy like India, complexity of multiple taxes (multiple taxes like GST, custom duties, central excise duty, etc.) is a major concern. The changing legislations, increased scrutiny by tax authorities and increasing public attention are together resulting in tax risks for organizations. There is, thus an increasing urgency for firms to manage their tax affairs efficiently to minimize tax risks.
- **Regulatory Risks:** Regulatory risk is the risk of changes in regulations and laws that might affect an industry or businesses. The regulatory changes can pertain to tariffs and trade policies, business laws pertaining to employment, minimum wage laws, financial regulation, Foreign Direct Investment etc.

- **Foreign Exchange Risk:** The exchange rate plays an important role for firms who export goods and import raw materials. The fluctuations in foreign exchange will have great impacts on the prices of traded goods. For example, if the currency depreciates (devaluation), the exporting firms will benefit. However, the firms importing raw materials will face higher costs on imports. The firms need to hedge their exposure to foreign exchange risks to insulate themselves from the impact from forex changes.
- **Geo-political Tension:** Geopolitical risk means the political and economic risks that are a potential threat to the financial and operational stability of companies.
- **Competitive risk:** Competitive risk is the risk associated with the fact that there are multiple companies competing in the market, each seeking to obtain the highest position and consumer ratings, to gain maximum benefits for themselves. The companies devise different strategies to garner a higher market share and acquire customers from competitors. Any failure in managing the competitive stand could lead to losses in business, thereby making marketing and competition a major risk in market.



## Technology Risk

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Technology risks are also identified as information technology related risks which may arise due to failure of any installed hardware or software system, spam, viruses or any malicious attack. Also delay/over/under adoption of trending disruptive technologies can lead to technology related risks. We have classified the risks in below mentioned categories.

- **Innovation Risk / Obsolete Technology:** Innovation is the key to success in all the industries. Risk of redundancy and losing out to competition on account of poor R&D is a major concern.
- **Intellectual Property risk:** Dependence on trade secrets and unpatented proprietary know-how.
- **Disruptive Technologies:** These will fundamentally alter the financial prospects of the industry.
- **Data Compromise:** Hardware failure refers to malfunctions within the electronic circuits or electromechanical components (disks, tapes) of a computer system; Software failure refers to an operating system crash. Such failures lead to stoppage of entire computer or operating systems creating substantial losses to business.



## Operational and Physical Risk

Risk of losses caused due to faulty or failed processes, systems or human resource related inefficiencies are classified as operational and physical risks. We have classified Operational & Physical risks in below mentioned categories.

- **Critical Infrastructure Failure / Machine Breakdown:** Industries with a heavy dependence on machinery consider any rise in machinery breakdowns a hindrance to their businesses operations. An untimely equipment breakdown can bring businesses to a standstill or be the root cause for fires and explosions. Mostly, human errors and deferred maintenances are the major reasons for such breakdowns. The companies should actively invest in timely maintenance of all machineries.
- **Business Continuity / Sustainability:** Non adoption of Business Continuity/ Sustainability Plans and Lack of Internal Control tools would result in: Failure of businesses, Brand Equity / Loss of reputation, Financial Loss, Business model Failure, Ineffective engagement/communication with stakeholders, Losses in productivity, Lack of opportunity monitoring.
- **Supply chain risk:** Raw Material unavailability and Heavy Dependence on Global Supply Chains / Supplier concentration risk. Unavailability of raw materials owing to disruption in the supply chain or heavy dependency on one source (company/country) which is unable to supply owing to some geo-political tensions, fires, or any other incidents. Transportation is one of the key activities for companies making it an important risk to mitigate. The loss of goods in transit and spillage is one of the major concerns as it accounts for a sizeable loss of revenue to companies.
- **Commodity Price Risk - Volatility in prices of raw materials:** The fluctuations in raw material prices creating a margin pressure / top-line pressure in the scenario of rising input costs.
- **Portfolio Risk:** Loss of key customers, Customer concentration - Key customers accounting for a larger share of revenue, Over-dependence on suppliers, Business Model Risk: Transformative changes in business model, Tail Risks: Ability to overcome or manage extreme worst-case scenarios.
- **Environmental Hazard Risk:** Any environmental hazard having the potential to affect the surrounding environment.
- **Workplace Accident:** Fire and Explosion Hazards, Containment Incidents and Workplace Injuries.
- **Human Resource:** Key person risk: This risk occurs when a business or business unit becomes heavily reliant on a key individual. Talent acquisition and retention - The companies require a highly skilled labor force for R&D as well as continuous production. Accessing skilled resources and expertise on an on-going basis is one of the major challenges; moreover, retention of trained staff is imperative. Labor shortages, Union Strikes & Industrial Actions, Employee health, safety, and security (SHE/Sustainability risk).
- **Financial Risk:** Financial Reporting Risk: Material misstatement of Financial Statements, whether due to fraud or error. Interest rates and equity prices: Interest rate risk arising out of working capital borrowings at variable rates. Equity price fluctuations affect the Company's income or the value of its holdings of financial instruments. Liquidity Risk (Credit Risk / Receivables).
- **Breaches of law (local/ international):** Voluntary/ involuntary breaches of law can lead to costly lawsuits.



## Crime & Security Risk

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Cybersecurity risks relate to the loss of confidentiality, integrity, or availability of information, data, or information (or control) systems and reflect the potential adverse impacts to organizational operations. These attacks can cause major financial losses, reputational harm, and a loss of client trust. Regarding cybersecurity, the BFSI industry in India has several difficulties, including difficult-to-secure legacy systems, a shortage of qualified cybersecurity personnel, and the requirement for ongoing system and network monitoring. There is a significant investment in cybersecurity tools like network monitoring, endpoint security, access control, and threat intelligence. Many organizations are also implementing cutting-edge technology like artificial intelligence and machine learning to strengthen their security posture.

We have classified Crime & Security risks in below mentioned categories.

- **Cyber Crimes:** Data Theft, Spam, scams and phishing, Hacking, Malwares and Viruses, Piracy, Fraud, Corruption, Malicious attacks
- **Counterfeiting:** Counterfeiting of goods/services leads to loss of revenues, profits and ultimately affects the brand equity
- Threat to Women Security
- **Terrorism:** Un-lawful use of violence and intimidation, especially against civilians, in the pursuit of political aims.



## Natural Hazard Risk

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A natural hazard is the threat of an event that will likely have a negative impact. A natural disaster is the negative impact following an actual occurrence of natural hazard if it significantly harms a community. Due to India's geographical structure, it is one of the most disaster-prone countries in the world. Natural hazards like floods, earthquakes, landslides, and cyclones are common risks faced by India. The situation has worsened due to rise in GHG emissions, loss of biodiversity, deforestation, and degradation of environment. Such natural disasters hamper the day-to-day operations of corporates, and it is important for them to understand that such risks cannot go unheeded. Over the years, Indian corporates have learnt to mitigate such risks by diversifying their supply chains, having multiple logistics partners, diversified geographical presence and multiple vendors.

- **Pandemic and other global epidemic diseases:** Risk to business owing to disruptions caused by COVID-19 pandemic and similar another global epidemic.





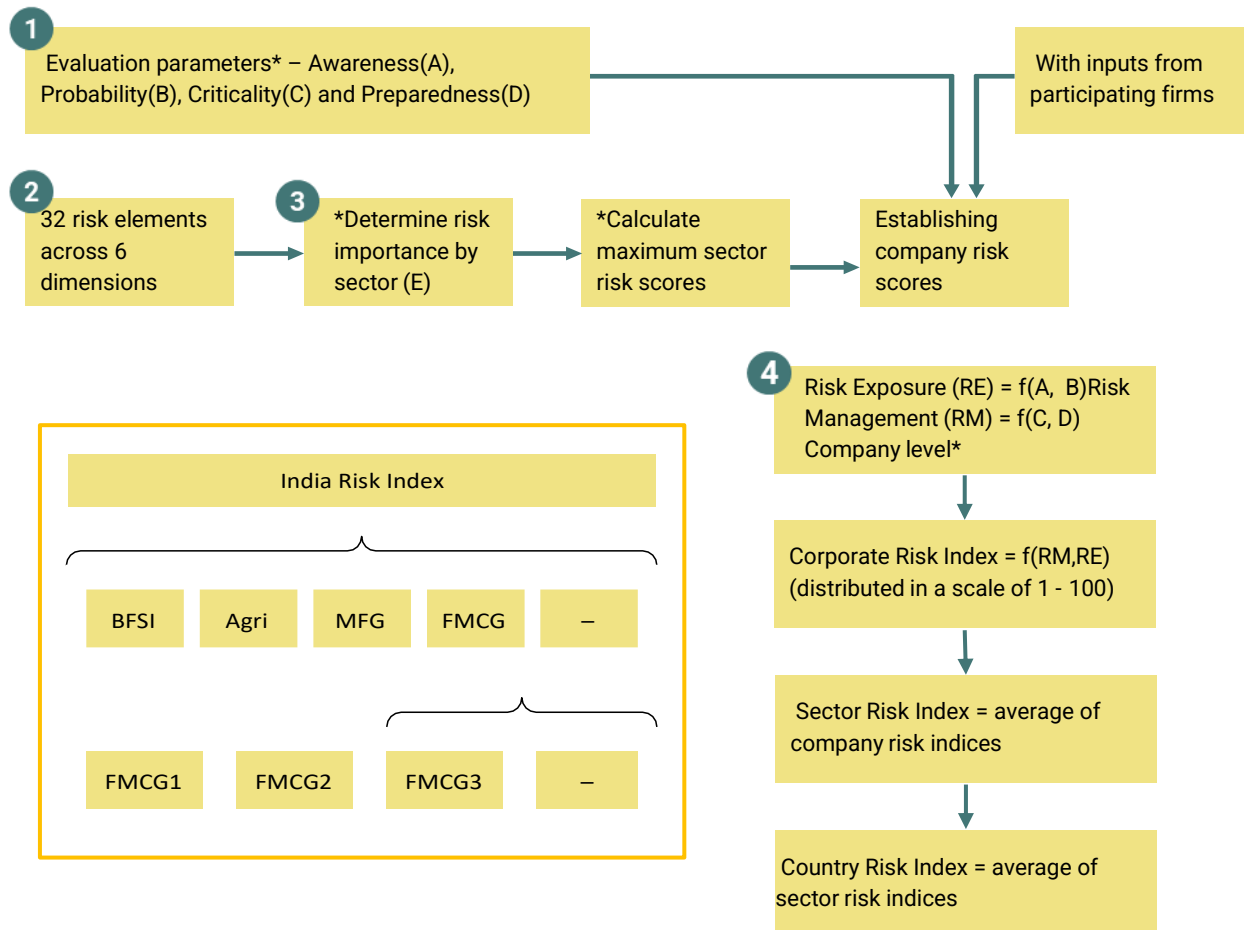
## Strategic Risk

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Strategic risk is the risk that failed business decisions may pose to a company. Strategic risk is often a major factor in determining a company's worth, particularly observable if the company experiences a sharp decline in a short period of time. Several factors, such as unethical or unlawful activities, poor customer service, product recalls, data breaches, or unfavorable media coverage, can lead to strategic risk. An organization's reputation can be severely harmed by a single negative incident, such as a high-profile data breach or fraud scandal, resulting in a loss of clients, income, and market share.

- **Resource scarcity / Misutilization / Overall Utilization:** Difficulties in acquisition of land, water, fuel, or other resources for operations of business.
- **Public Sentiment:** Current events playing out in the public scene can change the public sentiment.
- **Delay in execution of projects:** Delays in execution of projects can surge in the capex.
- **Increased number of recalls and quality audits:** Impacts both the brand equity and increased operational expenses.
- **Failed / Hostile Mergers & Acquisitions:** High dependence on inorganic growth.

# Bottom-Up Risk Assessment Approach



**Figure 1: Risk Assessment Approach**

**1. Evaluation Parameters\*:** The index maps the risks faced by any enterprise basis of Awareness, Probability, Criticality and Preparedness against the defined Risk elements. The evaluation Parameters are defined as:

- Awareness - Level of awareness of potential risk affecting the firm.
- Probability - Likelihood of risk to affect the business goals of the firm adversely.
- Criticality - Level of impact of the identified risk on the success of business goals.
- Preparedness - Risk handling practices/ mechanisms already in place to handle the risk.

2. **Determining Risk Importance\*:** Importance/Impact of individual risk element is established against individual sector based on the published corporate risk reports, in depth sector understanding by F&S team and SMEs.
3. **Calculating Maximum Sector Risk Score:** Weighted Sum of all risk elements based on their importance to the respective sector.
4. **Company Level\*:** All the Risk Index scores for companies in a sector are averaged to represent the sector; and sectors average to India. Risk Exposure is defined as the function of corporate's Risk Awareness and Probability of risk occurrence. Risk Management is defined as the function of an enterprise risk preparedness and criticality risk impact assessment.

# Defining the Risk Scale

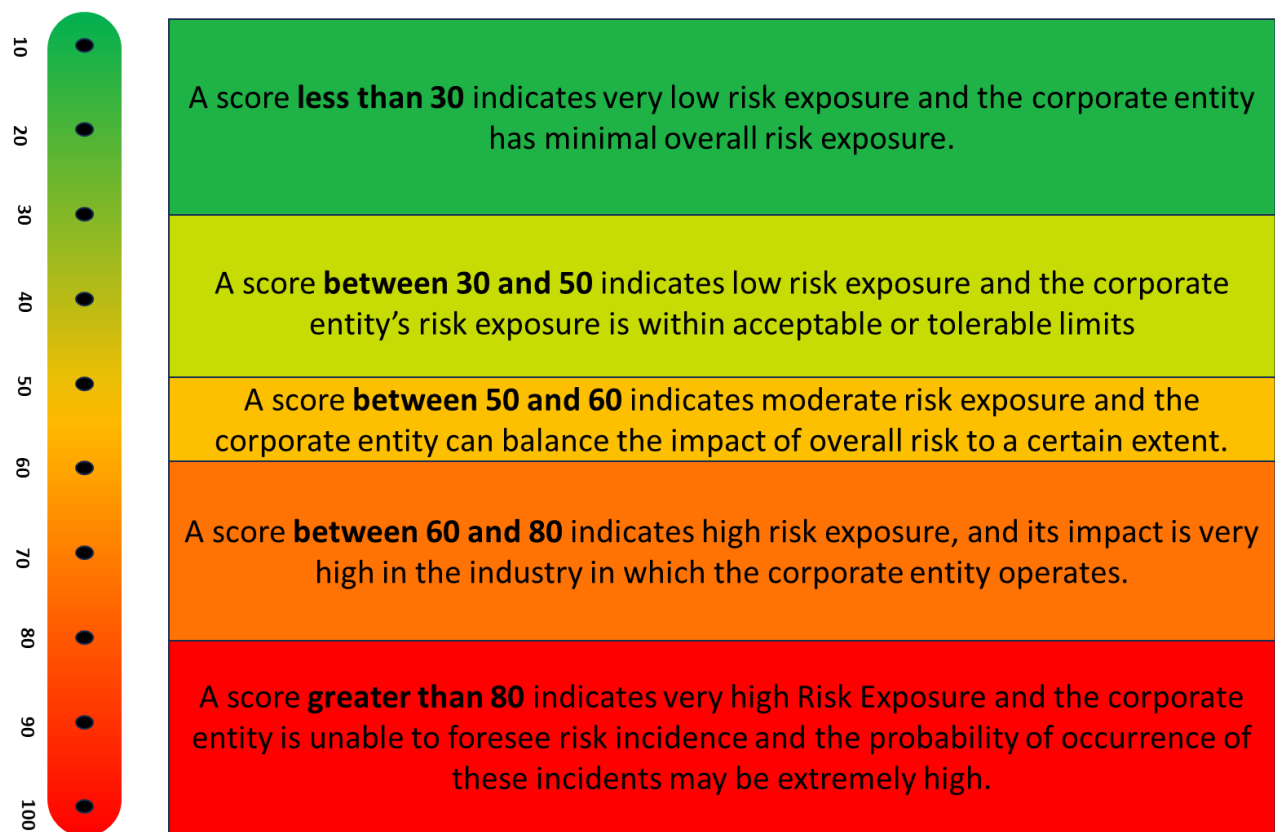
We have selected 20 Sectors to understand the current stand of our country today in terms of risk. Risk for various Sectors is measured on the risk exposure scale and risk management scale.

## A. ICICI Lombard Corporate Risk Exposure – Scale

**Risk Exposure:** The impact of any internal, external or strategic occurrence on the financial performance of an organization is defined as the corporate risk exposure.

Risk has traditionally been seen as something to be avoided – with the belief that if behavior is risky, it's not something a business should pursue. But the very nature of business is to take risks to attain growth. Risk can be a creator of value and can play a unique role in driving business performance.

Let's look at the risk exposure scale.

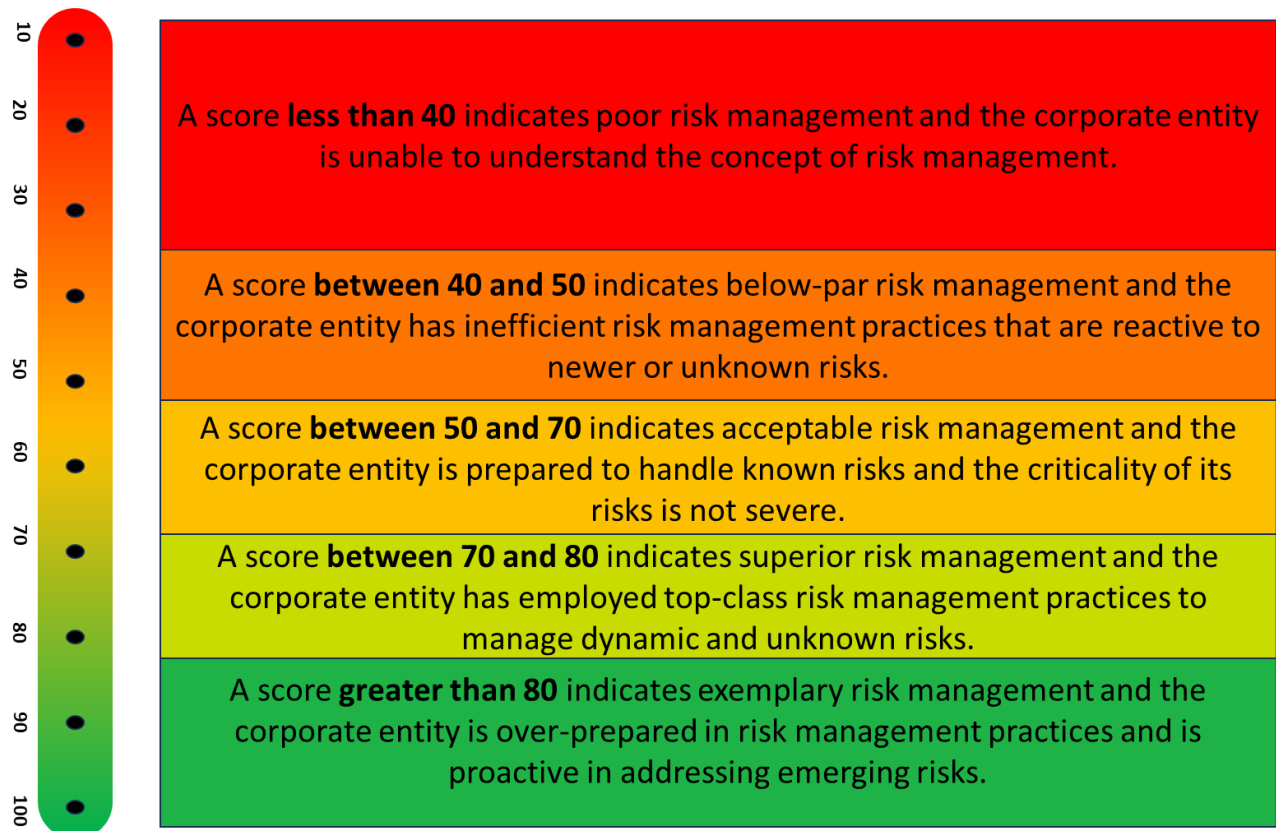


## B. ICICI Lombard Corporate Risk Management – Scale

**Risk Management:** Identification, Evaluation and Prioritization of corporate risks followed by well-coordinated steps to minimize the occurrence of uncertainties in the foreseeable future is defined as Corporate Risk Management.

The risk management scale works counter to the risk exposure scale.

Let's look at the risk management scale.

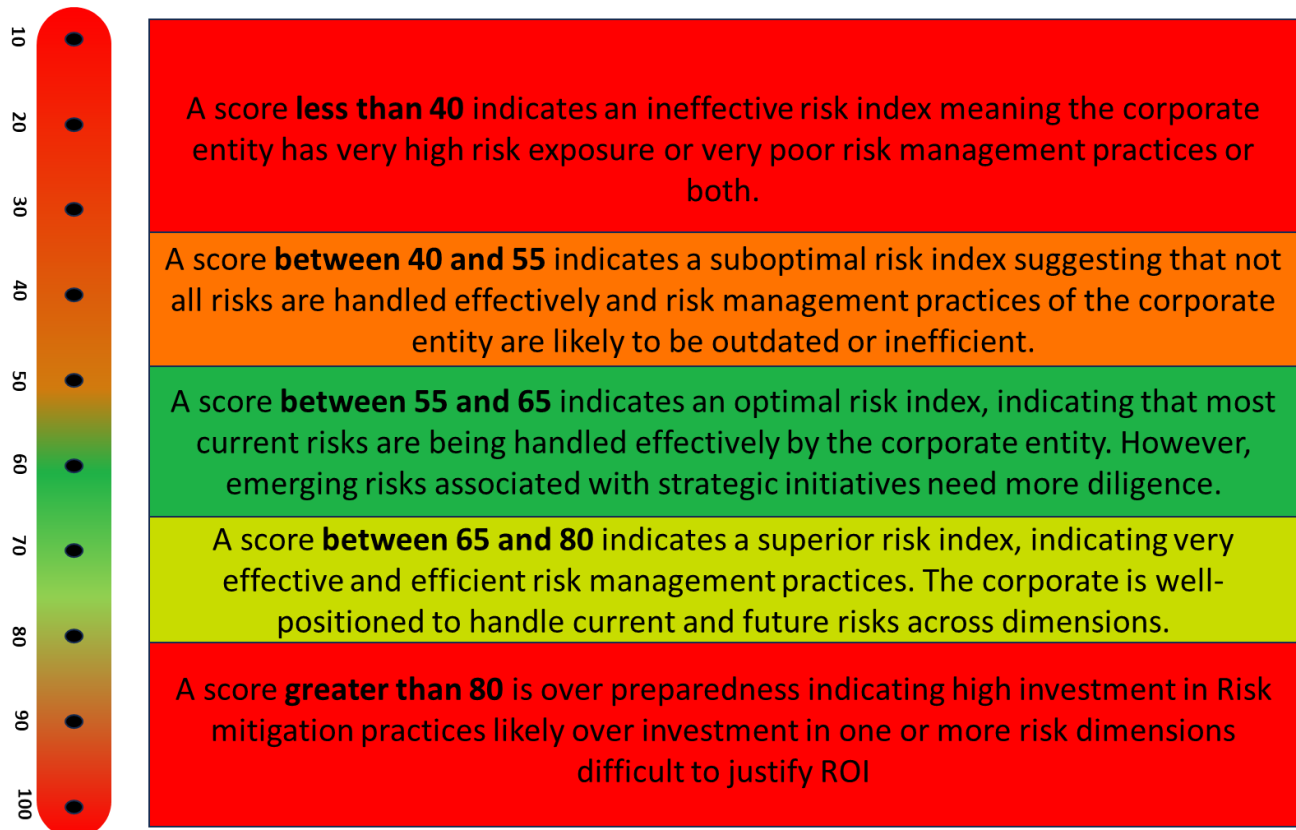




### c. ICICI Lombard Corporate Risk Index – Scale

**Risk Index:** Risk Index is a measurement tool to gauge the level of Risk Exposure against Risk Preparedness. The score intends to give companies/Sector/Country access to an extensive and quantifiable metrics of risk management.

Let's look at the risk Index scale.



# India - Emerging Superpower with Optimized Corporate Risk Handling

In 2023, India witnessed a number of developments in various sectors, reflecting changes in consumer preferences, technological advances and regulatory trends. These developments shaped the industry and affected strategic decisions among industry players.

Electric vehicles (EVs) gained traction across sectors, driving investments in infrastructure and incentivized by government policies promoting electric mobility. The Automotive industry witnessed a surge in demand for EVs, while Logistics & Transportation embraced electric fleets to reduce carbon emissions and operational costs. Digital transformation accelerated across sectors, fueled by the COVID-19 pandemic. Telemedicine, online banking, and remote work solutions proliferated in Healthcare, BFSI, and IT/ITES sectors, enhancing operational efficiency and customer experiences.

In 2023, sustainability took center stage as sectors across India embraced eco-friendly practices. The Energy sector witnessed a shift towards renewable energy sources, with significant investments in solar and wind power. Industries like Manufacturing and FMCG prioritized energy efficiency and waste reduction initiatives. Hospitality and Real Estate sectors focused on green building practices, while Agriculture adopted precision farming techniques to conserve resources.

AI integration surged in 2023, revolutionizing business operations across sectors. Manufacturing companies leveraged AI for predictive maintenance and quality control, enhancing efficiency and reducing costs. Healthcare adopted AI-powered diagnostics and personalized treatment plans, improving patient care. Financial institutions utilized AI for fraud detection and risk assessment, bolstering security and compliance.

Social media emerged as a powerful tool for brand building and customer engagement in 2023. FMCG and Retail sectors capitalized on social media platforms to launch targeted marketing campaigns and drive product sales. Hospitality and Tourism industries utilized social media influencers to enhance brand visibility and customer loyalty. By leveraging social media analytics and customer feedback, companies across sectors tailored their strategies to effectively connect with their target audience and build brand reputation.

The "Make in India" initiative drove significant changes in supply chain operations in 2023. Sectors like Automotive, Manufacturing, and Pharmaceuticals emphasized local sourcing to reduce dependency on imports. Companies diversified their supplier base and optimized logistics networks to mitigate supply chain risks. This strategic shift towards domestic production enhanced resilience and competitiveness across industries.

Diversity, Equity, and Inclusion (DE&I) initiatives gained momentum in 2023, fostering inclusive workplaces across sectors. Companies in BFSI and IT/ITES led the way with diversity training programs and gender-neutral policies. Healthcare organizations focused on addressing healthcare disparities among marginalized communities. Manufacturing and Retail sectors prioritized inclusive hiring practices to tap into diverse talent pools, driving innovation and employee engagement.

Leadership risks emerged as a critical concern in 2023, prompting sectors to reassess their leadership strategies. Companies in BFSI and Technology faced challenges in adapting to rapid technological advancements and changing market dynamics. Healthcare organizations navigated leadership transitions amidst the COVID-19 pandemic, emphasizing the need for agile and resilient leadership. Strategic investments in leadership development and succession planning became imperative to mitigate leadership risks effectively.

Disruptive technologies like artificial intelligence, blockchain, 5G, and IoT reshaped traditional business models, offering new avenues for innovation and growth in sectors such as Telecom & Communication, Biotech & Life Sciences, and New Age Industries.

The scenario of the Indian economy in 2023 had a myriad of risks and opportunities in various sectors. Cybersecurity emerged as a pervasive risk, affecting industries from banking and finance to healthcare and IT/ITES. With more than 400 million cyber threats detected in nearly 8.5 million locations by 2023, organizations prioritized strong cybersecurity measures. Advanced threat detection systems, encryption protocols and employee training programs were implemented locally to enhance cyber resilience and protect sensitive data.

Another common risk was supply chain disruption, exacerbated by factors such as geopolitical pressures, natural disasters, and semiconductor chip shortages. To mitigate these risks, companies diversified their supplier base, invested in inventory management systems, and adopted agile supply chain practices to enhance resilience and flexibility.

Regulatory uncertainty was rife in industries such as Pharma, Energy, Telecommunications, which required active engagement with regulators. Furthermore, environmental risks emphasized the importance of sustainability and green technologies, renewable energy and waste management practices to reduce environmental impact around us and compliance with legal standards.

Despite the challenges posed by common risks, several sectors emerged as resilient performers in 2023, whose efforts helped us understand the situation in 2023 better. Noteworthy efforts included the "National COVID-19 Vaccination Drive" in healthcare, "Electric Vehicle Adoption Mission" in automotive, and "Green Freight Movement" in logistics. Additionally, initiatives such as the "Make in India Defence" program in aerospace and "Skill India Mission 2.0" in education underscored the nation's commitment to innovation and development.

The Automotive industry in India showed resilience in the face of supply chain disruption and regulatory uncertainty. Focusing on sustainability and innovation, the sector saw an increase in electric vehicle (EV) adoption, with sales reaching Rs 4.22 lakh crore.

The Aerospace & Defence sector focused on developing indigenous manufacturing capacity and technology to strengthen national defence by investing Rs 1.5 lakh crore.

In the Healthcare sector, India has invested heavily in digital health solutions and infrastructure to combat the lingering effects of the COVID-19 pandemic. With a total investment of more than Rs 50,000 crore, companies have expanded telemedicine and implemented AI-powered diagnostics to improve patient care.

The Manufacturing sector prioritized digitalization and process optimization to enhance productivity and competitiveness amidst supply chain disruptions and inflationary pressures. Companies invested Rs 1.2 lakh crore in automation technologies and smart manufacturing initiatives to streamline operations and reduce costs. The Logistics & Transportation companies invested Rs 800 crore in blockchain-based traceability systems and cyber security protocols to secure supply chains and protect sensitive data from cyberattacks.

The Hospitality industry adapted to customer preferences and regulatory requirements through new service offerings and customer engagement strategies. With an investment of Rs 0.5 lakh crore, companies also focused on using contactless technology to improve health and safety measures, ensuring that guests have satisfaction and compliance.

The Agricultural & Food Processing sector embraced technological initiatives to increase agricultural productivity and ensure food security in the face of climate change and supply disruptions. With an investment of Rs 1 lakh crore, companies focused on precision farming and farm-to-fork traceability solutions to improve crop yield and quality.

The BFSI sector focused on digital transformation and risk management to address cyber threats and regulatory challenges. Banks and financial institutions invested Rs 2,50,000 crore to implement advanced cyber security measures and fraud detection systems to protect customer data and prevent financial fraud.

The Biotech & Life Sciences sector showcased innovation and resilience amidst regulatory complexities and supply chain disruptions. The Chemicals & Petrochemicals sector navigated environmental regulations and market volatility through sustainable practices and operational excellence initiatives. Digital learning and job training were adopted to meet workforce challenges and enhance productivity in the face of technological disruption and demographic changes in the Education & Skill Development sector.

The Energy sector has shifted towards renewable energy and sustainable development policies to mitigate the risks of climate change and reduce dependence on fossil fuels. Moreover, with investments of Rs 1.5 lakh crore in smart grid technologies and demand-side management initiatives to optimize energy consumption and reduce emissions, the sector prioritized grid modernization and energy efficiency.

The IT ITES sector continued to drive digital transformation and innovation to address cybersecurity threats and meet evolving customer demands. With investments of Rs 4 lakh crore, companies focused on cloud computing and cybersecurity solutions to protect data and ensure business continuity.

The Metals & Mining sector focused on sustainable practices and community engagement to address environmental concerns and social risks associated with resource extraction. With investments of over Rs 0.8 lakh crore, companies implemented reclamation and rehabilitation projects to restore mined areas and promote biodiversity conservation.

The New Age sector, comprising startups and technology companies, showcased innovation and resilience amidst market uncertainties and funding challenges. Additionally, the sector prioritized talent acquisition and retention, with investments of Rs 0.5 lakh crore in employee benefits and workplace diversity initiatives to attract top talent and foster a culture of innovation.

The Telecommunication sector continued to expand connectivity and digital infrastructure to meet growing demand for broadband services and IoT applications. With investments of over Rs 2 lakh crore, companies deployed 5G networks and fiber-optic cables to enhance network capacity and speed.

In summary, India's diverse sectors demonstrated resilience and innovation in navigating through a challenging operating environment in 2023. As India continues its journey towards economic prosperity, proactive risk management and innovation will remain critical drivers of success across diverse sectors.



# India Showcasing an Optimized Risk Handling



**Figure 2: Corporate India Risk Index 2023**

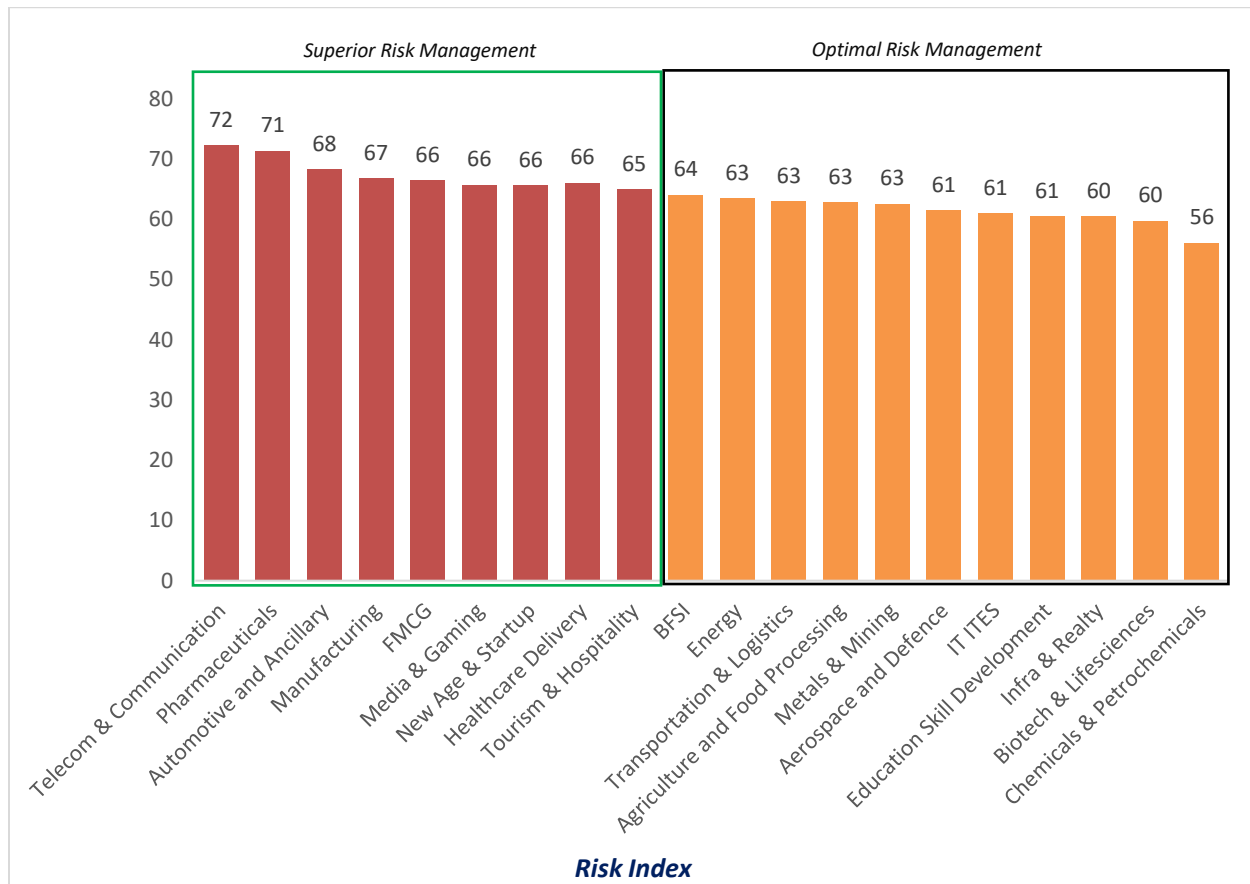
A score of 64 on the Corporate Risk Index indicates optimal handling of risk by the Indian companies. However, to enter the superior risk handling territory, the Indian companies have scope to improve upon their risk management practices in the areas of crime & security risks and strategic risks. It was observed across sectors that there is an increased focus on cybersecurity and other technological risks.

In the sectorial analysis of risk exposure, it was found that companies were most affected by market & economy and operational & physical risks due to inflation, global volatility and geopolitical events like the Red Sea crisis, Israel Palestine conflict and Russia Ukraine War.

Another common risk was supply chain disruption, exacerbated by factors such as geopolitical pressures, natural disasters, and inflation. To mitigate these risks, companies diversified their supplier base, invested in inventory management systems, focused on localization and adopted agile supply chain practices to enhance resilience and flexibility.

It was observed that risk management is getting an increased focus in the growth strategy of every organization with companies having dedicated risk teams to manage their risk exposure. All the organizations fell either into 'Superior Risk Management' or 'Optimal Risk Management' category indicating good risk management practices.

Below is a broader categorization of sectors in terms of risk index:



**Figure 3: Corporate India Risk Index 2023 Sector Score**

### Superior Risk Index

Superior risk handling was found in nine industrial sectors: Telecom & Communication, Pharmaceuticals, Healthcare Delivery, Automotive & Ancillary, Manufacturing, FMCG, Media & Gaming, New Age & Startups and Tourism & Hospitality.

### Optimal Risk Index

Optimal risk handling was found in 11 industrial sectors: BFSI, Energy, Transportation & Logistics, Agriculture & Food processing, Metals & Mining, Aerospace & Defence, IT ITES, Education & Skill Development, Infrastructure & Realty, Biotech & Lifesciences and Chemicals & Petrochemicals.

# Metals & Mining Sector Insights 2023

Minerals and metals are indispensable for countless economic activities. The energy transition is set to increase the demand for materials, and numerous industries are expected to require more minerals in the near future. This, combined with a renewed focus on sustainability, makes the mining and metals industry ripe for a transformation whose implications will extend beyond the immediate sector to a myriad of industries and processes essential to everyday life.

It plays a vital role in India's economic landscape, serving as a cornerstone for employment opportunities and contributing significantly to the nation's GDP. However, this sector faces a multitude of risks, spanning environmental, social, and operational domains, along with regulatory and financial uncertainties. These risks not only pose challenges to the profitability and sustainability of companies but also impact local communities and the environment. This report aims to offer an insight into the prevalent risks confronting the mining, mineral, and metal sector in India, ranging from regulatory constraints and resource uncertainties to operational hazards and market fluctuations.

A whole host of industries, including construction, transportation, and electronics, rely on this sector for their fundamental resources, thereby driving employment across various segments. In FY 2023, India's mining industry experienced a substantial growth of 4.7% in overall production, with coal production notably surging by 12.47% year-on-year to reach an output of 92.87 million tonnes by December 2023. The auctioning of mineral blocks across the country also saw significant progress, with a total of 76 blocks successfully auctioned by December 2023, led notably by Madhya Pradesh and Rajasthan.

The profitability of mining endeavors is susceptible to the volatility of commodity prices, shifts in demand dynamics, and broader economic trends. Moreover, regulatory reforms and policy alterations can significantly influence operational landscapes, necessitating a proactive approach to risk management for sustained competitiveness. While strides have been made in enhancing safety protocols inherent safety risks such as accidents, natural calamities, and equipment failures persist, posing operational disruptions and reputational challenges.

Environmental considerations, including pollution and habitat degradation, pose regulatory and reputational risks, mandating a strategic focus on sustainability initiatives and stringent adherence to environmental standards.

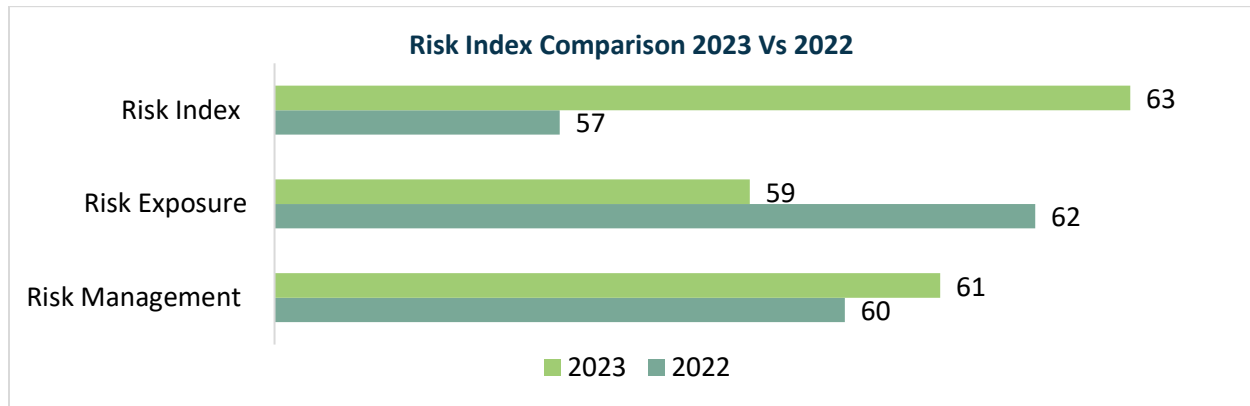
Embracing technological advancements such as automation, artificial intelligence, and data analytics presents avenues for improving productivity, cost efficiencies, and safety standards. However, the adoption of such innovations necessitates addressing associated challenges, including workforce upskilling, substantial capital investments, and change management strategies.

The sector remains susceptible to natural calamities like floods, earthquakes, and cyclones, posing threats to infrastructure integrity and operational continuity, thereby warranting robust risk mitigation measures.

Mergers and acquisitions within the sector present avenues for consolidation and growth, enabling access to new technologies and market expansions. However, such strategic moves entail inherent risks pertaining to cultural integration, legal compliance, and financial synergies, necessitating thorough due diligence and risk assessment protocols.

Positive policy support in recent times like the enactment of Mines and Minerals (Development and Regulation) Amendment Act, 2021 enabled captive mines owners (other than atomic minerals) to sell up to 50% of their annual mineral (including coal) production in the open market. Looking ahead, experts anticipate a 3% increase in mineral demand in 2023, driven by India's economic expansion and electrification efforts. Furthermore, the Indian government's initiative to allow 100% Foreign Direct Investment (FDI) in coal and lignite mining aims to stimulate economic growth and foster technological advancements in the sector.

# Metals & Mining Sector Risk Index 2023 Vs 2022



**Figure 4: Detailed Comparative Analysis 2023 Vs. 2022**

## Metals & Mining Sector Risk Index 2023 Vs 2022

The risk index for the Metals & Mining sector has increased from 57 in 2022 to 63 in 2023, indicating a heightened level of risk within the industry. One of the major factors contributing to this rise is the ongoing geopolitical tensions and supply chain disruptions. According to the World Bureau of Metal Statistics, the global production of key metals like copper, aluminium, and zinc witnessed a decline of 3-5% due to supply chain bottlenecks and trade restrictions. This has led to a shortage of essential raw materials, impacting production levels and driving up input costs for the sector.

Additionally, the sector's heavy reliance on energy-intensive processes has made it vulnerable to the volatility in global energy prices. Data from the International Energy Agency reveals that the average cost of electricity for industrial users in India has surged by over 20% in the past year, leading to increased operational expenses and squeezed profit margins for metal and mining companies. Furthermore, the sector's exposure to environmental risks, such as stringent emission norms and concerns over the depletion of natural resources, has heightened regulatory scrutiny and compliance costs. The recent amendments to the Mineral Conservation and Development Rules in India have mandated stricter environmental management practices, further contributing to the overall risk increase in the sector.

## Metals & Mining Sector Risk Exposure 2023 Vs 2022

The risk exposure score for the Metals & Mining sector has decreased from 62 to 59, indicating a reduced vulnerability to external factors. This positive development can be attributed to several factors like the diversification of supply sources. Companies in the sector have actively diversified their supply sources for key raw materials and inputs, reducing their reliance on any single region or supplier. This has mitigated the impact of geopolitical tensions and trade disruptions on their operations.

Additionally, companies have taken steps to transition towards renewable energy sources, such as solar and wind power, to power their operations. According to the Renewable Energy India Outlook report, the



sector's renewable energy capacity addition increased by 27%, reducing its exposure to volatile fossil fuel prices. The Investment in technology has witnessed significant investments in advanced technologies like automation, data analytics, and digital twins, enabling better risk identification, forecasting, and mitigation strategies. For instance, Tata Steel has implemented a digital twin initiative to optimize its operations and minimize operational risks.

### **Metals & Mining Sector Risk Management 2023 Vs 2022**

The risk management score for the Metals & Mining sector has marginally increased from 60 to 61, indicating a relatively stable risk management approach. Despite the challenging external environment, the sector has demonstrated its commitment to robust risk mitigation strategies. Companies have continued to invest in strengthening their enterprise risk management frameworks, fostering a risk-aware culture across all levels of the organization. Furthermore, the adoption of advanced technologies, such as predictive analytics and digital twins, has enabled real-time monitoring and proactive risk identification. The sector has also prioritized collaboration with industry bodies and regulatory authorities to align with best practices and stay ahead of emerging risks. Additionally, companies have focused on enhancing transparency and stakeholder engagement, building trust and resilience in their operations. While the increase is modest, it reflects the sector's ongoing efforts to effectively navigate an increasingly complex risk landscape.

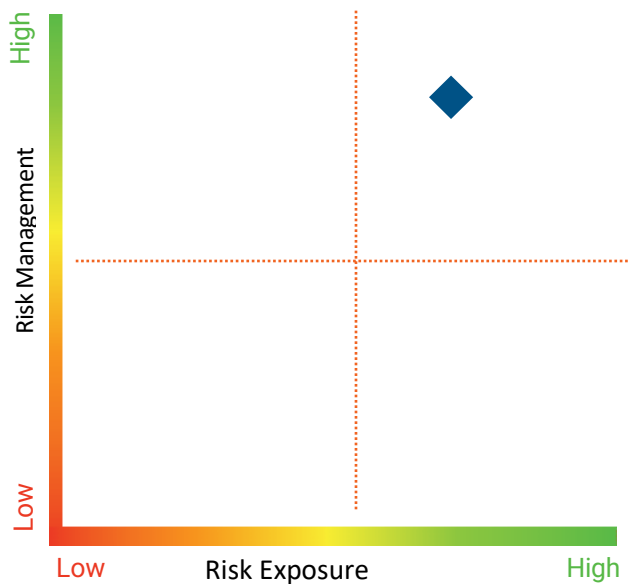
# Key Highlights



## Risk Dimension Analysis: Market and Economy

**Risk Exposure Score: 60**

**Risk Management Score: 65**



### Inflation

- Implement cost-optimization measures, such as energy efficiency and process improvements, to mitigate the impact of rising input costs (India's mining sector faced a 10%+ increase in input costs in 2023)
- Explore long-term contracts and hedging strategies for key raw materials and resources to manage price volatility (Global commodity prices expected to remain elevated, with a forecasted increase of 5-7% in 2023)
- Review pricing strategies and leverage pricing power in high-demand segments to pass on inflationary pressures to customers (Indian steel demand expected to grow by 6-8% in 2023, driven by infrastructure and construction sectors)

### Taxation

- Monitor and comply with changes in indirect tax regimes, such as GST and import duties, to optimize tax liabilities (India introduced a new tax regime for the mining sector with effective tax rates ranging from 22% to 58%)
- Leverage available tax incentives and deductions, such as accelerated depreciation and investment allowances, to reduce tax burdens (India offers incentives like a 10-year tax holiday for mineral exploration and mining projects)
- Engage with industry associations and policymakers to advocate for a stable and competitive tax environment.

### Regulatory Risks

- **Environmental Protection Regulations:** Mining & minerals processing activities can pose threats to the environment, such as soil erosion, water pollution, and deforestation. Companies must comply with strict environmental protection regulations. Failure to do so can result in legal action, ethical concerns, and reputational damage, impacting profitability and investor confidence.
- **Political Instability:** Political instability creates uncertainty surrounding government projects, contracts, and regulatory mechanisms. This uncertainty can lead to delays, project cancellations, and reduced profitability for companies in the sector.
- **Transfer Pricing Regulations:** Government intervention to minimize price variations through transfer pricing regulations between related parties can pose a challenge for the sector. These regulations may impact business deals and potentially limit operational flexibility.

### Geopolitical Risks

- **Disrupted Supply Chains:** Geopolitical tensions between countries can disrupt global supply chains for critical raw materials and equipment used in the mining and metals sector. This can lead to shortages, delays, and price fluctuations that impact production and profitability.
- **Trade Barriers and Tariffs:** Increased trade tensions and nationalistic policies can lead to the imposition of tariffs and other trade barriers on exports of mined and metal products. This can limit market access and reduce export revenue for Indian companies.
- **Political Instability in Resource-Rich Regions:** Instability in countries rich in mineral resources can disrupt mining operations and lead to supply shortages or price spikes for essential materials.

### Foreign Exchange Risk

- Implement hedging strategies, such as forward contracts and currency options, to manage currency fluctuations and mitigate risks associated with import/export transactions (Indian rupee depreciated against the US dollar in 2023)
- Explore natural hedging opportunities by matching foreign currency inflows and outflows, such as export revenues and import payments
- Diversify revenue streams by expanding into new markets and currencies to reduce concentration risk

### Competitive risk

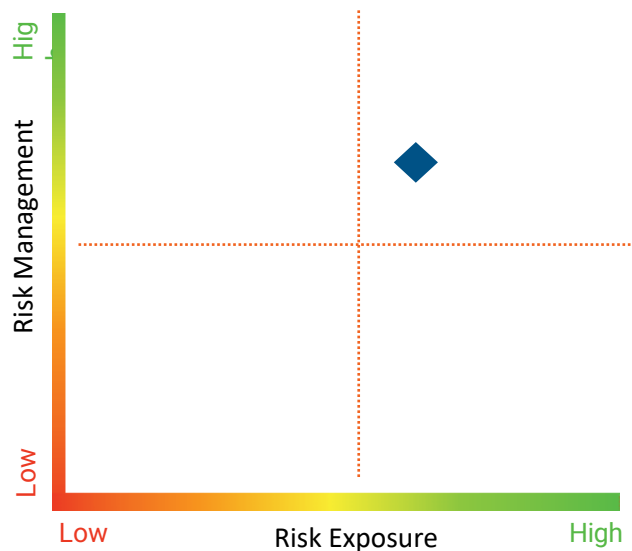
- **Price Volatility and Margin Pressure:** The mining and metals sector experiences price volatility due to competition from various players in the global market. This can significantly impact company profitability, especially during periods of low prices.
- **Pressure to Increase Production:** To maintain market share and profitability in a competitive landscape, companies may feel pressure to increase production. This can lead to:
  - **Resource Depletion:** Unsustainable mining practices aimed at maximizing extraction can accelerate resource depletion, potentially impacting long-term resource availability.
  - **Increased Operational Risks:** Ramping up production too quickly can increase the risk of accidents, environmental damage, and safety concerns.



## Risk Dimension Analysis: Technology

**Risk Exposure Score: 56**

**Risk Management Score: 58**



### Data Compromise

- The rapid pace of technological advancement in the global mining sector can lead to innovation risk. Companies that fail to keep pace with these advancements risk becoming obsolete and losing their competitive advantage. This can manifest as:
  - Inefficient operations compared to competitors using advanced technologies.
  - Difficulty in attracting skilled labor who are familiar with modern mining technologies.
  - Inability to access new markets that demand high-tech mining practices.

### Disruptive Technology

- Leveraging AI and machine learning for predictive maintenance, asset optimization, and improving operational efficiency (AI in mining market expected to reach INR 32 thousand crore by 2025, growing at 25% CAGR)
- Implementing advanced analytics and digital twin technology for mineral exploration, resource mapping, and mine planning (Digital twin technology can improve mine productivity by up to 20%)
- Investing in robust data infrastructure, cloud computing, and cybersecurity measures to support AI applications and ensure data integrity (Global mining industry's annual cybersecurity spending estimated at INR 14 thousand crore)
- Collaborating with technology partners or acquiring AI startups for specialized solutions in areas like autonomous mining, remote monitoring, and mineral processing optimization.

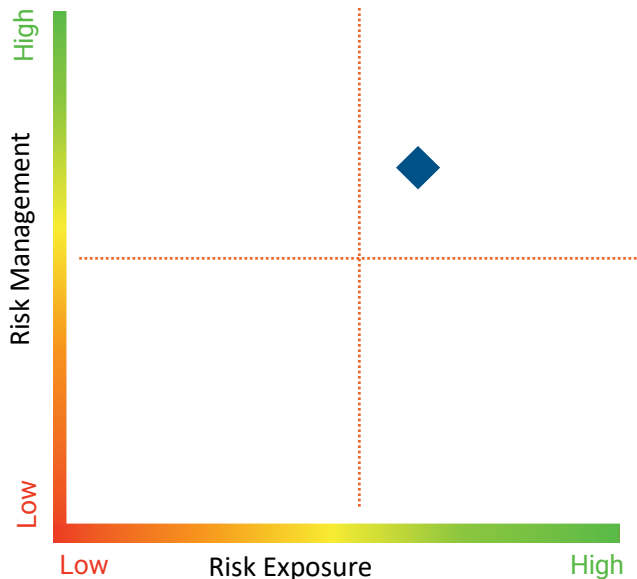




## Risk Dimension Analysis: Operational and Physical

**Risk Exposure Score: 64**

**Risk Management Score: 67**



### Critical Business Continuity Risk

- **Water Scarcity:** Water scarcity in certain regions can severely hinder mining operations. This can lead to:
  - Production limitations: Limited water availability can restrict processing capacity and ultimately impact production volumes.
  - Social and environmental conflicts: Competition for water resources with local communities can lead to social unrest and environmental concerns.

- **Land Acquisition Challenges:** Acquiring land for mining projects can be a complex and lengthy process due to:
  - Displacement of local communities: Mining projects can lead to the displacement of local communities, causing livelihood disruptions and social conflicts.
  - Environmental concerns: Land acquisition can raise concerns about deforestation, soil erosion, and habitat loss.
  - Caste-based discrimination and social inequality: Land acquisition processes may exacerbate existing social inequalities and discriminatory practices.

### Workplace accident

- **Worker Injuries and Fatalities:** The mining industry is inherently risky, with potential for accidents involving heavy machinery, falls from height, exposure to hazardous materials, and cave-ins. These accidents can result in:
  - Serious injuries or fatalities for workers.
  - Psychological trauma and long-term health problems.
  - Financial hardship for injured workers and their families.
- **Negative Impact on Communities:** Mining accidents can have a ripple effect on local communities, causing social unrest and impacting the well-being of families who have lost loved ones or face financial hardship due to worker injuries.
- **Disruptions and Delays:** Disruptions in the supply chain can significantly impact the mining and

metals sector.

### Environmental

- Implementing energy-efficient technologies and processes in mining operations and smelting activities to reduce carbon footprint (Global mining industry accounts for 4-7% of greenhouse gas emissions)
- Investing in renewable energy sources like solar and wind to power mining sites and processing facilities (Renewable energy deployment in mining sector expected to grow at 21.6% CAGR by 2027)
- Promoting sustainable mining practices, such as underground mining, and adopting eco-friendly methods for mineral extraction and processing (Sustainable mining practices can reduce environmental impact by up to 40%)
- Implementing water recycling and treatment systems, as water scarcity poses a significant risk to mining operations, especially in arid regions (Up to 80% of mining projects face water-related risks)

### Supply Chain

- Diversifying supply sources and establishing local partnerships for mining equipment and consumables to reduce import dependence (India imports nearly 80% of its mining machinery and equipment)
- Investing in domestic manufacturing facilities or joint ventures for mining equipment, leveraging incentives like the Production-Linked Incentive (PLI) scheme
- Adopting lean inventory management practices and optimizing transportation logistics to reduce supply chain costs (Supply chain optimization can result in 10-15% cost savings)
- Exploring alternative materials and methods that leverage locally available resources, such as recycled steel and aluminum, to reduce reliance on primary metal production.

### Human Resource

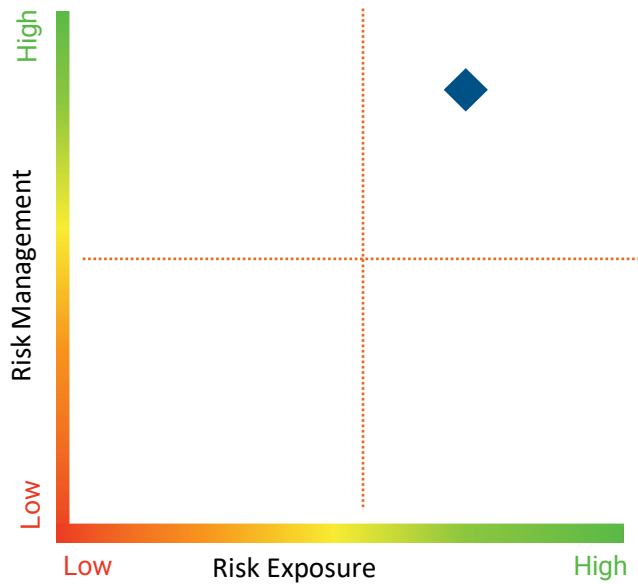
- Implementing policies and programs to promote workforce diversity and inclusive practices in the traditionally male-dominated mining industry (Women constitute only 8-17% of the global mining workforce)
- Providing training and development opportunities for underrepresented groups, including women, minority communities, and differently abled individuals, to address skill gaps.
- Establishing mechanisms for fair employment, promotion, and compensation practices, addressing gender pay gaps and discrimination issues.
- Partnering with organizations that support diverse communities and facilitate access to education and skills development in mining-related fields.



## Risk Dimension Analysis: Crime and Security

**Risk Exposure Score: 49**

**Risk Management Score: 52**



### Cyber-crimes

- Implement robust cybersecurity measures, including firewalls, encryption, and multi-factor authentication, to protect sensitive data and operational systems (The global mining industry faced over 600,000 cyberattacks in 2022)
- Conduct regular cybersecurity risk assessments, penetration testing, and employee awareness training to identify and mitigate vulnerabilities
- Develop and test incident response and business continuity plans to minimize the impact of potential cyber threats (Average cost of a data breach in India estimated at ₹17.5 crores in 2022).

### Data Compromise:

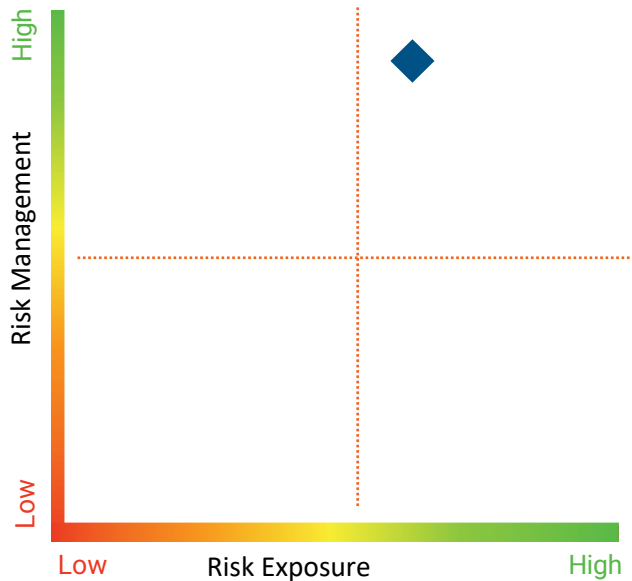
- Operational Inefficiencies: Failure to effectively manage and analyze the vast amount of data generated by mining operations can lead to missed opportunities for optimization, reduced productivity, and higher costs.
- Data Security Risks: Inadequate data management practices increase the vulnerability of sensitive information to unauthorized access or accidental loss.



## Risk Dimension Analysis: Natural Hazard and Event

**Risk Exposure Score: 58**

**Risk Management Score: 57**



### Pandemic and other global epidemic diseases:

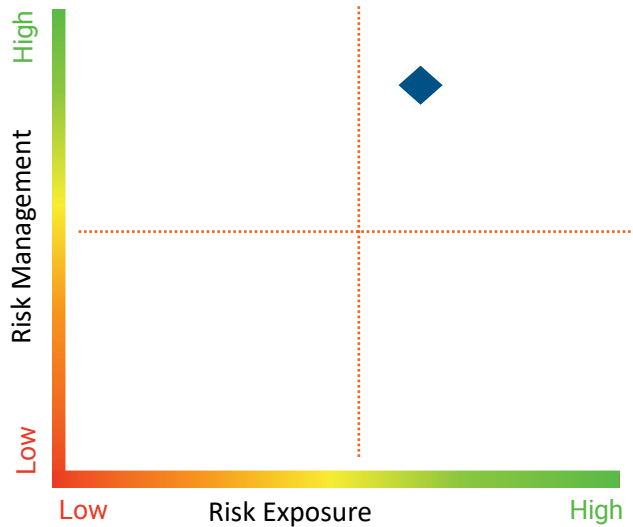
- Supply Chain Disruptions: Pandemics and epidemics can significantly disrupt global supply chains, leading to:
  - Delays in delivery of equipment, machinery, and raw materials: This can cause production slowdowns or stoppages, impacting output and profitability.
  - Increased input costs: Supply chain disruptions can drive up prices for essential materials due to shortages or logistical challenges.
  - Labor Shortages: Restrictions on movement and potential mine closures due to outbreaks.
- Reduced workforce availability: Labor shortages can significantly hamper production capacity and overall output.
  - Increased labor costs: Companies may face higher labor costs due to competition for a limited workforce or the need for additional safety measures.
  - Reduced Demand and Price Fluctuations: Global economic slowdowns triggered by pandemics can lead to:
- Decreased demand for minerals and metals: Lower demand can result in oversupply and put downward pressure on prices, impacting company revenue.
- Market volatility: Uncertainty during pandemics can lead to volatile market conditions, making it difficult for companies to accurately forecast prices and plan their finances.



## Risk Dimension Analysis: Strategic Risk

**Risk Exposure Score: 53**

**Risk Management Score: 47**



### Strategic Risk

- **Falling Behind Technological Advancements:** The mining and metals sector is undergoing rapid technological innovation. Companies that fail to adopt new technologies risk falling behind competitors in terms of:
  - **Operational efficiency:** New technologies can significantly improve efficiency in areas like exploration, extraction, and processing. Companies that lag behind may struggle to compete on cost or productivity.
  - **Product quality and innovation:** Advanced technologies can enable the production of higher-quality minerals and metals or facilitate the development of new innovative products. Companies that don't adapt may find their products becoming less competitive.
- **Security Vulnerabilities:** Reliance on outdated technologies can make companies more susceptible to cybersecurity threats. Legacy systems may have known vulnerabilities that attackers can exploit, potentially leading to data breaches, operational disruptions, and financial losses.

### Leadership risk

- Ensuring effective risk management and oversight mechanisms at the board and executive levels, including independent directors and risk committees, to manage operational, financial, and environmental risks.
- Fostering a collaborative and inclusive decision-making environment through cross-functional teams and employee engagement initiatives to drive innovation and operational excellence.

### Social media/Brand

- Monitoring and responding to social media sentiment and customer feedback promptly through dedicated teams and digital tools, addressing concerns related to environmental and social impacts.
- Leveraging strategic partnerships with industry associations, media outlets, and civil society organizations to enhance brand visibility, reputation, and social license to operate.

# ICICI LOMBARD: Key Solution Offerings



## Property

Evaluation of various risks to understand areas for improvement, such as fire preparedness, electrical safety, safety & emergency preparedness, maintenance and house-keeping, etc. By evaluating risks, we can identify potential hazards and advise on mitigating risks.

- **Property Loss Prevention:** We believe users should carry out detail risk visit followed by benchmarking of the industry good practices (Industry Risk Profiling). For instance, industries such as chemicals & petrochemicals impose a major challenge in manufacturing due to inherent risk. We recommend solutions for “Low Focus - High Loss Areas. This can help in minimizing severity losses. All the risk recommendations are grouped into four different segments based on cost-impact matrix and the priority is decided accordingly. Key decision makers at user’s end can ensure to get recommendations implemented.
- **Comprehensive Risk Assessment (CRA):** A Comprehensive Risk Assessment is a systematic approach to electrical safety specially designed for industries to evaluate potential hazards and recommend improvements, coupled with savings. It is an important tool for identifying risks, severity of hazards and avoid incidents arising out of electrical faults.
- **Electrical Risk Assessment (ERA):** An Electrical Risk Assessment is a basic solutions focused towards electrical safety designed to evaluate potential hazards and recommend improvements. Majority of fires in India are caused due to electrical installations. Ensuring safety of electrical installations of industrial unit or organization is critical to reduce risk and ensure safety compliance with Safety Standards and Regulation. ERA is an important tool which have 6 inbuilt activities such as Electrical Audit & Thermography built in with other such solutions.
- **Fire Hydrant IoT:** Fire hydrant monitoring is an automated solution that monitors key parameters such as Hydrant and Sprinkler line pressure, Main and Jockey pump on-off status. These can be interpreted to provide intelligence on unauthorized usage of water and leakage. This information pertaining to breach of above mentioned parameters is notified through dashboard & email alerts. Monitoring of such system is essential as these fire fighting systems are lifeline during any emergency.
- **Temperature & Humidity IoT:** Provides end to end plug & play ambient temperature and humidity monitoring Solution to manage temperature and humidity-controlled environment more efficiently. It generates - Automated reports (historical trends for different locations etc.). Intelligent Alerts - SMS & emails is sent to the concerned (one or multiple) stakeholders in case any anomaly.
- **Electrical IoT:** Electrical IoT is a patented solution (ILGIC Patented Solution) to avoid any instances of short circuiting due to abnormal voltage & current conditions. These are mainly built for application in warehouses. This solution has been created as these locations are having huge stocks with lesser manpower during emergencies mainly during non-business hours. The device automatically cuts off power in case of abnormality & restarts back when situation is normal.

- **Ultrasound technology for Gas Leak Detection:** Use of ultrasound technology for leak detection in process lines. The methodology recommends a non-destructive way of avoiding losses with no downtime. The main objective is to identify the leakages in all pressurized systems including pipelines by using ultrasound technology and tag them for rectification. It also includes listing leaks with individual CFM losses and cost savings possible. The outcome of the exercise will help the plant maintenance team to rectify the leaks and reduce the energy cost. This will also improve the process parameters and production quality.
- **Fire Mitigation Solutions:** Solutions have been designed based on their specific needs, keeping in mind the level of awareness and complexity of the location. These best in class solutions which are installed at correct places by risk assessors.
- **Renewable Solutions:** In line with our philosophy for recommending business solutions, we recommend advise on efficiency measurements for wind and solar power generating assets. Drones are used to provide high accuracy and the quick reach which is not possible through any traditional methodology. User get to know about the low performing module and ways to improve the same within the entire solar plant with latlong identification. We recommend advanced drone-based technology for inspection of wind turbines and solar PV modules.



## Marine

In the dynamic realm of marine insurance, cargo faces a myriad of risks, from unpredictable weather conditions to unforeseen accidents, safeguarding against potential challenges at sea is paramount.

- **MLCE (Marine loss control engineering):** Frequent occurring losses due to Peril such as accident, wet damage, theft, non-delivery, pilferage, hijack of consignments, mishandling shall be examined with ground inspections, root cause analysis with MIS, claim assessment reports.
- **Technical engagements:** Uncertainty of the risk associated with the transit can be concluded with marine experts. Risk assessment of cargo from packing, handling, lifting, securing, transit and final delivery methodology shall be discussed with the logistics team. Vessel selection, stowage and securing methods can be jointly discussed with the User's logistics team for a safe transit, dispatch and delivery coverage after assessing the risk on desktop with a virtual or F2F engagement and / or a ground visit.
- **Transit Telematics:** With the government's constant agenda of upgrading to digitalized operations by introducing ULIP and NITI Aayog mode of operations, not having a visibility of transit will hamper your logistics operations. IOT and SAAS based products incorporating the design of a cost efficiency and loss mitigation system can help enhance delivery with safe operation. Additionally, a 24\*7 risk control station and detailed post hijack recovery case studies is recommended to effectively monitor and mitigate theft / pilferage prone dispatches and ensure a safe transit delivery. Be it a temperature-controlled cargo, expensive cargo in transit or liquid bulk cargo in lorry tankers, it is essential to mitigate the risk and losses that might occur due to accidents caused by fatigue, unexplained conditions, or theft.





## Liability

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The growing adoption of technology in organizations has not only led to crucial data being stored and processed on digital platforms but also facilitated the automation of operations, thereby enhancing business efficiency. However, this shift also amplifies cyber risk, exposing sensitive information to potential threats and rendering organizations vulnerable to financial losses, reputational damage, and legal liabilities. As organizations delve deeper into the digital realm, fortifying cybersecurity measures becomes imperative to safeguard operational integrity and protect critical data from unauthorized access or breaches.

- **Phishing Simulation:** Experience cutting-edge phishing simulation tests to fortify your organization's defenses against cyber threats. You can enable phishing attack simulations to educate your employees on identifying and handling potential risks. Through engaging and interactive scenarios, you can raise awareness and equip your team with the necessary skills to detect and thwart phishing attempts.
- **Awareness Campaigns:** With Cyber Awareness Campaigns, you can go beyond just educating organizations about cybersecurity. The campaigns are meticulously designed to empower your team with essential best practices, insights into global incident trends and a comprehensive understanding of potential risks. Interactive designs help you captivate and engage your employees, fostering a cyber-aware culture within your organization. Customized campaigns can perfectly align with your unique needs and requirements and stay informed and vigilant.
- **Incident Response and Readiness:** A bespoke service that fortifies organizations with robust processes and clear communication channels for proficient cyber-incident management. This recommendation not only trims down the incident response time but also facilitates prompt, accurate action within the crucial initial hours. By meticulously assessing your organization's incident response policies and sculpting response systems in alignment with global industry benchmarks, this ensures you are thoroughly prepared to tackle the evolving digital threat landscape.
- **CXO's Session:** CXO's Session service provides immersive training sessions, personalized coaching & interactive discussions to empower your CXOs with cybersecurity knowledge that aligns with your business objectives. The subject matter experts recommend strategic guidance and in-depth insights into the ever-evolving threat landscape, translating technical jargon into practical language. Regular cybersecurity forums facilitate peer-to-peer learning and benchmarking against industry standards. CXO- focused approach ensures a cyber-aware leadership team that drives your organization's success securely into the future.
- **Weekly Threat Intelligence Bulletin:** Stay ahead of cyber threats with the Weekly Threat Intelligence Bulletin. We meticulously curate this comprehensive bulletin, providing timely insights on emerging threats, vulnerabilities, and attack trends. Delivered directly to your inbox, it recommends proactive advantage by promptly identifying potential risks. With continuous updates and ongoing support, you can confidently adapt your Defence strategies to combat the most sophisticated threats. It enables you to make informed decisions and protect your organization from emerging threats with Weekly Threat Intelligence Bulletin.

- **Email Security:** Safeguard your organization's communication channels with the Email Security solutions. We recommend robust measures to protect against phishing, malware & other email-borne threats. The advanced email filtering and authentication technologies prevent malicious emails from reaching your users inbox. Implementing encryption protocols to ensure the confidentiality of sensitive data in transit is a good idea. With real-time monitoring and threat intelligence, email security measures provide proactive Defence, detecting and blocking suspicious activities promptly. You can protect your organization's reputation and sensitive information with comprehensive Email Security measures, ensuring a secure and reliable email environment.
- **Agent-less Patching:** Agent-less patching platform for companies and MSMEs who want a rapid solution to distribute critical security updates and vulnerability fixes without causing system downtime. The patching platform not only assists with patch deployment, but it also enables your system administrator in understanding the patches, Adjustments & impact of the patches on the system. Before applying the patch, the software generates a warning if the system requires downtime or a reboot. You can experience a hassle-free patching process with the platform recommending enhanced security for your organization.
- **EDR/MDR Services:** Elevate your organization's cybersecurity capabilities with the Endpoint Detection and Response (EDR) and Managed Detection and Response (MDR) services. These advanced solutions provide continuous monitoring, rapid threat detection & effective incident response, safeguarding your digital assets in real-time. With EDR, proactively detect and respond to threats at the endpoint level, while MDR service offers 24/7 monitoring and expert support. You can strengthen defenses against the most sophisticated cyber-attacks with EDR/MDR services, ensuring a resilient and secure digital environment.
- **All-in-one Operating System:** All-in-One Operating System is a true game-changing platform that provides a fortified desktop environment to foster secure collaboration and centrally managed cybersecurity resilience. Inbuilt endpoint security serves as a vigilant guard, blocking potential dangers. Effortless IT management provides with a user-friendly interface, leading to significant cost savings in IT infrastructure. It provides in-built end-point security, automated updates and patches along with extensive device reports. Organizations can unlock a secure and prosperous future by embracing the All-in-One Operating System in their IT infrastructure.
- **Cyber Risk Management & Compliance Dashboard:** Gain a clear understanding of your organization's cyber risk exposure with Cyber Risk Management & Compliance Dashboard. This powerful tool assesses your risk posture, quantifies potential financial Impact & evaluates compliance with industry standards and regulations. Armed with this information you can make informed decisions to prioritize cybersecurity investments and ensure compliance with relevant laws and regulations. The intuitive dashboard provides a comprehensive view of your cybersecurity performance enabling data-driven decision-making. This solution enables organizations to stay ahead of threats and ensure a resilient cybersecurity posture.
- **Security Score Card:** Track your organization's cybersecurity performance with a dynamic Security Score Card solution. This comprehensive rating provides a clear overview of your security posture, highlighting areas that require attention and improvement. It empowers data-driven decisions, allowing you to focus on strengthening key areas. Identify potential risks and compliance gaps with industry standards and regulations. With actionable insights, you can prioritize cybersecurity investments effectively, ensuring a robust and resilient Defence against cyber threats. This Security Score Card solution can be your strategic tool to proactively elevate your cybersecurity posture.

- **VAPT:** Enhance your organization's cybersecurity defenses with the Vulnerability Assessment and Penetration Testing (VAPT) service. Skilled professionals conduct rigorous assessments, simulating real-world attacks to identify potential vulnerabilities in your digital infrastructure. With detailed insights, you can fortify your defenses and proactively address weak points before malicious actors exploit them. This service goes beyond identifying vulnerabilities, you also get actionable recommendations to mitigate risks effectively. Organizations can be one step ahead of cyber threats, ensuring the security and resilience of your critical assets with the comprehensive VAPT service.

## Engineering

In engineering risk management, it's vital to adopt a holistic approach that extends beyond immediate concerns to proactively tackle potential risks and uncertainties. Drawing upon considerable expertise in claims handling and risk evaluation, a robust and customized protection strategy can be ensured. Construction endeavors face a myriad of risks such as floods, cyclones, impact damage, fires, theft, and collapse. However, the adverse effects of these risks can be mitigated through the implementation of extensive loss prevention measures specifically tailored for engineering projects.

- **Engineering Loss Prevention Exercise (ELP):** To effectively manage losses in Engineering Risk, fostering a culture of loss prevention is crucial. It's widely acknowledged that each construction project is distinct, presenting specific challenges related to geography, geology, occupancy, and construction methodology, which in turn result in unique associated risks. To cater this challenge a specific risk management framework which deals about the unique requirement of each project could be created for the loss minimization with reference to some parameters of distinctive research and industries best practices.
- **Drone Solutions:** In recent years, the construction industry has undergone significant changes due to the introduction of drone-based construction solutions. These cutting-edge technologies are transforming the planning, design, and execution of construction projects. A major benefit of drone technology in construction is its capacity to conduct aerial surveys, providing extensive coverage and detail. Drones, equipped with advanced cameras and sensors, can rapidly capture precise images and data, offering project managers valuable insights into site conditions. This data can facilitate project planning, cost estimation and design optimization by providing a comprehensive understanding of the project's parameters.
- **CPM - Fleet & Fuel Management:** An advanced GPS-equipped sensor is available to precisely measure direct fuel consumption, evaluate engine efficiency, and detect potential tampering of diesel engines in both mobile vehicles and stationary machinery. This solution enables real-time alerts for service reminders and critical health issues, facilitating prompt resolutions and enhanced utilization. Additionally, it offers valuable insights into machinery and equipment performance through comprehensive analyses, resulting in optimized inventory usage and increased efficiency.



## Health

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We highly recommend exploring proactive and preventive healthcare solutions, which can make a significant difference in maintaining good health. Recognizing that majority of in-patient department (IPD) admissions could be prevented with timely interventions and regular healthcare, it is important to focus on health, not just during illness.

- **Pioneering Digital Platform:** We recommend exploring digital health innovations offered by industry leaders, which provide cutting edge health solutions through the IL TakeCare (ILTC) app. Our platform has transformed the way health services are delivered by introducing a fully digital and cashless Outpatient Department (OPD) and Wellness Program.
- **Health Advisory Services:** We recommend a suite of health advisory services on the IL TakeCare app. Users can access health risk assessments, diet and exercise trackers, health parameter tracking and trends and sleep, meditation & hydration reminders. In addition, the platform recommends a feature to upload health records up to 1GB, and provides informative health blogs.
- **IL TakeCare App:** IL TakeCare app is a One-Stop-Solution for users with insurance needs. This robust user engagement is a testament to the high-value features that the app provides. Unique to the app is the innovative self-health assessment feature, which includes Face scan technology that can measure blood pressure, heart rate, cardiac variance, and SpO2 levels. The platform provides seamless teleconsultations with medical practitioners and specialists, and even recommends access to mental wellness experts to the insured. The facility for cashless OPD services and the efficient claim settlement process further enhance user experience. By encapsulating a wide range of state-of-the-art health services and solutions, the IL TakeCare platform revolutionizes corporate health management and serves as a comprehensive digital health solution.

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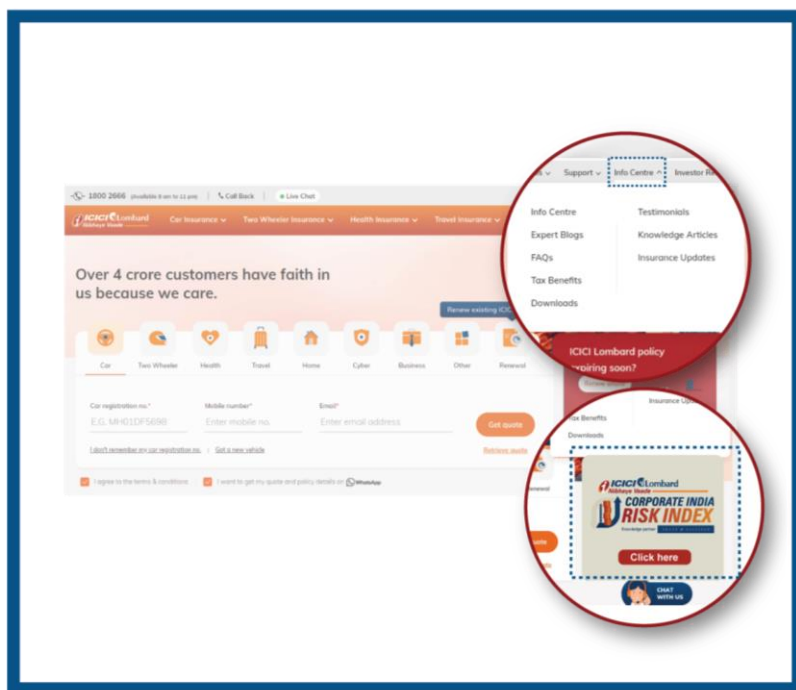
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