ICICI Lombard
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CORPORATE INDIA RISK INDEX

2023

Intelligence partner FROST & SULLIVAN

SECTOR REPORT 2023

ENERGY

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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

India is positioning itself to become INR 417.2 trillion economy in the next 3 years (up from INR 308 trillion in FY 2024) and taking bold steps to decouple this economic growth from greenhouse gas (GHG) emissions. To meet the rising demand from power and industry, the country relied on expensive coal imports, with a 20% increase in non-coking coal imports (by volume) in FY 2023—the highest growth since FY 2015.

In 2023, India also demonstrated leadership by steering the G20 under its Presidency to a common goal of tripling global renewable energy capacity globally by 2030. However, the country's rapidly increasing energy demand has also led it to adopt a hybrid approach, bolstering all forms of energy supplies in 2023.

The government's primary motivation in reducing coal prices through concessional duties, tax rates, and underpricing of coal for power utilities is to make electricity production more accessible and affordable, noting that the single largest energy subsidy in India is electricity subsidies.

With an aim to protect low-income households, India responded to peaking fossil fuel prices in 2022–23 by capping retail prices of petrol, diesel, and domestic liquefied petroleum gas (LPG), cutting taxes, providing direct budgetary transfers to businesses and consumers, and supporting existing energy supplies.

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

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, 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

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

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

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

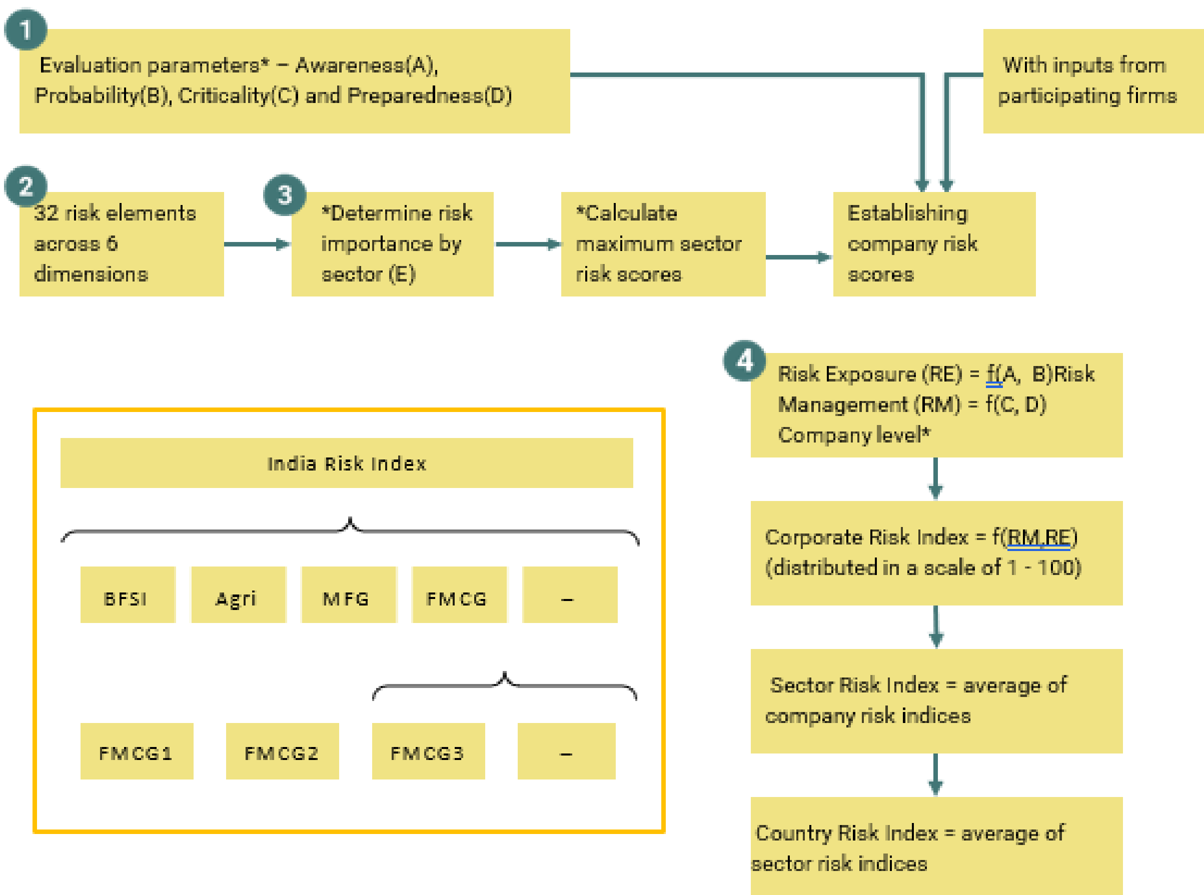


Figure 1: Risk Assessment Approach

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 riskto 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

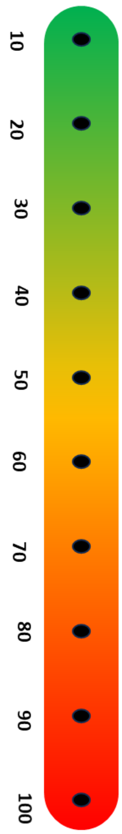
We have selected 20 sectors to understand the current stand of our country today in terms of risk. Risk for various sectors is measured on the risk exposure scale and risk management scale.

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 somethingto 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.



A score **less than 30** indicates very low risk exposure and the corporate entity has minimal overall risk exposure.

A score **between 30 and 50** indicates low risk exposure and the corporate entity's risk exposure is within acceptable or tolerable limits

A score **between 50 and 60** indicates moderate risk exposure and the corporate entity can balance the impact of overall risk to a certain extent.

A score **between 60 and 80** indicates high risk exposure, and its impact is very high in the industry in which the corporate entity operates.

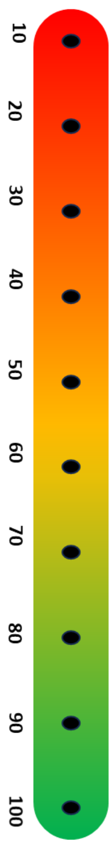
A score **greater than 80** indicates very high Risk Exposure and the corporate entity is unable to foresee risk incidence and the probability of occurrence of these incidents may be extremely high.

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 the Corporate Risk Management.

The risk management scale works in the opposite to that of the risk exposure scale.

Let’s look at the risk management scale.



A score **less than 40** indicates poor risk management and the corporate entity is unable to understand the concept of risk management.

A score **between 40 and 50** indicates below-par risk management and the corporate entity has inefficient risk management practices that are reactive to newer or unknown risks.

A score **between 50 and 70** indicates acceptable risk management and the corporate entity is prepared to handle known risks and the criticality of its risks is not severe.

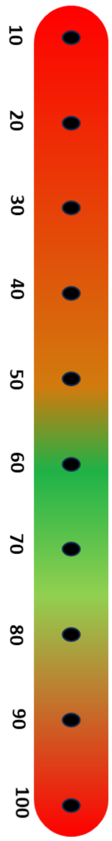
A score **between 70 and 80** indicates superior risk management and the corporate entity has employed top-class risk management practices to manage dynamic and unknown risks.

A score **greater than 80** indicates exemplary risk management and the corporate entity is over-prepared in risk management practices and is proactive in addressing emerging risks.

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.



A score **less than 40** indicates an ineffective risk index meaning the corporate entity has very high risk exposure or very poor risk management practices or both.

A score **between 40 and 55** indicates a suboptimal risk index suggesting that not all risks are handled effectively and risk management practices of the corporate entity are likely to be outdated or inefficient.

A score **between 55 and 65** indicates an optimal risk index, indicating that most current risks are being handled effectively by the corporate entity. However, emerging risks associated with strategic initiatives need more diligence.

A score **between 65 and 80** indicates a superior risk index, indicating very effective and efficient risk management practices. The corporate is well-positioned to handle current and future risks across dimensions.

A score **greater than 80** is over preparedness indicating high investment in Risk mitigation practices likely over investment in one or more risk dimensions difficult to justify ROI

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.

Energy Sector Insights 2023

India has been one of the world's fastest-growing economies in recent years and has become the fifth-largest in nominal terms, behind the United States, China, Japan and Germany. Regarding purchasing power parity (PPP), which adjusts for Indian buying power relative to other countries, India is the third-largest economy behind China and the United States. However, India remains a low-income economy, with a PPP per capita income less than half the world average. With half of India's population under the age of 25, India's economy has the potential to increase. India is characterised by the co-existence of shortage and abundance in several parts of its energy system.

India ranks fifth in the world regarding coal deposits. India is the second-largest consumer of coal behind China, with the demand primarily driven by the power sector. Nonetheless, it is one of the world's major coal importers. India is a major centre for global oil refining but relies overwhelmingly on imported crude. While progress has been made on many fronts over these years, the extraordinary disruption caused by the COVID-19 pandemic 2020 has cast a cloud over the future. In addition, industries like iron and steel, cement and fertilisers are some of the industries that depend on coal for their energy requirements. About 13 million people in India are employed in various coal-related sectors, including mining, transport, power, sponge iron and steel.

Power is among the most critical components of infrastructure, crucial for nations' economic growth and welfare. The existence and development of adequate power infrastructure are essential for the sustained growth of the Indian economy. During the Financial Year 2022-23, significant developments unfolded in the Indian power sector, including:

- The installed generation capacity witnessed a lesser-than-targeted addition.
- A rapid surge in demand ensued following the relaxation of pandemic restrictions, driven by the economic rebound.
- Thermal Plant Load Factors (PLFs) increased to 64.15% by the end of FY 23, marking a 5% rise compared to the previous FY 22.
- Energy deficit and peaking deficits experienced a narrowing trend.
- Power exchanges saw an uptick in trading volumes.
- Persistent efforts were made to address stressed generation assets in the private sector.
- Discoms continued to grapple with challenges such as high AT & C losses, a significant gap between ACS and ARR, and ongoing financial stress and liquidity constraints.

Growing population, increasing electrification & universal access to power, rising per-capita usage, and expansion in economic activities, including penetration of Electric Vehicles (EV) in both consumer and industrial segments, are expected to drive growth in power consumption.

In the financial year 2023, peak power demand increased by 6.3 per cent to ~216 GW, whereas in energy terms, it increased by 9.6 per cent to ~1,511 BU. With the industrial and commercial sectors together accounting for nearly 50% of the country's electricity consumption, the resumption of economic activity post-relaxation of pandemic restrictions has positively impacted the overall demand. Gradual and calibrated resumption of economic activity will further support the growth of electricity demand.

There has been a progressive shift towards renewable sources (mainly solar & wind). In the last five years, the share of renewable energy in the installed capacity has increased from ~33% (~114 GW in March 2018) to ~43% (~179 GW in March 2023).

The IEA report titled Electricity 2024 noted that coal will continue to dominate the Indian power sector through 2026. This is despite an expected fall from 74 per cent of total electricity generation in 2023. Renewable generation remained relatively stable, with a 21 per cent share of electricity generation in 2023. The report stated that the rise in solar and wind was offset mainly by reduced hydropower output. Close to 21 gigawatts (GW) of renewable energy (RE) capacity was added during 2023, with RE accounting for nearly 44 per cent of total installed capacity in the third financial quarter of 2023.

Electricity demand in India rose by seven per cent in 2023, a drop from 8.6 per cent in 2022. Despite the emphasis on renewable/non-fossil fuel-based energy, transitioning from coal is highly unlikely in the foreseeable future. The share of coal in the energy basket is also expected to remain significant as the demand for coal is likely to be 1.3-1.5 billion tonnes by 2030. The demand is also projected to rise and peak around 2040.

The power sector is a highly capital-intensive business with long gestation periods before generating revenue streams, especially for projects using conventional technology. Coal-based power projects have an average development and construction period of 7 to 8 years and an even longer operating period (over 25 years).

At the 26th Conference of the Parties (COP26) to the United Nations Framework Convention on Climate Change (UNFCCC), India announced five key commitments to enhance contributions to a more sustainable future:

- Develop capacity to generate 500GWN of non-fossil fuel-based energy by 2030.
- Meet 50% of the country's energy needs with renewable energy by 2030.
- Significant reduction in estimated global carbon emissions from current 1 billion tonnes by 2030.
- Minimize the economy's carbon intensity by 45% till 2030, from 2005 levels.
- Goal of achieving net zero emissions by 2070.

The energy sector was grappling with numerous challenges within its supply chain networks even before recent disruptions driven by the pandemic and the Russian invasion of Ukraine. These disruptions ranging from logistics bottlenecks to shortages of raw materials and components and labor shortages, have resulted in rising costs and a scarcity of essential electric supplies. They have also widened the gap between the demand and supply of electrical equipment and components, slowing the clean energy transition. As a result, many electric power and renewable energy companies are revisiting supply chain strategies and rebooting their approach to supply chain risk management. And ripple effects are impacting the broader economy, sometimes slowing new home construction due to a lack of electrical equipment especially distribution transformers and smart meters and delaying transportation electrification. In conjunction with a rising subsidy level and systemic failure to ensure proper revenue collection along the value chain, the financial capacity of energy sector players is significantly undermined. The lack of sufficient capacity to make timely and adequate investments gives reason to fear that India is heading towards an energy crisis. Indian energy policy cannot be set in isolation and needs to account for rising global interdependence while simultaneously communicating appropriately to the public and reflected in policy debates.

Energy Sector Risk Index 2023 Vs 2022

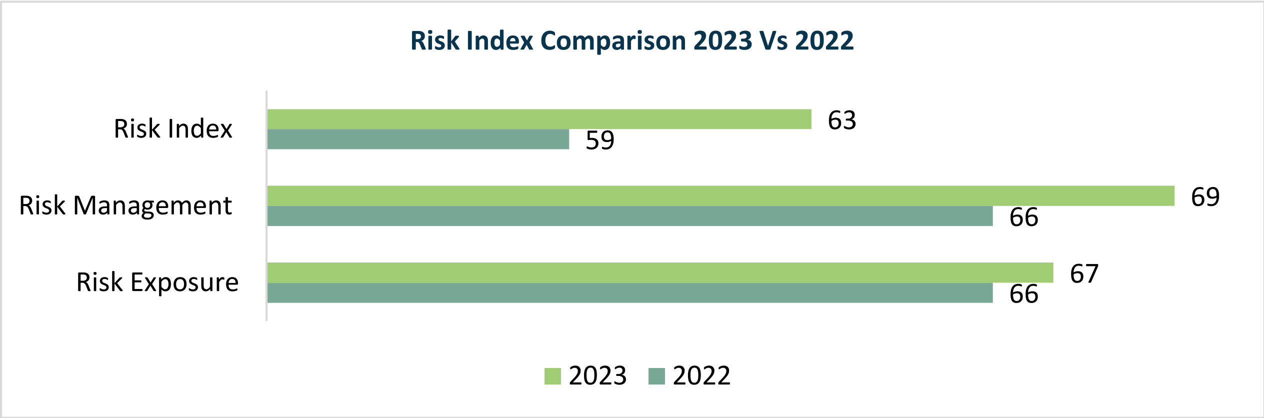


Figure 4: Detailed Comparative Analysis 2023 Vs. 2022

Energy Sector Risk Index 2023 Vs 2022

The overall Risk Index for the energy sector improved from 59 to 63 in 2023 indicating optimal risk index. There was no significant change in risk exposure for the sector, which increased from 66 to 67. The market risk remained high due to the rising inflation, primarily led by the increase in fuel prices and the change in regulations due to the increased focus on renewable energy generation. Operational & Physical risks remained the same due to the continued shortage of infrastructure facilities and high risk of worker accidents. The depleting coal reserves also increased the risk exposure. The risk management score improved from 66 to 69 because of the new cybersecurity initiatives by the Central Electricity Regulatory Commission and increased investments and initiatives in renewable energy sources by power generation companies.

Energy Sector Risk Exposure 2023 Vs 2022

There is no significant movement in the Energy Sector Risk Exposure. The fluctuations were noted due to global slowdown in GDP growth resulting in reduced industrial activities, all-time low rupee valuation and high CPI inflation. The technology risk increased from 63 to 68 because of the government's push for renewable energy generation to reduce carbon emissions and because of the risk of obsolete technology that can be caused due to electric vehicle charging infrastructure, smart grids etc. While market & economy risk exposure remained the same, the operational and physical risk reduced because of increased use of preventive maintenance of critical infrastructure and stringent implementation of safety measures.

Energy Sector Risk Management 2023 Vs 2022

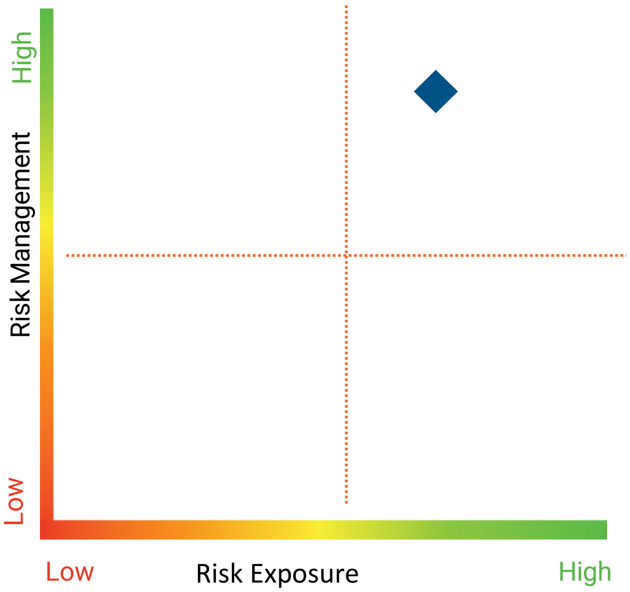
The risk management score for the energy sector increased from 66 to 69 majorly because of the technology dimension, which increased by 3 points from 64 to 67, the strategic risks dimension, which increased by 4 points from 67 to 71, and the natural hazards dimension, which increased from 63 to 66. The increased occurrence of natural hazards like cyclones, floods, etc and the seasonal nature of renewable energy led to the introduction of contingency measures, business continuity policies and emergency disaster preparedness plans to avoid disruptions in power generation and disruption. The sector also saw an increase in investments of renewable energy plants to improve competitiveness and reduce dependence on fossil fuels.

Key Highlights

Risk Dimension Analysis: Market and Economy

Risk Exposure Score: 71

Risk Management Score: 69



Inflation

- Credit rating agency Moody's Global Macroeconomic Outlook has flagged energy prices as the key source of upside risk to inflation. With oil prices remaining volatile on account of increased geopolitical uncertainty in the Middle East, oil prices are unlikely to be sustained at high levels against the backdrop of slowing growth.
- The index for fuel & power group increased by 0.65% to 154.1 (provisional) in October 2023 from 153.1 (provisional) in the month of September 2023. Prices of Mineral Oils (1.28%) increased in October 2023 compared to September 2023.
- The inflation rate in September receded to 5.0%, reverting within the RBI's target range. Despite a reduction in core inflation, the central bank has kept the repo rate unchanged at 6.5%, underscoring a precise inflation target of 4%.
- According to IEA, India is among the world's fastest-growing economies, contributing to over 10% of the global energy demand surge.
- The close link between energy and inflation in India underscores the need for the country to transition towards decarbonization. Thus, renewable energy adoption could mitigate the long-term impact of energy prices on the Consumer Price Index (CPI).

Taxation

- In the electricity sector, fuels used to generate electricity are taxed. The Basic Excise Duty (BED) applies to specified oil and gaseous products as part of the central excise regime. Solid biofuels may be untaxed.
- Electricity consumption may be taxed at the state level, with different residential, commercial and industrial tax rates.

- The Centre and states are quite dependent on the energy sector for their taxation revenues, with the Centre's dependence being as high as 25%.
- For the expansion of large-scale grid-connected solar and wind projects in the upcoming years, the waiver of inter-state transmission system charges for solar and wind projects has been extended for projects scheduled for installation until 30 June 2025, and a phased waiver has been proposed up to 2030.
- The government also provides support to the oil and gas sector through tax expenditures.
- A large part of these tax expenditures also went to domestic LPG consumers through lower goods and services tax (GST) rates and custom duty exemptions on imported LPG for domestic use (see interactive database for details).
- India also continues to provide a full custom duty exemption on import of crude oil to promote its refining sector.

Regulatory Risks

- Under the provisions of the Electricity Act and in consultation with CEA and state governments, the government of India has prepared National Electricity Policy and Tariff Policy for the development of the power sector based on the optimal utilization of resources.
- The Electricity Act 2003 is the parent legislation governing the electricity sector in India (other than nuclear power).
- Some of the key amendments proposed to Tariff policy include stricter operating norms with extension on AT&C losses, adoption of direct benefit transfer for subsidy payments, moving consumers from postpaid to prepaid electricity metering system, prescribing mandatory debt to equity ratio for financing capital of future projects, allowing for a change in law relief on the introduction of surcharges and charges after the awarding of bids, stricter implementation of Renewable Purchase Obligation, providing a service standard framework for the distribution of electricity, etc.
- The index of the coal sector showed year-on-year growth of 16.1% in 2023, the highest in the last 14 months. The overall index of eight core industries also saw an increase of 8.1% in September 2023. The growth can be attributed to strategic initiatives by the government, such as amending mining regulations and allowing captive mines to sell coal.
- In FY 2023, both clean energy and fossil fuel subsidies grew by around 40%, with subsidies for renewable energy and electric vehicles growing slightly faster.
- The government also announced several new initiatives during this period for promoting emerging sectors such as green hydrogen, battery storage, and offshore wind.
- Despite this, clean energy subsidies remained less than 10%, while subsidies for coal, oil, and gas contributed around 40% of total energy subsidies. Most of the remaining subsidies were for electricity consumption.

Geopolitical Risks

- Geopolitical risks, such as conflicts or wars in operational regions, could result in supply chain disruptions (raw material procurement, transport, etc), physical asset damage, operational disruptions, and revenue losses.
- Imposing economic sanctions and fines by Indian regulatory bodies, foreign governments, or

international bodies on operational countries may negatively impact the company's operations and financial outcomes.

- The government has committed to expanding manufacturing capacities in industries crucial for India's clean energy transition. Effectively addressing environmental concerns presents a significant challenge, like in Sterlite Copper, which has been closed for four years due to opposition from environmental activists.
- The energy price crisis brought about by Russia's invasion of Ukraine led to a spike in subsidies for fossil fuels to record levels across the world.

Foreign Exchange Risks

- The industry faces direct exposure to fluctuations in foreign exchange rates concerning the prices of securities and borrowings denominated in currencies other than the Indian Rupee.
- Exchange rate fluctuations can affect the economic environment in which the company operates. Appreciating the Indian Rupee against other currencies may increase the cost of Indian exports, potentially reducing demand for Indian products and services.
- Rising foreign investment in the renewable sector (such as the US$ 75 billion investment from the UAE) is expected to promote further investments in the country.
- To meet the rising demand from power and industry, the country relied on expensive coal imports, with a 20% increase in non-coking coal imports (by volume) in FY 2023—the highest growth since FY 2015.

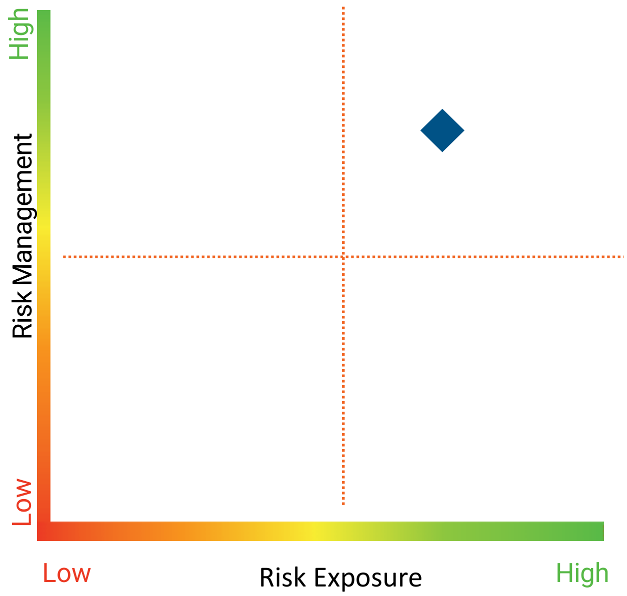
Competitive risk

- The Centre aims to bring in consumer choice through new distribution entities to compete against the incumbent monopoly public sector discoms.
- Currently facilitated by power exchanges, wholesale power markets represent 5 per cent of overall power transactions. Structural distortions hinder wholesale competition, as superior fuel and offtake contracts often favour those with cheaper power.
- Creating a liquid and competitive market with multiple players remains a challenge. On the retail side, new entrants may seek to target consumers selectively.

Risk Dimension Analysis: Technology

Risk Exposure Score: 68

Risk Management Score: 67



Data Compromise

- This includes unauthorised access to sensitive information, including customer, employee, and financial data. Any breaches may lead to financial losses, legal consequences, and can lower the trust among stakeholders.
- In 2021, 10 Indian power sector assets, including Mumbai port and Tamil Nadu's VO Chidambaranar port, were attacked by a hacker group with China links, a US-based company reported. In April 2022, India's Minister for Power, RK Singh, confirmed that the national power grid had faced cyberattacks.

Disruptive Technology

- Some key disruptive technologies are Smart Grid, Microgrid, Blockchain, AI, IoT, W2E, Energy Storage and 2nd Generation Power, Green Hydrogen, Green Building, V2G, and CASE.
- The disruption changes cost, technology capability, new business models, digital transformation, and policy change.
- The challenge in new energy development focuses on securing the profits of reliable, affordable, and sustainable energy.

R&D

- Various emerging fields of technological advances, including renewables, energy storage, battery technology, hydrogen power and digital energy technology, have picked up in recent times.
- In the market acceptance of new products, failure to garner positive responses from the market can result in significant financial losses.
- Aggressive targets, such as universal smart metering in three years, pose scalability and preparedness challenges for discoms, including database management and cost implications. Smart meters offer significant benefits, but their implementation should align with the unique business case of each utility.

Counterfeiting

- Counterfeit electrical equipment, spare parts, and meters can compromise safety and quality standards, leading to safety hazards like fires and explosions.

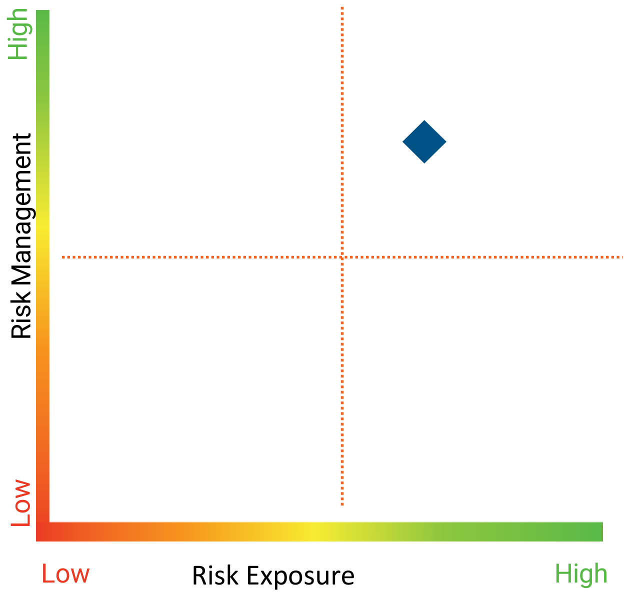
Intellectual Property

- A robust intellectual property (IP) protection framework incentivizes businesses to invest in safeguarding their technology, engaging in licensing agreements, and conducting local research and development (R&D).
- Hence, the Indian government must reevaluate tariffs imposed on products to foster the ecosystem for renewable product manufacturing.
- India boasts a robust industry in low-carbon environmental goods and services (LCEGS), ranking third in sales within Asia and second in proportion to gross domestic product (GDP).

Risk Dimension Analysis: Operational and Physical

Risk Exposure Score: 68

Risk Management Score: 71



Accidents/ Fire Safety

- Two major sources which provide information on electrical accidents are the annual Accidental Deaths and Suicides in India (ADSI) report prepared by the National Crime Records Bureau and the annual General Review of the Central Electricity Authority (CEA).
- According to the National Crime Records Bureau, around one lakh people lost their lives because of electrocution in the last decade alone. The annual average of fatalities rose to 12, 500 in 2023 from around 11,000 in 2021.

Striker/ Unrest/ Closure

- Joint forum general convenor Sunil Kumar Bajal said the central government plans to privatise the power sector in November 2023.
- A joint forum of farmers, labourers and other organisations staged a protest in November 2023, in front of Mescom offices in Dakshina Kannada district as part of a nationwide protest against the government's move to privatise.

Equipment Malfunction

- Structure or equipment failures due to high wear and tear, ageing of assets and improper/inadequate maintenance may lead to injuries, fatalities, and operational disruptions.
- Supply Chain Disruption
- Supply shortages due to supply chain disruptions in risks related to dependence on critical suppliers, price volatility of raw materials, quality control issues, and disruptions in logistics and transportation networks could impact production costs and operations.
- Supply chain disruptions impact grid modernisation efforts and clean energy deployment and cause service-related delays.

- Supply chain disruptions have worsened because of the pandemic, the Russian-Ukraine conflict, the Suez Canal blockage crisis, etc.

Environmental

- India stands fourth in the world in Renewable Energy Installed Capacity (including large hydro projects). The country is fourth in wind power and solar power capacity.

- The country's renewable energy capacity as of July 2023 stood at about 179 GW (which is about 40% of the total energy capacity).

- India's financial sector faces significant exposure to the risks of transitioning from fossil fuel dependency to clean energy.

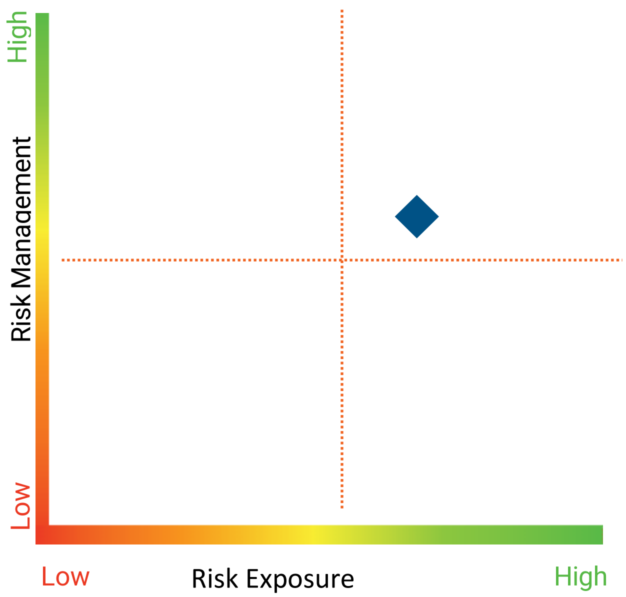
- A study of loans and bonds reveals that 60% of lending to the mining sector supports oil and gas extraction. In contrast, one-fifth of manufacturing sector debt is allocated to petroleum refining and related industries.

- Despite electricity production being the largest emitter of carbon emissions, only 5.2% of outstanding credit is directed towards this sector, with just 17.5% of this lending allocated to pure-play renewables.

Risk Dimension Analysis: Crime and Security

Risk Exposure Score: 58

Risk Management Score: 62



Cyber Crimes

- Since the power sector is an essential pillar in the country's economic growth, it can be a prime target for cyber attackers who can cause significant disruptions in services and even cause physical damage to the infrastructure. Cyberattacks can be in the form of spyware, malware, network hacking of the grid, or any power utility.
- The Central Electricity Regulatory Commission (CERC) has included a chapter on cyber security in its latest version of the "Grid Code", which is a set of rules and standards to maintain the high-voltage backbone system of interconnected transmission lines, substations and generating plants in the country.
- Lt Gen (Retd) Rajesh Pant, the national cyber security coordinator, said that the National Cyber Security Reference Framework (NCRF) 2023 has been approved and will be placed in public domain.

Harassment

- Corruption/ bribing has led to significant misallocation of resources, particularly capital, resulting in inefficiencies within the energy distribution system, ultimately depriving millions of Indians of access to electricity.
- Electricity theft is a prevalent issue, with its magnitude varying based on the electoral cycle of the state. Instances of theft notably increase during years when State Assembly elections are held, with affluent farmers being the primary culprits rather than industrial or residential consumers.

Executive threat/ Impersonation

- Chronic electricity shortages in India are often attributed to poor governance practices, which hinder efficient distribution and management of power resources.
- Nearly one-third of the electricity generated in India is lost due to various factors, such as damaged equipment or theft, exacerbating the issue of power scarcity.

- The most common method for meter tampering is hooking or bypassing the meter, where a consumer directly connects the electrical load to the service line, allowing electricity to flow without passing through the meter, accounting for around 25% of the total losses due to energy theft. In monetary terms, the estimated loss due to energy theft and meter tampering in India's power sector is over $16 billion annually.
- The power theft cases detected in the distribution areas of Mumbai based power discom, which supplies electricity to maximum consumers in Mumbai, rose by 38% in 2022-23 (from 7,058 cases to 9,756 cases).

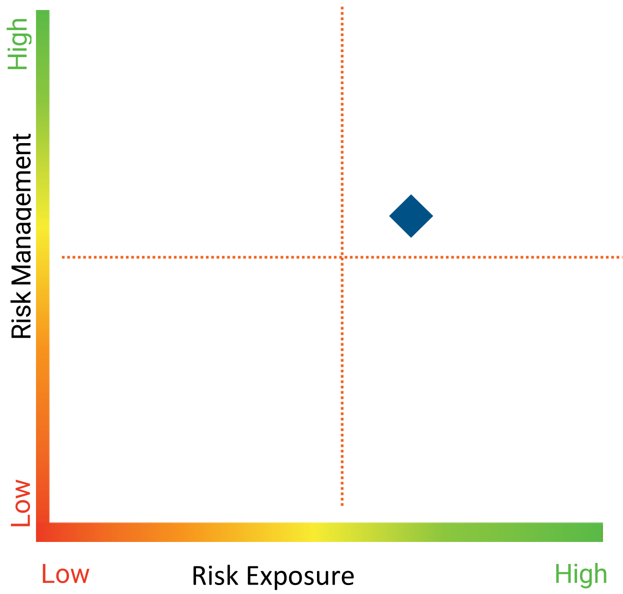
Physical Violence/ Abuse

- Incidents of physical violence can jeopardize employee safety and disrupt operations, resulting in lower productivity, higher attrition rate, legal conflicts and low trust among stakeholders.

Risk Dimension Analysis: Natural Hazard and Event

Risk Exposure Score: 61

Risk Management Score: 66



Natural Hazards:

- India ranks among the top ten countries most prone to natural disasters globally, with its geographical setting being a key factor contributing to this vulnerability. Geo-tectonic features in the Himalayan region and adjacent alluvial plains increase susceptibility to earthquakes, landslides, and water erosion.
- Natural disasters are pivotal in shaping energy consumption patterns, especially in regions prone to frequent and severe natural calamities. Factors such as population density, land vulnerability, and the overall population affected by disasters contribute to variations in energy demand across different areas.
- States experiencing low flood magnitudes may not significantly impact energy consumption, whereas those facing high flood magnitudes can considerably influence energy consumption levels across regions.

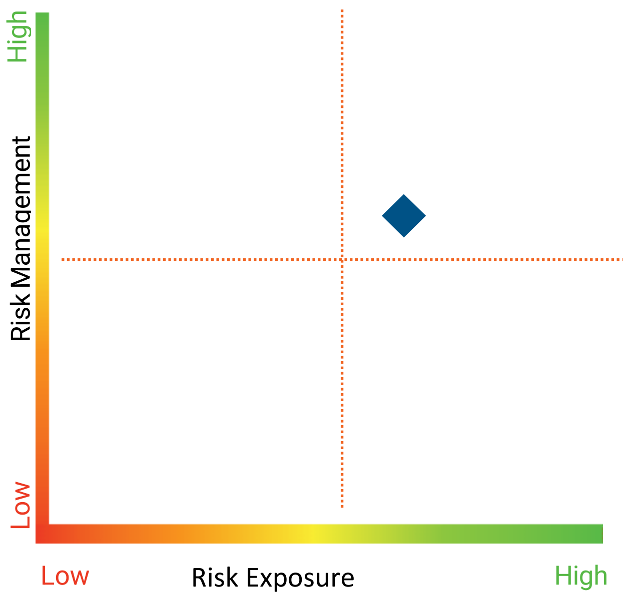
Pandemic and Global Epidemic Risks

- Measures like lockdowns and stay-at-home policies decrease industrial and commercial sector demand, but residential demand will increase manifold times.
- Due to changes in lifestyle and habits, a shift in morning and evening peaks is observed. As different levels of restrictions are implemented, the load profile changes.
- Various measures like rate cases, removal of subsidies and tariff revisions can be used as immediate and long-term actions to make up revenue losses.
- Moreover, grid operation digitisation, adoption of energy efficiency measures and advanced metering can provide value chain support.
- There is an immediate need to revise the existing policies, adapt from international business practices, and innovate breakthrough/cutting-edge technologies to make the system long-term resilient and cost-efficient in handling the crisis during such pandemics.

Risk Dimension Analysis: Strategic Risk

Risk Exposure Score: 67

Risk Management Score: 71



Public Sentiment

- India's per capita electricity consumption is 1,010 kilowatt hours (kWh), against a world average of 3,200 kWh. India is a relatively inefficient energy user, indicating significant improvement potential.
- India's share of the world population is 18 per cent, but its share of world gas and oil reserves is only 0.6 per cent and 0.4 per cent, respectively. On a per capita basis, India's domestic production of fossil fuels is the lowest among major emerging markets. Still, India relies on fossil fuels for around 75 per cent of its energy demands.
- According to a report by the Australian Government Department of Foreign Affairs and Trade based on IEA data, India is a long way from meeting its supply and energy security objectives: some 300 million Indians lack access to electricity, and about 500 million people are still dependent on solid biomass for cooking; the large majority of those without access live in rural areas.

Resources Scarcity/ Misutilization

- There's been a significant surge in energy demand after the economy started rebounding from a pandemic, leading to an unprecedented fuel shortage at the country's coal-fired power stations.
- Data from the Central Electricity Authority of India reveals that nearly 80% of these plants are in a critical state and have exhausted the coal that can be extracted, with stocks expected to deplete in days.
- This situation underscores several critical issues, including a lack of capacity-building to withstand such shocks, challenges in managing resources in alignment with demand, and difficulties in ensuring accessibility for all since coal prices increase due to high demand and low supply, leading to a hike in electricity tariff.
- The renewable energy power generation sector is still nascent, highlighting the potential consequences of inadequate foresight in relying solely on conventional energy sources without sufficient alternative strategies.

Failed/ Hostile M&A

- A hostile takeover attempt could disrupt operations, decreasing revenue and profitability, tarnishing the company's reputation, and impacting its ability to secure financing and attract investors. It may also trigger increased regulatory scrutiny and legal challenges, entailing significant costs and time.

- If the hostile takeover is successful, the company's management and board of directors could be replaced, leading to a loss of control over strategic decision-making.

ICICI Lombard Nibhaye Vaade

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

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

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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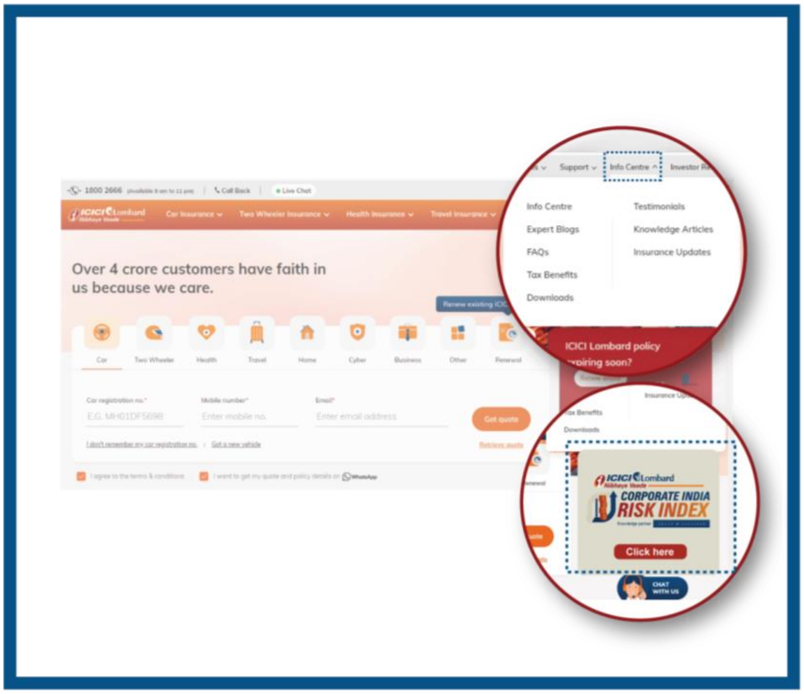

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