ICICI Lombard
Nibhaye Vaade

CORPORATE INDIA RISK INDEX

2022

Intelligence partner FROST & SULLIVAN

SECTOR REPORT 2022
CHEMICALS & PETROCHEMICALS


RISK

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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 chemicals sector continues to be the backbone of the Indian economy and a leading supplier of raw material to essential industries such as agriculture, pharmaceuticals, textiles, etc. With global macroeconomic factors and China + 1 strategy, it is believed that the chemicals sector could play a pivotal role in India's goal of becoming a $5 Trillion economy.

Through this report, the risk exposure, risk management and risk index of the chemicals sector was determined and compared with 2021. The results show that the risk index has improved, while risk management and risk exposure has slightly fallen. This happened majorly due to the heavy impact of Russia – Ukraine war on the global supply chain and its aftermaths on inflation and raw material shortages. Additionally, rising ESG concerns and stricter regulations have further worsened the situation.

However, the above risks are being off set with rising domestic demand and increasing investments in the chemicals sector

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 Defense, 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. Around 7.4% of the attacks in the Asian region were targeted at India in 2022.

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. From Surat Gas leak to landslides in the north and cyclones in Bay of Bengal, the year 2022 was no exception. 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.

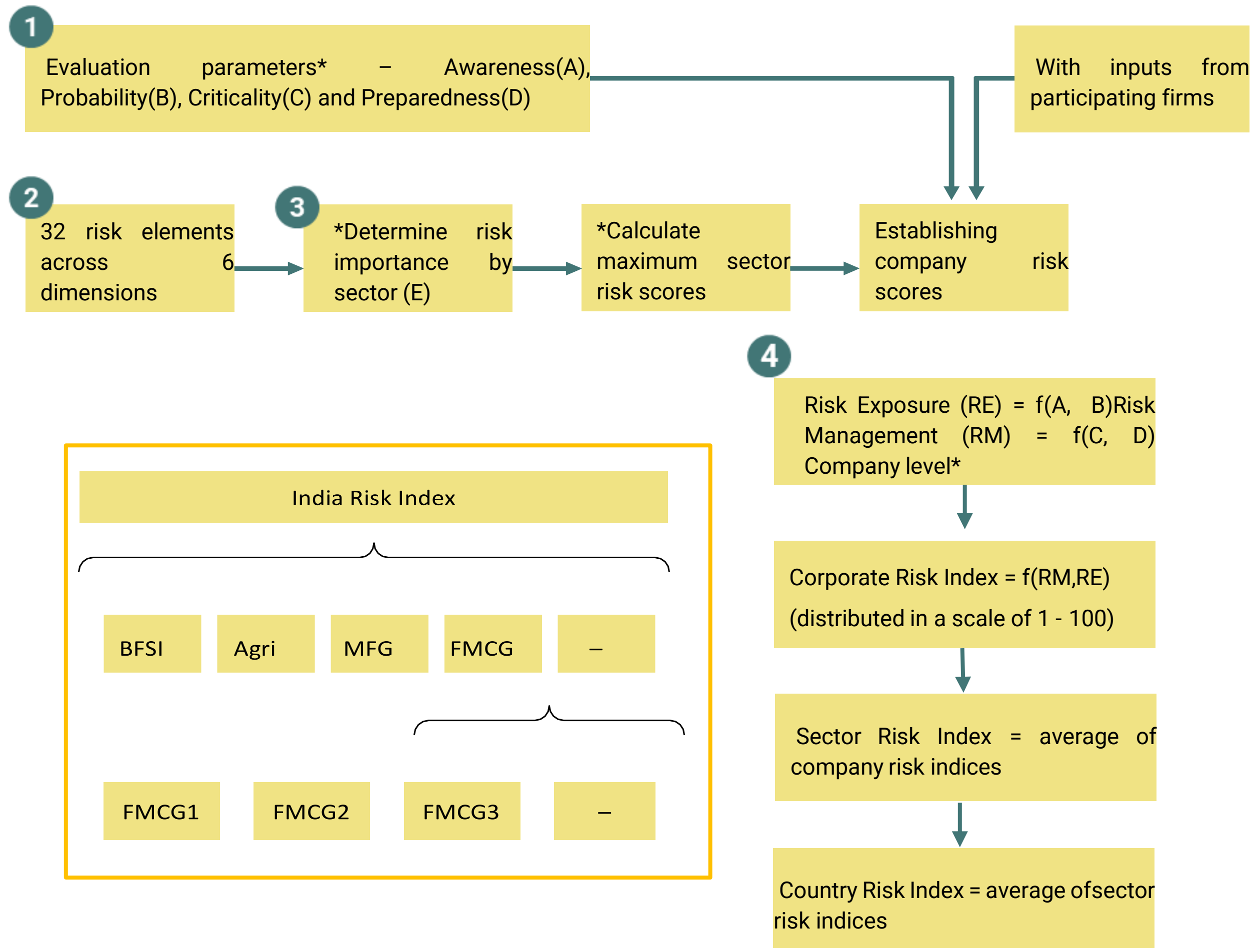
- **Public Sentiment:** Current events playing out in the public scene can change the public sentiment.

- **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



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. - 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.

< 30	Score, if **less than 30** means there is very low risk exposure, and the sector has minimal exposure to overall risk.
30 - 50	Score between **30 to 50** indicates low risk exposure and its risk exposure is within acceptable or tolerable limits.
50 – 60	Score between **50 to 60** indicates moderate exposure, indicating corporate can balance the impact of overall risks up to a certain extent.
60 - 80	Score between **60 to 80** indicates High risk exposure, and its impact is very high in the industry in which the corporate operates.
> 80	Score greater than 80 indicates very high-risk exposure. The corporate is unable to foresee risk incidents & probability of occurrence of these incidents may be extremely high.

B. ICICI Lombard Corporate Risk Management – Scale

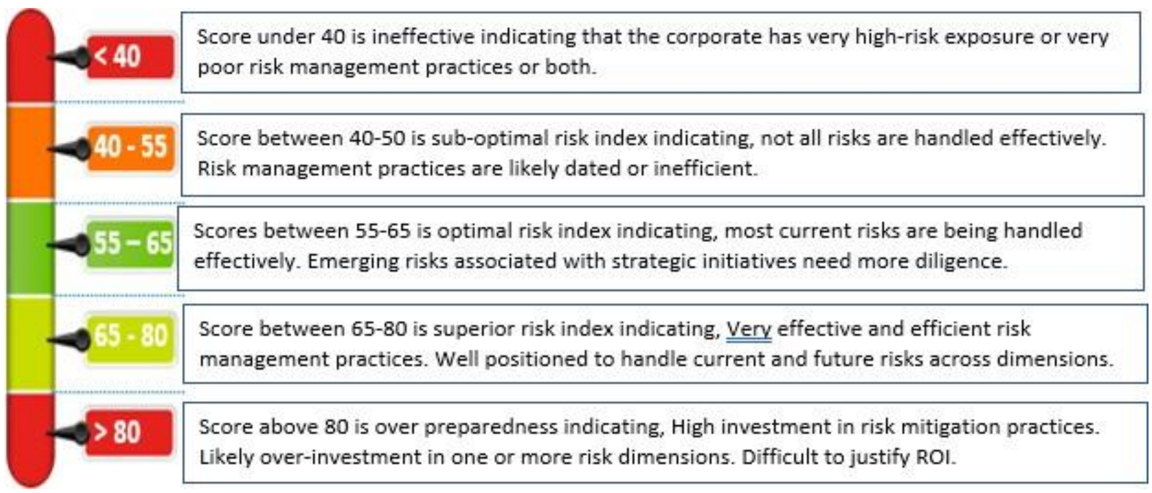
Risk Management: Identification, Evaluation and Prioritization of corporate risks followed by well-coordinated steps to minimize the occurrence of uncertainties in the foreseeable future is defined as the Corporate Risk Management. The risk management scale works in the opposite to that of the risk exposure scale. Let's look at the risk management scale.

< 40	Score less than 40, means poor risk management The enterprise is unable to understand the concept of Risk management.
40 - 50	Score between 40 and 50 indicates the risk management is below par so there are inefficient risk management practices which is reactive to newer or unknown risks.
50 – 70	Score between 50 to 70 indicates acceptable risk management. The corporate is prepared to handle known risk and the criticality of its risks are not severe.
70 - 80	Score between 70 to 80 indicates superior risk management. Top class risk management practices have been employed to manage dynamic & Unknown risk.
> 80	Scores above 80 indicate Exemplary risk management. The companies are overprepared in risk management practices and are proactive to 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.



India - Emerging Superpower with Optimized Corporate Risk Handling

Manufacturing sector contribution to India's GDP in 2022 stands at 17% and is expected to grow to 25% by 2025, the expected growth is attributed to various favorable schemes initiated by Government of India like 'Make in India', 'Digital India', Improved Road Infrastructure, implementation of modern technologies of manufacturing resulting in optimized and effective production, Also the pandemic has made business realize that they cannot just rely on a single manufacturing hub; hence notion of "China+1" is making the world realize the significance of India. China is in a trade war with the USA, which is positively shaping the role India will play in the global arena.

The below chart showcases the gradual increase in India's manufacturing exports.

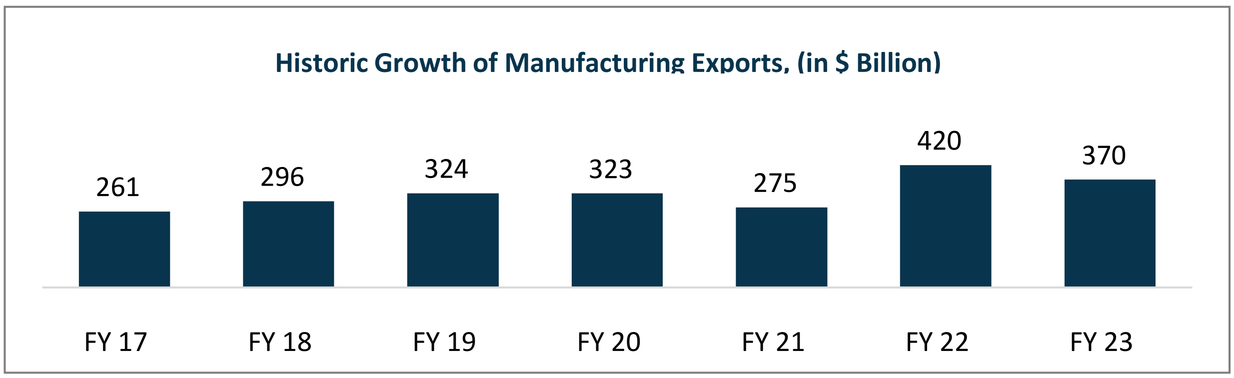


Figure 1: India's Growth of manufacturing exports. (Source: Redseer)

Indian manufacturing sector is also focusing on electronics manufacturing like mobile phones, industrial electronics consumer electronics, etc. due to government initiatives the production has doubled since 2015.

Aerospace and defense sector in India have evolved significantly, Govt. of India have identified A&D as area of focus due to the belligerent neighborhood, steps like Make in India(Atmanirbhar Bharat) is helping the overall defense sector, however India still remains the largest importer of arms and ammunition, favorable policies and ease in regulations is helping the drone industry in India and many new start-ups and big players are entering in this space.

Urbanization is another phenomenon evolving in India and it is estimated that by 2030 more than 400 million people will be living in cities, due to this megatrend huge push towards realty and infra sector is observed which is also the growth of ancillary industries like metals, cement, water availability, sanitation, mobility etc., the government along with the private sector is working on multiple initiatives to manage the huge inflow.

India has observed a steady adoption towards EVs in recent years, though India adoption still remains very low in comparison to Europe, Canada, China, however all big auto players are coming with new lines of EVs, and significant strategic investment have been made. The adoption is primarily due to lower running costs, lower maintenance, zero tailpipe emissions, tax and financial benefits by the government, convenience of charging.

BFSI sector in India is showcasing a significant robustness in the time of global crisis, there is a growing demand for financial services as there is a gradual rise in income across income brackets, with a rapid increase in mobile penetration and internet availability more than 2100 fintech companies have emerged in India, the traditional banks are also adopting the digital technologies at a required pace, investment on making the systems secured from cyber threats is utmost priority. Policy support by the government in the union budget 2021-22 is taking up shape and is helping the BFSI sector in 2022 and coming years, like government approval of 100% FDI for insurance intermediaries have increased the FDI limit to 74% from 49%.

Healthcare sector is also continuously growing healthcare has become the one of the India’s largest employers, employing around 4.7 million people, though in 2021-22 India only spends 2.1% of its GDP in healthcare, in the union budget 2022-23, US$ 11.28 billion was allocated to the Ministry of Health and Family Welfare (MoHFW). there is still huge room for improvement in the overall healthcare system in India. Efforts towards having well trained medical professionals in India is top priority. There were exemplary development in the vaccine manufacturing by India, Bharat Biotech Covaxin and Oxford AstraZeneca’s Covishield manufactured by SII, helped India get a protection shield against Covid. There is a plan by the government of India to infuse US $ 6 billion to boost the healthcare infrastructure in India.

The IT/ITes sector is a key engine for fueling India’s economic growth and contributing to 7.5% of India’s GDP in 2021-22, the Big four IT firms in India have recruited over 1 million employees, As the world is moving towards era of digital economy Indian IT-sector will be contributing significantly towards this journey, the rollout of 5G communication technologies and adoption of new age technologies across industries; like AI, Robotics, Internet of Things will further increase the size of Indian IT sector.

Indian enterprises are also concerned about the risks emerging out of the growing economy and the globalization India is heading towards, its observed that Indian enterprises are taking significant steps towards risk management and keeping budget allocated to implement best in class risk mitigation practices.

India Showcasing an Optimized Risk Handling

Figure 2: Corporate India Risk Index 2022

Corporate Risk Index Score of 63 implies that Indian enterprises are handling the risk in an optimal way but still there is scope of improvement to get into superior risk handling territory, Indian enterprises have a well-defined risk management practice in place for inherent risks, however risk management can be improved further as a potential buffer against potential risk events arising from market & economy, operational and technology related Risk events, openness towards adoption of technology and having a well-defined risk management team was observed across enterprises in India.

Sectorial categorization across above stated five categories, it was found that risk management is getting a paramount importance in the growth strategy of every organization and all the organization fell either into 'Superior Risk Management' or 'Optimal Risk Management' category.

From a risk exposure front the intensity of impact due to market and economy related risks increased due to the heightened inflation, global recession, and geopolitical tensions though from a regulation point the sector specific policies by the government helped the industries. Some of the inherent risks exposure due to the operational aspect did not see a significant change as compared to previous year, however companies are adopting diversification, technologically enabling the supply chain, and creating better hedging against financial related risks, whose results will be seen in coming years.

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

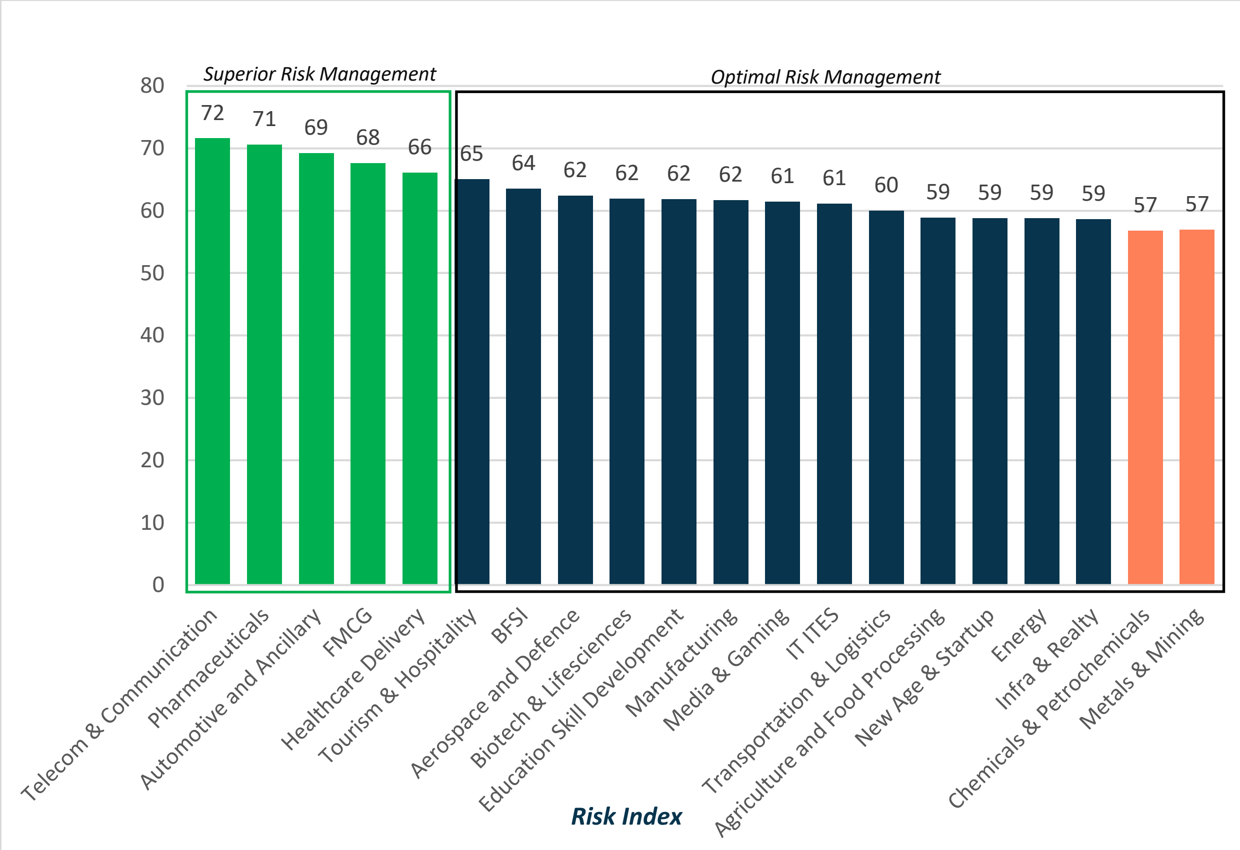


Figure 3: Corporate India Risk Index 2022 Sector Score

Superior Risk Index

Superior risk handling was found in five industrial sectors: Telecom & Communication, Pharmaceuticals, Automotive & Ancillary, FMCG, Healthcare Delivery.

Optimal Risk Index

Optimal risk handling was found in 15 industrial sectors: Tourism & Hospitality, BFSI, Aerospace & Defence, Biotech & Lifesciences, Education Skill Development, Manufacturing, Media and Gaming, IT & ITES, Transportation & Logistics, Agriculture and Food Processing, New Age & Startup, Energy, Infrastructure & Realty, Chemicals & Petrochemicals, Metals & Mining.

Chemicals & Petrochemicals Insights 2022

The chemicals sector has been one of the key growth drivers of the Indian Economy. Due to its wide use case across sectors such as Agriculture, Pharmaceuticals, FMCG, Construction, Textiles, etc, the growth potential of this sector is immense. With over 80,000 products to offer, it is one of the most diversified sectors in India. Thanks to factors such as the China + 1 strategy, India's proximity to the Middle East - the world's source of petrochemicals feedstock and overall boost in consumption, Indian chemical industry is all set to outpace its Chinese counterpart and increase its share in the global markets to 6% by 2026. Not only this, analysts also expect the Indian speciality chemicals market to grow at a CAGR of 12%, reaching a staggering figure of $120 billion by 2025 from $70 billion in 2020 and generating employment for over 2 million people.

The year 2022 has been full of ups and downs for the Chemicals Sector. With reoccurrence of Covid in China, Russia's invasion of Ukraine, continuous increase in interest rates by the Fed, increasing focus on sustainability & reduction of carbon footprint and ease in regulatory environment– all these factors have significantly impacted the risk exposure of the Chemicals Sector. This includes high energy costs, rising raw material prices, limited shipping and container availability and ever increasing costs of meeting ESG requirements.

Despite the uncertainty, the Chemicals Sector has continued to grow and flourish with YOY increase in exports and revenues. Not only this, the overall risk index has also reduced significantly when compared to 2021 – showing a positive trend for the entire sector. In order to meet the growth objectives of the Chemicals sector and help India achieve the $5 trillion mark, Indian government is playing a pivotal role for the growth and development of the chemicals sector. Some of the leading initiatives taken by the government include establishment of industrial corridors, industrial parks, National Infrastructure Pipeline, robust investment policies, industrial licensing for hazardous chemicals and liberalisation in licensing requirements. Further, to meet the global vision of a sustainable future, the government is increasing its focus to promote sustainable chemistry. This involves adopting a circular economy model and working collectively with the private players to reduce GHG emissions and plastic waste and using renewable raw materials such as agriculture and bio waste in order to make the entire manufacturing process eco - friendly. Additionally, government plans to introduce production-linked incentive (PLI) scheme to promote domestic manufacturing of agrochemicals, which could be a game changer for the entire sector.

To conclude, if the growth plans of the private players and the government are met, the chemicals sector could prove to be a goldmine and help India achieve the $5 trillion mark.

Chemicals & Petrochemicals Sector Risk Index 2022 Vs 2021

Figure 4: Detailed Comparative Analysis 2021 Vs. 2022

Chemicals & Petrochemicals Sector Risk Index 2022 Vs 2021

As per the Corporate India Risk Index, the overall risk prevailing in the chemicals sector has reduced from 69 to 57 – signalling a change from a high risk exposure to optimal risk. This is a very positive change for the entire sector which can have a multi-fold impact on the investments that are channelised into this sector or the way in which chemical businesses are run. The year 2021 revolved around uncertainties related to different variants of Covid, lockdowns across the globe, disruption in supply chain and adaptation to virtual modes of working. During this time, the manufacturing of chemicals and development of formulations – one of the core areas of the chemicals industry, had to make a complete shift from its traditional working. With increasing labour shortages and scarce availability of raw materials – the entire supply chain of a chemical manufacturing process got disrupted. This was further coupled with rising inflation, increasing regulatory practices, ever increasing ESG requirements and difficulty in adapting to virtual modes of operations. These factors led to an overall increase in the risk exposure of the chemicals sector and consequently categorising it as a high risk exposure sector.

Chemicals & Petrochemicals Sector Risk Management 2022 Vs 2021

In terms of Risk Management, the score of chemicals sector has fallen from 64 to 63. This has been possible as the year 2021 was a great learning opportunity for the entire chemicals sector. This year taught chemical companies how to deal with uncertainties vis-à-vis lockdowns, adapting to virtual operations and coping up with inventory shortages. Most chemical companies invested heavily in technology to cope up with changing trends. This includes latest technologies such as Industrial Internet of Things, Machine

Learning and Data Analysis to make operations efficient and predict inventory levels. Additionally, the effect of rising inflation was subdued by lower oil prices, fall in shipping and transportation costs and rise in demand – which improved the financial position of chemical companies. This could not have been possible without the support of the government and other concerned stakeholders. Government initiatives such as reduction in taxes and duties, ease in licensing requirements, and promotion of FDI have led to enormous growth in the chemicals sector and reduced the overall risk index.

Chemicals & Petrochemicals Sector Risk Exposure 2022 Vs 2021

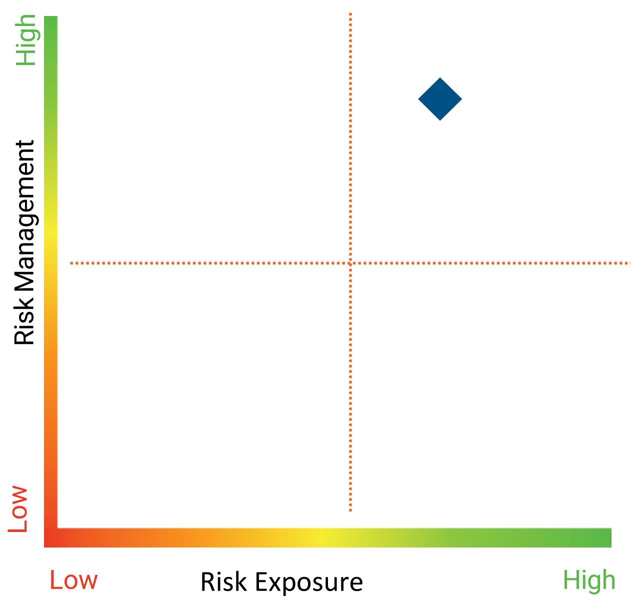
The overall Risk Exposure of the chemicals sector has increased from 59 to 64. With a higher growth outlook, comes a greater risk exposure. As the chemicals sector is growing rapidly and increasingly adopting latest technologies to make the entire manufacturing process efficient, there is a constant increase in the risk of cyberattacks and the intellectual property of chemical companies. Additionally, with rising levels of pollution and GHG emissions, the international bodies are imposing stricter laws with regard to environment safety and promotion of renewable sources of energy. Not only this, chemicals being such a diverse sector, it faces greater challenge with geo-political tensions around the globe and its aftermaths.

Key Highlights

Risk Dimension Analysis: Market and Economy

Risk Exposure Score: 64

Risk Management Score: 64



Inflation

- The year 2022 has been full of unexpected events which have impacted the Chemicals Sector differently. From disruption of supply chain due to Russia's invasion of Ukraine to reoccurrence of Covid in China. Such global factors have triggered different economic indicators such as rise in inflation, rise in foreign exchange rates and significantly impacting the geo-political risk index across the globe.?
- Due to the above factors, the year 2022 saw record breaking inflation rates across the globe - significantly impacting the raw material prices and other key costs, especially in the first three quarters of 2022. However, things got better towards the end of the year with lower oil prices, reduction in shipping rates and boost in domestic demand.?
- Despite the financial stress, the Chemicals sector has seen growth in quantum of production of major chemicals and strong momentum in exports, especially from countries like USA, China and Brazil. This has been possible due to sustained efforts of the government and CHEMEXCIL - India's chemical exports promotion council, to make India a leading player in the Global Chemicals Industry.?

Taxation and Regulation

- In recent years, the chemicals sector is seen as one of the key growth drivers of the Indian Economy. It is believed that the chemicals sector can play a crucial role in achieving PM's dream of a $5 Trillion economy.?

- Keeping the above factors in mind, the Indian government has taken favourable steps to boost the chemicals industry. This includes tariff reduction, ease in licensing requirements, encouraged production of several chemicals, industrial licensing for hazardous chemicals and liberalisation in licensing requirements.? ?

- Further, the FDI policy of India and the upcoming production linked incentive (PLI) scheme - signals a bullish view of the government towards the Chemicals Sector.

Foreign Exchange Rates

- Thanks to the aggressive monetary policy of the US Federal Reserve, the Indian rupee depreciated over 11% in 2022 against the US Dollar. This has been one of the highest falls recorded since 2013.

- As a result, all imports into India became expensive – further aggregating the impact of inflation.

- The chemicals industry being an import dependent industry, especially in the industrial chemicals segment, such downfall in rupee had a major impact on raw material prices.

- In order to counter the impact of foreign exchange risks, the government is increasingly promoting Atmanirbhar Bharat Abhiyan in the chemicals sector. Additionally, in a bid to reduce India's dependence on import of chemicals, a seven-member joint task force was formed under Ministry of Chemicals and Fertilizers.

Geopolitical Risk

- India being one of the major developing countries and a leading global superpower, the impact of geo political tensions across the globe is multifold.

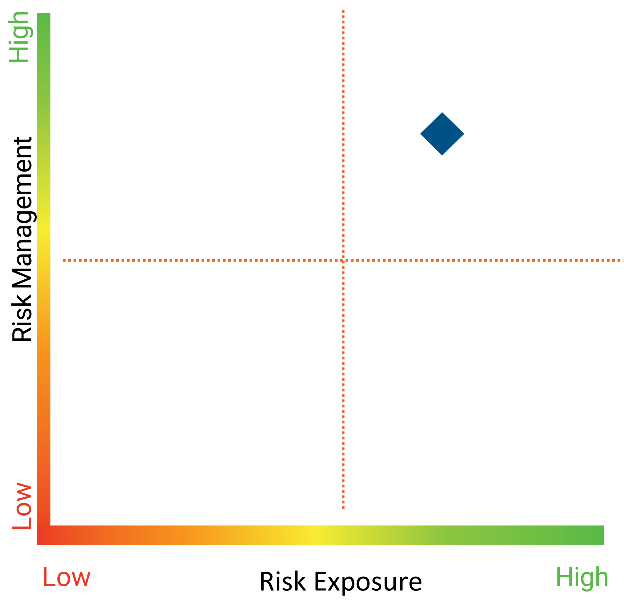
- One of the key events of 2022 that shook the entire world was Russia's invasion of Ukraine. Russia and Ukraine being rich in key minerals and resources such as Natural Gas, Coal, Iron Ore, Graphite, etc, - such invasion had a devastating impact on the global energy requirements.

- This led to a rise in fuel costs leading to higher freight charges and increasing the raw material prices for the chemicals sector.

Risk Dimension Analysis: Technology

Risk Exposure Score: 63

Risk Management Score: 63



Innovation Risk

- In recent years, there has been a robust growth in demand for Indian chemicals. This has led to a lot of opportunities in areas of chemical manufacturing and supply of specialty chemicals. However, one of the biggest challenges that the Indian chemicals sector is facing is the lack of availability of indigenous technologies due to lack of technological development in the country.?
- To mitigate this risk, Government of India is playing an active role by setting up and supporting 38 CSIR Laboratories with more than 4500 scientists to increase Research & Development in this field.

Intellectual Property Risk

- One of the major risks faced by chemical companies is the threat to intellectual property. Chemical industry by nature involves a number of innovations including developing new formulations, optimising processes and upgrading reactors. Such intangible assets are used extensively across the chemicals sector to create value.?
- However, there is a constant risk of theft of such key formulations and processes which can hamper the day to day operations of a chemical company.?
- In response to this, more and more chemical companies are filing patents and copyrights in order to protect the innovations.

Disruptive Technology

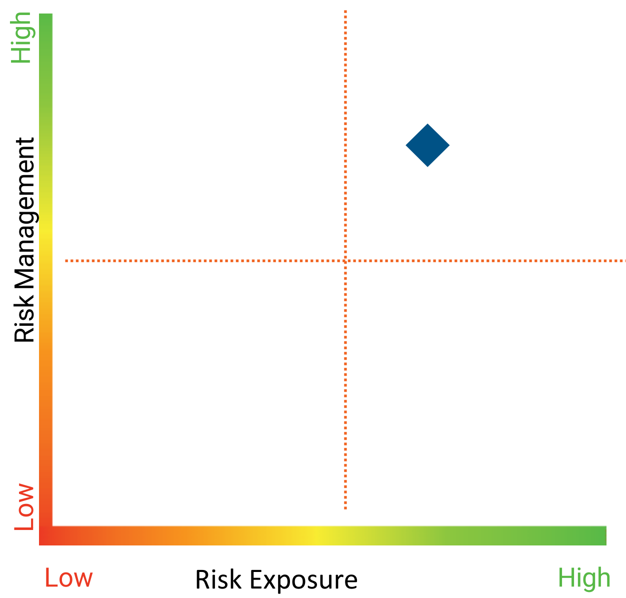
- Post the advent of Covid-19, the overall spent on latest technologies has increased significantly. The pandemic completely revolutionised the conventional way of working and forced companies to adapt to virtual modes of operations.?

- Seeing this change and the need to make operations more efficient, the major players of the chemicals sector are slowly adopting latest technologies such as Industrial Internet of Things (IIoT), Digital Twins, Data Analytics, Artificial Intelligence and Predictive Analytics to meet the growing demand of chemicals effectively and efficiently.?
- Use of such technologies has?catalysed the growth of chemical companies and reduced the chances of human error.?

Risk Dimension Analysis: Operational and Physical

Risk Exposure Score: 67

Risk Management Score: 61



Supply Chain and Critical Infrastructure risk

- The Chemicals Industry being one of the largest economic sectors of the world, supply chain risks are inherent. With over 80,000 products to offer and a major raw material provider to essential industries such as Pharmaceuticals, FMCG and Agriculture - any disruption in supply chain or critical infrastructure failure can have multifold impact.?
- Traditionally, all stakeholders in a chemical supply chain faced issues such as low margins, SKU proliferation, long lead times to increase capacity and costly logistics. However, with the advent of AI, the supply chain is increasingly becoming digitalized. Now players in the Chemicals Industry can forecast demand, raw material prices, inventory levels - thus improving their productivity and efficiency.?

Environmental Hazards and Sustainability

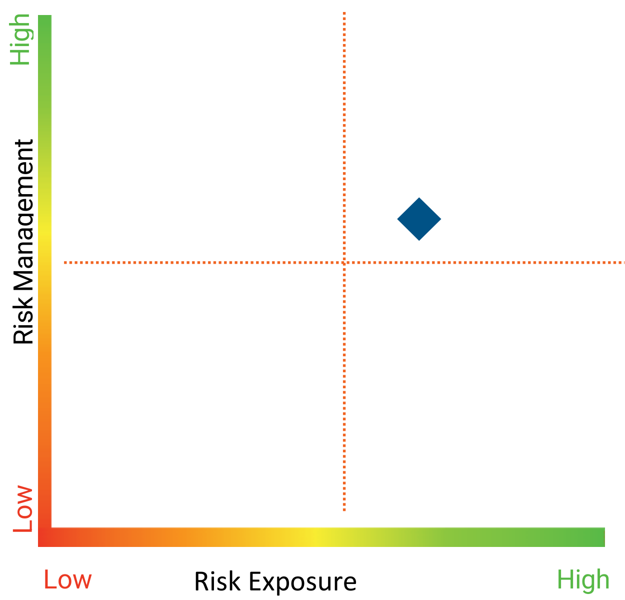
- The chemicals sector has always been in the limelight for concerns related to ESG norms. This sector has been historically linked to high GHG emissions, high carbon footprint and improper waste disposal.
- However, with increasing rules and regulations, major chemical companies are adopting sustainable practices such as Zero Liquid Discharge (ZLD) outfits, minimal energy & water consumption and compliance with Environmental Laws.

- Increasingly, a circular economy model is being promoted and the government is playing an active role alongside the private players to reduce plastic waste, use of renewable raw materials such as bio-waste and making the entire supply chain of a chemical manufacturing process more eco-friendly. ?

Risk Dimension Analysis: Crime and Security

Risk Exposure Score: 62

Risk Management Score: 65



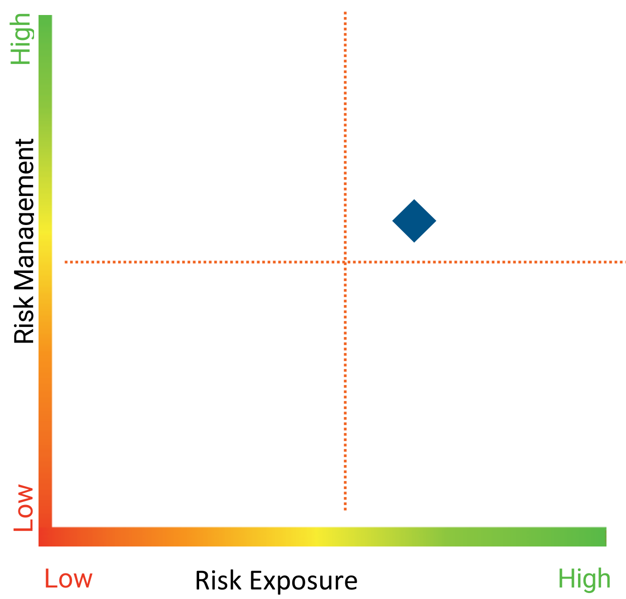
Cyber-crimes

- With increasing adoption of latest technologies such as IIoT, AI, Machine Learning and Data Analytics, there is a constant increase in Cyber Threats. These innovations have created additional channels and areas that hackers can exploit to their advantage.?
- Over time, it has been observed that Financial motivation continues to be the major driver for cyberattacks. For the chemicals sector in particular, ransomware and intellectual property theft continues to be one of the biggest risks.?
- Such attacks can have muti-fold impact on chemical companies including profitability, affect on credit quality, weakened competitiveness and reputational damage.

Risk Dimension Analysis: Natural Hazard and Event

Risk Exposure Score: 65

Risk Management Score: 68



Natural Hazards:

- Due to the toxic & corrosive nature of raw materials used and post the Bhopal Gas Tragedy, the government has imposed several rules and regulations on chemical companies to avoid such a tragic incident. This involves monitoring the quality of air emissions to avoid any kind of exposure to pollutants, liquid waste treatment to maintain outlet standards within the prescribed limits and proper solid waste disposal at secured landfills & authorised hazardous waste disposal facilities.
- Additionally, chemical companies are also required to take initiatives to offset the impact on nature. This involves setting up green belts and taking other sustainable initiatives to reduce the impact on environment.

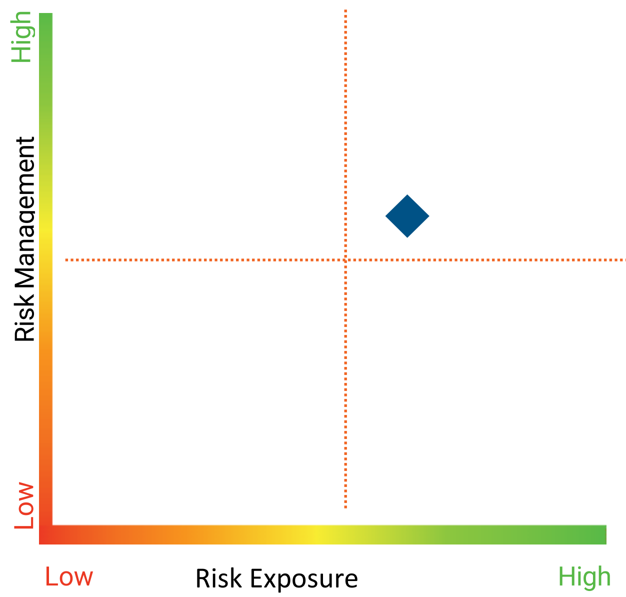
Pandemic and other global epidemic diseases:

- The period of COVID – 19 brought several challenges for the Indian Chemical Industry. This includes disruption in supply chain, rise in raw material prices, reduction in demand and decrease in manpower. This significantly impacted the production cycle and financial performance of companies.
- However, after two years of surviving Covid, companies were better prepared to deal with the situation in 2022. The top management of leading chemical companies are positioning themselves to tap robust growth opportunities – which is evident from their capex plans.
- The increasing global confidence in India's chemical sector along with favourable regulatory environment – these factors are acting as a catalyst in the Indian chemical sector growth story.

Risk Dimension Analysis: Strategic Risk

Risk Exposure Score: 60

Risk Management Score: 54



Public Sentiment:

- The chemicals industry faces an inherent risk of involving toxic chemical intermediaries or corrosive end products which could be harmful for the environment and risk the life of workers.
- Therefore, the risk of recalls and quality audits increases significantly to ensure strict quality management and safe working environment. To mitigate this risk, the concerned stakeholders and the government have prescribed various rules and regulations with regard to safety audits and quality checks to avoid accidents and ensure safety of everyone.

Resource scarcity / Misutilization / Overall Utilization

- Despite being one of the most diverse sectors, the chemicals sector faces a constant threat of sustainability. With rising consumption, there is an increased pressure on key raw materials such as water and energy.
- The chemicals sector has been questioned for polluting groundwater and other key water bodies. This happens due to dumping of chemical waste which causes a threat to aquatic life and clean drinking water.?
- Similarly, use of fossil fuel based sources of energy continue to dominate the chemicals sector. This has led to alarming levels of air pollution in most of the chemical industry clusters.?

ICICI LOMBARD: Key Solution Offerings

Property

a. Businesses are always prone to risks and fire eruption and fire insurance provides a comprehensive protection against damages caused due to fire explosion and other risks. Besides fire related perils, it also protect damages caused due to any natural calamity, bursting of water tanks, theft etc. The built in covers include alterations or extensions, stocks on floater basis, temporary removal of stock, cover for specific contents, start-up expenses, professional fees, costs for removal of debris etc

b. Solutions

i. Property Loss Prevention exercise - We have developed the methodology of Property Value Added Services for corporate customers which focuses on technical engagement with detail risk visit, followed by benchmarking of the risk (Industry Risk Profiling).

ii. Fire Hydrant IoT - Fire hydrant online monitoring devices use IoT to monitor fire hydrants and assure their availability in emergencies. We've helped multiple corporate customers maintain and monitor this important fire safety component in real time.

Marine

a. We offer specially curated plans for covering the risk of theft, malicious damage, shortage, and non-delivery of goods, damages during loading and unloading, and mishandling of goods/cargo

b. Marine Cargo insurance primarily covers loss during transit caused due to fire, explosion, hijacks, accidents, collisions, and overturning

c. Solutions

i. GPS Device Tracking: With the help of our advance GPS devices we can have bird eye view on the consignment and vehicle from anywhere in the world. OurSAAS allows us to track and get the visibility of the vehicle on the basis of our requirements which is fully customizable

Liability

a. Comprehensive general liability:

i. This policy is important for every small and medium sized businesses to protect the insured entity against claims arising out of legal liability where they are heldresponsible for third party bodily injury or property damage due to insured's business, premises or products. It should be taken by every new business as it covers all risk a business may face.

b. Cyber - With cyber risk steadily increasing, security/ data breaches affect millions of records a year. Cyber Risk insurance coverage is designed to help an organization mitigate its risk exposure by offsetting costs involved with recovery after a cyber-related security breach or similar event.

c. Solutions

i. **Simulated phishing tests** - Simulated real looking phishing tests andrecord employee behavior to phishing attacks along with training collateral in form of co-brandable posters, infographics and videos

ii. **Cyber maturity assessments** - Assess the security posture of your organization and identify the potential risks with our assessment based on ISO 27001 Control measures for Information security

iii. **D&O** - The need of Directors & Officers Insurance is more than ever before. Any breachor non-performance in the duties can result in claims against directors, officers and employees by reason of wrongful act and need to incur various expenses like defense costs, damages or compensation and other incidental costs. This can affect company's growth and performance.

Group Health

a. Employees are the backbone of an organization and the most valued asset. OurGroup health insurance product is designed to offer health coverage to suit employees of all business types ranging from small & medium enterprises to large organizations.

b. Solutions:

i. **IL Take Care -** AI enabled mobile app for employees

ii. **Health assistance services -** Health Assistance is a dedicated medical care service that assists you in all your health related queries for identifying specialist/hospital/fixing an appointment with doctors/nutritionist /facilitating2nd opinion

iii. **Tele Consultation** – Hello Doctor

iv. The insured is eligible to avail unlimited General Physician consultations for routine health issues over the phone by aqualified doctor

v. **Diagnostics & pharmacy services** – Book a lab test or home delivery of medicines

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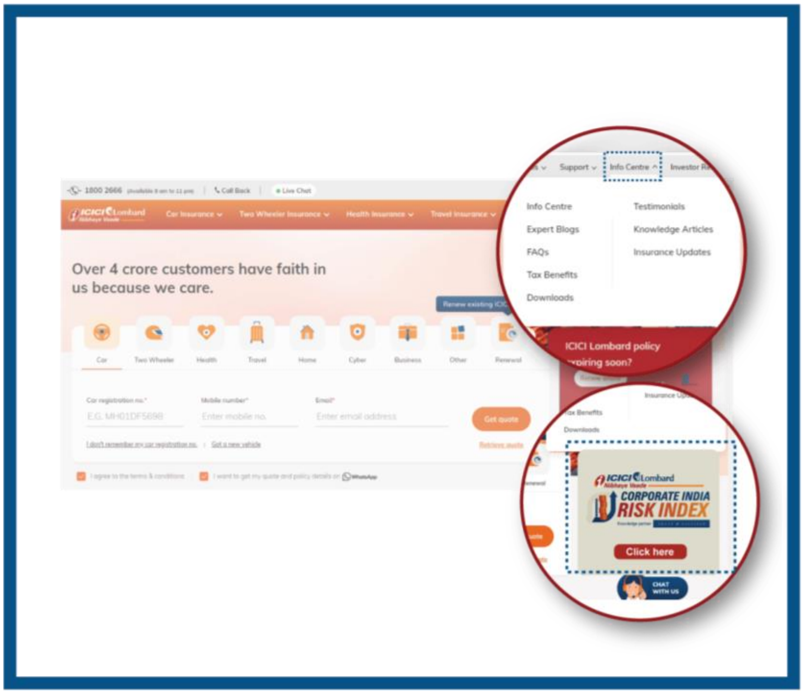

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