Confederation of Indian Industry
Total Cost Management Division

GAINING COMPETITIVE & COST ADVANTAGE

CROSS INDUSTRY BEST PRACTICES

YEAR - 2024

DISCLAIMER

The information and views expressed in this booklet reflect the individual perspectives of CII panel members and experts from select industries. While the insights are based on their sector expertise, CII does not guarantee the accuracy, validity, or completeness of the contents. The contents represent the independent opinions of the contributors and don't reflect the companies they represent and CII as an organization. The content published is for the purpose of knowledge dissemination and purely for academic interest only

Table of Contents

Foreword...

"India's growth story continues to shine, driven by resilient economic policy, and consumer trends impacting diverse sectors.

The contemporary Indian manufacturing sector stands out for its remarkable transformation—marked by its digital journey, ESG interventions, the burgeoning startup ecosystem, supportive policy frameworks, favourable macroeconomic conditions, and ongoing infrastructural advancements.

The trajectory of Indian industry competitiveness is multi-dimensional, influenced by sectoral dynamics, currency-commodity volatility, factor productivity, leveraged financials, and capital productivity. These elements continually challenge corporations to raise their competitive benchmarks.

Despite these complexities, the Indian corporate sector has made commendable strides in addressing both external and internal challenges. The steep learning curve has not only sharpened organizational resilience but has also enhanced business metrics across multiple industries.

India's manufacturing aspirations, however, require further momentum to achieve critical milestones: improving global competitiveness rankings, reaching USD 1 trillion in merchandise exports by 2030, increasing the manufacturing sector's contribution to GDP to 25%, and raising corporate profit to GDP to 10%.

The next phase of growth hinges on "technology and cross-industry learning."

In today's interconnected world, where boundaries between industries are increasingly blurred, organizations that harness cross-sectoral insights will be better equipped to thrive amidst rapid innovation and dynamic complexities. Cross-industry innovation inspires organizations to reimagine possibilities, challenge conventions, and overcome industry blind spots. By adopting practices from beyond their traditional domains, businesses can unlock novel ideas and solutions, fuel transformative growth.

The CII National Committee for Total Cost Management (TCM) has curated this compendium to capture and share best practices from diverse sectors such as FMCG, paper, air conditioning and refrigeration, passenger vehicles, and healthcare. This initiative has brought together experts with deep industry knowledge and expertise in cost and profit management to craft a practical, insightful guide.

The following pages distill this collective wisdom, offering actionable insights that can serve as an open-source protocol for organizations eager to learn and adapt beyond their own industry boundaries.

I extend my heartfelt gratitude to the CII TCM Expert Panel Members, who have generously shared their decades of experience and insights for the benefit of Indian industry. Their contributions exemplify the spirit of collaboration and innovation that drives our journey toward excellence.

Girish Wagh
Chairman, CII National Committee for TCM &
Executive Director, Tata Motors

Introduction

CII TCM Division was formed to accelerate 'Indian Industry Competitiveness' and has been working with the industry for 2 decades now. The division is now a repository of the best practices of over 200 companies. TCM jury and experts have continuously strengthened their belief that 'efficiency and productivity' across value chain of a business can largely contribute to improved EBIT in businesses.

TCM National committee have thoughtfully identified 5 exemplary industry value chains – FMCG, Paper & Paper board, Refrigeration & Airconditioning, Passenger Cars and Healthcare – who would demonstrate their 'competitive journey – counter strategies – profit improvement' over the years.

Objective

CII as an unique knowledge platform works incessantly to pool knowledge and share wisdom to achieve national goals of competitive industry.

In the era of disruption, the prime objective of the compendium is to incubate innovation in Industry through cross-industry learning.

Methodology

Indian market is largely characterized by 'price and cost sensitivity'. The maturity of industries is calibrated based on surviving 'complexity of external volatility, dexterous balancing of value-price-cost and generating endearing value to all stakeholders.

The committee has handpicked matured Indian industries with diverse features - B2B / B2C business models and MNC / Indian business ownership.

The selected companies have acquired deep industry expertise from their decades of successful operations with significant market share, diverse product profile, impressive financials through steady evolution of cost-efficient value chains.

The industry authors have been cherry picked due to their industry experience of close to 3 decades and domain knowledge of cost-profit pathways in their companies

Compendium

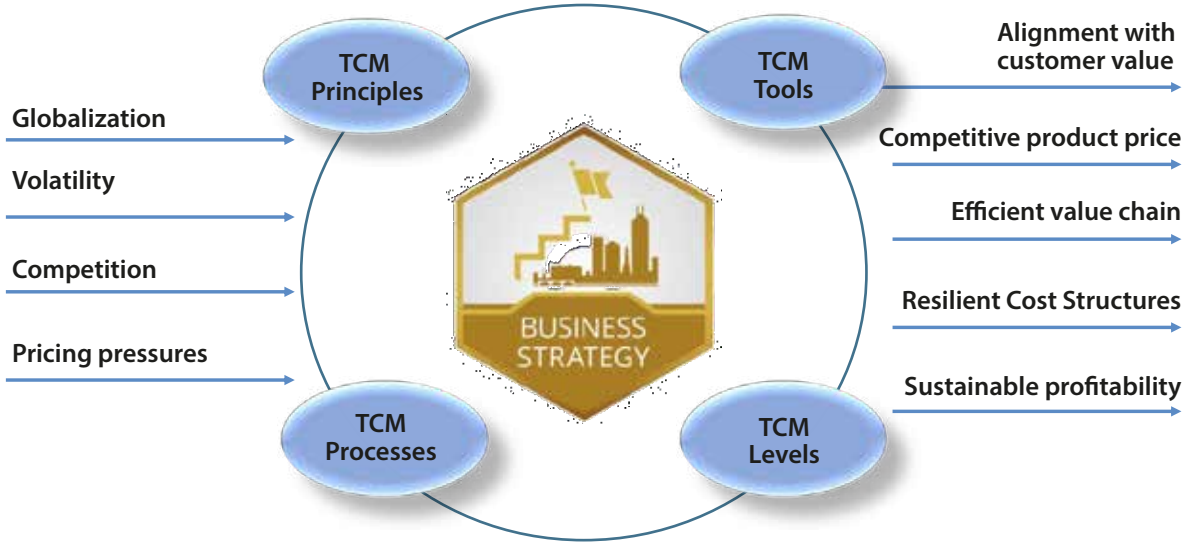
The compendium is presented in industry wise with the following sequence – About the industry, value chain of the industry, competitive challenges – counter strategies in each facet of value chain and take aways for the reader.

Benefits

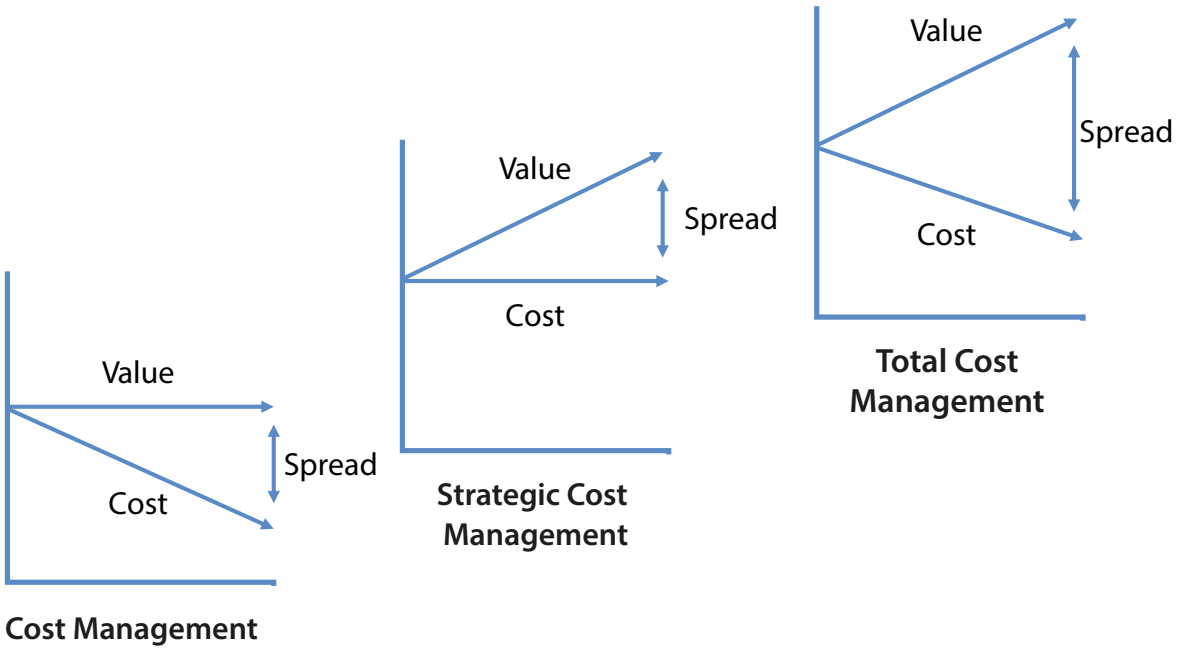
As the reader browses through the following pages, close to 200 learnings can be spotted across 5 value chains. The learnings can greatly benefit multiple industries across Indian sector

TCM FRAMEWORK & PRINCIPLES

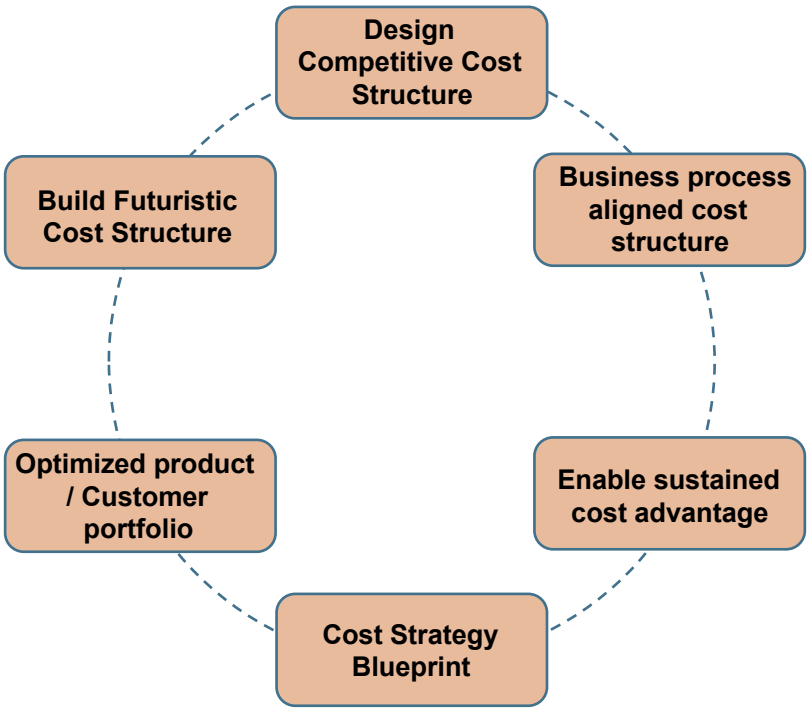
Tcm Framework - Purpose



Tcm Features



Tcm Axis In Business



Tcm & Business Strategy

The alignment of TCM with business strategy is the heart of TCM architecture

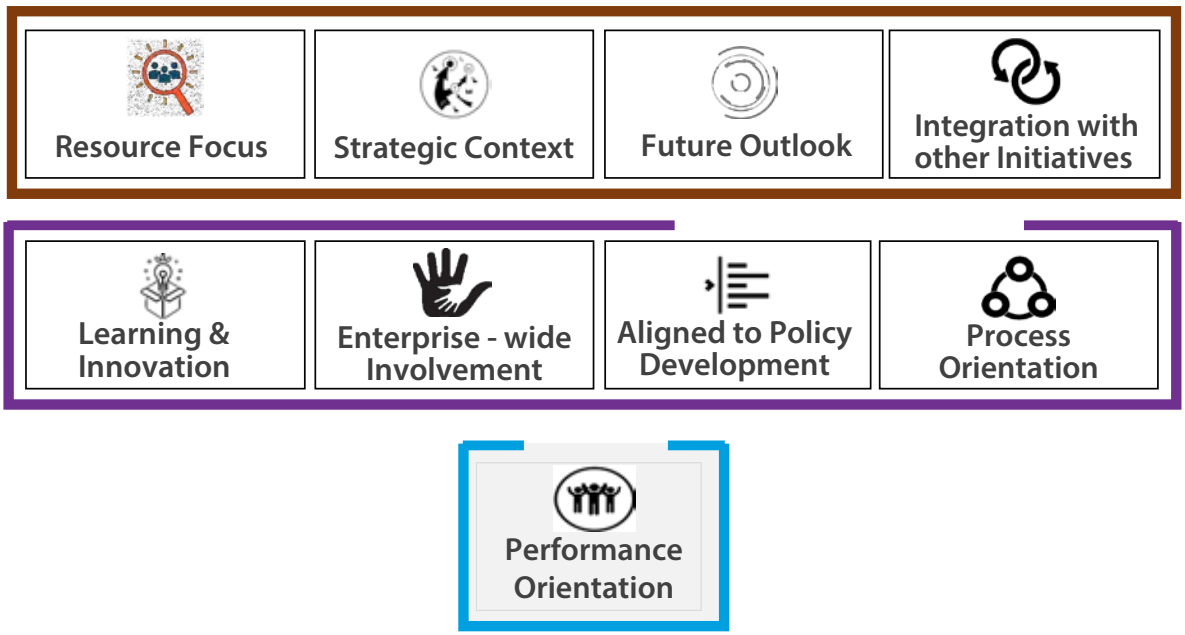
Understanding the customer requirements

Embedding the required value proposition in products / services

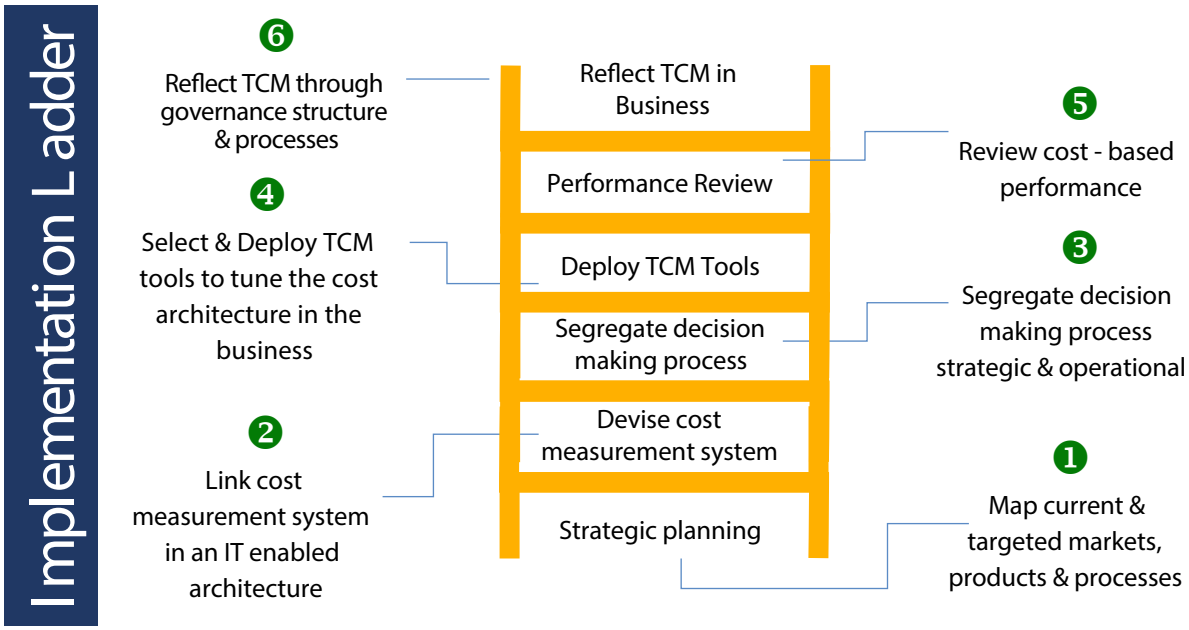
Transform business models / process with product & customer focus

Improve cost functionality across the value chain

Tcm Principles



Implementing Tcm In Business



Tcm Outcomes

Support decision making process - strategic & operational

Review viability or economics of business strategy

Cost visibility beyond P/L

Business view of cost sheet (Robust cost measurement)

INDUSTRY BEST PRACTICES

4a PULP & PAPER SECTOR

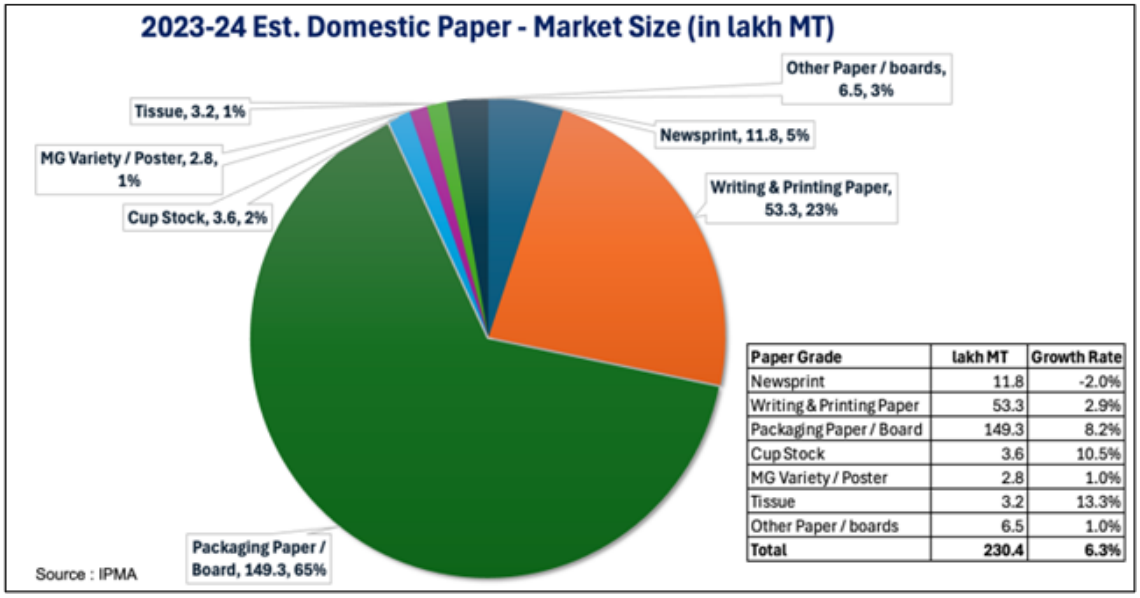
Chapter – I : Industry Overview

Pulp & Paper Industry of India Industry Overview	Segments of Paper (1) Writing & Printing Paper, (2) Paperboard / Packaging Paper, (3) Newsprint, (4) Specialty Paper, (5) Others
	Estimated Production of Paper in India in terms of Raw Material Used : 71% Recovered Paper / Recycled Fibre based; 21% Wood / Bamboo based; 8% Agro Residue (Bagasse / Wheat Straw) based
	Industry has strong backward linkages with the farming community and has Agro forestry roots
	Compliant with Government's Environment Charter

Pulp & Paper Industry of India Industry Overview	Annual turnover of around US $ 10 bn.
	Industry provides direct employment to 0.5 Mn persons and indirectly to 1.5 Mn
	Number of Mills : 900 with about 550 operational
	India's share in World production of Paper is around 5%

Source : Indian Paper Manufacturers' Association (IPMA)

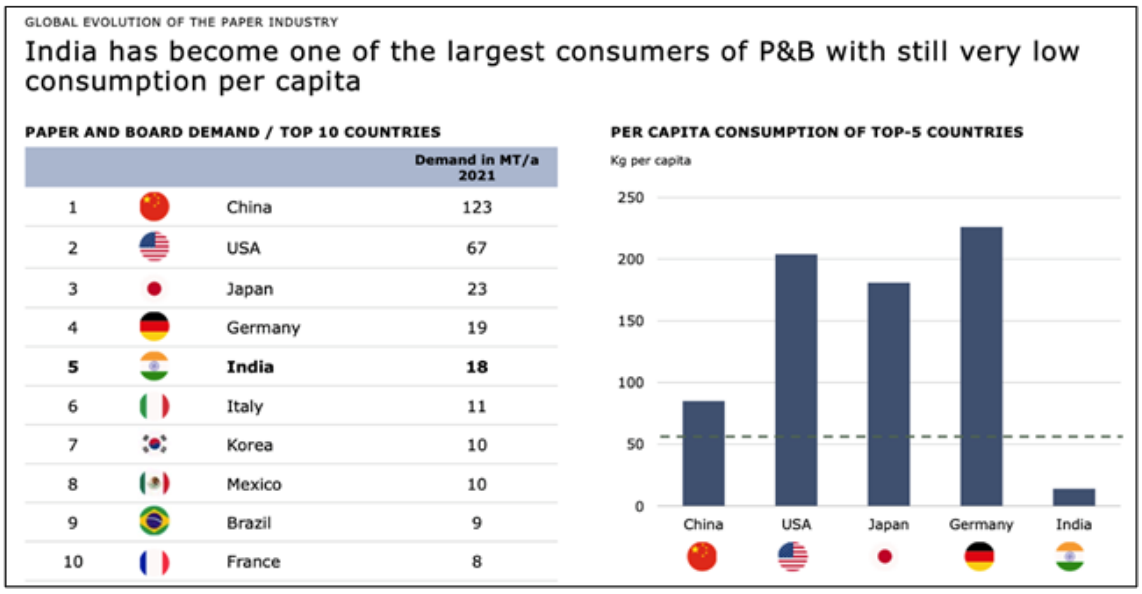
Chapter – II :
Key Drivers for Growth & Development Challenges



Paper Grade	lakh MT	Growth Rate
Newsprint	11.8	-2.0%
Writing & Printing Paper	53.3	2.9%
Packaging Paper / Board	149.3	8.2%
Cup Stock	3.6	10.5%
MG Variety / Poster	2.8	1.0%
Tissue	3.2	13.3%
Other Paper / boards	6.5	1.0%
Total	**230.4**	**6.3%**

Source : Indian Paper Manufacturers' Association (IPMA)

India's share in world production of paper is about 5% (5th largest producer in the world), with estimated production of around 22 million tonnes per annum (TPA).

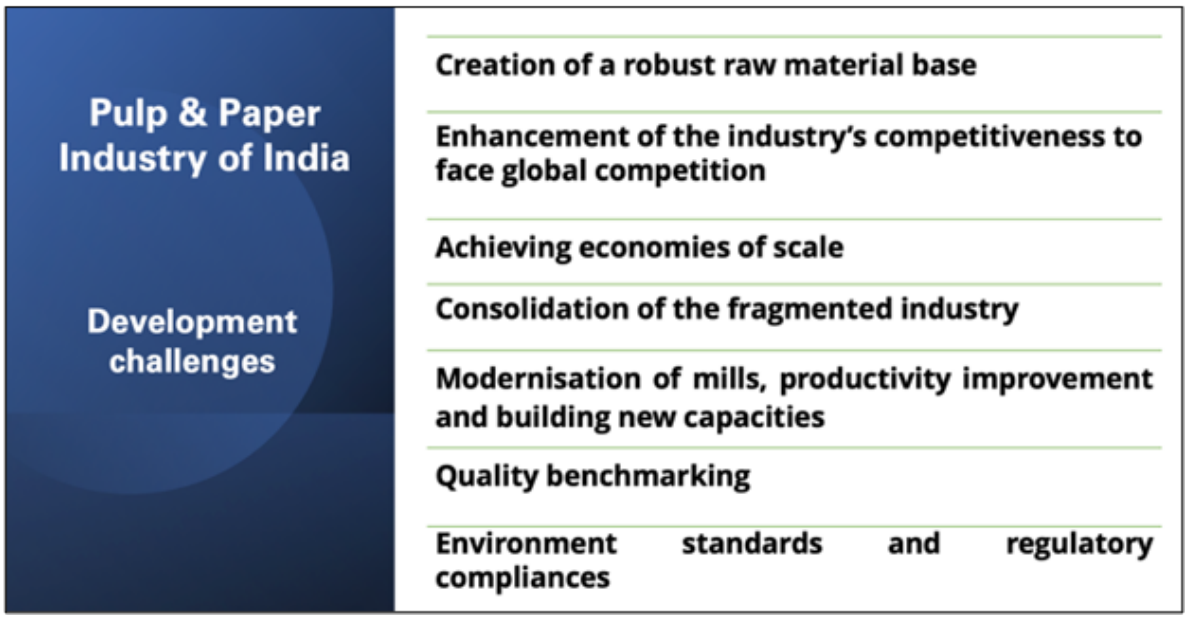


Source : AFRY

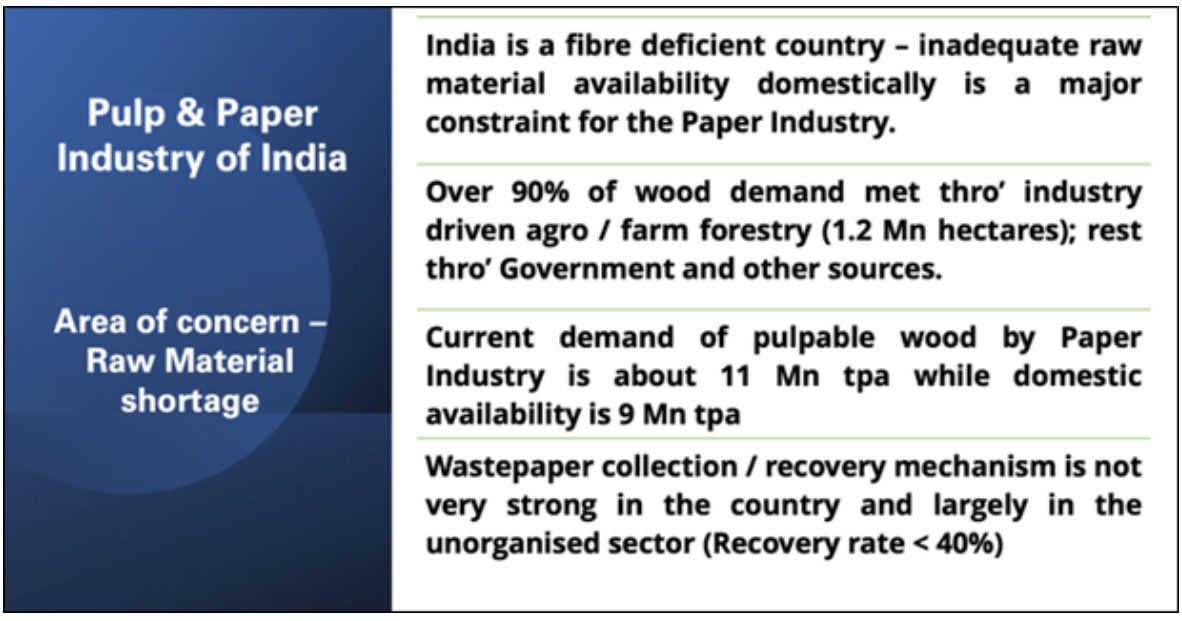
Per capita paper consumption in India is currently around 16 kgs, while the global average is 57 kgs (200+ kgs for developed countries). Per capita paper consumption in India is projected to increase over time with increasing level of literacy, higher growth of organised retail and need for packaging, and overall economic development. The demand for paper in India is growing at per 6-7% annum, making it one of the fastest growing markets in the world.

- Rising literacy rates, especially in rural areas, have fuelled the demand for writing and printing paper. The growing emphasis on education and learning will continue to drive the consumption of these grades.
- An example of this is the implementation of India's New Education Policy (NEP) in the 2023-2024 academic year, which has positively influenced the demand for printing paper. Highlights of the NEP include extended schooling period, higher education reforms, universal access to school education, foundational literacy and numeracy and more. This revamped syllabus and grade system restructuring present opportunities for paper producers.
- Paper Mills must prioritize upholding the quality and availability of printing and writing grades to meet market demands and exceed expectations. By aligning their strategies with the NEP, paper mills can effectively cater to the evolving educational landscape.
- Tissue Paper is the fastest growing segment, followed by Copier grades. The demand for tissue products, whether for household or commercial use, also seen significant growth. Items such as toilet paper, paper napkins, and kitchen towels are becoming increasingly popular.
- While a large portion of the demand for paper napkins currently leans towards MG paper due to its cost-effectiveness, there is a noticeable shift towards soft tissue products. This change is primarily driven by a heightened awareness of hygiene practices and an increase in disposable incomes.
- Investments in the tissue sector are on the rise, targeting both local consumption and international markets. These investments showcase the potential for growth in the tissue industry and present opportunities for innovation and expansion.
- After a prolonged slowdown, recycled board is witnessing a surge in demand. Economic recovery and growing industrial activities have contributed to this upward trend. The increased demand is a positive sign for the industry, indicating renewed growth and stability.

- The market's acceptance of higher recycled board prices is a testament to the product's value and necessity. Customers recognize the importance of recycled board in packaging and other applications, leading to sustained demand.
- Coated board grades are expected to see further price increases in the near term. The strong demand and market acceptance create a favourable environment for these adjustments.
- India's flexible packaging market is booming, driven by a growing middle-class population and increasing export demands. The shift towards convenience, hygiene, and sustainability enhances its appeal. This growth presents significant opportunities for producers, enabling them to expand their product offerings and customer base.
- Flexible packaging offers several advantages, including durability, light-weightedness, and extended shelf life. These benefits make it ideal for perishable items and other consumer goods.



- The Integrated Paper Mills in India face twin challenges, in current environment: Burgeoning Cost of Input Materials & Declining trend in Output (Paper) prices.



- Paper Market Prices are not cost indexed, but are freely determined by market forces. This gives limited opportunities for the Paper Mills to pass on cost push to market.
- These challenges have resulted in significant drop in Operating Margins, in recent times. Paper Industry is also directly / indirectly affected by all major global developments -- Global political tensions and wars, Red Sea Crisis, Chinese policies towards Covid and Environment, Developments in Indonesia, etc.
- Despite these challenges, the Indian pulp and paper industry is ripe with opportunities for growth and innovation. By capitalizing on emerging trends and strategic investments, stakeholders can navigate the evolving landscape and achieve long-term success.

PULP & PAPER INDUSTRY – MYTH VERSUS REALITY:

The Paper Industry in India is primarily rural based with close linkages with farming community. Over the years it has evolved into an agro-based industry. However myths continue to slur the image of the Paper Industry in India.

- **"Paper Industry is denuding forests" is a Myth:** Paper Industry in India is agro and rural based. Industry led agro/farm forestry in collaboration with farmers has brought over 1.2 million hectares under pulp wood plantations (mainly degraded marginal lands of farmers). At the current estimate, industry is using over 90 % of the total wood requirement from agro/farm forestry.
- **"Paper Industry cuts wood and disturbs ecological balance" is a Myth:** For one, Paper Industry is wood positive, that is, the industry grows more trees through its agro/farm forestry initiative than it harvests. Paper is made from cultivated trees (trees outside-forests) planted specially for this purpose. Trees cultivated for paper production emit tonnes of oxygen before they are harvested, thus helping the environment.
- **"Paper is a sunset industry in India" is a Myth:** Paper is a growing industry with large headroom for growth. Overall paper consumption is projected to grow to 24 million tonnes in 2024-25 from around 21 million tonnes currently. The per capita consumption in India is low and is poised to increase with rise in lifestyle. Every one kg incremental per capita consumption results in additional demand of more than one million tonne a year.
- **"Paper Industry is technologically outdated" is a Myth:** Large integrated mills have set new benchmarks with state of-the-art pulp and paper machines. An investment of more than USD 5 billion has been made by the industry during the last 5-7 years in capacity enhancement, technology upgradation and various acquisitions. The industry has potential and capabilities to service the growing demand and create huge employment avenues.
- **"Paper is not a priority sector in manufacturing" is a Myth:** Paper is a key manufacturing industry in India with large investments already made and lined up. Paper Industry plays an important role in meeting the three national objectives, i.e. Education, Literacy, and Employment Generation – that too in the rural areas and hence it is better placed to drive Government's initiatives including Make in India.
- **"Paper is an unsustainable industry" is a Myth:** Sources for paper mills being wood, recovered paper and agro based, they can be easily regenerated. The industry recycles the waste paper that is generated. The industry also recycles agricultural waste which otherwise would have been burnt in the fields. Paper is biodegradable, renewable, recyclable and sustainable.

- **"Paper Industry is putting undue strain on water and energy resources" is a myth:** Paper Industry has significantly improved upon its environmental performance. Integrated paper mills in India generate 40-60% of the power they use by utilising the black liquor from the pulping process. Earlier, paper mills used to consume 200 cubic metre of water to produce a tonne of paper. Now, the integrated mills have reduced that to 50 cubic metre with efforts on for 40 cubic metre.

- **"Paper Industry is not scientific research savvy" is a Myth:** Paper mills today are on the cutting edge of scientific research. Mills have set up state-of-the-art R&D centres to develop high-yielding, drought-tolerant and disease resistant eucalyptus varieties. Several million clonal or seed routed saplings are produced in these nurseries and made available to farmers at subsidised rates for plantation on their marginal lands.

- **"Paper Industry will suffer from Digitisation" is a Myth:** Specific sectors of Paper Industry, like Copier Segment and Boards Segment, are bound to gain from Digitisation.

Future of Paper:

- **The future of paper is expected to be shaped by a number of factors, including:**

  - **Digitalization :** The paper industry is likely to shift towards producing higher-value specialty papers, such as those used in packaging or printing.
  - **Advanced materials :** New types of paper products with enhanced properties, such as improved strength, water resistance, or flexibility, are likely to be created.
  - **Sustainability :** The paper industry is expected to continue its journey towards even greater sustainability through innovations in production, recycling, and forest management.
  - **Demand for packaging materials :** The demand for packaging materials is expected to increase, driven by factors such as the online shopping boom.
  - **Decline in print media :** The overall trend is a decline in the use of paper for print media, such as newspa pers and magazines.

PAPER WILL BE THERE FOREVER.

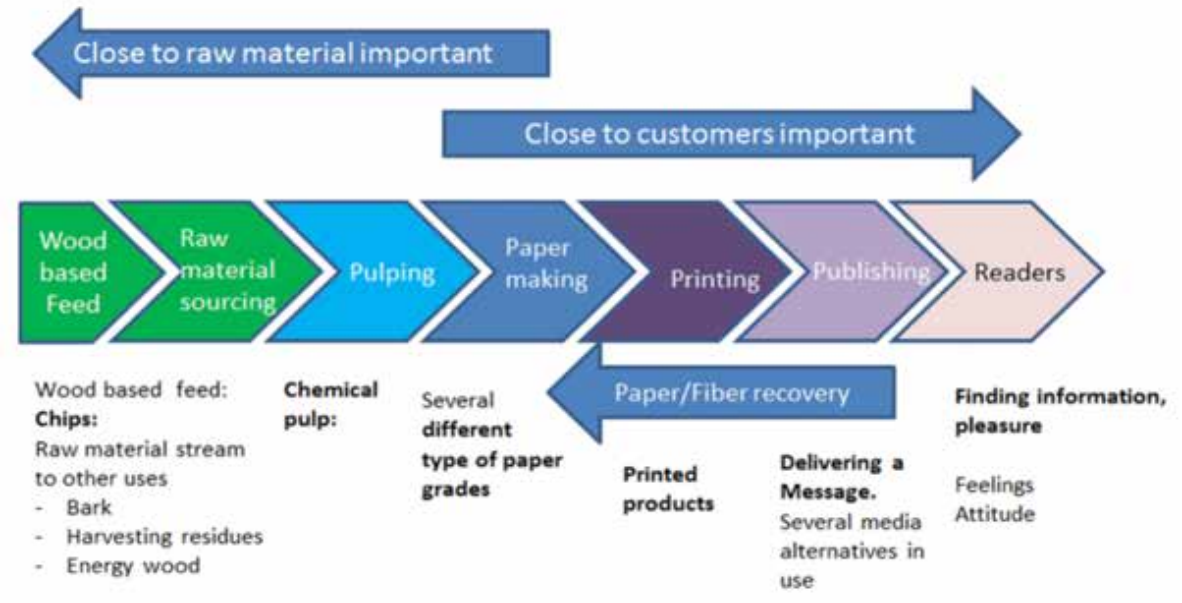
The Future of India's Pulp and Paper Industry

- Emerging trends to watch out for in the next few years in Indian market include:

  - Increasing demand for paper products: There is a growing demand for paper and paper-based products in India. This trend reflects the essential nature of paper in various applications, from packaging to education.
  - Market fragmentation and consolidation: The Indian pulp and paper market is highly fragmented, with many small-sized mills operating in

- clusters. However, there is a trend towards consolidation with inefficient and low-profit mills closing down. Consolidating production into larger capacities optimizes resources and enhances efficiency, providing a competitive edge in the market.
    - Structured waste paper collection system: A more structured and organized waste paper collection system, similar to those in Europe and the US, holds significant potential for India. Reducing dependency on imported waste paper and OCC can enhance the sustainability and cost-efficiency of the industry.
- The future of India's pulp and paper industry is bright, with numerous opportunities for growth and innovation. From expanding product lines to adopting advanced technologies, producers have several avenues to explore.
- Focusing on sustainability, efficiency, and quality will be key to unlocking these opportunities and driving the industry forward.
- However, despite the promising outlook, the industry faces several challenges, including high raw material costs, supply chain disruptions, and market fragmentation. Addressing these challenges requires strategic planning, investment, and collaboration.
- Producers must remain agile and proactive, anticipating and responding to these challenges effectively. To thrive in this dynamic market, producers should focus on:
    - Investing in advanced machinery and technology.
    - Enhancing supply chain management and efficiency.
    - Expanding product lines to meet evolving market demands.
- India's pulp and paper market is at a pivotal juncture, with numerous opportunities and challenges shaping its future. For paper industry, understanding these dynamics is crucial to navigating the market effectively.

Chapter – III : Value Chain and Key Players in the Value Chain



The sustainability and profitability of Paper Industry in India over long term, particularly for the integrated pulp& paper manufacturers, is determined by following key Cost Drivers / players in the value chain :

a) Raw Material – Availability of quality raw material at competitive prices

India is probably the only country where Pulp & Paper Mills execute Farm Forestry Programmes in association with a large number of marginal farmers. The Industry doesn't have the advantage of large scale availability of Natural Plantations or Government support towards Large scale farm forestry programmes. As a result, the cost of wood, as a % on Paper Cost of production, is probably the highest for the Indian Paper Mills.

In the recent times, Paper Industry is also affected by competing Industries (who require wood; but have not invested on growing wood / farming initiatives) consuming the Pulping Wood grown thro' the initiatives of Pulp & paper Industry. The Pulp and Paper Industry, which has invested tremendous amount of resources to augment overall pulping wood plantation over past 2 decades, is now at a disadvantage with wood being diverted at higher cost to the competing industries.

b) Pulping Operations including the Chemical Recovery Complex – Though, this stream of the value chain involves huge capital outlay, Pulping Operations together with Chemical Recovery Complex is the heart for Integrated Paper Mills

a. To generate profits on a sustainable basis.

b. To achieve benchmark ESG compliances

The paper industry is considered the most sustainable industry with renewable resources, recycling, and efficient processes across the value chain :

- **Renewable resources:** Paper is made from trees and other agro-residues which are all renewable resources.
- **Recycling:** The industry uses recycled paper to make new products, and paper is highly recyclable.
- **Efficient manufacturing:** The industry uses resources efficiently, reusing water and other resources, and optimizing the use of non-renewable resources.
- **Sustainable forests:** The industry sources wood from sustainably managed forests, which helps reduce deforestation and resource wastage.
- **Circular supply chain:** The industry has a circular supply chain, where sustainably managed forests are replanted to supply fibre, and recycled paper and packaging are turned into new products.
- **Biofuel:** The industry uses wood residue as biofuel to power the mills' operations.

<< Few news articles on Global Paper Industry >>

The European pulp and paper industry produces original biobased products using wood, a renewable material. It is also the largest single industrial user and producer of renewable energy in the EU.

The paper, pulp and print sector is one of the lowest industrial emitters of greenhouse gases, accounting for 0.9% of European emissions in 2021.[1]

The paper industry's carbon emissions have reduced by 50% per tonne of product from 1991 to 2022.The European pulp and paper industry is also the biggest single user and producer of renewable energy in Europe, with 62% of its primary energy consumption coming from renewable sources.[2]

The industry's primary on-site energy source (not including bought-in electricity) is biomass at 55.3%, followed by gas at 28.1%. The remaining 16.6% are other fossil fuels and net bought electricity.[2]

The industry has consistently increased its use of biomass since 1991, rising by 59% to 649,546 tonnes in 2022.

Cepi, Key Statistics, 2023

Between 2010 and 2022, the European paper industry reduced its total primary energy consumption by 16% and it is lower than it was at the beginning of this century. The European paper industry produces 55% of its electricity onsite, of which 96% is generated through highly efficient CHP (Combined Heat and Power) plants.[2]

The print and paper industry is one of the lowest industrial greenhouse gas emitters in Europe, accounting for just 0.9% of emissions in 2021. This is low compared to non-metallic mineral products industries (3.2%) and basic metal industries (2.9%).

European Environment Agency, Greenhouse Gasses – Data Viewer, 2023

By using paper from sustainably managed forests and always recycling, we really do not have to feel guilty about using this natural and renewable product.

Chapter – IV : The Value Chain, Challenges & Key Strategic Interventions

GLOBAL EVOLUTION OF THE PAPER INDUSTRY

Key megatrends that have and will continue to shape the paper industry

MACROECONOMY
- GDP
- Consumer Spending

DEMOGRAPHIC TRENDS
- Population Growth
- Ageing Population
- Number of single households
- Urbanisation and immigration

GLOBAL & POLITICAL EVENTS
- COVID-19/Global Financial Crisis
- Anti-dumping duties
- Import Bans

SUSTAINABILITY AND SAFETY
- Legislation changes
- Reducing, reusing and recycling
- Food safety & purity
- Plastic Reduction
- Biodegradability
- Retailer initiatives

TECHNOLOGY AND MATERIALS
- Digitalisation
- E-commerce penetration
- Performance of fibre-based materials

Sourcing

Complexity	Maturity	Intervention
• Availability of wood at price –which keeps the farmers interested in growing pulpwood species; which helps Paper Mills to maintain relative cost competitiveness • Availability of agri residue (like bagasse) at competitive prices • Availability of recycled fibre	High	• Large scale Tree Farming programs [The integrated Paper Mills have invested large amounts of resources over last 2 decades to ensure availability of pulp wood]. • Focus on identifying new wood species • Ensuring quality clonal seedlings / bareroot seedlings of pulpwood are available to farmers at subsidized rates; assist farmers with technical support. • Being Wood Positive – No. of trees planted in any year to exceed the trees cut for pulping operations • Strategic Tie-up with allied industries like Sugar Mills in ensuring Raw Material Security • Sourcing from Responsibly managed Plantations – Certificate from Forest Stewardship Council. • Adequate document controls to ensure identification and traceability throughout the chain of custody.

- The pulp & paper industry (Forest-Based Industries-FBIs) in India post - implementation of the National Forest Policy 1988 have faced tremendous challenges in sourcing their raw material (RM) – wood and bamboo. The government's support to source raw material was withdrawn indicating that the industries are to source their RM on their own. There has been a long challenging 35 years of progressive and emphatic journey so far; the pulp & paper industry has evolved and grown a lot.
- In India, with the continuous adoption of improved global technology, the Indian paper industry has kept pace and is expanding its global footprint though the cost of production is still high especially when we consider RM costs.
- The existing capacity requirement of wood is around 11 million MT per annum for the pulp & paper industry in India. About 17 million MT per annum would be required by other FBIs like Panel Industry, leading to an overall demand of about 28 million MT per annum.
- Having an assured supply for any forest-based industry in India has always been a concern and the prices are governed mainly by demand and supply. Integrated Paper Mills have progressed by generating their own Raw Material near their own catchment and protecting it by assuring viable lucrative prices to farmers so that they continue to plant and maintain coppicing crops in the long run to enhance their income by the way of supplying to pulp & paper industry.

MANUFACTURING & TECHNICAL

Complexity	Maturity	Intervention
• Process of manufacture of Paper by integrated Paper Mills - Largely clean, Green and energy efficient • Maintaining high levels of Capacity utilization to optimize cost of manufacturing. • High Capital requirement	High	• Energy efficient process and totally "Elemental Chlorine free". • Green Certifications • Continued Investment in newer technologies • Continued investment in Energy Conservation measures • Particularly with Integrated Paper Mills – 60-70% of energy needs can be met through' Green sources / bio-fuels. • Integrated Mills – Being Carbon Positive • Optimizing the operations of Pulp Mill and Recovery Operations – Determines the profitability and sustainability of the Paper Mills • Constant monitoring of environmental parameters • Investment in AIoT technologies

- The technological progress and investments in the pulping process, including the chemical recovery complex, helps Indian Paper Mills to take lead in ESG performance. Pulping Operations and Recovery Complex helps the mills to have 60 - 70% of the energy needs, which is a substantial cost in the value chain, to be met thro' Green sources, thanks to the inherent processes involved in using BLDS (Black Liquor Dry Solids) for Generation of Steam and Power.

CONSUMERS

Complexity	Maturity	Intervention
• Growing thrust for improving education and literacy levels in the country • Large and growing domestic paper market and potential for export • Growing urbanization and e-commerce activities • Fast growing contemporary printing sector	High	• Continued application support to the printers and publishers; supplying wide range of products to suit their varied requirements and applications. • Growing Packaging Boards Conversion Market – To make boards that suit the requirements of each of the small-scale conversion industries (wedding card makers / paper plates and paper cup manufacturers / carry bag convertors / packing box manufacturers, etc.) • Establishing Channel Partners and supporting them with growth opportunities.

WASTE MANAGEMENT

Complexity	Maturity	Intervention
• 100% Wastewater recovery & usage • Ensuring Zero Waste across manufacturing process and optimum recovery and usage of the waste materials in alternate processes / industries / applications	High	• Strategic partnering / arrangements – Use of treated wastewater for irrigating the waste land around the mill thro' Lift Irrigation Schemes. • Optimum Recovery of High / Medium & Low COD Steam – For usage in either manufacturing process (or) for replacing fossil fuels (or) for use in allied processes / systems • 95% + recovery of chemicals, used in the pulping process, back into Chemical Recovery Complex and recycling the same. • Supply of Solid waste from Wastewater Treatment Plants for use as raw materials by Small board manufacturers. • Lime sludge –waste product from Wastewater Treatment plant - is reburnt in a Rotary Lime Kiln which again uses 20% biogas from the Anaerobic Digestion System. • Usage of other waste in Captive Power Plant • Innovative Processes like Capturing Co2 from Lime Kiln and use in manufacture of Precipitated Calcium Carbonate

- The Indian paper industry is inherently sustainable. Paper industry recycles the societal waste, mills adopt social farm forestry which generates employment at large scale for farmers in the remotest of the areas and the trees grown in the process help in carbon dioxide sequestration.
- Paper is an integral part of the daily lives of people. Paper is one of the most environmentally sustainable products as it is biodegradable, recyclable and is produced from sources which are renewable and sustainable. Paper can be recycled up to 6-7 times, making it one of the most recycled products in the world.
- Industry is strongly committed towards water & energy conservation, wastewater treatment, reducing carbon footprint, and promoting FSC® certified products. In the last five to seven years, an estimated amount of over INR 25,000 crore has been invested by Pulp / Paper Mills in new efficient capacities and induction of clean and green technologies.

CHAPTER – V : KEY TAKEAWAYS FOR OTHER INDUSTRIES FROM STRATEGIC INITIATIVES TAKEN BY PULP & PAPER INDUSTRY

1. The strategic interventions in the Paper Industry, particularly the Integrated Paper Mills going upstream right to the farmers, with focus on supply of quality clonal seedlings - Is use case for any industry in aligning the stakeholders, even small marginal players, in to the Company's strategy for sustainable profitable growth.
2. Ensuring responsible business process upstream thro' FSC certifications / assuring sourcing of wood from responsibly managed plantations – A key practise in ensuring responsible business practices not only within the organisation but also with key suppliers.
3. The pro-active investments made by the Pulp and Paper Mills in Green Energy augmentation with 60-70% of energy requirements being met by Green sources, with very little Government support – Is again a case study for any Industry in dealing "Planet & Profit".
4. The Business Model of the Integrated Pulp and Paper Mills – Producing paper from pulp; pulp from wood; supporting farm forestry to source wood; being self-sufficient on the energy needs; tie-ups with Sugar Mills for sourcing Bagasse; Ensuring 60%+ of energy needs addressed through' Green Energy; finding alternate use for every kg of material generated as waste / by-product; Recovering 95% of chemicals used in pulping operations; Recovering CO2 for use in manufacture of chemicals – Itself is a case study on the investments made by the industry in addressing the entire value chain and the stakeholders spread across the value chain.
5. The comprehensive waste management approach, with every by-product / material waste across the value chain, being deployed for alternate use either within the company (or) outside the organisation – Is a key learning on "Wealth from Waste".
6. Models on Partnering with other industries (like partnering with sugarcane growers and Sugar Industries to ensure Bagasse Raw Material Security) – Successfully in operations for decades – A Case study on how organisations can enter in to Strategic Long Term agreements, in ensuring sustainability.
7. Ensuring Total Cost Management and Sustainability across every lever of the Value Chain is the most important learning from the Paper Industry :

   a. Raw Material : Renewable Source ; Responsible Plantations; Working with farmers ; Investment in Plantation augmentation with initiatives starting from seedlings

   b. Manufacturing Process & Technical : High focus on Renewable / Green Energy ; Investment in efficient manufacturing processes.

   c. Recovery of used paper – Creating a circular economy

   d. Waste Management : Finding solutions for use of every last kilogram of the materials.

Mr. Jonathan Porrit, Past Chairman of UK Sustainability Development Commission, had stated the following few years back in one of his reports, on the "Environmentally Compatible Sustainability" of the Paper Industry.

"There are not many industries around that can aspire to becoming genuinely sustainable. The pulp and Paper Industry, however is one of them. It is inherently sustainable."

4b FMCG

Industry Overview: FMCG

Consumer products that are sold quickly and at relatively low costs. These goods include essential items such as food, beverages, personal care proucts, household care items, and over-the-counter pharmaceuticals

Key Features of Indian FMCG industry

- High Volume, Low Margin Business
- Consumer sensitivity to Price points
- Large market with diverse demographics
- Frequent purchases, regular & growing demand
- Multiple players in market, intense competition

Industry needs a Scalable & Mature costing system due to :

SKU Complexity: With a wide range of products, accurate cost tracking and analysis at SKU level is essential to assess profitability and drive effective pricing strategies.

Significant impact of commodity price variations necessitate reliable forecasting to enable timely & informed pricing decisions to protect margins

Manufacturing Complexity: Sophisticated cost allocation systems are required to accurately assign overheads to each SKU, enabling granular insights that support strategic, SKU-level decisions

By products & co-products cost management & accurate valuations drive profitability improvement through waste minimization

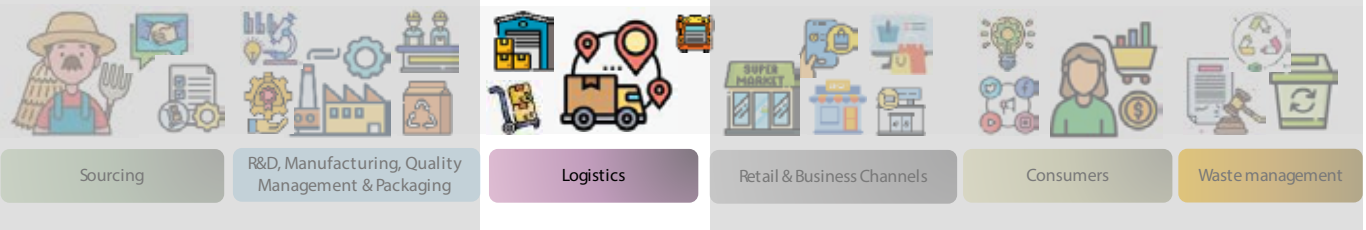
Demand and Supply Planning: Robust inventory management & visibility of value losses at each supply chain stage for driving cost efficiencies

Size of FMCG Market in India in 2025:
20 lac crore (USD 220 Billion)*

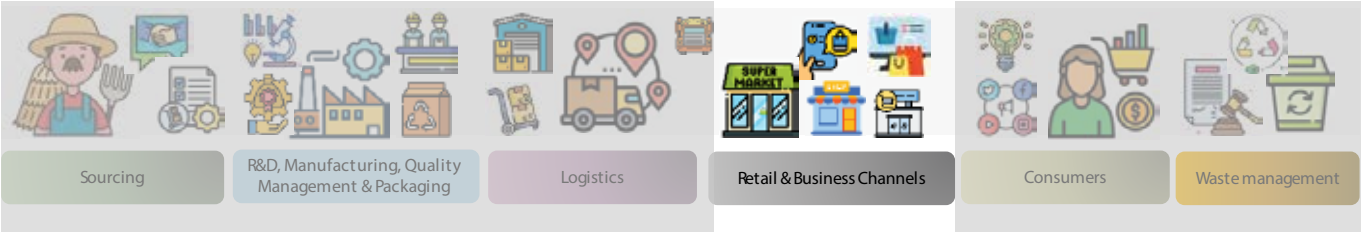
Complexity of VUCA world- FMCG industry (Volatile, Uncertain, Complex & Ambiguous)

Complexity	Maturity	Intervention
• Availability of ingredients dependent upon monsoons, crop failures, geo-political issues like Ukraine-Russia war • Other geo-political issues like SUEZ canal blockage increases the lead time in procurement of ingredients & capital goods • Govt policies/changes in rates of customs duty, GST & other levies could materially impact input costs Fluctuations in foreign exchange rates also have a material impact on input costs • Various changes in regulatory framework like ingredient specifications, product specifications, packaging specifications, legal metrology could create major complexity. Also, Govt policy on allowing exports of certain commodities impact local availability of materials (e.g. Skimmed milk powder) • With Net Zero commitments, there is an ask for sustainable sourcing leading to additional complexity	High	• Proactive sourcing strategy to avoid stock-outs & bring cost efficiencies • Development of local vendors meeting quality criteria & proximity to manufacturing sites for reduction in imports & cost efficiencies • Forex & commodity hedging as applicable Advocacy on regulatory matters with authorities Incorporate Net Zero compliances in business strategy • Focus on sustainability initiatives like renewable energy, fuel reduction, sustainable & regenerative farming, plastic waste management etc.. • With replacement costings at regular intervals impact of inflation is quantified & pricing actions initiated proactively • R&D constantly innovating to explore alternative materials • Defining sharp specifications for raw & packaging materials to enable the vendor to supply the materials with right quality first time

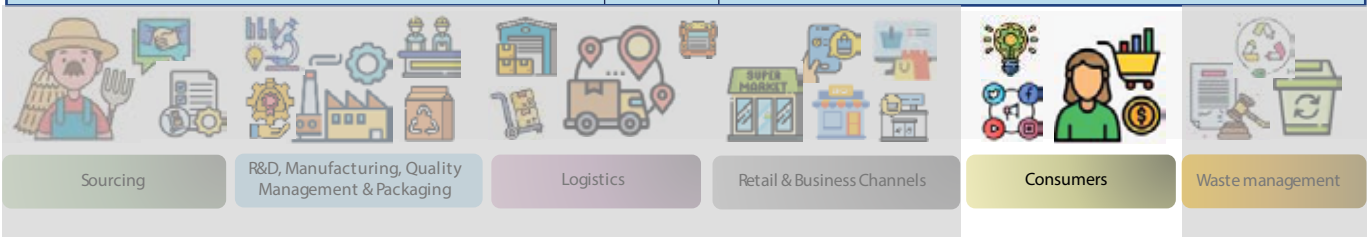
Complexity	Maturity	Intervention
• Complexity of operating vast portfolio of SKUs, encompassing thousands of products across different categories, packaging formats, factories, product lines, and sales channels • Precision required for low grammage SKUs to meet the legal metrology compliance • Maintaining traceability across value chain from sourcing to retail • Managing Shelf-life & Freshness of product across its life cycle • Consumer complaints management • Frequent changes in laws, e.g. various license related amendments, packaging, legal metrology, weights & measures, sustainability, • Labour laws compliances • Dependence on Labour primarily for secondary packaging • Restriction in deployment of women workers • Educating employees on safety culture with a big difference outside • Dependence on imported suppliers for high tech equipment • Management of vast data in manufacturing • Forecasting accuracies (demand, supply, mfg efficiencies) • Rapid technological advancements (AI, Processautomations) • Risk of failure of new products.	High	• Use of integrated ERP system across the value chain • Constant review of under performing SKUs & elimination of those • High tech machines offering precision on variations in manufacturing • Optimum Batch size & batch level controls • Review of product quality at various stages of its life cycle • Robust consumer complaints handling mechanism with a specialized team, SLA for complaint resolution • Specialized team of inhouse regulatory experts • Compliances to all regulations & laws • Investment in secondary packaging automations to reduce reliance on labour • Data analytics giving insights for sharper decision making



Complexity	Maturity	Intervention
• Last mile connectivity, to garner shelf space on maximum number of outlets across every nook & corner of the country • Natural Disasters & Interruptions in supply chain like rains, floods, strikes • Lack of organized players in logistics • Non standardized sizes & dimensions of various trucks & containers • Monopolistic stand by truck unions across the country • Underdeveloped cold chain infrastructure • Logistics sector largely operates on manual processes with safety risks, non compliances & inefficiencies • Environment friendly trucks still not available • Underdeveloped reverse logistics • Secondary distribution in cities still dependent on various smaller vehicles (non-standardized)	High	• Specialized cell for transport & logistics management • Proactive distribution strategy & planning • Reducing number of touchpoints in distribution • Post GST, with uniform law consolidation of distribution centers at regional level with modern & automated logistics • Exploring different means of transportation like rail, Van parcel, shared loads • Stock cover management, • Contracts with professional vendors • Educating transporters on safe & compliant practices



Complexity	Maturity	Intervention
• Multiple Trade Channels to reach the consumer (Retail, Organized Trade, E-commerce, Chain Pharmacy) poses a need for a different strategy • Vast network of distributors, wholesalers, cash & carry, traditional stores • With competitive pressures, companies are forced to take urgent reactive actions like introducing new SKUs with consumer promotions or a new variant etc • Different strategies for different organized trade players • Seasonality (Weather, festivals, school holidays, sports events etc) resulting in highs & lows in demand with corresponding impact on manufacturing capacities • Different pricing & distribution strategy for E-commerce & Quick Commerce • Availability of Counterfeit products in market	High	• Use of integrated ERP system across value chain • Real-time connectivity with distributor for order management • Sales, customer, channel organization at regional level • Specialized team for channel wise strategy • Timely settlement of distributor claims • Proactive actions on counterfeits including legal interventions • Focus on customer order fulfilment (COF) as a KPI • Supporting distributors with channel financing • Physical coverage of entire market by sales organization to have personal connect



Complexity	Maturity	Intervention
• Agility required in responding to changes in consumer perception & new trends • Constant pressure to innovate & renovate the product portfolio • Diversity in Consumer profile (Different products for age groups) • Diverse portfolio resulting in complexity in consumer connect/communication • Rise in consumer activism • Competition with unorganized players, pricing gap • Price Point business- inability to increase prices for certain SKUs • Rural Demand dependent on Monsoon • Impact of external factors – e.g. geo-political issues like Boycott after Hamas-Israel escalation	High	• Effective consumer communication through different mediums like TV, print media, digital media, sampling, consumer promotions etc • Ensuring availability of products on shelf with high penetration • Compliance to the laws of the land • Focus on market research & consumer insights • Creating consumer awareness on quality & nutrition aspects in the products • Effective use of the space on the product shelf as to communicate with the consumer • Visit of influencer groups to the manufacturing sites • Proactive & time bound resolution of consumer complaints

Complexity	Maturity	Intervention
• Logistics involved in retrieval of expired or near expiry product from the market • Safe destruction of expired products. • Technological upgrades required for using sustainable packaging • Recycling of hazardous, e-waste & other production waste through approved recyclers & ensuring that such waste does not find its way back into the food value chain • Compliance with Plastic Waste management regulations (EPR) requires the producers to collect & safely dispose post sale plastic equal to the plastic used in production	High	• Contracts with reliable vendors • Destruction in presence of company representatives • Use of approved recyclers • Constant education & awareness

Complexity of VUCA world..
(Volatile, Uncertain, Complex & Ambiguous)

With interventions, complexity of VUCA world can be managed
(Vision, Understanding, Competence & Ambition)

4C AIR CONDITIONING & REFRIGERATION

Air conditioning and Refrigeration (AC&R) Industry Value Chain

Overview of AC&R Industry [1/2...

The Air Conditioning and Refrigeration (AC&R) industry encompasses the design, manufacturing, installation, and maintenance of systems that control the temperature & humidity of indoor environments, and focuses on preserving perishable goods. It includes a broad range of products and services related to air conditioning, refrigeration, and climate control

Growth Drivers

- Rising Temperatures and Climate Change
- Rapid Urbanization & Infrastructure Development
- Rising Disposable Incomes
- Rising Consumption
- Enabling Government Policies and Incentives
- Technological Advancements
- Growing affordability
- Easy credit access

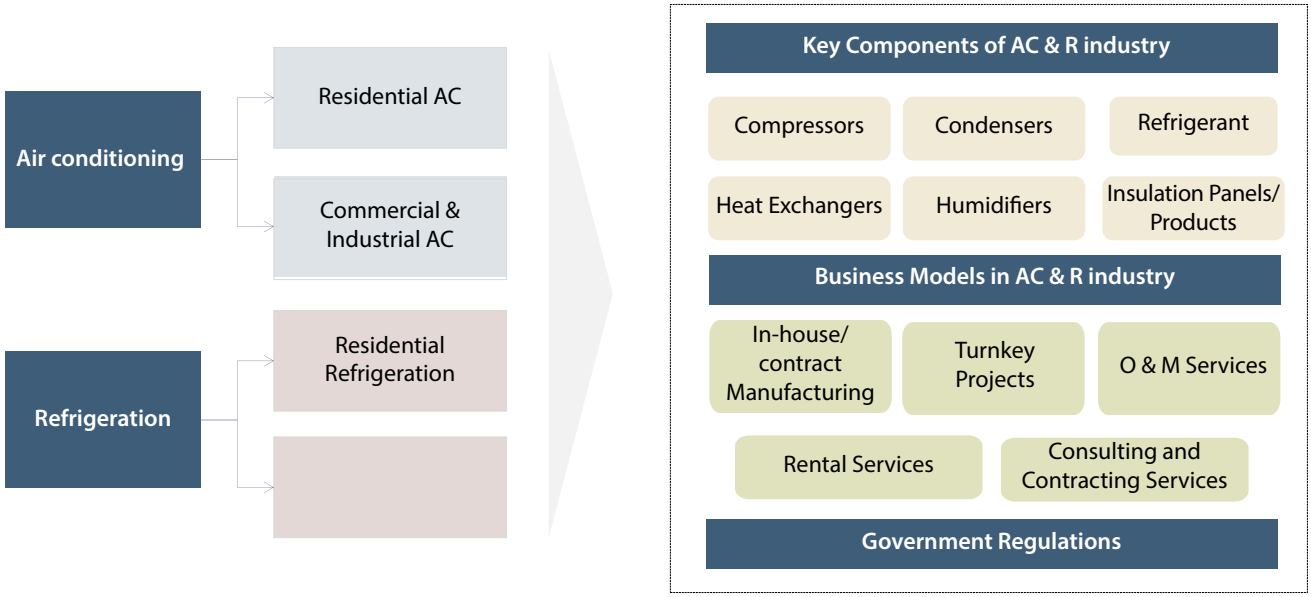
Structure

- Diverse product categories and solutions - Air conditioning (AC units, chillers, Precision cooling), and refrigeration (residential, commercial, industrial, transport)
- End-user segmentation: B2C, B2B and B2G
- Strong presence of Indian and MNC players
- Widening regulatory oversight

Nature

- Season-centric demand (e.g. Residential Air conditioners and heating systems)
- Evolving, fragmented and hyper-competitive market with small and large OEMs
- Lower market adoption (Room AC ~8%, Commercial Refrigeration ~6%)
- Limited scope of differentiation and value addition
- Heavy dependency on imports
- High propensity for Service (mandatory service dependency)
- Rising awareness on Eco-friendliness
- Lower economy of scale

AC & R Industry Eco - System



P.S. The component list is not exhaustive

AC & R Industry Value Chain

Key stages	Input	R&D and Production	Distribution (Sales & marketing)	Installation & Commissioning	Consumption	After-sales service	End-of-Life
Actors involved	Raw Material Suppliers (Cu, Al, Plastic)	ODM, Contract Manufacturers	Distributors, wholesalers	Channels (SSD, retailers)	(B2Cs) Residential customers	Channels (SSD, retailers)	OEMs
	Component Suppliers (Compressor. PCB, fan, motor etc.)	OEMs (Manufacturers / Assemblers)	Exclusive and Multi-brand Dealers	3P/ independent service providers	(B2B) Commercial, Industrial, Government, Developer*/ Builders	3P/ independent service providers	Government authorized E-waste Recyclers
			Offline Retailers	EPC/ MEP* player (via OEMs)		EPC/ MEP* player (via OEMs)	
			Online retailers, marketplaces, Direct sales/ D2C	O&M players*	Influencers (PMC, HVAC Consultants, IDEACs)	O&M players*	

Support providers across entire industry value chain: Logistics companies and software companies

Regulatory bodies (Government, BEE, BIS,)

*for Projects Business, D2C = Direct to customers, SSD = Sales & service dealers, 3P = 3rd Party, EPC = Engineering, Procurement and Construction, MEP = Mechanical, Electrical & Plumbing
PMC = Project Management Consultants, IDEA = Interior Designers and Architects, O&M = Operations & Maintenance

Industry Complexity - Maturity - Interventions

Supply chain | R&D and Manufacturing | Distribution | Installation, commissioning, After sales service | End-of-life





Complexity	Maturity	Interventions
• Very high import dependency • 85% of compressors used in the industry are imported • 90% PCB manufacturing base for sub-components doesn't exist in India • 80% of Motors (BLDC + non-BLDC) are imported • 100% of Grooved copper tubes are imported • Concentrated supplier base in China • Under-developed component ecosystem in India • Stringent regulatory framework such as QCO and Energy labeling • Volatility in Raw Material Prices • Lower bargaining power of AC&R industry due to low scale	Medium to High	• Industry has been making significant investments in manufacturing to indigenize and reduce import dependency (to around 30% from previous 70%) • Backward integration of sheet metal fabrication and heat exchanger coils for higher value addition and profitability • Long-term strategic sourcing tie-ups with critical foreign vendors • Supplier -as- strategic partner with deeper engagement and excellence programs to institutionalize global best practices at Indian vendors (shared vision) • Strategies to de-risk single vendor dependency and sourcing costs by exploring vendor eco-system in FTA countries • Embracing S&OP tools to minimize forecasting challenges and optimize working capital turns • Commodity and Forex hedging institutionalized • Co-development of critical inputs and components to meet energy regulations

Supply chain | R&D and Manufacturing | Distribution | Installation, commissioning, After sales service | End-of-life





Complexity	Maturity	Interventions
• Low manufacturing scale • Inadequate design and engineering capabilities in India • Cost vs. Energy norms • Underdeveloped testing and calibration infrastructure • Longer product development cycles	Medium	• Automation, digitalization and adoption of Industry 4.0 to reduce conversion cost per unit thru improved productivity • Fungibility and flexibility in manufacturing processes to reduce change over time and improve cycle productivity • Embraced and institutionalized sustainability as growth driver (refrigerants and energy norms in step with global developments) with collaboration, technology transfer and tropicalization (Indian energy norms are of higher order) • Alternate materials with better thermal conductivity, durability, and lower costs • Investments in-house R&D capabilities and R&D infrastructure such as Testing labs (with accreditations from Global testing agencies such as NABL, UL etc). • Adopting platform designs to reduce time-to-market • Digitization of NPD processes

Industry Complexity - Maturity - Interventions

Supply chain | R&D and Manufacturing | **Distribution** | Installation, commissioning, After sales service | End-of-life





Complexity	Maturity	Interventions
• Multi-distribution channels • Rising demand in Tier 3/4/5 cities and inadequacy of distribution networks • Seasonality factor impacting inventory, warehouse planning and working capital • Higher distribution cost including primary and secondary freight and consumer finance cost • Higher cost of consumer finance	Medium to High	• Adoption of distributor, re-seller and multi-brand, omni-channel models to leverage on multiple revenue streams and optimize distribution costs • Re-jigging and digitalization of warehouse footprint and management to optimize penetration into tier-3/4/5/6 markets • Building technical and engineering capabilities in channel network to get first-time-right installation quality to reduce warranty and service costs • Improving cost-efficiency and reliability through a strategic freight vendor selection and management • Roadworthy packaging to reduce transit damages and costs associated with defective inventory • Dynamic consumer financing models

Supply chain | R&D and Manufacturing | Distribution | **Installation, commissioning, After sales service** | End-of-life





Complexity	Maturity	Interventions
• Lack of skilled technicians and high attrition levels • Intense service load during peak seasons • Varying site conditions (e.g. building layouts, existing infrastructure, and climate) • Safety concerns regarding A2L refrigerant handling • Lack of reliable service networks in remote geographies	High	• Increased use of prefabricated HVAC systems to reduce installation time and costs • Digitalization of site engineering practices to reduce costs and time • Remote monitoring and predictive diagnostics tools for improved system performance, maintenance and reduce warranty costs • Mandatory training and certification programs for HVAC & R installers to ensure quality workmanship • Digitalization of service infrastructure to improve response time and customer satisfaction • Decentralization of training eco-system with significant investments in training centers across the country • Multi-skilling the technicians to handle both residential and commercial products

Industry Complexity - Maturity - Interventions

Complexity	Maturity	Interventions
• Manufacturers to bear the recycling cost as EPR, which impact industry profitability	Medium to High	• Recyclers eco-system developed in line with govt regulations • Adoption of circular economy practices, such as using recycled plastics and sustainable materials

Key Takeaways

- Air conditioning and refrigeration fast becoming a necessity than luxury, enabling human productivity and reducing losses across perishable value chain.
- Indian market, driven by domestic consumption and low penetration, offers immense growth and value creation opportunities in the HVAC & R sector
- A good reference case of how the industry utilized emerging business contexts to transform from trading-led model to manufacturing-led model over the years
- Sustainability and energy efficiency are adopted fast in step with global developments, while bringing out affordable products and solutions to the market
- It is a matter of time that Indian HVAC & R industry develops cost competitive products and solutions for global markets.
- Developing cost maturity is a compelling need of hour to remain competitive in domestic market

4d AUTOMOTIVE

Indian Automotive Industry

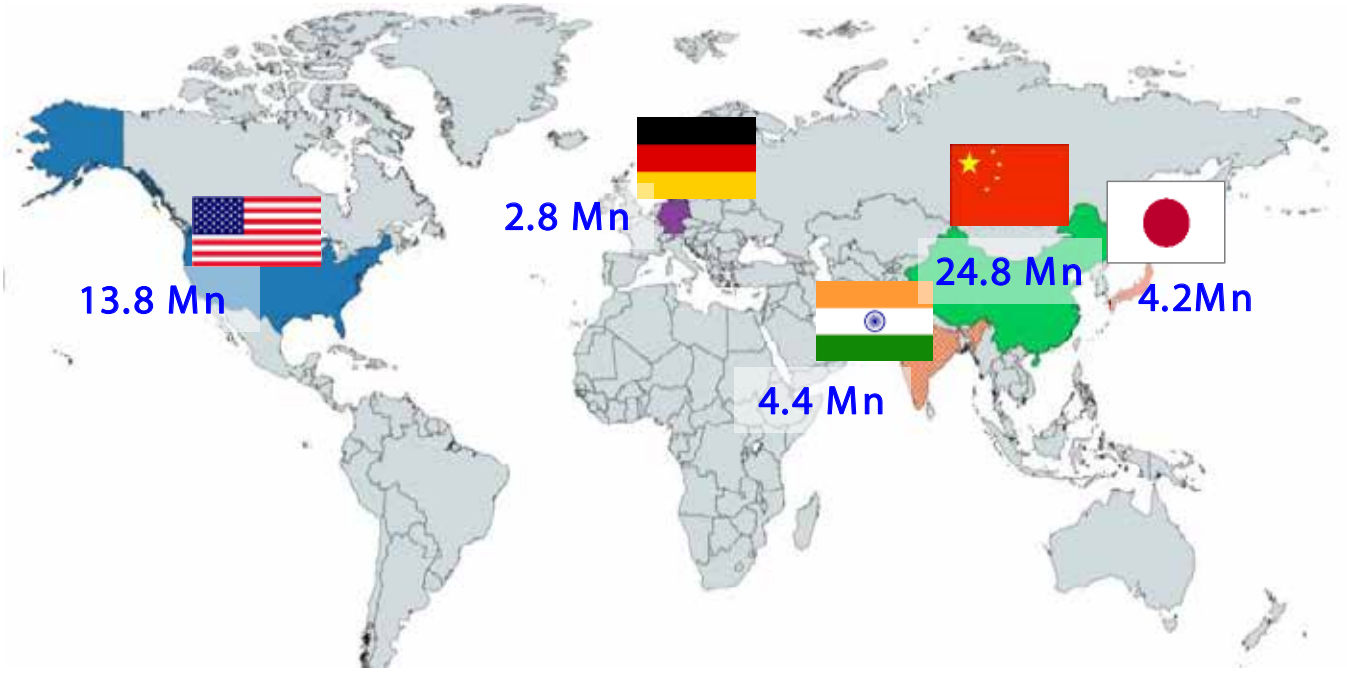
Growing India

Evolving Customer

Transforming Automotive Industry

Auto Industry: Key Contributor to India's Economy

Automobiles (PV+CV)



Auto Contribution to Nation GDP	6.5%
Auto Contribution to Mfg. GDP	40%
Revenue	US $ 151 Bn
GST Contribution	US $ 32 Bn
Employment	Direct: 8 mn Indirect: 29 mn

INDIA: 3rd Largest Automotive market in the World

2022 data, Source : OICA, SIAM , INVEST India

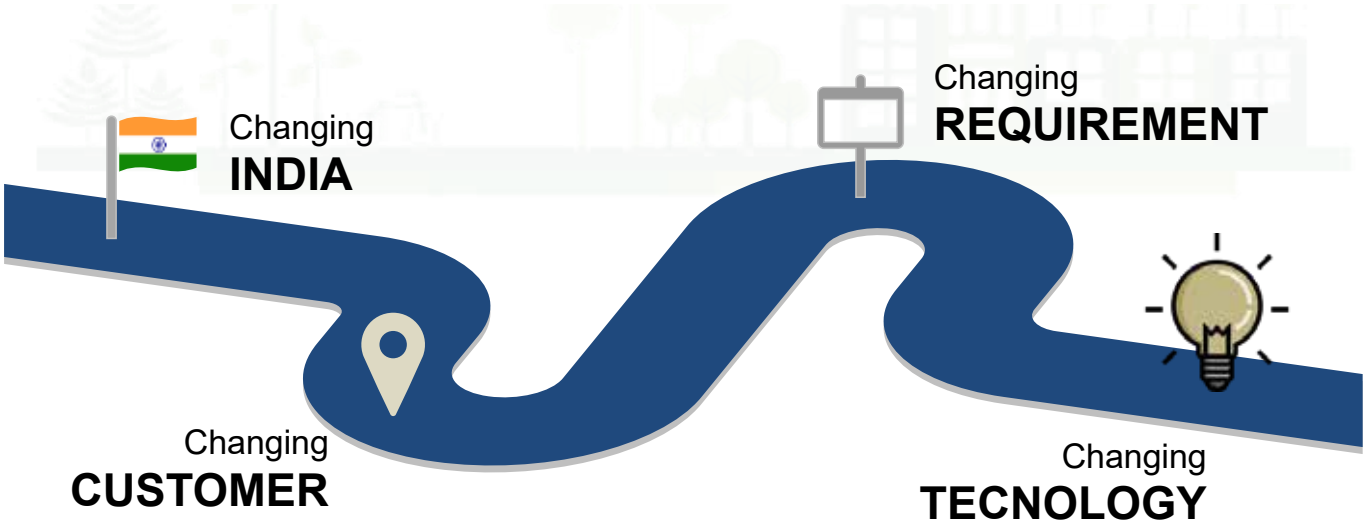
India Auto Industry – Current Sales & Forecast

Category	Annual Volume (in Millions)				
	2020-21 (COVID)	2022-23 (Post COVID)	Recovery Post Covid	2030-31	CAGR % 2022→2030
PV	2.7	3.9		6.0	6%
CV	0.6	0.96		1.5	6%
3Ws	0.2	0.5		c0.6	2%
2W	15.1	15.9		~26.0	6%
Total	18.6	21.2		~34.1	6%

Source: Current sales - SIAM Reports Future - IHS (PV & CV), BNEF (2W), Crisil (3W)
EV penetration forecast (BNEF) : PV 17%, CV 10%, 3W 88%, 2W 31%

Post COVID, Recovery has already started. Entry/Low price Segments may recover soon
Market likely to grow in future. EVs are also likely to grow.

Changing Dynamics - Enablers



Enablers - Changing India

Amritkaal [2022 - 2047]

is for fulfilling resolutions what we decide today for India

Carbon Neutral India - [COP26 commitment]

India's Panchamrit for Climate Challenge

2030

- 500GW of Non-fossil energy capacity.
- 50% energy need from renewables.
- One billion tonnes reduction of carbon emissions.
- 45% reduction in carbon intensity over 2005 levels.

2070

- Target to achieve net-zero emissions by 2070.

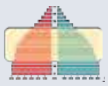
Economy

3rd Largest Economy by 2030

1. 2. 3. 4.

Population

59%
working-age population
(20 to 59 yrs) by 2040



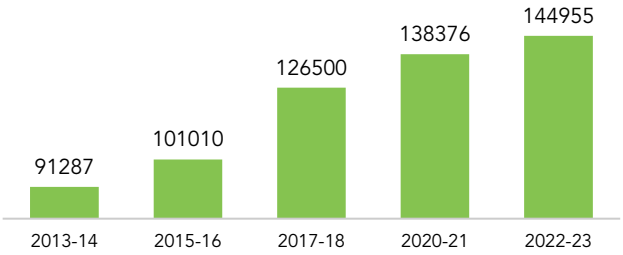
5/6G Fueling the digital era

Political stability, Technology oriented policies, Future vision -> Future economic growth

Enablers - Rapid Infra Push

Increasing Highways Network (in kms)

Current Highway construction : ~30kms per day
(2015 : ~12 kms per day)



- **39 Expressways under construction [completion by 2026].**
- **29 Expressways under proposal**
- **17 Highway projects under "Bharat Mala Project"**

Source – Morth Annual report 2022 - 23

Changing Requirements

Appealing Futuristic Designs

Appealing vehicle aesthetics, Interior design & visual appeal to define the vehicles of the future!

Increased Safety Requirements

Perception about safety increased and looking towards better safety [7 Airbags, ABS, ESP, TPMS, etc.]

Increased Affinity towards Modern Technologies

Demand for advanced tech, HMI, connected, personalized etc.

Preference towards Premium & Comfort features

Government Focus for Future Regulations

EMISSIONS	***SAFETY***	***CONNECTED***
Energy Security & Environment Concern	***Safe Society***	***Consumer Privacy & Convenience***
CAFE	***BNCAP***	***Data Privacy***
Bharat Stage Norms	***Cyber Security***	***ADAS***

Indian context to be considered for setting regulations while adopting safer and greener mobility

Key challenges of the Automotive Industry

- Highly aspirational product needing world-class designs.
- Regulated environment - fast technology development
- Ever changing new technologies due to customer aspirations
- Very high competition
- Vast supplier base
  - Make parts as per customer drawings
  - Responsible for system level technology development
- High Investments for
  - New Plants
  - New Technologies
  - New Models
- High Safety & Quality performance requirement
- High R&D Cost

Value chain of Automotive Industry

The Automotive Industry is highly dependent on the Supply chain:

- More than 70% % of the value created by the suppliers.
- The supply Chain goes upto Tier 3 or Tier with high value-add at each tier.
- Core R&D of critical components entirely designed & developed by suppliers.
- Suppliers Co develop vehicles along with the OEM
- Suppliers have equal or higher-level R&D including test tracks and labs.
- The Automotive supply chain covers the whole globe
- Just In time supplies is the Core of Automotive Supply Chain.
- Building plants closest to the OEM plant is key to survival.
- High Quality and Low cost.
- Dealers are single brand but require financial muscle to hold big inventories have facilities of Sales and service in Expensive neighbourhoods.

Key Interventions Local Supplier Development

Operation Support

- Provide land within the OEM production facility for JIT
- Support Tier 1 supplier in development of his Tier 2 & Tier 3 supplier
- Development of Raw materials like specialty steels
- Develop suppliers for Services Like Plating, Heat treatment etc
- Provide Tooling and Production/ inspection Machines

Management Support

- Help supplier in development Quality, Safety &Production systems
- Help in Problem solving incase of critical Quality & Manufacturing Issues
- Financial Support
- Supplier Manuals for Quality, Safety, Manufacturing systems
- Regular audits

People Development

- Develop Managerial Capability, especially in Family-owned companies
- Support vendors in setting-up DOJO centers (Operator & Supervisor Training)
- Supplier clubs for Best Practice Sharing
- Develop ITIs and Polytechnic to have Skilled Manpower

Key Interventions Co-Development of Technology with Suppliers

R&D of New Technologies and Products

- Co-develop technology of Parts & systems along with the suppliers
- Support suppliers build Local R&D Capability
- Work on Advanced Technologies in a proactive way any where between 5-10 years before introduction
- Share Development costs
- Share laboratories and test labs
- Share Development Knowledge and Standards
- Involve Software suppliers and consultants in tripartite agreements

Key Interventions
Local Supplier Development

Operation Support

- Develop standardized Dealer Management systems
- Development Sales and Service Quality standards
- Standard Integrated Software for Management of Sales, Spares & Service
- Centralized Logistics for Just in time Vehicles, Spare Parts & Services
- Use of Railways & Waterways for Reducing carbon footprint and transportation cost

Management Support

- Common Branding & Merchandizing across value chain
- Standard Integrated Software for Management of Sales, Spares & Service
- Financial support for Dealership management, Inventory financing
- Develop channels for Insurance, Used car sales
- Audit Dealers and suggest ways of Improvement on regular basis
- Centralized CRM centers

People Development

- Training of Salesmen, Service Technicians and Supervisors on regular basis to equip them with knowledge & skill of latest technologies
- Develop ITIs and Polytechnic to have Skilled Manpower
- Dealer Management training at IIMs and Reputed Management schools

4e HEALTHCARE

Health Care Industry Eco System Overview & Cost pathways

The primary sequence in healthcare system in India – Complexity / Criticality of illness – Diagnostic / Therapeutic pathway – Cost Pathway – Price Pathway – Profit Pathway.

However, healthcare system in India is a complex quagmire of eco-system, multiple health delivery platforms, policy framework, patient criticality and pricing mechanisms.

❖ Healthcare Eco System in India has multiple players

1.) Drugs and Pharmaceuticals Manufacturers, Dealers and Distributors, including Bulk Drugs and Formulations, R&D centres, Clinical Trials, involving international Patents and Technical know how, Royalty payments, Brand building activities.

2.) Manufacture of Surgical implants like Titanium plates, screws, metal and ceramic Knee caps, hip joints, heart valves, catheters, guide wires, stents, etc, which are predominantly supplied from US or Europe.

3.) Diagnostic Equipment like CT Scan, MRI machines, Operation Theatre equipment including Robotics, Laboratory Auto Analysers, Blood processing apparatus, Endoscopy equipment, Radiation Oncology equipment, are also developed and supplied from US and Europe and involving high capital outlay.

4.) Service delivery experts like Specialist Doctors, Surgeons, Anaesthetists are qualified after more than a decade of medical education and most of them have studied and worked in US or Europe. These Doctors work on Fee for Service Model and the fees are determined by them according to their skill levels and the complexity of the patients.

5.) The Patient affordability and payment avenues can be classified as follows.

- Cash paying (Out of Pocket)
- Insurance covered
- Corporate (Employee Welfare)
- Government Scheme patients for the poor **and needy**

6.) The health care providers can be classified as follows

- Corporate Super Specialty / Tertiary care Hospitals in Metro cities
- Single Specialty hospitals
- Medium sized hospitals in Tier 2 cities
- Nursing homes owned by Doctors which are non corporate
- Charity Trust owned Hospitals
- Government owned Hospitals
- Stand alone Clinical Laboratories and Scan centres, Blood Bank

The general myth among the consumers' mind is that the hospital treatment is very expensive.

However, we should note that hospitals or health care providers, per se are only a part of the entire Healthcare Eco System.

The treatment costs for patients is the sum of all the goods and services provided by all the six above entities. Hence, the hospitals alone cannot control the costs or prices of healthcare delivery.

The medical interventions needed for depend upon the medical conditions of the patients.

Medical conditions are compounded by factors like age, associated illnesses like Diabetes, Hypertension, Cholesterol, etc.

Every medical intervention like a given surgery, lab investigation, medicine, ICU care require varying levels of costs.

The resultant cost of the treatment is depending upon the above complexities for the given disease.

Challenges in arriving at the cost of services and suitable pricing in Healthcare.

1.) Many hospitals in India do not have a dedicated Costing Team. Hence, their respective managements are unaware of the Cost incurred at Patient Level or Service Level.

2.) Software support – Non availability of customised and cost effective Healthcare Costing software with implementation support in India.

3.) Sheer variety of Disease codes and complexity level poses challenge for standardising the cost workings.

a) Interventions:

1.) Alignment of criticality of illness, diagnostic standards, cost pathways, price pathways and profit sources.

2.) A good understanding of the Maturity Model for a Cost Management System in the context of Healthcare as imperative. For example, a single location, medium sized hospital, a costing system capable of calculating the Direct costs for each patient with an estimated charging of Indirect costs may be suitable. This can be achieved without the need of sophisticated costing software. Whereas, in the case of a Multiple location Super Specialty Hospital, we may require a DRG level Costing system with defined Clinical Pathways, which requires a sophisticated Costing Software and dedicated team of Costing Specialists, Medical coding experts.

3.) Detailed Operating Manual for a good Costing system tailored for Healthcare setting in India is imminent.

4.) Cost effective software, which is customised for Healthcare, with facilities to extract data from the native Hospital Information System to be looked at.

5.) Management of the hospitals to set the tone by dedicating resources in capacity building.

6.) Advanced learning from references like UK NHS where DRG wise Costing is implemented decades ago.

Confederation of Indian Industry
Total Cost Management Division

CII TCM Division (Total Cost Management) Introduction

1) Background:

Post liberalization, the Indian corporates were painstakingly getting acclimatized to the nuances of competitive intensity and corporate profit challenges were a stark reality. Understanding the mounting pressure, CII envisioned and pioneered the philosophy of 'Total Cost Management' after deep deliberations with stakeholders – industries, consultants and experts.

Competitive strategies and profit management scenarios in the Indian industry clearly differentiated 'TCM from the conventional cost accounting' – a factory centric and compliance-oriented system. Experts envisaged 'Key principles of TCM' – connecting business strategy / business model to cost incidence, strategic perspectives of cost and cost / profit ownership across business.

Global literature was browsed with references from Robert Kaplan (Emeritus at Harvard Business School) and Prof. Vijay Govindarajan (Tuck school of Business) to culminate into a holistic concept of TCM in business.

TCM encompasses amalgam of business functions – Business strategy, risk profiling & analysis, customer offerings, innovation & product development, environmental sustainability, plant operational excellence, procurement & logistics, capital productivity, cost measurement and management and IT / Digital architecture.

Business context:

Indian business context evolved from monopoly / duopoly to a competitive environment with multiple industry players. Onset of competition and macro challenges brought in new playbook in Indian businesses - competitiveness.

Multi-dimensional pressures – both external & internal – mounted on Indian businesses:

- Revenue / volume and profit margins.
- Input cost inflation and product pricing challenges.
- Business viability challenges: Efficiency indexed businesses in all of its dimensions - supply chain, resource consumption, production processes and customer delivery.
- Customer offering, Product design, USP & innovation synch with customer affordability.
- Product / process quality, customer acquisition, branding and customer reach processes.

Profit pathways in a competitive environment was a complex journey with multiple variables and dynamics at both company level and industry level. Performance standards, cyclical demands and internal efficiencies guided the profitability curve in a business.

2) About CII TCM Division:

As part of its industry connect initiatives, CII conceptualized TCM (Total Cost Management) Division in late 1990's with an objective to accelerate and enhance 'competitive journey of Indian industry'.

The purpose of CII TCM Division is to accelerate the 'competitive journey' of Indian industry. The governance structure of TCM division is in the format of 'CII National Committee for TCM' under the chairmanship of Mr. Girish Wagh, ED Tata Motors with CXO's from cross industry as committee members.

The division has closely engaged the industry through several of its service verticals including 'CII TCM Maturity Model' as prime amongst them. The model is the first of its kind in the world and CII has an IPR. Close to 125 companies have been certified through the model.

The division has touch points with all dimensions of the industry – Manufacturing sector, Service sector and MSME sector.

The division is in a mission mode to continuously sensitize industry on merits of creating **'TCM Architecture'** in a business.

3) TCM Concept

Erstwhile 'cost accounting' domain supported businesses in the areas of cost record compliance, inventory valuation and cost center reports which had minimal influence on managerial decision making. Inputs for cost records maintenance were drawn from the financial accounting (FA) system which was primarily reporting historical data.

Accelerating 'Competitive Journey' of businesses, TCM concept was evolved as an enterprise level exercise by connecting business strategy, value chain, business model, product portfolio to cost structure. Profit strategy in a business gets envisioned through TCM architecture.

TCM Architecture in a business creates competitive and cost advantage:

a) Cost strategy blue-print – Optimized resources, Optimized business process and optimized customer delivery.

b) Economical product design – cost effective BOM, optimized TCO (Total cost of ownership of material) and Optimized production routing.

c) Mapping profit drains in the value chain – cost / value loss matrix, non-value-added business processes,

d) Product / Customer / Channel profitability reporting – Causality principle-based algorithm cost structure, product / customer portfolio management, profit pathways and profit corrections.

TCM architecture evolved as an amalgam of business strategy, business model and right portfolio – aligned to cost structure. TCM also enabled both strategic and operational decisions for the leadership teams with data points in terms of cost information, operational information, non-financial metrics and financial information.

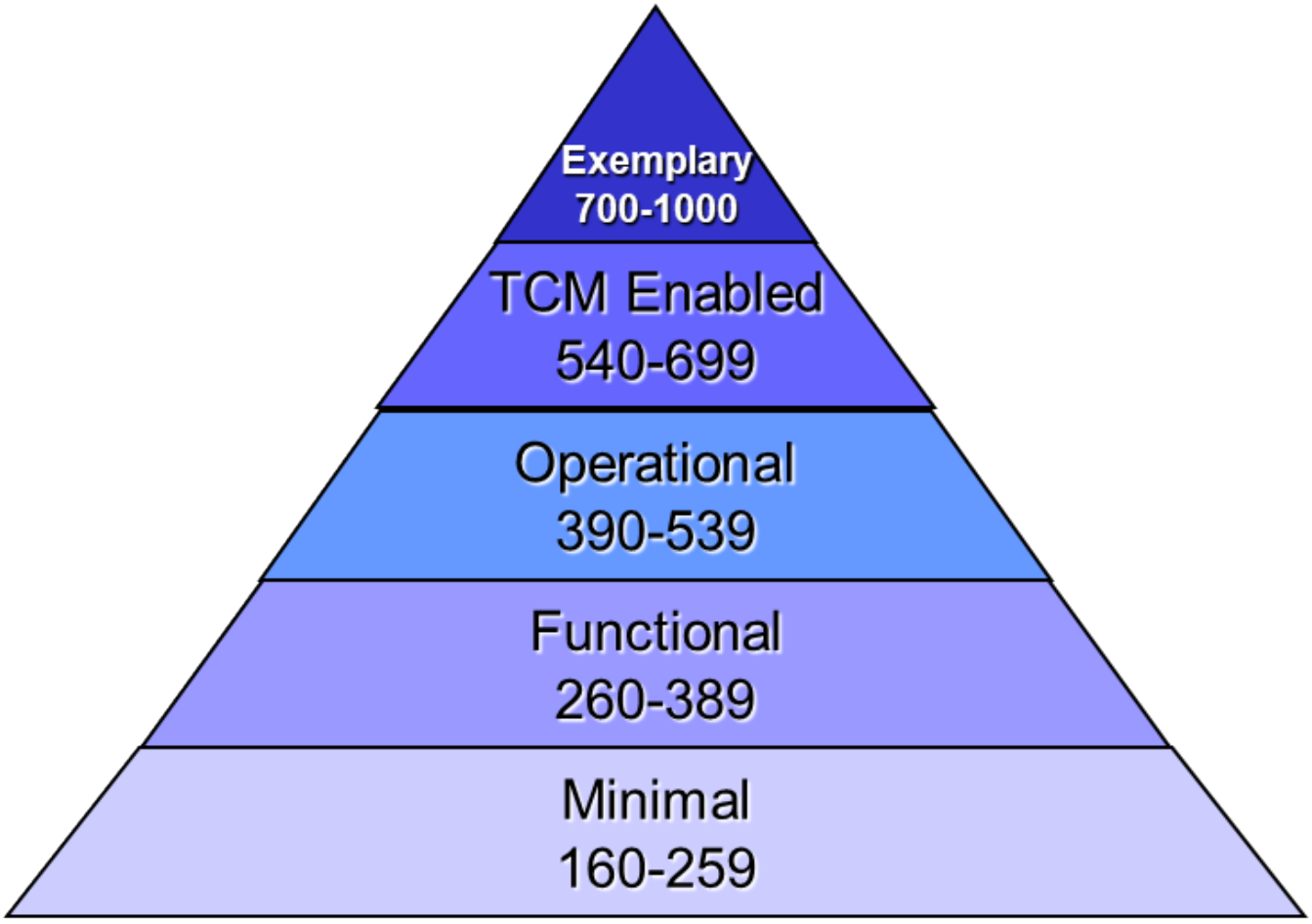
4) CII TCM Maturity Model

The TCM Maturity Model was conceptualized and designed by a specially created advisory group of 30 industry representatives, subject matter experts and academicians.

The model is unique and the first of its kind in the world and CII has an IPR. CII has evolved TCM models exclusively for Manufacturing sector, Service sector and MSME sector. The models vary in content, evaluation metrics and prescription. CII has also trained expert jury members who would actually calibrate the companies on a 5-level hierarchy and provide a prescriptive road map for improvement.

CII follows a 3-tier protocol process to evaluate, rank and provide a prescriptive report for companies.

- 5-level inputs for CII and the jury team in terms of industry research, company processes / systems, key ratios of productivity / efficiency, CEO interactions.
- Factory visits to assess and understand cost efficiencies and EBIT improvement.
- 3-member / 4-member Jury visit to the company for validation of strategies, systems and culture of cost connect to business.



Acknowledgements

Mr. M. Srinivas Reddy
Executive Vice President, Corporate Strategy and Business Development, Blue Star Limited

Mr. Sandeep Goyal
Head, Technical Controlling, Nestle India Limited

Mr. Srinivas
Senior Vice President & CFO, Seshasayee Paper and Boards Limited

Mr. N S Rao
Vice President, Product Cost Management, Benchmarking & Protype, Maruti Suzuki India Limited

Mr. S Bhargava
FCMA, ACMA (UK), SGM, Apollo Hospitals Enterprise Limited

About CII

(Confederation of Indian Industry)

The Confederation of Indian Industry (CII) works to create and sustain an environment to the develment of India, partnering industry, Government, and civil society, through advisory and consultative processes.

CII is a non-government, not-for-profit industry-led and industry-managed organization, playing a proactive role in India's development process. Founded in 1895, India's premier business association has over 7,900 members, from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 2,00,000 enterprises from around 240 national and regional sectoral industry bodies.

With 66 offices, including 9 Centres of Excellence, in India, and 8 overseas officers in Australia, Bahrain, China, Egypt, France, Singapore, UK and USA, as well as institutional partnerships with 312 counterpart organizations in 106 countries, CII serves as a reference point for Indian Industry and the international business community.

Confederation of Indian Industry

CII – Sohrabji Godrej Green Business Centre
Survey No 64. Kothaguda Cross Roads
Near Hitech City, Hyderabad – 500 084
Tel: +91 40 4418 5111 Fax: +91 40 4418 5189

Nagesh Babu M
m.nageshbabu@cii.in | tcm@cii.in
+91 98499 09683 | +91 40 4418 5120