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## INDUSTRY OUTLOOK

### FROM BARK TO BOOK: INDIA'S PAPER INDUSTRY

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### Introduction

India ranks as the 15<sup>th</sup> largest paper producer globally, contributing 5 per cent to the world's paper market<sup>1</sup>. The industry's growth is driven by rising demand for corrugated and household paper products. As the fastest-growing paper market worldwide, India is poised for significant expansion, aligning with the country's economic growth. Paper serves multiple purposes, including carrying, wrapping, protecting, packaging, and functioning as a container. To meet increasing demand, India needs to add around 1 million tonne per annum (TPA) of integrated pulp, paper, and paperboard production capacity beyond the current levels.



The paper industry in India is highly clustered even though it demonstrates resilience, with revenues reaching ₹ 80,000 crores in FY24 at an annual growth of about 8.2 per cent per annum.<sup>2</sup> The four main segments of the industry—printing and writing paper, newsprint, packaging paper and board, and specialty paper—serve diverse markets both domestically and internationally. The industry is distributed into small, medium, and large paper factories and mills, with over 900 mills scattered across the nation, with a majority of these mills existing in the plateau region of the country. The geographical spread of the industry, as well as the market, is mainly responsible for the regional balance of production and consumption.

The industry is heavily dependent on wood pulp and recycled fibre, which act as the main raw materials for the industry. Accordingly, Indian paper mills rely heavily on imports to meet raw material demands, which exposes them to international supply chain risks and currency volatility.

Currently, 70-75 per cent of paper and paperboard consumed in India are recycled grade, requiring about 20 million tonnes of wastepaper annually. Given India's low per capita paper consumption of 15 kg, one of the lowest in the world whereas for USA, it is around 320 kg, 129 kg for EU (European Union), 45 kg in Asia and 75 kg in China<sup>3</sup>, compared to the global average of 58 kg, any increase in consumption significantly impacts overall demand, i.e., an increase of 1 kg in per capita consumption will lead to a demand of 1 million tonnes of paper products. The shift from wood-based to recycled paper – evidenced by the reduction of wood usage from 80 per cent in the 1980s to 20 per cent today – indicates a continued rise in demand for recovered fibre.

The industry's production capacity is approximately 25 million tons annually with operating profit margins averaging at 14 per cent, with the specialty paper segment achieving over 18 per cent margins due to niche demand.<sup>4</sup> For the past 5 years, the Indian pulp and paper industry grew at a CAGR of 8.3 per cent. The Indian paper industry is projected to grow at a CAGR of 6-7 per cent over the next five years, potentially reaching ₹ 100,000 crores by FY28.

## Domestic Market

The production of paper increased by 5.9 per cent in December 2024 compared to the production recorded in the corresponding year-ago month. A total of 523,100 tonnes of paper was produced during the month. The cumulative production during April-December 2024 fell by 2 per cent to 4,667,300 tonnes.

Table 1: Production, Imports, Exports and Consumption of Paper and Newsprint								
	Newsprint				Paper (of all kinds)			
Year	Production	Imports	Exports	Consumption	Production	Imports	Exports	Consumption
	(Tonnes)							
2011-12	10,70,850	14,31,693	9,871	24,92,672	81,45,160	8,81,345	5,50,270	84,76,235
2012-13	11,31,636	12,40,804	8,557	23,63,883	86,05,000	10,60,821	5,52,537	91,13,284
2013-14	12,37,247	13,79,414	3,789	26,12,873	94,79,200	11,2,839	5,81,723	1,00,20,316
2014-15	11,56,751	13,35,813	9,641	24,82,922	1,00,43,100	12,89,130	6,84,304	1,06,47,927
2015-16	10,48,398	14,96,898	5,066	25,40,230	1,07,11,900	14,10,819	7,21,513	1,14,01,207
2016-17	10,12,169	15,84,440	4,354	25,92,255	1,12,25,200	26,39,929	7,88,689	1,30,76,440
2017-18	10,04,101	14,48,006	6,849	24,45,257	99,33,300	20,35,714	10,41,781	1,09,27,233
2018-19	10,61,692	13,66,473	12,726	24,15,439	68,61,700	17,98,494	15,63,260	70,96,934
2019-20	8,00,246	13,53,868	16,020	21,38,094	64,42,500	19,90,591	17,25,139	67,07,952
2020-21	4,43,421	6,62,515	3,181	11,02,754	61,67,700	13,73,002	22,59,091	52,81,611
2021-22	5,68,481	6,05,693	6,767	11,67,408	62,79,800	14,55,418	29,65,782	47,69,436
2022-23	4,98,705	6,22,222	8,787	11,12,140	66,53,500	17,90,492	18,79,387	65,64,605
2023-24	5,04,281	664,570	6,196	11,62,655	63,15,000	22,76,765	16,73,548	69,18,217

Source: Infomerics Research; CMIE

The production of newsprint fell by 6.8 per cent in December 2024 compared to the production recorded in the corresponding year-ago month. A total of 36,273 tonnes of newsprint was produced during the month. The cumulative production during April-December 2024 fell by 5.5 per cent to 356,353 tonnes. The annual data for paper and newsprint is given in the table.

Early results of the paper & newsprint industry show a 9.1 per cent YoY fall in its topline in the December 2024 quarter. However, its operating expenses corresponding to sales rose by 2.5 per cent. The industry's largest operating expense, raw materials, rose by 5.5 per cent. Other operating expenses grew by 1.1 per cent. Employee compensation increased by 14 per cent. This led to a 58.7 per cent fall in operating profits. The operating profit margin contracted by 10.4 percentage points to 8.6 per cent. Among the post-operating expenses, while interest fell by 33.6 per cent, depreciation rose by four per cent. Other income fell by 7.6 per cent. Hence, the industry's net profit declined by 65.7 per cent. The net profit margin deteriorated to 3.7 per cent in the reporting quarter from 9.9 per cent in the December 2023 quarter.



India's paper manufacturing landscape is vast, comprising over 900 mills, of which 526 are operational. The regional distribution of paper mills reflects this specialization. States like Gujarat and Tamil Nadu excel in packaging-grade paper production, catering to the growing demand for sustainable and e-commerce-driven packaging solutions.

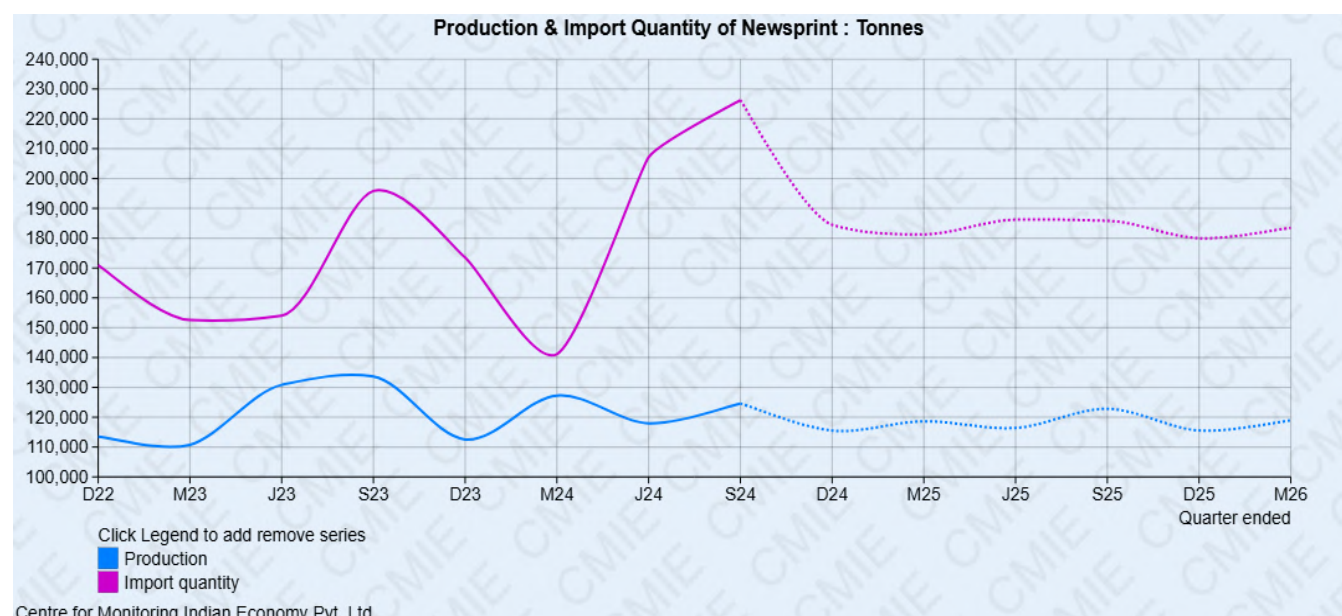


Andhra Pradesh and Odisha are emerging as centres for specialty papers, including food-grade and decorative varieties. Meanwhile, Uttarakhand, with hubs like Kashipur, is renowned for producing high-quality printing paper that meets the demands of educational institutions and government procurement programs. Due to their strategic location and industrial ecosystem, Maharashtra and West Bengal remain critical for newsprint and commercial printing applications.

The industry's market composition highlights the dominance of the packaging paper and board segment, which accounts for 57 per cent of total demand. This segment has grown exponentially, fuelled by the rapid rise of e-commerce and increasing consumer preference for sustainable packaging solutions. Printing and writing paper continue to hold a significant 30 per cent share, sustained by government programs promoting education and literacy, as well as rural demand for textbooks and stationery. Specialty papers, catering to niche applications such as food-grade packaging, decorative laminates, and industrial uses, comprise 5 per cent, while newsprint contributes 8 per cent, though this segment faces challenges due to declining print media consumption and reliance on imports.

## Trade

The increasing import of paper (excluding newsprint) is likely to hinder domestic production, as the industry faces intense competition from imports, especially from ASEAN countries and China. Free trade agreements (FTAs) and import concessions have disadvantaged the domestic paper sector. The surge in imports appears to be causing an oversupply, which may limit production. India grants several concessions on paper imports and has previously signed FTAs with ASEAN and South Korea, allowing these countries to export paper to India without any import duty. In 2024, India imported approximately 25 per cent of its wood pulp requirements from countries like Brazil and Indonesia. India provides import tariff concessions to China and other countries under the Asia Pacific Trade Agreement (APTA). It offers a 30 per cent margin of preference. Imports of paper and paperboard from China significantly jumped by 44 per cent during the first half of the ongoing fiscal year.



In 2022, due to a severe shortage of newsprint, several newspapers were forced to reduce their pages, pare down editorials, and dispense with weekend glossies and special editions. Others have increased cover prices or are using paper so thin that readability is compromised. As we can see in the chart below, there is a glut in the newspaper print market.

ITC, the largest player in the paper segment, in its October 2023 conference call, stated that cheaper Chinese supplies in the market were one of the reasons that impacted the performance of the paperboards, paper, and packaging segment. The Indian Paper Manufacturers Association (IPMA), a few years back, stated that paper manufacturers in China and ASEAN countries get incentives and subsidies for manufacturing paper. They also enjoy access to cheap inputs and raw materials. We believe these countries continue to benefit from cheaper raw materials, and therefore, the paper produced in these countries is cheaper in comparison to paper produced by domestic Indian manufacturers.

The domestic industry had urged the government to take measures to curb imports. The IPMA had sought an increase in the basic customs duty on paper and paperboard in the Union Budget 2024. It had lobbied for the import duty to be increased from 10 per cent to 25 per cent. Additionally, it had requested that quality control orders be issued for various grades of paper. But this year's Budget focus on the manufacturing sector, including MSMEs, was expected to boost demand for paper-based packaging, an eco-friendly alternative to single-use plastic. Policy incentives aimed at promoting recycling and the use of sustainable raw materials had further reinforced the paper industry's commitment to a circular economy.

The domestic industry would be able to charge much higher realisations had imports not played the spoiler. In the past decade, amidst strong demand, paper manufacturers enjoyed a certain degree of pricing power. While raw material prices increased, manufacturers transmitted this price to the end-user comfortably via price hikes. This helped the industry to operate at robust margins. It is expected that the prices for the natural wood pulp shall marginalize, and the imports will stabilize, leading to increased operating margins of about 2 to 3 per cent in the current fiscal, while the net profit margin is expected to be in the range of 5-8 per cent in the coming quarters.

## **Diversified raw material sources**

The raw materials used in the Indian paper industry are a complex blend of sustainability-focused practices and resource availability challenges. The industry draws its raw materials from three primary sources: recycled paper, wood-based fibres, and agro-residues. These materials are critical for supporting the industry's diverse production needs, including packaging paper, printing, writing paper, and specialty papers. Among these sources, recycled paper accounts for 52 per cent of the raw material base, reflecting the industry's strong emphasis on circular economy practices. Wood-based fibres contribute 28 per cent, primarily for producing high-quality paper grades, while agro-residues, such as bagasse and wheat straw, make up the remaining 20 per cent. Agro-residues offer a sustainable and cost-effective alternative, especially in sugarcane-rich states like Uttar Pradesh and Maharashtra, but their seasonal availability remains a challenge.

India's approach to raw material sourcing is regionally diverse, with states specializing in specific materials based on their agro-climatic conditions and industrial capabilities. Uttar Pradesh, for instance, is a leading producer of bagasse<sup>i</sup>, derived from its substantial sugarcane production. This state also hosts one of the largest clusters of recycling mills, making it a vital contributor to the industry's raw material supply. Gujarat stands out for its robust recycling infrastructure, contributing 22 per cent of the recycled paper supply nationally. Tamil Nadu leads in wood-based fibre production, supported by extensive agro-forestry initiatives and high-quality pulp output. Andhra Pradesh has emerged as a hub for specialty paper production, with significant investments in clonal plantation programs to enhance wood supply. Maharashtra and West Bengal also play critical roles, leveraging their sugarcane byproducts and historic paper production ecosystems, respectively.<sup>5</sup>

Bamboo and softwood were the primary raw materials for the global paper industry for a long time. However, due to their shortages, the industry began exploring alternatives, particularly agricultural residues like bagasse. The sugar industry, one of India's largest agro-based sectors, produces bagasse as a by-product of cane sugar production. Traditionally, it has been burned in boilers for steam generation, but it holds greater potential, such as in paper production. India currently produces 1.8 million tonnes of paper annually, expected to nearly double in the next five years. With 80 per cent of raw materials sourced from forests, dwindling forest cover has led to an ecological crisis. Despite this, most bagasse in India is still burned for steam in sugar mills, with 96-97 per cent consumed this way.

Despite these advancements, challenges persist. The recycling rate of wastepaper in India is only 43 per cent, far below the global average of 55-60 per cent. This inefficiency is compounded by the fragmented nature of the waste collection system and limited public awareness about recycling benefits. States like Gujarat and Uttar Pradesh contribute significantly to recycling efforts, accounting for 22 per cent and 18 per cent of the national total, respectively. However, Maharashtra and West Bengal lag behind, with logistical inefficiencies and inadequate infrastructure impacting their contributions. To address these issues, the industry has called for nationwide investments in modernized waste collection systems and public awareness campaigns to promote recycling practices.

Several strategies have been proposed to address the industry's raw material challenges. Enhancing wastepaper recovery rates through the establishment of nationwide collection centres is a priority. Additionally, expanding agro-forestry programs to states like Odisha and Karnataka could further reduce dependency on imports. Financial incentives for farmers cultivating pulpable wood, coupled with investments in modernized recycling infrastructure, could transform the raw material landscape.

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<sup>i</sup> Bagasse is a fibrous residue left after the sugarcane is crushed in the sugar factories for extraction of juice. It contains about 48-50% moisture, 48% fibre and 2-4% sugar and other minor constituents. This is known as mill wet bagasse. The fuel value of bagasse is mainly by virtue of its fibre content, which in turn contains 45% cellulose, 28% pentosans, 20% lignin and 5% sugar and 2% minerals. At 50% moisture, the gross heating value of mill wet bagasse is 2271 Kcal/Kg. The cellulose content of bagasse makes it viable as a fibrous raw material in the paper industry.

<b>Table 2: Raw Material wise Production Figures of Indian Paper, Paperboard and Newsprint</b>	
<b>Raw Material &amp; Variety of Paper</b>	<b>In Tons</b>
Writing & Printing from Virgin	3,032,524
Writing & Printing from RCF	1,761,748
<b>Sub - 1</b>	<b>4,794,272</b>
Kraft from Virgin	882,846
Kraft from RCF	10,802,225
Kraft paper board/Duplex Board from Virgin	873,797
Kraft paper board/Duplex Board from RCF	2,566,259
<b>Sub-2</b>	<b>15,125,127</b>
Newsprint from Virgin **	0
Newsprint from RCF**	667,726
<b>Sub-3</b>	<b>667,726</b>
Tissue Paper	263,663
<b>Sub-4</b>	<b>263,663</b>
Others & Specialty	516,053
<b>Sub-5</b>	<b>516,053</b>
<b>** Newsprint Production Figures are tentative</b>	
<b>Source: Census Survey of Indian Paper Industry (Primary &amp; Secondary Data Estimates)</b>	

## Industry Risk

This industry, which goes a long way in India, is fraught with multiple issues, viz., high raw material costs, supply chain disruptions, and market fragmentation. These seemingly intractable issues require concentrated attention on investing in advanced machinery and technology, enhancing supply chain management and efficiency, and expanding product lines to meet evolving market demands. To be sure, these are difficult issues, but by no means undoable.

Let us now turn to some specific issues hampering the steady growth of this industry.

### Manual waste paper collection

In India, wastepaper collection primarily relies on an informal network of ragpickers, small scrap dealers, and local aggregators who manually gather, sort, and supply used paper for recycling. This decentralized and unorganized system leads to inefficiencies in wastepaper recovery, with India achieving a paper recycling rate of around 30-35 per cent, significantly lower than developed countries, where rates exceed 60-70 per cent (Indian Paper Manufacturers Association, IPMA). The lack of a structured collection mechanism results in substantial paper waste being either incinerated or disposed of in landfills, limiting the availability of high-quality recovered fibre for the domestic paper industry. Additionally, the absence of standardized segregation at the source further contaminates the collected wastepaper, reducing its usability in high-quality paper production. The heavy reliance on manual collection also exposes the paper industry to supply chain disruptions and inconsistent raw material availability, making it dependent on expensive imports. India imports 35 per cent of its recovered paper needs, incurring significant costs and foreign exchange outflows



(Central Pulp & Paper Research Institute, CPPRI). Moreover, the informal nature of the collection system results in poor working conditions and low incomes for waste collectors, discouraging efficiency improvements. A lack of government-backed incentives and infrastructure for systematic wastepaper recovery further hampers efforts to strengthen the domestic recycling ecosystem. Addressing these challenges through policy reforms, formalized waste collection networks, and advanced recycling technologies could enhance domestic wastepaper recovery and reduce dependency on imports.

## Capacity Utilization

The industry is facing challenges in adopting environmentally friendly technologies and in practicing conservation measures. Its capacity utilization is also wavering around 80 per cent due to outdated technology. The Indian paper industry is facing investment constraints due to overcapacity in the kraft paper segment and declining demand for printing and writing paper, driven by the rise of digital technologies. Despite expectations of a 9 to 10 per cent annual growth in packaging paper demand over the next five years, production capacity is projected to grow at an even higher rate, leading to oversupply. Additionally, cheaper imports are likely to further discourage domestic capacity expansion. As a result, the industry is witnessing minimal new investments, with only two major projects in the pipeline. JK Paper's Ludhiana Corrugated Packaging Paper Project, worth ₹ 1,700 million, was expected to be completed in 2023–24, while Rajmax Paper India's Sundargarh Kraft Paper Project, with an investment of ₹ 492 million, is set for completion in 2024-25, adding 150 tonnes of daily kraft paper production (CMIE).

### Summary

- India is the 15th largest paper producer, contributing 5% to global output.
- Revenue in FY24 was ₹80,000 crore, growing at 8.2% CAGR.
- Projected revenue by FY28 is ₹1,00,000 crore, with an expected 6-7% CAGR.
- The industry has a production capacity of 25 million tonnes annually.
- The key segments are Packaging Paper & Board (57%), Printing & Writing Paper (30%), Newsprint (8%), and Specialty Paper (5%).
- Raw material sourcing: 70-75% from recycled paper, 25% wood pulp imports. Composition: Recycled (52%), Wood-based (28%), Agro-residues (20%).
- Per capita paper consumption in India is 15 kg, compared to the global average of 58 kg, USA (320 kg), EU (129 kg), and China (75 kg).
- India has 526 operational mills (out of 900), with key hubs in Gujarat and Tamil Nadu (Packaging), Andhra and Odisha (Specialty), Uttarakhand (Printing & Writing).
- Growth drivers include e-commerce expansion, rising demand for sustainable packaging, government education initiatives, and recycling policies.
- Key Challenges include high import dependence on China and ASEAN, increased competition due to FTAs, currency fluctuations, and declining newsprint demand.
- Industry margins: Average operating margin at 14%, specialty paper at 18%. Dec '24 quarter saw a 9.1% decline in revenue, 58.7% drop in operating profit, and net margin fell to 3.7% (from 9.9% in Dec '23).
- Paper imports increased by 44% YoY (H1 FY24), leading the industry to seek higher import duties (10% to 25%).
- Margins are expected to improve by 2-3% in FY26, with net margins projected at 5-8% for the coming quarters, driven by domestic production expansion and sustainability initiatives.



## Government Initiatives

In response to a Lok Sabha query on India's low per capita paper consumption of 16 kg compared to the global average of 57 kg, the Minister of State for Commerce and Industry outlined key factors shaping the sector. The government's sustainability initiatives, including the ban on single-use plastic, have boosted demand for paper-based packaging. Additionally, rising literacy rates and expanding manufacturing activities, supported by various government policies, have contributed to increased paper consumption. To ensure environmental compliance, the government has set industry-specific standards under the Environment (Protection) Rules, 1986, and introduced standard operating procedures (SOPs) for managing sludge from effluent treatment plants in the pulp and paper industry. Moreover, the growing needs of the food and beverage (F&B), healthcare, and personal care industries are driving significant growth in India's paper packaging market.

The National Packaging Initiative aims to modernize and streamline the packaging sector by establishing guidelines for design and material standards, promoting bulk transportation, and encouraging centralized industrial activity through specialized logistic parks and packaging labs. It emphasizes sustainability by reducing packaging waste through material recovery facilities (MRFs) and supports domestic businesses in manufacturing advanced packaging materials. Additionally, the initiative focuses on workforce development by creating high-quality training facilities and certification programs to ensure the availability of skilled labor. These measures collectively enhance efficiency, product integrity, innovation, sustainability, and scalability through advanced automation solutions in the packaging industry.

Sustainable packaging materials require strength, durability, and compliance. With the manufacturers focusing on optimizing materials while reducing costs and time-to-market, traditional testing methods alone are grossly inadequate to meet the travails of transition and need to integrate modeling and simulation (MODSIM) mechanisms into the testing process to create virtual models that predict packaging performance before conducting physical tests—saving time, reducing costs, and increasing confidence in the designs. The process of leveraging virtual simulations to refine packaging structures, accelerate product development, and optimize material use for sustainability can be facilitated by using real data to build accurate virtual models, accelerating physical testing with validated simulations, and optimizing material use without compromising performance.

The Budget's thrust on the manufacturing sector, including MSMEs, will contribute to increased demand for paper-based packaging, an eco-friendly alternative to single-use plastic. In view thereof, there is a manifest need to ensure compliance and efficiency when applying critical information on primary, secondary, and tertiary packages. This is why and how brands take different routes to sustainable packaging (e.g., featuring compostable, biodegradable, and reusable packaging, and alternative bio-materials like seaweed). These routes are based on product design changes, customer preferences, and innovative technology.

Major consumer packaged goods (CPGs) like Lay's are meeting 2025 materials initiatives on virgin plastic and bio-based materials. Global companies are attempting to reduce material consumption by light-weighting and post-consumer recycled content. Given the evolving dynamics, there must also be a renewed thrust on contract filling and single-use packaging solutions, and delivering quality, performance, and customer service.

With reliable technology and extensive label production capabilities, there is a compelling need to explore new and innovative solutions for equipment and labels, particularly because of the high workforce attrition as brought out by a study of Deloitte<sup>6</sup>. The study revealed that half of the new manufacturing jobs created between now and then will remain unfilled by 2033. Given this grim scenario, the packaging industry has deployed automation as an instrument of growth and structural transformation. The packaging automation is undergoing a paradigm shift from primary packaging to downstream packaging. But this process has its disadvantages.

The Weber Model 4050B print-apply labeling system (made in the USA), which is designed for maximum efficiency, accuracy, and easy maintenance, provides an example of a high-speed, cost-effective labeling solution. Its modular design facilitates quick in-field repairs, maximizing uptime, while the advanced electric actuator system ensures faster, more accurate labeling with minimal air usage.

The Indian Paper Manufacturers Association (IPMA) stressed that the Union Budget laid a strong emphasis on boosting consumption, manufacturing, and sustainability, which aligns well with the growth of the paper industry in India.

### **The Way Forward - New Vistas of Development**

The last hundred years have been characterized by increasing volatility, uncertainty, complexity, and ambiguity (VUCA), disruptive innovations, and regulatory compliance. These events and developments have made this century unprecedented in human history. Going forward, there is a manifest need to increasingly leverage technology's revolutionary power by a confluence of innovation, big data, artificial intelligence (AI), machine learning (ML), deep learning (DL), robotics, analytics, the Internet, and entrepreneurship to enhance productivity and foster creativity and innovation. These path-breaking initiatives will also supplant human labour and exacerbate wealth inequality.

Accordingly, there is a compelling need to streamline the packaging line for long-term success. This requires, *inter alia*, exploring how scalable automation solutions can help optimize production, handle diverse product formats, and seamlessly transition between packaging materials. These strategies, individually and collectively, work to a considerable degree in surmounting the challenge of change by utilizing them to address skills gaps and enhance operations.

At this defining moment of history, the growth drivers of the Indian paper industry are the surging literacy rate of the Indian population due to the universalization of education, the implementation of India's New Education Policy (NEP), the rising demand for corrugated paper and other packaging paper, and the increasing demand for household paper in the Indian market. The Indian paper industry is at a tipping point, where it must adapt to emerging challenges while leveraging new growth opportunities. With the sector expected to reach ₹ 1 lakh crore in revenues by 2030, a multi-pronged strategy focusing on sustainability, technological innovation, and global competitiveness will be essential to move to the next level.

One of the foremost priorities for the industry is reducing its dependency on imports, particularly for wood pulp and newsprint. While current agro-forestry initiatives helped decrease reliance on imported raw materials, further expansion in states such as Chhattisgarh, Madhya Pradesh, and Telangana could add another ₹ 2,500 crores in domestic wood pulp production annually.<sup>7</sup> This would significantly reduce the ₹ 8,500 crores spent on pulp imports each year. Additionally, investments in high-quality domestic newsprint production could decrease the industry's dependence on imports, which currently stands at ₹ 7,000 crores annually.

Another key area of focus is the modernization of paper mills to improve efficiency and sustainability. With the government's allocation of ₹ 3,000 crores for technological upgrades, an estimated 60 per cent of small and medium-sized mills are expected to transition to energy-efficient machinery by 2027.<sup>8</sup> This shift could lead to an 8-10 per cent reduction in production costs while increasing overall output.

Additionally, greater adoption of recycled fibre and biodegradable materials will align India's paper industry with global sustainability benchmarks. Presently, India's paper recycling rate stands at 43 per cent, significantly lower than China's 65 per cent and Europe's 72 per cent. Increasing this rate to 55 per cent within the next five years could save approximately ₹ 2,000 crores in raw material costs annually.

The Indian paper industry must also make substantial investments in research and development (R&D) to remain competitive globally. Automation and digitalization in production facilities, together with advanced and mechanical recycling working in tandem, will also play a crucial role in improving efficiency. The adoption of Industry 4.0 technologies, such as AI-driven process optimization, IoT-enabled monitoring systems, and automated supply chain management, can increase productivity by up to 15 per cent. Hence, there is a strong need to explore these technologies further to drive the industry forward with an emphasis on efficiency and productivity levels.

The introduction of bio-based alternatives for traditional paper products, along with the development of water-resistant and greaseproof paper, could open new market opportunities worth ₹ 10,000 crores annually. The future of India's paper industry is a function of strategic investment in sustainability, efficiency, modernization, research, modern technologies, and quality.

With the right policy interventions and private-sector innovations, the sector can achieve significant growth and consolidate its position in the global market. Meeting the challenge of digital disruption and exploring emerging opportunities in sustainable packaging and specialty paper production will be crucial in leveraging these opportunities and ensuring long-term resilience and profitability.

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