

Indian Paper Industry – Moving out of the woods?

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India's share in global paper demand is gradually growing as domestic demand is increasing at a steady pace while demand in the western nations is contracting. The domestic demand in India grew from 9.3 million tonnes in FY08 to 15.3 million tonnes in FY16 at a CAGR of 6.4%. In spite of the sustained growth witnessed by the industry, the per capita paper consumption in India stands at a little over 13 kg which is well below the global average of 57 kg and significantly below 200 kg in North America.

As per IPMA's (Indian Paper Mills Association) estimates, this industry contributes approximately Rs 4,500 crore to the exchequer and provides employment to over 5 lakh people across approximately 750 paper mills. The broad characteristics of the industry are that it is capital, energy and water intensive and highly fragmented (small units account for ~60% of the industry size).

The paper industry is classified under four segments: Printing & Writing (P&W), Packaging Paper & Board, Specialty Papers & Others, and Newsprint.

Pulp (over 40% of raw material cost) is the primary raw material used for manufacturing of paper, and is obtained from wood, wastepaper, agriculture residues etc. Wood accounts for 30-35% of raw material usage, while wastepaper and agri-residues account for 45-50% and 20-22%, respectively.

CARE Ratings expects that the overall paper demand growing at a CAGR of 6.6% is likely to touch 18.5 million tonnes in 2018-19

- a. *Printing and Writing segment demand is expected to grow at a CAGR of 4.2% and reach 5.3 million tonnes in FY19*
- b. *Demand for Packaging Paper and Board segment is expected to grow at a CAGR of 8.9% and reach 9.7 million tonnes in FY19*
- c. *Newsprint demand is expected to reach 2.7 million tonnes in FY19.*

The demand drivers include 1) rising income levels, 2) growing per capita expenditure, 3) a likely pick-up from the education sector, 4) requirement of better quality packaging of FMCG products marketed through organized retail, and 5) increasing preference for ready-to-eat foods.

On the other hand, challenges include 1) access to quality and cost competitive raw material whose prices have started increasing recently), 2) competition from imports and 3) technology obsolescence.

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India’s share in global paper demand, though small is growing as demand in the western nations contracts, while domestic demand in India grows at a steady pace

Globally over 400 million tonnes of paper and paper products are consumed. The world's three largest paper producing countries are China, the United States, and Japan (these three countries account for approximately half of the world's total paper production), while India accounts for a small but growing share of the global market. The global paper and pulp mills industry has contracted slightly over the past five years, primarily due to the shift to digital media and paperless communication across most developed economies. However, demand in emerging markets has partially offset the decline by driving increased demand for paper used in packaging materials.

Chart 1: India's share of the Global Market

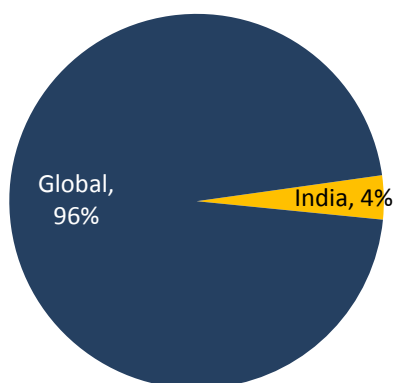
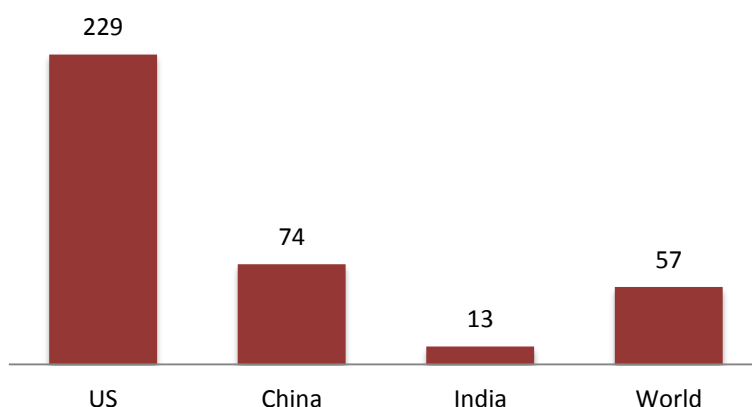


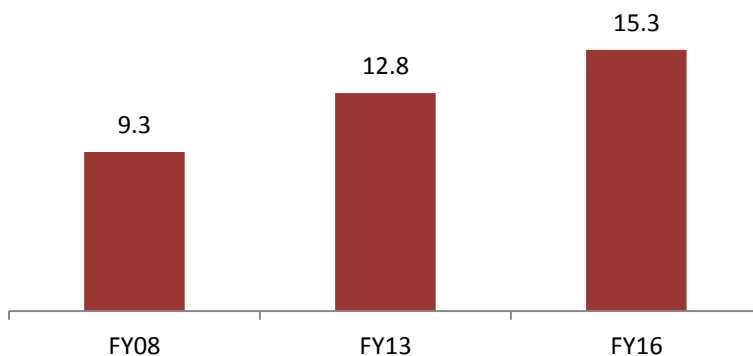
Chart 2: Per Capita Consumption of Paper (kg)



Source: Industry, IPMA

The Indian Paper & Paperboard industry is one of the oldest organised manufacturing industries in India and the first paper mill was started in 1812 in Serampore, West Bengal. The industry accounts for approximately 4% of the world’s production of paper. IPMA (Indian Paper Mills Association) estimates the industry turnover at approximately Rs 50,000 crore which year contribution of Rs 4,500 crore to the exchequer while providing employment to over 5 lakh people across approximately 750 paper mills.

Chart 3: Domestic Paper Demand (in mn tonnes)



Source: Industry, IPMA

The domestic demand in India grew from 9.3 million tonnes in FY08 to 15.3 million tonnes in FY16 at a CAGR of 6.4%. In spite of the sustained growth witnessed by the industry, the per capita paper consumption in India stands at a little over 13 kg, is way behind the global average of 57 kg and 200 kg in North America.

The broad characteristics of the industry are:

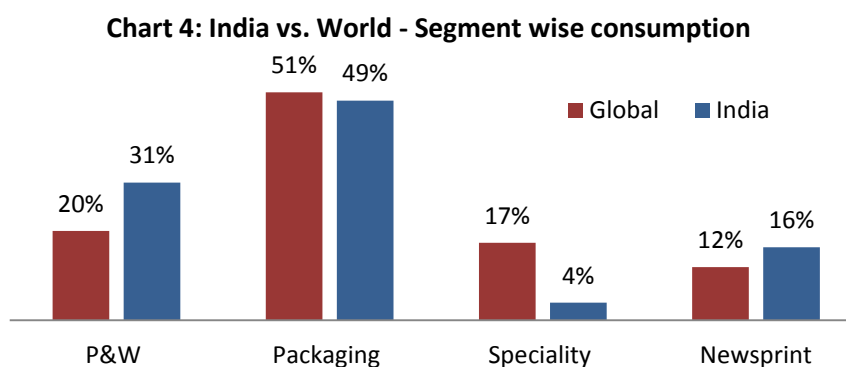
- it is capital, energy & water intensive and

- highly fragmented (small units account for ~60% of the industry size). The large players focus primarily on the high value added segments such as copier paper, coated packaging paper & board, while the smaller companies address low value added segments such as creamwove, kraft paper etc.

The paper mills are concentrated in the states of Andhra Pradesh, Tamil Nadu, Maharashtra, Punjab, Madhya Pradesh and Gujarat. The paper mills use a variety of raw material viz. wood, bamboo, recycled fiber, bagasse, wheat straw, rice husk, etc. The geographical location of the mill often determines the type of raw material used. Most mills in the northern and western regions of India depend heavily on agricultural residues and waste paper as their raw material. Pulp & paper production in southern and eastern regions uses wood and bamboo as raw materials. The proximity and assured availability of forest resources in the vicinity of the plant location and other factors like availability of water, forest policy of the state also influence the location of the manufacturing facility. Overall, the composition of raw material usage is approximately wood (35%), recycled fibre (40%) and agro-residues (25%).

Industry Segmentation: Packaging paper & board segment demand is growing at a faster pace as compared to Printing & Writing and the Newsprint segments

The paper industry is classified into four segments, Printing & Writing (P&W), Packaging Paper & Board, Specialty Papers & Others, and Newsprint. The chart depicts the variation of the consumption across the segments globally and in India. The table below illustrates the sub-segments and movement in share of total demand over the years.



In Million tonnes

Table 1: Segment Breakdown and Movement

Segments	Type	Variety	FY08	FY13	FY16	% Share FY08	% Share FY13	% Share FY16
Printing & Writing (P&W)	UWF	Creamwove	1.4	1.7	1.8	15%	13%	12%
		Maplitho Copier	1.1	1.7	2.1	12%	13%	14%
	CWF	Art paper/ board	0.3	0.6	0.8	4%	5%	5%
	CM	LWC, Pigment Paper, etc						
	P&W total			2.9	4.0	4.7	31%	32%
Newsprint	-	-	1.9	2.4	2.5	20%	19%	16%
Packaging Paper & Board	Container	Linerboard, fluting	1.7	2.7	3.1	18%	21%	20%
	Carton board	Folding Boxboard, Solid Bleached board						
	Kraft	Kraft-liner / Test-liner						
	Packaging paper & board total			4.3	6.1	7.5	46%	47%
Specialty & Others	Tissue and other industrial papers		0.2	0.3	0.6	3%	2%	4%
Total Paper Demand			9.3	12.8	15.3			

Notes: Uncoated Wood free (UWF), Coated Wood free (CWF) and Coated Mechanical (CM).

Source: Industry, IPMA

Domestic Demand for Paper is expected to Continue Growing at a Robust Pace with Packaging Paper & Board and Specialty Segments registering the Fastest Growth Rates

Table 2: Segment wise Demand (million tonnes)					
Segments	FY16	FY19P	CAGR (FY16-19P)	% Share FY16	% Share FY19P
Creamwove	1.8	1.9	2.0%	12%	10%
Maplitho & Copier	2.1	2.4	5.0%	14%	13%
Coated Paper & Others	0.8	1.0	7.0%	5%	5%
P&W	4.7	5.3	4.2%	31%	29%
Recycled Duplex Board	2.5	3.2	8.0%	16%	17%
Virgin Boards	0.6	0.8	12.0%	4%	5%
Packaging Board	3.1	4.0	8.8%	20%	22%
Packaging Papers (Kraft)	4.4	5.7	9.0%	29%	31%
Packaging Paper & Board	7.5	9.7	8.9%	49%	52%
Specialty Papers & Others	0.6	0.8	12.0%	4%	5%
Newsprint	2.5	2.7	2.5%	16%	15%
Total Paper Demand	15.3	18.5	6.6%		

Source: Industry, IPMA, CARE Ratings

For the Indian paper industry, strong economic growth has been accompanied by equally robust demand for paper. The demand drivers and growth triggers have come from a combination of factors such as rising income levels, growing per capita expenditure, rapid urbanization and a larger proportion of earning population which is expected to lead consumption and there is enormous potential for the paper industry in the country. **CARE Ratings expects that the overall paper demand growing at a CAGR of 6.6% is likely to touch 18.5 million tonnes in 2018-19.** The individual segments are expected to grow as follows:

- **Printing and Writing segment demand is expected to grow at a CAGR of 4.2% and reach 5.3 million tonnes in FY19.** The demand is expected to grow on account of an anticipated pick-up from the education sector with improving literacy rates and growing enrolment as well as increasing number of schools and colleges.
- **Packaging paper & board segment caters to industries such as FMCG, food & beverage, pharmaceutical, textiles, etc. Demand for Packaging Paper & Board segment is expected to grow at a CAGR of 8.9% and reach 9.7 million tonnes in FY19** due to factors such as increased urbanization, requirement of better quality packaging of FMCG products marketed through organized retail, and increasing preference for ready-to-eat foods.
- **Improving literacy rates, rising circulation and an increasing number of newspapers and magazines is expected to support growth in newsprint demand which is expected to reach 2.7 million tonnes in FY19.**

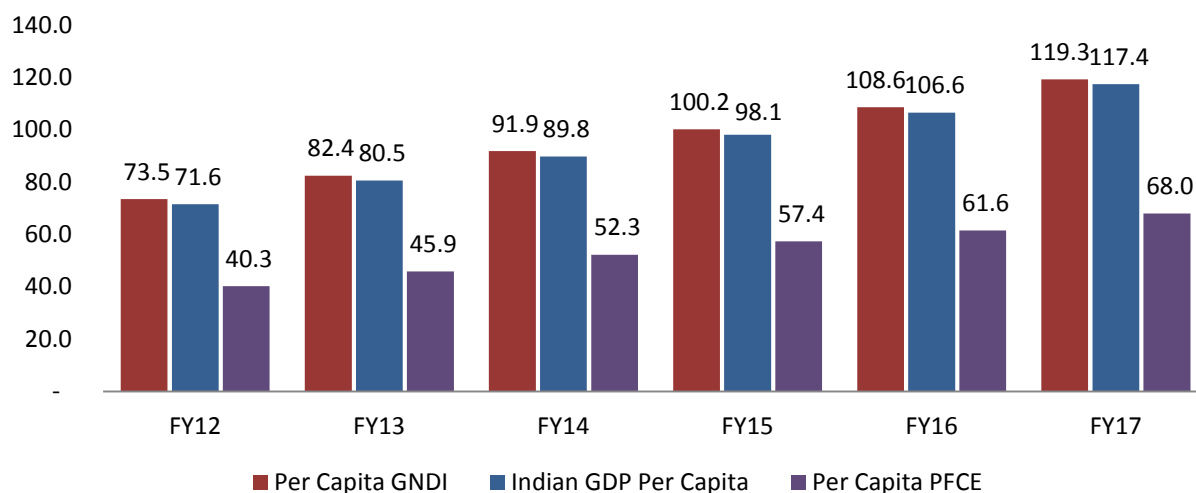
Additionally, the Chinese Government has banned the import of several varieties of waste paper, which is the primary raw material for finished paper. Consequently, the production of finished paper is expected to be hampered in China. This in turn is expected to lead to some relief in raw material prices and improve realizations.

Demand Drivers

Rising income levels & growing per capita expenditure

In the last decade, Indian economy has progressed rapidly. Correspondingly, India’s per capita GDP has increased from Rs 71,607 in FY12 to Rs. 117,406 in FY17 at a CAGR of 10.4% fuelling a consumption boom in the country. Correspondingly, the per capita personal disposable income surged from Rs 73,476 in FY12 to Rs 119,296 in FY17 at a CAGR of 10.2%. Also, the per capita private final consumption expenditure too rose from Rs 40,250 in FY12 to Rs.68,049 in FY17 at a CAGR of 11.1%. The growth in country’s per capita GDP in turn has increased the disposable income of the populace ultimately driving the country’s consumption.

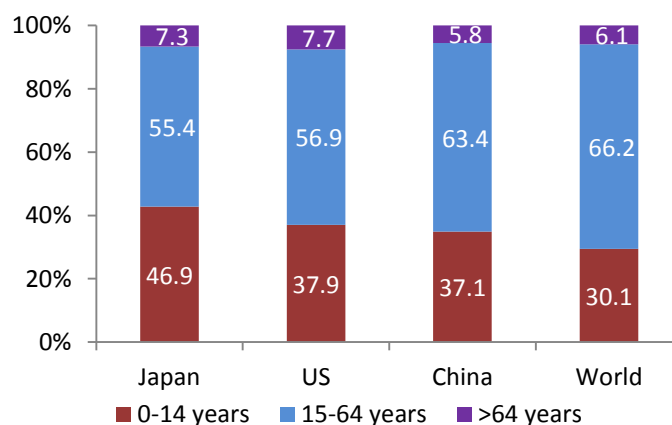
Chart 5: Per capita indicators (Rs '000 at current prices)



Source: Central Statistics Office (CSO)

A larger proportion of earning population to drive consumption

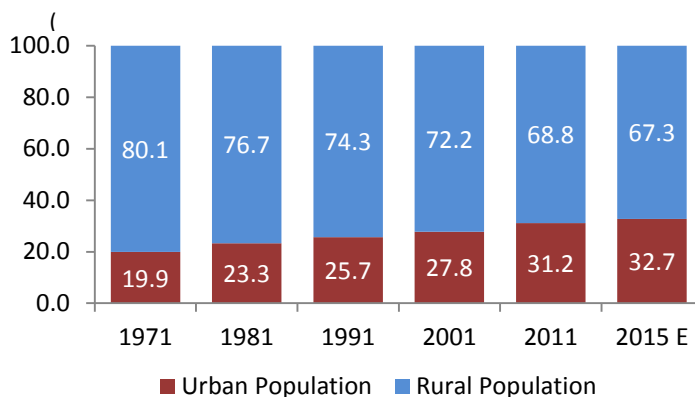
Chart 6: Age distribution of Indian population



The growing Indian population has also led to increase in the ‘earning population’ (age group 15-60) of the country. The proportion of Indian populace in the age group of 15-64 years increased from 55.4% in 1991 to 66.2% in 2016 (Source: CIA – The World Factbook). Considering the large size of the Indian population, the lower median age implies a higher number of working people thereby clearly outlining the immense earning as well as spending potential of the Indian populace. Taking into account the age group below 25 years being one of the highest spending age group, the current age dynamics are expected to boost the retail sales in India. The median age of India is 26.7 years, one of the lowest globally in comparison to 37.2 years in the US, 45.8 years in Japan and 36.3 years in China.

Increasing Urbanization

Chart 7: Distribution of Indian population (%)



Source: IBEF

A majority of India still lives in ‘villages’. This statement no doubt holds true but the figures suggest that there has been a paradigm shift of the Indian populace in terms of rural–urban divide. The aspirations of higher income, higher standard of living etc. has drawn more and more people from villages to settle in towns and cities. This transition from rural to urban areas has led to an increase in the demand for goods (owing to higher income and ever-expanding needs) and has also shifted the consumption pattern.

Widening spread of education and increase in literacy rate

Increase in the number of colleges and institution, rising enrolment numbers, rising literacy (continued government spending on education through the Sarva Shiksha Abhiyan) is expected to lead to an increased expenditure on textbooks, notebooks and other assorted paper products thereby driving demand. Additionally, with higher literacy levels, circulation of other print media, such as newspapers is also positively impacted.

Chart 8: Literacy Rate (%)

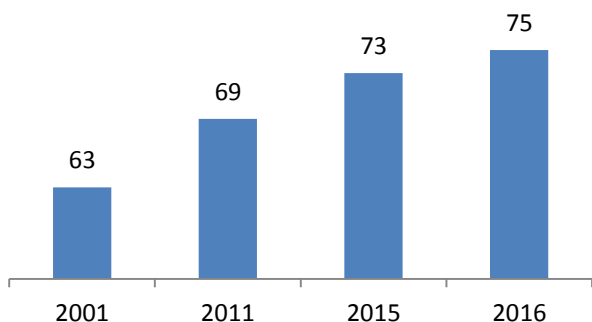


Chart 9: No. of Colleges

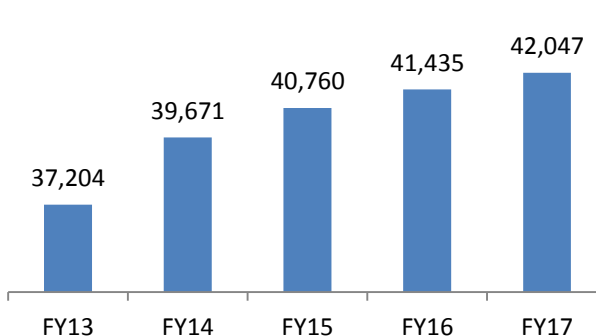
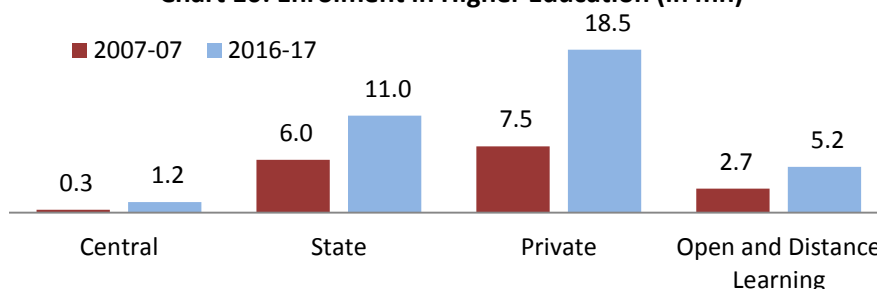


Chart 10: Enrolment in Higher Education (in mn)



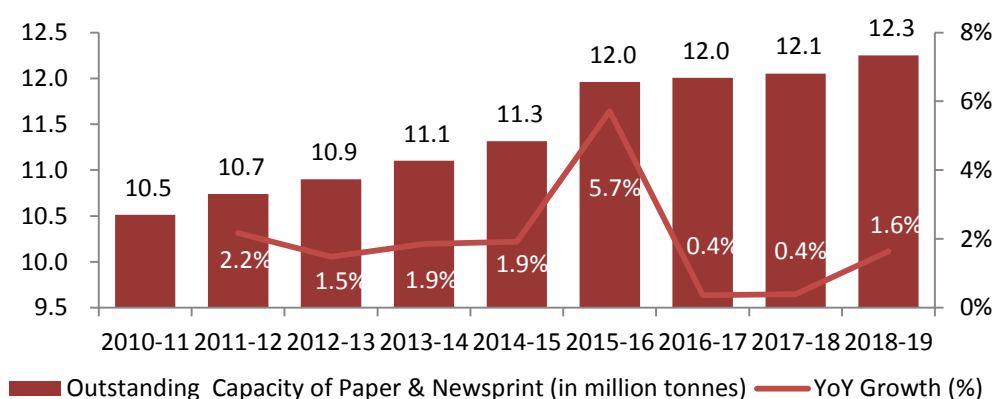
Source: IBEF

Rising circulation and number of newspapers and magazines

As per the Audit Bureau of Circulation (ABC), the circulation of print media reached 62 million copies a day in 2016, implying a 10 year CAGR of nearly 5%. Indian language newspapers primarily contributed to this growth with Hindi, Telugu and Kannada language publications growing at a CAGR of 8.76%, 8.28% and 6.40% respectively. On the other hand, English publications grew at a CAGR of 2.87% in the same period. Further as per ABC, the circulation of Indian dailies grew at 12% between 2013 and 2015, while dailies in countries such as Australia, France, Germany, the US, and Japan witnessed a 3% - 6% decline.

P&W segment to witness slower capacity addition, while Packaging paper & board segment to witness ramp up

Chart 11: Planned Capacity (in million tonnes)



Source: CMIE

After witnessing a growing rate of capacity addition in the early part of the decade, the planned domestic capacity (greenfield and brownfield) additions for paper and newsprint has slowed down, primarily due to a shortage of its key raw material i.e. pulp wood and rising prices of local waste paper. This has been partially mitigated by the agroforestry initiatives. However, the industry has been requesting for a policy to allow access to degraded forest land for paper mills to raise pulp wood plantations to enable sustainable source of raw materials.

On the other hand, driven by the increasing demand primarily from the e-commerce industry, Packaging paper & board segment is expected to witness significant capacity addition across the country.

Challenges

Access to quality and cost competitive raw material

India is a wood fibre deficient country as the Government of India does not permit industrial plantations in the country and inadequate raw material availability domestically is a major constraint for the paper industry. Additionally, the recovery rate of wastepaper in India is quite low (~30%) due to lack of an effective collection mechanism. With issues like availability of quality raw material at competitive prices, the players depend on the imports of pulp, wastepaper and even pulpwood to meet their raw material needs and often have to pay premium for availing them thereby impacting profitability and capacity addition. To alleviate this significant challenge, the Government of India could frame a policy to allow access to degraded forest land for paper mills to raise pulp wood plantations for increasing pulp availability and reduce import dependence; further the collection mechanism needs to be strengthened to increase usage of wastepaper.

Competition from imports

Imports accounts for over 20% of the paper consumption in India. The domestic paper manufacturers are less competitive against imports, given superior quality and lower prices of imported paper. As per IPMA, paper from ASEAN countries that is produced from raw wood is available at about USD 40 per tonne, as against USD 110 per tonne in India. Rising imports at predatory prices from surplus countries like China, has been a major concern for local players in India. On account of cheaper imports domestic industry has faced challenges in pricing its products. An anti-dumping probe into cheap import of 'uncoated paper' from Indonesia, Thailand and Singapore has been initiated by the Government as the Directorate General of Anti-Dumping And Allied Duties (DGAD) has found 'sufficient prima facie evidence' of dumping of uncoated paper following complaints from some domestic companies.

Technology

As the Indian paper industry is largely fragmented with lower capacity with an individual paper mill, it is also prone to using outdated technology. Resultantly, it is estimated that both the raw material as well as the power consumption is higher as compared to a modern paper mill. Adoption of new technology by domestic paper producers would lead to emergence of more competitiveness in critical areas including quantifiable increase in productivity, quality improvement with reduced cost, improvement in energy efficiency and better compliance with environmental protection legislation and safeguards for eco-sustainability of the products.

Rapidly increasing Imports along with steady Exports and domestic production indicates incremental domestic demand is being met through imports

Chart 12: Imports - Paper (excl. newsprint)

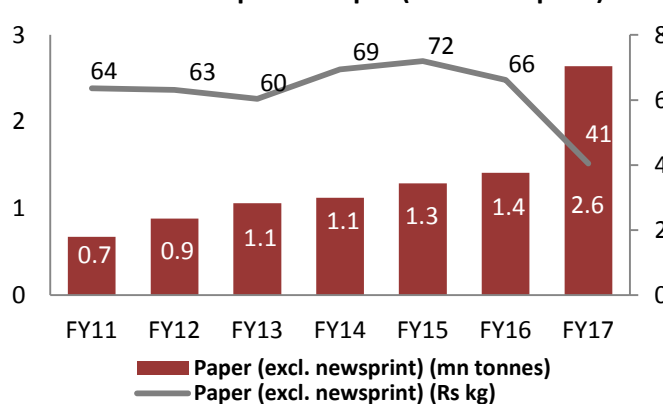
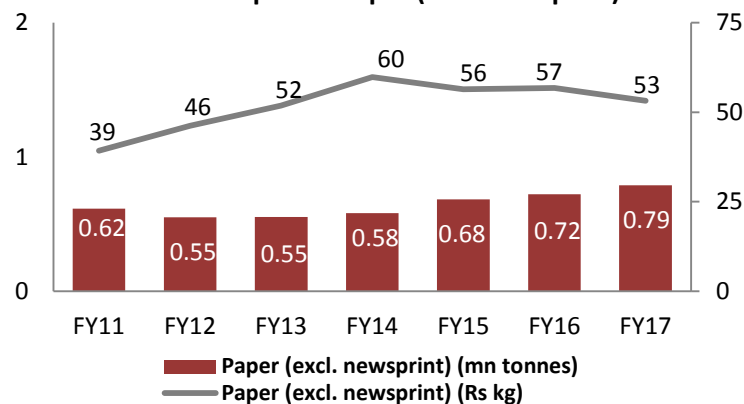


Chart 13: Exports - Paper (excl. newsprint)



Source: Directorate General of Commercial Intelligence and Statistic, CMIE

As per Directorate General of Commercial Intelligence and Statistics (DGCIS) data, total imports in FY17 were up 36% over FY16. As far as ASEAN imports were concerned, there was a surge of 67% in FY17 numbers over FY16. Imports from China have increased by 44%. Imports reached 1.1 million tonnes in the first half of 2017-18 as against 650 thousand tonnes imported in the first half of 2016-17, indicating an increase of approximately 69%. This increase in imports has been led by the duty-free import from ASEAN countries (which doubled from 80,000 tonnes to 210,000 tonnes during the said period) coupled with unavailability of raw materials domestically.

The domestic newsprint industry is less competitive against the imported one, given nil customs duty imposition on the imports of newsprint (The 2.5% customs duty on paper in India was brought down to zero; as per the terms of the free trade agreement with the Association of Southeast Asian Nations (ASEAN)). With imported price realisations remaining steady, the share of imported newsprint in the total domestic newsprint consumption increased sharply from 50% during FY13 to 60% during FY16.

Chart 14: Imports - Newsprint

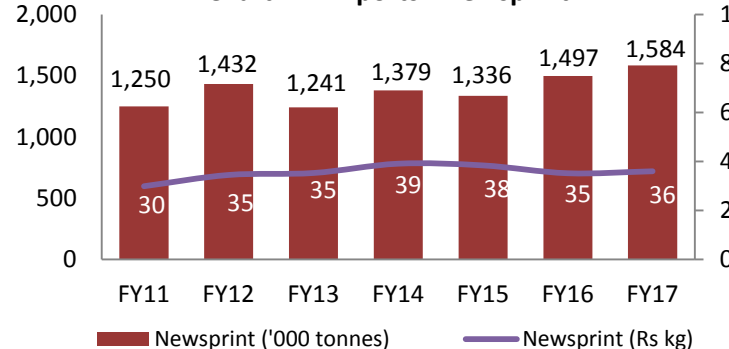
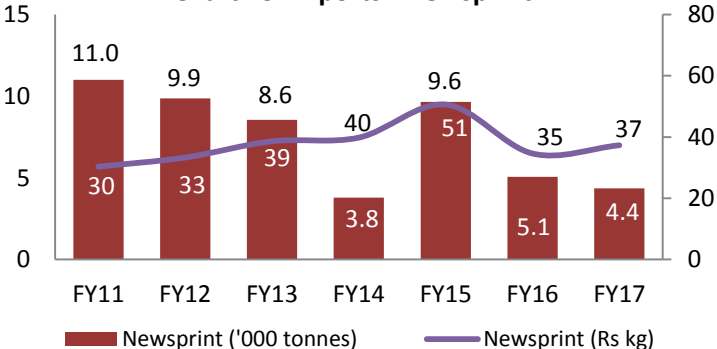


Chart 15: Exports - Newsprint



Source: Directorate General of Commercial Intelligence and Statistic, CMIE

Paper and Paper Products Price Movement

Table 3: Domestic Prices – Kolkata (Rs. / kg)					
Year	Newsprint	Chromo Paper	Maplitho (60 gsm)	Duplex HWC Board (296-350 gsm)	Duplex LWC Board (296-350 gsm)
2011-12	31	67	55	50.7	39.1
2012-13	31	64.4	59	48.5	37.5
2013-14	36	65.4	61.6	49.3	40.1
2014-15	39	65	67.5	52.5	44
2015-16	39	65	67.5	52.5	44
2016-17	39	65	67.5	52.5	44

Source: CMIE

Table 4: WPI (2011-12 series) – Index Movement			
	FY13	FY17	CAGR
Man. of paper and paper products	103.6	113.6	2.3%
a. Man. of pulp, paper and paperboard	103.3	117.7	3.3%
Newsprint	105.1	112.5	1.7%
Paper for printing & writing	102.7	119.3	3.8%
Kraft paper	102.0	117.7	3.6%
Tissue paper	103.4	125.1	4.9%
b. Man. of corrug. paper and paperboard	107.7	114.7	1.6%
Corrugated paper board	100.6	119.9	4.5%
Paper carton/box	100.7	127.5	6.1%
c. Manufacture of other articles	99.9	105.9	1.5%
Duplex paper	96.1	98.8	0.7%
Map litho paper	105.4	118.9	3.1%

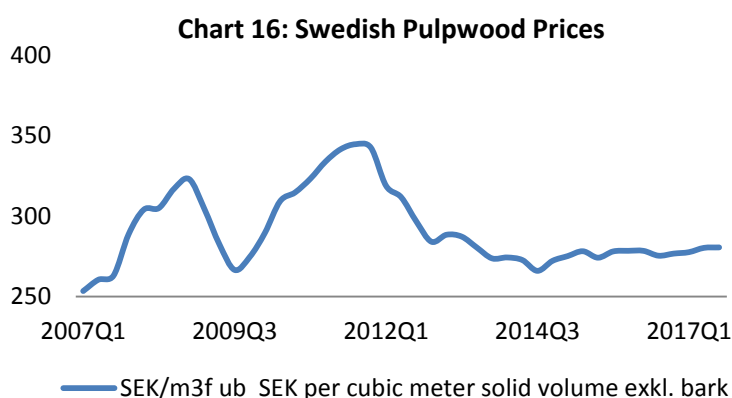
Source: Office of the Economic Adviser, Govt. of India, Ministry of Commerce & Industry

The prices of various varieties of paper in Kolkata market remained unchanged in 2015-16, which is likely to have continued in 2016-17. Paper companies did not undertake price hikes because of factors such as competition from imports, stabilisation in wood prices and lower power & fuel cost. Nonetheless, paper prices are projected to rise marginally in 2017-18. Even though stiff competition from imports is likely to persist, an anticipated rise in wood prices along with higher power & fuel cost would compel paper manufacturers to undertake price hikes.

Raw Material Scenario

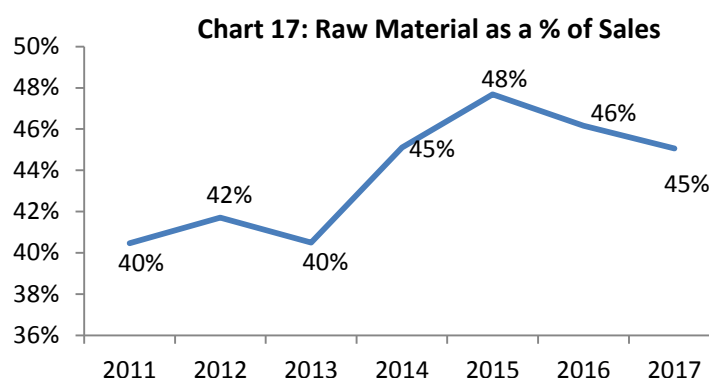
Pulp is the primary raw material used for manufacturing of paper, and is obtained through processing of fibers separated from wood, wastepaper, agriculture residues etc. Indian paper mills are categorized based on raw materials used by them in the manufacture of paper - wood/forest based mills, agro-based mills and wastepaper based mills. Wood accounts for 30-35% of production, while wastepaper and agri-residues account for 45-50% and 20-22%, respectively. India has a total land area of 3.3 million sq km with forests covering only 0.7 million sq km. About 78% of the total land area is non-forest area. With diminishing forest resources and limitations on enlarging man-made forests, there is scarcity of raw material for paper mills. To counter the issue of wood deficit, Indian paper companies gave thrust to initiatives like agro forestry which have now started yielding results.

Due to the limited availability of wood, agro-based raw materials and waste paper are generally used as substitutes for manufacturing paper. However, a majority of pulp and paper mills integrate their operations to various options of raw materials like wood, bamboo, agro-residues, wastepaper and market pulp. In the backdrop of issues pertaining to raw material availability and quality being faced in India; the players depend on the imports for meeting their raw material needs, and often have to pay premium for availing them.



Source: Swedish Forest Agency

The pulpwood prices fell from the high in 2012 till 2014, however, the prices have been on an uptrend. In 2017Q3, the prices increased by 2% on a y-o-y basis, as compared to less than 1% in the previous quarter. Several factors such as challenging harvesting conditions due to the mild winter, and strong demand in China have influenced the prices.



Note: Dataset comprises of 50 companies in the paper and paper products industry

Source: Ace Equity

The increase in raw material costs as a % of sales has been increasing since FY11 and peaked in FY15 and has subsequently reduced in FY16 and FY17 due to lower international prices and as initiatives such as agro forestry boosted local supply. The major raw material costs drivers have been summarised below

Category	Type	Issue
Wood	Hardwood	- Shortage of wood
	Bamboo	- Shortage of bamboo
	Imported wood	- Volatile prices
Recycled Paper	Domestic	- Low domestic recovery - Low quality of domestic recovered paper
	Imported	- Volatile prices - Import duty on imported recycled paper
	Agri-residues	- Limited availability due to use for electricity cogeneration - Seasonality - Environmental Investments
	Cereal Straw	- Seasonality - Environmental Investments

Non-wood fibre as a source for paper manufacturing: According to industry experts, agricultural residue is more sustainable for paper manufacturing as compared to wood fibre. Certain agricultural residue pulps take less time to process than wood pulps indicating that agricultural-based paper requires less energy & water and fewer chemicals. Bagasse and grain straws are the main agricultural residues used by paper industry. High availability of agricultural residues and various financial incentives provided by the government in the past lead to increased usage of agriculture residues fibre for paper production. For a variety of reasons including seasonal availability, problems with chemical recovery, brightness of the pulp etc, non-wood fibre sources account for a very small portion of global pulp production. Still it is believed that agro-based paper manufacturing is extremely cost-competitive and highly environmental-friendly than wood pulp, resulting in lower cost of production and could be a sustainable competitive advantage for companies.

Chemicals are also one of the major cost drivers of paper and the degree of chemical usage depends upon the raw-material used in the paper-making process. There are a number of chemicals required to be added, particularly in the pulping and bleaching stage of paper production. Major chemicals used are chlorine, sodium chlorate, caustic soda, sodium sulphate, sodium sulphide, pulping aids, chlorine dioxide, oxygen, calcium hypochlorite, ozone and hydrogen peroxide. The other auxiliary materials, such as dyes, starch, clay and resin are less significant because of the relatively small quantities of usage.

Recently paper companies have witnessed an increase in raw material costs as international pulp prices have reportedly increased from \$650 a tonne around three months ago to \$780 a tonne. Further, chemical prices and coal prices have also increased (imported as well as domestic). Consequently, companies are expected to increase prices to maintain margins.

Financial Analysis

The charts below give certain financial indicators of paper industry for a sample of 50 companies for the period....

Chart 18: Revenue Growth

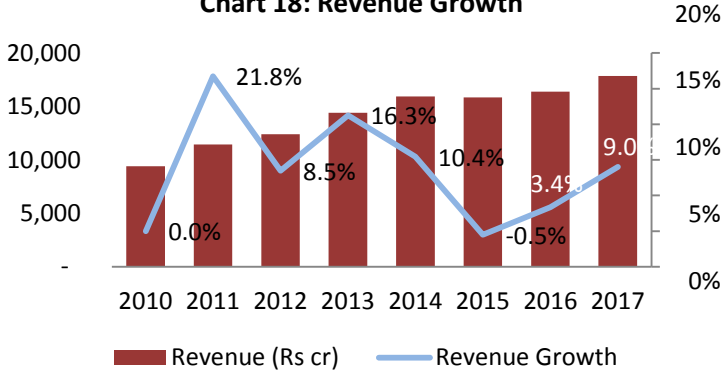
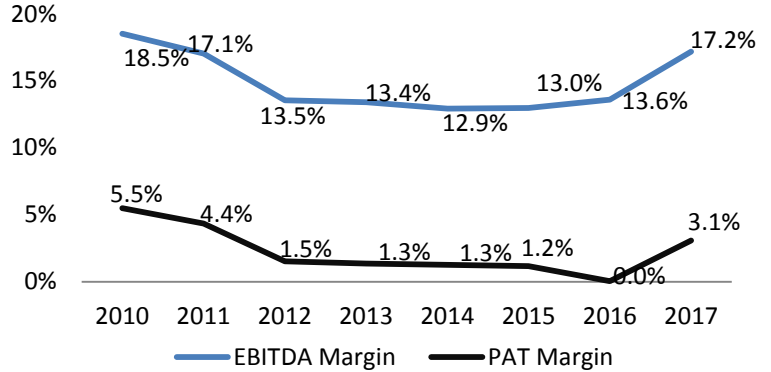


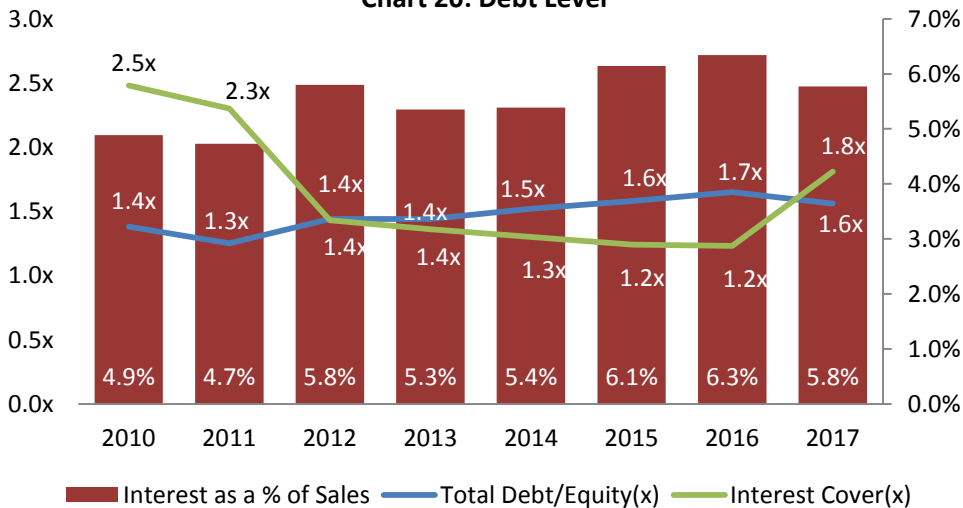
Chart 19: Margins



Note: Dataset comprises of 50 companies in the paper and paper products industry
Source: Ace Equity

Revenues grew by 3.4% in FY16 and 9% in FY17 after registering a marginal drop in FY15, while, the operating and net profit margin expanded by approximately 350 basis points in FY17 on a y-o-y basis and the margin expansion was the highest in when compared to the previous 6 years. The expansion in profit margins was mainly on account of input costs as raw materials as percentage of sales dropped to 45% in FY17 from 48% in FY15 and lowered power and fuels costs which were lower on account of subdued coal prices and energy efficiency measures undertaken by the companies.

Chart 20: Debt Level



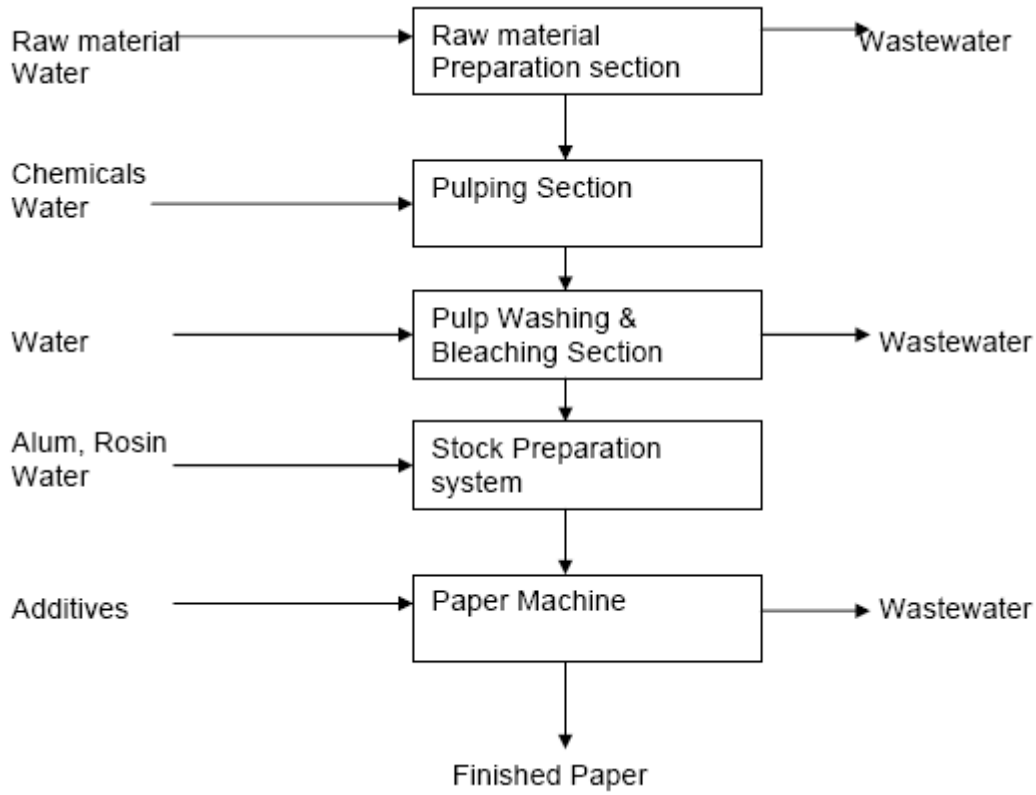
The paper companies had borrowed in prior years for capacity expansion and consequently the debt levels had increased for the industry. As depicted above the interest cost as a % of sales increased from FY13 and peaked in FY16, when it stood at 6.3%, further, due to subdued operating performance, the profitability decreased and interest coverage also declined. However, the industry’s profitability improved in FY17 due to cost control measures undertaken by the company, benign pricing environment and deleveraging, consequently, the metrics (debt/ equity as well as interest cover) improved

Concluding remarks

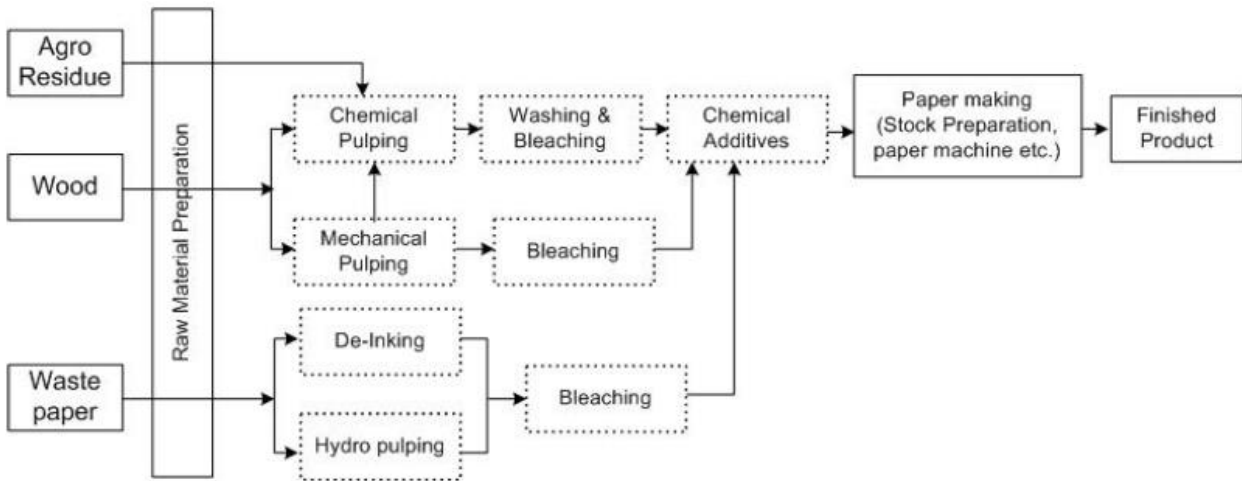
- The domestic paper demand in India grew from 9.3 million tonnes in FY08 to 15.3 million tonnes in FY16 at a CAGR of 6.4%.
- CARE Ratings expects the paper demand to grow at a CAGR of 6.6% and reach 18.5 million tonnes in 2018-19. The Packaging Paper and Board segment (CAGR: 8.9%) is expected to grow the fastest, while Newsprint segment (CAGR: 2.5%) is expected to grow the slowest.
- With FTAs and lower costs, imports are expected to continue challenging the domestic industry in the medium term

Appendix

Typical paper manufacturing process



Paper manufacturing process by type of raw-material



P&W Segments

Category	Main Varieties	Applications
UWF	High-quality uncoated papers ranging from 70-250 gsm are used in copiers, for fine writing and printing, for archival copying and offset printing	
	Creamwoven	A non-surfaced sized paper mainly used for low end printing products such as textbooks, examination paper, stationery, etc
	Maplitho	A non-surfaced/surfaced sized paper mainly used for high-end printing products such as diaries, calendars, annual reports, brochures, catalogues, premium notebooks, etc
	Copier Paper	Mainly used for copying, typing, plain paper faxes, general stationery
	Bond Paper	Mostly used for letterheads and for image building stationery
CWF	Medium to heavy weight papers produced from chemical pulp, whose weights range from 90-300 gsm. Mainly used for company brochures, annual reports, high end magazines and books	
	Art paper/board	China clay coatings done on both sides of the paper. It is used for brochures, calendars, magazine covers, magazine text, etc.
	Chromo paper/board	It is blade-coated paper with high gloss feature, where only one-side needs to be coated. Mainly used for self-adhesive stickers, calendars, posters, labels, etc
UM	Light weight grade paper based on mechanical or recycled fibre, whose weight ranges from 45-60 gsm. Mainly used to print a host of short print life applications	
	Telephone directory	Good quality standard newsprint used for directory purpose
	Yellow pages	Used for printing classified addresses and information in directory
	Supercalendered	Used for magazines, offset printing, inserts and flyers, etc
CM	Light to medium weight coated papers produced from mechanical or recycled fibre, whose paper weights range from 35-115 gsm. Mainly used for magazines, higher quality advertising and other low lifetime, high resolution print products	
	Pigmented Paper	At similar brightness and lower grammage, it can be sold in competition with certain uncoated woodfrees
	Lightweight coated	Used in roll form for printing by web offset and gravure. Mainly used for magazines, catalogs, direct mail, and general commercial printing
	Heavy weight coated	Brighter than LWC, but of similar smoothness and containing more chemical pulp

Packaging Paper & Board Segments

Category	Main Varieties	Applications
Kraft paper	It is primarily made from recycled fibre-based paper. Used for transportation packaging for containment and safety of goods during storage, handling and transportation. Organized retail market is one of the key users of containerboard papers.	
	Kraft-liner	Made from virgin unbleached softwood kraft pulp
	Test-liner	Predominantly made from recycled fibre based paper
	Fluting (Medium)	Made from semi chemical fibres pulp or recycled fibre
Packaging Board	It is mainly used for flexible packaging products to facilitate protection of goods and tool for marketing strategy, etc	
	Folding box-board	It is used for end-products requiring lower quality cartons (such as detergent packs).
	Solid-bleached sulphate	It includes foodboard, cupstock, liquid packaging board, ovenable tray
	Solid-unbleached kraft	Popularly used as carrier board for beverages (eg: beer), envelopes and foodboard
	Duplex board	It has different finish or colour on each side. Most common duplex board is white-lined chipboard
	Aseptic/Medical packaging	Aseptic processing and packaging extend the shelf life of food and drink
Packaging papers	It includes packaging paper and tissue papers	
	Packaging paper	They are essentially non-board packaging grades, which are used as a substitute for plastics for wrapping/bags purpose
	Tissue paper	Mainly used as toilet tissue papers. Also used for towel, wipes, facial, handkerchief, napkin, and cellulose wadding

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