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### **A Study Of Indian Paper Industry**

#### **INTRODUCTION ::**

The paper industry is one of the key industries in the whole industrial sectors of the country. This sector is country's sixth largest user of energy. The energy cost today accounts for 20-25% of the total cost of manufacturing and is rising steadily every year. The ever-rising trend of the cost of energy clearly indicates that energy is fast becoming the most expensive input in papermaking. This stuff has been around for almost 2000 years!!! Imagine life without it. The papermaking process has come a long way since 105 A.D. Paper as we know it today is what you are holding in your hand. The paper industry is one of the oldest industries in India. Today there are about 515 paper mills in India, using a variety of raw materials ranging from forest-based wood to agricultural residues such as wheat straw, rice straw, and bagasse.

Annual paper demand is predicted to rise from the present level of about 6 million tons from 515 mills to at least 10 million tons by the end of the year 2012-2013. About 40% of Indians still live below the poverty line, but increasing literacy from the present national average of about half of the population, an annual growth in packaging use of 20%, a rising population and the effects of the government's continuing economic liberalization are all contributing to the growth in demand. The government target is consumption from current 5 kg / capita to 6 kg / capita by 2013.

#### **ORIGIN OF PAPER ::**

Mankind's greatest revolution in communications began in 105 A.D. when Tsai Lun, a Chinese court official, invented paper, as we know it today. It is presumed that he mixed mulberry bark, hemp and rags with water, meshed it into pulp, pressed out the liquid, and hung the thin mat to dry in the sun. For several centuries the process was kept a closely guarded secret, but eventually it slipped out via Arabian traders and by the mid-1600s the process had been introduced into Europe, although it remained very labor-intensive and was largely based upon the use of straw, and linen rags. These materials, when broken down into thin slurry in water, could be settled out in thin layers. When the water was removed and the sheet of fibres remaining had been pressed flat and dried a rudimentary sheet of paper had been created.

William Rittenhouse and William Bradford founded the first North American paper mill in 1690 at Wissahickon Creek, near Philadelphia. Thanks to a great deal of imagination and hard work, they successfully collected, separated, cleaned, and recycled old cloth rags to make America's first writing papers.

In the early 1800s, Nicholas-Louis Robert of France invented the Fourdrinier, a machine that produces paper on an endless wire screen. Fifty years later, papermakers began successfully using wood fiber to make paper, a process that was introduced in the United States in the early 1900s. In 1866, an American named Benjamin Tilghman developed the sulfite pulping process. The first mill using this process was built in Sweden in 1874. This was the dominant pulping process until 1937. At that time, kraft pulping became the dominant chemical pulping process and still is today.

#### **THE GLOBAL SCENARIO ::**

40% of the world's population uses hardly any paper at all. Most of Africa and much of Asia's per capita consumption is less than 10 kg. The top ten paper consuming countries, with a combined population of 2 billion, use around 230 million tons per annum. The rest of the world, with a population of 3.7 billion, uses around 75 million tons, i.e. average per capita consumption is 115 kg

for the top-ten compared with 20 kg for the rest.

Among the top ten countries, the USA stands alone. Its usage of around 10 millions tons far exceeds the next largest consumer, Japan, whose consumption is around 35 millions tons. The remaining eight countries in the list combined consume about the same as the US on its own.

Per capita consumption still puts the USA well ahead of the rest at 340 kg, with Finland second at 310, Belgium third at 262, Japan Fourth at 243, Canada fifth at 235, and then Singapore, Taiwan, Switzerland, Denmark, New Zealand, Sweden and Holland all above 200, UK and Germany are level in 13th place, slightly below 200.

- The global paper industry churns out around 310 million tones, with North American and Scandinavian countries such as Finland and Norway accounting for 55 per cent of the output. Asia accounts for a fourth of the world production. While the European and American output is largely based on soft pulp and is of better quality, the Asian production is a mix of hard wood pulp, soft wood pulp and other agri-residues.
- Writing and printing paper accounts for 33 per cent, industrial paper for 61 per cent and newsprint for around 6 per cent of the market.
- World average of per capita consumption of paper is 48 kg.

## **PAPER : AS A PRODUCT ::**

The role of paper in every area of human activity is almost inevitable. Paper provides the means of recording, storage and dissemination of information. Over and above the writing and printing use, paper is almost widely used medium of wrapping and packaging, and finds its usage in structural application, too. The world over paper has become an essential commodity. Despite the electronics revolution leading to more and more automation of operation and computerization, the much talked about "Paperless Office" has remained a distant dream even in developed countries. If anything, computers the world over churn out even increasing reams of papers. Per capital consumption of paper in developed countries is nearly 100 times that of developing countries.

## **TYPES OF PAPER.**

Paper can be broadly divided into Paper and Paperboards and News print paper.

### **Paper and paperboards are classified into :-**

- cultural paper
- Industrial paper
- Paper board and
- Specialty paper

### **The news print paper has been classified into :-**

- Standard
- Glazed and
- Security

## **USE OF PAPER IN VARIOUS SECTORS.**

<b>Agriculture</b>	Sacks, seed packets
<b>Building</b>	Wallpaper, damp-proof courses, roofing, flooring, flame resistant papers, plasterboard, decorative laminates for furniture.

<b>Business</b>	Computer tapes, printout sheets, advertisements, circulars, catalogues, filing systems, sales and service manuals, brochures, shop till paper
<b>Money</b>	Finance, security, money, insurance forms, cheques books, traveler's cheques, postal orders, stamps, cash bags and papers that contain special markings which are only visible when subjected to ultra-violet light.
<b>Office papers</b>	Duplicating and photocopying paper, graph paper, paper twine and string, blotting paper, carbonless paper, box files and folders.
<b>Automobiles</b>	Fascia boards, door and roof liners, filters, the Highway code.
<b>Communication</b>	Writing, typing, printing envelopes publishing, accounts, receipts, stamps, newspapers, magazines, greeting cards, calendars, diaries, and telephone directories.
<b>Domestic product</b>	Wrapping and boxes for cleaning materials, domestic tissues, paper plates and cups, kitchen towels, table napkins, lampshades.
<b>Education</b>	Books, exercise book, instruction books, maps, wall-charts, report cards.
<b>Food packaging</b>	Wrapping bread, flour, tea, sugar, butter, margarine, sweets, etc. milk cartons, deep freeze food, egg boxes, foil wrappings, tea bags, and sausage skins.
<b>Identification</b>	Gummed labels, identity cards, tamper-proof labels for supermarkets.
<b>Industry</b>	Presentation, wrapping, packaging and protection for all manufactured goods, transfer sheet for decorating chinaware.
<b>Electrical</b>	Special insulating boards, electrolytic condenser paper, wrapping and identification for electrical cables, printed circuits, battery separators.
<b>Filtration</b>	Filters for waters, air, coffee, medicine, beer and oil and for mechanical uses.
<b>Impregnated papers</b>	Grease and corrosion resistant products, compact disc and record sleeves.
<b>Medical</b>	Wrapping to keep instruments and equipment sterilized, bandages, first aid bands, clothing for nurses, face masks, surgeons' caps, disposable bedpans, sheets, and pillowcases.
<b>Personal</b>	Facial and toilet tissue, towels, disposable napkins, sanitary products,

	tableware, sheets, disposable nappies, confetti, carrier bags, gift wrapping.
<b>Photographic</b>	Films, photographs, enlargements, mountings, lens cleaners.

## MANUFACTURING PROCESS ::

Paper Manufacturing Process is possess five various stages to complete a single Paper Product.

### Step 1 : Forestry

Typically, trees used for papermaking are specifically grown and harvested like a crop for that purpose. To meet tomorrow's demand, forest products companies and private landowners plant millions of new seedlings every year.

### Step 2 : Debarking, Chipping and / or Recycling

To begin the process, logs are passed through a debarked, where the bark is removed, and through chippers, where spinning blades cut the wood into 1" pieces. Those wood chips are then pressure-cooked with a mixture of water and chemicals in a digester. Used paper is another important sources of paper fiber

### Step 3 : Pulp Preparation

The pulp is washed, refined, cleaned and sometimes bleached, then turned to slush in the beater. Color dyes, coatings and other additives are mixed in, and the pulp slush is pumped onto a moving wire screen.

### Step 4 : Paper Formation

As the pulp travels down the screen, water is drained away and recycled. The resulting crude paper sheet, or web, is squeezed between large rollers to remove most of the remaining water and ensure smoothness and uniform thickness. The semidry web is then run through heated dryer rollers to remove the remaining water.

Waste water is carefully cleaned and purified before its release or reuse. Fiber particles and chemicals are filtered out and burned to provide additional power for the mill.

### Step 5 : Paper Finishing

The finished paper is then wound into large rolls, which can be 30 feet wide and weigh close to 25 tons. A slitter cuts the paper into smaller, more manageable rolls, and the paper is ready for use.

## INDIAN PAPER INDUSTRY

The paper industry is one of the oldest industries in India. At the time of independence, there were fewer than 20 mills in India, with a total annual capacity of 100,000 tonnes. At present, the industry is highly fragmented, with about 400 pulp and paper industries in the organized sector and another in the unorganized sector. India is self-sufficient in paper and has an annual installed capacity of nearly 6 mn tones. However, the industry has been facing competition from cheap imports, and capacity utilization which is less than 80%.

The 1970s and early 1980s were good times for the paper industry. Favorable government policies, like the encouragement to set up paper units based on agro-residue and waste, and the grant of fiscal incentives to such units, caused a large number of small units to be set up through import of second-hand machinery. By the late 1980s, the industry started facing a situation of oversupply, which led to lower prices and lower sales realization, rendering operations unviable. Most of the paper producers started reporting substantial reduction in profits, an, in some cases, even losses, leading to the closure of many small units. There are now nearly 150 sick units that have been referred to the Board for Industrial and Financial Reconstruction.

In the early 1990s, the opening up of the economy and an end to the regime of protection threatened the survival of the domestic paper industry. The industry got exposed to severe competition from imports, mainly due to the reduction in import duties. Import duty on paper and

paperboards, which was at 140% until 1991-92, was progressively reduced to 20% by 2005, revealing the industry to competition from the international market.

Loaded, with technological obsolescence, many of the smaller units have found it difficult to survive, and are closing down. Their presence is likely to decline further in the future. However there are signs of revival in the industry, as demand for industrial paper, especially paperboards, is firming up global paper prices.

In a changing competitive environment, a shakeout in the industry is inevitable. Large mills are expanding, driven by the need for greater economics of scale and lower costs. The high cost for creating capacity also implies that any new capacity will largely be set up by existing players.

The Indian paper industry can be categorized into the following six broad groups of units viz.

1. The large integrated paper and paperboard units based primarily on conventional raw materials like bamboo, wood, with in housing pulping facilities.
2. Small paper units based either exclusively on non-conventional raw material like bagasse, wheat and rice straws, or in combination with imported pulp.
3. Small paper units based on waste paper
4. Paper units set up as a part of the large integrated sugar complexes for exploiting waste by products like bagasse,
5. The large integrated newsprint-manufacturing units.
6. The group of 400 handmade paper units producing paper using cotton rags, jute water, cotton linters etc.

### **Pre Independence position of Paper industry in India**

It is already discussed that the art of modern paper making come to India quite late. The first successful factory the Titaghur Paper Mills was established in 1881. But by 1913 the number of paper mill rose to 5. The growth of paper industry during the inter was period was rather slow. In 1925 when the industry got protection there were 6 mills and the number went up to 9 by 1937 and production from 27,000 tonnes to 45,5000 tonnes. During the Second World War period, the number of mills rose to 15 and production to 104,000 tonnes and by 1948-49 remained at this level. The number of units and installed capacity during different periods are given in table.

**Table 1.1 : Installed Capacity of Paper and Paper board in Pre-Independence Period**

<b>Year</b>	<b>No. of units</b>	<b>Installed Capacity (in tones)</b>
1913	5	--
1925	6	35,850
1937	9	48,500
1938	15	112,675

### **PAPER INDUSTRY IN INDEPENDENT INDIA ::**

After 1948 the industry took great strides in that states of Bihar and Orissa where the situation with regard to supplies of raw material and coal was more favorable. In spite of greater dispersal the states of Bengal, Bihar and Orissa taken together continue to accounts for more than 60 per cent of

the installed capacity. It may be pointed out that the private sector played pioneering role in the development of paper industry. Except for the production of newsprint, the entire production of paper and paper board has been in the private sector and large industrial houses controlled more than 75 per cent of the production of the paper and paper board industry.

## **UNIQUE FEATURE OF THE PAPER INDUSTRY ::**

### **Wide choice of raw materials**

The end product that is paper can be manufactured using different raw materials like softwood, hardwood, waste paper, bagasse and straw. Of course, the quality differs depending on the raw material used.

### **Depending on imports for raw material**

This industry is highly dependent on imports and this was irrespective of high tariffs. The proportion of imports may now increase as it has been placed in the OGL now. Almost all the major manufactures import at least a small portion of their raw materials, the cheap imports of raw materials resulted in a majority of small players in the unorganized sector being pushed out. This could be attributed to the earlier government policy, which encouraged alternatives raw materials like straw, bamboo, certain types of grasses and bagasse to be used in the manufacture of pulp. As a lot of incentives were given to units which set-up manufacturing process using alternatives raw materials, the industry witnessed a huge rush with some of the units producing a low as 1 tonnes per day. These small players often employed obsolete technologies and could not compete with cheap imports on cost basis and eventually has to close the unit. On the other hand, players using imported raw materials are likely to benefit from cheap imports.

### **Imports Tariffs**

Reductions in the import tariffs duty make the higher imports in the Indian paper market and this also would bring down the cost of the production.

### **Power Tariffs**

As the tariffs differ from state so do the cost of the production. The manufacturers themselves have to provide captive power generation facilities in case the power supply situation in the state is erratic. Power tariffs are expected to increase by an average of 10% from the year.

### **Forest Policy**

The government has to formulate a policy which allows degraded land to be employed for commercial plantation. This will give a boost to the manufacturer by increasing the supply of wood.

### **Inventory Levels**

Inventory levels maintained by the producers play an important role in the determining the price trends. Even buyers are able to influence the price levels by buying the produce at lower levels in order to store it. In the later scenario, clearly the producers are unable to push through price changes.

## **PLAYERS WHO DRIVE INDUSTRY TOWARD GIANT SUCCESS ::**

We know that, Indian Paper Industry is comprised with approximately 515 Small, Medium and Giant units. As per above definition, some of the all players of an Industry are drives the entire Paper Industry, not toward the Giant Success but quite well running. We've taken 15 Major companies, whose role is quite well enough in entire industry. They are major in the sense on Production, sales and market shares. When we focus on the graph presented below, it shows trends in sales of those 15 major players like, 31%, 425, 43%, 44% and 39% in compare of Industry's other players' powerlessness of production and contribution in success. When we analyze last five year's data of sales, following situations about these 15 major players has been laud out: Ballarpur Industries, J K Papers Ltd., I T C Ltd., Hindustan Paper Corporation Ltd, and Tamilnadu Newsprint & Papers has registered major contribution to over all industry, approximately 37% (as an aggregate) in compare of 100% of whole Industry.

## **STRUCTURE OF INDUSTRY ::**

The structure of the paper industry is a result of government policies, which steam from the Paper

Control Order, 1974 and the National Forest Policy, 1988.

### Large paper mills

Large paper mills, as defined by the Indian Paper Manufacturers Association (IPMA), have installed capacity of 33,000 tons per annum (100 tons per day, tpd) or above. Presently, there are 34 such mills in India. The raw materials for these mills are primarily forest based,

### Medium paper mills

Medium paper mills are defined as having installed capacity between 10,000-33,000 TPA (30-100 tpd). There are about 120 medium paper mills in India. These mills typically use 80% agricultural residues (straw, bagasse), 15% waste paper and 5% purchased pulp.

### Small paper mills

Many smaller mills use agro-based inputs like bagasse, rice husk, straw, jute, etc., while some of them are only equipped to use >waste paper as input.

Small paper mills are defined as having installed capacity of less than 10,000 TPA (30 tpd). These mills are either agro-based (straw, bagasse) or utilize waste paper, purchased pulp etc. as raw material for paper production. There are about 252 paper mills having capacity below 10,000 TPA

### State wise list of Indian paper mill

States	No.
Andhra Pradesh	39
Assam	02
Bihar	07
Chattisgarh	09
Gujarat	70
Haryana	17
Himachal Pradesh	07
Jammu & Kashmir	01
Jharkand	02
Karnataka	10
Kerala	13
Madhya Pradesh	27
Maharashtra	70

Nagaland	01
Orissa	06
Pondicherry	07
Punjab	50
Rajasthan	10
Tamil Nadu	37
Uttar Pradesh	70
Uttarachal	16
West Bengal	26
<b>Total</b>	<b>512</b>

**[Source : Indian press Service News Bulletin, Mumbai, 31th March 2008]**

### **Driving Force**

Some driving forces are also analyzed for Indian Paper Industry towards survive and success. Meaning of Driving Forces are the forces which are affect present scenario of current structure and way of production and distribution of finished goods. It also show the impact of "Competition" variable on traditional approach towards market and culture. Various driving forces are analyzed to find out some key characteristics which are needed for better survive in the present scenario of the Paper Manufacturing World. Some forces which drive the Industry very forcefully towards some changes and innovation are; I) Increasing Globalization, II) Product Innovation, III) Technological Changes and Manufacturing Process Innovation, IV) Regulatory Influences and Governmental Policy Changes and V) Changes in Societal Concerns, Attitudes and Lifestyles.

Above key points are look very small but they possess the power to change and move the entire sectors' scenario. Now let's visit some little bit of information about how those driving forces are force the trend of market as well as the Industry.

### **(I) Increasing Globalization**

After the liberal policies introduced by the Indian Narsimha Rao Government, many foreign venture came at India to gain better opportunities. In case on Indian Paper Industry, Globalization affects the sector. Attack from the various MNC also affects the paper sector. But thing is that no more MNC form out side has came at India for investing their money in Indian Paper Sector. Why? The reasons are that, Government is so suspicious about pollution and restriction. No doubts, there is vast availability of Land and Labor, there is no Government support. India has enough manpower with cheaper rates, enough waste and uncultivated land possibilities to generate raw materials. And also other countries' gates are open for export of Paper Products. So at this context Globalization is helpful to expand the business. Many Indian Companies are Millionaries and Billionaries with enough funds. If once business get its straight forward cycle, and then any Indian company can survive very well in domestic market as well as in Foreign Market.

## **(II) Product Innovation**

As economical scenario has changed, population grow, western culture affect, competition be come very tight, in these sense if industry wants to better survive, then it's monetarily to adopt some new strategies about Innovation in existing Products. Product Innovation is a key feature of any leading sector. Some supportive industries are very sensitive in case of paper products. But paper products those usage are very regular and straight forward. Product Innovation is not much recommended in paper sector. That's true that some quality consciousness is necessary to change the quality of product.

## **(III) Technologies change and manufacturing process innovation**

In any Manufacturing sector at last survival is always by obtained through better manufacturing process and some technological change in traditional process. In the case of Indian Paper Industry, efficiency is poor of manufacturing units in major portion of total paper manufactures. Because only 20 to 25 major units are able to generate ROI in goods sense of amount. And rests of the others are running on three wheels. There is basic necessity for change in technology as well Manufacturing Processes. Some quality conscious tools like Total Quality Management, Material Requirement Planning are necessary for better output.

## **(IV) Regulatory influence and Government policy changes**

Paper manufacturing process is directly related with Pollution issues. Government has also introduced licensing-raj in case of various Manufacturing industries. At some extent it also necessary. By means of Regulatory influences, comprise with production, environmental issues and in other considerations. Indian Paper industry is demanding about Forest Policy from Indian Government since last 10 years, but till now Government is under thinking. Such type of government laziness affects the growth and production of paper products.

## **(V) Changing Societal Concerns, attitudes, and lifestyles**

As time is passed out many global and domestic influences affect the lifestyles, Societal concerns and attitudes of general people towards art of living. Let's take first example of lifestyle. We know that western culture has already made an impact on Eastern world. Indian is also one of the affected countries. Changes in Lifestyles are directly affecting some Industries like Processed Food Industry, Textile & Yarns Sector, and Newsprint Media etc. These sectors' consumptions of paper have registered high changes in paper sector. People's attitudes and Societal Concerns affect the interests in Printing Papers, Educational requirement of papers are also peaked high.

## **CONCLUSION ::**

Paper is an indispensable need of modern civilization. The role of paper in every sphere of life can never be denied. Paper industry did not exist in ancient Indian. The modern art of paper came to Indian as late as 1870 A.D. soft woods of temperate forests, Sabaigrass, Munjgrass, Rags, Waste paper, Bamboo, Bagassee, straw, reeds etc. are different raw material used in the paper industry. Jute can be promoted as a new source of raw - material paper. Besides all, different chemicals are also used as a major source of raw material for manufacturing paper.

The structure of the industry, which has evolved over time, is not conducive to making it competitive, mainly due to the faulty government policies pursued in the past. Issues remain with respect to supply and the availability of major raw material not keeping pace with demand. Technology obsolescence, reduced availability of raw material and high operating costs has all contributed to make the Indian paper industry uncompetitive. Imports have also been rising steadily.

There has been a revival in the global demand for paper and paperboards, which is growing at 3-5% annually. However, with the Imbalance anticipated continuing, the price of paper is expected to remain steady in 2000 and 2001. Indian paper manufacturers will have to focus on the two important issues of improving quality and facing the challenges of increased global competition. With greater raw material needs for every unit of output, compared to other developing countries, the Indian industry will have to initiate productivity improvement measures. In order to improve competitiveness, smaller companies, with capacities of less than 100 tpd, will have to wind up operations, as they are unviable

at these levels. Companies with larger capacities will have to look at consolidation through mergers and acquisitions, rather than immediate capacity expansions.

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