

About Paper – Importance and Environmental Implications



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Abstract: *Paper is an essential commodity in day to day life. Although paper has many names like Kagaz in Hindi, Papier in French & German, Papir in Danish, Papiel in Spanish & Portugese, Paperi in Finnish etc, yet its wide applications and importance in day to day life is universal. Even in the today's digital world the importance of paper continue to exist and it is rightly said "No work is complete without paper work being done !"*

Introduction

In present perspective, our existence depends on paper i.e. from Birth Certificate to Death Certificate, as well as Aadhar Card, Passport, Pan Card, Testimonials etc all are made with paper. Besides no other commodity or product like paper has such a wide spectrum of applications and usefulness in various sectors like banking, education, postal, packaging including food packaging, printing, medical, legal, hygiene, pharmaceutical, recreation etc. In fact the importance of paper can be gauged from the fact that the per capita paper consumption of paper is considered as an index of a country's development .

Paper is one of the most environmentally sustainable products as it is Biodegradable, Recyclable, Renewable and produced from sources which are renewable and sustainable. Moreover in Indian context, Paper industry has an important role to play to achieve the three national objectives namely Education, Literacy, and Employment Generation (particularly in the rural areas). With Government ban on single use plastics the onus has again shifted to paper specially for packaging paper.

Though handmade paper was introduced in India in 1417 AD , the first mechanized paper mill was set up in 1812 in West Bengal . With just around 15 pulp & paper

mills (approx. 1 million tons of total paper production) at time of independence, today India has around 900 paper mills with around 29.11 million tons of installed paper production capacity or 21.36 million tons operational production capacity. The per capita consumption of paper in India is around 16 kg at present.

The Indian Paper Industry growth has been steady and gradual with several up and down / hiccups. Still the industry has been generally proactive towards adopting the modern developments and technology and indigenizing the same as per the needs of the domestic industry as well as fibrous raw material available

The different milestones achieved by Indian Paper Industry during its journey from 1812 to at present is summarized in Fig 1.

The Indian Paper industry is different from global paper Industry as it uses a wide range of diverse raw materials like 15+ species of Wood, Non-Woods viz



Paper Day write-up

Bagasse, Rice Straw, Wheat Straw, Grasses etc and Waste Paper (Indigenous and Imported) as well as Purchased Pulp. The share of fibrous raw material in paper has dramatically changed over last 3 to 4 decades. Initially around 84% raw material used was wood based. 80-90's saw a shift towards agro residues as well as waste paper (recycled fiber) leading to mushroom growth of agro residues /waste paper based pulp and paper mills in various regions of the country. With environmental issues related to black liquor management due to absence of chemical recovery, the last 2 decades have witnessed a phenomenal increase in growth of number of waste paper based pulp and paper mills. Today around 493 pulp and paper mills are waste paper based and constitutes over 76% of the total paper production in the country. Though the use of waste paper is eco friendly but ironically most of the waste paper used is imported leading to loss of valuable foreign exchange. There is a need for formulation and implementation of a policy on waste paper collection and utilization so as to improve the recovery of waste paper. Quality issues of imported v/s indigenous waste paper in which the former are superior in terms of fiber quality is also a reason for increased used of imported waste paper. In this context there is a need to have a relook on utilization of agro residues for pulp and paper making after addressing the environmental issues through the concept of setting up of agro residues based centralized Mother Pulp Mills in various agricultural belts of the country with all environmental management systems including chemical recovery to produce only unbleached pulp which could be used for making various grades of paper by paper mills.

This will not only help in reducing dependence on imported waste paper but will also give a boost to rural economy as well as address the problem of air pollution caused due to burning of agro residues by farmers after harvest. This will also be in line with Government of India's initiative to build Atamnirbhar Bharat

Though the digital innovation and developments are a cause of concern to future of paper but still no digital newspaper, book or magazine can substitute the joy of physically holding and reading a newspaper, book or magazine. Similarly digital photographs can't match the happiness of going



Figure 1: Milestones in Indian Paper Industry Journey

(Source CPPRI Paper Museum)

through a old album and revisiting the memories or a joy of flying kites (which are also made from paper) can match the online mobile games. In spite of its importance in our day to day life paper specially in Indian scenario has been the dubious distinction as product with a significant water, energy and overall environmental footprint. Over the years this has led to increased emphasis on reducing/ minimizing the use of paper which in fact is not true.

A reality check as indicated in Table-1 gives a completely different picture.

Moreover all the electronic gadgets viz mobile / laptop /computer/ tablets itself contribute to the menace of e-waste, a fact, which is often overlooked by so called environmentalists / advocates of digitalization or digital revolution while discouraging use of paper. As per statistics India generated 10,14,961 tonnes of e-waste last year which is a massive 31.6% increase.

Thus paper industry as well as paper as a product itself is environmental friendly and a sustainable

Table - 1 General Perspective and Reality check about Indian Paper Industry (Source : IPMA,IARPMA, INMA & CPPRI)

General Perception about Indian Paper Industry	Reality check
1. Paper Industry is responsible for Deforestation	<ul style="list-style-type: none"> • Industry led agro/farm forestry in collaboration with farmers has brought over 900,000 hectares under pulp wood plantations (mainly degraded marginal lands of farmers). • At the current estimate, industry is using over 90 % of the total wood requirement from agro/ farm forestry • Not a single forest wood is cut to make paper
2 A Wood Negative Industry	<ul style="list-style-type: none"> • Paper industry is wood positive, i.e., the industry grows more trees through its agro/ farm forestry initiative than it harvests. • Pulp and paper industry consumes only 3% of the national requirement of wood while major consumption is as fuel wood (89.5%) and timber (7.5%).
3 An Unsustainable Industry	<ul style="list-style-type: none"> • Major Raw material are wood, waste paper and agro based, which can be easily regenerated. • The industry recycles the waste paper that is generated. • The industry also uses agricultural waste which otherwise would have been burnt in the fields. • Paper is biodegradable, renewable, recyclable and sustainable.
4 Technical Obsolescence	<ul style="list-style-type: none"> • Most of the large integrated mills wood / agro are using modern fiber line technology including oxygen delignification, New Generation Pulp washers , ECF bleaching etc • It is now mandatory for Agro based mills to install chemical recovery system
5 Water Intensive	<ul style="list-style-type: none"> • The industry only consumes 10 % of the total water used for paper making • The fresh water consumption norms are one of the stringent norms around the globe • Increasing number of mills are recycling / reusing the treated effluent / back water back into the process
6 Highly Polluting Industry	<ul style="list-style-type: none"> • Most of the mills have upgraded ETPs specially the mills in Ganga River basin • OCEMS for treated effluent quality monitoring and air emission monitoring mandatory requirement • APCDs like Multi Cyclone / ESP mandatory at boilers for control of pollutants • ETP sludge / fly ash used to produce value added products
7 Associated with Solid Waste Generation	<ul style="list-style-type: none"> • Fly ash mostly being sold to brick making or cement industry. • ETP sludge used for board making • Lime sludge reburnt in lime kiln to regenerate lime which is used for producing white liquor
8 Energy Intensive	<ul style="list-style-type: none"> • Integrated paper mills in India generate 60% of the power they use by utilising the black liquor from the pulping process. • In the first two cycles of PAT (Perform Achieve Trade) Scheme of the Government (all large Paper Mills are Designated Consumers under the PAT Scheme), the Paper Industry significantly over-achieved the mandated stiff targets for energy saving.

product with low environmental foot print. The efforts of paper industry in reducing the water footprint over last two decades is indicated in Table -2

Table - 2 Fresh Water Consumption Trends in Indian Paper Industry

Mill Category	Before 2000	2000-2010	2021
Wood Based	250	100-150	<50
Agro Based	150	80-100	<50
RCF Based	< 75	40-50	<15 (W& P) <10 (Kraft)

In recent times, Indian Paper Industry has been proactive towards achieving sustainability by giving priority to improving technological and environmental status through Technological Upgradation, Process Optimization, Energy Conservation, Water Conservation, ETP Upgradation etc. As such it is the duty of each one of us as a member of paper fraternity to create awareness among the general public about the paper being a sustainable product and promote the increased use of paper.

In the same context a Paper Museum was set up by CPPRI in 2009 Fig. 2 to create an awareness among the general public specially school and college students about the importance of paper, dispel the misconceptions and myths about paper and Indian Paper Industry and promote the use

of paper. The museum showcase the history of paper making , its growth and development, status of Indian paper industry, raw material used and application of paper in day to day life.

In all, our life revolves around paper. It is unique commodity which touches our daily life in one form or other. However, Paper or Paper Industry itself urgently needs an image change over in context of changing public perception of being an industry with significant environmental impact to an environmental friendly and environmentally sustainable industry. We would like to sum up with a poem by Cathleen Keagen aptly titled “ Paper” - perhaps the only poem dedicated to paper as per our knowledge -

Paper

I bear the mighty record of the years
 Man's glory, his wisdom, and his shame
 I hold his joys, his anguish, and his fears,
 Exploit his folly, hallowed keep his fame
 I guard, until the worms of time shall win
 The thoughts that make men puny mortal things
 And thoughts that make man more than ever kin
 Unto their gods, in giving other wings
 The word might live, but ears forget ere long
 And eyes lose visions, once etched clear & keen
 I hold the memory of a lovely song!
 I hold the sunshine of a vanished scene!
 Revealing men as saints, as seers or knaves
 I bear their thought beyond their lonely graves

- Cathleen Keagan

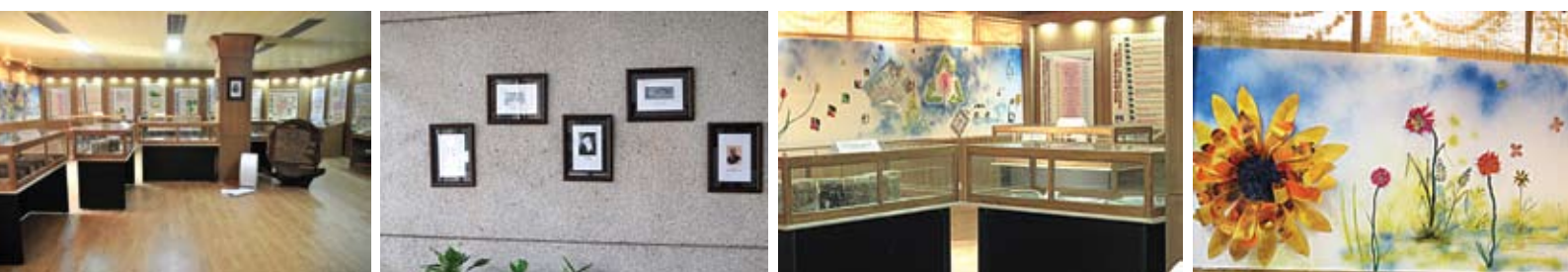


Figure 2: Glimpses of CPPRI Paper Museum