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HOW TO RECOVER MORE USED PAPER FOR RECYCLING

Abstract

This paper highlights the scenario of raw materials for pulp and paper industries and paper production in the last five years. The long term for growth of paper in the world is also indicated. Based on these figures and other factors, it is indispensable for our country to use more and more of recycled fibre. However, the level of recovery of recycled fibre in India is poor compared to many other countries; barely 20%. Solid wastes deposited in many cities are given here and some of the measures taken in ITC and other organizations are indicated. This paper presents many innovative techniques and strategies for increasing the level of collection of recycled fibre.

Introduction

Global paper consumption is growing at an average of 2.2% per annum. The paper consumption during 2000 was 324 million tonnes and the same has reached 415 million tonnes by 2014. Global per capita consumption has moved from 54 kgs in 2000 to 63 kgs in 2015 (Fig. 1).

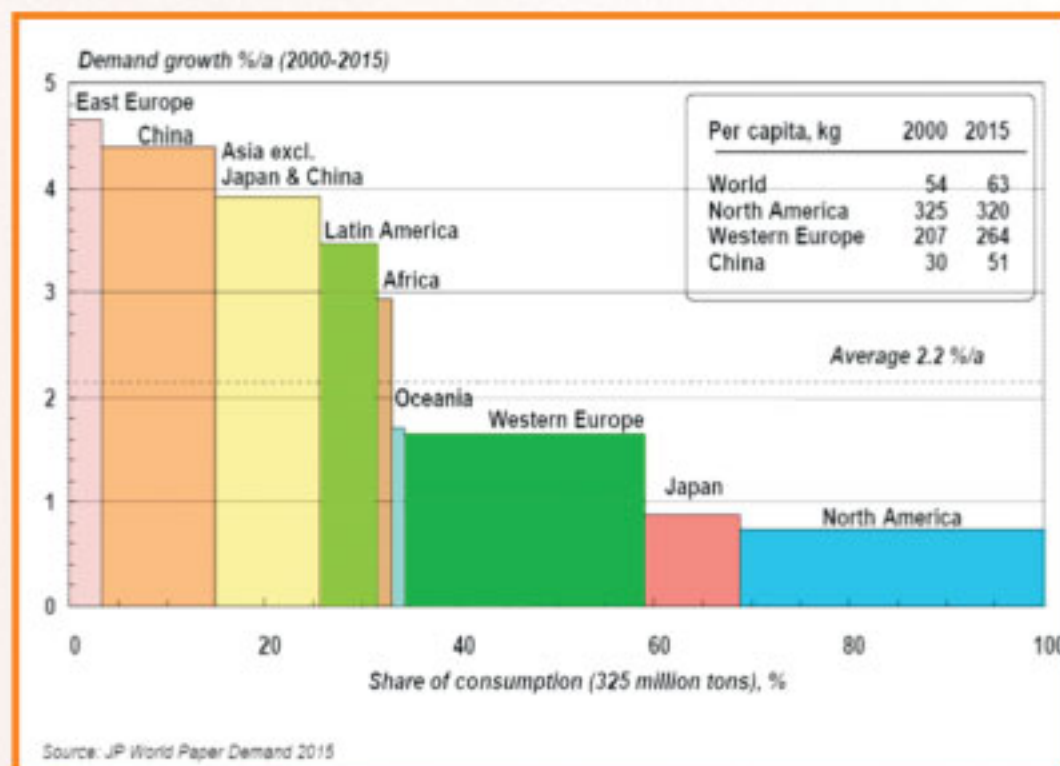


Figure 1: Long-term demand growth of Paper

Indian Paper Industry

In India paper consumption is also growing at an average of 7.6% CAGR across the segments. The per capita consumption is currently in excess of 10 kilos. The paper consumption is expected to touch 28 million tonnes by 2025 in India, from the current level of 12.7 million tonnes, a growth of more than 120%. The different segments of paper industries in India are shown in Fig. 2.

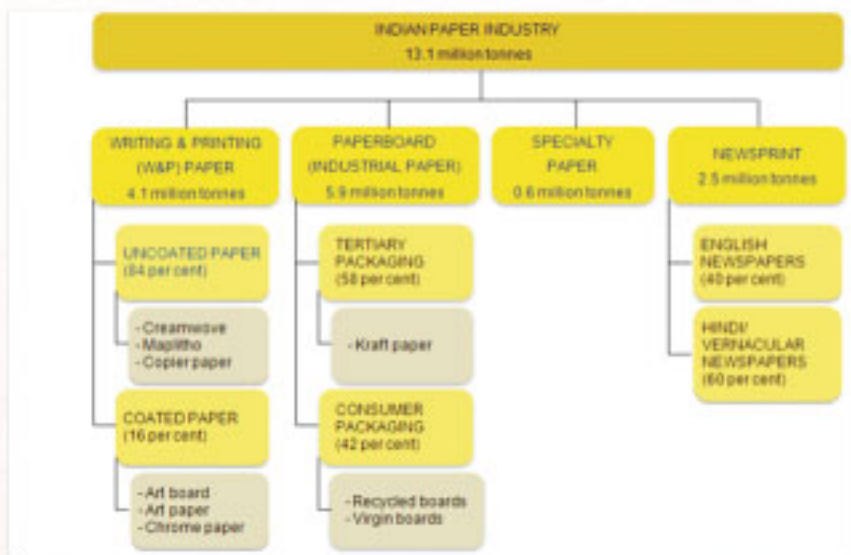


Figure 2: Segments of different paper industries in India.

The projected consumptions of paper (in million tonnes) are indicated in Table 1.

Table 1: Projected consumptions of paper
(in million tonnes)

	Writing paper	Packaging Paper	News Print	Total consumption	Baseline Scenario
2010-11	4.0	5.4	1.7	11.2	11.2
2011-12	4.3	5.9	1.8	12.0	12.1
2012-13	4.6	6.4	1.9	13.0	13.0
2013-14	5.0	7.1	2.1	14.2	13.8
2014-15	5.4	7.8	2.2	15.4	14.7
2015-16	5.8	8.6	2.4	16.8	15.6
2016-17	6.3	9.4	2.6	18.4	16.5
2021-22	9.3	15.2	3.9	28.4	21.8
2024-25	11.8	20.2	4.9	36.9	23.5
2026-27	13.8	24.5	5.7	43.9	25.3

Overall paper consumption in the baseline scenario is projected to increase to 16.5 million tons in 2016-17 and reach 25.3 million tons in 2026-27. In the alternative scenario, which appears to be more realistic, the consumption increases to 18.4 million tons in 2016-17 (the terminal year of the 12th Plan) and to 43.9 million tons in 2026-27.

The major segments expected to grow are packaging, paper/board, newsprint and tissue paper. The wood based paper mills have a huge raw material constraint due to non availability of wood and imports being extremely expensive. Current consumption of pulp produced by wood based mills is 2.25 million MT which is expected to touch 6.1 million MT by 2025.

Current wood consumption is at 9 million MT and is expected to touch 25 million MT by 2025. Unless

government facilitate plantations on degraded lands and amend the existing regulations to meet this demand, it would be extremely difficult (there is over 28.84 million ha of degraded forest land). Of the 800 paper mills in India, nearly 600 paper mills are dependent on recycled fiber as key raw material, producing 6.5 million MT of paper and paperboards per annum.

Results and Discussion

Current waste paper consumption is at 7.9 million MT of which domestic collection is 3.7 million MT and the balance is catered through imports, which is 4.2 million MT at an overall value of USD 2 billion per annum. Major grades produced using recycled fiber are newsprint, duplex board and kraft paper.

Newsprint producers use OINP, ONP, magazines, news blanks and mechanical fiber trimmings. It is expected that the newsprint production would be around 6 million MT by 2025, requiring about 8 million tonnes of recycled fiber.

Duplex board production is expected to touch 5 million MT by 2025 requiring waste paper of 6.6 million MT consisting of mainly mixed waste, ONP, magazines, printers offcuts, BBC, SWL, CBS, SOP, HWS and HVEC.

Kraft paper production is expected to be at 7 million tonnes requiring 9.5 million MT of recycled fiber consisting of mainly OCC and NDLKC.

Between Europe and the Northern America over 45 million MT of recycled fiber gets exported of which nearly 30 million MT goes to China alone while India is importing about 4 million tonnes.

Europe and US, the key sources of RCF have reached plateau in terms of generation, at peak recovery levels of 70% and 60% respectively. With demand of RCF growing substantially in Asian region and the key sources being Europe and US with restricted generation, quality is going down and the prices are moving up perpetually.

Of the 12.7 million tonnes of paper/boards consumed in India only 4 million tonnes are being recovered and the rest ends up in garbage / landfills. With ever growing demand for waste paper it is extremely important and critical for Indian paper industry to step up recovery levels from the current 25% to at least 50% in the near future, so that the pressure on imports can come down and quality can improve.

How do we achieve this, is the biggest question mark ??.

By 2025 India would be needing 17 million MT of recycled fiber and if the recovery levels do not improve, we will be looking at over 12 million MT of imports. Therefore, it is necessary to improve the recovery levels and reach at least 50% level, so that at least 15 million MT of RCF is recovered and only 2/3 million MT are imported. This will help the paper industry in reducing the costs and also avoid forex usage.

In daily garbage what we all dump at homes, offices, shops, public places over 25% recyclable waste like paper, plastics, metal and glass gets landfilled. If we separate these recyclable waste and send it to respective industries for using as raw-material, the economic savings run into several crores , for example between six metros Delhi, Kolkata, Mumbai, Chennai, Bangalore and Hyderabad the daily garbage qty is 50000 MT and if by separating the recyclable waste at source a qty of 12500 MT raw- material can be provided to Paper, plastic, metal and glass industries daily and save Rs 12.5 crores daily, which is a direct saving and indirect savings on handling, logistics and landfilling costs by Municipal corporations come down by 25%.

Global Recovery Levels:

The global recovery levels in world are shown in Fig. 3.



Trigger for WOW:

The different triggers for WOW are the followings:

Waste Generation:

It is a stated fact that in daily garbage dumped by all of us over 25% recyclable material gets landfilled. In any developed country the dry waste generated is recovered to an extent of 70%, while in India it is just about 14%.

Garbage dumping in our major cities are as follows :

- Hyderabad 4000MT /day – Recyclables 1200MT
- Kolkata – 5500 MT/Day – Recyclables 1600MT
- Mumbai – 6800 MT/Day – Recyclables 2000MT
- Chennai – 4500 MT/Day - Recyclables 1300MT
- Delhi – 6000MT/Day – Recyclables 1800MT
- Bangalore – 4000 MT/Day – Recyclables 1200MT.

The types of wastes are presented in Fig. 4 along with composition.

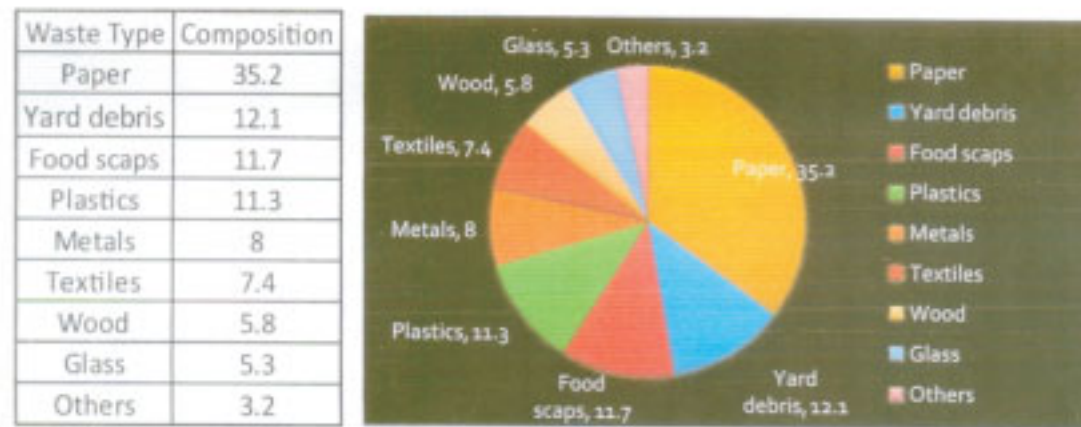


Figure 4: Type of wastes and their compositions.

Recyclable Components in Daily garbage in USA

60% Paper and board, 20% Plastics, 10% Glass, 5% Metals, 5% Others

Breakup of Dry recyclable waste in Bangalore:

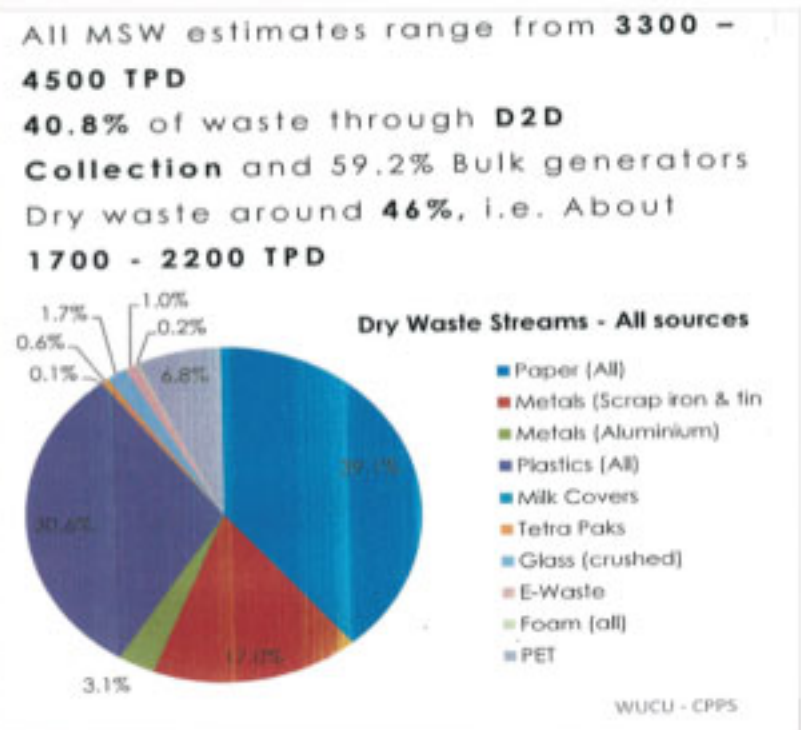


Figure 4: Dry waste streams.

The mounting garbage levels are presented in Fig. 5.

Mounting Garbage Levels

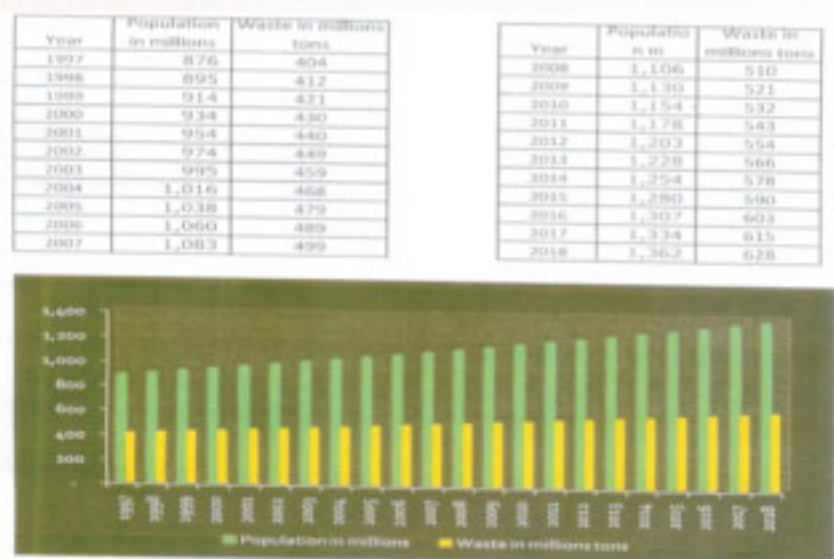


Figure 5: Mounting garbage levels.

WOW – Initiation:

I have pioneered an innovative program WOW – Wealth Out of Waste in 2007, to increase the recovery levels and collect more waste paper which is ending up in garbage. The current collection levels are at 4500 tonnes per month and have plans to step up this further with the support of government and other paper mills across the country. There is over 8 million MT paper that can be recovered if we implement the WOW program sincerely and that can result in taking care of substantial waste paper demand and the imports will be restricted only to specialty grades.

Why Recycle?

- Recycling Reduces Air and water pollution.
- Recycling saves energy.
- Recycling saves Natural resources.
- Recycling saves landfill space.
- Recycling creates jobs.

“WOW” – What Do we Do ?

- Source Segregation
- Efficient Collection System
- Sorting and Recycling

Some case studies made are explained below giving some live pictures (Figs. 8 and 9).



Figure : 8



Figure : 9

Advantage WOW:

Over 50000 MT of recyclables end up in landfill through garbage route daily in all major cities in India. In value terms it could be Rs Rs 50 crores per day- annualized Rs 18250 crores. This number is only from Households, there are other sectors like corporate offices, banks, railway stations, airports, industries, hospitals, educational institutions, printers and converters etc, which can add to the overall recyclables number substantially. Eg. an office with 200 people working generates 1000 kgs of paper waste in a month.

Garbage generated across India need 42 acres of land for dumping. By implementing WOW across India, precious land mass to an extent of 12 acres per day.

Indian paper Industry imports 4 million Mt of waste paper at a cost of USD 2 billion PA and this number will only go up, with increasing growth and demand from domestic paper mills. If domestic recovery levels improve over USD1.5 billion can be saved by way of reduced imports and savings will improve immensely in future. Plastics, metal, glass ,wood and textiles add further to this number.

Recycled fiber usage in paper making is an ecofriendly activity and reduces water and power consumption – **50% reduction in power and 80% reduction in water consumption.**

WOW aims at Source Segregation and recovery of maximum recyclables to provide low cost raw material to industry and in turn conserve scarce natural resources. Reduced garbage levels – improve Health and Hygiene, provide clean and green surroundings. Conserves scarce land mass by reducing landfill volume. It improves green cover and Reduces Global warming impact.

Huge employment potential – for the limited activity of SSS – currently over 4000 people are employed, most of them have studied only upto high school.

It also enhances Tourism.

Conclusion

Increasing the collection of recycled fibre in the country is a socio-political issue, depending upon the garbage dumped in different cities, municipalities and Govt policies. The experience of collecting systems for recycled paper practiced in ITC shows that it is possible to increase the recovery level to 50% though the ultimate goal could be 70%.