

Recycling and Resource Recovery of Recovered Paper

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PAPER INDUSTRY - AT A GLANCE

Snapshot of Indian Paper Industry (2021-22)

No. of Mills	912
Total Installed Capacity, million tons	29.11
Operating Installed Capacity, million tons	25.28
Production of Paper, Paperboard, and Newsprint, million tons	22.43
Capacity Utilization, %	~89
No. of Running units	538
No. of Mills Closed	368
Idle installed capacity, million tons	5.51
Import (in Million tons)	2.17
Export (in million tons)	3.53
Consumption (in million tons)	21.07
Per capita Consumption (kgs)	15.75
Global Share	5.6%

Paper Sector -The Impex Scenario

Million Tons

	IMPORT	EXPORT	IMPORT	EXPORT
YEAR	Chapter 47		Chapter 48	
	Pulp & Waste Paper		Paper, Paperboard & Items of Paper and Paperboard	
2017-18	5.51	0.002062	3.57	1.32
2018-19	7.95	0.007174	3.25	1.91
2019-20	8.50	0.026545	3.54	2.09
2020-21	7.70	0.032459	2.09	2.58
2021-22	8.54	0.004904	2.17	3.53

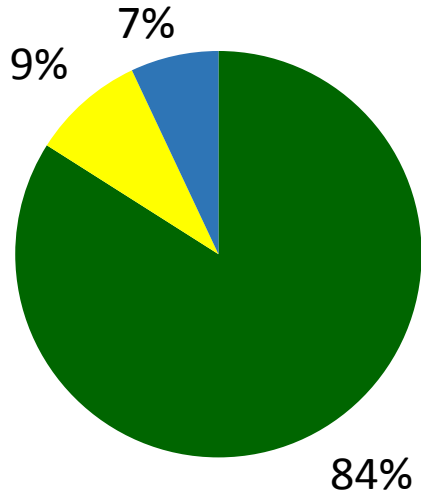
Source: Ministry of Commerce & Industry

Segmental Review of Indian Paper Industry (2021-22)

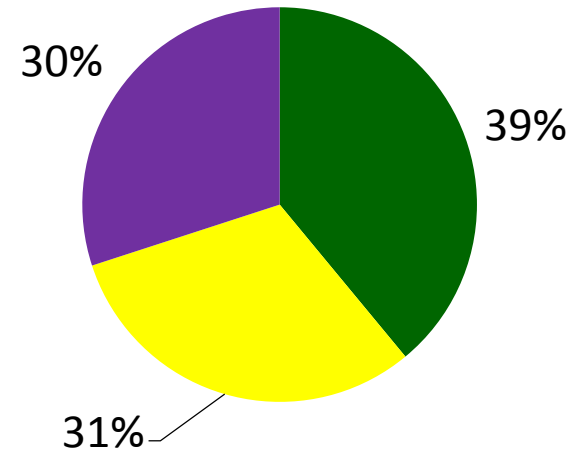
Million Tons

Category	No. of Mills	Production	% Share in Production
Wood Based	21	4.32	19.26
Agro Based	18	1.31	5.84
Recycled Fibre Based	499	16.80	74.90
Total	538	22.43	100

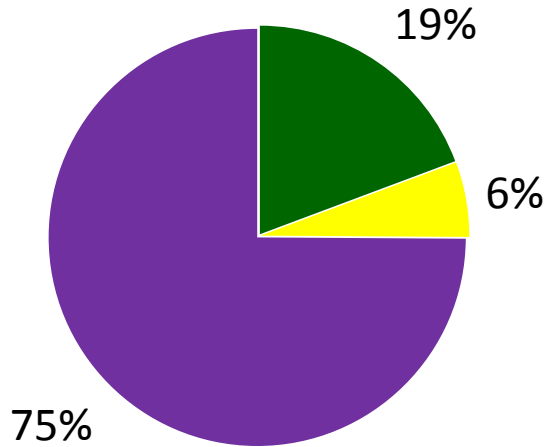
Raw Material Shift



1970



2000



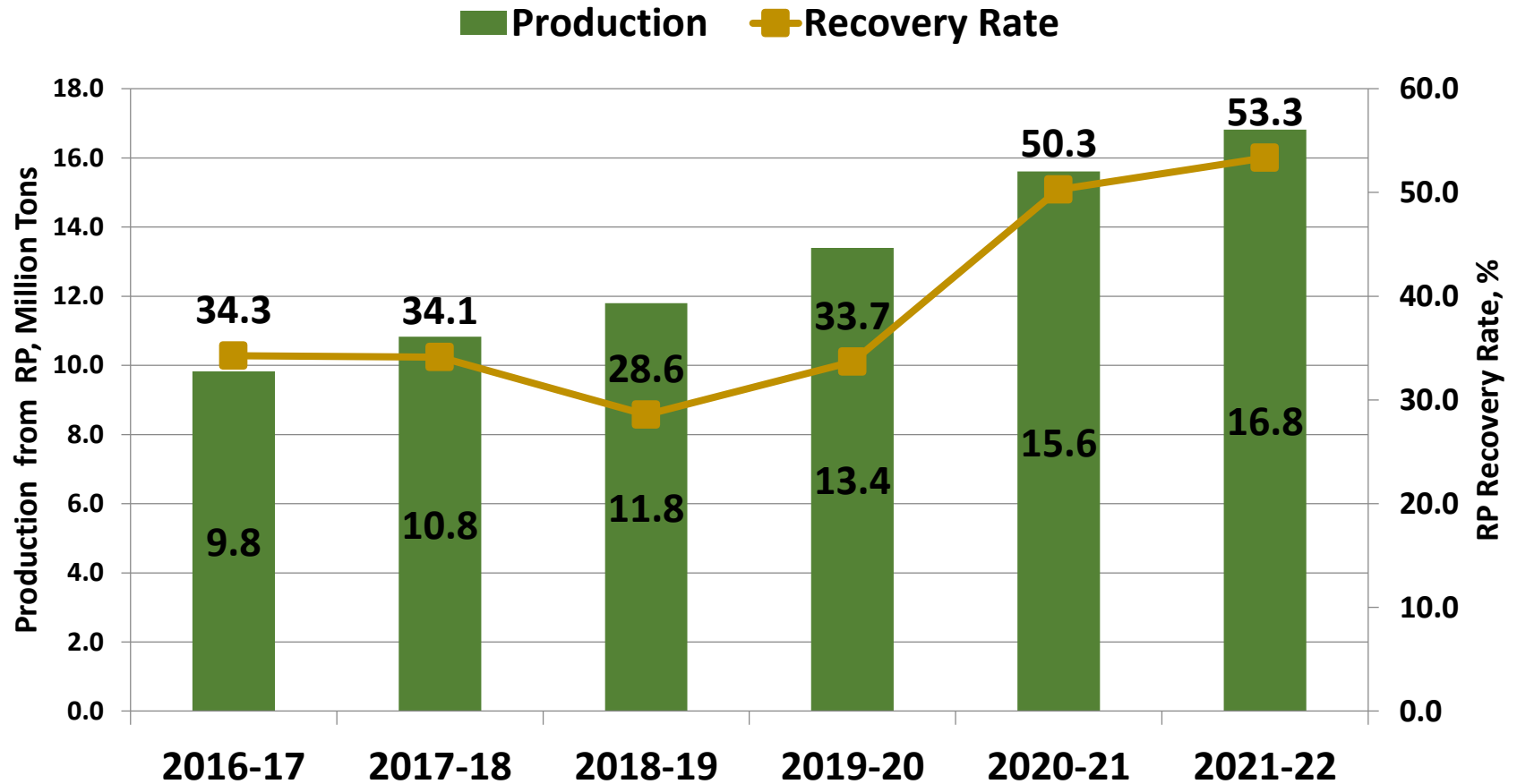
2022

■ Forest based

■ Agro based

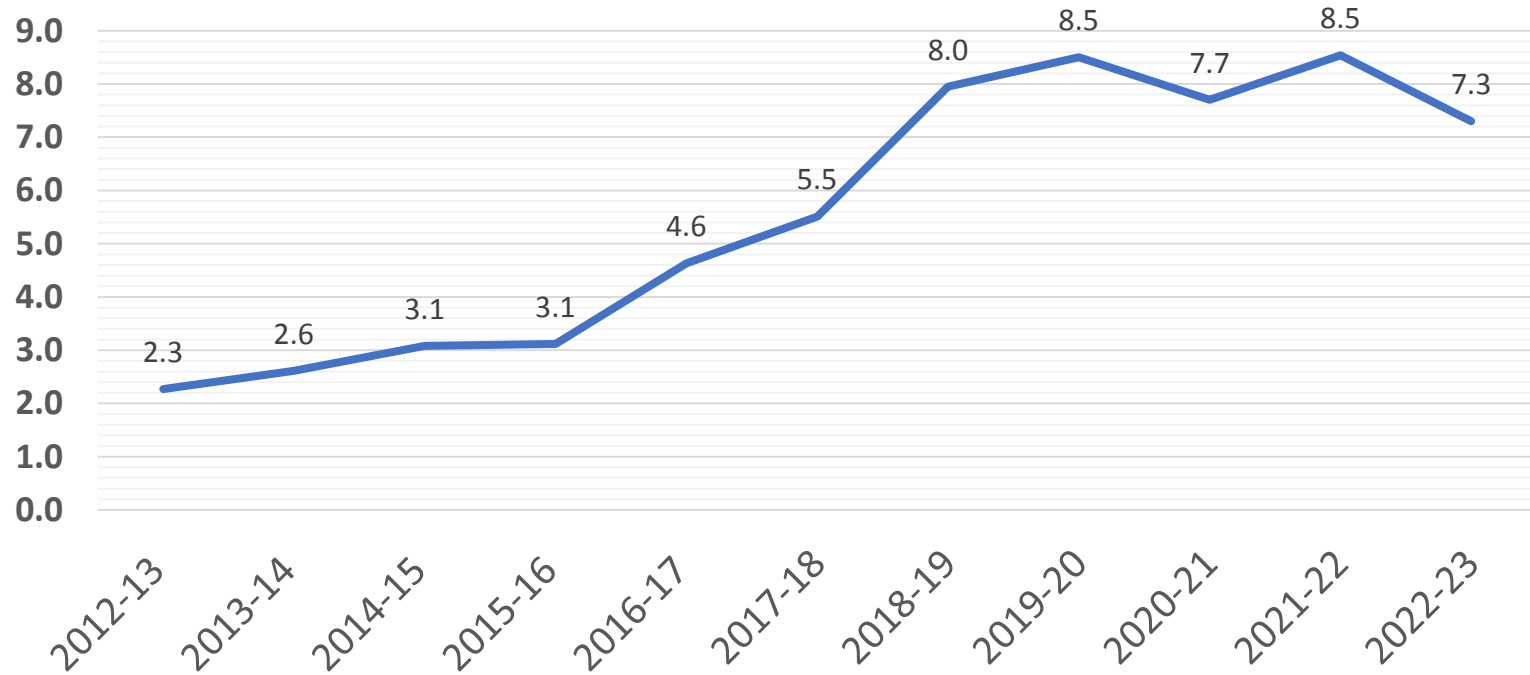
■ Recycled Fibre Based

Trend of Production from RP and RP Recovery Rate in last 5 Years



Wastepaper Import in Last One Decade

Import of Wastepaper (MT)



Environment & Economic Benefits of Increased Collection of Recovered Paper

- As per the literature on energy use and carbon foot print

Production of 1, 00,000 tons of paper	Energy Requirement, Tera Joule (TJ)	Carbon Foot Print, kilotons of CO2 (ktCO2)
From recycled fibre/Recovered paper	1880	0.14
% Reduction (savings)	47%	18%

- Properly collected, sorted and cleaned RCF would help to produce paper in an environmentally friendly way, without many losses and use of excess chemicals and energy. On average 20-30% savings in water and energy are possible by using the good quality RCF as raw material.

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Environment & Economic Benefits of Increased Collection of Recovered Paper

- Industry can make different high-quality grades/varieties easily from the properly sorted and cleaned RCF (recovered paper).
- Good quality raw material would also help in low investment in setting up Recycled fiber-based paper mills by eliminating some unit operations/ less cleaning requirements due to cleaned and segregated raw material.
- Lowering of import bill for waste paper.
- Opportunity for income and employment generation.

Present Mechanism of Collection of Waste Paper In India

Pre-consumer waste

It is a direct source

Present systems of collection of pre-consumer waste from the Industrial Houses (packaging waste) and from Printing & Converting Houses (printing presses waste, exercise book manufacturing waste) are quite efficient.

Contd....

Present Mechanism of Collection of Waste Paper In India

Post-consumer waste

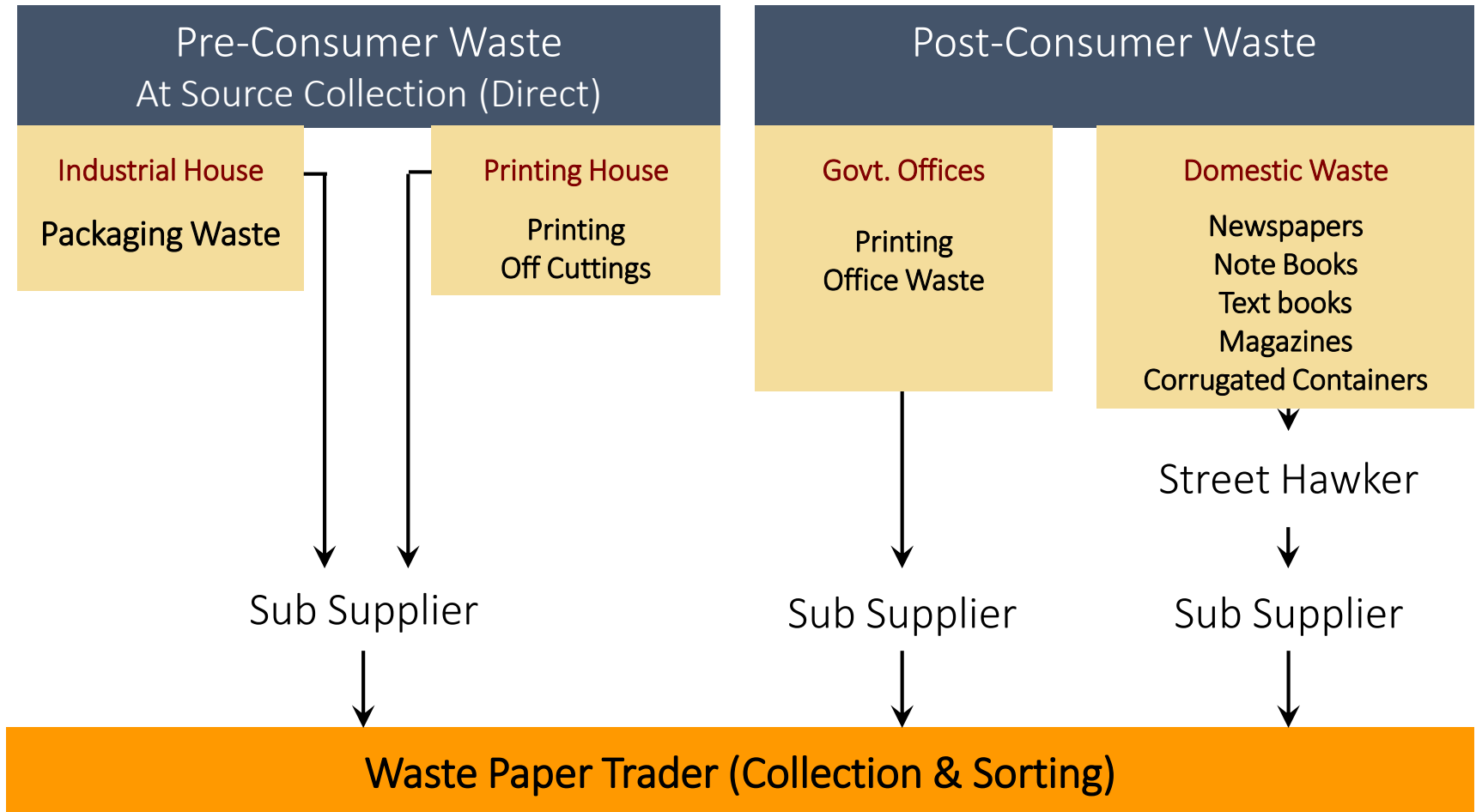
It is from Indirect source

- The collection is performed by informal sector
- Informal Sector- a community consisting of rag pickers and door to door collectors/ vendors.
- This informal sector is controlled & administrated by big traders.
- As much as 95% of the collection of waste paper in the country is in the hands of informal sector.
- There is no organised system for collection of waste paper, nor there is any legislation which could help to boost waste paper collection and its use in paper production.
- The waste paper diverted to secondary uses is not easily available for recycling by the paper mills.

Limitations of Present Mechanism

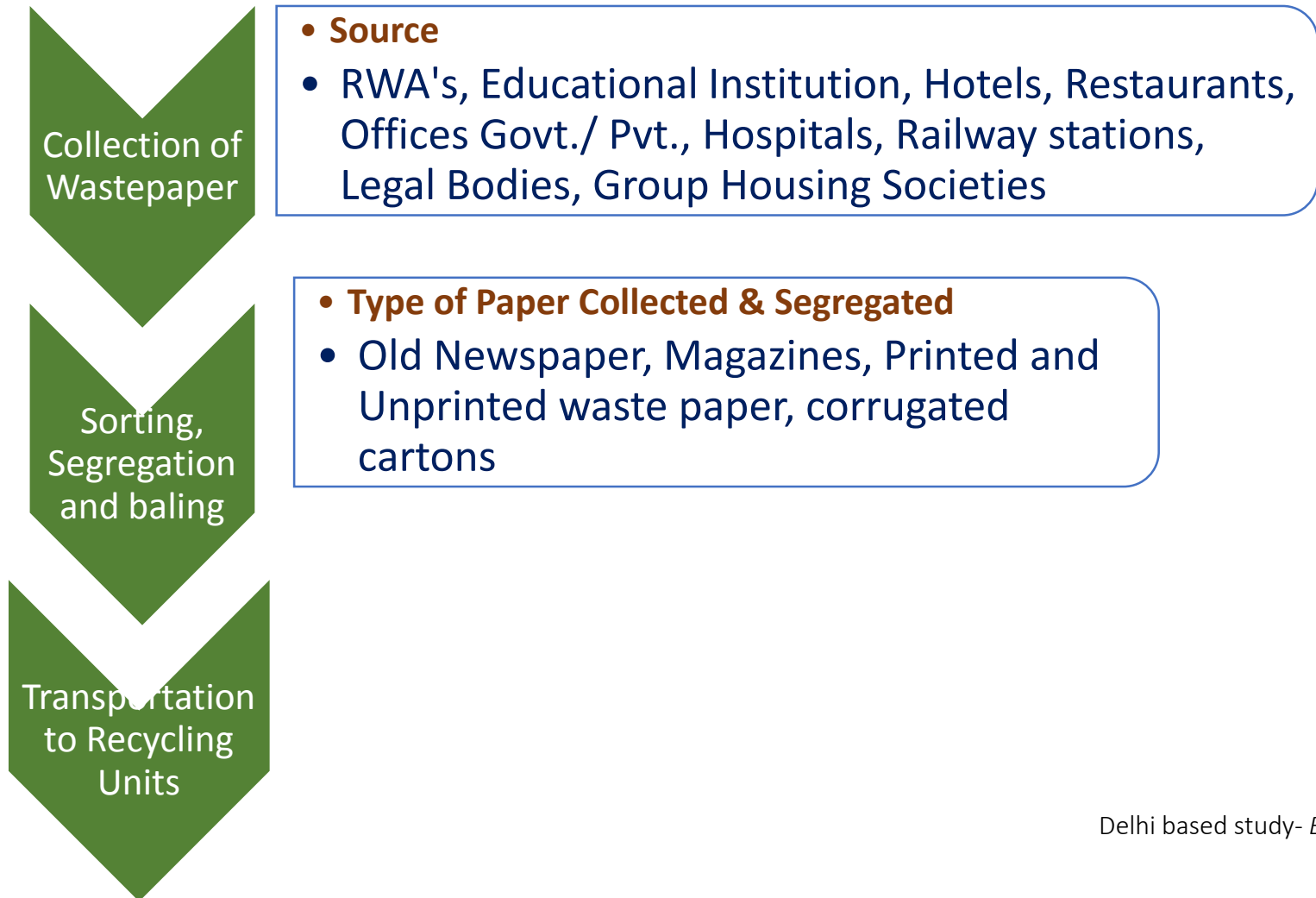
- In the present mechanism the waste paper which is very well used for wrapping and packing applications is not easily available for recycling.
- The vendors prefer to use over issue newspaper, used newspaper, examination copies for wrapping as the fresh paper for packing is very expensive.
- This practice cannot be stopped as there is no legislation by the MoEF & CC and Health Ministry forbidding the use of waste paper for packing of eatable, packing of fruits etc.

RP Collection Channels- Indian Context



The Concept of (WOW)-

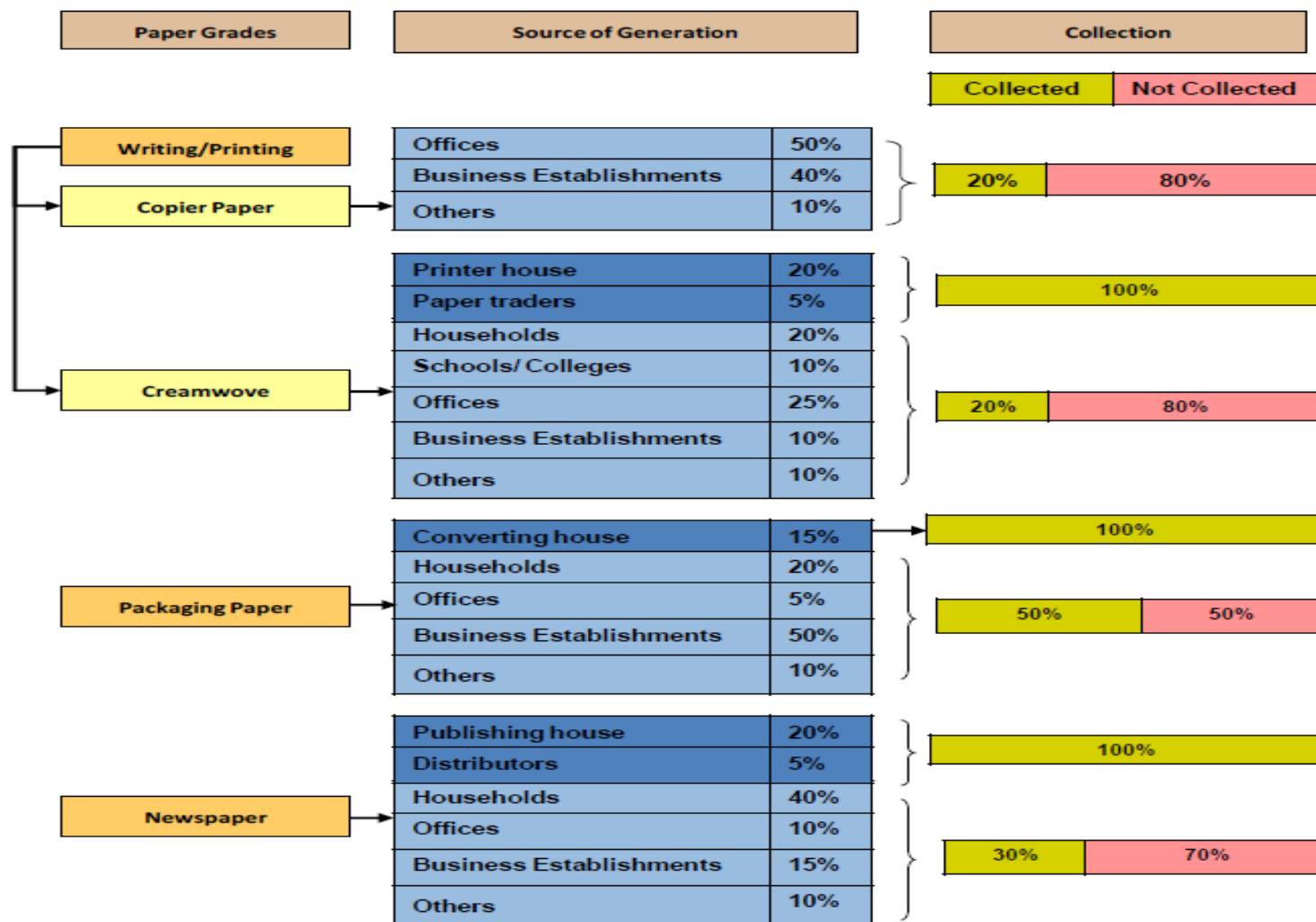
Joint initiative of ITC and South Delhi Municipal Corporation
(For Dry waste and Plastic Waste Material Recovery and Processing)



Recovery Potential for Waste Paper

Recovery Potential

There exists a large potential for recovery of waste paper in India.



Source: Indian Recycled Paper Mills Association (IRPMA), 2011

Issues Related to Recycled Fibre Sourcing in India

- ✓ Industry's dependence increasing on imported wastepaper due to inconsistent supply of indigenous wastepaper.
- ✓ Recovery of indigenous wastepaper is low due to unorganized collection system.
- ✓ There is no centralized agency to monitor the collection & distribution mechanism in the country which is presently managed by local collectors only.

Waste Paper Collection in Developed Countries

- In most developed countries, waste paper collection is in itself an organized sector. Waste paper is collected by the municipalities or by the waste hawkers acting as an intermediary between the municipalities and a paper stock dealer.
- A wide range of legislation in various countries is in force to promote material recycling and reduce further the generation of waste that requires disposal in appropriate facilities.
- These legal measures were specifically developed for packaging waste as packaging is a common item and readily accessible in a diverse range of forms to all consumers.

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Waste Paper Collection in Developed Countries

- Packaging is seen as environmental issue as it accounts for approximately 60% of the municipal solid waste generated by volume and if not collected would end up as landfill.
- Waste paper is collected at the curbside or depot, from household, office buildings, retail stores and other locations.
- Paper stock dealers purchase recovered paper, remove contaminants and process it for shipment to mills. These are called sorting centers.

Legislation in Europe

- In Europe, Germany was the pioneer for formulating waste management strategy adopting three pronged approach i.e. prevention of waste, re-use or recycling of used products and disposal or incineration of waste.
- In 1990, Germany passed the packaging ordinance and founded Duales System Deutschland GmbH (DSD) to help companies comply with the new legislation. This organisation and its subsidiaries collect, sort and recycle packaging waste.
- In 1994, the European Union (EU) adopted the European Packaging Directive, modelled on Germany's Packaging Ordinance and known as Directive 94/62/EEC on Packaging & Packaging waste. In 2004, Directive 94/62/EEC was amended by Directive 2004/12/EC2.

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Legislation in Europe

- This Directive covers all packaging placed on the market, regardless of whether it is released at the industrial or retail level.
- The Packaging Waste Directive has been transposed into national law in the majority of European countries.
- Each country has specific recovery and recycling targets for each material that must be met in a specified time period

Legislation in Japan

- In Japan also, there is a law for promotion of sorted collection and recycling of containers and packaging to promote the recycling, based on appropriate role sharing among consumers municipal authorities, business entities to reduce the volume of Municipal Solid Waste (MSW).
- Manufacturers and business entities using containers and packages have to pay a recycling fee to Japan Containers and Packaging Recycling Association (JCPRA), in accordance with the volume they manufacture or sell.
- Japan has managed the zero solid waste principle very effectively and minimised usage of scarce land space for landfills. Japan has reached a recovery rate of 80 percent as per the latest Sustainability Report published by Japan Paper Association (2022).

Legislation in USA

- There is no national legislation in USA.
- The waste management regulations are the responsibility of each individual municipality and State Government.

Legislation in India

- In India, there is no specific legislation or policy on recovered paper (wastepaper) collection.
- At present, there is an existing legal framework for Solid Waste Management (SWM) – Solid Waste Management Rules, 2016. Management of municipal solid waste is covered under State laws pertaining to municipal governance.

Global View

	Per Capita Consumption	RCP Recovery	Grading System	Collection Schemes	
	Kg.	%		Legislation	Voluntary
USA	202	68	✓	x	✓
GERMANY	218	81	✓	✓	✓
U.K.	122	89	✓	✓	✓
JAPAN	199	78	✓	✓	x
SWEDEN	122	90	✓	✓	✓
	74	49	✓	x	✓
INDIA*	15	53	✓	x	✓

Source of Per capita consumption and recovery is taken from <https://www.paperonweb.com/FAO2019.Paper.pdf/>

*CPPRI Statistical Data Cell

Suggested Options for Development of Sustainable Model for Increased Collection of Waste Paper

Allocation of Land on Lease Basis for Development of Sorting Centers/ Warehouse for Sorting, Baling and Storage of Waste Paper

- An informal sector is already existing in India with the community developed of rag pickers/kabadiwalas for their livelihood and which is administered by sub suppliers and big waste paper traders.
- This mechanism can be effectively utilized by providing land to waste paper traders on lease through tendering process to develop large Warehouses for storing the collected RCP and which could then be baled and supplied directly to the mills.
- Municipal funding or loans could be used to subsidize the capital expense of the sorting facility and equipment.

Improve Collection of Waste Paper from Offices

- Pilot collection programme may be introduced in offices mandating use of shredder for collection of confidential paper.
- The collected waste papers may be given to either NGO / Waste paper traders through annual contracts and shall be channeled directly to recycling units. One time financial assistance may be given to collector by way of providing land and upgrade sorting and bailing facilities.
- Dedicated collection system needs to be introduced to collect sorted office waste from individual's desk.

Improve Collection Mechanism For Rural Area (Village)

- Gram Panchayats may be asked to train and create awareness among the villagers for waste paper collection. The villagers may sell the waste paper to the persons designated by panchayats.
- Awareness programme should be planned to educate the rural area people by the existing waste paper based mill in the near by area.

Improve Collection Mechanism for Schools

- Educational Boards may be included to introduce educational programme on 3R's Concept i.e. Reduce, Reuse & Recycle.
- The schools should make deposition of the previous class note books compulsory to school authorities for onward recycling.
- An incentive in form of grades or marks, new note books or a certificate of appreciation may be provided to the students for the same.
- An exchange programme of old exercise notes and books through supply of new exercise books and books should be planed through stakeholders like paper mills and waste paper collectors.

Improve Collection Mechanism for Household

- Options for buyback of newspaper and magazines etc. by their publishers with a symbolic discount on monthly bill of newspaper or new issue of magazine.
- Currently collection of newspaper, magazine, books and other waste generated in the house waste is collected by the Kabadiwala's but they do not have the proper baling facilities which could be improved by providing them proper training and financial assistance by way of providing them subsidies to purchase baling machine and vehicles with green logos.

Explore the Possibility for Imposing Legislation for Collection of Waste Paper

Worldwide in most of the developed countries the collection of packaging waste (both industrial and municipal) is regulated by Law or Ordinance, which is based on **Polluters Pay Principle** or **Producer Responsibility Schemes**.

This mechanism helps to keep a track on all the packaging material coming into the market as it involves all the stakeholders to declare the quantities and effectively collect the packaging waste through take back system. The stakeholders in this supply chain are-

- Manufacturers of packaging raw materials (eg. Paper sheets);
- Converters (eg. those who make cardboard boxes);
- Packers (eg. those who pack food into cartons);
- Retailers who sell the packaged product to the consumer;

Other Suggestions to Improve Collection of Waste Paper

- Spreading awareness through media about need for segregated disposal of waste paper to authorized vendors.
- Reuse of used waste paper for packaging/ wrapping of fruits, food articles etc should be banned to prevent contamination as well as improve availability of waste paper.
- Development of alternate packaging material for packing of fruits, vegetables etc. to avoid secondary use of waste paper.

Other Suggestions.....

- Such mechanism could be adopted which will help in return/ collection of used paper waste from the consumer, other final user or from the waste stream in order to channel it to recycling units.
- Ministry of Environment, Forests & Climate Change (MoEF & CC) may be requested to formulate a policy on management of waste paper similar in line with e-waste (Management and Handling) Rules, 2011.
- It must be mandatory for the electronic goods and other companies to recollect the packaging material after installation/ delivery of the equipment or product.

Other Suggestions.....

- In all the places either rural or urban and metros an exchange programme of old books and notebooks as well as other waste paper should be planed and fresh new notebooks, exercise books, dairy etc. should be exchanged with old notes books. Such programme should be initiated through paper mills to collect more and more recycled fibre for recycling.
- Under CSR activities, the RCF mills should promote awareness programme and educate the people for collection of waste paper.

