

DISCUSSION PAPER ON COLLECTION AND RECYCLING OF WASTE PAPER IN INDIA

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I. Foreword

The Department of Industrial Policy and Promotion has prepared this discussion paper on “Collection and recycling of waste paper in India”, with the objective of developing a suitable policy framework to define the obligations of producers and users, to sensitize the citizens to improve the segregation, collection and reuse of waste paper in the country and to evolve a sustainable and workable mechanism for achieving a significant level of recovery of waste paper by 2025.

Post consumer paper, or waste paper, is an important renewable raw material source for the paper industry and can contribute considerably towards reduction in its imports. Its recycling is also important from the environmental perspective, as systematic collection and recycling of waste paper can significantly reduce the generation of municipal solid wastes. It has been estimated that recycling one tonne of waste paper results in a saving of 70% raw material, 60% coal, 43% energy and 70 % water, as compared to making virgin paper from wood. Finally, the recycling process also offers an opportunity for generation of additional income and employment. According to some estimates, one tonne of recycled paper saves approximately 17 trees, 2.5 barrels of oil, 4100 Kilowatt hours of electricity, 4 cubic meters of landfill and 31,780 litres of water.

Views and suggestions are invited by 30th November, 2011 so that they can be examined for development of a suitable policy on collection and recycling of waste paper.

II. Introduction

Paper is made up of cellulosic fibre sourced from plants. After consumption it often makes its way to trash bins and thus comes to be termed as “waste paper”. This waste paper when recovered becomes the reclaimed cellulose fibre base suitable for paper making. Today the term “recycled fibre” is used to refer to the post consumer paper that has been collected and reused to make paper. Use of recycled fibre for paper making has been picking up the world over, including India.

The Indian paper industry uses wood, agricultural residues and waste paper as raw materials. In the early 70’s, the share of waste paper used as raw material was only 7%, whereas now it constitutes the major raw material base for paper industry with 47% share in total production (Table 1).

Table-1: Shift in Raw Material Consumption Pattern

Year	% Share		
	Wood	Agro residue	Waste Paper
1970	84	9	7
2000	39	31	30
2011	31	22	47

Source: Paper Industry

As of date, about 550 mills in India use waste paper as primary fibre source for paper, paperboard and newsprint production. This waste paper is sourced indigenously as well as through imports.

The present recovery and utilisation of waste paper by paper mills in India is 3.0 million tonnes annually, which translates to a recovery of 27% of the total paper and paperboard consumed. This recovery rate is very low when compared to developed countries like Germany-73%, Sweden-69%, Japan-60%, Western Europe-56%, USA-49% and Italy-45%¹. Due to inadequate availability of indigenous waste paper, Indian mills rely heavily on imported waste paper to meet the raw material demand. The import bill has increased significantly over the years. According to an estimate, the import of waste paper

¹ *Indian Paper Manufacturers Associations (IPMA), 2010*

has increased from 5.1 million USD in 1980 to one billion USD in 2011. India imports around 4.0 million tonnes of waste paper annually² which is about 57% of its requirements.

Therefore, it is important to put in place suitable mechanisms that result in increasing the effective recycling of post consumer paper for manufacturing. The designing of such mechanisms and interventions lead to three major advantages:

First and foremost, the removal of post consumer paper from the garbage cycle would **considerably reduce the environmental load on the eco-system**. It translates into lesser requirements of land for dumping (it is estimated that as much as 5 million tonnes of waste paper ends up in landfills today), lowering of formation of greenhouse gases (methane) upon decomposition of cellulose and corresponding lowering of the requirement of wood based fibre resources for papermaking. Further, use of recycled fibre in the process leads to lower air emissions and energy use, which again lowers the carbon footprint of the paper industry.

Second, this will lead to **lowering of the import bill for waste paper**. If there was a mechanism to recover this paper, there would have been a considerable reduction in the import bill. With paper and paperboard demand growing at an average of 7.8% per annum, the industry is expected to meet an annual requirement of 24 million tonnes by 2025, which is a quantum leap from the current level of over 11.1 million tonnes. It is estimated that Indian paper industry would require over 16 million tonnes of waste paper by 2025 to meet the increase in demand. If the industry has to depend on imports to meet the waste paper requirement, the foreign exchange outgo could be as high as 6.4 billion USD (assuming, of course, that the major exporters of today would be able to meet such high demand).

Last, but not the least, the process of collection of post consumer paper presents an **opportunity for income and employment generation**³. It is estimated that about 31.2% of India's population is residing in urban areas distributed across various towns and cities, covering a total population of around 377 million or about 94 million households. These households generate around 2.6 million tonnes of dry recyclables per annum, out of which 1.3 million tonnes is contributed by paper only (50% of total dry recyclable composition), which includes newspaper and magazines also. Based on current data base and actual cost

² *Indian Recycled Paper Mills Association (IRPMA), 2011*

³ *ITC – WOW (Waste out of Wealth) program*

of collection, segregation and baling of dry recyclables, it is estimated that the gross realization is to the tune of US \$ 735 million per annum for a population cover of 377 million. This has the potential of going up substantially through integrated municipal solid waste management and installation of recycling facilities.

Waste paper collection is an industry in itself. In the developed countries, a large workforce of semi-skilled & skilled manpower is engaged in a scientific and organised manner to improve the recovery targets for recovered paper. In India M/s ITC Ltd., a leading paper manufacturer is running a programme for waste paper collection called 'Wealth Out of Waste' (WOW) Model employing over 4,000 people. Such programmes offer a huge potential for inclusive growth as setting up of facilities for dry waste management and value addition requires a large workforce of semiskilled and unskilled manpower.

As per the thumb rule with every one percent increase in waste paper recovery, a significant reduction in consumption of raw material, coal, power and water can be achieved besides reducing the annual import bill and opening up of opportunities of employment generation for skilled & semi-skilled manpower, as shown below:

- (I) Savings of -
 - 0.2 million tonnes of raw material,
 - 0.16 million tonnes of coal,
 - 2750 megawatt of installed capacity, and
 - 7.7 million m³ water
- (II) Reduction in-
 - 0.02 million tonnes of GHG emission
 - Import bill by 25 million USD
- (III) Employment generation opportunity for 7000 additional persons.

A possible business model on source segregation and scientific handling of solid waste is enclosed at Annexure-I.

III. Strategies Adopted by other Countries

In most of the developed nations, waste paper recycling is initiated, organised and operated by the municipal authorities, supported by suitable national policy normally based on the “polluter pays” principle. Legislations are formulated in the form of directives, procurement policy guidelines, as well as voluntary agreements.

The collection mechanisms put in place are highly successful as indicated by continuous improvement in the recovery rates of waste paper. These countries not only meet their domestic requirements but also export large quantities of waste paper.

Few examples of such legislation are given below for illustration:

Legislation in European Union (EU)

Countries of the European Union follow the European Packaging Directive No. 94/62 (EEC and 2004/12/EC2). In these countries, responsibility for collection and recycling of packaging waste lies with Packaging Recovery Organisation Europe, or PRO EUROPE, which is an umbrella organisation of 33 national producers. PRO EUROPE uses a “Green Dot” as its registered trademark. A ‘Green Dot’ on packaging signifies that a financial contribution has been paid to a qualified national packaging recovery organisation. By contracting with the green dot system, the companies responsible for producing packaging entrust their take-back obligation to the scheme in return for an annual fee based on the type of packaging materials used and on the amount of packaging put in the market. The printing of the “Green Dot” is an indication that the packaging producer financially supports the integrated system of collection and recycling of its packaging waste, which is mandatory in most EU Countries.

In all the member states of EU, economic operators within the packaging chain (manufacturer, packer/filler, distributor, and importer) are responsible for packaging waste management and for providing data on the amount of recycled packaging put in the market. Most of the compliance systems need to be approved and are monitored by the Ministry for Environment or an independent body.

The work of the compliance schemes is financed by fees collected from companies wishing to transfer the obligations imposed on them to the scheme. In general, the fee

structure is based on weight/ volume of the packaging material, per unit of packing or on a membership/ fees based on turnover.

Legislation in Germany

In addition to the European Packaging Directive, Germany has the Waste Management Act (1986), a Packaging Ordinance (1991) and a Voluntary Agreement of the Graphic Paper Chain (1994).

Waste separation at the household level is a prominent feature of German waste management systems, which is regulated at the municipal level. Households dispose paper, cardboard, glass, biodegradable waste, light packaging (plastics, aluminium and tin), and the residual household waste, separately.

In 1991, the German Government introduced the principle of producer responsibility for used packaging and placed a legal obligation on trade and industry to take back and recycle the packaging materials producers put into circulation. The consumers are required to follow sorting guidelines established by the municipalities.

Legislation in Japan

Japan's law for the promotion of sorted collection and recycling of container and packaging was enforced in April 1997 by the Ministry of Environment. As per provisions, the sorted waste is collected, stored and transported to the recycling companies by the municipalities. Manufactures 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.

Legislation in USA

There is no national legislation in the United States requiring the development of packaging recycling programmes or use of the Green Dot, as prevalent in Europe. Waste Management regulations are the responsibility of each individual provincial and state government. The local waste management system design and operations are the responsibility of individual municipalities.

Details of extant legislative and compliance mechanisms in Europe are enclosed at Annexure-II.

IV. Waste Paper Collection in India - Problems and Potential

In India the collection of waste paper is mainly performed by the informal sector, i.e., by rag pickers and door to door collectors/vendors. As much as 95% of the collection of waste paper in the country is carried out by the informal sector. The value chain comprises the direct collectors from various source points and small shops – where primary sorting of the waste into different categories takes place – and zonal segregation centres owned by wholesalers where the waste material gets collected from small shops and baled for dispatch to the end users. The current mechanism adopted for collection of waste paper in India is shown in Table-2.

Table-2: Current Waste Paper Collection Mechanisms in India

Source	Items Collected	Collected by	Quantity Collected (in Million tonnes/Annum)
Collection from households	Old newspaper & magazines	Weekend hawkers	1.50
	Notebooks & textbooks		0.50
Annual scrap contracts of printers, publishers & converters	Paper trimmings, print rejects, overprint/misprint sheets and other waste	Contractors	0.25
Scrap contracts with industries, offices, libraries	Old corrugated cartons, examination answer sheets, library records, old office and library records etc.	Contractors	0.50
TOTAL			2.75

Source: ITC-WOW, Aug. 2011

Clearly, the existing institutional mechanisms are weak and lead to considerable leakages. The life cycle analysis of different grades of paper, shown in Table-3, indicates the potential for sizeable enhancement of recoveries, particularly for copier and creamwove paper from offices and newspaper & packaging from households.

Table-3: Recovery Potential for Waste Paper

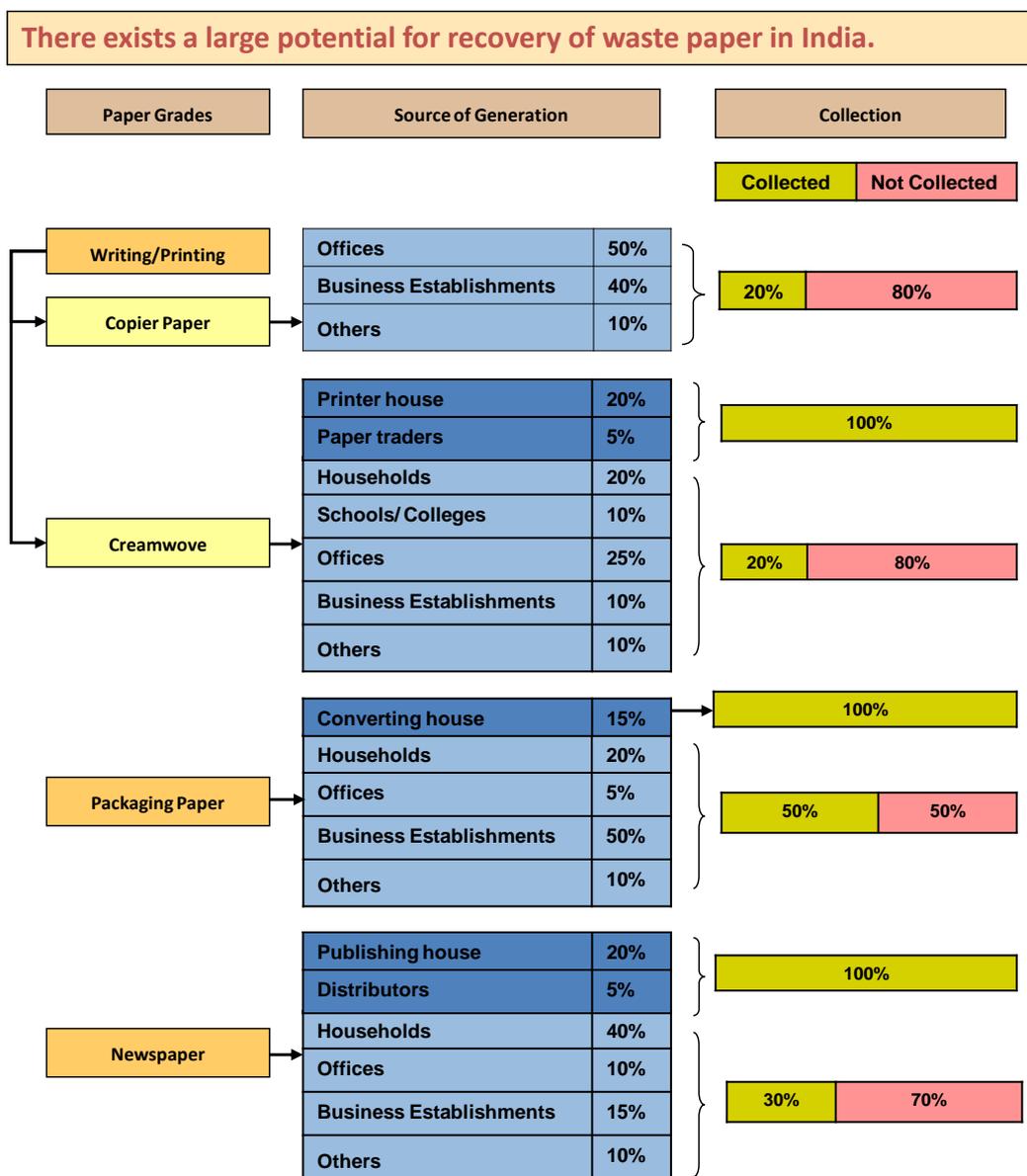
Grades of paper	Potential Source of Generation	Generation/Consumption %	Type of waste	Collection Rate %
Writing/Printing				
Copier Paper	Offices	50	Post Consumer	20
	Business Establishment	40		
	Others	10		
Cream wove	Printing House	20	Pre Consumer	100
	Paper Traders	5		
	Households	20	Post Consumer	20
	Schools/Colleges	10		
	Offices	25		
Business Establishment	10			
Others	10			
Packaging Paper	Converting House	15	Pre Consumer	100
	Households	20	Post Consumer	50
	Offices	5		
	Business Establishment	50		
Others	10			
Newspaper	Publishing House	20	Pre Consumer	100
	Distributors	5		
	Households	40	Post Consumer	30
	Offices	10		
	Business Establishment	15		
Others	10			

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

Table 3A indicates the considerable potential for recovery of waste paper in India.

TABLE: 3A

Recovery Potential



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

Existing Legal Framework in India for Solid Waste Management (SWM)

In India, solid waste management is a state function (Article 243W, 12th Schedule of the Constitution of India). However, the Central Government has powers to enact laws and frame rules for environmental protection. Accordingly, the Government of India has enacted the Environment Protection Act (EPA) 1986, and has framed rules, under its provisions, for managing and handling municipal solid wastes, biomedical wastes, hazardous wastes, etc.

Management of municipal solid waste is covered under state laws pertaining to municipal governance, but all the issues relating to Solid Waste Management (SWM) are not adequately addressed therein. In pursuance of a Public Interest Litigation filed in 1996 in the Supreme Court (Special Civil Application No. 888 of 1996), the Supreme Court appointed an expert committee to look into all aspects of SWM and to make recommendations to improve the situation.

On the basis of the report, the Ministry of Environment and Forests issued the Municipal Solid Waste (Management and Handling) Rules 2000 under the Environment Protection Act 1986, pursuant to the EPA for expeditious management and handling of MSW and has made it mandatory for all municipal authorities in the country to implement these rules within a prescribed time frame.

Solid Waste Management Institutions and their functions are illustrated in Table-4.

Table-4: Solid Waste Management Institutions and Functions

Responsible institution	Roles and responsibilities in SWM
Central Government	Make laws and rules, frame policies; prepare guidelines, manuals and technical assistance; provides financial support; monitor implementation of laws and rules.
State Government	Make state-level laws and rules, frame policies; prepare guidelines, manuals; and technical assistance, provide financial support; monitor implementation of laws and rules.
Municipal Authorities and State Government	Plan for SWM treatment facilities.
Municipal Authorities	Collect, transport, treat and dispose of waste.
Municipal Authorities with the approval of State Government	Frame by laws, levy and collect fees.
Municipal Authorities and State and Central Governments	Finance SWM systems.

Source: Improving Municipal Solid Waste Management in India: A sourcebook for Policy Makers and Practitioners, World Bank Institute

Due to various reasons, the compliance with the above rules remains unsatisfactory in the country today. The expert committee has identified the following deficiencies in the SWM system in India.

- No storage of waste at source
- Only partial segregation of recyclable waste
- No system of primary collection of waste at the doorstep
- Irregular street sweeping
- Inappropriate system of secondary storage of waste
- Irregular transport of waste in open vehicles
- No treatment of waste
- Inappropriate disposal of waste at open dumping grounds

Details are enclosed at Annexure-III.

Engagement of Private Players through a Public Private Partnership (PPP) Model

Though solid waste management is mandatory for all municipal authorities in the country and a significant budget is allocated for this purpose, the service is poorly performed, with segregation, collection, treatment and disposal getting the least attention. Experience in many countries shows that in certain circumstances, involving the private sector can significantly improve solid waste management service quality. Thus private sector participation could be considered in India also for collection of waste paper.

One viable option is to involve the private sector more extensively in providing services, with the municipal authority moving from being a service provider to being a regulator and service facilitator. The Wealth out of Waste (WOW) programme of M/s ITC provides a model for such engagements in India.

In the year 2007, ITC started waste paper collection scheme under the WOW programme, now spread across 6 cities in South India with an average monthly collection of 3000 tonnes of waste paper. Over 3 million citizens, 500,000 school children, 350 firms, 1000 commercial establishments and about 200 industries support WOW. Paper manufacturers ITC and an infrastructure development company, M/s Ramky Infrastructures Pvt. Ltd., have joined hands together to spread the programme across the country over the next ten years.

Realising the potential of WOW, the Bangalore and Hyderabad municipalities have come forward to develop waste collection ventures. The Bangalore venture is a joint endeavour of Bruhat Bangalore Mahanagara Palike (BBMP), ITC, Ramky Group and Solid Waste Management Round Table, Bangalore. The scope includes setting up and management of Dry Waste Collection Centre (DWCC). The Hyderabad venture is a project of Greater Hyderabad Municipal Corporation of Hyderabad, which promotes processing of waste as per Municipal Solid Waste (MSW) Rules, through door to door collection, and transportation of waste to an integrated waste management facility where it is processed and disposed in a scientific manner.

Details of the Waste Collection Model for Bangalore and Hyderabad are enclosed at Annexure-IV.

V. Policy Options

Based on the foregoing discussions, the following policy options can be examined for improving the collection and recycling of post consumer paper in India:

1. The government could formulate a **policy on management of waste paper** in line with the e-Waste (Management and Handling) Rules 2011 as formulated by Ministry of Environment and Forests. This policy will lay down the guidelines and procedures for the producers, collection centers, dismantlers and the recyclers. In the present case, the producers of waste would essentially be the domestic and commercial consumers. The collection centers would be the facilities run by the municipalities, preferably through outsourcing to private players. The dismantling function can be correlated to the segregation step and the recycler would refer to the entity that sells the waste paper to the mill.

Details of the E-Waste (Management and Handling) Rules 2011 are enclosed at Annexure-V.

2. The government could simultaneously announce a **scheme to provide incentives to municipalities** to meet source segregation targets by making it obligatory for households to segregate the wastes and impose a fee on commercial users. Alternatively, a fee structure for waste collection may be proposed along the lines of the German model.
3. **Guidelines for allocation of land on lease for development of sorting centers/ warehouses** for sorting, baling and storage of waste paper could be developed by the Ministry of Urban Development. These sorting centers / warehouses may be developed through the PPP route by bidding system so that collected, sorted & baled waste paper is directly sent to recycling units. Such centers could serve as a forward linkage for the already existing informal sector.
4. Regulations may be formulated **mandating use of shredders by all offices** and collection of shredded waste paper through contract agreements on annual basis.
5. **Voluntary guidelines to contribute to waste paper collection efforts under CSR** could be put in place by industry and chambers of commerce to encourage private sector participation.

VI. Issues for discussion

1. What should the implementation mechanism be for segregation, collection and recycling of waste paper in a country like India?
2. The thrust of the policy should be on designing a self regulated sustainable system with suitable incentives, if necessary, rather than a separate legislative framework or a regulating agency for monitoring and enforcing compliance. How can this be achieved with minimal regulatory control/ legislative intervention?
3. If minimal regulatory controls or legislative interventions are required to achieve a self regulated sustainable system, then at what levels and in what form? Should the intervention be at the Central, State, Municipality level or a combination of these?
4. How can the existing informal sector be integrated with mechanism of segregation, collection and recycling effectively?
5. Is there any other existing model of waste paper segregation, collection and recycling in any part of the country that could be adopted or replicated with or without modifications?
6. What additional features could be included in the PPP model for making it more attractive and sustainable?
7. Will the following assist in the segregation, collection and recycling of waste paper in India? If yes, in what manner? Will the impact be sustainable?
 - a. Through active role of NGO's
 - b. Through legislation
 - c. Through imposing penal action
 - d. Through incentives
 - e. Any other option
8. How can every citizen be-
 - a. Made aware of the importance and benefits of waste paper recycling
 - b. Made part of an overarching institutional mechanism for systematic and regular segregation and collection of used paper/carton/packaging, etc.

c. Incentivised to inculcate habits of waste paper recycling

9. Can the “Green Dot” model be adopted in India? If yes, how? If not, why not?

SOURCE SEGREGATION AND SCIENTIFIC HANDLING OF SOLID WASTE: A BUSINESS MODEL

1. The total urban population in India as per 2011 Census is 377.1 million, which accounts for about 31.2% of India's population.
2. Assuming that there are 4 persons in a normal household, the number of households in the urban areas would be about 94 million.
3. It is estimated that a household consisting of 4 persons generates about 2.5 kilograms of garbage per day, which includes 30% or 750 grams of recyclables. In other words, each household generates about 274 kilograms of recyclables per annum.
4. 94 million households in urban areas would, therefore, generate about 26.0 million tonnes of recyclables per annum.
5. From the recyclables analysis, following is the break-up of various components:

Component	% dry waste
Paper	50.0
Plastic	14.0
Metal	1.5
Glass	6.0
Wood	3.0
Textile	5.0
Residual waste & moisture	20.5

Therefore, the total quantity of recyclables in urban areas broken down into different components would be as follows:

Component	Fraction	Quantity (million tonne)
Paper *	50%	13.0
Plastic	14%	3.6
Metal	1.5%	0.4
Glass	6%	1.6
Wood	3%	0.8
Textile	5%	1.3
Total Recyclables per annum		20.7 **

* This includes newspapers & magazines also.

** This excludes residual wastes and moisture.

6. Assuming that the following values are realizable for various dry recyclables after sorting and baling, the total revenue generation would be:

Component		Value in Rs (million) /annum
Paper	Rs. 10000 per tonne X 13000000	130000
Plastic	Rs.8000 per tonne X 3640000	29120
Metal	Rs. 12000 per tonne X 390000	4680
Glass	Rs. 3000 per tonne X 1560000	4680
Wood & Textile	Rs. 1500 per tonne X 2080000	3120
Total Value Realised (A)		171600

7. Based on current data, actual cost of collection, segregation and baling per tonne of dry recyclables works out to about Rs.6000/-.

Therefore, the total cost for collection of dry recyclables in the urban areas will be:
26 million tonnes X Rs.6000 = Rs. 156000 million per annum **(B)**

8. Savings on account of reduced landfill, handling and logistics costs by source segregation of recyclables is illustrated by the following example:

The Hyderabad Municipal Corporation spends Rs 170 million per month towards collection, handling and transport of 4300 tonnes municipal solid waste per day for a population of 7.0 million. If 30% recyclables are separated through source segregation these costs would come down by Rs. 51 million per month.

Taking this figure as the basis, the total savings for a population of 377 million works out to be Rs 32960.6 million per annum **(C)**

Thus the Gross Realisation will be : Rs. 48560.6 million per annum..... **(A+C - B)**.

This figure amounts to about 31.1% of cost of collection of waste.

The value addition would go up substantially through integrated municipal solid waste management and installation of recycling facilities, similar to the Hyderabad model.

A. LEGISLATIVE FRAMEWORK PREVAILING IN EU COUNTRIES FOR SUSTAINABLE MANAGEMENT OF PACKAGING WASTE

The majority of Member States have implemented Packaging Regulations (*The Directive 94/62/EC on Packaging and Packaging Waste*) in 1997. Only Greece has not yet transposed the EU Packaging Directive into national law. Depending on national waste management traditions, the regulation of packaging waste recovery is accompanied by voluntary agreements (Denmark, Netherlands). A number of Member States (Belgium, Denmark, France, Portugal, and United Kingdom) have transposed the EU Packaging Directive in regulating the recovery requirements and the environmental requirements in the design and manufacture of packaging ("essential requirements") in separate legal acts. Table-1 lists the legal basis for the transposition of the Packaging Directive.

Table-1: Legal basis

Country	Legal basis
Austria	Packaging Ordinance of 1992, amended 29 th November 1996 Target Ordinance (Federal Law Gazette No.646/1992, as amended by 649/1996)
Belgium	The Ecotax Act (Ordinary Law of 16 th July 1993 aiming at completing the federal structure of the state) Interregional Co-operation agreement Packaging Decree of 30 th of May 1996 (came into effect on 5 th March 1997) Law of 21 st December 1998 (essential requirements) The Royal Decree of the 25 th of March 1999 defining standards for packaging
Denmark	Statutory Order no. 298 of 30 April 1997 on certain requirements for packaging Statutory Order no. 299 of 30 April 1997 on waste Statutory Order no. 124 of February 27, 1989 on packaging for beer and soft drinks as amended by statutory order no. 540 of 1991 and no. 583 of 1996 and no. 300 of 30 April 1997
Finland	Decision of Council of State on Packaging and Packaging Waste 1997 Law on Alcohol Excise no. 1471 of 29 th December 1994 Law on Soft drinks Excise no. 1474 of 29 th December 1994
France	Lalonde Decree N° 92-377 of April 1 1992, in force since January 1993, setting out conditions for the collection and the recovery of packaging waste produced in households. Decree N° 94-609 of 13 July 1994 on packaging waste for which the holders are not households. Decree N° 96-1008 on the disposal of household waste which contains the

	quotas set by the European Packaging Directive. Decree N° 98-638 of 20 July 1998 related to the environmental requirements in the design and manufacture of packaging.
Germany	Packaging Ordinance of 1991, amended 21th August 1998
Greece	Draft Law “Measures and conditions for the alternative management of packaging and other waste products. Foundation of the National Organisation for the Alternative Management of Packaging and Other Waste (NOAMPOW)”
Ireland	Waste Management (Packaging) Regulations 1997 Waste Management (Farm Plastics) Regulations 1997 Waste Management (Packaging Amendment) Regulations 1998
Italy	“Ronchi Decree” Law effective from 5 th February 1997 implementing EC Directives (Directive on waste, hazardous waste and packaging waste) amended 28 th November 1997
Luxembourg	Grand Ducal Regulation of 31 st October 1998
Portugal	Decree-Law No.366-A/97 of 20 th December 1997 (modified by Decree-Law N° 162/2000 of 27 th July 2000) Ordinance N° 29-B/98 of January 1998 The Decree-Law N° 407/98 of 21 December 1998 for essential requirements and maximal concentration of heavy metal
Spain	Packaging Law 11/1997 of 24 th April 1997 Royal Decree 782/98 of 30 th April 1998 Law 10/1998 of April 21 st 1998 Order 50/1998 of December 30 th 1998 Order 50/1998 of 30 th December 1998
Sweden	Decree (1997-185) on producer responsibility for packaging
The Netherlands	Packaging and Packaging Waste Decree of July 4 th 1997 Packaging Covenant II of 26 December 1997
U.K	Producer Responsibility Obligations (Packaging Waste) Regulations 1997 Packaging Regulation (1998) Packaging (Essential Requirements) Regulations 1998 Producer Responsibility Obligations (Packaging Waste) Regulations (Northern Ireland) 1999

System of Compliances

In all Member States economic operators within the packaging chain (manufacturers, packers/fillers, distributors, and importers) are responsible for packaging waste management, and for providing data on the amount of packaging put out in the market. Except for Denmark, the industry has build up organisations in all Member States to comply with the obligations imposed by national packaging regulations on behalf of the individual businesses affected. However, economic operators generally have the option of

transferring their obligations to an external organisation (hereafter called compliance scheme) or fulfilling their obligations by themselves.

Most of the compliance systems need to be approved and are monitored by the Ministry for Environment or an independent body (e.g. packaging committee). The schemes co-ordinate the activities necessary for the recovery of packaging waste and have an essential interfacing role to play between the different actors within the packaging life cycle (industries, public legal entities, consumers, recycling and recovery operators). In Austria and the UK a competition scrutiny system is explicitly applicable to these organisations in order to avoid monopolisation.

In eight Member States a "green dot" system has been established. By contracting with the green dot system, the companies responsible for producing packaging entrust their take-back obligation to the scheme in return for an annual fee based on the types of packaging materials used, and on the amount of packaging put on the market. The printing of the "green dot" is an indication that the "packaging producer responsible" financially supports the integrated system of selective collection and recycling of its packaging waste. The green dot systems are predominantly in charge of the management of household/municipal packaging waste.

The United Kingdom has adopted the concept of "shared producer responsibility" for packaging waste. This refers only to the industries which produce or use packaging. Responsibility for recovery and recycling of packaging waste is divided among the commercial enterprises which form part of the "packaging chain", raw material producers, packaging manufacturers, packer/fillers and sellers.

Except for Denmark and the United Kingdom, industry-based organisations are established in all Member States to take over the responsibility for management and recovery of municipal packaging waste. It is only in Belgium that the responsibility is only for municipal waste and industrial packaging waste with two different organisations dealing with the two waste streams.

In Austria, Finland, Ireland, The Netherlands and Italy the systems in place are responsible for both municipal and industrial packaging waste. In Germany, the activity of the nation-wide Der GrünePunkt – Duales System Deutschland GmbH (DSD) system was restricted to sales packaging by the Federal Cartel Office. Systems for self-compliers have

started operating in competition to the DSD since the amendment of the Packaging Ordinance in 1998.

Table-2 lists the main national packaging waste management organisations and summarises the responsibility of these systems according to municipal/industrial packaging waste.

Table-2: Areas of activities of main compliance schemes

Country	Organisation	Responsible for		Green Dot
		Municipal packaging	Industrial packaging	
Austria	Branch organisations	Yes	Yes	Yes
Belgium	Fost + Val-I-Pack	Yes no	No Yes	Yes
Denmark	Municipalities	Yes	(Yes)*	no
Finland	Pakkausalan Ympäristörekisteri PYR Oy (PYR)	Yes	Yes	no
France	Eco-Emballages, Adelphe	Yes Yes	no no	Yes
Germany	DSD different organisations	Yes (Yes) [@]	no Yes	Yes
Ireland	Repak	Yes	Yes	Yes
Italy	Consorzio Nazionale Imballaggi (CONAI)	Yes	Yes	no
Luxembourg	Valorlux	Yes	No	Yes
The Netherlands	SVM-Pact	Yes	Yes	no
Portugal	Sociedade Ponto Verde, S.A.(SPV)	Yes	Yes	Yes
Spain	Ecoembalajes Ecovidrio	Yes Yes	no no	Yes
Sweden	Reparegistret AB (REPA)	Yes	No	no
U.K	Different organisation, e.g Valpak	No particular responsibility according to this classification		no

* Municipalities are obliged to assign industrial packaging waste to recycling, which means that they have to prepare regulations that oblige enterprises to recycle their packaging waste.

@ Since the amendment of the Packaging Ordinance in 1998, systems for self-compliers are in operation in competition with the Der Grüne Punkt – Duales System Deutschland GmbH (DSD)

Share of Responsibility

In principle, the private sector is responsible for the packaging they put out in the market. With regard to definite packaging waste management activities, the responsibility is shared in the majority of Member States between municipalities and industry. While collection and sorting of municipal packaging waste is predominately undertaken by the public sector, the collection of industrial packaging waste and the recovery and recycling of both municipal and industrial packaging waste is by the private sector.

In Austria and Germany, obligated economic operators are explicitly required to organise the collection and sorting of domestic packaging waste and to comply with recycling targets for this waste stream. The packaging regulations in these countries set out criteria for the collection system, capacities and distances between collection points, extensions of the collection system etc. The compliance schemes include contracts with municipalities (and private operators) for the services necessary in the context of separate collection and sorting of municipal packaging waste.

Table-3 provides an overview of the share of responsibility.

Table-3: Share of responsibility according to activity

Country	Collection and sorting (municipal packaging)	Recovery
Austria	ARGEV + other private organisation	Branch organisation responsible for recycling (Guarantors)
Belgium	Municipalities	Fost Plus
Denmark	Municipalities	Industry
Finland	Municipalities	PYR
France	Municipalities	Eco-Emballages, Adelphe
Germany	DSD + other private organisation	Industry (Guarantors)
Ireland	Municipalities	Repak
Italy	Municipalities	CONAI
Luxembourg	Municipalities	Valorlux
Portugal	Municipalities	Ponto Verde + entities of packaging and raw packaging material manufacturers
Spain	Municipalities	Eco-embalajes
Sweden	Material companies	Material companies
The Netherlands	Municipalities	Industry
U. K.	Municipalities	Industry/compliance schemes

Collection Systems

Separate collection of municipal and industrial packing waste is carried out in all Member States, but in varying degrees. In Austria, Denmark, Finland, Germany the Netherlands and Sweden for example, a well functioning reuse system, e.g. for glass, already existed, and glass and paper were collected separately for recycling. Table -4 provides an overview of the collection systems.

Table-4: Collection modalities (from households)

Country	Extension of separate collection	Predominant collection system	Comments
Austria	Nation-wide	Mainly kerbside bring system for glass, paper and metals	Plastics: trend to collection of only recyclable plastic materials, other plastics are incinerated with energy recovery
Belgium	Nearly nation-wide	Kerbside sys. except for glass	Glass: 2 colours are separately collected PMC: empty plastics bottles and jars, metal cans and beverage cartons
Denmark		Depending on local condition	Glass: colour separations only in few municipalities Paper: together with newspaper etc. Plastics: collection only in very few municipalities
Finland	Mainly in urban regions	Bring-system	Beverage carton is collected separately in yellow bins Kerbside system for glass
France	Not yet fully established	Depending on local condition	Glass: predominately colour separate collection Plastics: empty plastic bottles and flasks metal cans
Germany	Nation-wide	Mainly kerbside bring system for glass and paper	Glass: separately collected, three colours Paper: together with magazines, newspaper, estimated packaging share 25% Plastics, metals composites: collected together (yellow bin)
Ireland	Not yet fully	Bring-system	Glass and aluminium cans are

	established		separately collected, extension of collection scheme planed
Italy	Mainly in northern region	Depending on local condition	Glass, paper, plastics and aluminium is separately collected
Luxembourg		Bring system except for plastics bottles and flasks, metal cans and beverage cartons	Paper etc: collected together with newspapers etc. Empty plastics bottles and jars, metal cans and beverage cartons are collected in blue bags or via containers
Portugal	Not yet fully established	Mainly bring-system in some areas kerbside system	Glass: collected mainly through green containers Papers: together with beverage cartons in blue containers Plastics, metals: together in yellow containers
Spain	Not yet fully established	Mainly bring-system in some areas kerbside system	Glass: green containers Paper: blue containers Plastics, cans, beverage cartons in yellow containers
Sweden	Nation-wide	Bring-system	
The Netherlands	Nation-wide (for glass and paper, cardboard)	Mainly Bring-system	Glass: colour separate collection via bottle banks Paper and cardboard mainly via bring systems Plastics, metals, beverage cartons: collected separately on a small scale
U.K	Some separate collection schemes	Mainly bring-system in some areas kerbside system	Glass: colour separate collection Bring systems for aluminium

Financing Of Packaging Waste Management

The work of the compliance schemes is financed by fees collected from companies wishing to transfer the obligations imposed on them to the scheme. In general, the fee structure is based on weight /volume/ type of packaging material, a fee per unit of packaging or a membership /registration fee based on turnover.

Monitoring

The activities of the compliance schemes are monitored by the ministries of Environment or other entities e.g. the Interregional Packaging Commission in Belgium and the Agencies in the UK.

Prevailing Systems of Solid Waste Collection in Developed Countries

A number of different systems have been implemented to collect recyclables from the general waste stream in developed countries. These systems lie along the spectrum of trade-off between public convenience and government ease and expense. The three main categories of collection are "drop-off centres", "buy-back centres" and "curbside collection".

Drop-off centres

Drop off centres require the waste producer to carry the recyclables to a central location, which is either an installed or mobile collection station or is located at the reprocessing plant itself. They are the easiest type of collection to establish, but suffer from low and unpredictable throughput.

Buy-back centres

Buy-back centres differ in that the cleaned recyclables are purchased, thus providing a clear incentive for use and creating a stable supply. The post-processed material can then be sold, resulting in profits. The government subsidies are necessary to make buy-back centres a viable enterprise, as according to the United States National Solid Wastes Management Association it costs on average US\$50 to process a tonne of material, which can only be resold for US\$30.

Curb-side collection

Curbside collection encompasses many subtly different systems, which differ mostly on where in the process the recyclables are sorted and cleaned. The main categories are mixed waste collection, commingled recyclables and source separation. A waste collection vehicle generally picks up the waste.

At one end of the spectrum is mixed waste collection, in which all recyclables are collected, mixed in with the rest of the waste, and the desired material is then sorted out and cleaned at a central sorting facility. This results in a large amount of recyclable waste, paper especially, being too soiled to reprocess, but has advantages as well; the city need not pay for a separate collection of recyclables and no public education is needed. Any changes in the categories of recyclable materials is easy to accommodate as all sorting happens in a central location.

In a Commingled or single-stream system, all recyclables for collection are mixed but kept separate from other wastes. This greatly reduces the need for post-collection cleaning but does require public education on what materials are recyclable.

Source separation is the other extreme, where each material is cleaned and sorted prior to collection. This method requires the least post-collection sorting and produces the purest recyclables, but incurs additional operating costs for collection of each separate material. An extensive public education program is also required, which must be successful if contamination among recyclables is to be avoided.

POSITION PAPER ON THE SOLID WASTE MANAGEMENT SECTOR IN INDIA

A PIL was filed by Almitra H.Patel and others in the Supreme Court of India in 1996 regarding management of Municipal Solid Wastes. The Supreme Court subsequently set up an Expert committee which submitted its report to the Supreme Court in March 1999 with detailed recommendations. These were circulated to various stakeholders for implementation.

To ensure compliance, the principal recommendations of the Supreme Court appointed committee have been incorporated in the Municipal Solid Waste (Management and Handling Rules 2000) notified by Ministry of Environment and Forests in September, 2000. To improve the system, the following seven directions were issued:

- (i) Prohibit littering on the streets by ensuring storage of waste at source in two bins: one for biodegradable waste and another for recyclable material.
- (ii) Primary collection of biodegradable and non biodegradable waste from the doorsteps at pre-informed time on a day-to day basis using containerized tricycles/handcart/pick-up vans.
- (iii) Street sweeping covering all the residential and commercial areas on all the days of the week irrespective of Sundays and holidays.
- (iv) Abolition of open waste storage depots.
- (v) Transportation of waste in covered vehicles on a day-to-day basis.
- (vi) Treatment of biodegradable waste using composting or waste to energy technologies meeting the standards laid down.
- (vii) Minimize the waste going to the landfill and dispose of only rejects from the treatment plants and inert material at the landfills as per the standards laid down in the rules.

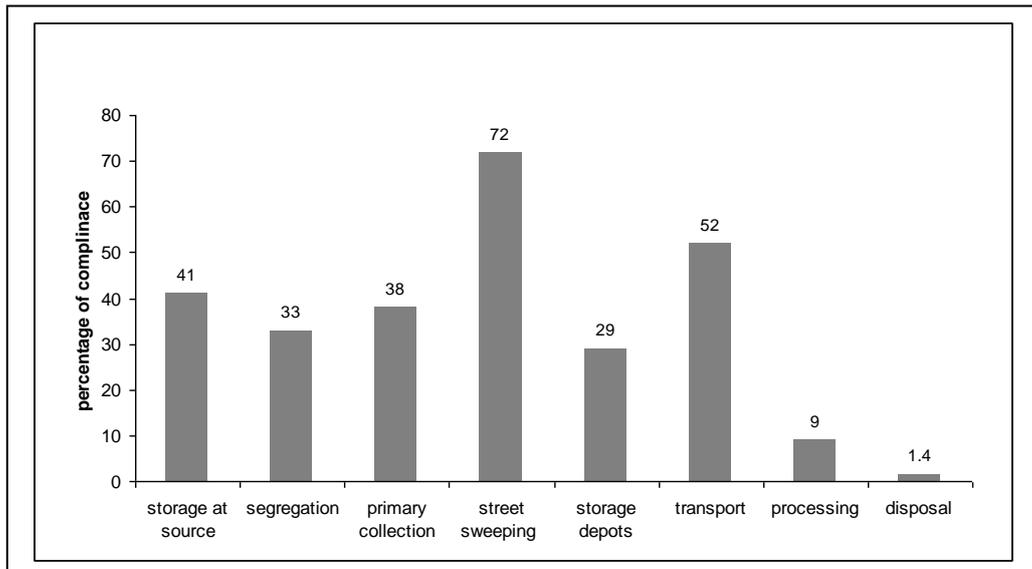
The entire responsibility of implementation as well as development of required infrastructure lies with Municipal authorities. They are directed to obtain authorization from the state Pollution Control Boards/committees for setting up waste processing and disposal facilities and furnish annual report of compliance.

Source : www.pppinindia.com/.../ppp_position_paper_solid_waste_mgmt_112k9.pdf

**STATUS OF COMPLIANCE OF MUNICIPAL SOLID WASTE MANAGEMENT 2000 RULES
PREPARED BY EXPERT COMMITTEE CONSTITUTED BY THE MINISTRY OF URBAN
DEVELOPMENT AND POVERTY ALLEVIATION, GOVERNMENT OF INDIA**

No consolidated official data are available about the status of compliance of MSW. However, **figure 1** shows estimated percentages of compliance. Municipal authorities report numerous reasons for non-compliance with the 2000 rules. Those reasons are listed in **table-1**¹.

Figure-1: Compliance with the 2000 Rules



Source: Asnani 2004a.

Table: Reasons for Noncompliance with the 2000 Rules

Area of compliance	Reasons for noncompliance
Storage of waste at source	<ul style="list-style-type: none"> ▪ Lack of public awareness, motivation and education ▪ Lack of civic sense and bad habits of people to litter ▪ Lack of cooperation from households, trade and commerce ▪ Lack of stringent panel provision ▪ Lack of powers to levy spot fines ▪ Lack of litter bins in the city ▪ Long distance between community bins ▪ Resistance to change in attitude
Segregation of recyclable waste	<ul style="list-style-type: none"> ▪ Lack of wide publicity through electronic and print media ▪ Lack of public awareness and motivation, resulting in poor response from citizens ▪ Lack of citizen's understanding about how to use separate bins for storage of recyclables ▪ Lack of sufficient knowledge of benefits of segregation ▪ Lack of cooperation and negative attitude of people ▪ Lack of finances to create awareness ▪ Difficulty of educating slum dwellers ▪ Lack of effective legal remedy
Collection of waste from doorstep	<ul style="list-style-type: none"> ▪ Lack of awareness and motivation ▪ Unavailability of primary collection vehicles and equipment ▪ Insufficient response from citizens ▪ Lack of financial resources ▪ Difficulty of motivation slum dwellers ▪ Lack of personnel for door-to-door collection ▪ Lack of suitable containers
Daily sweeping of streets	<ul style="list-style-type: none"> ▪ Excessive leave and absenteeism of sanitary workers ▪ Unavailability of workers on Sundays and public holidays ▪ Kuchha (unpaved) roads ▪ Lack of financial resources
Abolition of open waste storage depots and placement of containers	<ul style="list-style-type: none"> ▪ Shortage of containers ▪ Lack of financial resources ▪ Lack of planning for waste storage depots ▪ Inaccessible areas and narrow lanes that do not allow sufficient space for containers
Transportation of waste in covered vehicles	<ul style="list-style-type: none"> ▪ Old vehicles that are difficult to replace
Processing of waste	<ul style="list-style-type: none"> ▪ Lack of financial resources ▪ Lack of technical know-how ▪ Lack of skilled personnel ▪ Unavailability of appropriate land ▪ Lack of basic facilities to set up treatment plants ▪ Lack of institutional capacity
Disposal of waste at the engineered landfill	<ul style="list-style-type: none"> ▪ Lack of financial resources ▪ Lack of technical personnel ▪ Lack of technical know-how for scientific disposal of waste ▪ Unavailability of appropriate land ▪ Lack of institutional capacity

Source: Asnani 2004a.

Source : www.tn.gov.in/cma/swm_in_india.pdf(Page14-15)

IMPORTANT LEGAL DECISIONS IN THE YEAR 2004-2005

A. Supreme Court Matter

Writ Petition (Civil) No. 888/1996 [Almitra H. Patel & Another, Petitioners Versus Union of India & Others., Respondents]; Order Dated 26.07.2004

The matter relates to the disposal of municipal solid wastes in terms of the Municipal Solid Wastes (Management and Handling) Rules, 2000. Upon hearing on 26.07.2004, the Hon'ble Supreme Court of India observed that the Central Government had also not responded to the matters related to the order dated 03.02.2004 passed earlier by the Hon'ble Court. It was also learnt that some of the states have sought 80 per cent central assistance for implementation of the project. The state of West Bengal had made an affidavit dated 18.06.2004 in this regard.

The Hon'ble Court observed large scale noncompliance of the provisions of the Municipal Solid Wastes Rules in the annual report (2002-2003) filed by the Central Pollution Control Board.

Considering these facts and circumstances, the Hon'ble Court directed that the Chief Secretaries of States need to direct their State Pollution Control Boards to send their Regional Officers and Environment Officers to pro-actively interact with the officials of local bodies. An average of 5-6 local bodies should be dealt with and each should jointly fill in and submit the local bodies' annual report before the next hearing and report compliance. The Hon'ble Court also directed that all Chief Secretaries need to direct the State Pollution Control Board to file affidavit stating the reasons why applications already applied for have not been approved within the stipulated time.

Source: www.wbpcb.gov.in/html/annualreps/ar0405/chapter_7.pdf

WASTE COLLECTION MODELS FOR BANGALORE AND HYDERABAD

BANGALORE MODEL

It is a joint venture for green initiative by Bruhat Bangalore Mahanagara Palike (BBMP), ITC, RAMKY Group and Solid Waste Management Round table, Bangalore. The scope includes setting up and Management of Dry Waste Collection Center (DWCC).

The BBMP provides rent free storage space for the waste. It makes the necessary arrangements for delivery of Dry Waste (DW) to the DWCC. It is the duty of BBMP to educate the public at large to adopt the concept of source segregation.

On its part, ITC/RAMKY manages the DWCC with required manpower, vehicles and other expenses. The consortium receives the dry waste from the conservancy workers as well as the public and makes the required payments to them. It carries out the secondary segregation of the DW and sends the same for recycling.

Some details of the DWCC are summarised hereunder.

Area of DWCC	1500 sq ft.
No. of DWCC proposed to be set up	50 (Across various part of Bangalore)
Cost of 1 DWCC	Rs. 4.0 million
Total Cost	Rs. 200 million

Five DWCC will make one cluster, which will be managed by common staff. The activities are likely to commence from September 2011. There are two Hub management options that are open for adoption. The same are detailed hereunder.

Hub Management – Option 1

These options are put in place for the hubs operated by Ramky. Each cluster of five hubs will be managed by an Area manager and an Accountant. At the hub level, there shall be one manager and accountant assisted by receiving staff, six sorters, two balers and two security personnel. BBMP conservancy workers shall bring segregated wastes from households and deliver the same to the nearest hub. Waste paper collected by ITC's franchisees from other segments will also be deposited at the nearest hub.

Dry waste will be paid @ Rs 2 per kg to BBMP Conservancy Workers and in case of Franchisees the payment shall be Rs 3.50 per kg inclusive of their collection expenses. Other dry waste like newspaper, packaging paper, etc. will be offered a better price.

The following tables present the costs involved in the of Option –1

COST CARD FOR BANGALORE				(In Rs.)
Man Power	Nos.	Amount	Total Cost	Per kg Cost
COLLECTION COST				
Area Manager	1	25000	25000	0.08
Area Accountant	1	20000	20000	0.07
Hub In charges	5	12000	60000	0.20
Hub Accountant	5	10000	50000	0.17
TOTAL COLLECTION EXP				0.52
HUB EXPENSES				
Receiving staff	5	5000	25000	0.08
Sorters Salary	30	5000	150000	0.50
Balers Salary (Unloading, Baling & loading)	10	5000	50000	0.17
Watchmen Salary	10	5000	50000	0.17
Hub Rent (1000 Sft) (Ofce+Godown)	0	0	0	-
Miscellaneous Exp	1	25000	25000	0.08
TOTAL HUB EXP			300,000	1.00
Dry Recyclables Cost	4.5		1350000	4.50
PROMOTIONAL EXP			16,667	0.17
ADMIN EXPENSES (HO)				0.50
TOTAL COST PER kg DELIVERED TO MILL				6.69
Minimum Collections	300000	kg		

Sale Realization - For option 1

Waste	Proportion	Target Qty in Tonnes	Proportionate Qty in Tonnes	Sale Price Rs. Per Tonne	Total Sale amount (Rs.)
ONP	20%	300	60	10,000.00	600,000.00
Mixed waste	40%		120	7,000.00	840,000.00
White waste	15%		45	12,000.00	540,000.00
Plastics	15%		45	7,000.00	315,000.00
Corrugated Box	8%		24	7,500.00	180,000.00
Others	2%		6	-	-
		Total	300		2,475,000.00
				Realization per kg	8.25

Profit per annum for 3000 tonnes/month is Rs 45 million

Infrastructure requirement

Each hub requires following infrastructure

Infrastructure	Quantity	Cost (Rs.)
Electronic weighing scale (250 kg capacity)	1	15000
Manual baling machine	1	5000
Electrical Fitting (Light/Fan)	1 set	10000
Computer with printer	1 set	25000
Table, other furniture	1 set	10000
Partition of hub space	-	75000
Miscellaneous Expenses	-	10000
Total		1,50,000

Hub Management – Option 2

This option is proposed for the Hubs operated by Franchisees. It will be obligation of the franchisee to place necessary staff / workers for operating the hub, including providing expenses for all day to day working. The DW will be graded by the franchisee and a fair price will be provided to them grade wise. The price will be cheaper by at least 50 paise per kg as compared to the market price. BBMP workers and ITC franchisees will bring the segregated wastes to the nearest hub.

HYDERABAD MODEL

The Hyderabad model is based on separate primary collection of dry and wet solid wastes. These wastes are collected and transported to designated collection points. From the collection points, these wastes are taken to the transfer stations. Here, the dry recyclables are sorted out employing mechanized technology in to paper, plastic, metal, glass, wood, textiles etc. The wet waste is treated to convert it to compost /biogas. The residual silt and civil construction debris is disposed in secured landfills.

There are huge costs in handling Municipal Solid Waste starting from the source points to disposal. Huge capital is required to install state of the art equipment to process the municipal solid waste. Therefore, Integrated Municipal Solid Waste Management is possible, provided the Government extends financial and infrastructure support as described below:

- 1) Reasonable tipping fee to be paid to the contractor in the range of Rs.1600 to Rs.2000 per tonne to cover the cost of source segregation, primary collections, movement of waste from collection points to the transfer stations and from there to dumping yards.
- 2) Government should allocate land of about 500 Acres to handle the municipal solid waste and create infrastructure like segregation and sorting system, recycling complex, compost yards, power plants (waste energy), landfills and instillations. For example a city of 7.0 million population like Hyderabad, must have two waste management facilities, each of a minimum of 500 acres in area.
- 3) It requires capital investment of about Rs. 10000 million.
- 4) Government to provide 100% grants for capital investment.

As a part of the project, four integrated waste management facilities are planned across Hyderabad.

Capital Investment	Rs. 9000 million for Phase I & II
Cost of Phase I	Rs. 5000 million
Financial Assistance by AP Government	Rs. 2500 million (50% grant)

The Government of Andhra Pradesh will transfer all existing infrastructure including the vehicles and machinery towards the project and will provide land license for transfer stations and dumping yard for the period of 25 years.

Sources: ITC-WOW, 2011

E-WASTE (MANAGEMENT AND HANDLING) RULES 2011

The Ministry of Environment and Forests has recently notified the e-waste (Management and Handling) Rules 2011 which apply to every producer, consumer involved in the manufacture, sale, purchase, and processing of electrical and electronic equipment or components as specified in schedule I, collection center, dismantler and recycler of e-waste.

The rule clearly defines the responsibility of each stakeholder in line with principle of "Extended Producer Responsibility".

The producer is responsible for -

- Collection and channeling of e-waste to registered recycler or dismantler.
- Setting up of collection centers or take back system individually or collectively
- Financing and organizing a system to meet the costs involved in management of e-waste generated.
- Creating awareness through publications, advertisement, posters with regard to information on management of e-waste and obtain authorization from State Pollution Control Board.
- File annual return in Form 3 to the State Pollution Control Board or Pollution Control Committee

Collection centers are responsible for -

- Obtaining an authorization from the State Pollution Control Board.
- To ensure that the e-waste collected by them is stored in a secured manner till it is sent to registered dismantler(s) or recycler(s).
- File annual return in Form 3 to the State Pollution Control Board or Pollution Control Committee
- Maintain records of the e-waste handled

Dismantler is responsible for -

- Obtaining an authorization from the State Pollution Control Board.
- Ensure that no damage is caused to the environment during storage and transportation.
- Ensure that the facility and dismantling processes are in accordance with the guidelines of Central Pollution Control Board.
- File annual return in Form 3 to the State Pollution Control Board or Pollution Control Committee

Recycler is responsible for -

- Obtaining an authorization from the State Pollution Control Board.
- Ensure that the facility and recycling processes are in accordance with the guidelines of Central Pollution Control Board.
- Ensure that residue generated thereof is disposed off in a hazardous waste treatment storage disposal facility.
- File annual return in Form 3 to the State Pollution Control Board or Pollution Control Committee

Source: Ministry of Environment and Forests Notification, 12th May 2011 on e-waste (Management and Handling) Rules, 2011. moef.nic.in/downloads/rules-and-regulations/1035e_eng.pdf