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Feasibility Study On

Waste Exchange Portal in India

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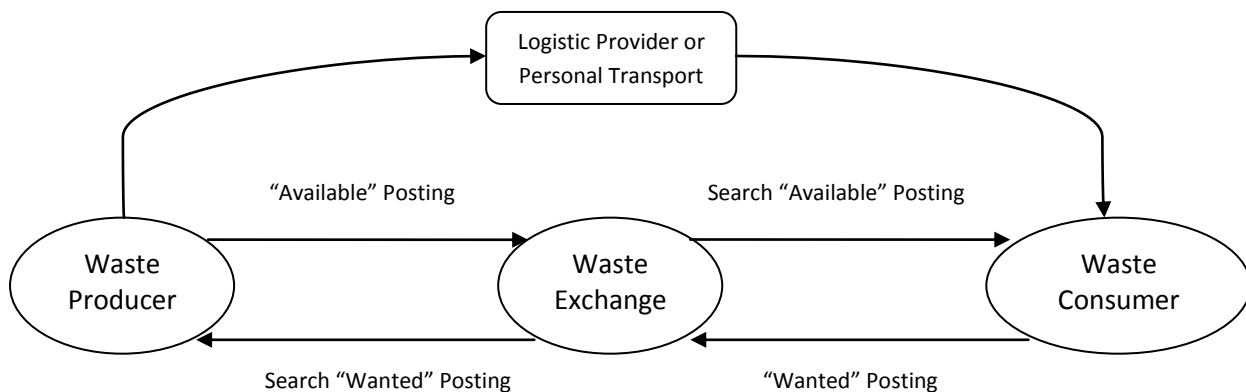
## Idea Description

The idea is to analyze the feasibility of an online platform for waste exchange between domestic and industrial entities through an online exchange portal. The portal will enable customers search, sell or buy waste. The aim of the Waste Exchange Platform is to develop a symbiotic relationship among the waste producing and consuming entities. The concept is also derived from the 3R concept which says that waste is reducible, reusable and recyclable. The portal focuses on the 2<sup>nd</sup> R i.e. waste is reusable.

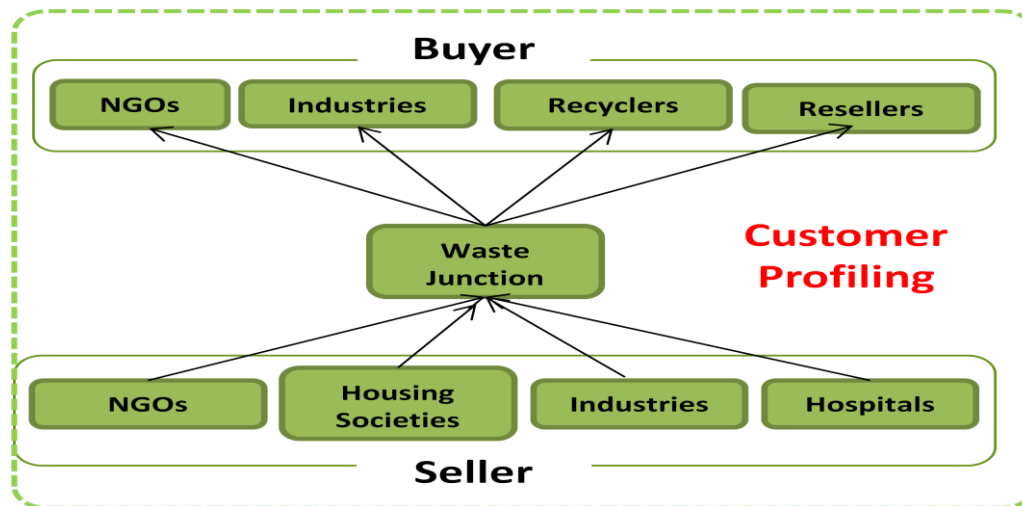
The biggest advantage of the online portal would be that it would be an open portal allowing large number of buyers and sellers on both sides of the market. Both industrial and household buyers and sellers can buy and sell their waste through the portal. In the current context it is difficult for small industries to find sellers whose waste they can use as source of their raw material. One of major factors responsible for this, is lack of information related to the presence and location of such buyers or sellers

The major advantage of the portal would be to remove information asymmetry and search cost. Identifying a matching buyer or seller would be easier and every buyer and seller would now be able to locate exactly what they want from where. The portal would also provide other advantages such as reduction in lead time for sale closure, better price discovery through auction mechanism, increase in reach by making searching easier, increase in awareness about waste and most importantly it will help customers make money by selling their waste.

## Model for the Waste Exchange



As mentioned the portal would be an open portal, so any entity wanting to sell or buy waste is our customer. During our field study we found that even organizations like Hospitals, big Hotels, and Industries etc. are interested in selling waste through our portal. The targeted buyers and sellers are represented below:



## Operational Details

Any successful exchange essentially delivers on four parameters:

- ❖ Price
- ❖ Quality
- ❖ Quantity
- ❖ Delivery

In the operational market there are three entities: the Buyer, the Seller and the intermediary - Waste Junction.

**Step 1:** A seller willing to sell its waste through the exchange raises the “**Request for Sale**” through an “**online form**”. The online form includes the description of waste along with its location and approximate quantity, reserve price, type of auction, delivery payment conditions and other special conditions with respect to transaction.

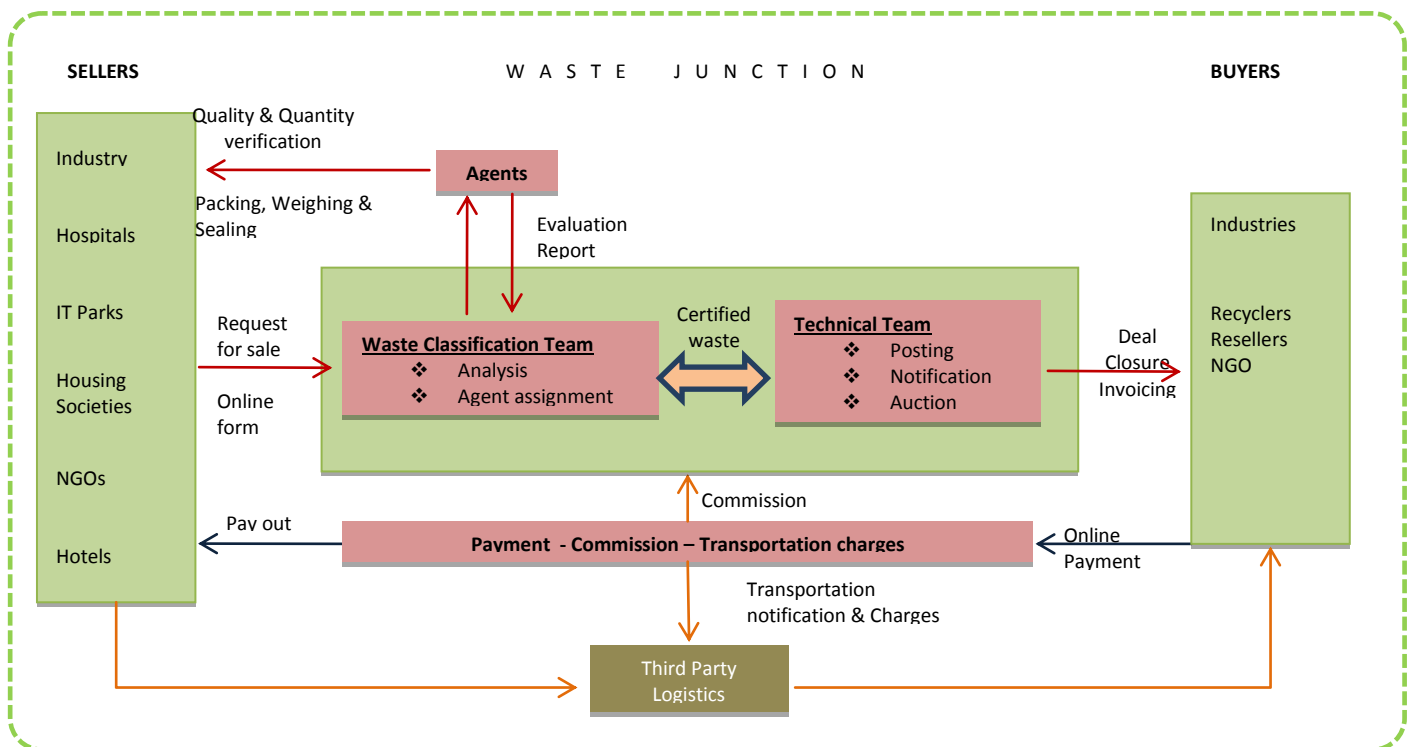
**Step 2:** After user submits the online form it goes to the Waste Classification Team (WCT). The WCT analyzes the waste for its type and assigns a specific Agent located closest to the waste location.

**Step 3:** The agent along with two workers visits the waste location to verify the quality, classification/type and measure the quantity of waste. Following the verification, the agent along with the workers measure the quantity, pack the waste in a bag and seal the bag by putting the waste junction Tag. Once the tag is put the seller is debarred to sell it to any other agency till the contract period. Agent then submits an evaluation report to the WCT.

**Step 4:** Based on the evaluation report the waste is certified and Technical Team initiates the posting, notification and auction of waste on the website. Once the auction is concluded and a buyer has been identified, an invoice is generated in the name of buyer who in turn makes an online payment to waste junction’s account. The payment includes the deal price (the value/rate at which the deal has been finalized), commission and the transportation charges as mentioned in the online form mentioned above.

**Step 5:** Once the payment has been made the **deal price is transferred to sellers account**, the **commission is retained by Waste Junction** and **transportation charges are transferred to third party logistics** which transfers the waste from the seller's to the buyer's premises within a stipulated time.

Therefore, Waste junction is delivering on price by better price discovery through auction mechanism and it is also creating value for both buyer and seller by providing better prices through disintermediation in the waste value chain. It is using external agents to guarantee the quality and quantity of waste there by certifying trust for the buyer. And finally it is also making arrangements for delivering the waste in a time bound manner – thereby fulfilling all the aspects of a successful exchange.



Operational Model for the Waste Exchange

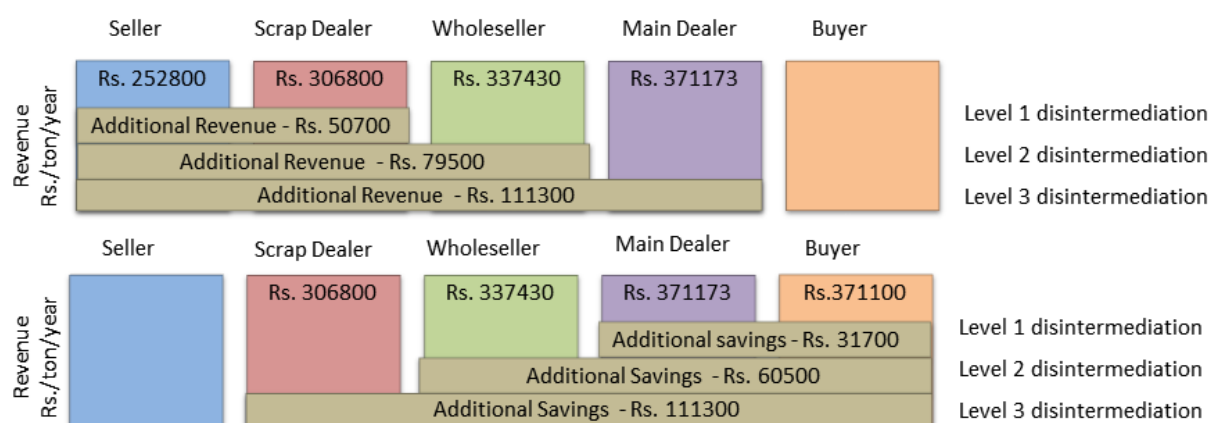
### Market Description and Value Addition through Disintermediation

During field research it has been found that there are three intermediaries in the waste value chain: the Scrap dealer, wholesaler and main dealer. The main dealer sells the scrap to the ultimate buyer i.e. recyclers and other waste consuming entities. Each of these intermediaries have a margin somewhere between 5 to 20 per cent based on different categories and subcategories of each product such as glass, metal, paper and plastic.

Category - Plastic	Waste generated in Bangalore / month Ton	Ratio of waste generated	Apartment Quantity Ton	Selling Price Levels, In INR			
				Seller	Scrap Dealer	Wholesaler	Main Dealer
PET	2.5	0.1	0.06	15.0	17.0	18.7	20.6
HDPE	21.0	0.5	0.48	15.0	20.0	22.0	24.2
PVC	1.5	0.0	0.03	20.0	22.0	24.2	26.6
LDPE	12.0	0.3	0.28	30.0	35.0	38.5	42.4
PP	1.0	0.0	0.02	25.0	30.0	33.0	36.3
Acrylic Sheet	2.5	0.1	0.06	45.0	50.0	55.0	60.5
Mixed Road Waste	1.5	0.0	0.03	5.0	6.0	6.6	7.3
Others	3.0	0.1	0.07	9.0	10.0	11.0	12.1

Table 1: Waste Plastic Distribution in Bangalore

To estimate the extent of additional revenue the sellers can have and additional savings the buyers can have, an illustration has been made for a mid-size apartment in Bangalore of 200 flats. The per capita daily plastic waste generation of Bangalore city is 36 grams/person/day which equates to 1.03 Tons of monthly plastic waste for 200 flats apartment. This aggregate amount of waste plastic is further subdivided into categories based on the ratio of different plastic waste generated in Bangalore. The buying price and selling price of each subcategory of plastic at each intermediary level has been identified through field research and revenue has been calculated.



Using the waste exchange both sellers and the buyers can dis-intermediate the scrap dealer, wholesaler and main dealer. If the seller does one level of disintermediation i.e. removes the scrap dealer from the value chain by selling directly to the wholesaler through waste junction then he makes an additional profit of INR 50700, if the buyer does two level of disintermediation and sells directly to main dealer then he makes an additional profit of INR 79500, similarly he makes an additional profit of INR 111300 if he sells directly to the ultimate buyer by doing three levels of disintermediation.

On similar lines if the seller buys through waste junction and does one, two or three levels of disintermediation then he makes additional savings of INR 31700, INR 60500 & INR 111300 respectively.

In real life scenario, on advent of waste junction, disintermediation will happen both from the seller side and from the buyer side resulting in mutual gains for both the players.

Similar analysis has been carried out for Glass, Paper and Metal categories and the cumulative savings has been carried out. The cumulative savings for the buyer ranges between INR 10300 to INR 309800 and the cumulative profit for seller ranges between INR 17800 to INR 309800 on an annual basis.

Category	Profit On Sellers Side Rs./ton/year	Savings On Buyer side Rs./ton/year
Glass	5900 – 26400	11200 – 26400
Papers	25700 – 38200	4440 – 38200
Metals	60000 – 134000	33000 – 134000
Plastic	50700 – 111200	31700 – 111200
Total	178000 – 309800	100300 – 309800

Table 2: Additional Revenue and Savings for Sellers and Buyers

## Industry Analysis: Porter 5 Force Framework

In order to understand the Waste Industry in India we did a Porter 5-Force analysis to understand the industry attractiveness and realized that the overall Industry attractive for waste in India is “Medium”. Let us discuss the analysis:

### **Bargaining Power of Suppliers (Moderate): Producers of Waste**

(+) **Low Switching Cost:** Waste industry in India is highly fragmented with large number of waste and scrap dealers, thus it is easy for the waste producers to easily move to any buyer of their waste, this lowers their switching cost thus increasing their bargaining power.

(+) **Low importance to Waste:** Waste as a product is not given much importance by the domestic and small industrial waste producing entities. They are even ready to dispose it off without deriving any value out of it. This nature of suppliers increases the bargaining power.

(-) **Ease of Doing Business:** The buyers i.e. the waste collectors or the scrap dealers also have the advantage of having large number of sellers of waste in the form of large number of housing societies. Thus it is relatively easy for them to do business decreasing the bargaining power of the sellers.

### **Bargaining Power of Buyers (Low): Buyers of waste explained above**

(+) **Low Switching Cost:** As a result of the fragmentation in the market as described above it is easy for the waste buyers to easily move to any seller of waste, this lowers their switching cost thus increasing their bargaining power.

(-) **High importance to Waste:** For the buyers the waste collection and selling is a means of earning their livelihood, thus it is essential for them to have a constant revenue source from the waste business which reduces their bargaining power.

(-) **Ease of Doing Business:** The waste market is plagued by governance issues involving people with strong political clout (“Mafia”). In such an atmosphere it is difficult to carry out business in an easy way.

#### **Threat of New Entrants (Medium/Low): New entrants like NGOs**

(+) **Low Entry Barrier:** There are no stringent government regulations which would make it difficult for the players to enter the market.

(-) **Requirement of Skilled Staff:** Parts of the business like waste data collection and analyzing and classifying waste, prospecting waste sellers and buyers to become customers & providing waste consultancy are skill intensive tasks raising entry barriers for new players.

(-) **High Governance Costs:** The governance problem discussed above will make it difficult for the new entrants to enter the market and risk their business.

#### **Threat of Substitutes (Very Low): Other dealers of Waste**

(-) **No Clear Substitutes could be identified for the Industry:** Waste production is a natural outcome for any industry and household and cannot be avoided. Thus there are no substitutes of the current business which is a link in the value chain to reduce, reuse and recycle the waste.

#### **Rivalry among Existing Firms (High)**

(+) **Large Number of Players:** As described the fragmented nature of the market ensures that there are large number of players in the market acting as direct competition of the existing business.

(-) **Presence of non-profit organizations:** The social cause spread by the non-profit organizations makes it very difficult for profit making entities to operate in the waste market.

(-) **Threat of Undercutting:** As there are large numbers of waste dealers in the market, there is always a threat of being undercut by a player willing to operate at lower margins, often making it difficult to operate in the market.

Thus from our analysis we find that the waste market in India Medium in terms of Bargaining power of suppliers, Low in terms of Bargaining power of the buyers, Low to Medium in terms of the threat of new entrants, Very low in terms of threat of substitutes and High in terms of the rivalry among the existing firms. Thus we find that the 5 forces have varying nature of intensity and only the rivalry among the existing firms if high. **Thus we rate the overall industry attractiveness as medium.**

A summarized diagram of the 5-Force analysis is shown below:

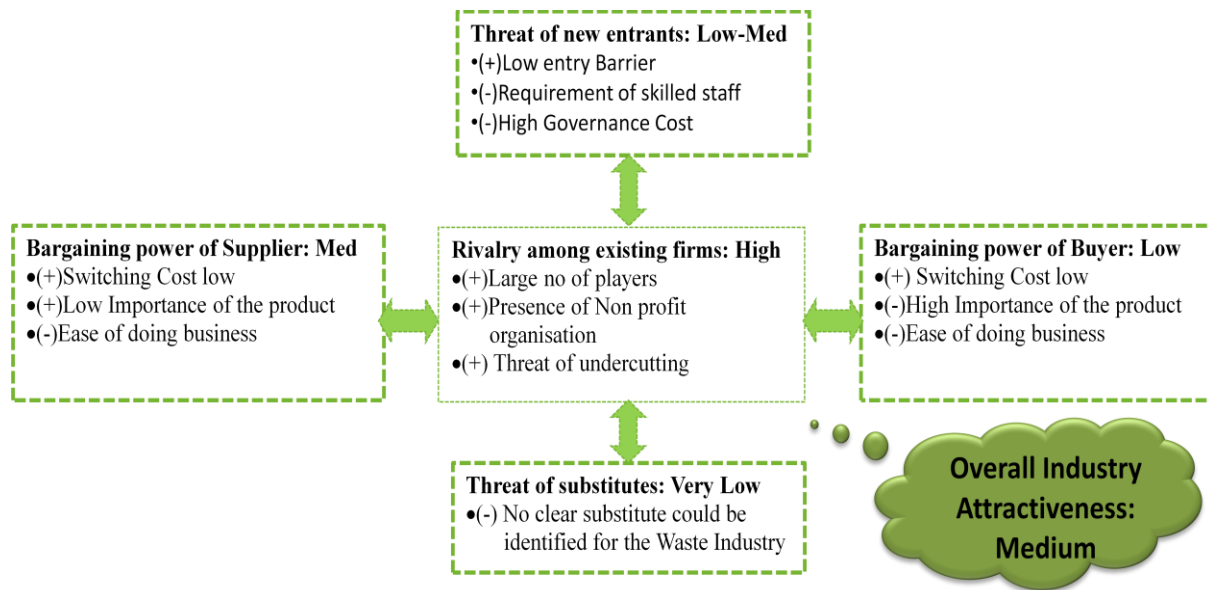


Figure 1: Porter 5 Force Analysis of Waste Industry in India

Some data related to the Waste industry in India are given below:

### Plastic Consumption in India

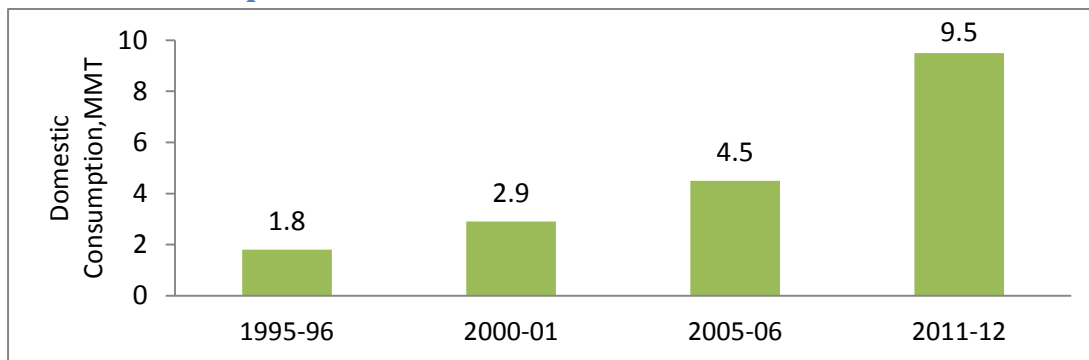


Figure 2: Plastic Consumption in India, in Million Metric Tones

### Waste Generation Trends in India

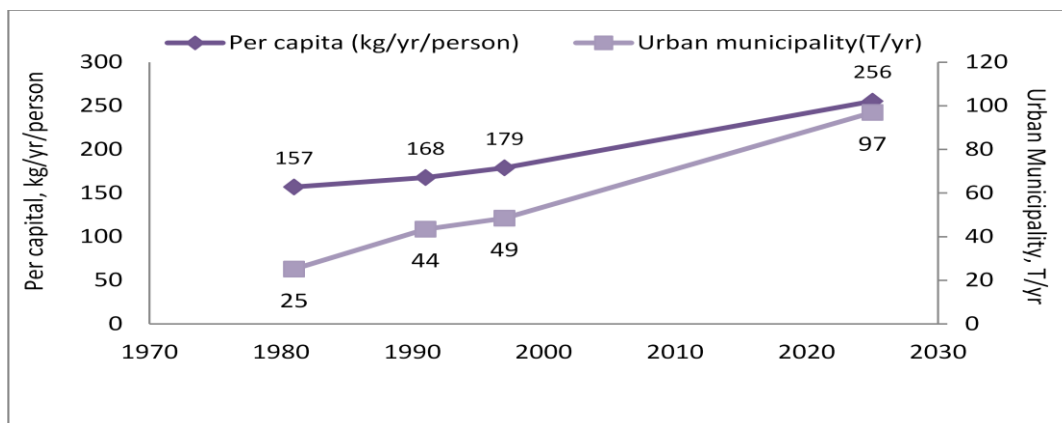
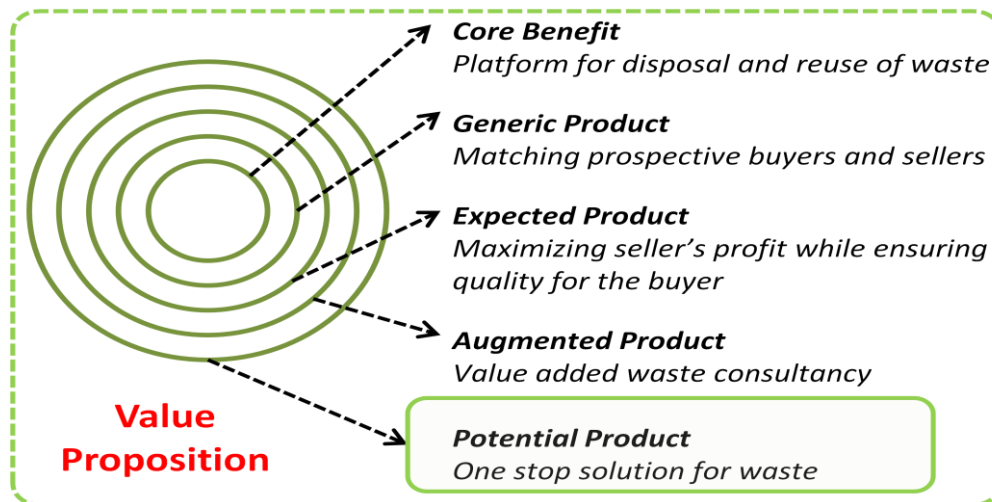


Figure 3: Waste Generation in India

## Benefits and Value Proposition

The most important benefit is that we will help our customers make money out of selling their waste and also make them more aware about the importance of waste and its management by reusing it. The other benefits are mentioned below:



The **core benefit** will be to provide a platform for disposal and reuse of waste. The platform will reduce information asymmetry, reduce search cost and enable large number of buyers and sellers of waste to exchange their waste through the portal. The **generic benefit** will be exact matching of the customers. The buyers and sellers will be able to exactly find a match for them overcoming the geographical barriers. The **expected benefit** will be to provide our customers a better value for their waste i.e. maximized profit for the seller while ensuring quality for the buyer. The **augmented benefit** will be to provide waste consultancy to our customers to help them reduce, recycle and reuse their waste. And finally, the **potential benefit** is to provide a “One Stop Solution” for waste, whereby we will contract with companies & big housing societies to manage their entire waste disposal & reuse part.

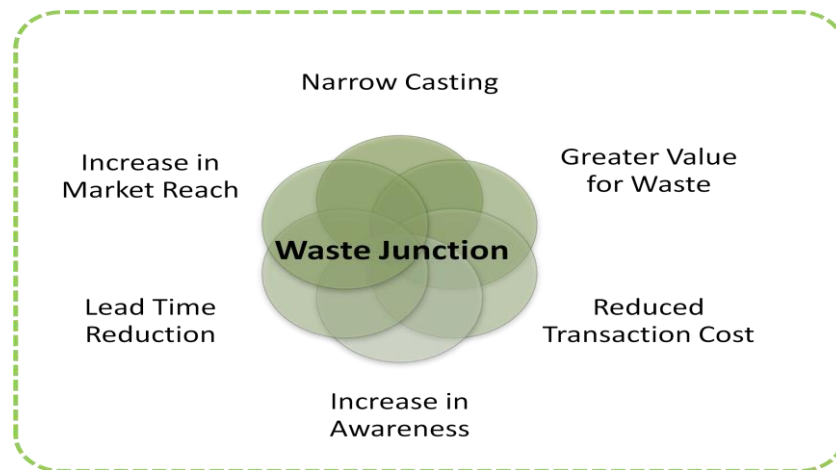
## Need, Service and Feature Details

### Need and Advantages of the Portal

Some of the advantages of using waste junction portal are described below:

- ❖ **Narrow Casting:** Using the website it will be easier for the buyers and sellers to locate what they “exactly” want.
- ❖ **Increased Market Reach:** It would be possible for a buyer or seller to easily locate a potential source anywhere within the country thus maximizing the chances of it getting what it wants.
- ❖ **Lead time reduction:** The overall time needed to close deals would be greatly reduced due to the role of electronic markets (online platform). Search cost will be drastically reduced; the negotiation period would be smaller because of consultancy services provided by sales force.

- ❖ Increased Awareness: The “Waste Awareness” education will increase awareness in market place creating a networking effect that will bring more buyers and sellers benefitting everyone.
- ❖ Reduced Transaction Cost: As the search cost is reduced and it is easier for the buyers and sellers to locate each other, the other kinds of transaction costs associated in the traditional model are removed.



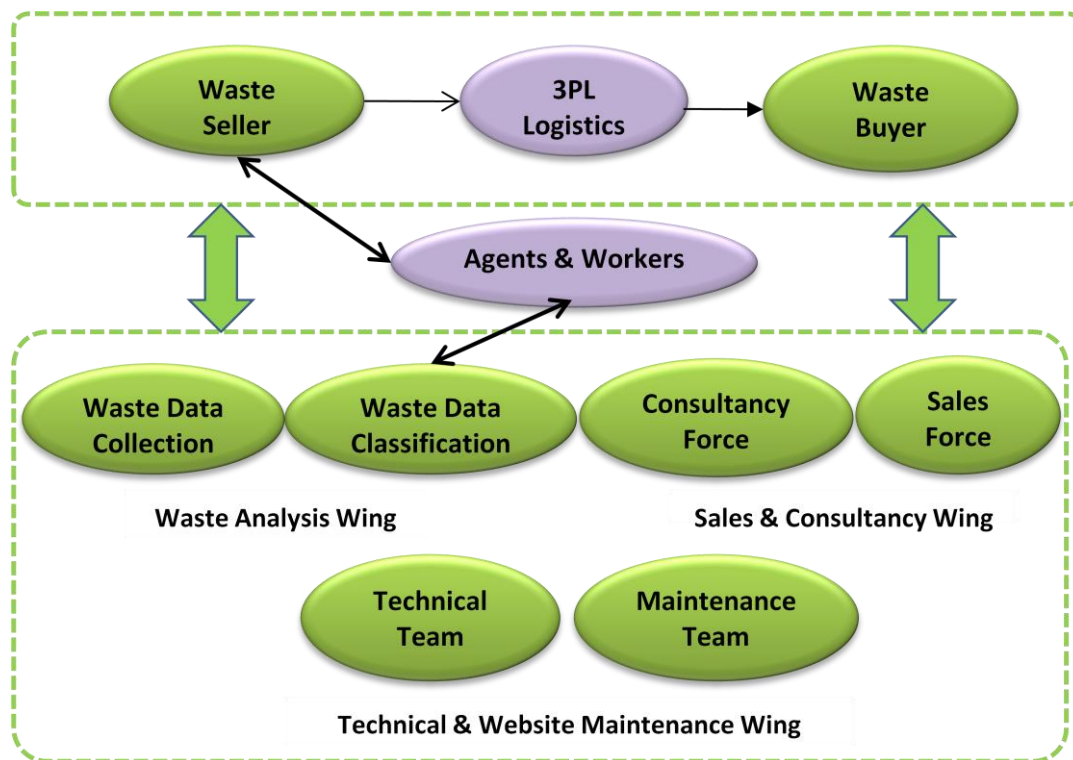
## Product and Service Details

The service details and various components of the platform are enlisted below:

- ❖ Online Waste Category List: The website will host an online categorization of waste into predefined categories called “Category List”. Initially we will start with four kinds of categories: Category (e.g. Plastic, Metals), Subcategory (e.g. within plastic e.g. PVC, PET etc.), Source (Industrial, domestic), and Geographical Location (Local, Regional and National)
- ❖ “Available” & “Wanted” Section: There will be two sections in the portal to describe the type, composition and the amount of waste each entity wants to sell or buy. “Available” section will list all the posting which have been put up by customers willing to sell their waste and “Wanted” section will be used by customers willing to buy waste. Each buyer and seller will have two ways to carry out the transaction. Say for a buyer, it can either search in the “Available” section or else it can also make a posting in the “Wanted” Section if the “Available” section does give appropriate matches. The same mechanism will work for the seller also.
- ❖ Waste Selling & Buying Customers: The Customers willing to sell or buy waste will be given “Available” and “Wanted” Spaces respectively on the website. The selling and buying process will proceed as described in the operational details section above.
- ❖ “Location Specificity” Feature: The website will also contain the “Location Specificity” feature. Since the transportation of the raw materials is complex and costly, the website will be hosted with three search level options: National, Regional and Local.

- ❖ “Assured Hit Service” Feature: The website will also offer “Assured Hit Service”. Even after the National Level search does not offer any successful matches, the online platform will store the request and intimate the enquiring entity if any prospective matches are found at a later date.
- ❖ “Hot Shot Matches” Feature: The platform will offer a “Hot Shot Matches” facility to subscribed clients by sending regular updates of better (closely located, better quality waste etc.) matches of its needs.
- ❖ “Waste Awareness” Education: The website will also host a “Waste Awareness” section which will increase the general awareness about industrial and household waste recycling and related matters.

## Functional Details



Sales and Consultancy Functions: The sales force will be responsible for generating customers through calls and contacts. It will also have domain experts who will provide consultancy support to buyers or sellers to smoothly close the sale. The consultancy wing would also provide value added consultancy services to the customers especially in some of the Industrial cases as described in the **Augment Benefit** Section above.

Waste Data Collection Functions: This body would be responsible for periodically collecting data from the companies and households related to what waste they produce, and what waste they can use. Their role will include creating a waste classification list based on the data collection. For e.g. for e.g. for waste plastic there are 5 major categories PET, HDPE, PVC,

LDPE, Mixed Road Waste. The body will be responsible for creating this classification for different categories like metals; rubber etc.

Waste Data Classification Functions: This body would be responsible for analyzing the posting in terms of nature of the waste, its properties etc. and then classify into one of the category and subcategory created above with the help of field agents and workers. After the verification is done, the classification body will work with the technical team to update the website and make the posting.

Technical and Website Maintenance Functions: It will jointly work with the Waste Analysis wing and the sales and consultancy wing to update website and database.

Agents and Workers: Agents and workers would be responsible for the Quality and Quantity verification. In a typical process flow, after a seller has requested for sale of waste through an online form which is scrutinized by the WCT team, the Agents near to a particular area are sent to the site along with 2 workers. These agents verify the waste in terms of quality and quantity, pack the waste in plastic bags and seal it. The agents then prepare an Evaluation report which is sent to the WCT team, which based on the form take the process further.

## Marketing Plan

Marketing Medium	Medium
Advertising	❖ Newspaper, Magazines and Journals, Internet and Social Media
Printed Material	❖ Technical Brochures, Pamphlets
Public Relations	❖ Seminars, Campaigns, Blogs, Events

## Marketing Roll out Plan for Year 1

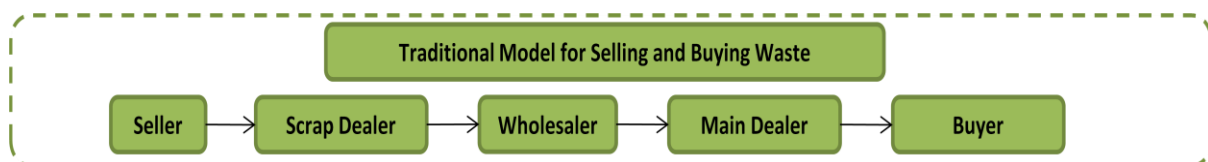
Waste Junction Roll Out Plan for the Gestation Period			
Gestation Period Estimates	Goal	Marketing Plan	Investment INR
0 - 3 Months	Grow in Bangalore in two categories: Plastics and Metal	Newspaper, Pamphlets, Internet, Social Media, Seminar	21,00,000
3 - 6 Months		Newspaper, Events in societies, Online campaigns, Brochure sent to companies	12,50,000
6 - 12 Months		Newspaper, Articles in Journals, Advertisements in magazines, Blogs	16,00,000

Within the first 3 months the idea is to make the portal popular through newspapers, pamphlets distributed within housing societies and NGOs and other industrial customers, use internet and social media like Facebook for advertising. For the next 3 months, we would organize events in societies and conduct online campaigns, also send technical brochures to

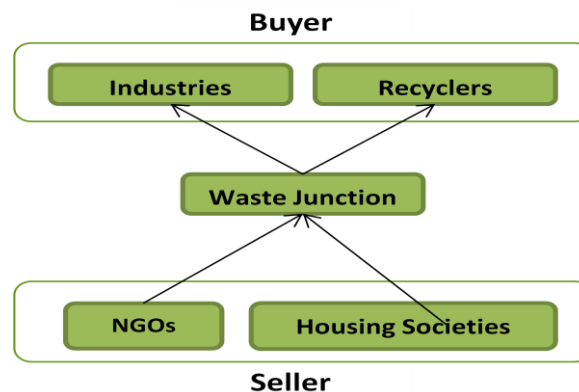
companies. Newspaper advertisements will also be used alongside. For the next 6 months, we will be aggressively post in Newspapers, give articles in Journals and Magazines and also host a blog for customers to interact and know more about the services and also increase their awareness about waste disposal and reuse.

## Case Study –Waste Market in Bangalore

In order to understand the waste market, many field visits have been performed in the city of Bangalore. Scrap dealers were visited for the first level data collection (Scrap Dealer: Khwaja Enterprises Bangalore, Contact: +91-9731113386, Diamond Enterprises Bangalore, Contact: +91-9141855123). This was followed by the data collection from the wholesale market for the second level market estimation (KR Market Bangalore). Social venture owners were also contacted to understand the market structure and to cross verify the details obtained. Based on the inputs we found that in the traditional model there are 3 levels of intermediation: Scrap Dealer, Wholesaler and the Main Dealer with the Seller and Buyer on the two sides.



Advantage of Waste Junction is that it would help in dis-intermediating some or all of these intermediaries thereby ensuring greater profits for the seller and greater saving for the buyer.



Market size and volume estimation has been done for 4 waste categories: Plastic, Metal, Paper and Glass. Following table shows estimated values annually for the city of Bangalore:

Category	Annual Volume	Scrap Dealer Market	Wholesale Market
	Million Tones	INR CRORES	INR CRORES
<b>Plastic</b>	0.10	254.10	292.90
<b>Metal</b>	0.50	2526.00	2944.50
<b>Paper</b>	0.13	70.65	95.63
<b>Glass</b>	0.30	103.65	140.62

Table 3: Estimated Annual Market Sizes and Volumes for Bangalore

The estimation tables for the Waste Plastic, Metal, Paper and Glass markets follow:

Category	Buying Price (Per Kg)	Margin of Reseller (Per Kg)	Selling Price (Per Kg)	Monthly Quantity (Tons)	No of Dealers	Estimated Total Market Value (Rs.)	Estimated Market Size (Tons)	
PET	15	2	17	0.2	2500	8500000	500	
HDPE	15	5	20	1.5	2500	75000000	3750	
PVC	20	2	22	0.1	2500	5500000	250	
LDPE	30	5	35	1	2500	87500000	2500	
PP	25	5	30	0.05	2500	3750000	125	
Acrylic Sheet	45	5	50	0.2	2500	25000000	500	
Mixed Road Waste	5	1	6	0.1	2500	1500000	250	
Others	9	1	10	0.2	2500	5000000	500	
Annual Total					In CRORE	254.1	0.1005	Million Tones

#### Estimation of Waste Plastic Market in Bangalore, Scrap Dealer Level

Category	Buying Price (Per Kg)	Margin of Reseller (Percentage)	Selling Price (Per Kg)	Monthly Quantity (Tons)	No of Wholesalers	Estimated Total Market Value (Rs.)	Estimated Market Size (Tons)	
PET	17	10	18.7	2.5	200	9350000	500	
HDPE	20	10	22	21	200	92400000	4200	
PVC	22	10	24.2	1.5	200	7260000	300	
LDPE	35	10	38.5	12	200	92400000	2400	
PP	30	10	33	1	200	6600000	200	
Acrylic Sheet	50	10	55	2.5	200	27500000	500	
Mixed Road Waste	6	10	6.6	1.5	200	1980000	300	
Others	10	10	11	3	200	6600000	600	
Annual Total					In CRORE	292.908	0.108	Million Tons

#### Estimation of Waste Plastic Market in Bangalore, Wholesaler Level

Category	Buying Price (Per Kg)	Margin of Reseller (Per Kg)	Selling Price (Per Kg)	Monthly Quantity (Tons)	No of Wholesalers	Estimated Total Market Value (Rs.)	Estimated Market Size (Tons)	
Brass	270	5	275	3.75	200	206250000	750	
Copper	400	15	415	7.5	200	622500000	1500	
Aluminium	95	5	100	15	200	300000000	3000	
Stainless Steel	31	3	34	17.5	200	119000000	3500	
Mild Steel								
Ferrous	25	2	27	150	200	810000000	30000	
Zinc	115	5	120	4	200	96000000	800	
Lead	90	10	100	15	200	300000000	3000	
Annual Total					In CRORE	2944.5	0.5106	Million Tons

#### Estimation of Waste Metal Market in Bangalore, Scrap Dealer Level

Category	Buying Price (Per Kg)	Margin of Reseller (Per Kg)	Selling Price (Per Kg)	Monthly Quantity (Kg)	No of Dealers	Estimated Total Market Value (Rs.)	Estimated Market Size (Tons)	
Brass	250	20	270	300	2500	202500000	750	
Copper	370	30	400	500	2500	500000000	1250	
Aluminium	90	5	95	1000	2500	237500000	2500	
Stainless Steel	26	5	31	1500	2500	116250000	3750	
Mild Steel								
Ferrous	22	3	25	10000	2500	625000000	25000	
Zinc	105	10	115	300	2500	86250000	750	
Lead	80	10	90	1500	2500	337500000	3750	
Annual Total					In CRORE	2526	0.453	Million Tons

#### Estimation of Waste Metal Market in Bangalore, Wholesaler Level

Category	Buying Price	Margin of Reseller	Selling Price	Monthly Quantity	No of Dealers	Estimated Total Market Value	Estimated Market Size	
	(Per Kg)	(Per Kg)	(Per Kg)	(Kg)		(Rs.)	(Tons)	
Craft Box	5	2	7	2250	2500	39375000	5625	
Notebook	8	5	13	350	2500	11375000	875	
Wastage	1	1	2	500	2500	2500000	1250	
Newspaper	6	3	9	250	2500	5625000	625	
Total						58875000	8375	
Annual Total					In CRORE	70.65	0.1005	Million Tons

#### Estimation of Waste Paper Market in Bangalore, Scrap Dealer Level

Category	Buying Price	Margin of Reseller	Selling Price	Monthly Quantity	No of Wholesalers	Estimated Total Market Value	Estimated Market Size	
	(Per Kg)	(Percentage)	(Per Kg)	(Tons)		(Rs.)	(Tons)	
Craft Box	7	10	7.7	20	350	53900000	7000	
Notebook	13	10	14.3	3	350	15015000	1050	
Wastage	2	10	2.2	5	350	3850000	1750	
Newspaper	9	10	9.9	2	350	6930000	700	
Total						79695000	10500	
Annual Total					In CRORE	95.634	0.126	Million Tons

#### Estimation of Waste Paper Market in Bangalore, Wholesaler Level

Category	Buying Price	Margin of Reseller	Selling Price	Monthly Quantity	No of Dealers	Estimated Total Market Value	Estimated Market Size	
	(Per Kg)	(Per Kg)	(Per Kg)	(Kg)		(Rs.)	(Tons)	
Pharma	2.5	1	3.5	100	2500	875000	250	
Liquor	3.5	0.5	4	8500	2500	85000000	21250	
Food	3.5	0.5	4	50	2500	500000	125	
Total						86375000	21625	
Annual Total					In CRORE	103.65	0.2595	Million Tons

#### Estimation of Waste Glass Market in Bangalore, Scrap Dealer Level

Category	Buying Price	Margin of Reseller	Selling Price	Monthly Quantity	No of Wholesalers	Estimated Total Market Value	Estimated Market Size	
	(Per Kg)	(Percentage)	(Per Kg)	(Tons)		(Rs.)	(Tons)	
Pharma	3.5	20	4.2	1.5	200	1260000	300	
Liquor	4	20	4.8	120	200	115200000	24000	
Food	4	20	4.8	0.75	200	720000	150	
Total						117180000	24450	
Annual Total					In CRORE	140.616	0.2934	Million Tons

#### Estimation of Waste Glass Market in Bangalore, Wholesaler Level

## Financial Projections, Usage of Funds

The business will need an initial corpus of INR 8 CRORES towards all expense for startup cost (all expenses are shown in the table below) and operation for the first year, which will be managed through either VC funding or bank loan. The business will generate profits by the end of first year itself and will breakeven by the end of third year. The business will generate positive cash flow by the end of first year and will be able to repay the initial capital invested by the end of third year. Following assumptions have been made to arrive at the expenditures:

- ❖ Commission: 5% of the overall Transaction Value
- ❖ Average cost of each computer to be used for official purposes INR 35,000
- ❖ Average cost of each PDA be used by the Waste Data Collection People INR 10,000
- ❖ Travel expense is 25% of total salary of Waste Data Collection, Quality Assurance & Classification, Sales and Consultants employees
- ❖ Miscellaneous cost is assumed to be 30% of all expenses

	Units	Year 1	Year 2	Year 3
<b>Number of Cities</b>		1	3	5
<b>Plastic Market</b>	CRORES	293	879	1465
<b>Metals Market</b>	CRORES	2945	8834	14723
<b>Paper Market</b>	CRORES	96	287	478
<b>Glass Market</b>	CRORES	141	422	703
<b>Market Share</b>	Percentage	5%	5%	5%
<b>Commission</b>	Percentage	5%	5%	5%
<b>Total Revenues</b>	<b>CRORES</b>	<b>8.7</b>	<b>26.1</b>	<b>43.4</b>
<b>Expenses from Operations</b>				
<b>Marketing Expense</b>	CRORES	0.50	1.49	2.48
<b>Salary Expense</b>	CRORES	1.16	2.77	4.38
<b>Office Rental</b>	CRORES	0.18	0.54	0.90
<b>Electricity Expense</b>	CRORES	0.03	0.10	0.17
<b>Material Cost</b>	CRORES	0.21	0.63	1.04
<b>Training Cost</b>	CRORES	0.03	0.06	0.12
<b>Miscellaneous Cost</b>	CRORES	0.34	0.86	1.41
<b>Total Expenses</b>	CRORES	2.8	7.3	11.9
<b>EBITDA</b>	<b>CRORES</b>	<b>5.9</b>	<b>18.8</b>	<b>31.5</b>

Table 4: Total Revenues and EBITDA figures for first 3 Years

Loan Amount	CRORES	7		
Interest Rate	Percentage	13%		
Tax Rate	Percentage	33%		
EBITDA	CRORES	5.867	18.784	31.483
Interest	CRORES	0.910	0.910	0.910
PBT	CRORES	4.957	17.874	30.573
Tax	CRORES	1.636	5.899	10.089
PAT	CRORES	3.321	11.976	20.484
<b>Profitability</b>		<b>38%</b>	<b>46%</b>	<b>47%</b>
Principal	CRORES	7.000	7.000	7.000
Principal Paid	CRORES	0.000	0.000	7.000
Principal Left	CRORES	7.000	7.000	0.000
Cash Flow	CRORES	3.321	11.976	13.484

Table 5: Break even and Cash Flow Figures for first 3 Years

Some of the major expenses like salary expense and Electricity are shown to give an understanding of the expense calculation:

Salary Expense for One Operational City, In Rs.							
Nature of Employee	Salary Per Person	Year 1		Year 2		Year 3	
		Number	Total	Number	Total	Number	Total
Waste Data Collection	35000	4	140000	12	420000	20	700000
Quality Assurance & Classification	35000	2	70000	6	210000	10	350000
Sales Team	40000	6	240000	18	720000	30	1200000
Consultants	50000	2	100000	6	300000	10	500000
Website Technical & Maintenance	30000	2	60000	2	60000	2	60000
Founders Salary	80000	3	240000	3	240000	3	240000
Miscellaneous	8000	1	8000	3	24000	5	40000
Agent Cost			99000		297000		495000
Worker Cost			13200		39600		66000
<b>Total Annual Salary</b>			<b>11642400</b>		<b>27727200</b>		<b>43812000</b>

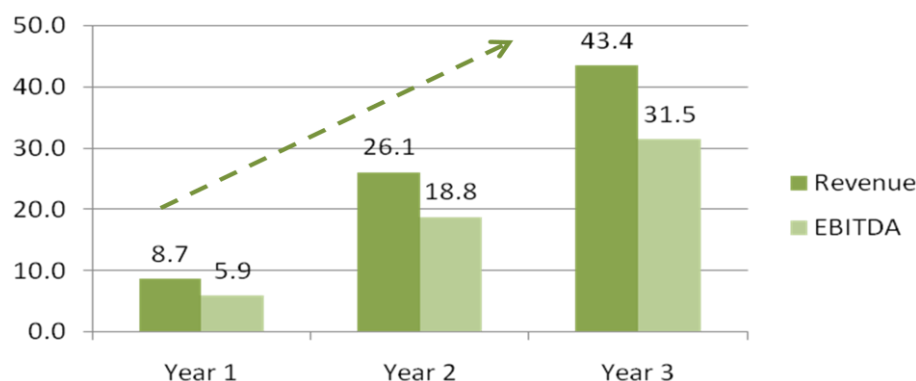
**Estimation of Annual Salary Expense for first 3 Years**

Electricity Cost				
Item	Watt	Quantity	Units/day	Working hours 9
Tubelight	36	20	6480	
Table Fan	60	10	5400	
Exhaust fan	125	3	3375	
Phone Answering Machine	100	16	14400	
Computer	100	16	14400	
Monitor	100	16	14400	
Printer	50	3	1350	
Fax	250	3	6750	
AC 1.5 Ton	2100	5	94500	
<b>Total/Day</b>			<b>161055</b>	
<b>Total/Month</b>			<b>4831650</b>	
<b>Total Units in KWh</b>			<b>4831.65</b>	
<b>Total Cost Of Electricity</b>			<b>28506.74</b>	
<b>Total Annual Electricity Cost</b>			<b>342080.8</b>	

**Estimation of Total Annual Electricity Expense**

Total Number of Agents Per Day	11
Total Number of Workers Per Day	22
Total Expense for Agents Per Month	495000
Total Expense for Workers Per Month	66000
Total Number of Agents For All Categories	44
Total Number of Workers For All Categories	88
Total Expense for Agents For All Categories	1980000
Total Expense for Workers For All Categories	264000
Applicable Agents Expense	99000
Applicable Worker Expense	13200
Applicable Number of Agents	3
Applicable Number of Workers	6

**Estimation of Number of Agents and Workers and Associated Costs**



Revenue and EBITDA Growth for the First 3 Years

Waste Junction is estimated to grow from estimated revenues of INR 8.7 CRORES at the end of year 1 to INR 43.7 CRORES at the end of Year 3. EBITDA is projected to increase from INR 5.9 CRORES at the end of Year 1 to INR 31.5 CRORES at the end of Year 3. PAT as a percentage of Sales revenue increases from 38% to 47% from end of Year 1 to end of Year 3.

## Risk Identification and Mitigation

### Identification of favorable factors

- ❖ Potential Large number of Household and Industrial Buyers & Sellers
- ❖ Better price discovery through Auction Mechanism
- ❖ No established player especially in industrial sector
- ❖ Zero waste & Environmental conscious image - pull customers
- ❖ Less intermediaries & lower cycle time for sale closure

### Identification of unfavorable factors

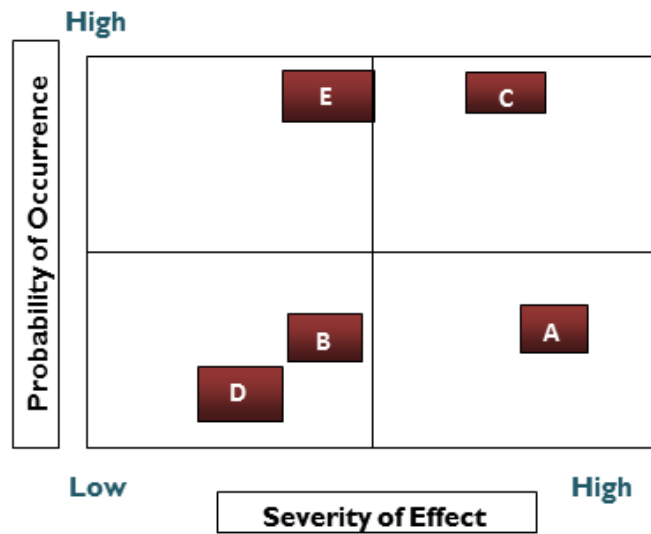
- ❖ Threat of potentially bypassing website once players are identified
- ❖ Threat of governance especially in household cases
- ❖ Threat from NGOs specially in the household segment
- ❖ Physical transportation is still a bottleneck between players
- ❖ Requirement of skilled Waste analysis & sales team

Based on the above mentioned factors a list of five independent risks has been identified along with their mitigation strategies.

Risk Mitigation	Contingency Plan
Threat of Bypass	Well designed Auction for higher prices, Anonymity of buyer & Seller
Threat of Governance	Players can enter a bidding only after signing a legal contract
Threat from NGOs	NGOs collecting household waste can be convinced to sell through the portal
Physical Transportation	3PL logistics services, payment terms to be decided between buyer & Seller
Need for Skilled Labor	Outsources waste related activities to agencies expert in the field

Table 6: Table of Business Risks and Their Mitigation Strategies

The five risks have been mapped in the following matrix to find the order of riskiness of the risks in order to sequentially mitigate them. The risks which are high on severity and also high on the frequency of occurrence are the ones which are most important for the business



From the matrix we find that the risk which is most important for our business as of now is the Threat from NGOs who are in a way our direct competitors and have also gained market share in the business. However Waste Junction will have an advantage over the NGOs as well. The NGOs do not generally have a huge customer base again due to the problem of reach and have to deal with the resellers and recyclers directly which is a problem because of the governance issues. Thus the NGOs can also be convinced to sell through our portal as they would gain the advantage of a larger customer base and also better prices.

### Future Course of Action

First year will be spent in establishing the business in Bangalore and arranging for business extension in other cities, creating waste categories, making industrial and community contacts etc. The details of the actionable plan are as follows.

#### Actionable plan till Year Three

The primary objective till year three is **Strategy of Geographic Expansion**. The business will be scaled replicating the model of Bangalore to four more cities – Delhi, Pune, Kolkata and Mumbai.

#### Actionable plan for Year Four

The primary objective of year four is **Strategy of Industrial Expansion**. Industrial waste categories e.g. Organic and Inorganic Chemicals, Acids, Slag, Steel scraps, glass wool, fly ash etc. will be introduced.

#### Actionable plan for Year Five

The primary objective of year five is **Strategy of Categorical Expansion and New Services**. New service lines would be introduced including Waste Audit and Waste Consultancy services for the corporate, industries and housing societies.

## Actionable plan for Year Six and beyond

After diversifying into industrial waste, Waste Junction will embark on a bigger role of collaborating with industry to provide a complete waste solution. Waste junction will collaborate with industry partners to maximize selling and buying of all possible waste through the exchange.

