Sample Study of Informal Scrap Dealers and Recyclers in Bangalore

February – April 2011
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Background

India has an age old practice of recycling. However a large amount of waste, due to newer forms of packaging, does not find its way into the recycling stream and is mixed with other forms of municipal solid waste. Traditionally, people are used to keeping newspapers, magazines, used note books, milk packets, large shampoo and detergent bottles etc. But there exists a huge potential for the recovery of several forms of paper and plastic packaging that can feed into the recycling chain. Bangalore has a long history of community participation in its solid waste management with a number of initiatives started in the late nineties, with focus on management of waste at the source, many of them involving waste pickers. At this time there was no legal obligation on the part of citizens to segregate waste at source or on the part of medical establishments to dispose of the hazardous waste safely. There was, however, a rising awareness of the need for such legislation mandating citizens and municipalities on the manner in which solid waste should be handed over, collected, transported and treated, a paradigm shift, from NIMBY (not in my backyard) to YIMBY (yes in my backyard) syndrome.

In 2000, the Municipal Solid Waste (handling and management) Rules came into force making it mandatory for citizens to segregate waste at source into bio-degradable and non bio-degradable fractions. Further, since 2009, the Karnataka State Pollution Control Board (KSPCB) has laid down the stipulation that all apartment complexes with a capacity of more than 100 units should manage their solid waste at source, which implies dealing with both the organic and the recyclables at the point of generation. As a result, all large-sized apartment buildings now provide the necessary infrastructure to carry out composting and segregation of dry waste for recycling.

The informal resource recovery of waste is a sector whose role is underplayed and underestimated. It remains at the fringes, with no formal recognition like other sectors. Yet the role that it performs is invaluable. Starting from the recovery at the point of generation through the chain of secondary sorting, storage, wholesale trade and reprocessing, there is an age-old system that has been working in the city since the last fifty years and more. There are waste pickers, itinerant traders and waste buyers, local scrap dealers, wholesale dealers and reproprocessors. At every stage there is value addition. By recovering nearly 20% of the total waste at the point of generation (this is the average amount of recyclable dry waste out of total waste generated), significant savings can be made in transportation and land filling costs. Estimates shows that the BBMP saves Rs. 15 lakh per day for a total daily dry waste generation of 700 tonnes (calculated at the current cost of Rs.2219 per tonne, the current costs for BBMP to landfill 1 tonne of waste).

The first level of recovery is done by waste pickers and itinerant buyers. In India it is estimated that there are 15 lakh waste pickers and itinerant buyers (Source: Alliance of Indian Waste pickers). In order to draw attention to the lack of accurate data on waste pickers in Bangalore, and recognition of their contribution to the waste management in the city, CHF International and Mythri Sarva Seva Samithi (MSSS) undertook a sample survey of 264 informal waste pickers in Bangalore September and October 2010. The survey gave insights to the different categories of waste pickers that exist and their socio-economic conditions and initiated a process of change.

The waste pickers and itinerant buyers sell the materials to scrap dealers and whole sale dealers who aggregate and sort the material before it is reprocessed. In an effort to understand the quantities of recyclable waste retrieved and the informal systems that manage them, CHF International and MSSS undertook a sample survey of informal and formal recyclers (including scrap shops, whole sale dealers and reproprocessors) in Bangalore in February to April 2011.
The objectives of the survey were to:

- Understand the socio economic conditions of different categories of recyclers in order to help formalize their role in managing waste in the city.
- Understand the economics of waste retrieval / management by the informal economy through studying how waste is retrieved at the source and chart its journey to the recovery and recycling markets.
- Map scrap dealers in 16 wards in Bangalore on a GIS platform

The funding for the study was jointly shared by CHF International and MSSS. CHF International utilized its own funds for the survey while MSSS was supported by FEM Italia Onlus.
Methodology

The survey of recyclers (including scrap shops, whole sale dealers and reprocessors) was conducted with the help of 6 Surveyors (field staff of organisations working in poor communities), two research coordinators and one GIS assistant.

Categories of recyclers

After preliminary discussions the following categories of recyclers were identified:

- Small scrap shops (less than 300 kg/day)
- Medium scrap shops (300 Kg - 1 tonne/ day)
- Large scrap shops ( more than 1 tonne /day)
- Wholesale dealers (in specific whole sale markets)
- Reprocessors ( in specific recycling hubs)
- Companies ( dealing with collection and sale of scrap materials)

Categories can also depend on type of recyclables handled by scrap shops. A small scrap shop mainly deals with materials which are high value and have less volume due to space constraints, majority are shop cum residence with only one worker or no workers to segregate the materials. Medium scrap shops are more spacious and will have workers to sort the materials and they deal with all recyclables. Large scrap shops will have a lot of employees with spacious area to store the materials and usually located away from residential areas although this is not true across the city.

Data collection

Information on the economics of waste management by the informal and formal recyclers and their socio-economic conditions was collected using questionnaires. An external consultant prepared the questionnaires with inputs from CHF and coordinated the survey in association with CHF and MSSS. The questionnaires were field tested before finalization. The survey of small and medium scrap shops in 16 wards in the city was undertaken by field staff of five grassroots organisations in different locations of the city including:

1. Grace
2. Gilgal Charitable Trust
3. Divya Jyothi Trust
4. Ragpickers Education & Development Scheme (REDS)
5. Waste Wise Trust
A one page questionnaire was administered by the field staff after adequate training. A team from CHF and the field staff also mapped the small and medium scrap shops using a GPS device and developed ward level maps on a GIS platform. The external consultant surveyed large scrap shops, wholesale dealers, recyclers and companies using a detailed questionnaire. Case studies of large scrap shops, wholesale dealers, recyclers, wholesale and recycling hub -Jolly Mohalla and Kasa Rasa (waste to resources) centre, a decentralised SWM centre within the existing framework of scrap dealers, waste-pickers and municipal workers were also prepared to get detailed, qualitative information.

### Sample size

<table>
<thead>
<tr>
<th>Category</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Small scrap shops and Medium scrap shops</td>
<td>In 16 wards in Bangalore</td>
</tr>
<tr>
<td>2 Large scrap shops</td>
<td>9</td>
</tr>
<tr>
<td>3 Wholesale dealers</td>
<td>11</td>
</tr>
<tr>
<td>4 Reprocessors</td>
<td>2</td>
</tr>
<tr>
<td>5 Companies (paper and tetrapak)</td>
<td>2</td>
</tr>
</tbody>
</table>
Survey Findings
Small, medium, large scrap shops and wholesale dealers

I. Small and Medium Scrap Shops
Small and medium scrap shops are the primary source to get the recyclables to the market. This survey covering 16 wards across 6 zones was conducted with the help of 5 NGOS’s. 310 shops were surveyed out of which 305 samples were considered for analysis and remaining 5 samples did not respond.

16 wards were selected across the 6 zones namely:

<table>
<thead>
<tr>
<th>Bangalore Zones</th>
<th>Ward no</th>
<th>Ward name</th>
</tr>
</thead>
<tbody>
<tr>
<td>East zone</td>
<td>21</td>
<td>Hebbal</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>Kadugondanahalli</td>
</tr>
<tr>
<td></td>
<td>49</td>
<td>Lingarajapuram</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>Sagayapuram</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>Nagavara</td>
</tr>
<tr>
<td></td>
<td>58</td>
<td>New Thippasandra</td>
</tr>
<tr>
<td></td>
<td>117</td>
<td>Shanthi nagar</td>
</tr>
<tr>
<td></td>
<td>111</td>
<td>Shanthala nagar</td>
</tr>
<tr>
<td>Rajarajeshwari nagar zone</td>
<td>131</td>
<td>Nayandahalli</td>
</tr>
<tr>
<td></td>
<td>128</td>
<td>Nagarbhavi</td>
</tr>
<tr>
<td>Madvepura zone</td>
<td>56</td>
<td>A.Narayanapura</td>
</tr>
<tr>
<td>South Zone</td>
<td>170</td>
<td>Jayanagar</td>
</tr>
<tr>
<td></td>
<td>154</td>
<td>Basavangudi</td>
</tr>
<tr>
<td></td>
<td>127</td>
<td>Moodalpalya</td>
</tr>
<tr>
<td>Byatarayanapura zone</td>
<td>34</td>
<td>Kodigehalli</td>
</tr>
<tr>
<td>Bommanahalli zone</td>
<td>175</td>
<td>Bommanahalli</td>
</tr>
</tbody>
</table>

The number of scrap shops surveyed in each ward is given below:

![Scrap shops diagram]

CHF International / Mythri Sarva Seva Samithi, February-April 2011
Some of the major findings are given below.

1. Type of scrap shops
Of the 310 small and medium scrap shops based on the quantities of waste handled per day:
   - 91% (279) were Small scrap shops (less than 300Kg per day)
   - 9% (26) were Medium scale scrap shops (300 to 1 ton per day)

2. Length of the time in business
Around 70% (214) of scrap shops are less than 5 years old, 23% (69) are between 5 to 10 years old and 7% (22) had more than 10 years of business experience in the recyclables trade.

3. Shop ownership
96% (294) of shops are rented and only 4% (11) of shops are operating in their own premises, all of which are small scrap shops.

4. Number of employees
34% of scrap shops has one worker, 27% have two workers, 9% of scrap shops have 3 workers and a significant 24% of scrap shops do not have any workers in their shops. Here the owner’s work themselves and in few cases family members assist. Only 1% has more than five workers.

5. Sources of recyclable waste
Both small and medium scrap shops get recyclables from various sources. Majority of the waste is sourced from house maids (78%) and residents (74%), 48% from waste pickers, 37% from BBMP municipal workers, 35% from Itinerant buyers and 21% from other traders including factory workers, hotels, office assistants,
bar & restaurants and construction workers also supply recyclable materials to the shops.

6. Frequency of sale of Recyclables Materials
A significant 49% (150) scrap shops sell their recyclables once every month and 26% (79) sell once a week mainly due to space constraint. Similarly 14% (42) scrap shops sell waste every 15 days and 3% (9) sell twice in a week. 5% (15) of shops had varied times ranging from once in 3-4 months to depending on quantities and dealers flexibility to pick up materials.

7. Average income per month:
Although most scrap dealers are reluctant to give this information. Broadly the analysis shows that 50% of scrap shop owners earn in the range of Rs 1001 to 3000 per month, 29% in the range of Rs 3001-5000, 7% more than Rs 5000 and 6% earn a profit in the range of Rs 300 to 1000 per month. 8% refused to reveal details.

8. Links with wholesale dealers
Study shows that the main recyclable hub in Bangalore is Jolly Mohalla. Around 58% (178) of the surveyed shops sell the recyclables in Jolly Mohalla and 19% (57) to local whole sale dealers in Mahadevpura, Shampura and Danisandra, 15% (47) to dealers who come and pick the materials from their shop or sell it to nearby whole sale shops, 6% (17) sell it to godowns/storehouses in Kasturibanagar, BHEL, Rajarajeswari nagar, Marathahalli, Kanakanagar, Venketeshpura and Shampura.

9. Transportation of materials
Transportation is a major expense while selling recyclables in the market; the shops have to invest in transporting the materials. Analysis shows that 69% are hiring vehicles to transport recyclables whereas 20% have dealers sending vehicles and 10% of shops have their own transportation.

10. Challenges and problems faced by scrap shop owners:
The data reveals that 70% of the scrap shop owners are facing harassment from the police. They have to pay regular bribes as most of the shops do not have a license to operate. Some shops also face problems from residents. Space constraint is another major problem.
II. Large Scrap Shops

Ten large scrap dealers were surveyed. They buy all types of scrap waste from high value cartons and PET bottles to low value thin plastic bags. One of the scrap dealers is located in Jolly Mohalla, the wholesale hub, while the rest are located in different parts of the city, more towards the outer areas such as Thanisandra, Cholanayakanahalli, Kodigehali and Bavaninagar.

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Sales per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Azeez, M N Enterprises</td>
<td>Jolly Mohalla</td>
<td>27,000</td>
</tr>
<tr>
<td>2 Simpson</td>
<td>Cholanayakanahalli</td>
<td>8,000</td>
</tr>
<tr>
<td>3 Prakash</td>
<td>Central Silk Board, Outer Ring Road</td>
<td>8,000 to 10,000</td>
</tr>
<tr>
<td>4 Ponnuswamy</td>
<td>Kanakanagar</td>
<td>30,000</td>
</tr>
<tr>
<td>5 Naruswamy</td>
<td>Brigade Road</td>
<td>No information</td>
</tr>
<tr>
<td>6 Maadhu</td>
<td>Thanisandra</td>
<td>60,000 to 70,000</td>
</tr>
<tr>
<td>7 Tamil</td>
<td>Kaverinagar</td>
<td>4000 to 6000</td>
</tr>
<tr>
<td>8 Paramasivam</td>
<td>Kanakanagar</td>
<td>4000</td>
</tr>
<tr>
<td>9 Anderson</td>
<td>Chinnappa garden</td>
<td>4000 to 6000</td>
</tr>
</tbody>
</table>

Some of the major findings have been highlighted in this section:

1. **Length of the time in business**
   All of them, except for one dealer, have been in the business for more than 10 years.

2. **Quantities of waste handled per day**
   There were three scrap dealers dealing in 1 tonne per day, five scrap dealers managing between 1 and 2 tonnes per day and one scrap dealer dealing in more than 4 tonnes per day.

3. **Sources of recyclable waste**
   The materials were sourced mainly from other smaller scrap dealers in the surrounding areas. Two of the dealers sourced their waste from waste pickers, while four of the dealers also bought from BBMP workers. Three of the dealers bought recyclables directly from households. One of the dealers, Simpson, sourced the waste mainly from waste pickers and also employed them on daily wages to do the sorting, packing and loading.
4. Number of employees
The dealers mainly employed both permanent and casual daily wage workers. Majority of the scrap dealers (7) surveyed had 3-5 workers. One of the dealers, Maadhu, employed 7 workers while one dealer employed only 1 worker. Prakash (near Central Silk Board), did not employ any labour but took the assistance of three family members.

5. Shop ownership
Most of the scrap dealers functioned out of rented spaces (7), while one of the dealers owned the space. There is no information from one dealer on this issue.

6. Infrastructure
The volume of business per day is directly proportional to the amount of space available for movement of vehicles, sorting, packing and storage before transportation. The dealers managing 1-2 tonnes per day functioned out of an average space of 1850 square feet. Dealers whose volume of business is more than 4 tonnes had spaces measuring between 3000 and 5000 square feet.

The dealers do not use any kind of machines to sort or segregate the waste, all operations are manually done. Two of them used a manual baling machine to compress and pack paper waste. One of the dealers (Maadhu, Thanisandra) used a gas welding and cutting machine to cut metal pieces.

7. Frequency of sale of Recyclables Materials
The dealers sold the materials every day. The very large dealers (those dealing in more than 2 tonnes) packed the materials according to the type – for eg: a single load of PET bottles or iron rods or white paper.

8. Income (in sales per day)
There are seasonal variations with a fall in business during the rainy season as the waste is wet and commands a lower price. The scrap shops surveyed were reluctant to disclose incomes and therefore information on the total sales per day was collected. Five dealers were making a sale ranging from Rs.8,000 to Rs.20,000 per day; two dealers was making a sale between Rs 20,000 to 50,000 a day while one dealer was making a sale Rs 50000 and Rs. 1 lakh per day. There was no information from one dealer.
9. Challenges and problems faced
A number of the dealers reported police harassment. They have also faced situations where police allege that the dealers buy stolen items, especially in the case of metal scrap waste. Sometimes the employees of the dealers are accused of petty stealing and summoned to police stations for interrogation. (Cases reported by Simpson, Cholanagar and Anderson, Chinnappa Garden). Purchasing waste from BBMP collection trucks is a problem as the waste is mixed and emits odour, and as a result, neighbours complain. Dealer Anderson also reported chronic health problems and attributed it to his occupation.

II. Whole Sale Dealers
Fifteen dealers were interviewed each dealing with only one type of waste material namely:

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name</th>
<th>Material</th>
<th>Sales per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kalimhulla Wire Godown</td>
<td>Metal wires</td>
<td>60,000</td>
</tr>
<tr>
<td>2</td>
<td>P V Ameer Basha</td>
<td>Foam sheets &amp; plastic</td>
<td>12,500</td>
</tr>
<tr>
<td>3</td>
<td>Huma Bottles</td>
<td>Bottles</td>
<td>8,000</td>
</tr>
<tr>
<td>4</td>
<td>R Karunanidhi</td>
<td>Plastic</td>
<td>45,000</td>
</tr>
<tr>
<td>5</td>
<td>Saravana Bottles</td>
<td>Bottles</td>
<td>8,000</td>
</tr>
<tr>
<td>6</td>
<td>Chennarayan Paper Godown</td>
<td>Paper</td>
<td>29,000</td>
</tr>
<tr>
<td>7</td>
<td>Kamalesh</td>
<td>Plastic</td>
<td>50,000</td>
</tr>
<tr>
<td>8</td>
<td>Prakash</td>
<td>Paper</td>
<td>1,00,000 to 1,50,000</td>
</tr>
<tr>
<td>9</td>
<td>R F Traders</td>
<td>Plastic insulation wires</td>
<td>40,000 to 50,000</td>
</tr>
<tr>
<td>10</td>
<td>Mohammed</td>
<td>Plastic bags</td>
<td>28,000</td>
</tr>
<tr>
<td>11</td>
<td>Nawaz</td>
<td>Plastic, mainly hard plastic</td>
<td>10,000</td>
</tr>
<tr>
<td>12</td>
<td>Harish</td>
<td>All materials</td>
<td>1,50,000</td>
</tr>
<tr>
<td>13</td>
<td>Shekhar</td>
<td>All materials</td>
<td>1,50,000</td>
</tr>
<tr>
<td>14</td>
<td>Thangadurai</td>
<td>All materials</td>
<td>2,00,000</td>
</tr>
<tr>
<td>15</td>
<td>Pandian</td>
<td>All materials</td>
<td>1,00,000</td>
</tr>
</tbody>
</table>

Some of the major findings have been highlighted in this section.

1. Type of wholesale dealers
Of the fifteen wholesale dealers interviewed five dealers work with only plastic (mixed grades of plastic), two with only paper, two with only glass and two with only wires (metal and plastic). Four dealers dealt with all kinds of materials.

2. Length of the time in business
Eleven of the dealers had been in the business for more than 10 years while four were newer entrants.
3. **Quantities of waste handled per day**

The wholesale dealers were further categorized as those dealing between 500 kg and 1 tonne per day (3 dealers), between 1 and 2 tonnes per day (5 dealers), between 2 to 4 tonnes per day (4 dealers) and those dealing with more than 4 tonnes per day (3 dealers).

![Diagram showing waste quantities per day](image)

4. **Sources of recyclable waste**

All the dealers source their material from smaller scrap dealers. One of them, Mr. Mohammed from Lingarajapuram, sourced his plastic waste from nearly 35 smaller dealers in the surrounding localities. This dealer stores a lot of low grade plastic waste piled high. He is able to carry out his business in a busy residential locality because he has a standing in the local community as well as political influence. Four dealers also sourced their waste from bulk generators directly.

![The scrap shop of Mr. Mohammed, Lingarajapuram, Frazer Town, Bangalore](image)

5. **Number of employees**

Of the fifteen wholesale dealers interviewed, majority of them (nine) have 1-3 workers on their payroll. Five of the dealers employed 4-7 workers and only one dealer employed between 8 and 10 workers. Dealers generally worked with permanent employees as well as casual labour on daily wages.

![Bar chart showing wholesale dealers' employee profile](image)

6. **Shop ownership**

Two out of the eleven dealers (Mohammed, Lingarajapuram and Shekhar, Ganganagar) carried on the business on their own space. Eleven dealers operated out of rented spaces. There is no information from two dealers on this matter.

7. **Infrastructure**

The dealers do not use machinery. Eight of the dealers have invested in their own commercial vehicles.

8. **Frequency of sale of Recyclables Materials**

As in the case of the large dealers who deal in all categories of waste, the wholesale dealers also packed and despatched materials on a daily basis, according to type of material. Prakash, the wholesale paper dealer despatches his materials in separate loads of cartons, white paper, coloured paper, magazines and newspapers.

9. **Income (in sales per day)**
Like the scrap shops, the whole sale dealers surveyed were also reluctant to disclose incomes and therefore information on the total sales per day was collected. There are seasonal variations with a fall in business during the rainy season. Some of the dealers including Mr. Mohammed face problems during the rainy season when the material gets wet and does not command a good price. One dealer sold scrap worth between 1.5 and 2 lakhs per day; four dealers sold scrap worth between Rs.1 and 1.5 lakhs per day. Two dealer’s transactions were between Rs.50,000 and 1 lakh per day while most of the dealers (4) were in Rs.8,000 to 20,000 and Rs.20,000 to 50,000 per day (4 dealers) category. The value of the transactions depends upon the type of material dealt with, rather than on tonnage. For example metals command a high rate per tonne as compared to plastics and paper.

10. Challenges faced
The dealers are not registered with the tax authorities. Some of the dealers in Jolly Mohalla have rented their spaces from the BBMP but they do not have any trade licences.
Case Studies

Large Scrap Dealers

1. Maadhu, Thanisandra
Maadhu is a scrap dealer dealing with 4 tonnes of waste per day. He has a large rented space of about 5000 square feet which serves as a storehouse. All categories of waste is handled here. His total sales per day is about Rs.60,000 to Rs.70,000. Seven workers including a driver are employed by him to sort, pack and load the recyclables. The material is sent to factories and other wholesale dealers. The major part of this scrap dealer’s income is from the sale of iron scrap. He despatches plastic scrap once a week, iron scrap twice a week, and paper (cartons, newspapers, magazines etc) once a fortnight. Maadhu is one of the few dealers who is willing to buy low value scrap falling under the category of “road waste” which is soiled thin plastic materials.

2. Mr.Azeez, M N Enterprises
Mr.Azeez has been in the scrap business for about 25 years in Jolly Mohalla. He deals with paper and PET bottles and small quantities of metal. He manages around 1.5 tonnes of waste per day 300 to 500 kg of which are PET bottles. He sources scrap waste from bulk generators - mainly hotels, technology parks, apartments and other scrap dealers. The material is stored in three godowns. The paper is baled using a manual baling apparatus. Mr.Azeez employs 3 permanent workers and accommodation is provided by him. Besides this he also employs temporary workers on daily wages when the need arises. He is a member of the plastic, paper and glass associations in Jolly Mohalla.

Wholesale Dealers

1. Huma Bottle Syndicate
This whole sale dealer, operating from Jolly Mohalla, deals in only bottles (all varieties except those meant for alcohol). He manages 2 tonnes per day and sources the waste from bulk generators and other dealers, some of them outside the state of Karnataka (Tamilnadu & AndhraPradesh). He sells the materials to factories in North India. He has no equipment or transport of his own, and employs two workers. No benefits are given to the workers. He reports a fall in business in the months of June, July and August. The dealer has observed an increase in the varieties of bottles available in the market.

2. Mohammed, Lingarajapuram
Mr. Mohammed from Lingarajapuram deals with nearly 4 tonnes of plastic waste per day which are milk covers, carry bags, “kadak” (hard) plastic, PET bottles, and “super” or high grade transparent carry bags every day. He sources his plastic waste from nearly 35 smaller dealers in the surrounding area. This dealer stores a lot of low grade plastic waste piled high. He is able to carry out his business in a busy residential locality because he has a standing in the local community as well as political influence, although he does receive complaints from neighbours about the maintenance of the godown. His godown is a makeshift one, with waste spilling out on all sides and faces problems during the rainy season when the material gets wet. He uses his own vehicle to send the materials three times a week to Jolly Mohalla. Mr.Mohammed employs 8 casual workers (3 men and 5 women) on daily wages of Rs.130 to Rs.150 per day.

Large Scrap Shop and Wholesale Dealer

1. Prakash, Central Silk Board, off Outer Ring Road, near Hosur Road
Mr.Prakash has been in the business of dealing in scrap items for more about 24 years. Paper dealer, 5 tonnes per day, also deals in mixed scrap, one tonne per day. He rents a godown for Rs.15,000 per month. He runs two establishments – a scrap shop where about one tonne of waste is purchased everyday and a whole sale shop dealing with about 5 tonnes of paper every day.
The scrap shop accepts all types of waste except wood and rubber. He buys from waste pickers, itinerant waste buyers and from households directly. He does not buy from municipal workers who retrieve waste from the trucks directly as this tends to be very dirty and mixed. The volume of scrap especially paper is higher in April and May when used school books enter the recycling markets.

Mr. Prakash does not have his own transport. About 3 of his family members work in his establishment. Apart from this there are two workers on a permanent basis. They are paid a salary but are not given any other benefits such as housing etc. The scrap is sold at the wholesale markets (Jolly Mohalla). The paper waste is sold directly to paper mills. As Mr. Prakash is not registered with any tax authorities, he has to channelize his materials through dealers who have the necessary licenses/papers to deal with the paper mills.

Reprocessors
Two reprocessors were interviewed namely:
- Hidayath Traders, Jolly Mohalla
- Veekay Industries, Peenya

Hidayath Traders, Jolly Mohalla
This is the only re-processing unit in Jolly Mohalla in existence for more than 30 years. About 1 – 2 tonnes of all types of plastic waste are ground here every day using a grinding machine. The plastic waste includes cables, hospital drip tubes, footwear, e-waste such as CDs, hard (“kadam”) plastic etc. The material is sourced from other dealers. The ground plastic is sent to Nayandahalli and also outside the city to Pune and Mumbai.

The owners feel they are able to earn higher profits due to the value addition from grinding. They operate out of a large 6000 square feet space, but a lot of the work also spills out on to the pathways. The business is registered both with the BBMP and the Department of Commercial Taxes. There are 15 workers, mostly women who have already worked in this unit for the last 10 years. They are paid on the basis of daily rates (between Rs. 120 and Rs.170) and receive no other benefits.

This unit also sees a 30% drop in business in the rainy season. They have seen a drop in business over the last couple of years, as more dealers have set up businesses in the outskirts of the city.

Veekay Industries, Peenya
This unit reprocesses waste thermocol. They have been in the business since 26 years. Although they collect all types of waste plastic, they collect and reprocess thermocol and foam packing materials through a grinding process to make thermocol beans. These beans are used in bean bags for seating, and also compressed into moulded packing materials. The unit has a capacity to process one tonne of thermocol per day. Presently their capacity utilisation is only 8 tonnes per month. This material is mainly sourced from other dealers.
Veekay industries face the challenge of logistics of collection. They are willing to collect materials from the source provided no payment is expected. They could pay on a nominal basis if the material is brought to their storehouse. So far no mechanism exists for regular pick-up or delivery of materials.

Companies
Two companies dealing with collection and sale of scrap materials in Bangalore were interviewed namely:

- Saahas (tetrapak collection program)
- ITC Limited (wealth out of waste program)

Saahas (Tetrapak collection program)
Saahas is registered Society working since 2001 in Bangalore, committed to finding solutions to problems related to solid waste. Today newer forms of packaging have entered the market, intended to give food a longer shelf life. Tetra Pak is one such packaging. It has seven layers of paper, plastic and metal foil, all fused together. Therefore it is manually impossible to separate the different layers. It requires a special recycling facility. Collection logistics are also important, since they are very light weight and voluminous. Nearly 200 empty packets of juice (of 200 ml capacity) are required to make up one kilogram of tetrapak packaging. Collection logistics are very important especially in the case of milk packets as they tend to emit a foul odour when stored for a long time.

Saahas began the program with Tetra Pak India Pvt. Ltd. for collection and recycling of post consumer cartons in 2009. It source’s the tetra pak directly from bulk generators including scrap dealers. It has introduced collection boxes in apartments, schools and corporate offices for collection of the same. However, it has taken a long time to build-up the network. Most scrap dealers are still reluctant to store tetra pak because of space constraints. Waste pickers do not think it attractive as yet to pick the material, due to low weight and huge volumes required. The few scrap dealers who store the material usually pay about Rs.2 to Rs.3 per kg of tetra pak.

A total of 50 tonnes was recovered for the entire year in 2009. This increased to 290 tonnes’ in 2010. The target for 2011 is 500 tonnes. The scrap dealer network includes one large dealer who is able to recover nearly 10 to 15 tonnes every month and about 10 small dealers who are able to recover 500 kg to about 1 tonne per month. Saahas offers a price of Rs.6 or 7 per kg depending upon the volume available and the distance involved. The material is baled (On an average, about 10 bales of 80-100 kg each are packed on a daily basis).and stored in a storehouse to be transported to Daman Ganga Paper Mills Ltd., a recycler of tetra pak in Vapi, Gujarat, where the paper component which makes up about 75% of the package is recycled back into paper products and the rest which includes polyethylene and aluminium is recycled into different products including roofing sheets (corrugated and plain).

Challenges faced by Saahas:

- Scrap dealers need encouragement to store the material, and need assurance of prompt, regular pick-up since at the moment there is only one recycling channel. Space is therefore a major constraint.
- Waste pickers similarly should also be encouraged to pick up the material by being offered attractive rates by scrap dealers.

Strategies for improving recovery:

- Build up the scrap dealer network
- Provide incentives for increased recovery
- Tap bulk generation points such as airports and railway stations
ITC Ltd (Wealth out of Waste program)

ITC is one of India's foremost private sector companies. ITC has a diversified presence in Cigarettes, Hotels, Paperboards & Specialty Papers, Packaging, Agri-Business, Packaged Foods & Confectionery, Information Technology, Branded Apparel, Personal Care, Stationery, Safety Matches and other FMCG products. ITC's Wealth Out of Waste (WOW) is a recycling initiative that works towards spreading awareness about recycling, and encouraging people to segregate and dispose waste responsibly. The WOW initiative was started to source clean dry waste in an attempt to decrease the pressure on imports. India's total requirement of paper pulp is about 9 million tonnes per annum of which 5 million tonnes are imported. About 2/3rds of India’s production is met through the use of recycled paper and 1/3rd is sourced from virgin pulp. In this programme, WOW reaches out to schools, institutions and homes through its awareness building teams, about source segregation of waste.

The benefits of using recycled paper instead of virgin pulp are huge. About 22 trees can be saved from being cut for every tonne of paper manufactured. While about 50 litres of pure water is required for every kg of paper that is manufactured, the requirement in the case of recycling is only 20% of this. Using recycled materials saves power as well: 1500 watts of power is required for processing 1 kg of virgin pulp, but the requirement for processing recycled pulp is only 500 watts for every kg.

ITC began the WOW program to tap this potential. The company claims that it cannot source this material through the existing scrap dealer network due to several reasons including a lack of awareness on source separation of all categories of materials, lack of space for storage and difficulty of storing certain materials, especially disposable food containers (both paper and plastic) because of the bad odour and resultant proneness to pests.

Although ITC’s requirement is only for paper waste, the collection system also involves source separated plastics and mixed materials like laminates. This is because it is difficult to organise separate systems for each type of material. Bulk generators find it easier to co-ordinate a single-point collection system that takes care of most categories of dry waste recovered at source.

ITCs current requirement is about 1000 tonnes per day for its plant. The current rate of recovery from Bangalore is about 150 tonnes per month through the network of about 15,000 household units who separate dry waste at source. The BBMP has provided storage space for this purpose in four localities. The target is to reach 1000 tonnes per month over the next 3 years.

Kasa Rasa (Waste to Resources Centre), Ejipura

A legitimate space within an urban neighbourhood for waste management

A “Kasa Rasa” waste to resources centre has been established in Ejipura, Bangalore on land provided by BBMP in January 2011 by CHF International in association with Centre for Social Action (an NGO of Christ University), SAAHAS and Bruhat Bengaluru Mahanagara Palike (BBMP). This centre is managed by SAAHAS with a capacity to process 1.5 tonnes of solid waste every day (Around 500 kgs of organic waste and 1000 kg of recyclable waste).
This centre has been established to demonstrate decentralized waste management systems providing a mechanism to improve waste segregation at source and recycling of waste. The infrastructure, facilitation, operation and maintenance costs have been supported by the Caterpillar Foundation. In the next few months this centre will begin functioning as viable business enterprise supporting the livelihood of poor women.

At the centre, dry waste is further segregated, aggregated and sold to scrap dealers for recycling and biodegradable waste is composted through a forced air aerobic treatment method. Spaces are well defined; workers wear protective gear and are aided in their segregation with custom designed apparatus.

The program was launched after a three month awareness campaign to convince residents to hand over segregated waste. With the support of BBMP officials and the BBMP waste contractor for Ejipura a mechanism for separate collection of segregated waste was initiated. Currently only Biodegradable waste (wet waste) is collected every day. Recyclable (Dry waste) waste is collected only two days in a week.

At present, the unit handles about 90 to 100 kg of wet waste and about 3.3 tonnes of recyclable waste in a month including from apartment complexes. Scrap dealers in the vicinity are also encouraged to collect low value waste such as tetrapaks and thin plastics from waste pickers and municipal collectors in an effort to maximise the recovery of waste. Occasionally the centre receives additional waste for a specific period such as waste from the Indian Premier League cricket matches held in the city.

The Land Lab (Solid Waste Management Centre), Waste Wise Trust, Mahadevapura:

The ‘Land Lab’ was conceived during 2004 by waste Wise Trust a subsidiary of Mythri Sarva Seva Samithi a non profit registered NGO, in order to render high quality professional waste management services that would address specific problems of large generators of waste and inclusion of the informal sector waste pickers. Currently, the Land Lab functions at the outskirts of the city in an acre of land managing waste of large generators like IT parks, five star hotels and residential colonies. It handles nearly 4 to 5 tons of waste per day with an average of 25 tons per month that predominantly consists of dry recyclable waste. 18 waste pickers and 9 support staff are engaged for these purposes. The waste pickers have formed a cooperative for themselves and all proceeds of dry waste goes to them. With the proceeds from the professional fee charged to the bulk generators and sale of compost as well as agriculture proceeds, the land lab sustains itself.

The land lab operation involves four main steps:

- **Waste collection services**: The segregated waste from households apartments, gated communities and large generators of waste is collected by waste pickers using separate bins and motorized vehicles.
- **Transportation and sorting**: The collected waste is transported to the land lab area or the waste processing zone. There, the organic waste is sent for composting, whilst the dry waste is stored, sorted and sold to junk dealers. The reject waste (rags, rubber pieces, and non-recyclables) is transported to a dumping area.
• **Composting:** Three methods of composting are in operation in the land lab. They involve composting through a forced aeration method, vermin composting and microbial culture composting. This process generally takes two months, in order to produce good quality compost.

- This compost material is then sold on the market or used for agricultural purposes around the land lab. Seasonal yielding vegetables, ornamental plants, and fruit bearing plants are grown on the land lab grounds using compost generated from waste.

The land lab functions as a demonstration centre for waste management as well as learning centre that attracts large number of visitors like corporate groups, resident associations, students and even members of smaller municipalities throughout the year.

**Jolly Mohalla Recycling Hub**

Jolly Mohalla is the hub of the recycling trade in Bangalore. Situated in the heart of the city, right by the Krishnarajapuram Market (City market), Jolly Mohalla is more than 50 years old. It stretches from South Mysore Road to north P.V.R. Road and East A.S.Char Street to West Cottonpet main road. It is located in unhygienic surroundings with narrow roads, clogged drains and waste materials. Child labour is also rampant with many young boys and girls working in the shops segregating the waste. They are cheap labour and shop owners provide them meals.

Almost every kind of material that has a potential to be recycled is sorted and traded here. Recycle shops conduct their business here and deal with different grades and varieties of plastic, paper, metal, jute and glass. Every part of recyclable material from bottle caps to electric wire and worn out of gunny bags, is carefully removed, sorted and packed before it is sent to recycling facilities across the country. These shops source their material from scrap dealers throughout the city.

There are several shops that focus exclusively on certain materials such as low grade plastics from broken toys or appliances and footwear, caps of bottles, gunny sacks, etc, this focus on one or two materials is important in terms of efficiency and space allotment. One particular shop is involved in the sole activity of removing the lining from medicine bottle caps and selling the material. A few other shops deal with all types of waste. Sorting is mainly done manually and not with machines, except in one shop, where a plastic grinding machine was available and a shop where paper was baled with the help of a machine. One shop is engaged in separating layers of laminates with the help of an LPG gas cylinder. Many of the larger shops own and run recycling facilities in Nayandahalli, Mysore road. Ewaste is not dealt with by any particular dealer. CD’s sell as low value scrap and keyboard as 1st grade mixed plastic scrap after separating the power cords.

From the discussions with the traders in Jolly Mohalla, it is clear that they are not comfortable disclosing their income and the quantities of waste that they handle. Some of them are giving the waste to agents and some directly to reprocessing units.
Mr. M. Rajamani, who owns gunny bag shop, mentioned that 500 to 1000 discarded gunny bags reach his shop every day and they get sorted by quality and size. Many are made neat to be reused. He is getting from Rs.4000 to 5000 a day while Mr. Manoj gets around 2500 bags every day and earns Rs.10000 to 15000 a day.

Mr. Pariyaswamy, who owns a waste paper shop at chart road, said that he gets 1 to 2 tonnes of paper per day and after segregation he gets a profit of Rs.2 per kg. The owner of Paradise Plastics mentioned that he gets 2 to 3 tonnes of plastic waste per day and after segregation he sends to recycling unit. He gets the waste at the rate of Rs.4/ Kg and sells at the rate of Rs.5/Kg

All types of electronic waste are available here including computer accessories like keyboard, mouse and all parts of the computer. Some of the electronic and computer parts are sold here and some at Sunday market at Avenue Road nearby. The rate ranges from Rs.25 to Rs500 depends upon the quality and parts of the computer. The regular customers include people who own electronic repair shops in the city, who purchase spare parts here, like Mr. Srinivas who owns an electric and electronic repair shop at Rajajinagar, who visits Jolly Mohalla once in a week and buys spare parts for lesser price than the Market rate.

The metal dealers were not very open and did not disclose where they sent the waste. Mr. Balaji from Reliance metals said he gets more than 600kg per day. He buys at Rs.5 to 6 per kg and sells at Rs.8 to 10 while Mr. Gopal from R.S. Enterprises told us that they are getting 3 to 4 tonnes per day and he buys at rate of Rs. 4 to 6 per Kg and sells at Rs.8 per kg.

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Particulars</th>
<th>Rate(Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Paper</td>
<td>Rs. 6</td>
</tr>
<tr>
<td>2</td>
<td>News paper</td>
<td>Rs. 8</td>
</tr>
<tr>
<td>3</td>
<td>Hard plastics</td>
<td>Rs.18</td>
</tr>
<tr>
<td>4</td>
<td>Milk cover</td>
<td>Rs.15</td>
</tr>
<tr>
<td>5</td>
<td>Other plastics</td>
<td>Rs.5</td>
</tr>
<tr>
<td>6</td>
<td>Water bottle</td>
<td>Rs.12-15</td>
</tr>
<tr>
<td>7</td>
<td>Carton box</td>
<td>Rs.8</td>
</tr>
<tr>
<td>8</td>
<td>Beer bottles (per bottle)</td>
<td>Rs.2.50</td>
</tr>
<tr>
<td>9</td>
<td>Glass</td>
<td>Rs.2</td>
</tr>
<tr>
<td>10</td>
<td>Aluminium foil</td>
<td>Rs.12</td>
</tr>
<tr>
<td>11</td>
<td>Aluminium</td>
<td>Rs.30</td>
</tr>
<tr>
<td>12</td>
<td>Fibre</td>
<td>Rs.7</td>
</tr>
<tr>
<td>13</td>
<td>Oil tins</td>
<td>Rs.5</td>
</tr>
<tr>
<td>14</td>
<td>Metal</td>
<td>Rs.8</td>
</tr>
<tr>
<td>15</td>
<td>Gunny bag (per bag)</td>
<td>Rs.5</td>
</tr>
<tr>
<td>16</td>
<td>Computer key board</td>
<td>Rs. 15 to 25</td>
</tr>
<tr>
<td>17</td>
<td>Computer Mouse</td>
<td>Rs.10 to 20</td>
</tr>
<tr>
<td>18</td>
<td>Hard disk</td>
<td>Rs. 300 to 500</td>
</tr>
<tr>
<td>19</td>
<td>Television</td>
<td>Rs.750 onwards</td>
</tr>
<tr>
<td>20</td>
<td>MP3 and DVD Player</td>
<td>Rs.250 onwards</td>
</tr>
<tr>
<td>21</td>
<td>CD</td>
<td>Rs.5</td>
</tr>
</tbody>
</table>

There is little institutional support for these businesses. Many of the shops have been leased by the BBMP. There is no plan for the movement of vehicles, which is very critical in businesses of this nature or for the space. A lot of time is required for packing and loading, but there seems to be constant pressure on the space available for the free movement of the vehicles. A lot of the activities spill out on to the streets – sorting and related activities require adequate space that is simply not available. The process of separating the laminates from discarded sign boards (referred to above) was in fact being carried out right on the street. The hazard of operating a gas cylinder in the middle of a crowded business centre does not need elaboration.
The paper, plastic and bottle traders have their own associations, but in the course of our interviews we learnt that there was no strong sense of belonging. The associations got together whenever they had to make representations before the government. Apart from that the members had little to do with each other.

Our survey showed a figure of 228 establishments in Jolly Mohalla.

### Number of shops and types of waste they handle

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Particulars</th>
<th>No of Shops</th>
<th>Average Qty per day</th>
<th>Rate per Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Paper traders</td>
<td>22</td>
<td>1 tonne</td>
<td>Rs 5 to 8</td>
</tr>
<tr>
<td>2</td>
<td>Plastic traders</td>
<td>30</td>
<td>1 tonne</td>
<td>Rs 3 to 15</td>
</tr>
<tr>
<td>3</td>
<td>P.V.C. Pipes</td>
<td>8</td>
<td>300kg</td>
<td>Rs 10 to 15</td>
</tr>
<tr>
<td>4</td>
<td>Junk dealers (all kinds of materials including e-waste)</td>
<td>68</td>
<td>1 tonne</td>
<td>Rs 3 onwards</td>
</tr>
<tr>
<td>5</td>
<td>Metal traders</td>
<td>35</td>
<td>500kg</td>
<td>Rs 20</td>
</tr>
<tr>
<td>6</td>
<td>Oil tin</td>
<td>12</td>
<td>300 no’s</td>
<td>Rs 5</td>
</tr>
<tr>
<td>7</td>
<td>Plastic tin &amp; cans</td>
<td>8</td>
<td>300 no’s</td>
<td>Rs 5 to 10</td>
</tr>
<tr>
<td>8</td>
<td>Gunny bags</td>
<td>15</td>
<td>500 to 1000 no’s</td>
<td>Rs 3 to 5</td>
</tr>
<tr>
<td>9</td>
<td>Bottles +glass includes</td>
<td>6</td>
<td>1 tonne</td>
<td>Rs 2</td>
</tr>
<tr>
<td>10</td>
<td>Cartons boxes</td>
<td>8</td>
<td>1 tonne</td>
<td>Rs 5-8</td>
</tr>
<tr>
<td>11</td>
<td>Other Plastic</td>
<td>4</td>
<td>1 tonne</td>
<td>Rs 5</td>
</tr>
<tr>
<td>12</td>
<td>Old wire and aluminium</td>
<td>12</td>
<td>50kg</td>
<td>Rs 10 to 20</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>228</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Conclusion

The informal recycling sector plays an important and valuable role, yet it remains in the fringes with no formal recognition. At every stage there is value addition and the sector helps the city, its people and the environment through significant savings and efficient waste management. However there is a lack of data on this contribution as well as non recognition and negative perception. In an effort to formalize the role of scrap shops (large and small), whole sale dealers and reprocessors, this study was conducted to understand quantities of dry recyclable waste retrieved and recycled from the source through the informal network and the socio economic conditions of different categories of recyclers.

Bangalore has a main wholesale market area called “Jolly Mohalla” situated in the heart of the city where wholesale shops dealing in paper, plastic, glass and metal are located. Jolly Mohalla ranks alongside Jawalpuri and Nandnagar in New Delhi and Dharavi in Mumbai as one of the largest recycling hubs in the country (Source: Plastic Recycling in Bangalore – India, Esha Shah & Rajaram, 1997). Almost every kind of material that has a potential to be recycled is sorted and traded here. The network of small, medium and large scrap dealers scattered throughout the city largely feeds into this system. A lot of larger scrap dealers (dealing with one tonne per day or more of materials including mixed municipal scrap) are to be found along the outer ring road, where space availability is less of a problem and there are no houses in the immediate vicinity.

310 small and medium scrap shops (dealing with less than one tonne per day) exist within 16 wards surveyed in Bangalore which were surveyed, with a majority of them (more than 90%) dealing with less than 300 kg of waste per day. Majority of the small and medium scrap shops are less than 5 years old while almost all the large scrap dealers and wholesale dealers surveyed have been in the business for more than 10 years.

The small and medium shops mostly deal with high value waste like newspapers and cartons that do not take up space as compared to light weight plastic or paper packaging. They are unable to deal with light voluminous material requiring space for storage and secondary sorting areas. They function from small spaces of about 100 sq feet or less. About 2 or 3 dealers can be found in each ward, dealing with mixed waste adding up to about one tonne per day. Such dealers work out of make-shift yards and network with a lot of waste pickers. In contrast the large scrap shops work out of an average space of 1850 square feet and more and deal with all kinds of waste including low quality and voluminous waste. Majority of wholesale dealers however deal with specific types of waste. Majority of the scrap shops, small, medium and large work out of rented spaces. The study also found a number of waste processing activities spilling out onto pathways and other common areas, many of them hazardous like the reprocessing activities. Transportation is a major expense for small and medium dealers with only 10% of shops having their own vehicles, majority of them hire vehicles. The large scrap dealers and wholesale dealers do not use any kind of machines to segregate the waste instead employ casual daily wage labour to manually segregate. These workers get no benefits from the traders.

The information on the income is in accurate as almost all scrap dealers are reluctant to give information on their income. According to the survey 50% of small and medium shops earn between Rs 1000-Rs 3000 profits per month. The large dealers only reported the sales per month with an equal number of dealers surveyed making a sale of more than Rs 1 lakh a day and Rs 50000 and less per day. However all scrap dealers and wholesale dealers mentioned seasonal variations with a fall in business during the rainy season as the waste is wet and commands a
lower price. The survey also showed that the number of storehouse/warehouse have increased to store materials waiting to get a good market price.

Nearly all the scrap dealers interviewed complained of police harassment. Sometimes material that is brought to the shops could be stolen goods and this leaves the shop owners vulnerable to police scrutiny. But this is mostly in the case of high value metal items. Most of the owners are not registered with any authority, be it the BBMP or the Commercial tax authorities. Some of them operate under shops and trade license obtained from BBMP that is applicable for any trade and not specifically applied for trading in scrap materials. This does not give them a formal status as contributors to the economy of the city.

The way forward

1. Source segregation and collection: In today’s scenario, a lot of material including paper, plastic carry bags, tetra pak cartons, cereal boxes, disposable food containers and packets etc., can be retrieved provided adequate source segregation and infrastructure is provided. The key to this is enforcement of source segregation and separate collection of organic and recyclable (dry) waste by the BBMP through garbage tenders and trained municipal and contract workers. Once collected separately, waste can be further sorted (secondary segregation). The first requirement for this is space to operate centre’s like “Kasa Rasa”. The BBMP should come up with a ward-wise plan for the recovery of recyclables at source. As space in a crowded urban area such as Bangalore is scarce and expensive, it is important that public spaces in every ward be ear-marked for this purpose. These spaces should also include secondary sorting area and a washroom. The challenge is to maintain standards of cleanliness and hygiene so as to gain acceptance in the neighbourhoods and good working conditions. Another challenge is to collect both high and low value waste through incentives for waste collectors.

The network of scrap dealers should be encouraged to also collect all types of source separated recyclable waste and hand them over to the centres on a daily basis, to reduce their pressure on space and other infrastructure. This way, the recovery can be maximised. Waste pickers can also integrate into this system. They are experts in secondary segregation and can therefore operate the centres or be employed at the centres. The advantage of this is that the waste pickers have access to clean waste. Waste pickers can also be employed in places where there is no proper collection system by the municipality for door-to-door collection of the recyclable waste and in other places to complement the collection by municipal workers.

2. Bulk generators: There are a number of bulk generators in Bangalore, institutions (educational, medical and others), large apartment complexes, office complexes and business parks. These institutions are now required by law to deal with the waste onsite and only send out rejects for land filling. With increasing level of awareness and compliance with the law, more apartment complexes are beginning to separate their waste and store dry recyclables. According to data provided by the SMWRT (Solid Waste Management Round Table), Bengaluru, nearly 20,000 households, several of them part of large and small apartment complexes now participate in programs to segregate and manage waste at source. There is an opportunity for waste pickers to organise themselves formally and provide waste management services to the bulk generators and scrap dealers to provide doorstep services for the pick-up of the recyclables. The services need to be efficient, regular and consistent. Volumes, extent of segregation, and pricing are crucial to this. Scrap dealers need to have their own transportation and space since profit margins may vary dramatically (due to variations in the waste categories as well as in the levels of segregation) at each pick-up.
At the moment, only a few scrap dealers who are linked to NGOs offering decentralised services in waste management and ITC offers doorstep services to bulk generators. However, there is a strong need for capacities to be built in this regard and more scrap dealers to provide this service.

3. **Enumeration**: Local governments, on whom the solid waste management activities are mandated, struggle with funds and unskilled labour that results in inadequate coverage and poorly run services. Only 50 to 80% of the waste generated is collected and open dumping is the prevalent method of disposal available. On the other hand, one of the aims of modern waste management is to move ‘up the waste hierarchy,’ i.e. reduce the reliance on disposal and increase recycling; it would seem ironic to move forward by deliberately eliminating what can be a rather efficient, existing recycling system. Many studies worldwide have shown that informal sector recycling activities largely contribute to reduce cost for MSWM, provide livelihood for poor people and offer positive effects for the environment. Hence inclusion of informal sector of waste picking and recycling within the formal of system giving it necessary autonomous space, evolving standards and support systems is crucial to efficient and effective waste management of the city. The municipality should enumerate informal waste pickers, scrap shops, wholesale dealers and reprocessors in the city. This will give them a formal identity, legitimate status and an opportunity to benefit from the social and welfare schemes of the government.

4. **Enforce legal provisions of child labour**: Prevent child labour and ensure children employed in waste recycling are enrolled in formal schools.
Annexure 1

Questionnaire for small/ medium scrap shops study Bangalore 2011

CHF International – Myhtri Serva Seva samithi

Ward Number and Area: ______________________ Date surveyed: ______________________

1. Name of the shop owner: ______________________________

2. Location of the shop and contact number: ______________________________

3. Type of scrap shop: Small (less than 300 kg/day) Medium (300 Kg - 1 tonne/ day)

4. Length of time in business:  a. Less than 5 years  b. 5-10 years  c. above 10 years

5. Scrap shop space is: Owned  Rented

6. Number of workers in the shop: __________

7. Main type of materials you trade and daily volume of trade:

<table>
<thead>
<tr>
<th>Main type of material (tick)</th>
<th>Quantity/kg/day</th>
<th>Price/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newspaper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White &amp; colour paper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardboard</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st grade plastic (milk cover, shampoo, Domex, Harpic bottles etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kadak (plastic cups, food container etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Super (carry bags)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pet bottles (water &amp; Pepsi etc...)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glass bottles /piece</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any other (tetra pak etc...)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. Who are your main suppliers of waste ( please tick )
   • Itinerant waste buyers (person who buys from the Households and sells to scrap shops)
   • Waste pickers
   • House maids
   • Residents
   • BBMP pourakarmikas/contract workers
   • Other traders

9. Sale of materials
   a. Frequency of sale of materials to dealers:
   b. Name of wholesale market:
   c. Transportation: Own transportation  Hired  Sent by dealers

10. Challenges and problems faced by the scrap shops
    ____________________________________________________________________________
    ____________________________________________________________________________

11. Average income (profit) per month __________
Questionnaire for Large scrap shops study Bangalore 2011
CHF International – Mythri Sarva Seva samithi

1. How long have you been in the business
   - Less than 10 years
   - More than 10 years

2. How do you source your waste?
   - From waste pickers
   - From municipal collectors
   - From bulk generators directly
   - From other scrap dealers

3. What kind of scrap waste is purchased by you?

   **PURCHASE INFORMATION**

<table>
<thead>
<tr>
<th>Material</th>
<th>Type*</th>
<th>Quantity in kgs per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>others</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
   
   * For e.g.: in paper – coloured, white, carton boxes, etc.

4. Who do you sell the recyclables to?
   - Wholesale markets (Jolly Mohall, etc.)
   - Other large single material type of dealers
   - Directly to manufacturers

   **SALES OF MATERIALS**

<table>
<thead>
<tr>
<th>Type</th>
<th>Sold to whom</th>
<th>Price</th>
<th>Frequency</th>
<th>Transport</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

5. Do you have any type of machinery to process the waste (baling, etc.)

6. Other details on infrastructure available (vehicle, own or rented space, observations by surveyor)

7. Is the business registered with any authority (BBMP, PCB, commercial taxes, etc.)

8. Employee profile
   - Number of permanent workers
   - Number of casual workers
   - Profile of workers (who, where are they from, age group, number of men and women)
9. Facilities provided to the staff if any
   - Housing, financial assistance, other benefits

10. What challenges and problems do you face in the business?

11. Are there any seasonal variations in their work and how does this reflect in the business in terms of number of employees, type of material in demand, etc.

12. What are the new trends you have observed in this type of business in the last couple of years?

13. Other observations
Interview with Reprocessor
CHF International –Myhtri Serva Seva samithi

1. When did you start the business?

2. What type of waste materials do you source for reprocessing?

3. What are the products manufactured?

4. What type of machinery do you use?

5. How many employees work in the unit?

6. Is it a value-added process or do you manufacture a product for the end-user?

7. What is your daily requirement of waste material?

8. How do you source it?

9. What are the challenges faced by you in sourcing the raw material?

10. Are there any seasonal variations in the sourcing and production processes?

11. With what authority is your unit registered?
Annexure 2
Map - Small/Medium scrap shops location

1. East Zone – Shanthinagar ward
East Zone: Nagavara ward

East Zone: Shanthalanagara Ward
East Zone: New Tippanasandra Ward

East Zone: Lingarajpuram Ward
East Zone: Sagayapuram

2. South Zone: Modalpalya Ward
South Zone : Basavanagudi Ward

South Zone : Jayanagar Ward
3. Rajarajeshwari Zone: Nayandahalli Ward

Rajarajeshwari Zone: Nagarbhavi ward
4. West zone: Hebbal Ward

5. Mahadevpura zone: A. Narayanapura Ward
6. Byataryanapura zone : Kodagehalli

![Map of Study of Scrap Shops in Bangalore](image)
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**Mythri Sarva Sava Samithi** is a non-profit organization with more than 20 years of experience working on behalf of informal waste pickers and their families, and promoting environmental sustainability through integral solid waste management. Visit [www.wwt.co.in](http://www.wwt.co.in) for more information.