Review Paper

Municipal solid waste scavenging practice’s in Mubi, Nigeria

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The study investigates an unauthorized form of resources recovery known as Scavenging (Yan Bola or Baban Bola) by ever increasing number of unemployed youth in Mubi. Data was collected by Focus Group Discussion (FGD) conducted to twelve (12) waste scavengers and three (3) junk merchants, and through researcher’s field observation. Data obtained were qualitatively and quantitatively analyzed using descriptive statistics. Results shows that material scavenging from solid waste for reuse or recycling is dangerously done by combing through waste dumps where materials sought after is hand-picked. Reusable or recyclable materials are also obtained by scavengers through the process of barter or exchange with gift items or bought for paltry sums of money from residents. The materials acquired are hence transported using a metal cart (push-push) to junk collection depots and processed by sorting or grading. They are consequently weighed using the salter scale to determine their monetary worth before selling to junk merchants. Most materials recovered by scavengers are metallic objects, glass bottles, and rubber or plastic material because demands for such materials are high by recycling industries locally. This scavenging practice is observed to be environmentally benign as it helps in reducing the excess waste destined for evacuation and final disposal in addition to the job it creates. It is however recommended that scavenging practices should be properly organized and practitioners financially empowered so that they will acquire modern tools of resources recovery from waste to boost their capacity to recover more waste which will in due course lead to a low-waste society.

Key words: Solid waste, scavenging, practices.

INTRODUCTION

Municipal solid waste management practices are the techniques or methods employed by urban dwellers in the collection, storage, transportation and disposal of solid waste generated from day to day activities. MSW is troublesome to manage because it consist of diverse range of materials such as glass, metals, plastics, papers, food, nylon, vegetable, dead animals etc (Afon, 2003).

According to Sheehan and Knapp (2000), waste problems are generally due to resource management, as a result of bad design, and ultimately, the result of bad decision making (Lombardi, 2001). However, zero waste is a new way of looking at or managing our waste stream; it conserves our natural resources and more environmentally benign (Botkin and Keller, 1997; Raven et al., 1998; Moses, 2004).

Wikipedia (2012) describes a waste picker (scavenger) as a person who salvages reusable or recyclable materials thrown away by others to sell or for personal consumption. Such practices eliminate a lot of materials that may be dumped, burnt or buried as waste. This goes to say that if what constitute our waste is segregated and their uses found, they can be good sources of raw materials for our cottage industries, generate employment and income, and equally rid our cities of refuse dumps or reduce our waste stream destined for
Mubi metropolis located in the northern part of Adamawa State, Nigeria, and lies between latitude 10° 14' and 10° 18' north of the equator and longitude 13° 14' and 13° 19' east of the Greenwich meridian (Adebayo, 2004) is one place where a new wave of commercial waste scavenging exists. Armies of scavengers throng refuse dumps and the streets daily collecting reusable or recyclable waste materials of commercial value. It is in this light that this study attempts an assessment of the emergent form of resource recovery, commercial waste scavenging practices in the study area.

METHODOLOGY

A research into municipal solid waste scavenging practices requires collecting relevant information from focus groups notably scavengers and their likes in the study area. The information collected forms the research data. Hence, data were collected through focus group discussion with twelve (12) volunteer waste scavengers and three (3) volunteer scrap merchants (yan bola) at the scrap market (kasuwan bola) along Adamawa State University road in Kolere ward. Data was also obtained through researcher’s field observation.

To obtain the required data, interview questions centered around socio-economic characteristics of respondents, daily operation of the scavengers viz a viz: the type of material they collect, method of collection, cleaning, and transportation of materials collected to junk markets, and estimates of quantity of materials removed daily (kg/day). The scrap merchants were equally interviewed on how they weigh, grade and fix prices for the different materials brought to them. Data on the transportation/trips and marketing of scavenged materials by scrap merchants to recycling factories/foundries and items made out of the scraps were also obtained and analysed.

SOLID WASTE SCAVENGING PRACTICES IN MUBI METROPOLIS

Socio-economic characteristics of scavengers

Data gathered from fifteen (15) respondents with regards to socio-economic characteristics shows that 80% are scavengers or labour waste collectors while 20% are junk merchants (Yan bola or baban bola) who engage in scavenging as well. On age of respondents, 30% are of the age bracket 10 - 19 years, 54% are of the age bracket 20 - 29 years, 7% are of the age bracket 30 - 39 years and 6% are of the age bracket 40 - 49 years and 3% are of the age 50 years and above. This shows that most scavengers in the area are youth, and perhaps engages in such practice because of lack of employment.

Data collected on sex of respondents shows it is male dominated because all respondents are male. In the same vain, data on employment status of respondents indicate 67% are unemployed and scavenge full time while 33% are students, and resort to waste scavenging after school hours.

Daily scavenging practices

Information gathered from the focus group interaction with waste scavenger’s construe that waste scavenging practices in the area do not vary. Commercial scavengers or labour waste collectors obtain scavenged waste wares by scrambling indiscriminately to waste collection points on daily basis, where they comb through mixtures of waste dumps and collect items they consider valuable enough for their merchandise. At times scavengers purchase the reusable or recyclable waste materials from residents at negotiated parity sums of money, and through the process of barter i.e. exchange of junk materials such as used bottles, plastics and rubber materials with new plastic cups, spoons, balloons, sweet, candies etc.

With regards to mode of storage and transportation of scavenged or purchased waste materials, information gathered shows scavengers collect and convey their wares using a locally made metal carts (push-push). The metal cart is manually pushed by the scavenger from street to street visiting forms of waste dumps collecting valuable materials desired. The final destination of the scavenger terminates at the scrap market where the merchandise is segregated, weighed using the salter scale and sold to the junk merchant.

Additional information from the researcher’s personal observation shows in the study area, waste are generated and disposed without prior processing by residents, commercial enterprises and institutions. No amount of sorting or treatment is done. Waste exists in mixtures of garbage, combustible and non combustible waste, biodegradable and non-biodegradable waste, and even hazardous wastes. This therefore suggests that scavengers practicing this unorthodox resource recovery practices are at risk of danger.

Further summaries of data collected on scavenging by the fifteen commercial waste scavengers in Mubi Metropolis (Table 1) shows estimates of average waste scavenged daily in kilograms. The most scavenged waste material is metallic objects, mainly made of iron, aluminum, tin, steel (725.3 kg), rubber and plastic (719.9 kg) and cellophane (polyurethane) materials which can be recycled or reused. Others are glass bottles (628 kg) because they can be reused, and garbage (545 kg) mostly food waste, bones being the most removed for recycling. Plates 1, 2, 3 and 4 further corroborate this finding.

Further information gathered from respondents indicates
Table 1. Estimates of average waste scavenged per day by fifteen scavengers in Mubi, 2011 in kilograms.

<table>
<thead>
<tr>
<th>Scavengers</th>
<th>Bones (food waste)</th>
<th>Glass Bottles</th>
<th>Rubber and Plastics</th>
<th>Metals</th>
<th>Total of materials scavenged in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>120</td>
<td>47</td>
<td>63</td>
<td>346</td>
<td>576</td>
</tr>
<tr>
<td>2</td>
<td>55</td>
<td>68</td>
<td>92</td>
<td>514</td>
<td>729</td>
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<tr>
<td>3</td>
<td>144</td>
<td>87</td>
<td>88</td>
<td>620</td>
<td>939</td>
</tr>
<tr>
<td>4</td>
<td>62</td>
<td>42</td>
<td>38</td>
<td>702</td>
<td>844</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
<td>38</td>
<td>54</td>
<td>400</td>
<td>492</td>
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<tr>
<td>6</td>
<td>38</td>
<td>29</td>
<td>30</td>
<td>540</td>
<td>637</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
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<td>25</td>
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<td>357</td>
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<tr>
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<td>62</td>
<td>17</td>
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<td>529</td>
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<td>9</td>
<td>0</td>
<td>17</td>
<td>33</td>
<td>362</td>
<td>412</td>
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<td>10</td>
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<td>0</td>
<td>39</td>
<td>420</td>
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<td>11</td>
<td>0</td>
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<td>18</td>
<td>522</td>
<td>593</td>
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<td>49</td>
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<td>22</td>
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<td>507</td>
</tr>
<tr>
<td>13</td>
<td>52</td>
<td>51</td>
<td>79</td>
<td>608</td>
<td>790</td>
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<tr>
<td>14</td>
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<td>34</td>
<td>87</td>
<td>608</td>
<td>729</td>
</tr>
<tr>
<td>15</td>
<td>0</td>
<td>39</td>
<td>34</td>
<td>460</td>
<td>533</td>
</tr>
<tr>
<td>Total</td>
<td>545 (5.9%)</td>
<td>628 (6.9%)</td>
<td>719 (7.9%)</td>
<td>725 (79.3%)</td>
<td>9151 (100%)</td>
</tr>
</tbody>
</table>

that resource recovery from solid waste is a difficult task. However, it is mostly unemployed residents or school children that engage in scavenging. They scavenge for materials at mechanic workshops and garages, residences, and dumpsites collecting materials they consider valuable and can fetch money.

The process is very tedious as affirmed by the scavengers. The process involves trotting under harsh conditions, all over the place with their metal cart scavenging for valuable materials, hence exposing them to hazards. All respondents interviewed affirm the health hazard associated with the practice. Some of the hazards enumerated range from cuts, leading to loss of blood and tetanus infection; encounter with dangerous animals such as snakes and rats, mosquito, cockroaches and flies. They are also faced with air pollution in form of odour,
Plate 2. Cellophane (Polyurethane) electronics/machine packaging material collection depot at old motor park in Mubi metropolis.

Plate 3. Bottles Collected and bagged for reuse at collection depot, Kabang junction of Mubi metropolis.
obnoxious gas inhalation from decomposing materials, eyesores, exposure to sun radiation, fatigue, and risk of infectious diseases like cholera, malaria, typhoid fever and dysentery.

MONETARY EVALUATION OF SOME SCAVENGED MATERIALS BY SCRAP MERCHANTS IN MUBI METROPOLIS

Iron Scraps

i.) A kilogram (1kg) of iron scraps (plate 1) is bought for N5.00 or 3cent from scavengers.

ii.) The carrying capacity of a 30 tons truck (trailer) load of scrap iron is 30,000kg.

The cost of purchasing iron scraps from scavengers to make a truck load, where 1kg is bought at N5.00 (3 cent) is:

\[ \text{Cost of purchase of a truck load (30,000kg of iron) is:} \]
\[ 30,000 \text{kg} \times \text{N5.00} = \text{N150,000 ($937.5).} \]

iii.) A trailer haul of iron scraps, (30,000kg) is sold for N600, 000.00 ($3750) at Lagos or Warri (cities where junk merchant in Mubi metropolis sale their collections).

Cost of haulage from Mubi to Lagos or Warri is N150, 000 ($937.5) per truck.

Cost of soil assessment after weighing is N5, 000.00 ($31.2) for every truck load of scrap iron.

Deducting the cost of purchasing a truck load, 30,000kg from scavengers, cost of haulage and cost of soil assessment, the junk merchant makes a profit of N295, 000.00 per haulage ($1843.75/haulage).

Junk merchants in the study area further reveal that when business is good, about two trips are made in three months. Owing to this, junk collection is diversified to incorporate the surrounding areas of Mubi metropolis because it is lucrative.

On the likely uses of materials by junk recycling factories, junk merchants enumerated iron rods, bars, and sheets used for building construction and metallurgical constructions as materials made from the iron scraps by smelting companies and foundries.

Aluminum

Aluminum scraps are also scavenged and purchased by scrap merchant from scavengers by weighing (kg) using the salter scale. Information obtained from the group interaction revealed that financial values of aluminum scraps are better than iron scraps because they are in great demand but not commonly found like iron scraps. This made aluminum to be the most preferred materials among scavengers. However, they are sold locally to aluminum foundries in the study area and use in the manufacture of cooking pot, cutleries, personal effects and ornaments.

A kilogram of aluminum is sold at N80.00 ($0.5) by scavengers.
A kilogram of aluminum is sold at N120.00 ($0.75) locally to aluminum foundries by junk merchants.

**Cellophane (Polyurethane) electronic/machine safety packing material**

Observation by the researcher reveals another lucrative form of scavenging in the area, the collection of cellophane (polyurethane) electronic/machine safety packs. The material is scavenged from dump sites or purchased from motorcycle assembly plants in the metropolis based on quantity or size of the material and prices are negotiated. The prices range between N20.00 ($0.125) for a small size to N50.00 ($0.3) for a large one. The major collection centre is the old motor park in Mubi metropolis. Consequently, they are hauled using 5 tons (Mitsubishi) canter truck (Plate 2) at a transport fare charged between N5000 to N9000 ($31.2 to $56.2) as dictated by distance, and sold to fishermen in the republics of Chad and Cameroon.

According to scavengers, the polyurethane materials are bought and used as fishing hook suspension or crushed, and pieces used as fishing bait. The cellophane (polyurethane) substance are in great demand in these fishing communities and are sold for high prices ranging from N50, 000 to N70, 000 ($312.5 to $437.5) per a canter haul. Profits made ranges between N30, 000 to N35, 000 ($187.5 to $218.75) per haulage.

Scavengers also adduce that other uses of the cellophane (polyurethane) packing material when dissolve in gasoline serves as fillers for leaking roof, and adhesive for shoe repairs in the study area.

**Bones**

Another solid waste type collected for commercial purposes are bones (Plate 4). Scavengers reveal that un-chewable bones are collected from garbage dumps, food restaurants and drinking (beer) spots or pubs, abattoir, meat stalls and sold to junk merchants based on a negotiated price. Bones are hence collected by junk merchant, processed by burning of the bones, and then bagged for haulage to factories as source of raw material for the manufacture of poultry feeds and chalk at Kano, Jos and Maiduguri in Nigeria. The bones are sold to the proprietors based on the weight of the commodity where a thousand kilogram (1 ton) is sold for the sum of N20, 000.00 ($125).

**Conclusion**

Commercial scavenging, an informal form of resource recovery practiced by some segment of unemployed youths and students in the study area is environmentally benign as it reduces the volume of waste municipal authorities have to grapple with, and may form the cornerstone to the solution of our waste problems in the future. Besides, our resources are dwindling and waste dumps provide some potential reserves of reusable or recyclable materials.

**REFERENCES**


