

DEVELOPMENT DRIVERS OF WASTE RECYCLING IN NSUKKA URBAN AREA, SOUTHEASTERN NIGERIA

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Abstract

This article examines drivers of waste recovery and recycling in the informal waste sector in Nsukka urban area of Enugu State, southeastern Nigeria. Data on socioeconomic and demographic characteristics of waste pickers and waste dealers in the area were obtained using questionnaire survey, ethnographic interviews and field observations. Analyses of the data indicate that waste pickers play a crucial role in the waste recovery and recycling process. Waste dealers add value to materials through sorting, cleaning and processing, and also provide a vital link between waste pickers and industry. The article contextualizes waste recycling activities within the development and socio-cultural framework of the region, and examines socio-economic and demographic attributes that tend to predispose individuals to making a living from the recycle trade. Contributions of the informal recycling sector in Nsukka towards the Millennium Development Goals are also examined.

Keywords: Informal sector; Millennium Development Goals; Nsukka; recycling; socio-demographic attributes

1. Introduction

It has become acceptable, and somewhat fashionable, to regard recycling as a sustainable option on the waste management hierarchy (Agarwal *et al.*, 2005; Bolaane 2006). This is because it not only provides an avenue for the identification, recovery and exploitation of waste as a resource (Sicular, 1992; The Chartered Institution of Wastes Management, 2007) but also for its potential contribution towards environmental management and livelihoods (Masocha, 2006; Langenhoven and Dysssel, 2007).

Waste recycling in developing countries is being driven by the informal sector, often with minimal if any input from institutions of the state (Castells and Portes, 1989; Ahmed and Ali, 2004; Wilson *et al.*, 2006). At the same time, the informal sector is becoming increasingly integrated into the social, cultural and economic systems of most developing countries. Consequently, solid waste management (SWM) and recycling by the informal sector are arguably a potent and contemporary social phenomena which have made some contributions to development in low-and middle- income countries (Berthier, 2003; Wilson *et al.*, 2006; Gonzenbach and Coad, 2007; Medina, 2007; Gutberlet, 2008).

It is pertinent to observe, however, that in the past few years, attention of research on SWM in Nigeria has focused essentially on contextualizing waste recycling as an approach to urban environmental management and livelihoods (Adeyemi *et al.*, 2001; Agunwamba, 2003; Nzeadibe and Eziuzor, 2006; Nzeadibe and Iwuoha, 2008). Unfortunately, SWM and recycling appear to have received little attention from Nigerian social scientists especially from the viewpoint of the socially-related Millennium Development Goals (MDGs) (Nzeadibe, 2009).

In particular, research on the solid waste sector in Nsukka urban area of southeastern Nigeria, has so far focused attention on waste characterization and composition (Ogwueleka, 2003), and on the capacity needs of the sector for improved solid waste and resource management (Nzeadibe & Ajaero, 2008). However, the socio-economic and demographic circumstances, which appear to motivate peoples' decisions to recycle waste, and contributions of the informal waste sector towards achieving some of the MDGs, have not elicited serious investigation.

This article analyzes the drivers of waste recycling in Nsukka and describes the contributions of the recycling sector towards poverty reduction, gender equality, education, job creation and environmental sustainability. Regional contextualization of informal sector waste trade in Nsukka is also presented.

2. METHODOLOGY

Nsukka region is located in the northern section of southeastern Nigeria between latitudes 6°30' and 7°54' north, and longitudes 6°54' and 7°54' east. Nsukka urban is the *de facto* capital and largest urban centre in the region. It is also where the main campus of University of Nigeria is located. The formal/institutional arrangement for solid waste management (i.e collection and disposal) in this area is the Enugu State Waste Management Authority (ESWAMA) and Private Sector Service Providers (PSSPs) licensed by it.

For the conduct of this research, a combination of questionnaire survey and ethnographic interviews was used to elicit information on socioeconomic and demographic characteristics of the waste pickers and dealers. Non-participant observation and weighing of materials using scales at the junk shops were used to determine the type and amount of materials recovered and traded by the pickers and dealers respectively. The researcher to ensure accuracy requested for and obtained permission to crosscheck the weighing process.

Major centres of waste trade visited for interviews and administration of questionnaire to waste dealers and processors include Enugu Road junk shop (beside NITEL), Aku Road scrap dealers, Ogige Market

abattoir, feed mills at NIPOST and Link Road Onuiyi, Orié Orba, Obollo Afor, Orié Igbo Eze and Nkwo Ibagwa.

Waste picking is usually an urban phenomenon. Consequently, Nsukka urban, which is the main area of operation of the scavengers in the region, was divided into ten (10) zones for ease of data collection. Ten research assistants, one covering each zone, were recruited and trained on data collection for the survey. They were sent out simultaneously for data collection in order to reduce the chances of double counting.

Questionnaires administration was done orally to both the waste pickers and the dealers in the Igbo Language because the research participants became more cooperative when approached in Igbo language than English. In addition, most of them were people with low literacy levels so that Igbo was their only medium of communication.

Twenty-four questionnaires were administered to waste pickers who agreed to participate in the survey during the fieldwork in February 2008. Ten questionnaires were administered to the middlemen. Fifteen open-ended informal interviews were also conducted with the waste dealers in Nsukka urban (including Ogige Market), Orié Orba market, Obollo Afor, Orié Igbo Eze market and Nkwo Ibagwa Markets in order to obtain qualitative description of their activities. These markets contained significant informal recycling activities. Major themes emerging from the interviews were coded into categories for analysis. Findings of this research are presented below:

3. DRIVERS OF THE RECYCLE TRADE IN NSUKKA.

The waste recycling system in Nsukka region is run by the informal sector. This is because statutory measures for achieving improved recycling rates are non-existent in Nigeria. As a result, households and businesses can neither be compelled to achieve higher recycling targets nor enforce compliance. Also, because no formal resource recovery programmes exist, residents neither have the incentive nor do they see the need to recycle their wastes (Nzeadibe, 2006).

Waste pickers primarily drive the recycle trade through recovery of materials largely from dumps, markets and public places, while waste dealers (or middlemen) buy materials directly from waste pickers for sale to industry or end users. Through sorting and cleaning of the materials, the dealers add value to them. And by aggregating large volumes, they ensure that delivery of materials to industry is timely and to specifications (Nzeadibe and Iwuoha, 2008). Dealers therefore serve as a vital link between the waste pickers and the recycling industry in the waste trade chain.

In Nsukka, particularly the rural areas are found the itinerant waste buyers (IWBs) and itinerant waste collectors (IWCs). IWBs are people who walk around villages to buy clean, source separated waste materials that they can sell for a profit (Wilson *et al.*, 2009). Such materials include old or broken plastics, aluminium wares, glass bottles and metal cans. They often ring a bell and shout *Bottles! Bottles!* - as is the case of bottle buyers - in order to attract the attention of prospective sellers to themselves. IWCs on the other hand collect waste materials for free or sometimes they barter waste materials with people especially children who they offer such items as plastic cups, bowls, toys etc (Scheinberg, 2008). Both IWBs and IWCs are essentially small-scale operations (Ahmed and Ali, 2004) that ultimately service the middlemen in Nsukka urban.

Small and medium scale industries within and outside the region finally recycle these materials. They deal directly with the middlemen and they motivate and finance the recovery and recycling of these recyclable materials.

4. SOCIO-DEMOGRAPHIC ASPECTS OF THE WASTE ECONOMY IN NSUKKA

It has been suggested that waste economy is a significant component of the economy and socio-cultural system in most developing societies (Amin, 2006). Since this research analyzes waste recycling activities in a developing region, such activities would seem to be best contextualized within the socio-economic and cultural circumstances of the study area. Some socio-demographic attributes of the informal waste workers tend to predispose or motivate them to the waste trade. The social and demographic characteristics of scavengers in Nsukka are presented in Table 1 and are examined below.

Gender Dimension of the waste economy

An important aspect of the waste economy in an area is gender (Maclaren and Thu 2003). Findings of this survey revealed that waste picking in Nsukka is not a gendered occupation, although male waste pickers tend to predominate. Male pickers account for about 67% of the scavenger population while the female pickers make up the remaining 33%. This slightly contrasts with the findings of Agunwamba (2003) who, using a sample size of 13 interviews, reported that 77% of scavengers in Nsukka were men.

Similarly, single male pickers make up the largest proportion of the population, accounting for about 35% of the population, while married male pickers constitute about 29% of the scavenging population. It is pertinent to observe that no unmarried female picker was sighted during the survey probably because

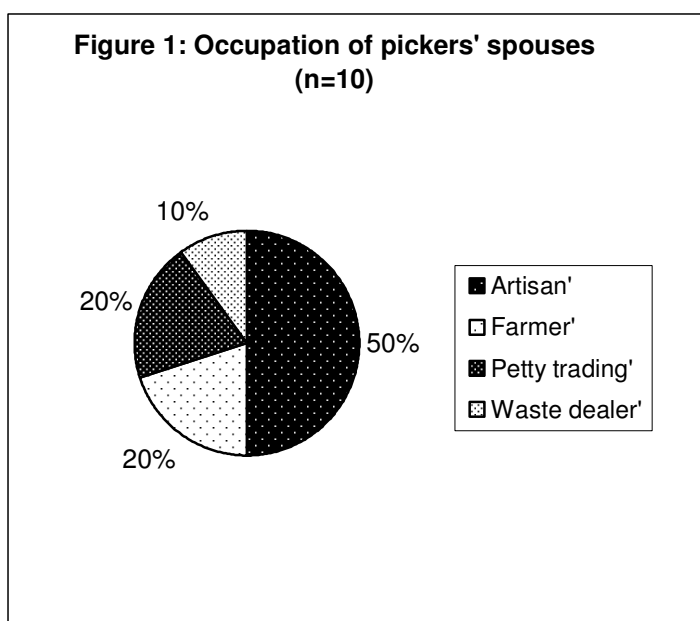
of the stigma associated with the job. The mores of the region, which places high value on marriage and accords a social recognition to married women, could make it difficult for any single female scavenger to find a husband. In addition, young women tend to marry rather early in the region. As a result, unmarried females may not engage in waste picking. This finding therefore contrasts with that of a similar work in Ilorin, Nigeria (Adeyemi *et al.*, 2001), where both male and female scavengers were all young and single.

TABLE 1: SOCIO-DEMOGRAPHIC ATTRIBUTES OF WASTE PICKERS IN NSUKKA

Attributes	Frequency	Percentage
Age		
20 –30	10	41.6
31-40	5	20.9
41-50	7	29.2
51-60	2	8.3
Gender		
Male	16	67
Female	8	33
Level of education		
No formal education	4	16.7
Primary	17	70.8
Secondary	3	12.5
Marital status		
Single	9	37.5
Married	10	41.7
Widowed	5	20.8
Place of Birth		
Nsukka	7	29.2
Outside	17	70.8
Length of time in the job		
< 2 years	7	29.2
3-5 years	8	33.3
6-8 years	1	4.2
>9 years	8	33.3

Waste recycling in Nsukka provides jobs and livelihood to vulnerable groups especially with their low levels of education. In Nsukka, widowed female pickers make up about 21% of the population, with all reporting that they took to waste picking after the death of their husbands (Huysman, 1994; Maclaren and Thu, 2003). It could therefore be argued that waste picking provides a chance to vulnerable groups such as widows to earn an independent income. It thus contributes towards the attainment of MDG 8 related to job creation.

In an attempt to determine the proportion of scavengers who worked with their spouses in picking waste, it was found that no waste picker reported working with the spouse. One female picker however reported that her husband is a waste dealer. Figure 1 shows the occupations of picker's spouses. It should also be noted that no spouse of a waste picker is employed in the formal sector. They are all engaged in informal, small-scale own-account businesses, with artisans accounting for 50% of such activities.



Low level of education and skills

Waste pickers generally have low levels of formal education. Nearly 88% of waste pickers have either no formal education or primary education. About 13% reported that they could not complete secondary education as a result of poor parental backgrounds. Consequently, lack of education and skills debar them from securing formal employment, hence their decision to pick waste.

This lack of education also contributes to making a living from alternative employment, as some of the pickers are not trained on any other trade for survival. 46% of pickers surveyed reported that they possess no other job while about 54% of the pickers have alternative jobs.

Child and migrant labour in waste recycling

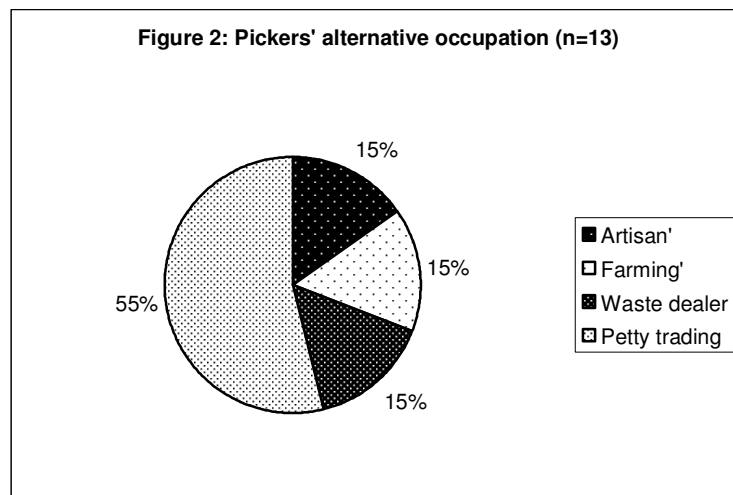
Although no child picker was sighted or interviewed, child labour appears to characterize waste recycling business in Nsukka. About 17% of waste pickers reported working with their male children of school age for collection, sorting and sale of waste materials. Similarly, waste trade appears to be family

business, with spouses and children of dealers involved in the business. In one particular case, a dealer reported that his three children (two male and one female) of school age assist in sorting/processing and storage of waste in his junk shop. Involvement of children in the recycle trade could inhibit attainment of MDG 2 on achieving universal primary education

There was also a wide variation in the age of the pickers interviewed during the survey although young people predominated. About 42% were below 30 years of age and more than 60% of them were less than 40 years. 8.3% of the pickers were made up of elderly people of between 50-60 years of age. This finding about waste pickers in Nsukka also differs from Ilorin waste pickers where all pickers were less than 30 years of age (Adeyemi *et al.*, 2001).

As shown in Table 1, about 71% of the waste pickers in Nsukka were born outside Nsukka. Some of the pickers reported that they are migrants from neighbouring states, particularly Ebonyi state. About 30% of the pickers originate from rural areas of Nsukka region. A combination of low literacy level, low skill, poverty, migrant and widowed status appears to predispose the pickers to seeking a livelihood from waste. This tendency for migrants to get involved in waste recycling activities in Nsukka appears consistent with observations in another city in Nigeria (Nzeadibe and Eziuzor, 2006).

Alternative occupation of Nsukka waste pickers



While some scavengers practiced waste picking as a fulltime activity for their sustenance, others moonlighted with it, combining waste picking with seasonal work and other trades to supplement family income. Figure 2 shows alternative occupations engaged in by waste pickers in Nsukka. Because 100% of the waste pickers reported that they enjoyed a boom in dry season (especially during festivities),

about 55% of the scavenger population reported having an alternative occupation to meet their needs during periods of scarcity.

Petty trading accounts for about 54% of pickers' alternative employment, while farming, waste dealing and artisan take second place with about 15% each. Some of the waste pickers who double as waste dealers also have junk shops at periodic markets such as Orié Orba Market where they sell their wares on market days.

5. ECONOMIC ASPECTS OF THE RECYCLE TRADE IN NSUKKA

Although the earnings of waste pickers and waste dealers in Nsukka may be variable, interviews with the scavengers indicate that they earn an average of ₦750 (US\$6.4) daily. Over a six-day workweek, an average waste picker could earn about ₦4500 (US\$38.5).

The NITEL waste dealer on the other hand reported making between ₦1500- ₦2000 daily. Similarly, the Ogige Market bone dealer reported making ₦1000 daily while it was found that the Aku Road recyclers make between ₦3000- ₦5000 daily.

Table 2 compares the average income of various recycler groups in Nsukka with the minimum wage in Enugu State. Given that the minimum wage in Enugu was recently increased to ₦6500 (about US\$56) with the on-going reform of the public sector, it is still lower than the monthly income of scavengers in Nsukka. This will tend to suggest that waste picking is a profitable occupation in Nsukka. It would therefore be argued that waste pickers in Nsukka earn more than the statutory minimum wage of about US\$56 monthly. They thus earn more than US\$1 a day prescribed by Millennium Development Goal 1 related to poverty reduction (Nzeadibe, 2009).

TABLE 2: MINIMUM WAGE IN ENUGU STATE COMPARED WITH NSUKKA RECYCLERS' INCOME (₦)

Recycler Group	Average daily income	Average monthly income	*US\$ rate of monthly income	Minimum wage
Waste pickers	750	18,000	153.84	6,500
Aku Road Scrap Dealers	4,000	96,000	820.51	6,500
NITEL Junk Shop	1,750	42,000	358.97	6,500
Ogige Market Bone Dealers	1,000	24,000	205.12	6,500

*Exchange rate used is ₦117 to US\$1.

Source: Nzeadibe and Ajaero, 2008

6. MATERIAL FLOWS WITHIN NSUKKA REGION

In order to have a better understanding of the socio-cultural, economic and logistical aspects of waste recycling in Nsukka region, an appreciation of the interconnectedness and flows within the system would seem imperative. Although the amount of materials that move from one node to another within the recycling network of Nsukka may be variable over time and season, there are however observable patterns within the region. Major hubs of recycle trade within the region are Nsukka urban, Obollo-Afor, Nkwo Ibagwa , Orië Orba and Orië Igbo-Eze.

Apart from the Ogige market in Nsukka urban and Obollo-Afor, which are daily markets, the others are periodic, that is, full marketing activities of each of them holds on a certain day of the week (Madu, 2004). The World Bank-assisted Orië Orba market is the biggest market in the sub-region. Ogige , Obollo-Afor and Nkwo Ibagwa are all located at LGA Headquarters. Obollo-Afor is also a nodal settlement through which the major highway connecting northern and southern Nigeria passes.

Materials are conveyed to these major hubs for distribution to higher order recycling centres such as Onitsha, Warri and Lagos. Materials for distribution to the recycling industry in Onitsha include plastics, bottles, slippers and old shoes. Scrap iron and steel are sent to Warri and Lagos for recycling. Some of these materials are also utilized locally in the manufacture or processing of other items.

Most of the items going outside the sub-region are transported to end users or industry with heavy duty trucks (popularly called 911 trucks) while cart pushers and pick up vans may be used for local transport of wares.

The forces of demand and supply determine the frequency and regularity of movement of materials. At the time of the survey, the estimated quantity of materials, which waste dealers in Nsukka region had in stock, is presented in Table 3.

TABLE 3: QUANTITIES AND PRICES OF MATERIALS STOCKED BY THE WASTE DEALERS

Type of material	Quantity in stock	Unit price (₦)
Plastics	4,500kg	30
Scrap Metals ^a	10,000kg	120
Aluminium & Brass	2,500kg	120
Bones ^b	150kg	5000
Bottles	5,000kg	10
Slippers	2,000kg	25
Automobile batteries	300 units	1000
Motorcycle batteries	120 units	250
Tyres	150 units	200

^aData obtained from Aku road scrap dealers. ^bData obtained from Ogige Market bone dealers. All other data in Table 3 are from NITEL junk shop.
Source: Author's fieldwork 2008

7. MAJOR ARTICLES HANDLED BY THE RECYCLING NETWORK

The waste pickers are skilled in identifying materials with value for recovery. As long as market exists for the material, waste pickers will simply pick it up. Consequently, a range of materials, including organic waste is traded. Table 3 shows the major recyclables traded by waste dealers in Nsukka.

TABLE 4: SYNOPSIS OF MAJOR RECYCLABLES HANDLED BY WASTE DEALERS IN NSUKKA

Materials	Sources	Markets	Uses
Animal bones, blood & shells	Abattoir, markets, homes	Feed processing companies, ceramic industry	Making of animal food concentrates, making of ceramic plates
Metals	Mechanic workshops, construction sites, furniture makers, homes	Blacksmiths, artisans, welders, iron/ steel markets, metals/steel companies	Used for metal gates, cutlass, hoes, metal rods reused in construction, re-formulated into new products
Plastics	Homes, rental shops	Plastic companies	Rubber slippers, shoes, cups, plates, chairs, buckets, reuse.
Tyres & tubes	Homes, motorists, University campus, vulcanizers	Abattoirs, students, cobblers, motor cyclists, barrow pushers, water vendors	Roasting of animal hides & skin, tubes cut into strips for tying goods, commercial water vendors for dispensing water from tankers, tyres are burnt by students during carnivals, construction of games facilities, reuse, repair of tyres and shoe soles
Charcoal, wood shavings & saw dust	Homes, Abattoirs, loggers, furniture makers	Hotels, homes, poultry farms	Cooking, heating, ironing, bedding for birds & pets
Animal dung & undigested forage	Abattoirs	Farms	Making compost & land application
Leather & shoe soles	Homes, students' hostels	Cobblers, shoe companies	Repair of shoes, fabrication of new shoes
Batteries	Mechanic workshops, homes & motorists	Lead for battery companies	Lead for batteries
Glass bottles	Homes, University campus	Bottling, companies, pharmaceutical, wine, breweries, cosmetics companies, market women	Soft drink and beverage, peanut bottling, herbal remedies, domestic uses
Beverage & tomato containers	Homes, hostels, shops, hotels	Market women, households	Reused in packaging & cooking, making of graters
Aluminium & copper scraps	Homes, markets, artisans	Artisans, craftsmen & aluminium companies	Making of pots, poultry feeder, plates, cooking utensils, soldering, wiring and coatings

Source: Author's fieldwork, 2008

This survey found that there are two (2) major junk dealers in Nsukka urban who the waste pickers, IWBs, IWCs and small buyers supply materials to. They are located at Enugu Road (Beside NITEL) and Aku Road (beside Bishop Shanahan Hospital). At the abattoir section of Ogige Market is found a major bone dealer who supplies burnt bones to three (3) feed mills (one is located beside NIPOST Nsukka and the other two are located adjacent to each other at Link Road, Onuiyi, Nsukka). Scrap metal dealers are also found at Obollo Afor. Other small waste dealers have shops at the periodic markets.

There appears to be a form of specialization in the Aku Road (metal scrap) and Ogige Market (Bone) dealers. Enugu Road dealer trades in most other items not handled by the others (Table 2). The Enugu Road junk dealer claimed that 16 waste pickers who regularly supplied materials to him service his business. The mechanic village (popularly known as site), market and construction sites are the main sources of scrap metals for the Aku Road recyclers. On the other hand, the abattoir is the source of bones for the bone dealer, and charcoal for cooking and heating. Table 4 gives a synopsis of recyclables handled by waste dealers in Nsukka.

8. CONCLUSIONS

Waste recycling in Nsukka is primarily about people and their livelihoods, although the activity inadvertently makes contributions to urban environmental management. Also, the informal sector that drives the recycle trade is arguably an integral part of the social system of the study area.

This paper has shown that some socio-demographic and cultural characteristics of individuals in the waste trade influence people's choice to make a living from waste. In particular, it was found that a third of the scavenger population are women, mostly widows and the occupation provided widows who have low levels of education a chance to earn an independent income. In addition, waste picking provides an income opportunity for recent migrants from the rural areas or from neighbouring states. The activity therefore serves as a refuge occupation for vulnerable groups. It could therefore be argued that the waste recycling sector in Nsukka is making unacknowledged contributions towards achievement of the MDGs.

An aspect of the recycle trade that could inhibit progress towards the MDGs is the involvement of school age children in waste recycling. Public policy should be geared towards getting the children back to school, as education is the bedrock for achieving most of the other MDGs.

Finally, it has been noted that the economic contributions of the informal recycling sector in Nsukka could be significant. These contributions deserve to be acknowledged with policy-level recognition, and

support in the formation of scavenger cooperatives in order to make the best use of the skills and knowledge of the waste recyclers for societal improvement. Arguably, the sector could be a partner in the fight against world poverty.

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