African Journal of Environmental Research
Vol 1, No. 1, 2018

METAL SCAVENGING AS A MEANS OF INCOME GENERATION IN ANAMBRA STATE

Emmanuel N. Enumah[1], **Leonard N. Muoghalu**[2]

[1,2] *Department of Environmental Management, Chukwuemeka Odumegwu Ojukwu University, Uli Campus, Nigeria*

Abstract

The study evaluated the contribution of metal scavenging to income generation in Anambra State. The study design was a field survey consisting of observation, interviews and daily recording of scrap metals recovered and sold by scavengers in the study area for 10 months. The population of the study consisted of 483 scavengers and 53 dumpsite managers identified in the study area, while the sample size comprised of 220 scavengers and 30 dumpsites/managers, randomly chosen. Others were 30 Anambra State Waste Management Agency (ASWAMA) officials and 300 people living around dumpsites. Four sets of structured questions and questionnaire were used to obtain information from the respondents. Data analysis was done using percentages and averages, while analysis of variance (ANOVA) was used for testing the hypothesis formulated. The findings of the study were (1) A total of 4845.23 metric tonnes of scrap metals was salvaged for 10 months by 220 scavengers in the state earned the operators a whooping sum of ₦11,735,147.10 in 10 months (into the economy of Anambra State.) (2)The average monthly income of scavengers studied ranged from ₦39359.50 to ₦62,704.80. (3) the result of ANOVA applied to analyze the perception of the respondents on scavenging as a means of income generation is statistically significant at an F-ratio of 4.545> Table F-ratio of 2.62 at 0.05 level of significance. (4) Over 76% of the respondents were of the view that scavenging is a veritable means of income generation in Anambra State. (5) That the least average monthly income (₦39,359.50) realized is more than the gross pay (₦38,823.00 minimum wage) of a grade level 10 step 1 public servant in Anambra State. An inference drawn from the study is that metal scavenging provides income not only to scavengers but to many others who find livelihood in the occupation, thus helping to alleviate poverty in the State. Scavengers should be integrated into formal waste management system in Anambra State to tap from their wealth of experience in waste sorting and handling.

Keywords: *dumpsite managers, income generation, metal scavenging, metal scavengers*

INTRODUCTION

Over the last few decades, human beings have continuously exploited and degraded their environment beyond limits, as a result of enormous technological advancement, rapid urbanization and industrialization (Paul, 2002). The economy of a country is fundamentally linked and largely dependent on its environmental health, but policy makers often overlook that. Maintenance of the integrity of the nation's environment is essentially important for sustainable development. In Anambra State, especially in urban centers, the way municipal and industrial wastes are disposed of leaves much to be desired. This is because waste is generated and dumped

indiscriminately into the environment, due to the absence of effective waste management programmes in cities. The rate of solid waste generation has greatly surpassed the rate of effective collection and disposal; hence, large quantities of solid waste are accumulating in unauthorized areas. It has reached the point that humans and natural ecosystems are negatively impacted upon (Enumah, 2013; Okonkwo, 2009; Adewole, 2009; Onwurah, Oguzua & Otitoye, 2006). Over the years, governments have initiated policies and programmes aimed at ensuring effective and sustainable solid waste management but neglecting a very important sector that contributes substantially to solid waste reduction, income generation and availability of cheap industrial raw materials. This is the unrecognized, but very important activity of scavenging (Enumah, 2013)

Scavenging is the process of recovering useful materials from the waste streams and the people that engage in scavenging are known as scavengers. Scavenging is a fallout of a failed solid waste management system and unemployment, resulting from inability of urban economic systems to provide alternative means of livelihood to unemployed people (Enumah, 2013). Scavengers, in a bid to recover valuable materials, from waste dumps, get involved in waste management indirectly (Enumah, 2013). Scholars like Ogboi and Okosum (2008), Muktar (2009; 2011), Medina (2009, 2010), Enumah (2013) and Muoghalu and Okoye (2010) had variously reported in their separate studies that "scavenging reduces the amount of solid wastes that need to be collected, transported, and disposed of by agencies saddled with such responsibilities". Scavenging is ubiquitous in occurrence throughout the developing countries of the World (Medina, 2010). They recover materials to sell for reuse or recycling as well as diverse items for their own consumption. The World Bank has estimated that up to 2% of the populations in third world countries survive by recovering materials from waste (Medina, 2009; 2010).

In Anambra State, scavenging among youth begins with the collection of plastics, metal scraps, bottles, papers, cardboards, cans and other valuables. The existence of very large dump sites tends to attract local scavengers. They sort out the useful materials and sell them to middlemen, who in turn sell to recycling industries. Unemployed people engage in scavenging activities that earn them income for their survival and that of their families. Scavengers contribute immensely to the economic development and cleanliness of the state. This is evident in the number of lorry loads of scrap metals being transported to various destinations in Lagos, Warri and elsewhere from Anambra State. It is in the light of the above that this study was conducted to investigate the income generation potential of scavenging in Anambra State, with a view to determining the quantity of scrap metals (waste) recovered and sold through scavenging in the study area.

The Study Area

Anambra State, the study area is a state in south east geopolitical zone of Nigeria. It is located between the following coordinates: $5^0\ 50^1$ N, $6^0\ 45^1$ N and $6^0\ 35^1$ E, $7^0\ 30^1$ E and about 960 km east of Lagos (Igboegbunam, 2009). Its name is an anglicized version of the original "Oma Mbala", the name of the river now known as Anambra River, (Omambala River), a tributary of the famous and majestic river Niger. It is after this tributary that the state is named. The state was created on August 27, 1991, following the State creation exercises in Nigeria. Administratively, the State consists of twenty one local government areas. The State had a total population of 4,055,048 and a land area of 4,844 km^2 and an average population density of 837.10 km^2 (Igboegbunam, 2009). This study focuses on the quantity of scrap metals recovered and sold by

scavengers in Anambra State, specifically in the three major cities of Awka, Onitsha and Nnewi and four other sub- urban communities of Awada-Obosi, Nkpor, Abagana and Enugu Ukwu. These urban cities and communities were chosen because of their strategic economic importance in Anambra State and the immense commercial and industrial activities taking place in them. These commercial and industrial activities result in waste especially scrap metals, that are poorly managed and the resultant effect is metal scavenging due to poverty and unemployment.

Awka is the capital of Anambra State and is about 37 km from Onitsha. Awka South local government area in which Awka is located has an estimated population of 198,589 (according to the 2006 Nation Population and Housing Survey). It lies between latitudes 6^0 12 ^{1} N; 6^0 25^1 N and longitudes 7^0 04^1 E, $7^0 07^1$ E. Awka is sited in a fertile tropical valley, but most of the original rainforest has been lost due to clearing for farming and human settlement. A few examples of the original rainforest remains at places like the "Imo Oka" shrine. Awka was famous as the industrial suburb of Nri with metal working and its blacksmithing before the 20^{th} century. The Awka area in earlier times was the industrial site of the Nri civilization that produced the earliest documented bronze works in Sub-Saharan Africa around 800 A.D. (Igboegbunam, 2009).

Onitsha is a fast growing commercial city and has developed to become a huge metropolis extending to Idemili, Oyi, and Anambra East local government areas. It is the city state on the River Niger, a river port and commercial center. Onitsha is the premier city in Anambra State (Bosah, 2008). The city was founded around 1550 with a total land area of 36.19 $km^{2.}$ According to GeoNames Geographical Data base (2010), Onitsha has a population of 561,066 with a metropolitan population of 1,003,000 and a density of 43,978/km^2. Onitsha lies at a major east-west crossing point on the Niger River and occupies the northern most part of the river regularly navigable by large vessels. Onitsha is home to largest open air market in West Africa, the Onitsha Main Market (Bosah, 2008). The state of Lagos and various northern towns are partially fed by suppliers from Onitsha. Trade soared between the eastern and western parts of Nigeria because of Onitsha market. This made Onitsha the strategic gateway for trade between the former Eastern and Western regions.

Nnewi is located east of the Niger River and is about 27 km from Onitsha. It is the second largest commercial city in Anambra State after Onitsha. Nnewi is one of the trading and manufacturing centers of Nigeria. Before Nigeria's independence, Nnewi residents were at the center of an international trading network that dominated the supply of motor spare parts in the country. The town subsequently became a center of commerce and industry and has one of the largest automotive parts markets in Africa. Over the last decades, Nnewi has experienced relatively rapid industrialization. In fact over 20 medium to large scale industries, have been established across a variety of sectors, including the first indigenous motor vehicle manufacturing plant in Anambra State (Figure 1)

All the commercial and industrial activities taking place in these cities carry with them wastes especially scrap metals, that are poorly managed and the resultant effect is scavenging, due to unemployment resulting from inability of urban economic system in those cities to provide alternative means of livelihood to a group of unskilled, jobless urban migrants, as well as

industrial demand for inexpensive raw materials to feed recycling industries that abound in the country and elsewhere.

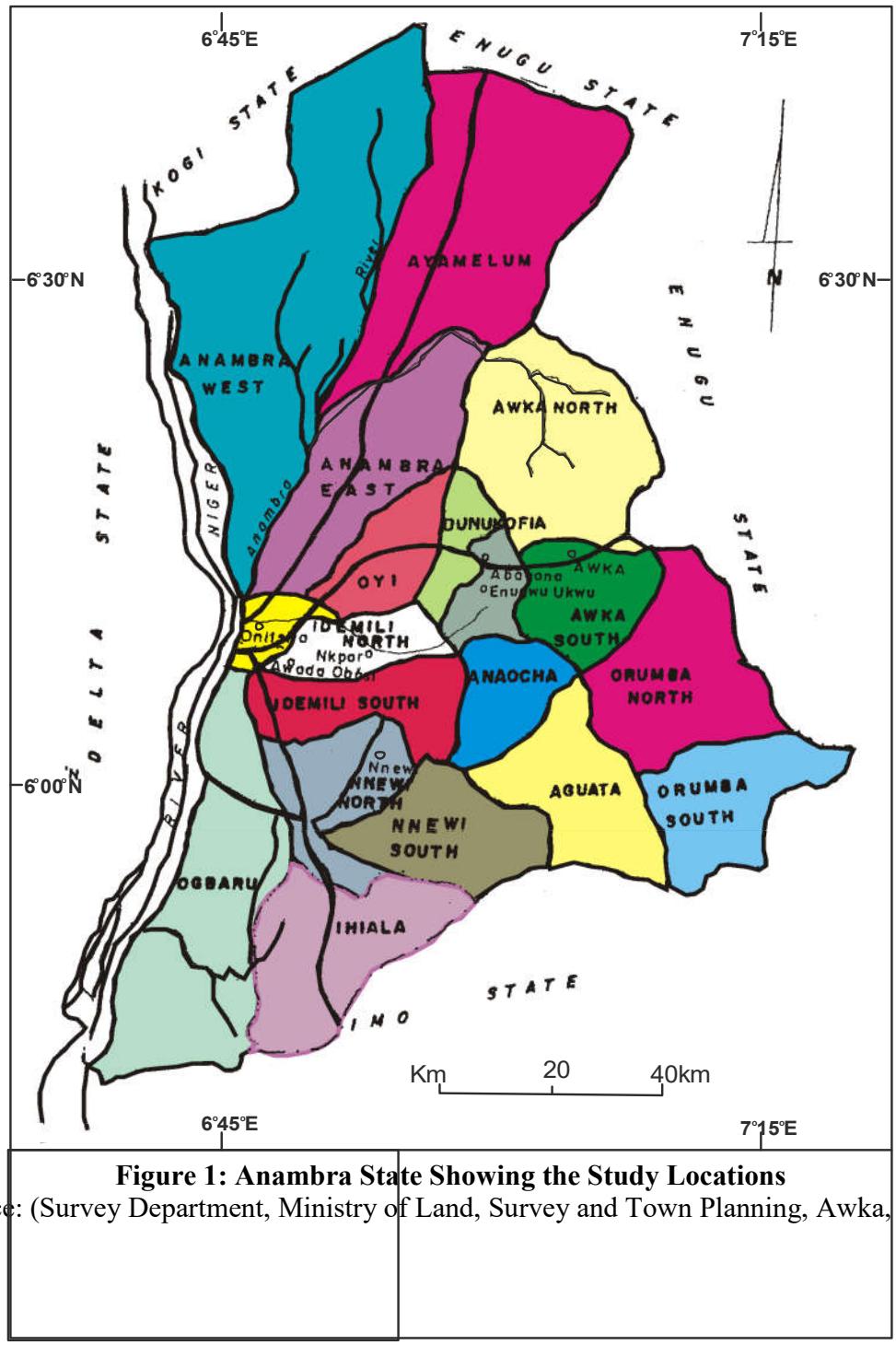

Figure 1: Anambra State Showing the Study Locations
Source: (Survey Department, Ministry of Land, Survey and Town Planning, Awka, 2018)

CONCEPTUAL/ THEORETICAL FRAMEWORK

The Systems Theory

The systems theory is considered appropriate because any theory that can effectively analyze and explore the system must be capable of looking at the system, not as a single entity but as a complex system, comprising many functional interconnections, interrelations and interdependence of parts called sub-systems.

A system as defined by Hall and Fagen (1956) is "a set of objects together with the interrelationships between the objects and between their attributes" or as "an entity composed of a number of parts, the relationships of these parts and attributes of both the parts and their relationships (Immegart & Pileck, 1973). Systems therefore have functionally interconnected parts known as subsystems, which possess qualitative factors, all of which stem from inclusion in the particular system. It is difficult to deal with any environmental issue as a single entity. This is because the environment itself is complex and therefore any real world view of environment must be seen in terms of multi- dimensionality of environment- the biogeochemical, bio-geophysical, social, economic and political dimensions. Excluding one is dealing with an incomplete environment, hence, the adequacy of systems theory for studying a phenomenon as complex as scavenging activity cannot be overstressed. This is because, scavenging system is a complex system that involves many processes and many activities and stakeholders. Scavenging system is resolved in this study into other sub-systems- health, economic, social and environmental. For scavengers to carry out their functions of recovering materials from dumpsites and elsewhere, they must be in good health. Health subsystem is resolved into illness suffered, sources of treatment and availability of health facilities. Social, economic and environment aspects of scavenging system are resolved into other various subsystems that can be measured. The environmental subsystem is resolved into level of pollution reduction. The social subsystem is resolved into education, public perception and exploitation by scrap metal dealers. The economic subsystem is resolved into market, recycling, employment and income level. Market subsystem is very important because recovered materials by scavengers must be sold and recycled and final products must be utilized for the scavenging system to remain afloat. In other words, the subsystems of social, health, environmental and economic, along with all their attributes must be effective for the scavenging system to perform optimally. Therefore, for recycling industries to remain afloat, there must be a continuous flow of recyclables, made available by scavengers who must be in good health to do this, via the scrap dealers, facilitated by transporters and the recycled products must be utilized.

The resolution of the problems of scavenging in Awka, Onitsha, Nnewi, Nkpor, Awada- Obosi, Abagana and Enugu- Ukwu should be studied from the perspective of the relationship between the factors involved. These factors should be seen from the viewpoint of the systems highlighted which must all function to keep the system alive.

RESEARCH METHODOLOGY

The survey design was adopted for the study. Data were generated for the study by recording the daily/monthly quantity of scrap metals recovered by scavengers, personal interviews, use of structured questionnaire and field observation. The study area was divided into three zones Awka, Onitsha and Nnewi for ease of data presentation. Questionnaire was administered to 30 Anambra State Waste Management Agency (ASWAMA) officials, while three sets of structured questions were used to gather data from 220 regular scavengers out of 483 identified, 30 dumpsite managers out of 53 identified and 300 people living around dumpsites from the zones, all randomly chosen. Data obtained from the scavengers and other respondents include quantity of scrap metals salvaged through scavenging in the study area for 10 months between February and November, 2011 and views of scavengers, dumpsite managers, ASWAMA officials and people living around dumpsites on scavenging as a means of income generation.

The statistical techniques used to analyze the data generated were percentages, statistical means and analysis of variance (ANOVA). A null hypothesis that scavenging is not perceived as a means of income generation by ASWAMA officials, scavengers, dumpsite managers and people living around dumpsites in the study area was postulated and tested.

RESULTS AND DISCUSSION

The major thrust of this work was the investigation of income generation potential of scavenging in Anambra State. The task was accomplished by recording, compiling and collating the daily and monthly quantity of scrap metals recovered and sold in 10 months by 220 scavengers studied in all the three zones of the study area. The study shows that a total of 4,845.23 metric tonnes (4,845,230kg) of scrap metal was recovered in 10 months by 220 scavengers in the study area which attracted a whooping sum of ₦11,735,147.10 in 10 months into the economy of Anambra State. A breakdown of this shows that 619.809, 204.054 and 189.059 metric tonnes of scrap metals were recovered in Awka, Abagana and Enugu-Ukwu respectively by 30, 10 and 10 scavengers respectively, 1,084.717, 693.282 and 1,197.673 metric tonnes of scrap metals were recovered in Ochanja, Mgbuka-Nkpor/ Express by 50, 50 and 30 scavengers respectively and 322.517, 213.573 and 320.646 metric tonnes of scrap metals were recovered in Nwagbara, Coscharis- Junction and Mgbuka – Agboedo by 15, 10 and 15 scavengers respectively.

By adding these subtotals together, a total of 1,012.822, 2,975.672 and 856.735 metric tonnes of scrap metals were salvaged in Awka, Onitsha and Nnewi zones respectively. Multiplying these figures by the average price/kg prevailing in the zones- ₦24/kg in Awka, ₦24.33/kg in Onitsha and ₦24/kg in Nnewi, ₦2,430,772.800, ₦7,239,810.00 and ₦2,056,166.400 were generated in Awka, Onitsha and Nnewi zones respectively. Dividing these amounts by the products of the number of scavengers studied in each zone and the number of months (10 months) covered by the study, yielded zonal per capita incomes/month. Therefore, the per capita income/ month for scavengers in Awka, Onitsha and Nnewi zones were ₦48,635.52, ₦55,728.91 and ₦51,392.66 respectively.

It was discovered from the study that the least average monthly income (₦39,359.00) was realized in Awka subzone and highest average monthly income (₦62,704.80) came from

Mgbuka- Obosi sub-zone. The implication of this, is that the average monthly income of all the scavengers (220) studied, ranged from ₦39,359.50 to ₦62,704.88. This result conforms to that of Muoghalu and Okoye (2010) in their study of scavenging activities in Awka and far above what Muktar (2009) arrived at in his study of youth scavenging in Kano, Nigeria. Muoghalu and Okoye (2010) reported that the average monthly income of scavengers in Awka ranged between ₦39,000 and ₦52,000, which corresponds to the then salary of grade level 14 and 15 officers in Anambra State public service, while Muktar (2009) reported that the average monthly income of youth scavengers in Kano was estimated to be ₦12,000, above the minimum wage paid by the state civil service in 2009.

Respondents' Perception of Scavenging as a means of Income Generation

Opinion of dumpsite managers, scavengers, ASWAMA officials and people living around dumpsites were sought for using structured questionnaire on whether scavenging generates income for the unemployed especially the urban poor (Medina, 2009, 2010; Muoghalu & Okoye ,2010; Taiwo, 2010). The results of the survey show that 76.50% of the respondents accepted that scavenging generates income. 8.50% were undecided in their opinion, while 15% disagreed with the statement. Some scavengers and dumpsite managers, who decided to be open during interaction with them, emphatically told the researchers that metal scavenging is a money spinning occupation. For instance, one dumpsite manager, at Mgbuka-Obosi informed the researcher that he joined the business in the early 1990's and that he was among the first set of people that exported scrap metals to China, Hong Kong, United Arab Emirate, Japan and India through Onne Port in Rivers State, before it was banned by the Federal Government of Nigeria in 1999. This singular action of the government resulted in the establishment of some scrap metal recycling industries in Lagos and elsewhere in the country by Chinese and Indian nationals. These industries include among others, Sunflag Steel, African Steel and Mayor Steel all in Odogonyo in Ikorodu Industrial Estate, owned by Chinese nationals and Universal Steel, sited in Ikeja Industrial Estate, owned by Chinese nationals. However, in order to add impetus and strength to the views of the respondents and to the outcome of earlier results, and average monthly income of scavengers, a null hypothesis was postulated and tested.

Testing of Hypothesis

The hypothesis that scavenging is not perceived as a means of income generation by ASWAMA officials, scavengers, dumpsite managers and people living around dumpsites in the study area was tested using the respondents' perception of scavenging as a means of income generation. The data generated were analyzed with the application of one-way analysis of variance (ANOVA). At 0.05 level of significance, the differences in the respondents' perception were determined. The analysis produced an F-ratio of 4.545> table F-Ratio of 2.62 at 0.05 level of significance at V_1= 9 and V_2= 14 degrees of freedom. Thus the null hypothesis was rejected and the conclusion is that the perception of scavenging as a means of income generation by ASWAMA officials, scavengers, dumpsite managers and people living around dumpsites is statistically significant in the study area.

Further analysis was carried out to ascertain which pairs are different using Turkey's Pairwise Comparisons Technique. The result shows the ratings attributable to different pairs. The conclusion is therefore that there is statistical evidence, at 0.05 significance level, to support the claim. The pair scavengers/ ASWAMA officials gave the highest rating to the assertion that

scavenging creates jobs and generates income. This was followed in descending order by the following pairs: people living around dumpsites/ ASWAMA, dumpsites managers, people living around dumpsites/ scavengers and people living around dumpsites/ dumpsite managers respectively. The implication of this is that, although the four groups of respondents affirmed that scavenging generates income in the study area, their levels of affirmation differed.

The ANOVA result confirms the reports of Muoghalu and Okoye (2010), Taiwo (2010); Medina (2009; 2010) and Okonkwo (2009) that scavenging creates jobs and generates income for the urban unemployed persons. The result of statistical analysis is also in conformity with the results obtained from the sale of recovered scrap metals where the average monthly income of scavengers ranged from ₦39,359.50 to ₦62,704.80. These figures fall within grade levels 10 step 1 and 14 step 8 of Anambra State newly harmonized public service salary structure as at 2011. Recall that the least average monthly income (₦39,359.50) realized is more than the gross pay (₦38,823 new minimum wage) of a grade level 10 step 1 public servant in Anambra State.

Oftentimes, scavengers are portrayed in the media, as being poor and living on the margins of society (Medina, 2010; Muktar, 2009). The proponents of this view point have been proved wrong, in view of the fact that a grade level 10 officer in the public service of Anambra State is a senior officer and cannot be said to be poor or living on the margin of society. A newly employed university graduate in Anambra State public service is placed on a salary grade level 08 step 3.

POLICY IMPLICATIONS

The major thrust of the study was the investigation of income generation potential of scrap metal scavenging and came up with the following policy issues:

i. First, since many people find livelihood either directly or indirectly in scrap metal scavenging, it should be supported and encouraged because it helps to reduce unemployment, urban crime and social vices. No effort should be spared in giving support to any activity that helps to alleviate the precarious unemployment situation in the state.
ii. Secondly, seminar and workshops should be organized for scavengers where they will be taught the rudiments of business management as this might help them manage their income, diversify or even venture into some other lines of business. This has become imperative in view of the enormous income generated via scavenging as shown in this study.
iii. Thirdly, there should be education of the public at large through awareness creation which will focus on the benefits inherent in scavenging and its contribution to income generation, resources conservation and environmental protection. This should be the main focus of the non-governmental organizations (NGOs), national directorate of employment and national orientation agency.
iv. Fourthly, scavengers should be educated on basic health practices like first aid, to enable them take care of themselves in case of minor injuries. They should be educated to wear

jungle boots, gloves, helmets, surgeon masks and uniform as this would further enhance their dignity and health status.

CONCLUSION

The study evaluated the income generation potential of scrap metal scavenging and established that it is truly a veritable means through which many people find livelihood in Anambra State and elsewhere. Therefore, scavenging as a means of poverty alleviation should be supported and encouraged by all and sundry, so that the society will continue to reap the numerous benefits inherent in the occupation.

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