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GENDER ROLES IN INFORMAL SOLID WASTE MANAGEMENT IN CITIES OF NORTHERN NIGERIA: A CASE STUDY OF KADUNA METROPOLIS

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ABSTRACT

For the urban poor in most cities of developing countries, informal waste recycling is a common way of earning a living. And women are the most vulnerable group to poverty within the urban poor population. In Kaduna metropolis, an ancient city in the North West Nigeria, women are only playing a very fringe but yet complementary roles in the waste collection, sorting and recycling processes, which are fast becoming catalyst for livelihood for the underprivileged urban dwellers. This represents a wider spectrum of informal solid waste management issues in Northern Nigeria. At the household level, it was observed during the study that women and children play a very dominant role in collection and sell of recyclable materials to itinerant waste collectors. The results show 55% of recyclable materials are being sold by women and 40% by children while only an insignificant percentage of 5% were men. A distinct gender division of labour was observed as women are almost conspicuously absent at the higher levels of solid waste recycling processes. This is largely due to cultural construct, poor coordination and lack of capital. This paper investigated these fringe roles of women within the value chain process in the informal sector of solid waste management business, and made recommendations for their integration into the mainstream policy as a poverty reduction strategy.

Keywords: Urban poor, women, solid waste, Metropolis and poverty reduction

INTRODUCTION

Waste is defined as any unwanted material that is due for discarding. But technically, waste is considered as a resource in the wrong place Abdullahi, Y.A. (2011). Waste is something for which we have no further use and which we wish to get rid of. Solid wastes arise from unusable residues in raw materials, leftovers, rejects and scrap from process operations, used or scrap packaging materials and even the saleable products themselves when they are finally discarded. Equally, Waste is defined as any substance or object which the holder discards or intends to discard. Solid waste can be classified based on composition, source as well as physico-chemical properties. The classes of solid waste based on source are: municipal (domestic, institutional and commercial), agricultural, mining and mineral, radioactive and industrial wastes. Among these sources, industrial and municipal wastes contribute the highest volume annually (Victor and Choji, 2006). For the purpose of this study, municipal solid waste is considered. Waste collection, sorting and recycling in the informal sector is characterized by small-scale, labour-intensive, largely unregulated and unregistered, low-technology manufacturing or provision of services. Generally, Informal sector entrepreneurs or enterprises do not pay taxes, have no trading license and are not included in social welfare or government insurance schemes (Haan, Coad, & Lardinois, 1998). In the context of Municipal solid waste management (MSWM), the informal recycling sector refers to the waste recycling activities of itinerant waste collectors, scavengers and waste pickers. These

terms are used to describe those involved in the extraction of recyclable and reusable materials from mixed waste. These activities epitomized the informal sector as this is labour-intensive, low technology and low-paid, unrecorded and unregulated work. The principal goal of Municipal Solid Waste Management is to protect public health. Other goals include promotion of environmental quality and sustainability, support of economic productivity and employment generation (Wilson, Whiteman, & Tormin, 2001)

It is on record that rapid increase in volume and types of solid waste as a result of continuous economic growth, urbanization and industrialization, is becoming an intractable problem for public and private sectors to ensure effective and sustainable management of waste across the world. It is estimated that in 2006 the total amount of municipal solid waste (MSW) generated globally reached 2.02 billion tones, representing a 7% annual increase since 2003 (UNEP, 2009 report). It is further estimated that between 2007 and 2011, global generation of municipal waste has risen 37.3%, equivalent to roughly 8% increase per year.

The term Gender regenerates a plethora of views and in the process so much controversy has been generated to the extent that its true meaning is lost. Gender, according to Aminu (Daily Trust, 2012) refers to the social attributes and opportunities associated with being male and female and the relationship between women men and girls and boys, as well as the relations between women and those between men. Sometimes people easily jump to conclusion that the gender automatically mean women stuffs, it's not always the case, but women in many societies are at disadvantage, economically, culturally and socially and hence gender connotes women. It is within this context that gender simply refers to women which forms the focus of this paper.

METHODOLOGY

This study relies on primary data collected through a household survey using structured questionnaires. A total of 120 households were visited and interviewed randomly in Kaduna metropolis to establish the role being played by women in waste management. These researchers paid a site visits to dumpsites and to Panteka market, a waste recycling market in the heart of Kaduna metropolis where a focus group discussion was held with women involved in the business of waste recycling. Data and information on gender involvement in informal waste recycling were equally collected from both published and unpublished sources.

WOMEN IN SOLID WASTE RECYCLING IN DEVELOPING COUNTRIES

Municipal Solid waste management (MSWM) constitutes a serious problem in many Third World cities. Most cities do not collect the totality of wastes generated, and of the wastes collected, only a fraction receives proper disposal. The insufficient collection and inappropriate disposal of solid wastes represent a source of water, land and air pollution, and pose risks to human health and the environment. Over the next several decades, globalization, rapid urbanization, slum emergence/squatter settlement and economic growth in the developing world tend to further deteriorate this situation. The World Bank has estimated that up to 2 percent of the population in Third World countries survive by recovering materials from waste and substantial numbers of these are women. Scavengers salvage materials to sell for recycling, as well as repairable and reusable items that can sell or use themselves. In solid waste management, especially in developing countries, women play a decisive role. Waste management in households is basically a woman's job in these countries, (Scheinberg et al, 1999). A majority of waste pickers are women and children (example of Bangalore, India). Most of sophisticated sorting is done by low-wage female workers (Bangladesh). The gender

aspect will be an indispensable perspective in future social approach to waste recycling and poverty reduction.

Furedy, C. (1997) reported that having reviewed the social and cultural issues relating to waste picking in Asian countries especially India and China came to the conclusion that waste scavenging is an inevitable phenomenon in Third World cities and hence has come to stay. She concludes equally that the role of scavengers/women in reducing wastes, and in providing resources for manufacturing, cannot be dismissed as unimportant arguing further that we cannot afford to ignore the status and needs of waste pickers (Nguyen et al., 2003).

Although local systems usually have distinctive characteristics, the main status lines in waste recovery are uniform in developing countries: women and children predominate in the lowest levels of waste gathering, that is, those that depend on the least valuable wastes whose retrieval demands the greatest amount of simple labour for the lowest cash returns. Thus on dump sites that receive largely organic and inert rubbish in Asia one finds mainly women and children, except at times when men know that trucks will arrive from special areas such as the airport or certain commercial and residential neighbourhoods (Furedy, C. 1990).

Informal waste recycling is carried out by poor and marginalized social groups who resort to scavenging/ waste picking for income generation and some even for everyday survival. This is widespread throughout urban areas of the developing world and it is reported that up to 2% of the population in Asian and Latin American cities depend on waste picking to earn their livelihood (Medina, 2000). Many Third World cities have a dynamic informal sector that includes informal refuse collection and scavenging. These activities provide income opportunities for migrants, unemployed, children, women and handicapped individuals.

NORTHERN NIGERIA

The North as it is composed today is made up of 19 states and Abuja the FCT, with a total population of about 78,258,794(NPC, 2006). The Northern region has a total land mass of about 719,435 square kilometres or 79% of Nigeria's land mass. Solid waste management problems have been a recurrent decimal in the physical development indices of cities if Northern Nigeria.

OVERVIEW OF THE CASE STUDY AREA: Kaduna Metropolis

Kaduna Metropolis is the state capital of Kaduna State in North-Western Nigeria and the state is located on $10^0$20'N, $7^0$45'E and 10.333^{o}N, 7.75^{0}E. The metropolis is made up of four urban Local Government Areas Kaduna North, Kaduna South, Igabi and Chikun. The city is about 10,026km^2 in size, with a population of 1,558,563 according to the 2006 census NPC, (2006). The Environmental challenges in the city include rapid urbanization, communal conflicts, poverty and decayed physical and social infrastructure. Kaduna state like many other urban centers is plagued with indiscriminate solid waste disposal problems. The Kaduna State government had applied various methods of interventions in solid waste management since 1970s through 1990s but had not achieved the desired success in ridding the Kaduna metropolis of solid waste menace (Hyuwa, 2010). Equally, Hyuwa (2010) reported that as regards to method of waste disposal at the time a survey was carried out, about 38% of the people burnt their wastes,37% engaged the services of wheelbarrow boys, 8% engaged the services of refuse contractors, while only 3% were found to bury their waste. From the above information, it is clear that there was virtually no organized method of waste collection. Therefore, heaps of solid waste are always seen almost everywhere within the metropolis (Hyuwa, 2010).

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The situation in Kaduna and Nigeria in general is quite different from what is obtainable in other developing countries where women are playing a key and significant role in waste collection, sorting and recycling. This is largely due to cultural construct and partly due to stigmatization associated with waste picking and recycling. There is no data about the quantum of waste generated nor the role of women in waste collection, sorting and recycling but this study shows that women do play fringe roles in the informal sector of waste recycling. At the household level, women do play a dominant role, while at the dumpsites they are virtually absent. But at the recycling stage, women appear to be involved in some form of recycling of waste into locally made finished products as is the case in Kaduna.

Table 1. Showing population of various L.G.A in Kaduna metropolis

L.G.A	*Female*	*Male*	*Total population*
Kaduna North	171431	186263	357694
Kaduna South	191904	210486	402390
Igabi	210960	219269	430229
Chikun	181376	186874	368250
Total	*755671*	*802892*	*1558563*

Source: NPC, 2006.

Table 1 shows the population of Kaduna metropolis by local government and by gender. The total population of Kaduna metropolis is 1558563 with female having about 48.5% while 51.5% are men and a growth of about 3% per annum, NPC (2006).

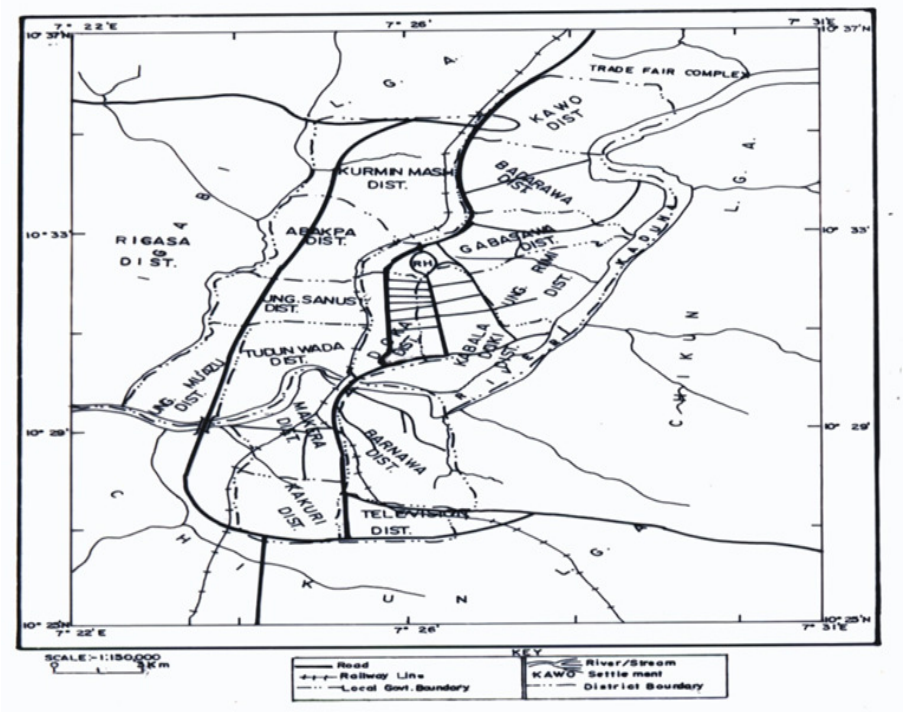

Figure 1. Map showing Kaduna Metropolis

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DATA COLLECTION

Table 2. Distribution of Questionnaires per L.G.A

Lga	*Population*	*Percentage*	*Number of Questionnaire Per Lga*
Kaduna North	357694	22.9	27
Kaduna South	402390	25.9	31
Igabi	430229	27.6	33
Chikun	368250	23.6	29
Total	*1558563*	*100*	*120*

From table 2, it shows the distribution of the structured questionnaires among the four local government that make up the metropolis and Igabi with the highest population 430229 which represents 27.6% of the total population of the metropolis, 33 structured questionnaires were distributed which equally represents 27.6% of the total number of questionnaire used. Kaduna North with population of 357694(22.9%), 27 questionnaires were distributed which also represents 22.9% of the questionnaires used. Kaduna south with 402390(25.9%) population, 31 questionnaires were distributed which equally represents (25.9%) while Chikun has a population of 368250(23.6%), 29 questionnaires were distributed which also represents 23.6% of total number of questionnaires used.

Household Survey

This household survey was conducted to extract data on the quantity of waste generated per household, type, mode of disposal and separation of waste into categories. In the same vein, establish the role of women and the relationship between the household and the itinerant waste collectors (a.k.a. mai kwalabes). Therefore, a total of 120 households were interviewed using structure questionnaires in a random fashion within Kaduna metropolis and the following data were extracted and hereby presented.

Table 3. Number of Household Members

Range	*No*	*Percentage*
5-10	72	60
11-15	42	35
16+	6	5
Total	*120*	*100*

Source: Fieldwork, 2011

From table 3, 60% of the household interviewed were made of 5-10 members, 35% made up of 11-15 while 5% have 16+ (above) members. A close look further revealed that of the total of 120 household interviewed, a large proportion of about 60% have 5-10 members.

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Table 4. Equipment Used In Waste Collection

Equipment Use	*No*	*Percentage*
Drum	6	5
Basket	12	10
Sack/Nylon Bag	66	55
Bucket	36	30
Total	*120*	*100*

Source: Fieldwork, 2011

From table 4, it can be observed that only 5% of the household interviewed use drums for their refuse/waste collection, 10% use basket, and 55% use sack/nylon bags, while 30% use bucket. It is obvious that majority of the household to the proportion of 55% use sack/nylon bags as equipment for waste collection

Table 5. Quantity Generated Per Week

Per Week	*No*	*Percentage*
Twice Per Week	72	60
Thrice Per Week	24	20
Once Per Week	24	20
Total	*120*	*100*

Source: Fieldwork, 2011

In view of the fact that household find it extremely difficult to estimate the quantity of waste they generate per day, this approach is seemingly simpler, therefore from the table 5, 60% of the households interviewed dump their waste/refuse twice a week. That is their basket, sack, or bucket would be due for collection/dumping twice in a week, 20% dump their waste thrice in a week and equally 20% once in a week. In the light if these, majority dump their refuse/waste twice per week

Table 6. Food Waste and Non-Bio-Degradable Waste

Nature of Waste	*No*	*Percentage*
Food Waste	42	35%
Non Biodegradable	78	65%
Total	*120*	*100*

Source: Fieldwork, 2011

From table 6, 35% of the household waste composed of food waste while 65% is made up of non- biodegradable waste with polythene bags, nylon bags, pure water sachet, plastics, nails etc taking the highest proportion of household waste in the area under study.

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Table 7. Household Waste Disposal

Method	*No*	*Percentage*
Government Contractors	0	0
Informal Waste Collectors	84	70%
Illegal/ Drainage Dumping	36	30%
Total	*120*	*100*

Source: Fieldwork, 2011

From table 7, 70% of the household patronize informal waste collectors which are mostly small children of about 8-12 years old. The *almajiris* constitute a good proportion of these informal waste collectors at non-bargain price. There is no any fixed price per waste basket; prices are given at will by the household ranging from N20-N50, depending on their disposition. While 30% of the household dump their waste in big gullies or drainage for onward clearance by torrential rains. This is so evident in the rainy seasons.

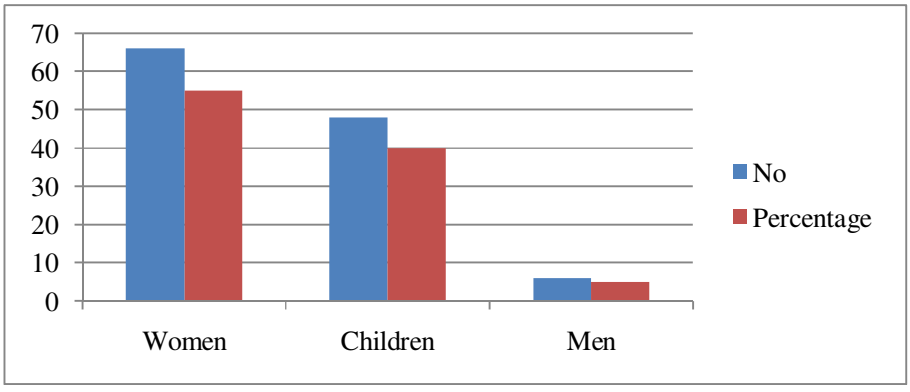
Table 8. Nature of Exchange

Nature	*No*	*Percentage*
Sold	54	45
Battered	60	50
Free	0	0
None	6	5
Total	*120*	*100*

Source: Fieldwork, 2011

From table 8 shows that 45% of the selected wastes are being sold to the mai-kwalabe with real cash exchanging hands, while 50% are battered. The commodities used for this batter system between the mai-kwalabe and 50% of the households are: - matches, plastics food plates, plastic bucket, sweet, rubber shoe, pots, plastics cups etc while 5% had no any form of interaction with the itinerant waste collector.

Gender Involvement in Waste Collection and Recycling At the Household Level



Source: Fieldwork, 2011

Figure 2. Gender involvement

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From figure 2, women constitute 55% of the interaction and 40% were children while no man was found to be involved in waste recycling at the household level. Women tend to play a very significant and dominant role at the household as indicated in this study. It is worthy of note that waste recycling is a major source of income for women largely because they are in close contact with waste at that household level. Women, as the providers and organizers of daily household needs, are responsible for marshalling household waste products, although they may often rely on their children to gather other wastes. Women are far more likely than men to be involved in handling, cleaning up, or being associated with waste.

Waste Picking

On the street of Kaduna metropolis, it was observed during the study that different category of waste pickers were involved, ranging from the *almajiris*, boys from underprivileged families, and women in the formal sector but the role of women in the informal sector is rather marginal. But even at that, women within the age bracket of 35- 45years old were seen mainly in the low density areas of the metropolis. These women waste pickers collect plastic bottles, plastic buckets, cloths, household utensils etc and largely for their household use.

Dumpsites

It was observed that about 18 informal waste collectors (Barrow boys) visit the dumpsites on daily bases to earn a living. They were all males between 10 to 18 years. They used either the wheelbarrow or the push cart for collection and transportation of collected waste. Waste collection is mostly from households, shops and small businesses. Some of them used sheets of zinc to create more space on the wheelbarrow to accommodate more waste At all the dumps scavengers were seen picking items of value from disposed waste. These scavengers depend mostly on these boys in achieving their aims as they all always rushed after them when they came to dispose their collected waste. They have no work dress, safety boots, hand glove and little or no formal education. They are all from low income high density areas of the metropolis. No buying or selling of end-of-waste resources was observed. It was quite noticeable that no woman was seen scavenging at any of the nine dumpsites visited except in Chikun Local Government where it was established that women do come to a particular dumpsite along Sabo express way as early as 6am-7am to scavenge and leave.

Recycling Centre: Panteka Market

Panteka market, an informal solid waste recycling market in the heart of Kaduna metropolis was observed to be a centre for local fabrications and general waste recycling. It is equally a hub of waste business in the metropolis. In Panteka market, different sort of recycling was taking place and is mainly dominated by the men folk. Women were observed to be playing a key role despite their small number in the entire panteka waste recycling business. Women at panteka market fabricate locally made boxes and *asusu,* a local save, and equally engage in pot finishings, a complementary role after pot has been fabricated by the men. The women interviewed during a focus group discussion asserted that they make use of their earnings to support their families. It was observed that in recycling or recovery microenterprises, women's activity is more likely to be associated with certain materials, like textiles and plastics, tins, which are largely domestic waste and less likely in relation to metals, building materials, and things requiring strength, technical knowledge, or capital investment

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Plate 1: Women waste pickers

Plate 2: Woman fabricator at Panteka Market

Plate 3: Women engage in pot finishing.

Plate 4: woman displaying her fabricated boxes

Plate 5: woman displaying *asusu* at Panteka

Plate 6: man sorting waste at a dumpsites

RECOMMENDATIONS

Community Based Solution

The introduction of community-based solutions calls for awareness building measures as well as organizational and technical support. Local NGOs and community leaders may provide

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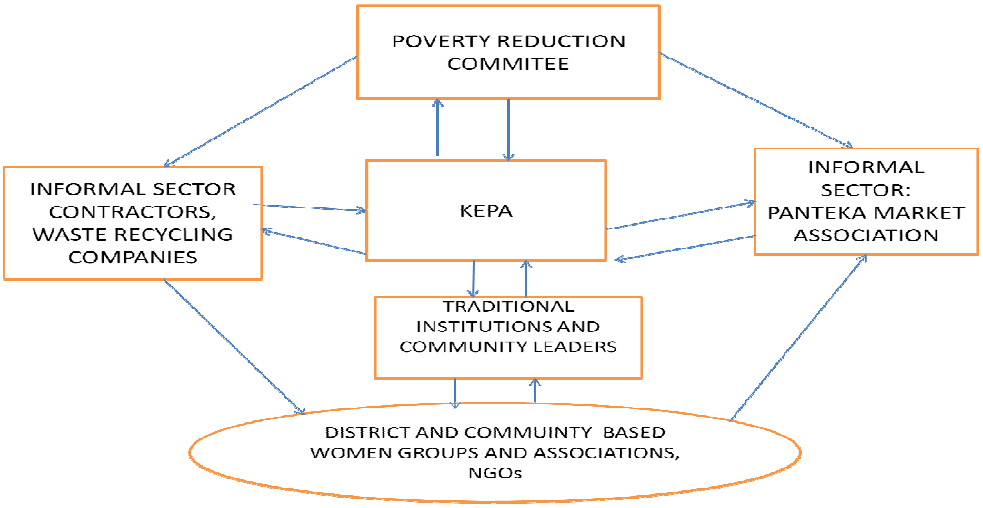
essential inputs towards building community capacity for waste management. Particular attention needs to be paid to the role of women, who normally bear principal responsibility for household waste management as indicated in the household survey.



Proposed Integrated Solid Waste Recycling and Poverty Reduction Strategy

The proposed integrated solid waste recycling and reduction strategy suggests that, a proposed poverty reduction committee would coordinate the process with the directive of the Kaduna state government and provide logistics. And Kaduna State Environmental Protection Authority (KEPA) would provide the technical background and ensure enforcement of environmental laws and facilitate the involvement of both the formal and informal sectors in this strategy. The focal point is too emphasized and accentuates what is working for the people and strengthened it. It is obvious that when women seek to move from waste picking to the status of waste micro entrepreneurs, their access to credit and family support tends to be less than that of the men, so they are more likely to be handicapped from the start, but in this proposed framework, women would be targeted for technical assistance and would by this have a bargaining power unlike what is now obtainable.

Local leaders can be divided into traditional, formal and informal leaders. Traditional leaders derive their authority from hereditary rights and from their status in the local culture. Formal leaders are appointed by the government or elected as local representatives of the government. Informal leaders are influential members of a community on the basis of their personal status or of their activities in community-based organizations such as political parties, churches, youth and women's organizations, neighbourhood committees, etc. All three types of local leaders may have different roles in solid waste management. Usually formal and informal leaders are more involved in solid waste management than traditional leaders.

Involvement in management of solid waste services includes participation in the management of solid waste services and keeping in contact both with the municipality and the community

Environmental Education

An important step to motivate and engage the public is via continuous public awareness media campaigns. These activities will, for instance, include promotion of the RRR-slogan – reduce, reuse, and recycle – advertisement on publicity boards, on local radio channels, and in local newspapers, as well as workshops, exhibitions, lectures, street plays, and etcetera. In

addition, eco-clubs at schools and youth groups together with volunteers will be encouraged to take an active part in the community waste recycling business.

Women Community Training on Solid Waste Management (WCTSWM)

Married women and widows should undergo extensive training in Solid Waste Management and entrepreneurial options, including the linkage between deteriorating environment, waste, and human health, the treatment and management of waste and recycling.

Promote Green Opportunities

These are jobs that contribute substantially to preserving or restoring environmental quality, and include work in agriculture, manufacturing, research and development (R&D). Green opportunities help to protect ecosystems and biodiversity; minimize the generation of all forms of waste and pollution, and reduce energy, materials, and water consumption. And this has the capacity to accommodate women's needs and peculiarities.

CONCLUSION

It will be in interest of poverty reduction if women are brought into the mainstream of waste recycling through a coordinated effort if poverty is to be tackled. Women and children are the most vulnerable segment of the society and most of women's earnings are spent on livelihoods and this entails that empowering women inevitable brings a sustainable empowerment of the family. Waste and women are closely related because of their daily contact with it and this placed them in a very significant position of waste collection, reuse and sell at the household level. The essence is to reinforce what is already working by implementing the recommendations contained in this paper and in the process alleviate poverty, keep the environment clean and promote public health.

Even where waste collection services are provided by state authorities, user cooperation is essential regarding such factors as proper storage of household waste, waste separation, placement of household containers and discipline in the use of public collection points. Households and community participation is of cardinal importance in waste regeneration, collection, separation, and storage in a collective stride to make wealth from waste and check poverty amongst Kaduna urban poor population and if replicated will alleviate poverty in the Northern Region in general.

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