

Original Article

Women Empowerment through Waste Recycling in Africa. Case of Douala, Cameroon.

Sophie Ebot Agborabang 

Department of Global Environmental Studies, Sophia University, 7-1 Kioicho, Chiyoda, Tokyo-Japan.



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Corresponding Author Email:
sophieebot@eagle.sophia.ac.jp

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Abstract

Background: In the city of Douala, Cameroon, the activities like collecting, sorting, trading, and sometimes even processing waste materials, provide an income opportunity for large numbers of poor people, where women represent a great number. However, the informal sector is usually characterized by poor working and living conditions, uncertain incomes, low social status, and little or no support from local governments. Thus, it remains doubtful if they will achieve more power and freedom as well as economic empowerment through participation in the informal waste recycling sector. This study aims to analyze the relationship between women's roles, participation in the informal sector of recycling, positive and negative outcomes, and empowerment in the city of Douala.

Methodology: This study exploits both qualitative and quantitative methods using the survey as the data collection technique. The sampling was carried out by random sampling technique, and the criteria for sampling were women waste pickers in the Bonamousadi, Ndokoti, and Bonanjo dumpsites.

Results: The findings of this study indicates that female waste pickers, apart from being housewives, are active in collecting, upgrading, and selling valuable waste materials. They work as individual waste pickers and are exposed to many risks at the dumpsite as they work with no protective equipment and no legal protection. They face unstable incomes and social stigma, and most cannot make decisions in the household. Though their living conditions have improved and they have gained greater independence in purchasing, they have not achieved more power nor gained any empowerment as many indicated that they perceive themselves in the lowest rung of the ladder of power and freedom where there is almost no freedom to make decisions.

Conclusion: Empowering women waste pickers through creating waste organizations or groups and integration with the formal sector might have a significant correlation with achieving more power and freedom and changing the perception of the public on waste pickers. This is the basis for achieving more sustainable waste management and a better environment.

Keywords

Women Empowerment, Recycling, Informal Sector, Sustainable Development.

Introduction

In the past decades, gender equivalence and women's empowerment have become dominant topics in development studies and policy. Though this topic has gained a huge interest, women remain one of the most vulnerable groups today. This can be justified by the representation of women and their lower access to adequate jobs in the formal economy¹. Most of the material recovery in economically developing countries is made by the informal sector, where women are present in a great number. It was observed that the activities of the informal sector are often suited to the current waste management conditions². Unlike the formal system in most developing countries that rarely carry out recycling, the informal system provides a steady supply of raw materials for domestic industries to vigor the manufacture of low-priced and economical products from the recovered materials. A good example from the literature reviewed is the case of the Zabbaleen in Cairo, with reuse rates as high as 80% due to rigorous handiwork and their skills at separating waste with value². Likewise, informal activities are vital in reducing the number of waste materials for collection and transportation by municipalities which implies less money and time spend, thereby reducing the cost of waste management. Another significant role of informal activities is its contribution to public health and sanitation and in conserving natural resources and energy by removing waste from dumpsters, households, streets, canals, and other urban waterways³. This contributes greatly to environmental sustainability.

In most cases, the reuse and recovery of waste materials in most cities in economically developing countries is being made by waste pickers. In addition, at the household level, most women (usually housewives) are involved in waste generation, handling, and disposal, and their work is unpaid. Many risks usually accompany their engagement in informal employment to their health as they work in poor conditions and have a low social status and uncertain incomes. Wilson et al.², in their study, pointed out that waste pickers working at open dump sites face the most damage to health². Samson² accorded this in his study by

asserting that nearly 1/2 of the research she reviewed emphasized the substantial bodily and health impacts linked with waste picking in most African cities⁴. A report from WIEGO⁵ outlined that the informal sector is generally characterized by low income, including a significant number of waste pickers. The risks and limitations they face in the informal sector are accompanied by low incomes, which can hinder them from achieving economic emancipation and thus from experiencing the benefits of employment^{6,7}. Though waste pickers carry out a crucial function in waste management, there has been a failure to acknowledge the role of informal workers in most countries as it's far excluded from country-wide data⁸.

In Douala, 2000 tons of waste are produced every day, and simply 42% of this waste is gathered and disposed of in dumpsites. The rest of the waste stays within the metropolis resulting in environmental pollution. In addition, waste minimization, recycling, and reuse are not incorporated within the waste management system. Thus, the role played by waste pickers is essential and provides the only most effective forms of recycling that arise in any respect within side the metropolis. Chen et al.⁷ pointed out that the conditions faced by informal workers greatly affect their financial, physical, and psychological well-being. Thus, it remains doubtful if women achieve more power and economic empowerment through participation in informal activities in the waste management sector. Though there exists a gap between women's engagement in waste picking and empowerment, in the city of Doula, for example, some women depend on waste collection for their livelihood. Women's engagement in waste picking also increases their domestic responsibilities, as in some societies, it is the woman's responsibility to clean and take care of the children and the home⁹. The term 'waste picker' or 'scavengers' is used in this study because this has been regularly used in most literature explored. Waste pickers or scavengers are people concerned with waste picking and sorting valuable materials from combined waste and thus depend on waste for a source of living². Recognizing women waste

pickers and providing higher information on their roles, needs, and priorities in waste management strategies is important in bringing equality between men and women and an important tool and a driver for sustainable development in all its scope.

Methodology

Primary and secondary data were utilized in this study. For primary data, questionnaires were constructed and administered to 50 participants. Out of the 50 questionnaires administered, 30 were completed and submitted. The study also made use of skype interviews with some Professors in Cameroon whose research interest lies within my work and some waste management officials in the Douala municipality to understand how waste is managed, the challenges faced, and the way forward. Interview questions to women waste pickers were categorized as follows: genders roles that exist within households and factors that shape these roles, roles performed by women as informal waste pickers and recyclers and factors that shape their engagement, positive and negative outcomes of their engagement, empowerment through their

engagement in the informal sector of waste recycling, and a perception of themselves on the ladder of power and freedom. These questions were important in guiding the participants to reflect on their experiences in the informal waste sector. Data were collected from August to September 2020.

The ladder of power and freedom, combined with a set of explorative questions, was used to better understand the benefits of informal waste recycling to empowerment. The definition of empowerment used in this study is drawn from Kabeer as "the expansion of people's ability to make strategic life choices in a context where this ability was previously denied to them"¹⁰. The Ladder of Power and Freedom was used in this study to measure the change in participants' perception of their power and freedom to make important life decisions both ten years ago and today. The ladder has five rungs, with the first rung having little power and freedom and the fifth rung having power and freedom to make most major decisions. The following calculation was performed to know if a woman is empowered or not using this tool.

Change in perceived agency = mean step now – mean step 10 years ago

A positive value indicates a rising level of empowerment

A negative value indicates no significant level of empowerment

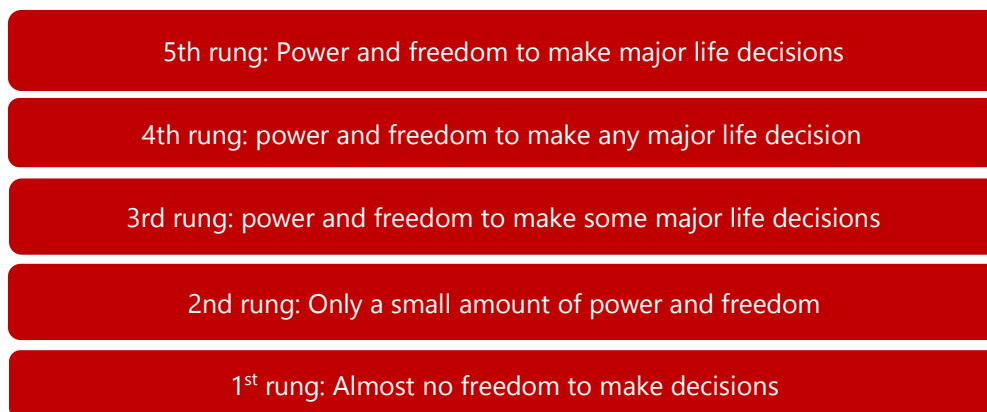


Figure 1: Showing the ladder of power and freedom

Data analysis

Data were analyzed by transcribing, coding, and extracting main themes while linking the concepts. After that, the ongoing analysis took place by coding and extracting the main themes with their significant patterns. Lastly, these figures were included in the research result.

Results

Interest in waste picking

The waste dumpsites are open and accessible to everyone. There isn't any policy on the ownership of waste in Cameroon and the Douala municipality. Thus, dumpsites are free for everyone to collect waste. The waste pickers' schedules and work experiences are dissimilar. Some only work on the dumpsite seasonally, while others have worked regularly for years. Interest in waste picking was

common for all participants. All thirty women had a common interest in that they could generate income from waste sales. Of the Thirty women interviewed, twenty-eight said they consider waste picking a short-term profession and plan to venture into another business once they have raised some money. Two women see waste picking as a long-term profession, as waste picking offers them the freedom to adjust their schedules to fit their household needs. Unlike other residents in the city of Douala, women waste pickers regard waste as a valuable source of their livelihood through the income they can earn from waste sales. Their interest in waste materials also depends on the market demand. Thus, their interest changes with changes in market demand for waste materials. All women mention that plastic, glass, and rubber are now in demand on the market like before, where cans were.

Table 1: Background of participants.

Code	Occupation	Age	Marital status	No. of children	Educational level	Language	Religion	Ethnic group
1,5,9	Housewife	34	Married	4	Primary	French	None	Bamilike
4,29,22,6	Housewife	27	Married	3	Primary	Duala	Christian	Bassa, c22 Bangwa
16,9,23	Housewife	28	Married	None	None	English	None	Bassa, c16, Mezam
15,24,27	None	30	Single	2	Secondary	English	None	Bassa, c27, Mantung
30,14	Housewife	29	Married	2	None	French	Christian	Bassa
3,26,12	Housewife	39	Married	3	Primary	Duala	Christian	Bassa
8,21,18	None	40	Divorced	None	Primary	Duala	Christian	Bassa
2,11,13,28	None	27	Single	None	Secondary	English	Christian	Bassa
13	None	21	Divorced	4	None	French	Christian	Bassa

Table 2: Daily routines of participants.

Group	Daytime schedule		
	Morning	Afternoon	Evening
4, 5, 6, 12,15,19, 21, 23, 22, 29, 30	1	Waste picking	Housekeeping
1,2,4,7,13, 16 17,25,26,28	2	Waste picking	Housekeeping & cultivation Waste picking
3, 8, 9, 10, 11, 14, 18, 20, 24, 27	3	Waste picking	Waste picking Housekeeping & cultivation

All women identified four main daily activities: waste picking, taking care of children, doing household work, and engaging in crop cultivation. Eleven women mention that they only work for some hours in the morning (c4,5,6,12,15,19,21,22,23,29,30) and then go back home to do the housework, go shopping, and take care of children. Ten participants cited that they work in the morning and the evening (c1,2,4,7,13,16,17,25,26,28), then go back home to take care of their children, do housework, and cultivate, and Nine women (c3,8,9,10,11,14,18,20,24,27) work on the waste dump from morning to afternoon, and then return home to cultivate and do housework.

All women indicated being involved in waste collection and sorting, while just a few are engaged in upgrading. At the dumpsite, they mostly collect all valuable materials but pay more attention to those highly demanded in the market.

A weekly collection of waste materials

Waste materials collected per week differed for all the women. All women except (c1, c2, c8) mention that they can collect between 7-10 bags of plastic per week, 5-7 kg of aluminum, 3-5 kg of rubber, 5 kg of metal, and 20-30 glass bottles. At the same time, others can only collect below the quantities mentioned. Amount collected depends on the physical strength, the type of landfill, and sometimes negotiations with households for waste materials. Some women mentioned that they usually fight for waste materials with others, and among these are men who usually extract the most valuable materials at the dumpsites due to their physical strength to climb up the waste trucks just before the waste is disposed of.

Each extracted material has its market price. The table below represents the sale unit and market prices mentioned by all women.

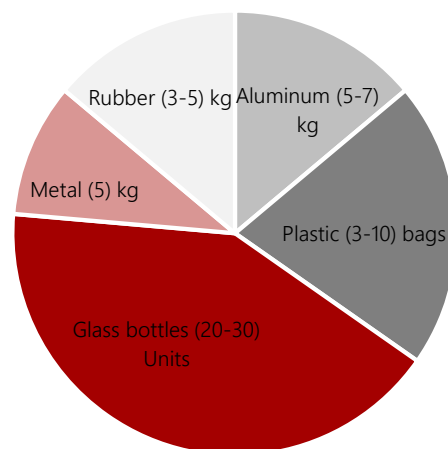


Figure 2: Showing the amount of waste materials collected per week.

Table 3: The selling price of extracted materials.

Materials	Selling Price (CFA/\$US)	Selling Unit
Plastics	4 bags (45L) @1000 (\$US1.76)	per bag
Rubber	150 (\$US0.26)	per kg
Aluminum	70-120 (\$US0.62-1.07)	per kg
Metal	30 (\$US 0.053)	per unit
Glass bottle	30-100 (\$US 0.053-0.18)	per unit

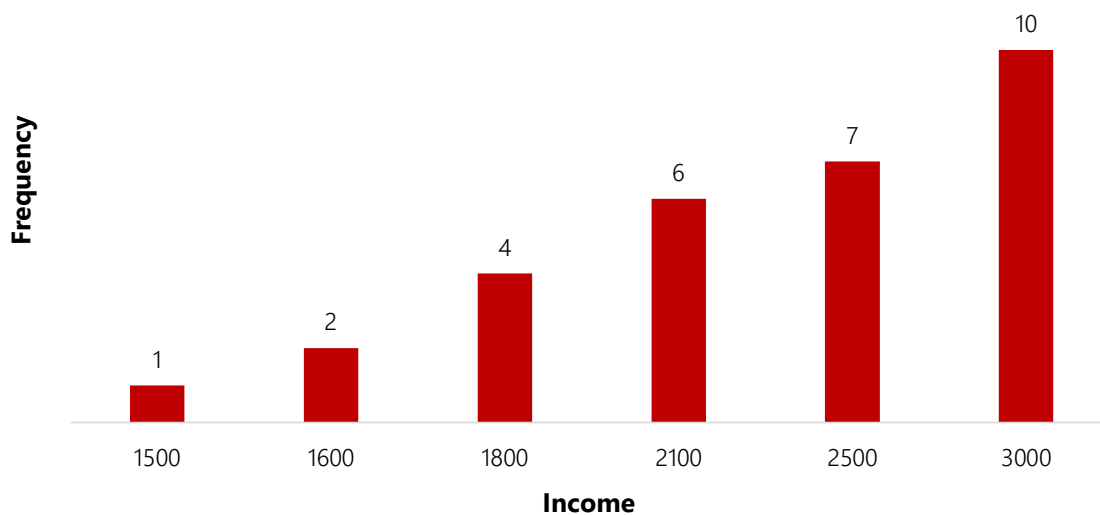


Figure 3: Showing income per week.

Some women mention that sometimes they keep their products in stock until prices go up, while others prefer to sell even when prices are down due to the urgent need for money. From women's responses regarding income earned, it can be assumed that women who store their waste materials and only sell them when prices are up making more money than the others. Most women mention that they usually use their income to provide for basic household needs, and since they earn very little income, saving is impossible. After selling their waste materials, they take the money home and see no need to own a bank account.

Livelihood Assets of Women

This section emphasizes the results, the outcome of women's involvement in waste picking, social structure, and their ranking in local society. The focus is to assess women's roles, their responsibilities in the household, and their ability to make final decisions and manage their income. Another important factor represented here is the composition of women's households.

Household composition

It was essential to look at the household composition to understand the power relations within households and decision-making power. The households of fifteen married women (c1, 3, 5,

11, c12-18, c22, 26, 27, 28, 29) are in two generations and consist of parents and children. In contrast, four single women and three women who are divorced live together with their children, parents, and other relatives. The size of households by women waste pickers is between three to six people. Three waste pickers (c22, 16, 27), all migrants from different cities from the north and southwest regions of Cameroon, live with their masters (waste traders) or middlemen and are housed by them.

The social structure of waste recycling

All women waste pickers aren't associated with any cooperatives or associations; instead, the three women waste pickers who are migrants from the north and southwest regions of Cameroon and are housed by waste traders or middlemen owe sovereignty to these waste traders. The waste traders provide a steady market to these waste pickers at their prices. On the contrary, waste pickers who aren't housed by any waste trader sell their waste materials to any waste trader who is ready to buy since they own no sovereignty over any specific waste trader.

Women's roles in the household

Women waste pickers are responsible for housekeeping. According to the results, women

arrange the meals and clean the house, dishes, and clothes. Most of them aren't supported by their husband or male members of the family. The volume to which married and non-married women perform those roles is different. All married women

residing with their households take an extra critical function within the family and feature extra duties than unmarried or divorced women residing with their parents.

Table 4: Women's roles in the household.

		Doer		
		Husband	Wife	Together
Production activity	Sorting waste	20%	60%	20%
	Solid waste processing	30%	40%	30%
	Garbage at home	20%	50%	30%
	Waste disposal	20%	60%	20%
Household activities	Washing clothes	10%	80%	10%
	Cooking	10%	80%	10%
	Washing dishes	20%	40%	40%
	Taking water	20%	40%	40%
	Parenting	30%	40%	20%
	Cleaning	10%	60%	30%
	Taking children for treatment	20%	60%	20%
	Shopping at the market	20%	60%	20%

Decision-making within the household

For most participants, the income they earn from waste sales is vital for the family's well-being. Most times, it is used for buying food for household consumption and, in some cases, paying for children's school fees and housing. All women mentioned that in most cases, the male head of the household makes major decisions and pays for all the living costs. Ability to manage their income was different for married, single, and divorced women. Women waste pickers who are married (10) and living with their families can manage their incomes. Four waste pickers (c4, 7, 19 and 10) whose husbands are in bad financial state mention that their income is highly relevant for the family's well-being. Thus, they sometimes have the final say regarding decision-making. Case 19, for example, cited that she decided to enroll and pay for the children's school fees at the primary level. Eleven women waste pickers give the money to their husbands. In cases 18, 13, and 8, living with their parents is not managing their income; instead, they give their parents the money to manage for them.

Social Status in Society

Most female waste pickers mentioned that they live close to each other. They usually met at the dumpsite, had exchanged, and know other waste pickers by face but not everyone by name. All waste pickers work individually and not as a group. They compete for waste materials, and sometimes conflicts occur. Most women mention that they prefer working individually as it offers them the freedom to work according to their ability. A few waste pickers think working in groups is a good idea. Participants believe some people in the community think of them as low class and dirty because they sometimes collect wood from the dumpsite and other useful household materials and store them in the village. The smell of the wood collected usually conflicts with their neighbors and the community. However, not everyone in the community has the same thought toward them. Though they are not seen as Environmental agents, others think waste picking is a means of survival for the female waste pickers who have no skills that enable them to find other jobs.

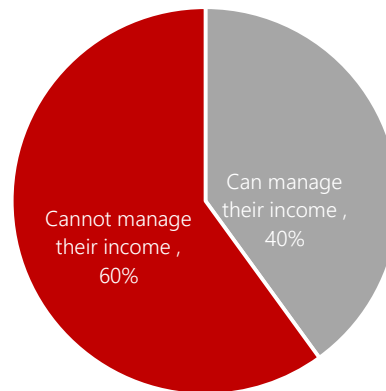


Figure 4: Women's ability to manage their income.

Women's health as waste pickers

Waste pickers' health conditions were assessed, and most appeared to be more concerned about the health impacts of waste picking at the dumpsites. The dangers women face as waste pickers were classified into four major factors.

Manual handling of waste

All women mentioned health concerns from the manual handling of waste. They usually have been cut from pointed and acute waste materials due to a lack of protective equipment. Some women mentioned that they do not have enough funds to buy protective clothes, while others think it is unreasonable to wear gloves while collecting or sorting waste because the gloves get broken most of the time. Nevertheless, five women wear boots or gloves to pick up waste at the dumpsites (c1, 2, 4, 6, 7, 8, 10). It is interesting to know that those that wore some protective equipment all have a certain level of education.

Weather Conditions at the dumpsite

Waste pickers also express their concerns about the weather condition during waste picking. The most common concerns expressed by women are the extreme weather conditions which comprise high temperatures and heavy rains. It rains heavily during the rainy season and is sometimes accompanied by thunder, which is scary and dangerous for them. Waste pickers also suffer from sunburns, especially during the dry season. In

addition, most waste pickers worry about the stability of the waste dumps. The waste dumps are not stable; some parts suddenly slip away amid the rainy season and post a treat to waste pickers. Three waste pickers (c5, 8, 23) mention that they have slipped and gotten stuck several times at the dumpsites and had to seek help from other waste pickers to get out.

Integration of waste pickers in the Douala SWM system

According to results obtained from interviews with some officials in charge of the target dumpsites in the Douala municipality, female waste pickers are seen as those who break the rules and are disobedient to the municipal officials and government. Extraction and sale of waste materials are not forbidden. However, the state owns the waste dump area, and thus, permission from the state is required to extract waste materials from the dump site. They have no legal permission to visit and collect waste materials from the dumpsites. Thus, their functions in waste management are neglected. All officials think it is important for waste pickers to organize into groups and seek recognition from the local government and integration.

Power and freedom to make decisions

The Ladder of Power and Freedom tool assessed the benefit of informal waste picking on women's empowerment. In the first step of the ladder (which

is the lowest rung), there isn't any ability and liberty to make important life decisions, while there exists full power to make major life decisions in the fifth step (the highest rung). Female waste recyclers were asked about their perceptions of what they think their life is today compared to ten years ago. Using this tool, female waste pickers were asked to indicate what rung of the ladder they belonged to. However, fifteen women think they belong to the first rung of the ladder, where there exists little or almost no power to make major decisions, eleven women think they belong to the second rung of the ladder, where they have little ability and liberty to make decisions, and four women (c4, 7, 19, 10) think they belong to the third rung of the ladder where they have the ability and liberty to make some important life decisions. It is fascinating to note that those who indicated belonging to the third rung of the ladder also indicated sometimes having the final say regarding decision-making within the household. Most women waste pickers mention an increase in the ability to buy household and personal needs as well as the ability to decide by themselves and self-esteem and self-appreciation. Self-evaluation in the ladder of power and freedom was different among participants, with some noticing little change or improvement in living conditions. Some women cited that they are less or no longer dependent on their husband's income to buy personal needs, including clothes and accessories.

Awareness of government initiatives and platforms to support Small, Medium, and Micro Enterprises (SMMEs)

Notably, 90% of women waste pickers knew nothing of the resources and platforms set up by the government to support SMMEs that are solid waste orientated. Getting those benefits requires legal recognition and formal registration. Results indicate that all waste picker's work Individuals belong to no cooperative organization and are not recognized by the local government, thus hindering their possibility of getting the benefits available.

Discussion

Characteristics, interest, & growth in waste picking

Out of the thirty participants, three women are migrants from the northwest region of Cameroon. Douala is the economic capital of Cameroon and is traditionally a city of intensive internal and cross-border migratory movements. The cause of migration into this city has been identified as poverty and unemployment^{11,12}. Thus, the rationale for migration for the three women from the north and southwest regions is the pursuit of income and greater wealth in waste picking. Women's interest in waste picking is guided by the money they can make from waste sales. Thus, as the demand for waste materials in the market changes, so does their interest. Their interest in informal waste picking is also due to the flexibility and ease of combining waste picking with household work. Most women can earn \$5US a week and less than \$1US a day, placing them below the international poverty line. This is in line with studies done by Chen. In her work, she stated that some individuals or households are engaged in informal activities due to sheer survival, growth or wealth, and flexibility. She further summarized that the informal sector contributes to economic growth and provides diversity. However, she stated that working informally is associated with being poor, as average incomes are lower than in the formal economy.

Activities and organizing

Most women are involved in collecting and sorting waste, and very few are involved in upgrading because it requires access to financial resources. Also, engaging in upgrading requires more cash as they cannot sell their materials daily. Moreover, those involved in upgrading do not always go to the dumpsites but rather buy valuable waste materials from other waste pickers. This might imply that they are exposed to less risk at the dumpsite than those engaged in waste collecting and sorting. All participants work individually, do not belong to any cooperative or organization, and compete for waste materials. Most of them cited that working individually allows them to work according to their strength and workload. Some

have big families with young kids who must return home early to prepare lunch. Thus, the challenges faced by women waste pickers towards forming an organization or working in groups are due to women waste pickers being involved in different activities and having different interests and strategies.

Awareness of government initiatives & platforms to support Small, Medium, and Micro Enterprises (SMMEs)

It is also important to note that most participants knew nothing of the resources and platforms set up by the government to support solid waste-oriented SMMEs. Getting these benefits provided by the government requires legal recognition and formal registration. Results indicate that all waste pickers work individually and are not recognized by the local government, thus making it impossible to get the benefits available. Creating awareness among waste pickers is important in forming organizations and seeking legal recognition. Also, starting a business or company is cumbersome as many documents and certifications are required from different ministries. This also hinders the emergence of microenterprises. The existence of SMMEs, as well as their expansion, is inhibited by the limited financial resources of waste pickers. Firstly, they earn low incomes. Secondly, despite the government funding agencies, government requirements and rules (such as owning a bank account) hinder waste pickers from getting loans or government financial incentives. Moreover, a requirement for a loan is formal registration. But since waste picking is associated with informality, most waste pickers do not qualify and usually cannot provide all documents required to qualify. Thus, waste picking has remained a means of survival for most.

Roles & responsibilities in generating income

Female waste pickers actively participate in labor outside the household in addition to their household roles and responsibilities. Most women indicated that they were responsible for housekeeping. According to the results, women clean the house, dishes, and clothes and cook. Most of them are not supported by any male family

member or their husband. The volume to which married and non-married women perform these roles is different. All married women residing in their households take an extra critical function inside the family and feature extra duties than unmarried or divorced women residing with their parents. This is in line with studies by Chen et al., where they cited that women do most of the household work from food preparation, cleaning, and taking care of the children⁷. However, this study's results indicate that some respondents (c1, c3) did their household work together between males and females. It showed that some respondents were already aware that household work is not only a women's responsibility but also male and other family members. Most participants cited that their family's financial condition and limited job opportunities were the push factor for their engagement in waste picking. However, most women waste pickers are unsatisfied with waste picking as they indicated investing in a different business once they have saved enough money. It also indicates their continuous interest in working outside the household. Respondent 23 is an exception, as she mentions that her husband has asked her several times to stop working at the dump site, but she ignored him because she wants to have an income and to be able to buy what she wants without asking permission from her husband. It is essential to note that the ability to make independent choices enables women to come out of their subordinate position, and it is an important step towards the process of women's empowerment that interlinks with the promotion of gender equality.

Ability to manage their income and decision-making within the household

Most married women living with their families can manage their income compared to single or divorced women who live with their parents. Most participants cited that their husbands or parents make the final decision in the household. Participants mentioned that men usually pay for most of the expenses. Thus it has become obvious that they have the final say in most decision-making in the household. This was common for all except for cases 4, 7, 10 and 19. The 4 cases are

similar in that their husbands face terrible financial difficulties, and the women's income is vital. From this finding, it can be assumed that the women's ability to choose and decide will increase with their earnings. Cases four and ten cited that it is through their function as income generators that they can decide and make choices for the household.

Dangers associated with waste picking and its Influence on Women

Findings indicate that the most serious dangers associated with waste picking are exposure to direct contact with dangerous waste, a polluted environment, cuts from sharp waste materials, and exposure to extreme temperatures and rain. These negative impacts faced by women waste pickers on their health also negatively influence women's human assets. Moreover, most women who work at the waste dump indicated having low status in the community. This also imposes a negative attitude of the female waste pickers towards the community. Wilson et al.², in their study, pointed out that waste pickers working at open dump sites face the most damage to health. Samson⁴ accorded this in his study by asserting that nearly 1/2 of the research she reviewed emphasized the substantial bodily and health impacts associated with waste picking in cities in Africa⁴. Women suffer from low income and hardly ever earn US\$2 a day. This low and irregular income means women cannot afford to improve their living and working conditions, such as buying protective equipment.

External vulnerabilities of waste pickers

In Doula, women waste pickers sell their waste materials to middlemen, who sell directly to recycling companies or businesses. According to Medina 2005, Waste pickers go through intensive labor but receive very little. In most cities in Colombia, Mexico, and India, waste pickers earn 5% lower than prices paid by industries pay for recyclables. This is due to middlemen or dealers who usually subject waste pickers to their prices^{5,13}. Their dependence on large utilization of reusable and recyclable materials means they can only earn money when there is a high demand for such materials⁴.

Integration into the Douala Solid Waste Management (SWM) system

Waste pickers form an integral part of the waste recycling industry in Douala. Though they carry out vital waste management functions and create business for recyclable and reusable materials, they aren't recognized by the authorities. This can be seen from the non-existence of policies targeting mainly waste pickers which also implies that the interest and rights of waste pickers are not protected. Moreover, the environment within which waste pickers function is affected and influenced by existing waste management policies and legislation. For example, the waste control offerings within the town of Douala were privatized, which has since brought about striker right to waste substances, thus, depriving waste pickers of the source of their income. Samson points out that while waste privatization offerings remain common in many African towns, privatization negatively affects the access of waste pickers to waste materials because the organizations have now been the waste proprietors and managed their control. However, with privatization in most towns, the number of materials recycled is stated to drop. Here he referred to a very good instance of the Zabbaleen of Cairo, Egypt. He argues that setting up new formal waste recycling structures can be disadvantageous without considering the already present local structures⁴. Thus, the literature review emphasizes the significance of adopting a cooperative method and involving waste pickers in the planning process of the SWM structures.

Low Status in Society

The present study reveals that waste pickers often face low status in society. According to Wilson et al.², Informal activities have historically been practiced by displaced and marginal individuals, including gypsies, rural migrants, immigrants, and participants of spiritual minorities². His examples factor into the Harijans, a caste of untouchables in India, and the Zabbaleen, a Christian minority in Cairo that deal with waste gathering and recycling. This is supported by Samson, who mentioned that critiques papers from Africa all screen that waste picker are city migrants and frequently dealt with

as a nuisance, an embarrassment, or at the same time as criminals by the public authorities⁴. These findings correspond with the prevailing study.

Organizing Female Waste Pickers

The present study reveals that female waste pickers in the Douala municipality work individually. The literature reviewed points out that globally, Informal workers have begun to organize themselves into groups to urge better conditions. Samson, in his study, cited that a growing number of waste pickers, especially in Latin America and somewhat in Asia, are now organized into trade unions, cooperatives, and associations. According to Samson⁴, another advantage of organizing waste pickers is to connect with others across cities, countries, continents, and the globe. Studies done by Wilson et al.² cited that when waste pickers work individually, their ability to add value to the secondary raw materials remains low, and the greater prone they're to exploitation from intermediate dealers². It also enables them to lessen individual vulnerability by offering social and financial support and converting conventional behavioral styles to which women are subjected within the household⁷. Thus, financial empowerment is a chief aspect of balancing gender relations.

Conclusion

To conclude, gender approaches have rarely been adopted in the African waste management system. Due to this, there exists little or no knowledge about the vital roles played by waste pickers in waste management, as well as their livelihood, needs, and priorities in the informal waste management sector. Failure to recognize the role played by waste pickers has led to poor perception of the public towards waste pickers. Waste pickers are thus said to have low social status and face social stigma. Waste pickers also work individually, leading to increase vulnerability by middlemen and a low ability to add value to the waste collected. It is important to develop and implement waste management policies that organize and integrate waste pickers into formal settings. This will contribute not only to the promotion of recycling and resource conservation but also to creating

decent jobs, reducing poverty, and social inclusion, and thus might have a positive correlation with achieving more power and freedom. The existence of waste pickers 'cooperatives or groups has been a vital step towards integrating and formalizing the work of waste pickers.

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References

1. Chant S, Pedwell C. Women, gender and the informal economy: An assessment of ILO research and suggested ways forward. ILO. 2008:1-56.
2. Wilson DC, Velis C, Cheeseman C. Role of informal sector recycling in waste management in developing countries. *Habitat Int.* 2006;30(4):797-808.
3. Nzeadibe TC. Solid waste reforms and informal recycling in Enugu urban area, Nigeria. *Habitat Int.* 2009;33(1):93-99.
4. Samson M. Reclaiming Reusable and Recyclable Materials in Africa A Critical Review of English Language Literature. WIEGO. 2010;16:1-35.
5. WIEGO (Women in the Informal Economy Organizing and Globalizing) (undated). Information Sheet on Informal Workers. Waste Collectors.
6. Tevera DS. Waste management in Eastern and Southern Africa: regional paper. Univ Zimb. 1993.
7. Chen M, Vanek J, Lund F, Heintz J, Jhabvala R, Bonner C. Women, work & poverty. New York, NY: Unifem; 2005.

8. Decent work and informal economy. Report 6, International Labor Conference. 9th session. Geneva, International Labor Organization (ILO); 2002.
9. Muller M, Scheinberg A. Gender-linked livelihoods from modernising the waste management and recycling sector: a framework for analysis and decision making. *Gender and the waste economy: Vietnamese and International experiences*. 2003:15-39.
10. Naila K. Reflections on the Measurement of Women's Empowerment. In: Kabeer, Naila, (ed.), *Discussing Women's Empowerment: Theory and Practice*. Stockholm: SIDA: Swedish International Development Cooperation Agency; 2001.
11. Mberu BU, Pongou R. Crossing boundaries: Internal, regional and international migration in Cameroon. *Int Migr*. 2016;54(1):100-118.
12. Bonnet F, Vanek J, Chen M. Women and men in the informal economy: A statistical brief. International Labour Office, Geneva. 2019;20.
13. Medina M. Serving the unserved: informal refuse collection in Mexico. *Waste Manag Res*. 2005;23(5):390-397.
14. Samson M. Refusing to be cast aside: Waste pickers organising around the world. *Women in Informal Employment: Globalizing and Organizing (WIEGO)*; 2009.
15. African Development Bank Group. *Gender, Poverty, and environmental indicators on African countries*. Volume XI. Tunisia: Economic and Social Statistics Division Statistics Department; 2010.
16. Chen M, Bonner C, Carré F. *Organizing Informal Workers. Benefits, Challenges and Successes*. Background Paper for Human Development Report. 2015.
17. Transitioning from the informal to the formal economy, Report V (1), International Labor Conference, 103rd Session, Geneva; 2014.
18. Kabeer N, Milward K, Sudarshan R. Organising women workers in the informal economy. *Gend Dev*. 2013;21(2):249-263.
19. Medina M. *The world's scavengers: salvaging for sustainable consumption and production*. Rowman Altamira; 2007.
20. Seager J, Bechtel J, Bock S, Dankelman IE. *Global gender and environment outlook*. Nairobi, Kenya: United Nations Environment Programme (UNEP); 2016.
21. DIEGO. *Cooperation among workers in the informal economy: A focus on home-based workers and waste pickers*. Geneva and Cambridge, MA, ILO and WIEGO. 2017.
22. Gerdes P, Gunsilius E. *The waste experts: Enabling conditions for informal sector integration in solid waste management: Lessons learned from Brazil, Egypt and India*. GTZ; 2010.