

Household Waste Recycling Knowledge and Markets, Challenges and Successes, in the Yassa, Douala, Cameroon

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ABSTRACT

This research paper presents the results of a survey consisting of recycling knowledge and markets in the Yassa a residential neighborhood in Douala 3 municipality in Cameroon from January 2018 to march 2019. Primary data was collected from field surveys and random sampling to select residents. Household survey, participant observation and participatory appraisal, focus group discussions, interviews and questionnaires administered to collect information from participating households regarding, gender, age and level of education and itinerant buyers. In the Yassa, Table 1 highlights the preference of the recycled household waste fraction while in Table 2, 1 Kg of plastic waste was bought by Itinerant waste buyers from households at 100FCFA, and later sold to middlemen at 200FCFA and middlemen to small enterprises at 400FCFA. The difference in the buying and selling prices with the ferrous metal and glass illustrates their importance in the market for recyclates. Descriptive statistics was used to analyze the collected data. The results showed a predominance of female 70,4%, and 29.6% for their male counterpart with 60,2% for those with formal education and 39.8% with no educational background. The results from this study will enhance and increase value for household waste as well as waste management recycling in Douala in particular and Cameroon in general

Keywords: Household Waste, Knowledge, Markets for recyclates, Recycling.

1. INTRODUCTION

The emphasis of recycling activity as a sustainable waste management strategy has represented a shift in paradigm from the conventional collection and waste disposal practices. Most recent studies recommend the reuse and recycling of solid waste [1-4]. Participation of residents in recycling is essential to the achievements of statutory targets but it is influenced by a range of factors including scheme design, household attitudes and behavior, incentives and motivation of household themselves, education and financial incentives or penalties [5-7].

1.1 Scheme design.

A typical scheme design is the pay -as you throw (PAYT) strategy that is widely applied in solid waste management systems, the main purpose is to support from a more sustainable -from economic, environmental and social point of view- management of waste flows. Adopting charging models increase the complexity level of waste management service as new organizational issues have to be evaluated compared to flat charging models. In addition, innovative technological Solutions could also be adopted to increase the overall efficiency of the service. Unit pricing, user identification and solid waste identification represents three important methods to be defined in a PAYT system [8]

1.2. Household attitudes and behavior

Why do we act the way we act? What factors influence our behavior? Is behavior a national choice and, therefore, can our actions or it be predicted when modeled in hypothetical and real scenarios? Historically, these questions have been debated and, until recently confined within the fields of psychology and sociology [9]. Efforts to model human attitudes and behavior in waste management are relatively new and remain in the scope and context of developed countries and have focused mainly on waste minimization, reuse and recycling behaviors in the UK [10-12].

1.3. Incentives and motivation

Waste recycling is seldom considered to be an exciting task and it is fairly easy to cheat. To increase interest and recycling rates authorities and other stakeholders sometimes want to introduce incentives to motivate individuals to perform as favored. Incentives can be remunerative, moral, coercive, natural or physical. The remunerative incentives are usually based on repayment when recycling (deposit system). Moral incentives occur when a certain choice is regarded as the right thing to do, it is right to recycle for the benefit of the environment or viewed as immoral when not performed. Coercive incentives are the risks of some sort of punishment for wrongdoing. Finally, natural incentives are things such as curiosity, mental or physical exercise, admiration, fear, anger, pain, joy, or the pursuit of truth [10]. Notwithstanding, natural incentives have not been studied in depth, although joy or fun factors seem to have some influence as well.

2. MATERIAL AND METHODS

In an attempt to understand recycling knowledge and markets in the the Yassaa residential neighborhood in Douala 3 municipality in Cameroon from January 2018 to march 2019, a research study was undertaken involving a qualitative survey using random sampling and interviews to clarify the survey result.

2.1 Household surveys

Household survey was carried out in the Yassa-a residential neighborhood in Douala 3 municipality in Cameroon from January 2018 to march 2019 involving 120 individuals based on gender, age and level of education. Questionnaires were randomly administered to these participating individuals.

2.2 Participant observation and participatory appraisal

Participant observation and participatory appraisals were carried out during the field survey to make acquaintances with the household structure. Participatory appraisal is an approach of learning about communities that place equal value on the knowledge and experience of local people with different background and experience and their capacity to come up with solutions to problems affecting them(13). Participatory appraisal was used to evaluate the performance of household waste management involving waste collection, disposal and recycling methods in the Yassan neighborhood. Participant observation was used to make direct observation and visual evaluation of clandestine garbage dumps in the Yassa neighborhood. It was also used to identify the challenges and successes faced by household in the collection and recycling of the different waste fractions.

2.3 Focus group discussions and interviews

Five focus group discussions involving men, women and their adult children were organized to increase the knowledge of household regarding waste recycling and markets for recyclates. Interviews were done with households and waste buyers to determine the socio-economic conditions of household involved in recycling as well as the buyers. Interviews also permitted us to know the relationship that existed between the households, waste buyers, the municipality and HYSACAM, the sole waste collection, transportation, disposal and Treatment Company in Douala.

3. RESULTS AND DISCUSSION

3.1 Market for Recyclates

To ensure waste management options reflect the cost of environmental damage waste markets must be created and market prices for non-renewable raw materials must reflect their full economic and environmental cost [14-15]. It is on this basis that [16] puts more emphasis on the importance of market development programs as part of integrated waste management in the UK. The development of markets for recycled material is key to ensuring that recycling is economically and environmentally viable. Recycling is about putting materials back into productive use in the economy, whether through re-use or re-manufacture, thus closing the loop [16]. The concept of integrated waste management is not new in Cameroon. The major problem is with the unregulated structure of the markets which has given room for exploitation of households. While household structure in The Yassan remains same the structure of middlemen and small enterprises changes with time. The researchers noticed the increasing concern of middlemen coming from countries like Nigeria, United Arab Emirates and China. In Cameroon we identified small enterprises e.g., SOCAVER for glass, SIPLAST, POLYPLAST, SOFAMAC, SIPLAST and SICA for plastic waste[17]. Table 1, provides information of the importance of the household waste with the plastic waste as the most recycled, followed by ferrous metals and glass while Table 2, highlights the buying and selling prices of the different waste fraction per kilogram (kg). From Table 2 the iterant buyers pay 100 FCFA per kg of plastic waste to households and sell to middlemen at 200FCFA. The middlemen later sell to the small enterprises at 400 FCFA. However, this is not the case with ferrous metal or glass waste. Table 2, therefore illustrates the importance of these waste fraction in the market for recyclates.

Table 1: Average Percentage composition of recycled waste at The Yassa

Waste fraction	Percentage of recycled waste fraction
Plastic	55
Ferrous metal	33
Glass	12

Table 2: Average buying and selling prices per kg of waste fraction in The Yassa

Waste type	Itinerant buyer	Middlemen	Small Enterprises
Plastic	100FCFA	200FCFA	400FCFA
Ferrous metal	100FCFA	150 FCFA	300FCFA
Glass	100FCFA	150FCFA	200FCFA

3.2 Gender, behavior change and recycling.

The results showed a predominance of female 70,4%, and 29.6 % for their male counterpart involved in recycling. The fact that The Yassais a low-income residential area, the need for knowledge and behavior change on recycling can cancel the myths of waste considered as something without value. The Yassa being a low-income residential area we found many women as housewives with much time at home hence their availability to recycling activities. Their involvement in recycling did not only provide income but enabled them to acquire knowledge and change behavior towards waste. Participation in focus group discussions increased their knowledge on recycling as well as their behavior towards waste. This result is in line with [18] who indicated that publicity or information campaign has been widely used to achieving public interest goals. This is because learning by trial and error, observing how others behave and Modelling our behavior on what we see around us provide more effective and more promising avenues for changing behavior.

3.3 Age, group and recycling.

The middle age group were mostly involved in recycling due to the financial incentives. The young and the old were not involved in recycling. However, the teenage children helped their mothers in segregating and cleaning the recyclables. Cleaning of recyclables particularly the pet bottles attracted a higher price compared to the unclean. The role played by teenage children in recycling cannot be underestimated. Information gathered indicated that they played the role of house police making sure the recyclates are carefully guarded prior to the arrival of the itinerant buyer.

4.0 Challenges and Successes

The absence of a waste collection it inert by the municipality in certain areas of The Yassa has not only reduced recycling activities but also reduced the aesthetics of the surrounding environment with an increase in airborne diseases and environmental pollution. Lack of knowledge especially in the recycling of plastic waste is common not only in The Yassa but with the other municipalities in Douala. This is in line with (19) who indicated that with limited global success in plastic recycling- only 9%of all plastic produced has been recycled.

In the Yassa as in other municipalities in Douala, the non-control of domestic animals like fowls, goats and pigs is in many ways aggravating the scavenging activities of the household waste. These animals mostly feed on the putrescible waste fraction which could have been used as garden manure. Although the use of the organic waste fraction as agricultural and horticulture fertilizer is utilized by many households, it has very little market value. To make the situation much better, capacity building action through our focus group discussions in The yassais gaining fruits.

Successes include increase in recycling due to the financial gains. Notwithstanding, much gains are expected in the future in the presence of a genuine market for recyclates as seen with the Coptic scavengers in Egypt. Knowledge transfer from the Coptic

society in Egypt regarding the creation of markets amongst scavengers has not only increased the knowledge of waste managers in Cameroon but is a formidable tool used to increase the finances of all involve in the sales of re cyclates.

5.0 CONCLUSION

Waste management at the household is not without challenges and successes. Mindful of the fact that waste has both environmental and health problems, recycling is surely an inevitable action to combat household and environmental pollution and other health issues associated with it. The Yassais a new neighborhood with a majority of residents keeping domestic animals hence their presence reduces the organic fraction of the waste which is another important component for soil fertility. These researchers have plans to create a non -governmental organization that will also take on board the organic waste fraction for use in agriculture and horticulture.

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