

## Gender and the Urban Environment: Analysis of Willingness to pay for Waste Management Disposal in Ekiti-State, Nigeria

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### Abstract

*The paper examined the factors that might influence willingness-to-pay for waste disposal among male and female gender in Ekiti State, Nigeria. Information on willingness-to-pay, socioeconomic characteristics, and gender division of household's responsibility in the State were sought from 160 respondents randomly selected at 3-5 male –female ratio. Probit regression analysis was used to determine the dominant factors that might influence willingness-to-pay for waste disposal. The results showed that willingness-to-pay for waste disposal was significantly affected by gender; nature of primary occupation; marital status; level of education and average monthly income. However, family size, household headship and nearness to dump site all have a negative relationship with willingness to pay for waste disposal in Ekiti State. Thus, married female gender, having good occupation with a higher level of education and income tend to express willingness to pay for waste disposal in Ekiti State than other counterparts. However poverty as manifested in large family size, headship of households and nearness to dump site reduces the willingness to pay for waste disposal in the State. Awareness campaign on the need for effective waste disposal in the State should be mounted while the males should be encouraged to pay for waste disposal as they earn more income than the female respondents. Females should be encouraged to participate in adult literacy programmes and income generating activities to improve their level of education, income as well as the sensitivity to maintain a clean environment*

**Key words:** Cleanliness, Environment, Gender, waste management

### Introduction

In recent times the world has witnessed a lot of environmental disaster and conflicts. Issues of global warming, climate change have been very prominent. There is increasing level of environmental concern and awareness in Nigerian society. The loss of existential security, and specifically the loss of means of livelihoods, food security and health as acutely experienced by poorer households and populations, as well as the intensification of work and claims on time and physical energy, all exert enormous pressures on people's capacities to live, on the care or reproductive economy. The right to environment has now become the right to live. People need nature and nurture to live, and to live they have to produce and to consume while wastes are being generated from the by-products of consumption. Waste management still remains one of the biggest challenges facing Nigerians today. There is still a widespread lack of resources; the technical and administrative capacity to properly implement sound mechanisms for waste management is still weak.

There is a rise in illegal dumping and the proliferation of permanent piles of rubbish in some commercial, industrial and residential areas of urban areas. It is observed that too much garbage is lying uncollected in Nigerian streets, causing inconvenience and environmental pollution, and being a risk for public health. An attempt to ensure a sound environmental management requires consideration of the key role players in waste generation, which are the men and women folk. The discuss of the gender dimension in waste management is of necessity according to Anne *et al* (1999) because the very definitions of waste and discarded materials may be influenced by the gender of the person making the judgement. For instance what looks like "junk to women may be motorcycle parts to men; what looks like "dirt to men may be compost or fertilizer to women; the examples are legion of different sexes "seeing things differently.

Also, men and women participate (or not) in managing waste within the household, their relationship to discarded materials may depend on who they are, as much as or more than on what they do. Men and women may differ in their attitudes towards public health and community cleanliness, and have markedly different preferences for how to address public health and environmental problems. These differences affect the type of services women and men would like to see developed in their communities, how much they are willing to pay for these services, and who is responsible for finding the money to pay from within their part of the family budget. Environmental history books according to Wikipedia (2011) have mostly focused on men's roles, and generally women's involvement with nature has been ignored.

Women's perspectives and values for the environment according to Jiggins (1994) are somewhat different than men's. Women give greater priority to protection of and improving the capacity of nature, maintaining farming lands, and caring for nature and environment's future. Dankelman and Davidson (1998) observed that women play a key role in managing their natural surroundings and adopt several mechanisms to deal with the kinds of environmental crisis they face. Studies have shown that eventually, women are generally responsible for human waste disposal of children and cleanliness of latrines and other facilities (Akwa, 2009).

It is observed that women are usually associated with responsibility for cleanliness of the home and for the health of the family. Does this translate to responsibility for or special interest in cleanliness of the community? Are there special aspects of women's role in community maintenance that relate to responsibility for waste management? At which point in the waste management trajectory (if any) does this special interest 'switch over' to men and what are the aspects of that shift? How do the gender balance of power, access and control of financial resources within the Household and the community affect the demand for waste removal services? And how does this affect willingness to pay?

The main objective of the study is to investigate gender roles in maintaining a clean environment and most especially their willingness to pay for waste disposal in Ekiti and Ondo States.

The specific objective includes to:-

Identify the socio- economic characteristic of the respondents in Ado-Ekiti.

Ascertain gender perception of what constitute wastes

Assess how the gender balance of power, access and control of financial resources in the household affects the demand for waste removal services

Examine willingness to pay for waste disposal by gender in Ado-Ekiti

Determine gender accessibility to waste management authority and the effects on the environment

### **Literature Review and Conceptual framework**

The word "waste" refers to something that is "no longer serving a purpose", something "without value" (The Concise Oxford Dictionary). According to Anne et al (1999) Waste' is any item, material or substance derived from human activities or human or domesticated animal bodily functions which has outlived the purpose for which it was intended and which does not appear to its owner to be useful for secondary purposes. It becomes waste when its owner or their agent chooses to discard it by returning it to a natural medium (usually water or soil, but sometimes also by burning and release of smoke to the air) or by releasing it to the responsibility of the community, municipality, or waste collection entity.

However, Maria and Anne (1999) opined that certain people in certain circumstances consider waste materials as a resource for their family, their livelihood, or their enterprise. Such waste materials may serve as a crucial resource within households. For example, oily milk packages may be used as fuel; leftover food may be fed to pigs and goats; discarded cardboard may serve as walls and roofs of houses. Naturally, men and women re-value waste materials differently and see their usefulness for different purposes, such as domestic utility, saving on household expenditures, earning money, or other purposes.

Across cultures, it appears that women 'have to' handle waste in their homes: it is part of the definition of who they are and what they do and may relate to their lower economic and social status. An important aspect of this is that women who are able to afford it may pass this responsibility to servants. No one considers it strange or unfair that women do not get paid for this activity, even when these activities extend beyond the home to community cleaning.

Men, on the other hand, tend only to handle waste when they are paid for it, or when it is specific to their activities (Anne et al, 1999). Ability and willingness to pay have important gender components. In a capitalist society, according to WASPA (2009), the interactions between nature and people are mediated by money. The currently ruling form of money (financial capital) is driven by the compulsion to reproduce itself. In most cases people are usually willing to part with their money for services if the benefits to be derived will commensurate with the amount of money expended on such services. An empirical study of the willingness to pay for quality improvements according to Whitehead (2003) is expected to include measures of quality perceptions as determinants of willingness to pay. He opined that studies that do not include quality perceptions raise the potential for omitted variable bias in which coefficients on variables that are correlated with quality perceptions may be biased. However Anne *et al* (1999) suggests that calculations on the willingness and ability to pay for services must consider the household income as well as who controls the cash resource and how this is allocated. In certain cases, for example, women-headed households, even though their household income is lower, are able to maintain better payment levels for services and have also shown higher payback rates for micro-lending. (Younas 1999). It is paramount to note that women have limited control of resources and also more limited ability to mobilise economic resources, than men in equivalent social positions.

While men consider money to belong to them personally, women tend to see money as belonging to the family (IFAD, 1999). There is considerable evidence that women manage money more responsibly, especially in societies where the level of drinking, gambling and the like are high. Specifically, women manage to pay more bills even when they have less money. This is related to ability to pay, as well as to willingness to pay. Second, women may have a higher willingness to pay for services which relate to family health. According to Tobla (1992), there is an increase in awareness of the global dimension of a number of environmental problems, such as climate change, ozone depletion, dumping of hazardous wastes, destruction of biological resources and of forests, and the impact of desertification. Hence, the need to protect the environment becomes imperative.

### Methodology

This study was carried out in Ado-Ekiti, the capital of Ekiti State, Nigeria. Ekiti state was carved out of Ondo State in 1996. Ekiti State has 16 Local Government Areas. The 2006 National census put the population of Ekiti State at 2,497,000. The state is located between 7° and 8° N and between longitudes 4° 45' and 5° 45' E. Ekiti State is bounded in the North by Kwara, Kogi and Osun States in the West and Ondo State in the South (Directorate of information, 2004).

### Sampling Frame

There are 16 Local Government Areas in Ekiti state. Ado-Ekiti Local Government is purposively selected for the study because of the existence of waste management authority and being a state capital, the amount of waste generated there is more than any other place within the State. Residents of Ado-Ekiti indulge themselves in indiscriminate waste disposal. Five communities were chosen within Ado-Ekiti for the study; these communities are Odo-Ado, Mugbagba, Ajilosun, Oke-bola, and Atikantan. In each community, a total number of 32 (16 males and 16 females) respondents were interviewed thus making a total number of 160 respondents. Descriptive statistics such as frequency counts, percentage was used to characterize and categorize the socioeconomic characteristics of the respondents while Probit regression analysis was used to evaluate the probability relationship between the willingness to pay for waste disposal and the socio economic characteristics of the respondents.

In the probit model (Gujarati, 1995), let the latent  $Y$  represent the women's willingness to pay for waste disposal. The probit regression model used is then specified as follows:

$$\Pr(Y_i = 1) = f(\beta_i X_i) + \epsilon_i \text{-----} (1)$$

Where;  $Y$  is a dichotomous dependent variable which can either assume the value of 0 or 1. It measures the women's willingness to pay for waste disposal

$X_i = n \times k$  matrix of explanatory variables/independable variables

$\beta_i = k \times 1$  vector of parameters/ coefficients to be estimated

$\epsilon_i =$  error term

The estimated equation is of the form.

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_{12} X_{12} + \epsilon_i \quad (2)$$

$Y_i$  is the dependable variable measuring the respondents' willingness to pay for waste disposal in the study area.

**Table 1: Description and measurement of explanatory variable**

Variable	Description	Measurement
X <sub>1</sub>	Age	Years
X <sub>2</sub>	Sex	Dichotomous: male,1: female,0
X <sub>3</sub>	Primary occupation	Civil servant:1, others :0
X <sub>4</sub>	Marital Status	Dichotomous: Married,1: Single,0
X <sub>5</sub>	Family size	Number of people under the farmers roof
X <sub>6</sub>	Level of Education	Years
X <sub>7</sub>	Average monthly income	₦/month
X <sub>8</sub>	Household Headship	Dichotomous: Male,1: Female,0
X <sub>9</sub>	Nearness to dump site	Kilometres

## Results and Discussions

### Socioeconomic Characteristics of the respondents

Data in Table 2 shows that 50.0% of the male respondents were between 21-40 years of age while 50.0percent were between 41-60 years of age. None of the male respondent was below 20 years. The mean age of the male respondents was 41.2 while that of the female was 38 years. About 70 percent of the male respondents were married while 40 percent were single. Seventy- five percent (75%) of the female respondents were married, 19 percent were single while 3.0 percent were widowed. The respondents engaged in a wide range of occupations with 58.3 percent of the males as civil servants, 33.3 percent engaged in farming, 6.7 percent were plumbers and mechanics respectively, 8.3 percent were traders while 3.3 percent were fashion designers. It could be deduced that major occupations of the respondents were civil servants and farming. Vocational occupation is not common among both male and female gender. Concerning house hold size, 57% of the male and female gender had 4-6 house hold members. 37% of the female respondents had 7-9 household members while 46.7% of the males had 7-9 house hold members. Only 5% of the female and 33% of the male respondents had 1-3 house hold members. It could be deduced that majority of the respondents have large family size

About 49.0% of the males had tertiary education while only 11% of the females had tertiary education. 25% of both male and female gender had secondary education, a large percentage of the female respondents had primary education and 34% had no formal education at all. This might be responsible for the large percentage of traders among the female respondents About 38.3% of the male respondents earn above ₦ 50 000 per month, 25% earn ₦ 41,000- ₦ 50,000, 16.7% earn ₦ 21,000 - ₦ 40,000, 13.3% earn between ₦ 10,000- ₦ 20,000 while 67% earn below 10% per month. Concerning the female respondents, a large percentage (36%) earn below ₦ 10,000 monthly, 33% earn between ₦ 21,000 - ₦ 40,000, 31% earn between ₦ 40,000 – ₦ 50,000 and 16.0% earn ₦10- ₦ 20,000.

It could be said that the monthly income of the male respondents supersedes that of the females. A large percentage of the female earn very low income. This is expected as the levels of education usually have a positive correlation with the income. The higher number of the females earning above ₦ 50, 000.00 might be as a result of the trading activities which majority of them engaged in.

**Table 2: Socioeconomic Characteristics of the respondents**

Variables	Male		Female	
	Frequency(60)	Percentages	Frequency(100)	Percentages
<b>Age</b>				
<20years	-	0.00	10	10.0
21-40years	30	50.0	76	76.0
41-60years	30	50.0	14	14.0
<b>Marital status</b>				
Single	18	30.0	10	10.0
Married	42	70.0	75	75.0
Widowed	0	0.00	03	03.0
Divorced	0	0.00	12	12.0
<b>Primary Occupation</b>				
Artisan	-	0.00	10	10.0
Civil servant	35	58.3	35	35.0
Farming	20	33.3	04	4.0
Fashion designing	02	3.3	06	6.0
Mechanic	04	6.7	-	0.00
Plumbing	04	6.7	-	0.00
Trading	05	8.3	45	45.0
<b>Household Size</b>				
0-3	02	3.3	05	5.0
4-6	30	50.0	57	57.0
7-9	28	46.7	38	38.0
<b>Level of Education</b>				
No formal education	04	6.7	34	34.0
Primary education	12	20.0	30	30.0
Secondary education	15	25.0	25	25.0
Tertiary education	29	48.3	11	11.0
<b>Level of income</b>				
≤ ₦ 10,000	04	6.7	36	36.0
₦ 10,000- ₦ 20,000	08	13.3	16	16.0
₦ 21,000- ₦ 40,000	10	16.7	33	33.0
₦ 41,000- ₦ 50,000	15	25.0	31	31.0
>₦ 50,000	23	38.3	14	14.0

### Assessment of gender balance of power, access and control of financial resources in the household affects the demand for waste removal services

In an attempt to assess the gender balance of power, access and control of financial resources in the household, efforts were made to investigate who head the household, controls family income and the management of family income.

Data in Table 3 shows that 70.0 percent of the male respondents indicate that they were heads of their households while 62.0 percent of the female respondents indicate that the husband is the head of the households. However a handsome number (28.0%) indicated the wife as heads of the household while 10percent indicate others. The others apply to situations whereby the woman resides in her fathers/family house or rented apartment under the control of some other people apart from the husbands. According to IFAD (1999) female headed households are usually disadvantaged in terms of access to land, livestock, other assets, credit, education, health care and extension services.

This might also be one of the factors affecting their willingness to pay for waste disposal. Efforts were made to investigate if the households keep joint account 93.3percent of the male respondents as well as 90.0percent of the female respondents indicated that they were not holding any joint account neither do they pull resources together before spending with their spouses. Only a few percentages (6.7 and 10.0%) of the male-female gender held joint accounts with their spouses. Result also shows that a large percentage (61.6&50.0%) of the male and female gender controls their own income. It could be said that members of the households in Ekiti State do not operate a joint account, hence no spouse have access and control over each other's financial resources but each have control over the finances generated. The management of household decision on efficient waste disposal might be negatively influenced by lack of gender balance of power and control of financial resources in the household and most especially among the female gender who are usually referred to as home makers.

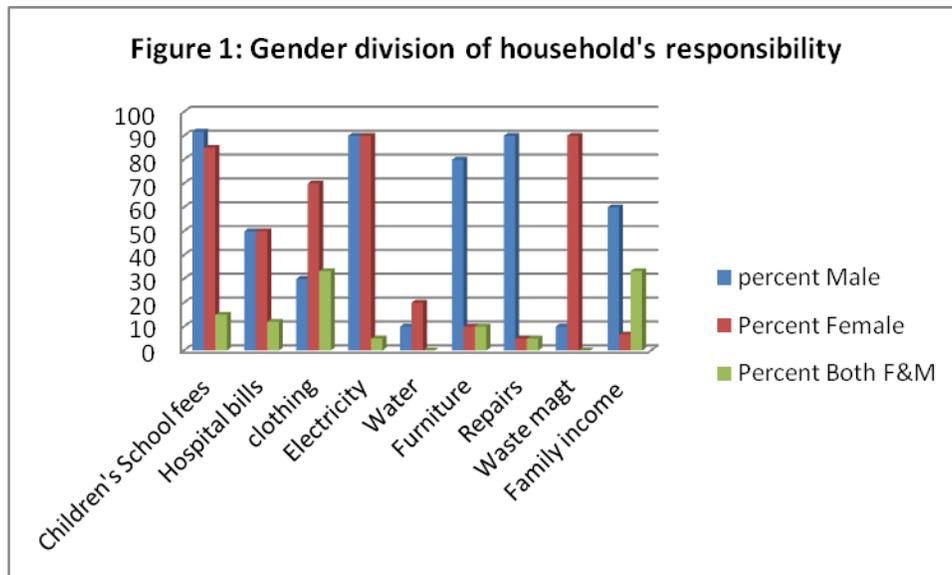
**Table 3: Assessment of gender balance of power, access and control of financial resources in the household affects the demand for waste removal services**

Variables	Male		Female	
	Frequency	%	Frequency	%
The head of the family				
The Husband	42	70.0	62	62.0
The Wife	-	0.00	28	28.0
Others			10	10.0
<b>Whether family keep joint account</b>				
Yes	04	6.7	10	10.0
No	56	93.3	90	90.0
<b>Do family pull resources together before spending</b>				
Yes				
No	05	8.3	22	22.0
	55	91.7	78	78.0
<b>Who controls family income</b>				
Husband				
Wife	15	25	12	12.0
Both Husband and wife	02	3.3	28	28.0
Each individual	05	8.3	10	10.0
	37	61.6	50	50.0

Source: Field survey, 2010

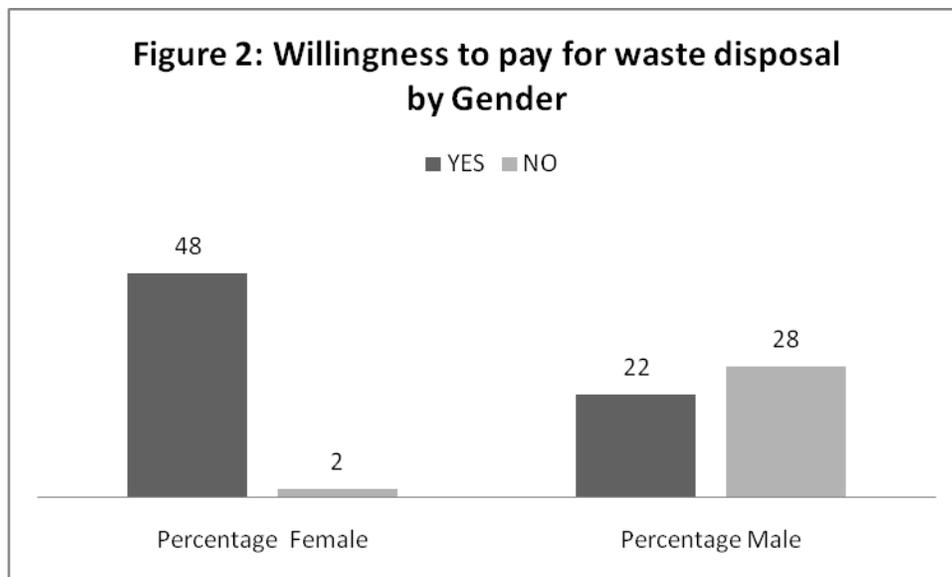
### Gender Division of Households' Responsibilities

Efforts were made to ascertain gender division of household responsibilities in terms of different bills paid at home. Results in figure 1 indicated that the male engaged in the payment of electricity bills (60%), female 30% and both male and female 10%. For children's school fees children's school fees 60% of the males accepted it as their responsibility, 80% of females said it was the woman that paid school fees while 15% believed school fees payment should be joint responsibility at home. But 35% agreed that school fees should be paid jointly by both the male and female gender. About 50% of the male respondents paid water bills while 16.5 & 13.5 % of female and both sexes paid water bills respectively Waste disposal was seen as female's responsibility by 85% of the respondents while only 15% saw it as male's responsibility. Eighty percent of the respondents saw furniture provision as male's responsibility, 15% as females while 5% saw it as joint responsibility of both male and female gender. Also provision of clothing for the entire household was considered as women's affairs by of the respondents, while 30 & 20% saw it as women and joint responsibilities respectively. It could be affirmed that the female gender were mainly involved in paying children's school fees, waste disposal and family clothing among Ekiti people.



Data in fig.2 shows that About 48 percent of the women interviewed are willing to pay for waste disposal while only 22percent of the male gender were willing to pay for waste disposal However it is noted that the percentage of men not willing to pay for waste disposal outstripped that of women. Only a few (2%) of the female respondents are not willing to pay for waste disposal. Efforts were made to unfold the unwillingness of the men to pay for waste disposal, almost all of them have the believe that it is not part of men’s responsibility in the home and that women are care takers of homes which stay home often and also generate most of the wastes hence should be responsible for its disposal.

**Figure 2: Willingness to pay for waste disposal by gender**



Source: Field survey, 2010

**Factors influencing willingness to pay for waste disposal**

The result of the Probit model employed to ascertain the probability relationship between respondents’ willingness to pay for waste disposal and their socioeconomic characteristics is presented in Table 4. From the Table, it shows that gender significantly influence the probability of paying for waste disposal among respondents negatively, this shows that female respondents are willing to pay for waste disposal probably because the onus of household waste disposal in most cases usually falls on female gender.

Nature of Primary occupation increases the probability of paying for waste disposal among respondents significantly, this shows that being a civil or public servant increases the probability of paying for waste disposal perhaps due to time exigencies on the part of these categories of respondents. Other socioeconomic characteristics that influence the willingness to pay for waste disposal among the respondents positively are: Marital status, Level of Education, and Average monthly income. However, Family size shows a negative significant probability of paying for waste disposal among the respondents. This could be as a result of availability of extra hands in the household that could easily be allocated to waste disposal not minding the distance of the dump site and probably because of financial stress that is often associated with large families. Household headship equally has a significant negative probability relationship with willingness to pay for waste disposal, this show that female headship of household tends to increase the probability of paying for waste disposal. This could be as a result of deep understanding of problem associated with the waste disposal by women. Nearness to dump site equally shows a negative significant relationship with probability of paying for waste disposal. This is obvious because those that are living close to dump site may not see any reason for paying for such service since they could easily trek down to drop their waste.

**Table 4: Estimates of the Probit Regression Model**

	Variable	Coefficients	Standard Deviation
X <sub>1</sub>	Age	0.103	0.315
X <sub>2</sub>	Sex	- 0.019**	0.222
X <sub>3</sub>	Primary occupation	0.021*	0.275
X <sub>4</sub>	Marital Status	0.016	0.139
X <sub>5</sub>	Family size	- 0.022**	0.019
X <sub>6</sub>	Level of Education	0.042	0.332
X <sub>7</sub>	Average monthly income	0.024	0.261
X <sub>8</sub>	Household Headship	- 0.031*	0.156
X <sub>9</sub>	Nearness to dump site	-0.016*	0.094

\*Significant at 5%

\*\* Significant at 1%

Source: Data Analysis, 2010

### Summary, Conclusion and Recommendations

The research work examines the willingness pay for waste management disposal by gender in Ekiti, Nigeria. Using 160 house holds randomly sampled with a ratio of 3-5 male-female gender. Data shows that both the male and female gender sampled were young with an average age of 38 and 41 years respectively. A large percentage were married, with civil servants & farming being the main occupation of the male respondents while trading civil servants were the main occupation of the female respondents. The male and female genders in both states were not engaged in vocational occupations. Most of the respondents had large family sizes with about 7-9 members. The male respondents are highly educated than the females. So also, the level of income of the male respondents is higher than the females. However, the females that engaged in trading earn so much when compared to the males.

The males were regarded as the heads of the family. However, some households were headed by the females. Both male and female respondents ascertain that the male gender were the major sources of family income. Though, both male and female generate revenue for the household but only few operate joint accounts. Hence, the control, access and power over family resources is on individual basis.

Family responsibilities were divided among gender with males mainly responsible for furniture, electricity, repairs , payments of school fees and feeding while the provision of school fees , clothing and payment for waste management were solely the females' responsibilities. Both male and female gender agreed that the females have the responsibility to maintain clean environment as well as pay for waste management bills though both male and female generated waste at home. The result of the Probit regression analysis shows that gender, family size, Household headship, and nearness to dump site have significant negative relationship with the probability of paying for waste disposal in the study area however, only primary occupation of the respondents recorded a significant positive relationship with the probability of paying for waste disposal.

The study recommends for increase in awareness campaign for proper waste management and should emphasis the involvement/ responsibility of the entire households. Female gender should be encouraged to engage in more income generating activities and adult literacy programmes in order to meet their financial obligations and improve their education thus becoming more sensitive to maintaining a healthy environment

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