Civil and Environmental Research
ISSN 2224-5790 (Paper) ISSN 2225-0514 (Online)
Vol.11, No.11, 2019

Households' Perception and Management Practices on Urban Solid Waste in Robe Town, Bale Zone Oromia Regional State, Ethiopia

Aliyi Mama Gasu[1] Fatuma Hamid Mohammed[2]
1.Department of Environmental Science, College of Natural and Computational Science, Madda Walabu University Robe Bale, Ethiopia
2.Department of Nursing, College of Health Science, Madda Walabu University, Ethiopia

Abstract
With rapid development of the city the current condition of solid waste management service is becoming a challenge for municipalities. That means small proportions of the urban dwellers are served and a large quantity of solid waste left uncollected which in turn induced greater infrastructural demand, institutional setup and community participation for its management. The aim of the study was to assess households' perception and management practices on urban solid waste in Robe town, Bale Zone Oromia Regional State, Ethiopia. Cross sectional descriptive survey research strategy was conducted in Robe town. Both quantitative and qualitative research approach was employed. Both primary and secondary data sources were used. To select sample Households, first two kebeles were purposively selected based on the severity of the problem and absence of waste disposal site in those kebeles. Then probabilistic proportionate to size technique was applied to determine the total sample household size from each kebele. Ultimately, a total of 374 sample household heads were selected by using simple random sampling technique. The result of the study shows that the mean and standard deviation is 2.99 and 1.16 respectively. These shows as many of the respondents have low perception and the standard deviation value also indicates as their perceptions are highly deviating from the mean and one another. Hence, the urban households' perception is quite low and uncomplimentary regardless of some of the factor, waste management practices is also very poor. Meanwhile, the result shows as some of the dwellers use private pit to store solid waste produced and most of them do not use any material to store waste most of the time. Hence, the municipality should establish central composting plant and give training to jobless youth who can change organic solid wastes and produce compost as a soil conditioner and also create livelihood for the urban poor in addition to educate and enforce solid waste management practice at household level to familiarize the community with positive perception towards solid waste management.
Keywords: Governance; Management; Perception; Practices; Robe; Waste
DOI: 10.7176/CER/11-11-03
Publication date: December 31st 2019

1.0. INTRODUCTION

Human and the act of production and consumption are always inseparable and in the process of utility maximization procedure there is unexpected externalities, waste. The wastes could be both solid and liquid types; and public awareness and attitudes to waste can affect the whole municipal solid waste management system. All steps in municipal solid waste management starting from household waste storage, to waste segregation, recycling, collection frequency, willingness to pay for waste management services, and opposition to sitting of waste treatment and disposal facilities depend on public awareness and participation. Thus, lack of public awareness and school education about the importance of proper solid waste management for health and well-being of people severely restricts use of community based approaches in developing countries and also crucial factor for failure of a MSWM service in developing countries [Zurbrugg, 2003].

In most of the developing countries the influence of perception which describes how a person views himself and the world around him and how it tends to govern behavior is explained by as it is low. A situation that may result is greater incidence of divergent behavior's towards Solid Waste Management services as perceived or a total breakdown of waste control system. In this wise, individual's perception will influence the cultural values, responses, and success of the solid waste management system. Hence, people's perception on waste management should take the question of how to manage solid wastes without scarifying environmental and human health as an agenda [Gebrie, 2009].

According to Senbet Elmo [2017] "Solid waste management (SWM) involves the collection, storage, transportation, processing, treatment, recycling and final disposal of waste. Systems need to be simple, affordable, and sustainable (financially, environmentally and socially) and should be equitable, providing collection services to poor as well as wealthy households.

However, the current condition of municipal solid waste management service in different towns of Ethiopia is also becoming a challenge for municipalities. For instance, according to Degnet [2003] study of municipal

solid waste management practices of 15 regional cities of Ethiopia, a controlled solid waste disposal system was practiced in only two of them. That means small proportions of the urban dwellers are served and a large quantity of solid waste left uncollected. In addition, a study conducted by [Gebrie, 2009] revealed percentage of solid wastes which are left uncollected and disposed anywhere without due attention regarding their consequences in different towns of Ethiopia.

As a result, solid waste management in Robe has not been carried out in a sufficient and proper manner. The environmental and sanitary conditions of the town have become more serious from time to time, and people are suffering from living in such conditions. So those steady growths of solid waste problem are still the main features of the town. Hence, the main aim of the study is to assess households' perception and management practices on urban solid waste in Robe town, Bale Zone Oromia Regional State, Ethiopia.

2.0. METHODOLOGY

The proposed study was carried out in Robe city. Robe city is the capital city of Bale administrative zone of Oromia regional state, capital city for Sinana district and Robe city administration. The city is found to the South-eastern part of Addis Ababa at 430 kms along the highway through Shashemene or 460 kms through Asella. The total proposed area of the town is 8024 hectares (Robe Town, 2019).

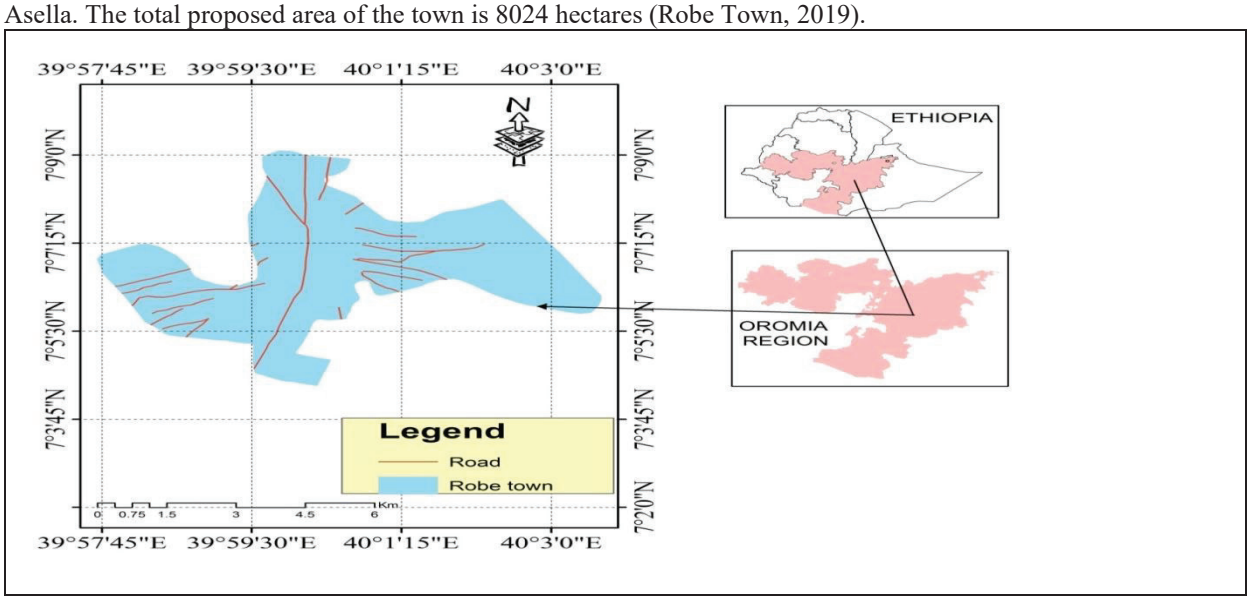

Figure 1: Indicator Map of the Study Area
Source: Own work by GIS, 2019

2.1. Research Design

Cross sectional descriptive survey research strategy was conducted in Robe town. Both quantitative and qualitative research approach was employed. Because, the combination of the two research approach gives better interpretation as the information missed by one might be captured by the other and thus an enhanced and integrated result may emerge from the analysis. The quantitative data was employed by closed ended questions while qualitative data was employed in open ended questions and observation. This design helps in picturing out the existing situation in addition gather necessary information using data collecting instruments and document analysis. This method also helps the researcher to adopt and explore households' perception and management practices on urban solid waste in Robe town of Bale Zone Oromia Regional State.

2.2. Sampling Methods and Procedures

The researcher owed purposive sampling to select Robe town, because it was easily accessible to the researcher and to make it cost and time effective. Similarly the researcher select two kebeles of Robe town on which to conduct the survey purposively based on the severity of the problem and absence of waste disposal site in these two kebeles which in turn contribute to poor waste management practices. Inhabitants of the two kebeles of Robe town whom were considered as the population of this study and respondents from the households were selected by stratified and simple random sampling method respectively. Hence, first the researcher has taken two kebeles with more serious problem of solid waste. After the two kebele stratification, the house hold heads were stratified in to male and female households. Then simple random sampling method was preferred because it allows all members of the population an equal chance of being included in the study.

The next step was selection of the sample households which was undertaken by employing simple random sampling technique from the two kebeles to be selected (according to proportional size of these kebele's

households).

Therefore, 374 were the minimum sample size of households for reliable results. Finally, by using proportional allocation method the researcher was decided to take sample households from selected kebeles.

Table 1: The distribution of total and sample Households in the sample kebeles

kebeles	Total number of Households	Total number of sample Households
Baha Biftu	5023	155
Café Donsa	7,083	219
Oda Robe	-	-
Total	**12,106**	**374**

Source: Robe Municipality, (2019)

In order to achieve the stated objectives, primary and secondary data were utilized in this research. The main source of data for the study was primarily field survey which focused on data related to socioeconomic and demographic characteristics of the respondents, and other related information that were essential for the research purpose. Primary data were collected from primary sources like households' heads, health extension workers, environmental protection experts and health office experts and kebele developmental team leaders of town.

Secondary data was extracted from different sources including published and unpublished materials like books, journals, scientific research works and office records as well as from annual reports of administrative office, municipality finance and economic development office, and health office of Robe town.

The primary data were collected from household heads, from woreda and kebele leaders, professionals working in the area and from the study area physical environment by using survey questionnaire, key informant interview, focus group discussion and personal observation.

2.3. Methods of Data Analysis

The methods of data analysis to be employed were underpinned by the nature of data and the specific objectives of the study. To this end, qualitative data collected through key informant interview, focus group discussion, and personal observation were analyzed with the help of qualitative methods of data analysis (description and narration). On the other hand, data collected from the respondents with the help of semi-structured interview were analyzed with the help of simple descriptive statistics (percentage, frequencies, mean, and standard deviation).

3.0. RESULTS AND DISCUSSION

3.1. Households' perceptions on solid waste management in Robe town

Table 2: Households' perceptions on solid waste management

Likert Item	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Mean	St'DV
Solid waste management is very important	15	29	50	101	168	4.041322	1.137483
The unwise handling and management of solid waste harms human health	2	8	55	143	155	4.035813	1.10815
Solid waste management is the only duty of municipality	96	142	65	37	23	2.30854	1.153237
Robe town do not have solid waste management problem and it is neat and comfortable for its residents.	138	97	69	33	26	2.206612	1.240994
Public awareness and attitudes to waste can affect the municipal solid waste management system	45	88	136	51	43	2.887052	1.159121
We have the responsibility to inform our parents about the wise management of solid waste	9	16	115	176	47	3.650138	0.85166
Solid waste management service in Robe town is not a burning issue as it compared with other service like road service, water supply etc	103	93	97	45	25	2.438017	1.216093
Materials at your home can be made from previously used materials	143	86	50	34	50	2.344353	1.425843
Grand						2.988981	1.161573

As evidenced in [Table 2], the mean and standard deviation is 2.99 and 1.16 respectively. These shows as many of the respondents have low perception and the standard deviation value also indicates as their perceptions are highly deviating. Hence, the standard deviation value indicates as their perceptions are highly deviating from the mean and one another. This indicated that households perception towards solid waste management inclined among the one that perceive as solid waste management is yet important. More specifically, the result of this variable can be interpreted as the level of households perception increases, the probability of effective solid waste management at household level. From this finding one can understand that the households have a poor perception but have interest to collect and dispose off generated wastes in a proper way. However, they did not have information about the usefulness of solid wastes if it is to be managed well or not.

In controversy to this, the research done by Luis, F [2012] pinpointed as perception of the respondents is high and used as indicator of households‟ understanding towards solid waste and its management by taking whether the respondents got necessary orientation or information as a bench mark. He stated as they had hypothesized that households, who have information or awareness on the importance of dispose of wastes properly, the negative consequences of choosing unauthorized place to dump wastes and others that relevant to improve the management system, can manage their solid wastes effectively; even by the initiation of themselves.

In line to this the research done by Ashenafi Haile, [2011] found that being male or female have a significance impact on perception and revealed as the households are facing awareness or understanding related problem. Meanwhile, he confirms as educational levels and income of the respondents have a significance positive relationship; whereas, age of the respondent have a negative relation with perception of the people on solid waste collection services which in turn strengthen the finding of this study.

As per the information obtained from different key informant interview and focus group discussion, still the households lacks orientation about how to separate, recycle, even lack clear information about the problems due to poor collection or management, the importance of effective management, the household's responsibility and other related basic information.

Hence, this is similar with the research done by Rahman, M.,*et.al*, [2005] who noted that in order to develop awareness and then to have a positive attitude, the households should be informed appropriately. Specifically, orientations pertinent to the negative impacts of inadequate waste collection with regard to public health and environmental conditions, the value of effective disposal and their responsibility as waste generators should be appropriately disseminated to the public.

Concurrently, the findings done by Rahman *et al*., [2005] stated as the severity index values for the public opinion and perception on solid waste management ranges between 46.67% and 51.25% are found within the neutral opinion range of $37.5 \leq SI < 62.5$. With this opinion range the respondents affirm the existence of an organized solid waste management system. The SWM system is however perceived by the respondents to be characterized with irregularity in waste collection by the assigned operators. This perception is stronger among the low income socio-economic group. At this present level of people's perception, a slight change could tilt the balance to the unfavorable side. It therefore behooves on the authorities to pay keen attention to problems arising from the management of solid waste and the perceptions of the citizens at different socio-economic levels and demographic characteristics.

In addition to this, the research done by Merton [2008] stated as situation that may result is greater incidence of divergent behavior's towards Solid Waste Management services as perceived or a total breakdown of waste control system. In this wise, individual's perception will influence the cultural values, responses, and success of the solid waste management system. Hence, people's perception on waste disposal and on waste collection services is primordial for its willingness to pay. He also revealed that the overall, awareness, concern, and support for significant action to deal with waste management appears to be gaining momentum among the public, although there are many obstacles remaining, including our limited understanding of the current status of waste generation, public opinion and willingness to pay, majority of the community tipping point, leading to greater levels of public engagement in reduction of waste at the source through campaigns in a scientific manner to create awareness among the individuals is very much needed for making our cities clean.

Meanwhile, perception may be positively influenced through awareness-building campaigns and educational measures on the negative impacts of inadequate waste collection with regard to public health and environmental conditions, and the value of effective disposal. Such campaigns should also inform people of their responsibilities as waste generators and of their rights as citizens to waste management services [Rahman *et al*., 2005]. Besides delivering required and related information to the public, it is also very crucial to recognized that solid waste management collection requires the participation of households, as generator, who involved in storage of the wastes in households, transferring wastes to communal containers, and the payment of the user fees. Due to this, the potential and interests of households to contribute to the service is very important [USAID, 2004].

3.2. Households' solid waste management practices in Robe town

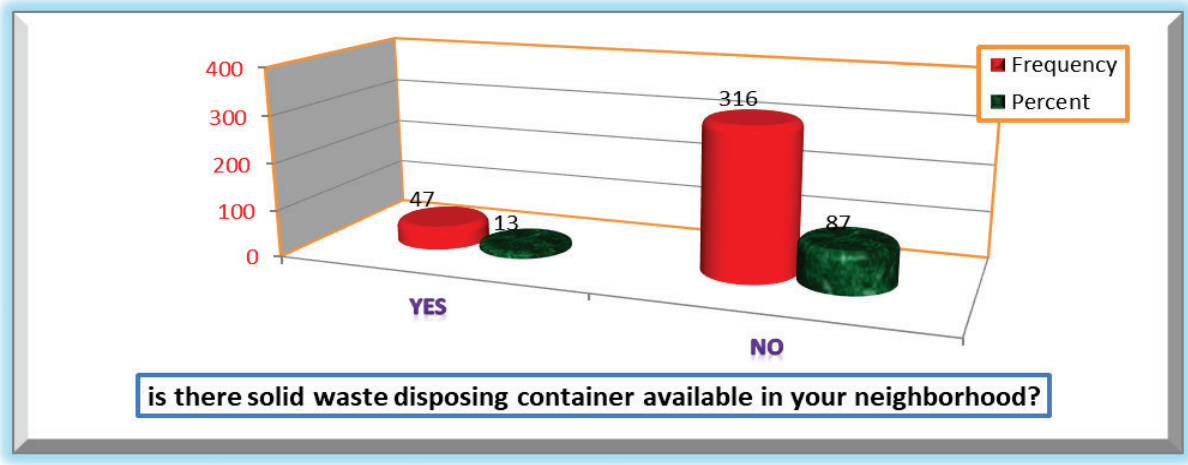

Figure 2: Availability of solid waste disposing container in neighborhood

As easily illustrated in Figure 2, highest percentage of the respondents, 87 % stated as there is no solid waste disposing container available in their neighborhood. The rest of them said there is solid waste disposing container in their neighborhood.

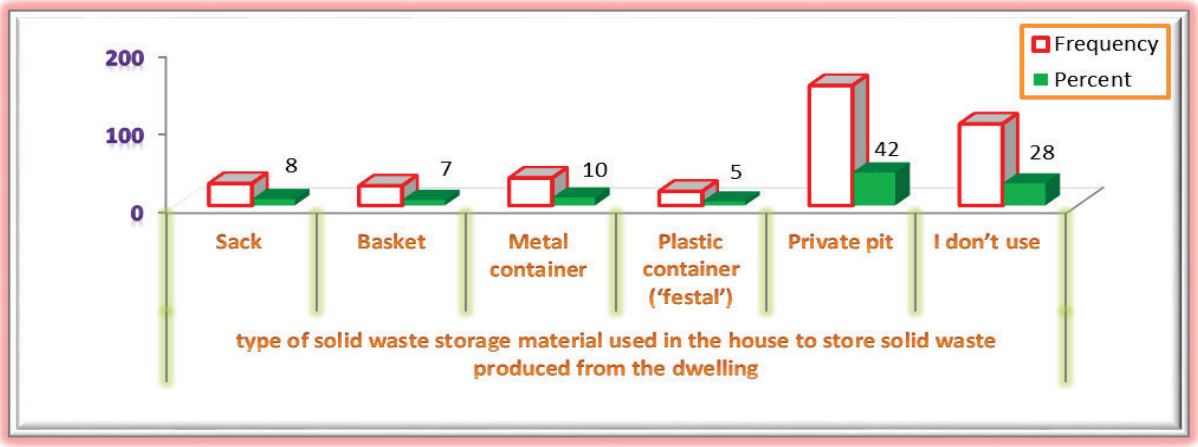

Figure 3: Type of solid waste storage material used in the house to store solid waste produced from the dwelling.

Figure 3, revealed that 42% of the respondents use private pit to store solid waste produced from the dwelling, 28% of them stated as they do not use any material to store waste and 10% of them use metal container, 8% of them use sacks, 7% of them use Basket and 5% of them use plastic containers.

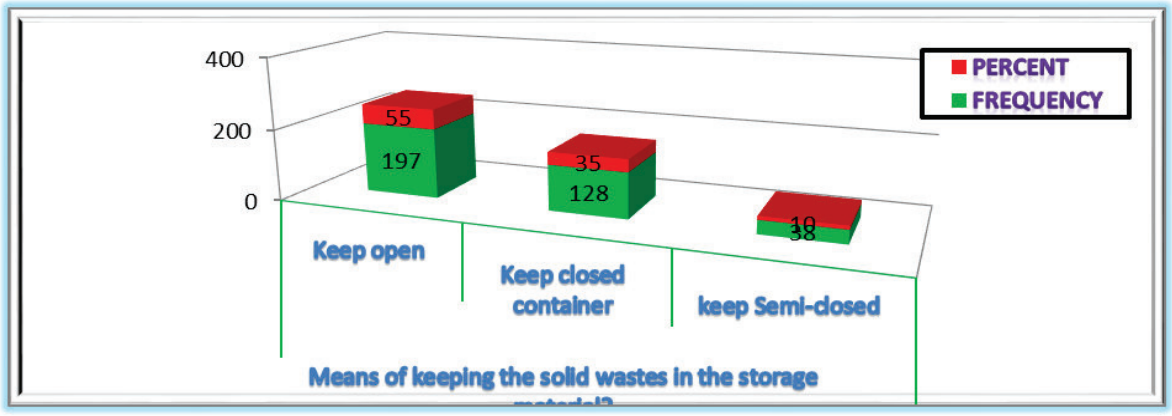

Figure 4: Means of keeping the solid wastes in the storage material

As presented in Figure 4, 55% of the respondents keep the waste open, 35% of them stated as the keep in the closed material and the left stated as they keep in semi closed container.

Again as one of the interviewee illustrated "we keep the waste materials in the plastic bucket and plastic

bag".

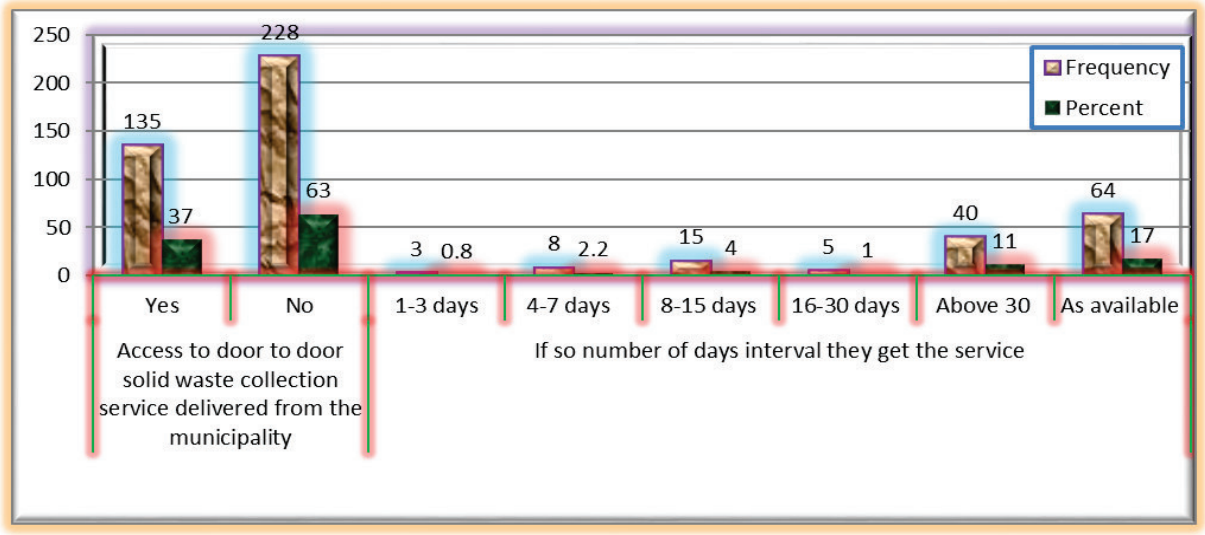

Figure 5: Access to door to door solid waste collection service delivered from the municipality and number of days interval they get the service

Plate 1: Means of Collecting waste from door to door

As shown in Figure [5], only 37% of respondents revealed as they have Access to door to door solid waste collection service delivered from the municipality. Of these respondents, 17% of them dispose the waste as availability the service. 11% of them stated as they dispose the waste more than 30 days interval. Only less than 1% of the respondents stated as they dispose wastes as in between 1-3 days interval.

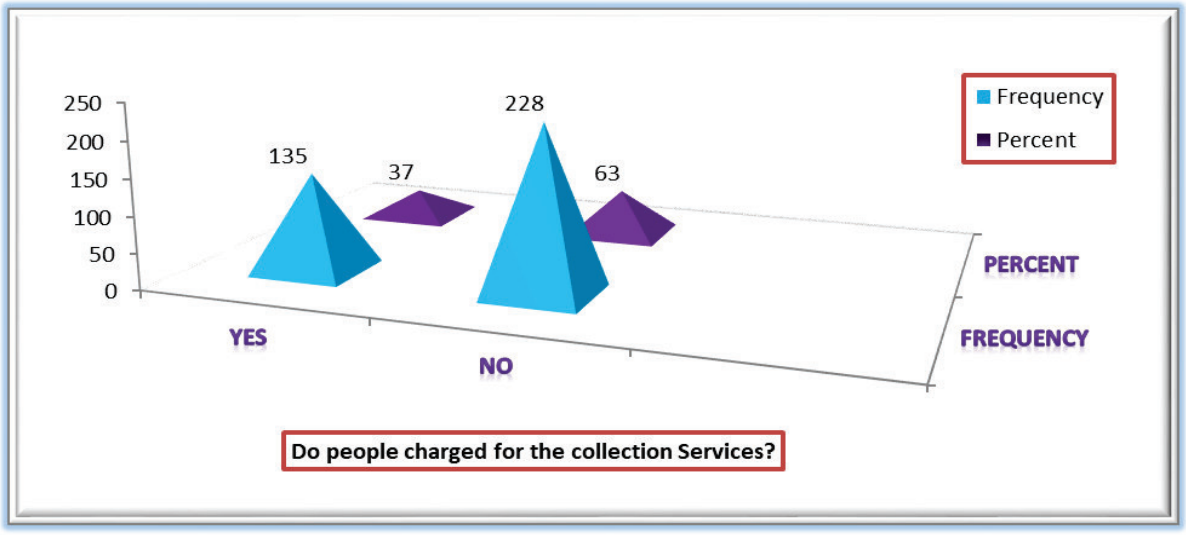

Figure 6: Whether people Charged for the collection services or not.

As shown in the Figure 6, of the respondents who were asked a question whether people charged for the collection services or not only 37% of them revealed as the people charged for the collection services and the vast majority 63% of them stated as they do not charged for the service since they do not use the service.

The interview and FGD made with key informants also shows that the people are not charged for the collection services since they do not have the access.

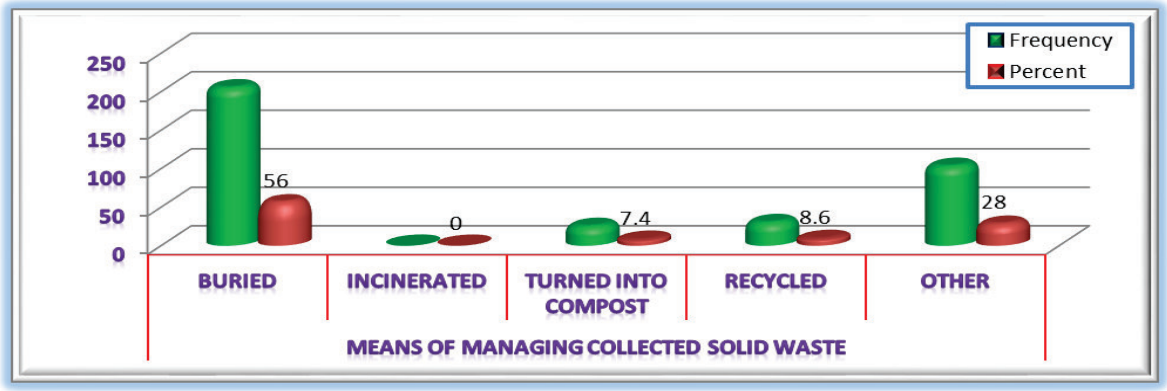

Figure 7: Means of Managing Collected solid waste

As shown in the Figure 7, respondents were also asked about the Means of Managing Collected solid wastes and more than half of the respondents 56% stated as they use Burial methods in their compound, 28 % of them stated as they use other means like that of open burning, throwing out side to their compound and only 8.6% and 7.4% of them stated as the use Recycling and Conversion to compost respectively.

Again interview with key informant stated as there were no well organized means of solid waste collection mechanisms.

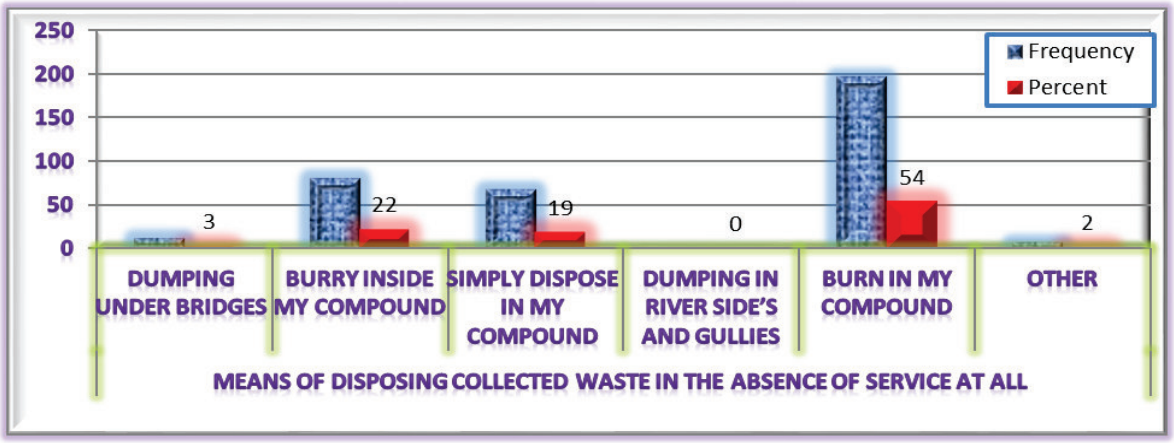

Figure 8: Means of disposing collected waste in the absence of municipal services at all

According to the sample survey response shown in Figure 8, among all those respondents who do not have access to waste disposing facilities 54 % of stated as they simply burn the waste, 22% of them revealed as they Buried the waste, 19% of them stated as simply dispose the waste in and around their compound.

Field observation by the researcher also confirms as waste management practices are very poor in robe city.

Figure 9: Waste Dumped on the field and Road side

In line with this finding, Zurbrugg [2003] stated that in the developing world the municipal solid waste collection services are delivered to only a limited part of the population. The populations who do not get the service of waste collection are low-income and live in pre-urban and slum areas. He also noted that the main reason for this limited collection services is lack of financial resources to cope with the increasing amount of generated wastes along with rapid growing cities. In other words, financial factor or constraint is the main cause for this inadequate service coverage of solid waste management activity. It is the fact that in less developed countries both the government and generators do not have adequate finance or budget. Due to this, often inadequate fees charged on the generator and insufficient funds from a central municipal budget cannot be finance sufficient level of services. It is obvious that the main financial source of municipality is tax, which is not adequate to deliver effective solid waste collection service along with other responsibility of the municipality or city administration. But, even the government, particularly local government, gives higher priority to other way of city development while distributing annual budget from its available finance than solid waste management Waste management services are generally a low-priority item in government budget allocations, thus the financial base for these activities is weak. This is true particularly of local governments who are the real overseers of solid waste management problems don't responded positively towards the need of waste management.

In controversy to this result, World Bank, [2012] and Rahman, et al., [2005] stated as wastes generated in the home can be separated at sources based on their nature and stored until a small amount is accumulated and then, the generator households are responsible to transport these stored wastes to the nearest dustbin or container, which is provided by the city municipality. Then, the municipality is responsible for the remaining activity of waste management, which transferring the collected wastes from the containers to the final disposal sites. Thus, the direct involvement of house holders, as far as this approach is concerned, is rare in the study area.

However, the research done by Senbet Elmo [2017] is in line with this finding by stating as people use different types of storage stuffs, such as plastic bags, baskets, and trash bags locally known as ‘medaberia’. Others use trash pits, to burry or burn the household generated wastes regularly. And also he stated as they simply put their garbage into the storage stuff and collectors then pick it up, the next time coming. In addition to this he stated as few households have also used plastic baskets and bags, instead, to hold their waste at courtyard for a time. And, again few others use waste pits to burn and burying their waste perpetually. Hence, according to his finding some of them are, disclosed that they do not use any form of temporary waste storage in their compound and rather directly dump their waste on streets, open fields and river streams nearby. None of these households were seen or uttered placing two or more trash bags or whatever, for sorting waste at the source.

This gives implication that the practice is based not on knowledge and or awareness but very traditional and intuitive, but still very helpful and encouraging in the waste minimization strategy.

The interview and FGD made with key informants also shows that the people are not charged for the collection services since they do not have the access and they have stated as there were no well organized means of solid waste collection mechanisms in Robe town. Not only had this field observation by the researcher also confirmed as waste management practices are very poor in robe city.

3.3. Governance of municipal solid waste management in Robe City

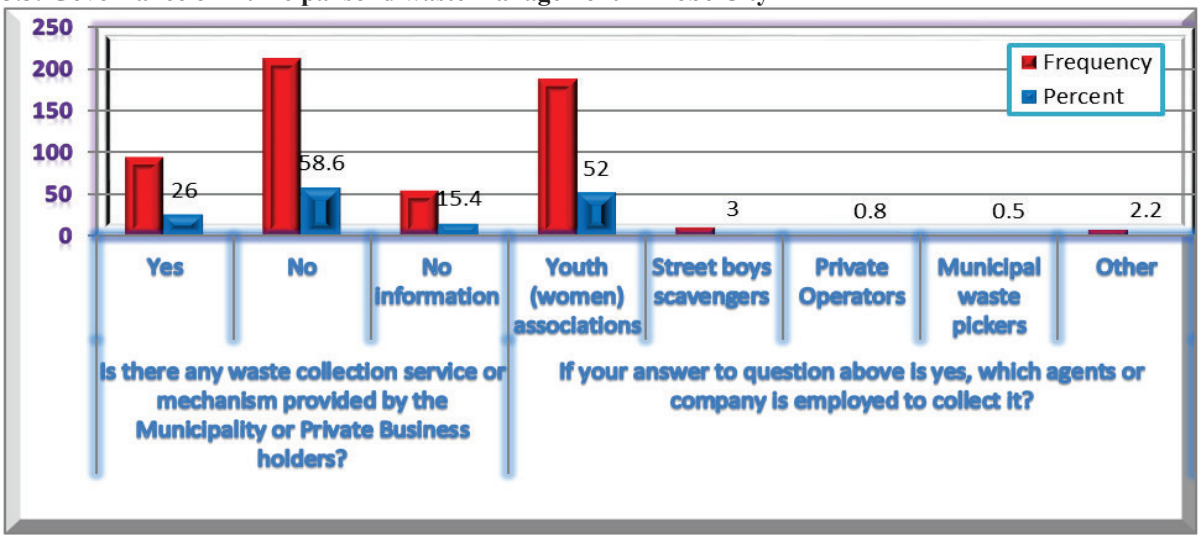

Figure 10: Existence of waste collection service or mechanism provided by the Municipality or Private Business holders and types of agents or company employed to collect it

Figure 10, respondents view on whether there is any waste collection service or mechanism provided by the Municipality or Private Business holders, 58.6% of the respondents revealed as there were no any waste collection service or mechanism provided by the Municipality or Private Business holders, 26% of the respondents stated as there were services and only 15.4% of them stated as they have no information about the issue.

Outcomes of the interviews are also in agreement with the results obtained from the survey data. They confirmed that as only four carts available in the town by municipality which in turn unable to address the community at large.

As clearly presented in Figure 10, the dominant agents or company employed to collect waste in the Robe city is Youth (women) associations.

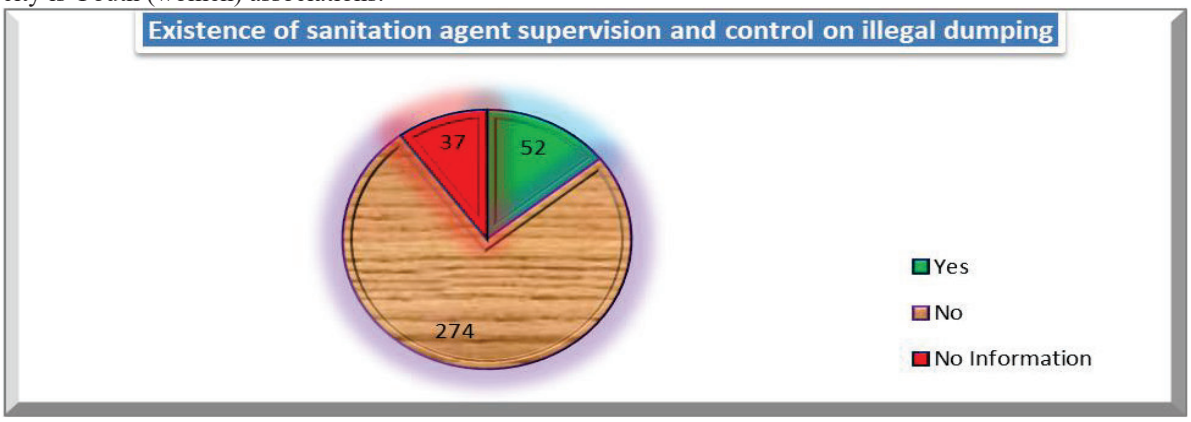

Figure 11: Existence of sanitation agent supervision and control on illegal dumping of solid wastes on the streets, open areas and other areas

As shown in (Figure 11), of the total 363 respondents 274(75%) of them revealed as there were no sanitation agent supervision and control on illegal dumping of solid wastes on the streets, open areas and other areas, only 52(15%) respondents have said there is supervision and control and only 37 (10%) of them are confirmed as they have no information about the issue.

The Focus group discussion made also revealed as there is intermittent supervision only to the establishments area not to the residential area.

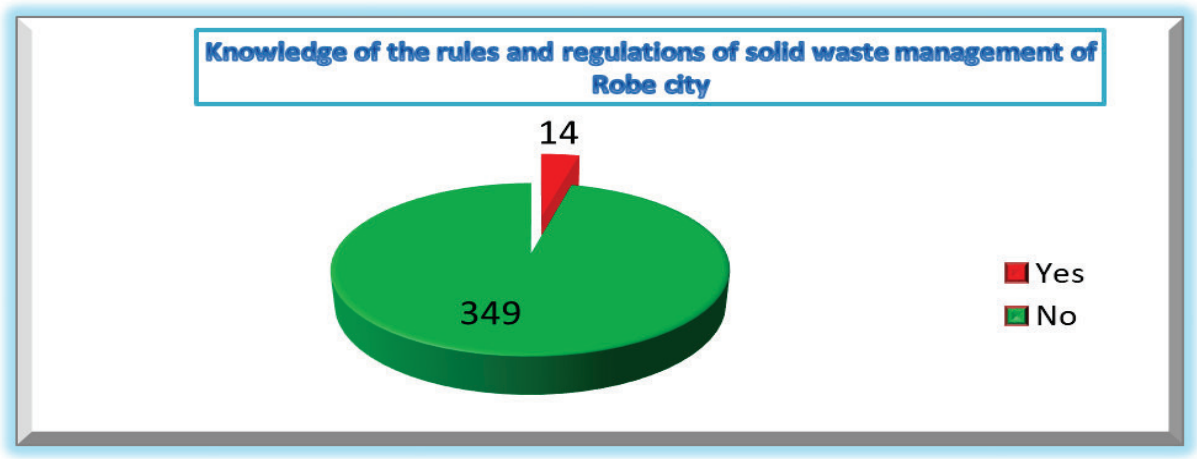

Figure 12: knowledge of the rules and regulations of solid waste management of Robe city

As shown in Figure (12), 349 (96%) of the respondents revealed as they have no knowledge of the rules and regulations of solid waste management that exist in Robe city and only the left 4% of them confirm as they have knowledge of the rules and regulations of solid waste management of Robe city.

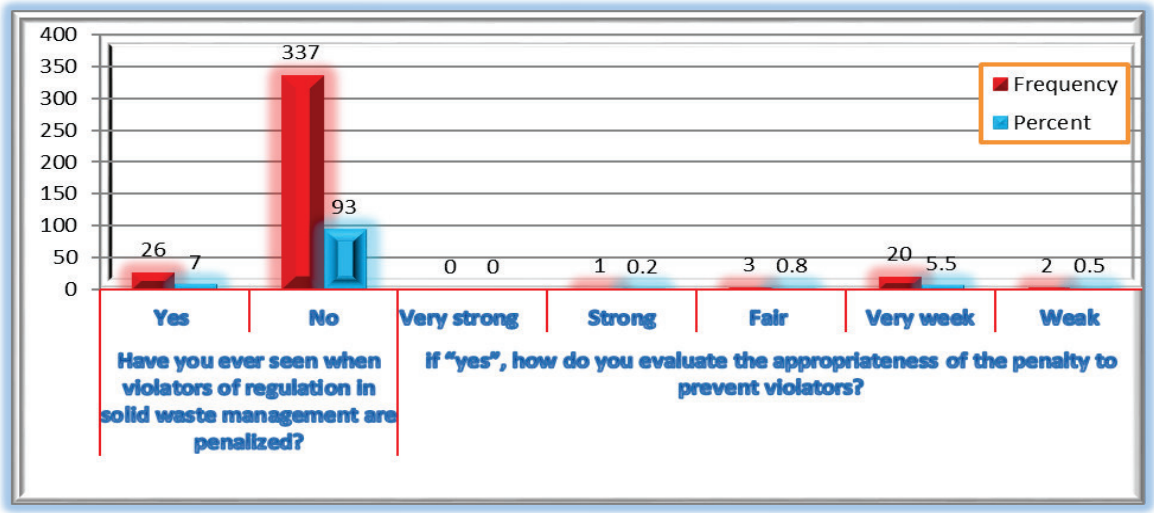

Figure 13: Experience regarding violators of regulation in solid waste management while penalized and appropriateness of the penalty to prevent violators

As presented in Figure 13, majority of the respondents, 93% of them revealed as they have no experience regarding violators of regulation in solid waste management while penalized and appropriateness of the penalty to prevent violators. Only about 7% of them stated as they have Experience regarding violators of regulation in solid waste management while penalized and appropriateness of the penalty to prevent violators. Of those respondents who have experience, 5.5% of them confirm as the rules and regulation is very week, 3 of them stated as it is fair, only 1 person confirms as it is strong.

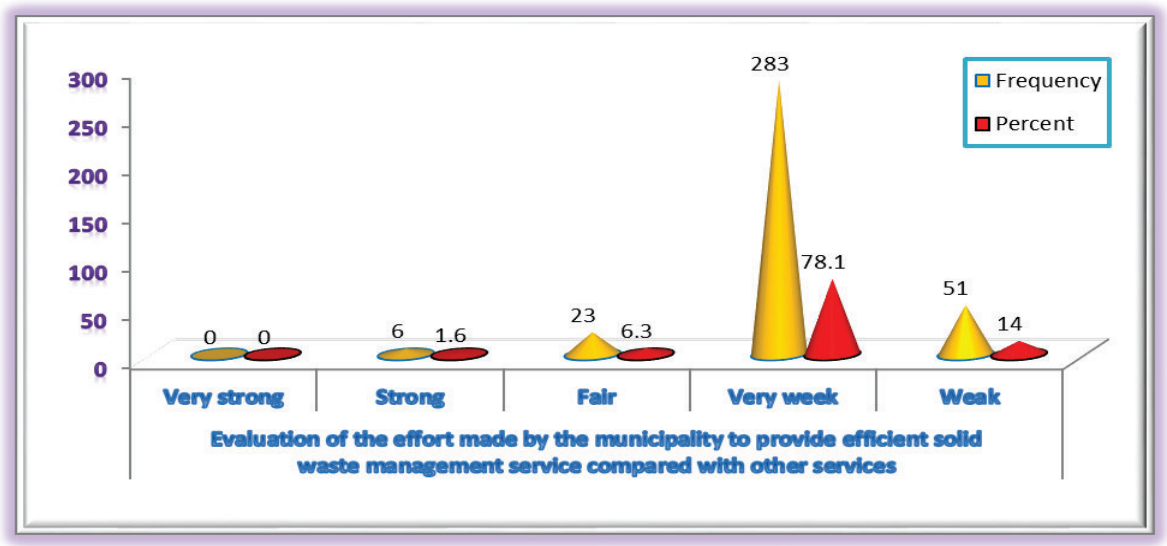

Figure 14: Evaluation of the effort made by the municipality to provide efficient solid waste management service compared with other services

As illustrated in Figure 14, 78.1% of the respondents revealed as the effort made by the municipality to provide efficient solid waste management service compared with other services like water, road, drainage, sheds, green infrastructure and etc is very week, 14% of them stated as it is weak, 6.3% of them stated as it is fair and only 6 of them stated as it is good.

Regarding Governance of municipal solid waste the results from the survey confirm that 58.6% of them stated as there is no any waste collection service or mechanism provided by the Municipality or Private Business holders, 26% of the respondents stated as there were services and only 15.4% of them stated as they have no information about the issue (Figure 12). The outcomes of the interviews are also in agreement with the results obtained from the survey data. They confirmed that as only four carts available in the town by municipality which in turn unable to address the community at large.

Again almost (96%) of the respondents revealed as they have no knowledge of the rules and regulations of solid waste management that exist in Robe city (Figure 13). Not only this majority of the respondents, 93% revealed as they have no experience regarding violators of regulation in solid waste management while penalized and appropriateness of the penalty to prevent violators in Robe town.

In line with this finding, the research done by van de Klundert, A., [2000] stated as the municipal government is legally responsible for solid waste management in a city, but cannot deliver on that responsibility by prescribing or undertaking measures in isolation, entirely on their own, without active participation of other stakeholders who each have their distinct roles and responsibilities within the system. Besides the municipal authorities, SWM stakeholders include: users and potential users, who are the waste generators as well as the 'clients'; providers, including the local municipal department or enterprise, and both the formal and informal private sectors, who actually offer the service; external agents in the enabling environment, including national government, neighboring municipalities, producer responsibility organizations and external support agencies. Both (potential) users and service providers are often represented in an inclusive policy and governance process by various NGOs and women's unions; the latter can be important as women more often take the role of 'users' and are prominent as informal service providers.

Again in supporting this finding Pruss, A., et al., [2010] stated about good practices in user inclusivity were demonstrated in the reference cities, for example Bamako in Mali, Belo Horizonte in Brazil, Bengaluru in India and Quezon City in the Philippines. Examples include: communication and consultation of users in strategic planning and sitting facilities; communication and involvement of users in the organization of day-to-day services; institutionalizing inclusivity through a solid waste 'platform'. Inclusive plans, prepared in a participatory manner are essential to serve equitably all parts of the (potential) user community, as well as to open economic niches to a range of private formal and informal service providers. Inclusivity in service provision is important, particularly where municipal services lack the capacity to provide a full service to poor communities and informal settlements – extending service coverage to the whole city is a key priority.

According to Senbet Elmo [2017], despite all legislations and policies in place, the municipal waste management in Shashamane, appear to be overlooked and in critical condition. Various measures taken and efforts exerted to date to improve SWM system were not in accordance to the existing policies and laws and, therefore, remained exclusive and insufficient.

It is noticed from the results of this study as the effort made by the municipality to provide efficient solid

waste management service compared with other services is poor as per the policies and regulations stated like that of other Ethiopian cities. Hence, 78.1% of the respondents revealed as the effort made by the municipality to provide efficient solid waste management service compared with other services like water, road, drainage, sheds, green infrastructure and etc is very week.

4.0. CONCLUSIONS

The analysis of the results conclude that urban households perception regarding solid waste management in the study area is quite low and uncomplimentary regardless of age, sex, educational status with the exception of house ownership and income. Poor perceptions towards waste management problems are mainly arising from the low awareness of the public, absence of good facilities to manage waste, lack of skilled manpower and resource. Regarding urban households' waste management practices in the study area there is no solid waste disposing container as a result they use private pit to store solid waste produced from the dwelling and even do not use any material to store waste. More over the result revealed that there is no access to solid waste collection service delivered from the municipality and therefore the dwellers dispose the wastes as they get the service or as the availability of the service. Households, also used unauthorized (illegal) site, to dispose their wastes simply by burning, Buried, and simply dispose the waste in and around their compound.

Coming to the good governance for municipal solid waste management in the study area, from the household survey data in Robe town we can conclude that it is very poor, and encountered with many operational challenges, most of which are associated with waste governance. The relevant urban waste management policies, strategies, plans, roles, and responsibilities are not clear for the respondents at all level and waste management services in the city is poorly coordinated and difficult to regulate. Hence, this essential service is not efficiently and properly performed by the concerned bodies of Robe city resulting in various social and environmental problems.

5.0. RECOMMENDATIONS

In light of the findings and conclusions of the study, the following recommendations are suggested:

- Robe town Municipality needs to educate and enforce solid waste management practice at household level to familiarize the community with positive perception towards solid waste management.
- Being with the stakeholders city Municipality needs to increase access to communal waste container's service in addition to consider subsidizing SWM services to assist the urban poor.
- Clear policy framework and regulations on solid waste management should be practiced, because many problems associated with managing solid wastes are related to lack of adequate attention from responsible government bodies. Policy issues that encourage private sector involvement in collecting and composting of organic solid waste should be addressed. Hence, most of the policies for penalizing illegal waste disposers do not play role as per the requirement to save the economy and environment.
- Sanitation and beautification process owner needs to strengthen supervision; monitoring and evaluation on urban waste management practices from the grass root level to maximize community participation on waste management service.
- Due to the shortage of time, budget and other material input, this study used only questioner, interview and field observation to collect data from household and officials, further applying different data collection tool with large sample size may result in identifying the challenges and opportunities in depth.

ACKNOWLEDGEMENTS

We are much obliged in thanking Robe city municipality and Health Extension workers for the technical and professional support rendered during our study.

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