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STUDIES ASSESSING SOLID WASTE MANAGEMNT SERVICE IN WOLKITE TWON

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ABSTRACT

This study is aimed at an assessment of solid waste management service in Wolkite town.in order to accomplish this objective the researcher used both qualitative and quantitative research approach. Both primary and secondary sources are used to collect relevant information. So that MSWM of the town is found in very low status and spatial coverage. This poor status of MSWM is also intensified by three critical factors. The first one is poor institutional structure and capacity of Sanitation and Beautification. The second shortcoming is limited participation and contribution of stakeholders' i.e. unsatisfactory participation of communities, the third constraint is poor households' solid waste management practices resulted from improper handling of solid waste storage materials, low level of solid waste separation and resource recovery activities, and illegal solid waste disposal system. Therefore, the best ways that used to tackle the above problems are: execution of sustainable solid waste management systems (reuse, recycle, composting, and incineration) through awareness creation and training, improvement of municipality institutional structure and capacity, and implementation of integrated MSWM rule which recognizes and comprises all stakeholders.

Table of Contents

List of tables

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the Study

The rapid urbanization that has been taking place during the 20th century virtually transformed the world in to communities of cities and towns facing similar challenges on environmental issues in which most of them have to be addressed at international level (Smith, 2010).

Among those environmental issues solid waste management is a critical one because as long as humans have been living in settled communities, solid waste generation has been an unavoidable and critical issue both in developed and developing nations. As a result, solid waste management became a worldwide agenda at united nation conference on environment and development in Riodejieneiro in 1992 with a great emphasis on reducing wastes and maximizing environmentally sound waste reuse and recycling (UNEP,1996).

Now days, Ethiopia is facing environmental crisis and it is becoming the most serious challenges of socio-economic development [kebena, 2010] In Ethiopia like other developing countries, proper solid waste management is one of the problems that are confronting various municipal authorities as it has posed threats to live and the environment. Indiscriminate disposal of effluent and toxic waste has endangered healthy living. Disposes transmission, fire hazards, atmospheric and water pollution, aesthetic nuisance and economic losses are some of the problem associated with improper management of solid waste [shyllon, 2005].

Solid waste management is defined as the collection, transportation, processing, recycling, and disposal of solid waste materials so as to reduce their effect on health, environment and aesthetics. It is highly related with urbanization and industrialization. For instance, in early societies, solid waste management consisted of digging pits and throwing garbage into them. When cities began to be more

concentrated; however, solid waste management became a serious and complex issue. Houses that did not have room to bury their garbage would throw it into the streets. In response, many cities started to set up municipal garbage collection teams which would dispose of unusable garbage. This is mainly because modern societies generate far more solid waste than early humans ever did. (sarageldin, 1995 cited in Solomon, 2009)

Therefore, this study is mainly devoted on assessing solid waste management service including solid waste collection, storage, transportation, disposal and composting in Gurage Zone, Wolkite Town.

1.2 Statement of the Problem

In adequate dry waste management has resulted in the accumulation of waste on open lands, in drains and in the living areas of many people, causing a nuisance and foul-smelling pools, environmental pollutions through leaches from (water and soil pollutions) and burning of waste (air pollution), clogging of drains, and the possible spread of disease: unattended piles of waste are a breeding place for insects and rats. This situation is believed to rest in poor environmental condition and an ever-present risk of epidemics, which in turn present a formidable threat to health and production (Zebenay, 2010,)

Municipalities throughout Ethiopia are facing a major challenge with solid waste collection and landfill management due to poor infrastructure, bureaucratic competence and limited institutional capacity of the municipalities.in Ethiopia peoples are using unsafe solid disposal practices such as open dumping, burning and buying. Selecting appropriate site and managing solid dumping in the countries with limited finance and rapid population growth rate is more sever. Dumping is a major problem especially in highly populated cities and there are ineffective legislation and structure to guide solid waste management. (Minalu,2016)

In Wolkite town there is a problem of solid waste management. Municipal office of urban sanitation of Wolkite town says that there is inefficient supply of finance, material, human resource, standardized dumping sits for solid waste management.

The only dumping sits of the town is Gassore which is improper and not standardized, and it is contributing for the disturbance of the life of local community who are living around it. Incineration in Gassore also not well managed and it is harmful. There is not composting, reuse /recycle processing of waste and the absence of waste recycling factories. There is also government awareness gap like weak mass media and so on. There is inefficient money that paid for waste disposal workers and to buy materials that need for disposal workers like, glove etc. there is also inefficient supply and long distance of containers, dust bins, cars/trucks etc. then this lead to less access of materials to collect, dispose or recycle the waste. They mix the liquid and solid wastes, dispose it in ditch and soon.

Generally, there is inadequate solid waste management leads to the pollution of the environment, affect the health of leaving things and reduce the beautifulness of the town. There is climate, air, water, soil, land pollutions and this may lead to the distraction of the ecosystem. All in all, peoples and animals are hard to live, plants are distracting and all things are becoming severe in this area.

1.3 Objectives of the Study

1.3.1. General objective

This study was aimed at assessing solid waste management service in wolkite town.

1.3.2. Specific objectives;

Having the above general objective, the study was geared to attain the following specific objectives;

To identify the mechanisms used to dispose solid wastes in the study area

To examine the existing status and spatial coverage of municipal solid waste management service in the town.

To investigate present institutional arrangement and capacity of municipal solid waste management of the town.

1.4 Research Questions

So as to achieve the intended objectives stated above, the following research questions were formulated;

1 what are mechanisms used to dispose solid wastes in the study area?

2 What is the current status and spatial coverage of municipal solid waste management of the town?

3 What is the existing institutional arrangement and capacity of municipal solid waste management of Wolkite town?

1.5. Significance of the study

This study was expected to produce the following results;

It may give some guide line information to policy makers, solid waste managers and environmental protection agencies about existing situation of municipal solid waste management of Wolkite town.

it is serve as a source of information for the municipal institution.

The study may also important in putting base for the researcher to gain experience on how to do the research and other researcher as a reference for feature study which will be conducted on related problem.

1.6. Scope of the study

Although, the problem of municipal solid waste management is an international agenda covering a number of countries in the world, the scope of this study was limited to assess the role of municipality in solid waste management: practice and challenge, the cause and effect, the current status and the existing institutional arrangement of solid waste management service in the case of wolkite town.

1.7 Organization of the Study

This paper is organized into five chapters. The first chapter deals with the introduction part such as background of the study, statement of problem, objective of the study, research Question, significant of the study &scope of the study. The second chapter of the paper contains review of related literature obtained from various published and

unpublished reference materials. Chapter three of the study describes the research design and methodology and fourth chapter deals with result and discussion, which present analysis and interpretation of data in assessing of Solid Waste management service. The last part of this paper is chapter five, which deals with conclusions, recommendation and possible solution to the problem of study.

CHAPTER TWO

2. REVIEW OF LITERATURE

2.1 Concept of Municipal Solid Waste Management

Waste means any substance which constitutes scrap materials, an effluent or other unwanted surplus arising from application of any substances or article which requires to be disposed of which has broken, worn out, contaminated or otherwise spoiled." Solid waste - can be defined as "any garbage, refuse, sludge, and other discarded solid materials resulting from industrial, commercial, agricultural operations, and community activities, but does not include dissolved materials" (Samuel, 2006).

Municipal solid waste (MSW) - refers to materials discarded in urban areas for which municipalities are usually responsible for collection, transportation, and final disposal. Municipal solid waste management - is an activity of planning and implementation of solid waste management components such as collection, transfer and transportation, recycling, and disposal MSW under jurisdiction of local government.

2.2 Sources and Types of Municipal Solid Waste

In order to categorize what exactly municipal solid waste constitutes, there have been different attempts of categorization based on numerous classification criteria. Some of those criteria are source from which solid waste emanates, and nature of solid waste components. On the basis of the nature of items that constitute solid wastes, it can be classified into organic or inorganic, combustible or non-combustible, and putrescible or non-putrescible (Edelman, 2002).

With respect to source from which solid waste emanates, categorized municipal solid waste as household (residential) refuse, institutional wastes, street sweepings, commercial area wastes, as well as construction and demolition debris. In developing countries, MSW also contains various amounts of industrial wastes from small scale industries. In these sources there are diverse types of solid wastes. But, some of typical solid wastes of those sources are described by (Dereje, 2001) as follows.

Domestic solid wastes: wastes generated from household activities such as food preparation, cleaning, fuel burning, old cloths, furniture, obsolete utensils and equipment, packaging, newsprint, and garden wastes. In developing countries, food waste and ashes dominate households' solid wastes.

Commercial wastes: waste from shops, offices, hotels, restaurants, etc. and typically consisting packaging materials, office supplies and food wastes. In low income countries food markets contribute the largest proportion of commercial waste.

Institutional wastes: waste from schools, hospitals, clinics, government offices, military bases etc., and comprise hospital and clinical wastes including potentially infectious and hazardous materials.

Industrial wastes: composition of industrial waste depends on the kind of industries involved. It consists food waste from kitchens, and canteens, packaging materials, plastics, papers and metal items.

Street sweepings: dust, soil, paper, etc. In developing countries street sweeping also include fruit and vegetable residues, household wastes dumped along roads, drain cleanings, animal manure and plant remains.

Construction and demolition wastes: its composition depends on type of construction materials used, but it typically includes soil, brick, stone, concrete, ceramic materials, wood, packaging materials and the like.

2.3 Functional Elements of Municipal Solid Waste Management

In the course of municipal solid waste management there are six functional elements. Identification of these functional elements allows description of relationships involved in each element, and development of a framework. As a result, to handle a specific solid waste management it is obligatory to observe the following six elements in combination. These are:

2.3.1 Waste Generation

Waste generation encompasses activities in which materials are identified as valueless and either thrown away or gather together for disposal. This functional element is very important because all activities that lead to identification and understanding of

solid waste generation rate, volume, composition, area specific variations of waste generation and their expected changes overtime are belong to this component solid waste management. So, this functional element is a vital stage for acquiring accurate information that is necessary to monitor existing management system and to make regulatory, financial and institutional decisions (Gebrie, 2009).

2.3.2 On site Handling, Storage and Processing

This functional element constitutes activities associated with handling, storage, and processing of solid wastes at point of generation.

Waste handling involves activities associated with management of wastes important for protection of public health and aesthetics and environment.

2.3.3 Collection

Collection involves the process of picking up of wastes from collection points, loading them in to a vehicle, and transporting it to processing facilities, transfer stations or disposal site. In general, there are four basic methods of collection described by (Tchobanolous, et al 1993cited in Ramachandra and Bachamanda, 2006):

I. Community bin- they are placed in convenient locations where community members carry waste and throw it in. This method is comparatively cheaper than other methods, and most widely adopted method in western countries. For this method to be adopted it is important that bins are covered, aesthetic, attended regularly, kept clean, easy to handle, and separate bins are provided.

II. Curbside collection - homeowner is responsible for placing containers to be emptied at the curb on collection day and for returning empty containers to their storage location until the next collection.

III. Block collection- collection vehicles arrive at a particular place or a set day and time to collect waste from households. Households bring their waste containers and empty directly into the vehicle. This method requires a higher homeowner cooperation and scheduled service for homeowner collaboration.

Iv. Door to door collection- waste is placed at doorstep at a set time when waste collector arrives. In this method, collector of waste has the responsibility to collect

waste separately. This method is very convenient for households, however requires homeowner cooperation.

2.3.4 Transfer and Transport

These activities are associated with transfer of wastes from public storage facilities to collection vehicle and the subsequent transport of wastes to disposal site. Transfer refers to movement of waste or materials from primary collection vehicle to a secondary, larger and more efficient transport vehicle. When location of final disposal site is at a long distance from points of collection, transfer stations may be used. With respect to transfer stations, “there are two basic modes of operation: direct discharge and storage discharge. In storage discharge refuse is first emptied from collection trucks in to a storage pit or to a large platform. While in direct discharge station, each refuse truck empties directly in to larger transport vehicles” (Meenakshi, 2005).

2.3.5 Processing and Recovery

Solid waste processing and recovery has been carried out beginning from separation and processing of wastes at the source. But, separations of mixed wastes usually occur at materials recovery facility, transfer stations, combustion facilities and disposal sites. This functional element includes all techniques, equipments and facilities used both to improve the efficiency of other functional elements and to recover usable materials, conversion products, produce energy, and compost from solid wastes. In addition, it also provides several advantages. First, it can serve to reduce total volume and weight of waste material that requires collection and final disposal. Volume reduction also helps to conserve land resources since land is the ultimate sink for most waste materials. On the other side, it also reduces total transportation cost of waste to its final disposal site (Uriarte and Filemon, 2008).

2.3.6 Disposal

This is final functional element in solid waste management system. Disposal activities are associated with final dump of solid wastes directly to a landfill site. Today disposal of wastes by land filling or land spreading is the ultimate fate of all solid wastes whether they are residential wastes, or residual materials from materials recovery facilities. “However, in most developed countries this method is officially

banned allowing only sanitary landfill for final disposal. “Though it is the most common technology around the world, conventional and environmental unfriendly methods such as open-burning, open-dumping, and non-sanitary landfill can still be used as disposal method” (UNEP, 2009).

2.4 Sustainable Municipal Solid Waste Management Methods

2.4.1 Incineration

Incineration is one option for sustainable solid waste management. It is defined as the process of burning solid waste under controlled conditions to reduce weight and volume of solid waste, and often to produce energy. This process is really waste reduction, not waste disposal, though following incineration ash must still be disposed. It is recognized as a practical method of disposing of certain hazardous waste materials (such as medical waste). Incineration can be carried out both on a small scale by individuals and on a large scale by industry.

2.4.2 Composting

It is a process of allowing biological decomposition of solid organic materials by bacteria, fungi, worms, insects, and other organisms in to a soil for transforming large quantities of organic materials to compost (humus like materials). “The organic materials produced by composting can be added to soil to supply plant nutrients such as nitrogen, phosphorus, potassium, iron, sulfur, and calcium, slow soil erosion, make clay soils more porous or increase water holding capacity of sandy soils” (Enger and Smith, 2008).

2.4.3 Reuse and Recycling

Reuse involves cleaning and using materials over and over. In other words, it means the use of a product more than once in its original form for the same or a new purpose. It relays on items that can be used over and over instead of throw away items. This method is used to decrease the use of matter and energy resources, cuts pollution, creates local jobs, and saves money (Miller, 2007). “Reusing is more efficient and better than recycling and composting methods because cleaning and reusing materials in their present form avoids the cost of energy for remaking them in to something else” (Cunningham,2008)

Recycling is both environmental and economical issue. Many peoples are motivated to recycle because of environmental concern i.e. it reduces pollution, it also save energy, space and resources, helps to protect biodiversity and reduce litter. Economically, it can save money for items like paper, metals and some plastics, and generally it is important part of economy. However, there are also some critics forwarded on recycling dominantly on economic aspect of its benefits. Economists say that recycling does not make sense if it costs more to recycle materials than to send them to a landfill or incineration. They also forwarded that recycling is often not needed to save landfill space because many areas are not running out of it (Miller, 2007).

2.5 Relationship between Institutional Capacity and Provision of Municipal Solid Waste Management

First of all, Institutional capacity means "the ability of institutions to perform functions, solve problems, and set and achieve objectives in a sustainable manner" (Abeje, 2009).

According to Hilderbrand & Grindle's in Watson (2004) capacity of an institution to deliver municipal solid waste management is mainly depend on three factors. These include; 1) capacity of individuals to perform their job or tasks; 2) considerations of structure and culture characteristics of organization and its leadership; and 3) institutional context of public sector and expansion of the task network.

A. The capacity of individuals to perform job or tasks

Environmental capacity building initiatives have not only stressed the importance of organizational and institutional strengths, but also the abilities of agents, the role of human capital, technical expertise and functional skills needed to carry out environmental protection measures. In relation to solid waste management, "the capacity of an individual is expressed based on the will and ability to set MSWM objectives and achieve them using one's own knowledge and skill, linguistic

competence, expertise, will and sense of responsibility" (JICAIIC, 2005). "Strengthening the efficiency of environmental protection through capacity building has therefore focused increasingly on improving skills of individual through varies training.

B. Structure of the organization and task networks

For the purpose of evaluating institutional capacity for MSWM, it is more important to examine the present level of cooperation between government agencies charged with waste management responsibilities; the present state of solid waste management policy; efforts undertaken for its implementation and the level of cooperation between its implementing agencies; and the level of municipal government financial and decision-making autonomy for determining appropriate waste management options for their area (Watson,2004).

Specifically, organizational capacity for MSWM can be viewed in terms of, human aspect (human resource in the engineering, management, and planning sections in MSWM, including the development of such resources), physical assets(facilities, equipment's, land, fund, and capital all required to provide MSWM), intellectual assets (expertise in MSWM system; statistical information including waste flows, literature; manuals; and research data, organization forms, management, leadership, and ownership that can put these assets to good use, and also a shared awareness with in organizations (JICAIIC, 2005).

C. Institutional context of the public sector and expansion of the task network

Institutional context refers to the environment and conditions necessary for demonstrating capabilities at the individual or organizational level, including the decision-making process, systems and frame works necessary for the formation, implementation of policies and strategies that are over and above an organization. As a result, for better provision of solid waste management service it is necessary to have the following capacities;

• Formal legal framework, laws, decrees and ordinances that define wastes and clarify where the responsibility for waste management lies. And formal regulations and standards on management, treatment and disposal of wastes; standards on waste

generation rates, environmental standards; and legal force.

• Articulated solid waste management policies, policy objectives.

• Social infrastructure for solid waste management services, social organizations involved in solid waste management NGOs, formal and informal recycling markets and industries.

• partnership designed to ensure that the opinions of local residents and communities are taken account of good governance, involving a partnership between all stakeholders in MSWM, Social ownership of the

implementation of solid waste management (public feeling, consensus or willingness to work together, etc. (JICAIIC, 2005).

2.6 Municipal Solid Waste Management in Developing Countries

The rapid extent and nature of urbanization in developing countries made MSWM as a major issue of concern in those countries. the existing MSWM of developing countries fail to catch up with the rapid increase of solid waste production in these countries. As a result, in poor suburban zones indiscriminate disposal of solid waste at river sides, roadsides, and other open spaces are common" (Gebrie, 2009).

Transport of waste from households, commercial areas, institutions and other generation sites is also a growing problem in developing countries. The transport of waste becomes longer and more time consuming, and hence, more expensive and less efficient. In developing countries many sources of waste might only be reached by roads or alleys which may be inaccessible to certain methods of transport because of their width, slope, congestion, and surface. This is especially critical in unplanned settlements such as slums or low-income areas. In addition to this vehicles that serve for waste transports are also outdated, poorly maintained and frequently out of action (zerbock, 2003).

The operational inefficiency of MSWM in developing countries is also further reflected in resource recovery. Although the material recovery from the waste stream has a great potential in economic as well as environmental point of view, municipality and formal private sector contribution in this activity is minimum. Besides this, waste

disposal is also a neglected area in many low-income countries and causes for environmental health hazards. Most of municipal solid wastes in developing countries are dumped on land in a more or less uncontrolled manner. These dumps make very uneconomical use of the available space, allow free access to waste pickers, animals and flies and often produce unpleasant and hazardous smoke from slow-burning fires (Zurbrug, 2003).

2.7 Constraints of Municipal Solid Waste Management in Developing Countries

As it is noted earlier a typical solid waste management system in a developing country displays an array of problems including low collection coverage and irregular collection services, and crude open dumping and burning without air and water pollution control. These problems are caused by various factors which constrain development of effective municipal solid waste management systems. They can be categorized into technical, financial, institutional, social constraints, and awareness and attitudes (Ogawa, 2002). Each of these constraints is discussed below.

2.7.1 Human and Technical Constraints

In most developing countries, there is lack of human resources and technical expertise both at national and local levels. Many officers in charge of municipal solid waste management, particularly at the local level, have little or no technical background or training in engineering or management (Ogawa, 2002). This is a main reason for lack of comprehensive waste management planning in developing countries.

2.7.2 Financial Constraints

MSWM is given low priority in developing countries; as a result, very limited funds are allocated to the sector by government. This problem is acute at the local government level where local revenue collection system is inadequately developed and financial base for public service including MSWM is weak. In addition to limited funds, many local governments in developing countries lack good financial management and planning. For instance, “in a developing country town over 90% of annual budget provided for solid waste management was used up within first six

months. Lack of financial management and planning, particularly cost accounting depletes limited resources available for the sector even more quickly and causes solid waste management services to halt for some periods, thus losing trust of service users"(Gebrie 2009).

2.7.3 Institutional Constraints

The waste management regime in developing countries is seldom integrated, and there is often no clear assignment of responsibilities and schedules among the organizations involved. Furthermore, there is often no umbrella organization to coordinate overlapping responsibilities for waste management that involve more than one agency. This situation not only hinders effective implementation of waste management operations, but also produces confusion in relation to technical cooperation and assistance projects among donors. Along with these organizational and structural problems, lack of an effective legal system and technical standards constitute a major constraint. Legal provisions related to solid waste are often incorporated as fragmented elements in disparate laws, such as laws for public hygiene, local administration, and environment protection Generally speaking, there is no integrated legal framework to deal with waste management in developing countries.

2.7.4 Social Constraints

Social status of solid waste management workers is generally low both in developed and developing countries, but more severe in developing countries than developed countries. Such people's perception leads workers to disrespect their work and in turn produces poor quality of their work. At dump sites, transfer stations, and street refuse bins, waste picking or scavenging activities are common scenes in developing countries. People involved have not received school education and vocational training to obtain knowledge and skills required for other jobs. They are also affected by limited employment opportunity available in formal sector. The existence of waste pickers (scavengers) creates often an obstacle to the operation of solid waste collection and disposal services. However, if organized

properly their activities can be effective in waste management system. Such an

opportunistic approach is required for sustainable development of solid waste management programs in developing countries (Ogawa, 2002).

2.7.5 Awareness and Attitudes

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).

2.8 Municipal Solid Waste Management in Ethiopia

Solid waste management is becoming a major public health and environmental concern in urban areas of Ethiopia. Rapid growth of urban population and solid waste management are some of the main challenging problems for developing countries and the waste disposal habit of the community causes the deterioration of the environment(Puttam,2011). As a result, since Ethiopia is one of the developing countries, the urban areas have problem of solid waste management, which has its own negative impact on the environment. improper and insufficient solid waste management is causing serious environmental and sanitary problems. (Negatu, et.al,2011), forwarded that uncollected garbage is a serious environmental hazard for all urban centers of the country, especially in urban areas where the roads within the town or city are not accessible for collection by municipality and these cause bad smells and attract various disease vectors and pests resulting in low aesthetic quality of the towns.

The involvement of private sectors is also very limited, but currently a number of micro and small-scale enterprises are emerging to participate in primary solid waste collection i.e. collect garbage at source from households and transport it to the

municipal waste containers and transfer points. To sum up the real situation of MSWM in Ethiopia indicates that the problem of solid waste cannot be solved only by mere effort of municipal government, there should be large involvement of the private sectors in general and participation of micro enterprises and community in particular (Abebe,2006).

CHAPTERTHREE

3. Research Design and Methodology

3.1Description of the study area

3.1.1 Location of the study area

in the study area of Wolkite it is found at the main road between Addis Ababa and Jimma at a distance of 155 k/ms south -west of Addis Ababa. It belongs to the Southern Nations, Nationalities and Peoples Region and it is capital of Gurage Zone. It is also serves as center for two rural administrative woredas, namely Abeshge and kabana woredas. The geographical location of the town is approximately 8 33' latitude and 37 59' longitude E'. The average elevation of the town is about 1870m above sea level (zewude, 2009).

3.1.2. Population of the study area

According to Wolkite town administrative office source in 2010 report, the population of the town is estimated to be 64,319 from these 32,802s are female and 31,516s are male.

3.1.3 Land and settlement

The population is multi-ethnic, the Gurage constituting the majority. Most of dwelling and other houses in the town have corrugated iron roofs, but some poor households

At the periphery of the town have that Chap roofs. It spread over a gross area of 1,132 hectares of land, of which 740 hectares (65.4percent) is developed and the remaining392 hectares (34.6percent) is not developed or used for house building purpose. The developed part of the land that is used for settlement, commercial purpose, industry areas, construction of different social and economic institutions. The settlement pattern of the population is about 4000 people per square kilo/mater (zewde, 2009)

3.2. Research Design

The research design refers to the overall strategy that helps to choose to integrate the

different components of the study in a coherent and logical ways. To conduct this study, the researcher will apply or use a descriptive type of research design. The reason to use this type of research design is that the researcher describing the existing situation and events in the urban solid waste management services and reducing the environmental problems. In addition to this descriptive research design helps to provide answers to the questions of who, what, when, where and how associated with a particular research problem plus to obtain information concerning the status of the certain phenomena or an issue that the specific point at the study area.

3.3. Sources and Nature of Data

In this study the research team used the primary and secondary source of data

3.3.1. Primary Sources of Data

Primary source of data is necessary to get information from the the respondents directly through interview and questioner.

3.3.2. Secondary Sources of Data

The Secondary source of information which was used as government publication, report of different international institutions, library books, online searches about issues related to the problems of solid waste management and to establish a conceptual and theoretical background of the study. In addition, different documents on solid waste management in Ethiopia in general and in Gurage zone, Wolkite town administration in particular will use from regional and local government offices especially, offices like Wolkite town administration, municipality, environmental protection authority, etc.

3.4. Sampling size and Sampling technique

To conduct this study the research team has employed purposive sampling technique for selecting the study area and municipality and accidental sampling for local community. The reason for the researcher was apply a purposive sampling technique is, because of the fact that purposive sampling techniques is better to get quality

information from knowledgeable informants or respondents. Accidental sampling for local community because of high population of town and time and finical constraint. The research team select Wolkite town for study area because of the seriousness of the problem is increased from time to time within the population growth.in Wolkite town consisted of six kebelles the researcher select one kebelle (edget ber) because of all kebelle of the town are mostly the same of solid waste management problem. Topography and climate are mostly similar. The target population of the study is 2851 from this 1438 are female and 1383are male. the research team was use 36 sample, including municipality of urban sanitation and local community ware used. From this one(1) of them was be used from municipal officers and 35 of them are from local community .For municipality also purposive sampling technique will be used, because of to get detail information about the issue. Accidental sampling technique was be use for selecting sample from local community to get information about the issue under the study.

3.5 Data Collecting Instruments

In order to investigate important aspects of solid waste management. Therefore, the research team has selected different data collection instruments such as questionnaire and interview. Interview was conducted with urban sanitation and beautification officers of the town. The questionnaire was used to collect data from the sampling local people and municipal worker.

3.6 Method of data analysis

The study was focus on both qualitative and quantitative research approach for data interpretation and analysis. The researcher was used qualitative and quantitative type of research method. Because, qualitative type of research method is very important in conducting social science research to investigate and critically analyzing existing data. Qualitative research has more focus on describing a certain situation, phenomenon or event and quantitative approach is focus on the list of table qualitative research is important to describes how peoples understand and explain a certain situation or events. It gives due attention to behavior, motivation and attitudes of

people. (Kumar 2007) our research finding is related to attitudinal and behavioral motivation of local community and municipality in solid waste management.

Finding which reflects a high magnitude of the problem where selected from interview and questionnaire. More over the raw data analysis present, interpret, a given solution for research problem by using statement as well as tabular and percentage description. The issue raised here needs description. So the data gathered from purposively from the municipal officer and accidental sampling from local community for the selected respondents through method of interview and questionnaire were added. The data was written in Amharic was be translated in English. then the organized data was interpreted and analysis using thematic arrangements.

3.7. Ethical Considerations

The researcher considers the research value of voluntary participates, confidentiality, anonymity, to ensure the protection of respondents from any possible harem that will be arise of from participating in the study. Those are the researcher clearly introduced the purpose of the study as Governance fulfillment of a degree study program and requested the respondent to participates in the study voluntary basis such that refusal from participating will be permitted. The researcher also assured the local communities' confidentiality of the information give and protraction from any possible harm that will be arise from the study. And finally the researcher will provide gratitude to the respondent after interviews.

CHAPTER FOUR

Results and Discussion

4. Introduction

In This chapter the major findings of the study were summarized. The main objective of the study was concerns on an assessment of solid waste management service in Wolkite town. To conduct this research the researchers were obtained both qualitative and quantitative types of data through different instruments such as questionnaire and interview. In his regard the quantitative data was obtained from selected respondents by distributing questionnaire and interviw from Wolkite town municipality officer. Accordingly, researchers were analyzed the backgrounds of the respondents, The mechanisms that helps to dispose solid waste management, the current status and spatial coverage of municipal solid waste management of the town and, the existing institutional arrangements and capacity of municipal solid waste management of Wolkite town were analyzed us follow in terms of sentences, frequency, percentage and tables.

In order to fill this researcher, investigate household solid waste generation rate and physical composition since the majority of solid waste constituents of the town are comes from households. Therefore, reliable and accurate data about these elements is very decisive.

4.1. Background of participants of the study

This section illustrates about sex, age, educational background and house ownership status of the participants.

Table 1: sex composition of respondent.

SEX	*Category*	*Frequency*	*Percentage*
	Male	*15*	*42.9 %*
	Female	*20*	*57.1 %*
	Total	*35*	*100 %*

Source servey data 2019

As it indecated in the above table about 15(42.9%)of them are male and More than half of them 20(57.1) are females. This was due to the fact that most of the time females stay and work inside their house rather than working outside. Such dominance of women is appreciated and important for this research since women have better knowledge than men about their residence solid waste property and its handling.

Table 2. age composition of respondent

Age	*Under-19*	*3*	*8.6 %*
	20-31	*16*	*45.7 %*
	32-43	*12*	*34.2 %*
	44-55	*4*	*11.4 %*
	Above-56	*0*	*0*
	Total	*35*	*100 %*

Source servey data 2019

As it indecated from the above table with respect to sex composition of the sample respondent included are below 19 age are (8.6%),(20-31) of them are (45.7%) this is imoprtant to know the rule and regulation and undestaned easly,(32-43) of them are (34.2%) and (44-55) of them are (11.4%)

Table 3. educational level of respondent.

Level of education	*No formal education*	*5*	*14.3 %*
	Primary level education	*9*	*25.7 %*
	Secondary level education	*9*	*25.7 %*
	Diploma and above	*11*	*31.4 %*
	Total	*35*	*100%*

Source survey data 2019

As it indicated from the above table, with respect to educational level great number of respondents (25.7%) primary education, (25.7%) 0f secondary education and Diploma and above are (31.4%) these educational characteristics of sample household also resulted positive impact to get brief and correct response.

Table 4. house ownership condition of sample house holed.

House ownership condition	*Type of response*	*frequency*	*Percentage*
	Private rental house	*24*	*68.6%*
	Keble rental house	*0*	*0*
	Private house	*11*	*31.4%*

	Total	*35*	*100%*

Source survey data 2019

As it indicated in the table above with respect to house ownership condition from the total respondent 24(68.6%) of them are private rental house. This is one of the problems to show households lake of responsibility to manage their Owen solid waste and 11(31.4%) of them are there Owen private houses. This is important to responsiveness of the problems and managing their solid waste in your surroundings.

4.2. The mechanisms used to dispose solid wastes in Wolkite area

Proper solid waste management is one of the problems that are confronting various municipal authorities as it has posed threats to live and beatification of the environment. However, it is possible to minimize and solve these problems through strictly planning and implementing different municipal solid waste management components. The first and the most prerequisite step for provision of efficient solid waste management system by municipality. Most of them are effectively implement rule and regulation of the municipality; door to door collection system, recycling and reusing that generated in household and to use other mechanisms are analyzed. This is supported by the response of respondent. the mechanisms are considered as a baseline for the rest of municipal solid waste management components for appropriate management of municipal solid waste of Wolkite town, reliable and accurate data about these elements is very decisive.

In order to fill this researcher investigates household solid waste management mechanism and physical composition since the majority of solid waste constituents of the town are comes from households.

Table 5. Type of solid waste storage material used in dwelling

The researchers were asked the respondents about what kind of materials used to dispose solid wastes. In Wolkite town the urban dwellers were applied to solid waste management methods and stock materials such as sack, baskets, metal containers, plastic containers and soon. More clearly, the result was summarized us follow in the table found below.

Type of material	*Frequency*	*Percentage*

Sack	*11*	*31.4 %*
Basket	*10*	*28.5 %*
Metal container	*2*	*5.7 %*
Plastic container(festal)	*10*	*28.7 %*
I do not use	*2*	*5.7 %*
Total	*35*	*100 %*

Source survey data 2019

From the above table, we can understand that (31.4) used sack. (28,5) used basket, (5.7) used metal container (,28.7) used in plastic container and (5.7) of them are don't use any material, this is highly related with list cost of sack, basket and festal and easily availability of the market and its suitability for holding large volume of waste. Metal container are the list used storage malarial and its difficult for transportation and high cost in the market. This is the most widely used materials to dispose solid wastes in Wolkite town. More generally, this show most of the household can use materials in the dwelling area.

based on information obtained from interview, it forward that materials used for solid waste management is mainly under taken by very inefficient equipments and technologies due to low level of economic development and low attention given to this service. Some of them are handcart this is mostly used by informal enterprise, spade, car, gauntlet and other materials are used for solid waste disposal service by municipality of Wolkite town. Obviously, these amounts of equipment or facilities are not sufficient to convey the service when we compared with the rapid expansion of the town and the level of increasing waste generation rate of the society.

Table 6. Do you separately store solid waste in your dwelling?

Type of response	*No of respondent*	*Percentage (%)*
Yes	*33*	*94.2 %*
No	*2*	*5.8 %*
Total	*35*	*100 %*

Source survey data 2019

From the above table the response of the sample household's solid waste separation activities in the town, only solid waste that are sellable to exchangeable to liwach, and to some extent organic waste are separated. Supporting to the researcher response of

sample also show that about (94.2%) of them are separately store solid waste which are sellable to quraleos and exchange with liwach. Households awareness about usefulness of such discarded waste for quraleos and liwach together with low economic performance led households to separately store such wastes and generate income and new equipment to their household. This is one of the mechanisms to decries the volume of solid waste. This is important and encourages to separately storing solid waste to the environmental safety.

Table 7. Material used for solid waste separation

Type of material	*Frequency*	*Percentage (%)*
Metal	*18*	*51.4%*
Plastic	*1*	*2.8%*
Glass, bottles etc..	*4*	*11.4%*
Textile and old shoes	*3*	*8.5%*
Other	*11*	*31.4%*
Total	*35*	*100%*

Source survey data 2019

From the above table show that such materials used for solid waste separation of the different dwelling of the town is existed. (94.2%) of sample households are separately stored by such small number of households some of them are (51.4%) are metal, (2’8%) of them are plastic, (11.4%) of them are glass, bottles etc., (8.5%) of them are textile and old shoes and (31.4%) of them are others. This type of material used for solid waste management one mechanism to reduce the effect of solid waste problem. It is related with economic performance of sample household and important to gate new equipment to help for households.

Table 8. What are the purposes to store solid waste in owner environment?

Type of activity	*Frequency*	*Percentage (%)*
Using as fertilizer	*5*	*14.2%*
Giving to other user	*8*	*22.8%*
Use as fuel	*2*	*5.7%*
To reduce volume of waste	*18*	*51.4%*
Other	*2*	*5.7%*
Total	*35*	*100%*

Source survey data 2019

From the above table show that waste separation activity of households are used for

different purpose. The sample show that (14.2%) of them are used for fertilizer, (22.8%) of them are giving to other, (5.7%) of them are used as fuel, (51.4%) of them are to reduce volume of waste and (5.7%) of them are other activity. this show that (51.4%) of them are activities to reduce volume of waste means paper and other burnable solid waste for reducing the volume of waste by burning, makes throwing convenient and contributing to environmental protection.

Table 9. do you recycling and reusing solid waste generated from your house?

Type of response	*No of response*	*Percentage (%)*
Yes	*11*	*31.4%*
No	*24*	*68.6 %*
Total	*35*	*100%*

Source survey data 2019

From the above table, according to sample it shows that recycle and reuse is the major mechanism used to dispose solid waste. From the respondent 68.6% of them are does not any idea about recycling and reusing solid waste and 31.4% of them are who have awareness about the concept of recycling, reusing and preparation of compost. But its participation of society is to use this mechanism is still very low even as it is compared to separation of solid waste. So, there is lack of awareness about sustainable solid waste management practice within the society. Since reusing and recycling concept are conceded as pillars of sustainable solid waste management. reuse and recycling are the major mechanism used to dispose solid waste. This is one of the major problems of the society used to dispose solid waste sustainably.

Table 10. Frequently use to dispose the solid waste

Place of disposal	*No of response*	*Percentage (%)*
At the rode side and open fields	*5*	*14.2(%)*
Dumping in river side and gullies	*4*	*11.4 (%)*
Burn in my compound	*22*	*62.8 (%)*
Simply dispose in my compound	*4*	*11.4 (%)*
Total	*35*	*100 (%)*

Source survey data 2019

From the above table show that based on simple respondent household dispose at the rode side and open fields are (14.2%), dumping in river side and gullies are (11.4%),

burn in my compound are (62.8%), and simply dispose in my compound are (11.4%).this result show that door to door solid waste collection of the town is very insignificant in coverage and effictivity.so most activity of household are burning paper and related burnable waste materials.. As a result, the solid waste option of majority households is restricted to some choice.

Table 11. Do you have a container in place of your surrounding?

Type of response	*No of respondent*	*Percentage (%)*
Yes	*10*	*28.5 (%)*
No	*25*	*71.5 (%)*
Total	*35*	*100 (%)*

Source survey date 2019

As it is observed in the above table large number of households (71.5%) preferred improper and unauthorized solid waste practices. This confirmed that the destination of the majority of uncollected solid wastes of households are in roads, sewers ,river banks, valleys, gullies, bridges, and open areas. This improper disposal of solid waste exposed communities to different respiratory and water borne diseases.

Table 12. do you participate in a cleanup campaign in your kebelle?

Type of response	*No of response*	*Percentage (%)*
Yes	*11*	*31.4 %*
No	*24*	*68.6 %*
Total	*35*	*100 %*

Source survey data 2019

As it has indicated in the above table, show that only 31.4% of them are participating to clean up campaigns, (68.6%) of households do not participate in cleanup campaigns. It is one of the weaknesses of municipality to encourage the society in cleanup campaigns.

Based on information it obtained from interview, Apricating to participate and involving the community to clean the environment. Cleaning areas which are characterized by illegal solid waste disposal and change them. Improving the status of MSWM by participating the community. Encouraging the participation of informal enterprise through giving training and support.

Table 13. Do you know the rule and regulation of solid waste managements of the town?

Type of response	*No of respondent*	*Percentage (%)*
Yes	*22*	*62.8%*
No	*13*	*37.2%*
Total	*35*	*100%*

Source survey data 2019

From the above table show that, from the respondent 62.8% of them are to know the rule and regulation to municipality, (37.2%) of the respondent does not know the rule and regulation of solid waste management. This is one problem of to effectively manage solid waste. Lake of awareness is one of the factors that affect the environment beautification.

Based on the information obtained from interview, The overall institution structure, mandate and function of sanitation and beautification of the town. It forwards that keeping the town neat and comfortable to its dwellers is the primary objective. In addition, the municipality explained that, it is involving few micro enterprises on solid waste management. The municipality of Wolkite town set its goals and objective in its strategic plan. Accordingly, the goal that the municipality has set to make Wolkite town clean, beautiful suitable for residences as well as work and its set objective.

the municipality officers the reason behind this inadequacy of manpower is lack of budget and low attention given by government. On the other hand, with respect to qualification of workers most of them are assigned in appropriate position.

4.3. The current status and spatial coverage of municipal solid waste management of the town?

the current status to effectively and proper management solid waste also requires proper disposal of waste in a proper place. In this case Wolkite town to select solid waste disposal site and its management is the major objective of municipality. This related question is analyzed below.

Table14. Do you obtain training or education about environment and solid waste management?

Type of response	*No of respondent*	*Percentage (%)*
Yes	*9*	*25.7 (%)*
No	*26*	*74.3 (%)*

No	*35*	*100 (%)*

Source survey data 2019

As it has revealed in the above table large number of households (74.3%) do not have clear and adequate awareness about proper solid waste management and the society to give low emphasis to sustainable solid waste management.

Based on information During interview, it forward that why public solid waste are dumped in the major road of Wolkite town because of lake of awareness to manage the solid waste because solid waste collection and management is considered as only the responsibility of municipality. It is using open dump site, which harm the environment.

Tables 15. Do you believe that the municipality has enough material?

Type of response	*No of response*	*Percentage (%)*
Yes	*14*	*40 %*
No	*21*	*60%*
Total	*35*	*100%*

Source survey data 2019

As it observed from the above table, we can understand that 60% of them does not know about the municipality enough material used to dispose solid waste from the environment.

Table 16.1. Is the municipality agent prepared clearly stipulated area?

Type of response	*No of response*	*Percentage (%)*
Yes	*24*	*68.5 (%)*
No	*11*	*31.5 (%)*
Total	*35*	*100 (%)*

Source survey data 2019

Table 16.2. is residence of the area affected by the disposal waste

Type of response	*No of response*	*percentage*
yes	*33*	*94.2%*
No	*2*	*5.8%*
total	*35*	*100%*

Source survey data 2019

As it observed from the above table, we can understand that (31.5%)of them are don’t

know the disposal area and it is not dispose solid waste properly.

(68.5%) of household are to know the stipulated area used to dispose solid waste that collected from urban household. But the society that live in the disposal area are mostly affected by the disposal waste that collected from surrounding area and (31.5%) of them are don't know and it is not dispose solid waste properly.

Based on the information obtained from interview, Solid waste collection and transportation is not an end to solid waste management. Proper solid waste management also requires proper disposal of waste in a proper place. In sight of this Wolkite town solid waste disposal site and its management is inadequate and below the standard. The site selection involves proper study of the site in relation to its topography, distance from incompatible land uses and acceptance by the local community.

Table 17. Is the sanitation agent making supervision and control illegal damping?

Types of response	*Frequency*	*percentage*
Yes	*20*	*57.1%*
No	*15*	*42.9%*
Total	*35*	*100%*

Source survey data 2019

As it observed from the above Table, we can understand that (57.1%) of them are supervised by municipal agent and 42.9% of the respondent show that does not control the illegal damping of solid waste

4.4. Institutional Arrangement and Capacity of Municipal Solid Waste Management Service of Wolkite Town

One of the basic services that are currently receiving wide attention in many towns of Ethiopia is municipal solid waste management. This is mainly because solid wastes that are generated in most towns of Ethiopia are not appropriately handled and managed. In Wolkite lake municipal solid waste management service the major problem.

Table 18.1 Do you gate door to door collection service by municipality?

Type of response	*No of response*	*Percentage(%)*

Yes	*23*	*65.7 (%)*
No	*12*	*34.3 (%)*
Total	*35*	*100 (%)*

Source survey data 2019

Table 18.2 Date of interval to gate door to door service by municipality

Date of interval	*1-3*	*4-7*	*8-15*	*16-30*	*30 and above*	*total*
Frequency	*2*	*2*	*4*	*4*	*11*	*23*
Percentage	*5.7 (%)*	*5.7 (%)*	*11.4 (%)*	*11.4 (%)*	*31.4(%)*	*65.7 (%)*

Source survey data 2019

From the above table response of household shows door to door collection service is one of the most common methods of solid waste collection system.

But (34.3%) of them are don't give the service of municipality and most society given the service are rare 30 day and above.

This method is largely implemented for collection of solid waste from residential area. It is provided by municipality and informal waste collectors.

Table19. How to evaluate the service of neighborhood by municipality?

Level of response	*No of response*	*Percentage*
Very low	*9*	*25.7 (%)*
Low	*3*	*8.5 (%)*
Medium	*20*	*57.1 (%)*
High	*3*	*8.5 (%)*
Total	*35*	*100 (%)*

Source survey date 2019

As it observed in the above table, we can understand that (25.7%) of them are very low and (8.5%) of them are low this show some part of the society does not give adequate service by municipality, (57.1%) of them are believe that medium service is given to neighborhood.

Based on information obtained from interview, It forward that common perception that improving solid waste management means making waste collection and disposal systems more efficient, raising public awareness and enforcing solid waste management laws. However, a prerequisite for all these factors are a well-planned management operating within an enabling institutional framework and capable of

generating financial resources required to meet the goal. So, in order to build an acceptable and satisfactory level of MSWM service, the responsible institution primarily need to have well organized management that functions within an adequate institutional arrangement, skilled manpower and financial resources, appropriate rule and regulation, short- and long-term strategy, and good cooperation with different stakeholders.

Table 20. Are you satisfied with the MSWM service of the town delivered by municipality?

Type of response	*No of response*	*Percentage (%)*
Very satisfied	*7*	*20 %*
Satisfied	*5*	*14.2%*
Fairly satisfied	*14*	*40%*
Dis satisfied	*9*	*25.7%*
Total	*35*	*100%*

Source survey data 2019

As it observed in the above table, response of household is (20%) of them are very satisfied, (14.2%) of them are satisfied, (40%) of them are fairy satisfied and (25.7%) of them are dis satisfied from the total sample. we can understand from this some activity are working by municipality but it does not cover all areas of the country.

Based on information obtained from interview, it forward that the coverage of solid waste collection, transportation and disposal service the rapid rate of urbanization of Wolkite town and parallel increment of its solid waste volume are adding burden to the municipality of the town. It totally engaged in collection, transportation and final disposal of solid waste as the only means of municipality solid waste management.

This is attributed to lack of commitment, finance and material resource and the department has very few manpower and this condition can be considered as a major problem for the existing MSWM activity of the town.

CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This paper has attempted to analyze the assessment of municipal solid waste management service of Wolkite town. These investigations were addressed by employing questionnaires and interview with the municipal official and reviewing published and unpublished documents. on the basis of qualitative and quantitative analysis of data, the findings of this study are summarized as follows.

Finally, this research investigated three main factors which are exacerbating the existing poor status of municipal solid waste management service of wolkite town. These are:

1.weak institutional arrangement and capacity of municipality of the town: municipality is measured by delay in implementation of activities, lack of practical involving other sector and society and high burden of work. In terms of capacity, very poor institutional capacity of the department is very low financial capacity, absence of cost recovery mechanism, insufficient manpower resource, scarcity of solid waste management facilities and weak enforcement of rules and regulations

2. very poor solid waste management practice of the households

The first weakness of households is poor handling of temporary storage material of their house. I.e. they drop out solid waste around it. They also exposed it to rain and did not well covered, and placed near to residence.

3.very limited participation and contribution of stakeholders

The provision of municipal solid waste management of the town is dominantly performed by municipality with very limited contribution of

others, and communities.

This study also indicated that Wolkite town municipal solid waste management service is not sufficient in terms of status, spatial coverage and solid waste management facility. Presently, in the town there is lake of public solid waste storage containers and road side dust bins.

Generally, sustainable solid waste management is the need to effective participation of individual, municipal officers, community or household, governmental organization, non-governmental organization and another related stakeholders' involvement. The municipality is the frontline actor in planning, organizing, monitoring, and implementing the overall Solid Waste management. This sustainable solid waste management by using the practice of incinerations, composting reuse and recycling, effectively implement rule and regulation and transportation to proper place is the most important mechanisms.

5.2 Recommendation

Based on the findings of this study, the following measures are very important to overcome MSWM problems of Wolkite town:

1. This Mechanism to dispose solid waste management are important to do the following point.

The need to sustainable solid waste management important to coordinately working households, non-governmental organizations and other stakeholders by using to involving or participating to work jointly.currating awareness and knowledge about solid waste management to the community. So that the municipality of the town should deliver adequate training and awareness creation to residents about side effects of solid waste, and application of sustainable solid waste management practices. In this case, there is a need to give special attention to women who are the most powerful change agent.

Organize efficient controlling mechanism and sanitation agent to prevent illegal solid waste disposal. Effectively implement the mechanisms used to dispose solid waste like incinerations, composition, reuse and recycling and disposal to appropriate places are important. Prepare specific implement rule and regulation under close supervision and inter organizational linkage.

2. Currently institutional related measures are important so to do the following point is important.

- ❖ Give majority of MSWM related mandates to municipality of the town since the fundamental part of MSWM activities are performed by this body.
- ❖ The town municipality should give priority to fulfill infrastructure facilities and increase the number of collection track. i.e. place back the public solid waste containers and introduce dust bins with a close supervision, frequent emptying of waste and even distribution.
- ❖ Increase municipality revenue through employing different revenue means like introducing user charges, penalties for persons who illegally dispose their waste, employing resource recovery activities, and government subsidies.
- ❖ Improve the number and productivity of sanitation workers by giving reasonable salary increment, moral respect, training, promotion opportunities, and providing health insurance and health protection facilities
- ❖ . In addition, organize voluntary groups that work on MSWM through giving different incentives and providing necessary equipment's that used for solid waste management

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Appendix

WOLKITE UNIVERSITY
COLLEGE OF SOCIAL SCIENCE AND HUMANITIES
Department of Governance and Development Studies
Questionnaire prepared for primary data collection

This Questionnaire is prepared for an academic purpose for the fulfillment of B A degree in Governance and development studies. Specifically, the objective of the study is to assess the current status, challenge and institutional capacity of municipal solid waste management service in wolkite town. Therefore, your response is very important for the success of the study because all information that you provide determines the analysis and conclusion of the research. Hence, you are hearty requested to give your response by selecting (circling) your answer from the given alternative choice or describing your opinion. Please be informed that your response is kept in confidential and you are not required to write your name. I would like to thank you for your cooperation.

Part one: Background information about the respondents

Instruction: In order to answer the following questions, circle in your choice.

1. *Sex: Male Female*
2. *Age A. below 19 B.20_31 C.32_43 D.44_55 E. above 55*

3. *Educational level: 1 No formal education 2. primary education 3.secondary education 4. diploma certificate and above*
4. *House ownership status:*

A. Government rent houseB.Private rent house C. Private house

Part two: Questionnaire prepared for investigating households solid waste management awareness, and practice together with their attitude regarding municipal solid waste management of the town.

1 . What type of solid waste storage material do you use in your house to store

solid waste produced from your dwelling?

A. sack B. basket C. metal container D. plastic container ('festal')

E. private pit F. I don't use

2. Do you separately store solid wastes that are produced in your house and salable to "Quraleos" and exchange with "Liwach"?

A. yes B. no

3 . If your answer for question ***no 3*** *is* ***'yes'****, which of the following items do you separate for selling it to "Quraleos" and exchange to "Liwach" (possible to select more than one)?*

A. Metals, B. Plastics C. Glass, bottles, can etc.

D. Electronic wastes E . textile and old shoes F. if other please specifies it_____

4. why do you separately store solid waste in your home?

A. Using as fertilizer B. giving to other users

C. to use as fuel D. to use as feeding to other persons

E . for reducing the volume of waste,

F. if other please specify it _____.

5 . Do you know the idea of solid waste recycling and reusing?

A. yes B. no

6. If your answer for question ***no 6 is 'yes'****, do you recycle or reuse solid wastes generated from your house?*

A. yes B. no

7. Do you know that compost can be prepared from solid waste?

A. yes B. no

8. If your answer for question no 8 ***is 'yes'*** *do you prepare compost from solid waste produced in your house?*

A. yes B. no

9. Do you have access to door to door solid waste collection service delivered from the municipality solid waste collection vehicle?

A. Yes B. No

10. If your answer for question ***no 13 is 'yes'****, in how many days interval you get this service?*

A. 1-3 days B. 4-7 days C. 8-15 days

D. 16-30 days *E. above 30 day*

11. what are other means you frequently use to dispose the solid waste of your household?

A. at the road sides and open fields

B.dumping in river side's and gullies

C. burn in my compound

D . simply dispose in my compound

E. if other please specify_____

12. Do you need the containers back again under regular follow up and place in your surrounding? A. Yes B. No

13. Have you ever obtained training, education or information about solid waste management, and environmental and other problems created due to carelessly thrown solid waste?

A. yes B. no

14. how do you assess the municipal waste management service in your neighbourhood?
A. low B.vary low C. medium D. high E.vary hige

15. are you satisfied with the municipal solid waste management service of the town which is delivered by Municipal sanitation and beautification of the town ?

A. Very satisfied B. satisfied C. fairly satisfied
D. dissatisfied E. very dissatisfied

16.do you believe that the municipality have enough material to clean the environment?
A. yes B. no

17. Have you ever participated in a cleanup campaigns in your kebelle?

A. yes B. no

18.Do you know the municipality agent prepare clearly stipulated area for solid waste disposal? A.yes B.no

19.If you answer for Question no 20 is "yes "do you believe that the residence of that area are affected by the disposal waste?

A.yes B.no

20.Do you know the rules and regulations of solid waste management of the town?

A. yes B. no

21. Have you ever seen the sanitation agent making supervision and control on

illegal dumping of solid wastes on the streets, open areas, river side's and other areas?

A. yes *B. no*

Appendix

Interview questions prepared for head of Municipal Sanitation and Beautification of the town

Dear respondent this interview is conducted for an academic purpose for the fulfillment of BA degree in Governance and development studies. Specifically the objective of the study is to assess the current status, institutional challenge and institutional capacity of municipal solid waste management service in Wolkite town. Therefore, your response is very important for the success of the study because all information that you provide determines the analysis and conclusion of the research.

Hence, you are hearty requested to give your response. Please be informed that your response is kept in confidential. I would like to thank you for your cooperation.

1. Do your collection, transportation and disposal service cover all parts of the town? If it not covered, please specify the major reasons?

2. Mention the types and total number of equipment's that your institution used for collection, transportation and disposal of municipal solid waste of the town?

3. Explain the major reasons of why public solid waste are dumped in the major road of wolkite town?

4. Explain the overall institutional structure, mandate and functions of sanitation and beautification institution and, the major positive and negative impact of these arrangement on the existing performance municipal solid waste management of the town?

5. Does your department collect charge from the residents of the town for its municipal solid waste management service delivery?

6. Do you think that there is inadequacy of man power in your organization? If there is, what do you think the reason behind this?

7. Did your department give education to the community about solid waste management and prepared cleanup campaigns? If you did, for how many times and describe your method of delivery.