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**ASSESS THE IMPACT OF SOLID WASTE DISPOSAL IN HUMAN AND ENVIRONMENTAL HEALTH IN WOLAITA SODO TOWN, SNNPR, ETHIOPIA**

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**ABSTRACT:**

Solid waste management is the serious problem in urban area of the world , the same is true in Ethiopia .In Ethiopia urban areas it is problem has turned to be one of compressing issues .This study has general objective Impact of solid waste disposal in human and environmental in Wolaita Sodo town .In this paper ,the researcher used as purposively employed to selected sub city of Arada and Merkato because serious solid waste disposal problem and over crowd population .From the total population to select two kebeles from both sub city total population of 2500 study area kebeles 75 simple random sampling were used to collect information .the data was collected different sources such as primary and secondary sources ,then the researcher prepare open and close ended questionnaires and interview for respondents in order to analyzed data collection from sample population in appropriate manner .some solid waste management problems were lack of equipment protection, good method of solid waste disposal ,lack of awareness about solid waste ,Based on the finding ,the referee has high employs turnover caused by different factors and effective handling style that adversely affects its performance .

Finally the study recommends certain solution such as compensation to avoid the above problem and have take care of solid waste generation and promote education should provide by the municipality of Wolaita Sodo town for those who have poor attitude and perception toward solid waste management and initiate the peoples to participate on the needs to keep the surrounding area clean

**KEY WORDS:** (Disposal, Solid Waste, Urban waste, solid waste management, waste management)

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## 1. INTRODUCTION

### 1.1. BACKGROUND OF THE STUDY

Currently in many countries of the world environmental problem is among issues that attract greater attention in relating to the health habit and living condition of the people. There exist greater imbalance between waste production and controlling waste disposal activities undertaken. In other worlds, it to mean that inadequate disposal system and management is one of main reasons that results in increasing environmental problem or pollution [WHO Report,2000].

Now a day, there exist about three kinds of waste products in day-to-day activities of human beings. These are classified as solid wastes, liquid wastes and gaseous waste. Solid waste is solid and semi-solid materials generated to the environment from the daily activities those results in health hazard and environmental pollution [WHO; Regional Office for Europe, 2000].

Whereas, liquid waste are liquid or water which resulted from different areas like from industries, universities, household, hospitals, floods and others. In addition, gaseous wastes are mainly smoke emits from household, hospitals, floods and others (Encyclopedia,2002).

The disposal of wastes in city, especially solid waste may particularly include the collection, recycling, composition, dumping and processing of waste in a controlling fashion. However, there are different waste disposal techniques from country to country depending upon the planning and implementation of system applied in each respective country. Furthermore, in developing countries specially in Ethiopia context, among the major cause for increasing problems of public health and its related consequences are inadequate and improper disposal of waste, particularly, solid is one of that is consider are directly usable. There exists poor planning and implementation of system of handling solid waste in most cities and very limited or low availability of facilities' for proper disposal that similarly results in health problem to the public and distraction of urban beauty in Ethiopia (Geber Emanuel,2000). This is also the case for the Wolaita Sodo town.

Regarding the above fact, this study was aim to address the current problem and challenge to relate other disposal of solid wastes in bringing change up on the existing situation in two kebeles of Wolaita Sodo town.

## **1.2. STATEMENT OF THE PROBLEM**

The problems of solid waste management in many developing countries are relatively recent phenomena, and are the outcome of explosive urbanization. In many developing countries, the most important public services providing clean water, energy, shelter, and sanitation services are irregular, inadequate and inefficient, both in their operation and in their geographical coverage. TheMunicipal Solid Waste Management System Service is one of indispensable services for the proper functioning of any city. However, inefficient use of resources, lack of appropriate policies, and poor solid waste management systems have worsened the problem of waste in cities in developing countries. The collection coverage is low, irregular and ranges between 40-70%, of the total generated wastes (Yirgalem, 2001).

These are growing concern for the insufficiency of solid waste disposal plan and management in developing countries. The reasons for waste storage, collection and sanitary disposal and technology of land filling are well accepted and understood in developed countries and they have requested program for the disposal of solid wastes. Whereas, developing countries have continued to use unsophisticated method such as open dump(Berkunetal,2005).In general, in Ethiopia context, which is, part of developing countries there is lack of organization and planning in waste disposal du to insufficient information about resolution and due to financial restrictions. So the societies in many urban area are in sever problem of poor solid waste disposal management (Gebre Emanuel,2001).

The present concerns of individuals and the government in Wolaita Sodo town. still faced with serious solid waste management problems. The domestic and municipal solid wastes are commonly found in Wolaita Sodo town . Domestic wastes comes from activities such as:- cooking and from human excrete. Municipal wastes are the fresh from commercial establishments, small industries and households. These include tins, plastic products and polythene bags. Therefore, greater part of the waste observed on the streets and the back of house in Wolaita Sodo town. The wastes are over spread around before they get to their sanitary sites. Solid wastes, when treated well, can be turned in to resource; but the greater part of waste generated undergo any treatments before their final disposal (Gourlay, 1992).

## **1.3 OBJECTIVES OF THE STUDY**

### **1.3.1 GENERAL OBJECTIVE**

The main objective this study was to assess the impact of solid waste disposal in human and environmental health in Wolaita Sodo town

### **1.3.2 SPECIFIC OBJECTIVES OF THE STUDY**

More specifically, the study was aims to address the following issues as core objectives

- 1.3.2.1. To see the situation of solid waste disposal problem in town in Wolaita Sodo town sub city.
- 1.3.2.2. To identify the problems and obstacles that could hinder proper handling of solid wastes.

## 1.4. BASIC RESEARCH QUESTIONS

- 1.4.1. What are the present conditions of the solid waste disposal facilities of town?
- 1.4.2. What are the disposal solid wastes in the town?

## 2. THE REVIEW OF THE RELATED LITERATURE

### 2.1. CONCEPTUAL DEFINITION OF SOLID WASTE

Different scholars and organizations have defined waste in different ways in different time. Even though different definitions are given to 'waste' most of the scholars and organizations have agreed as waste means which cannot be used further. The term 'Waste' has undergone changes in definition, concept and classification. According to Davies (2008) also describes wastes as "unwanted or unusable materials that emanate or generate from numerous sources from industry and agriculture as well as businesses and households and can be liquid, solid or gaseous in nature, and hazardous or non-hazardous depending on its location and concentration". But the correct definition of waste, may be depend on the existing situation of a particular country is necessary. According to Harrison (1996) in its definition of waste, has used phrases as 'scrap material or other unwanted surplus and any substance which requires to be disposed of as being broken, worn out, contaminated or otherwise spoiled.

In many countries, solid waste is commonly referred to as Municipal solid waste so as to distinguish it from industrial and special wastes (hazardous wastes). Thus, in a more specific term, the World Health Organization (WHO, 1996) defined SW in its municipality sense to refer to as discarded materials and objects which are originated from domestic, business and industrial sources, and are disposed of in landfills, but does not include industrial hazardous or special wastes. The Municipal solid waste can also be perceived as a mixture of locally available materials which include food scraps, household cleaning chemical containers, and hazardous household waste such as batteries, and non-hazardous household waste like papers and plastics.

Solid waste is any material which comes from domestic, commercial, and industrial sources arising from human activities which has no value to people who possess it and is discarded as useless. In the early days, waste disposal did not pose difficulty as habitations were sparse and land was plentiful. Waste disposal became problematic with the rise of towns and cities where large numbers of people started to congregate in relatively small areas in pursuit of livelihoods (Shafiul and Mansoor, 2003).

### 2.2. SOLID WASTE DISPOSAL

Waste is anything discharged by an individual, household or organization. As the result waste is a complex mixture of different substance, only some, of which are intrinsically hazardous to health (Ashtone, 2003). The collection, processing, transport and disposal of solid waste are all important aspects of waste management for public's health, aesthetic, and environmental reasons.

Solid waste disposal is one disposal namely solid or semi-solid materials resulting from human and animal activities that are useless, unwanted or would be subjected to delay through time and involves highly offensives odor and gases that are detrimental to health (Nicholas, 2000).

It is defined and the moveable object on which the owner wishes to the materials that are produced as a result of man and animal activities.

Overall, there are three kinds of waste that are produced in a day-to-day human activities namely solid, liquid and gases wastes. According to the Kebedefaris (2002). Waste disposal composition collection, transport storage dumping and recycling of wastes.

According to puma, (1999), solid wastes are broadly classified into two. These are organic (combustible) and inorganic (non-combustible) wastes.

They are further typically classified as follows.

- Garbage : decomposable dry refuse from food such as decayed fruits
  - Rubbish: non-decomposable wastes. Either combustible /such as, metal, glasses and ceramics
  - Large wastes : demolition and construction debris tree and dead animals
  - Sewage treatments should materials retained on sewage treatment screened settled solids and biomes sludge.
  - Ashes : residues of combustion of solid fuels
  - Industrial waste: such materials as chemicals, points and sand.
- Mining waste: slag heaps and coal refuses pills. That has a major contribution of environmental problems (WHO, 2000).

According to Abu, Eiseh(2001). It was reported that about thirty five children under those of five are victims of death every day because of environmental pollution and diseases in the world.2.8.

### **2.3. Accessibility of Public Service Delivery of Solid Waste**

A typical Solid waste management in a developing countries show that there is a problem in solid waste management. Due to a number of problems, the coverage of solid waste collection service is low. In developing countries low collection coverage and irregular collection services, crude open dumping and burning without air and water pollution control, the breeding of flies and vermin, and the handling and control of informal waste picking or scavenging activities. These public health, environmental, and management problems are caused by various factors which constrain the development of effective Solid waste management .Klundert and Anschütz (2001) put it, waste collection in developing countries is an issue of growing concern whereby about 50% of residents in urban areas of these countries lack collection services. Given that many municipalities are still to implement comprehensive MSWM plans that will have a wider scale of operation, it therefore implies in practice, however, a lower proportion of residents (compared to the 50%) do indeed have access to any collection facilities Bartone(2000)

In developing countries local governments alone may lack financial, human and technical resources to provide basic services to the entire urban residents. As a result, the poor parts of the cities might be excluded from getting basic services like clean water supply, solid waste services (SWS) and road construction. Nevertheless, it is not only the poor area that has borne the brunt of the public sector ineptness and misconduct, the middle and reach areas are also suffer from undependable schedule and poor service Onibokun (2006).

## **3. MATERIALS AND METHODS**

### **3.1. RESEARCH METHODOLOGY**

The purpose of the study was to investigate the environmental impact of solid waste disposal in case of Sub city town. To attain this purpose the researcher used descriptive survey method; in order to describe and interpret the current status of the problem in the study area.

### **3.2. SAMPLING TECHNIQUES AND SAMPLE SIZE**

Wolaita Sodo town is classified into three sub cities. From these three sub Wolaita Sodo town. Two sub cities were purposely selected as a study area. The main reason for the selection of these sub cities are the existence of serious solid waste disposal problem. Wolaita Sodo town. In sub city there are namely Arada and Merkato were selected purposively because these two Sub cities are serious solid waste disposal problem and overcrowded population. From two sub cities selected two kebeles by simple random sampling there were 2500 residents. From these 3% or 75 residents were taken as a sample population. Simple random sampling technique was

taken employed in the selection of the respondents based on simple random sampling in gender, age, occupational status and educational status.

### **3.3. SOURCES OF DATA**

To obtain relevant data the researcher used both primary and secondary sources of data. The primary sources of data or the firsthand information obtained through the structured questionnaires filled by the residents in the sample chosen houses in the kebeles. On the other hand, the secondary sources of data obtained mainly from the respective municipality and different available books, magazines, newspapers, reference materials, internet, relevant documents, and other available materials

### **3.4. DATA COLLECTION INSTRUMENTS**

In order to collect the appropriate data for this research the following data collection instruments was employed.

#### **3.4.1. OBSERVATION:-**

As the asses impact of waste disposal problem, observable in the physical environment. The researcher observed the research area what is going on the real environmental setting. The researcher recorded all necessary information from the field.

#### **3.4.2. QUESTIONNAIRE**

The researcher prepared both close ended and open ended questions to obtain data from the selected residents from the kebeles in study area. The researcher used this method because it helps to collect data simultaneously from the total population and it takes short period of time to collect data.

#### **3.4.3. INTERVIEW**

Interview was another instrument for data collection. The researcher used structured interview to obtain data from concerned bodies working on two kebeles administrator because it helps to collect clear, qualified and detail data from the interviewee.

### **3.5. DATA COLLECTION PROCEDURES**

The procedures that the student researcher used to collect the necessary data would be:- first the researcher distributed questionnaires to the residents with the necessary instruction; and, secondly, the researcher asked interview Kebeles administrative bodies.

### **3.6. METHODS OF DATA ANALYSIS**

The researcher emphasized on questionnaire and interview methods. The researcher analyzed the data using qualitative and quantitative method. The researcher used questionnaire in order to obtain data quantitatively from the respondents based on questions and collect data simultaneously from the respondents. The data was analyzed on the basis of the research questions.

## **4. DESCRIPETION OF STUDY AREA**

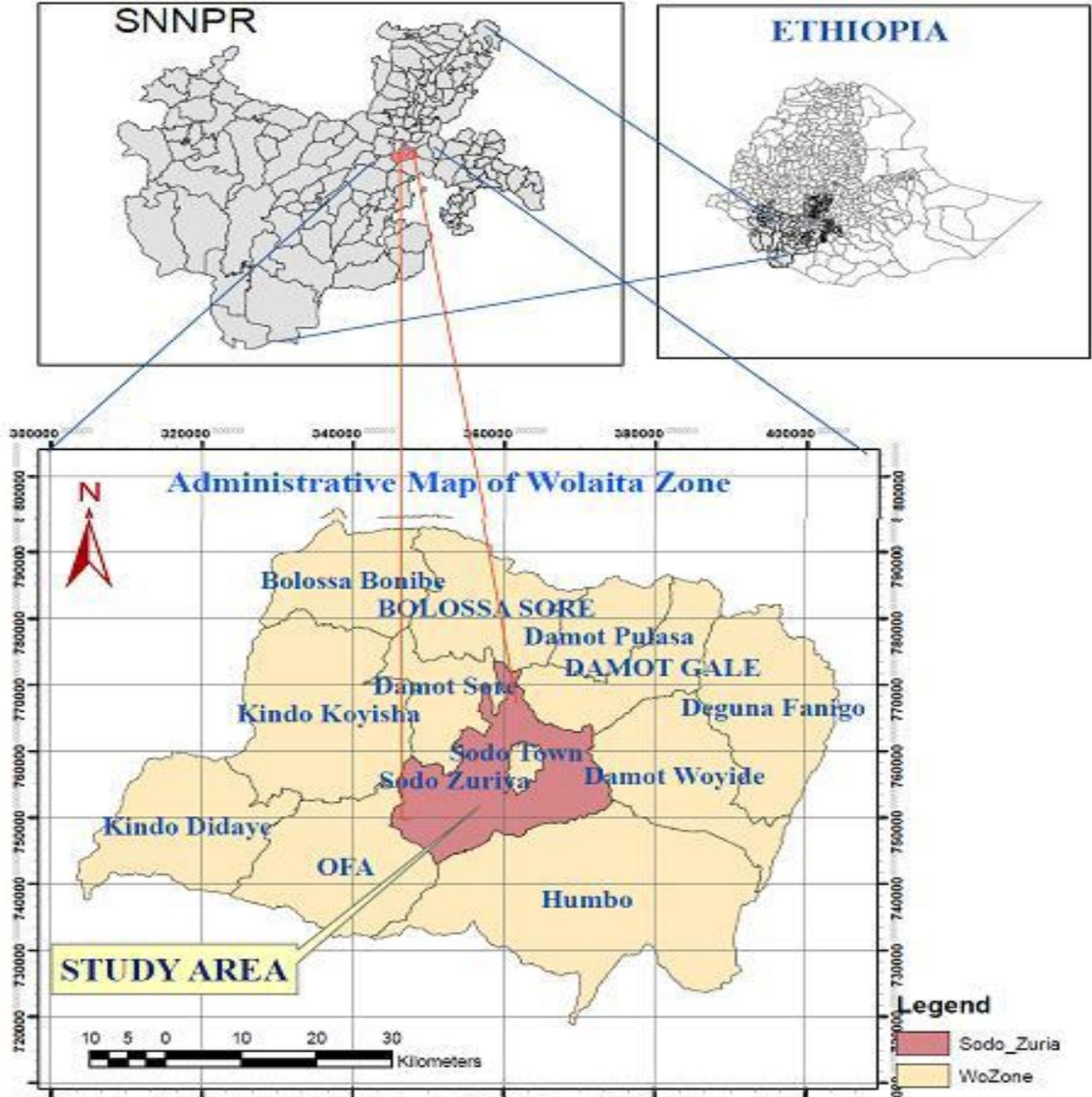
### **4.1. DESCRIPTION OF THE STUDY AREA**

#### **4.1.1. LOCATION**

Wolaita Sodo town is the capital city of Wolaita zone. It is found 383 km away from Addis Ababa(via-Shashemene), 328 km (via-Hossaina) and 156 km far from Hawassa, SNNPR's capital. Five major transport routes connect Wolaita Sodo with the neighboring zones and regions. These are Alaba- Shashemene (via-Boditi), Hossaina- Butajjira- Addis Ababa (via- Areka), Waka- Taracha- Jima- MizanAman and Bonga (via-Bele), Arbaminch-Jinka (via- Tebela) And Goffa Sawula (via-Gesuba). Astronomically, Wolaita Sodo town is

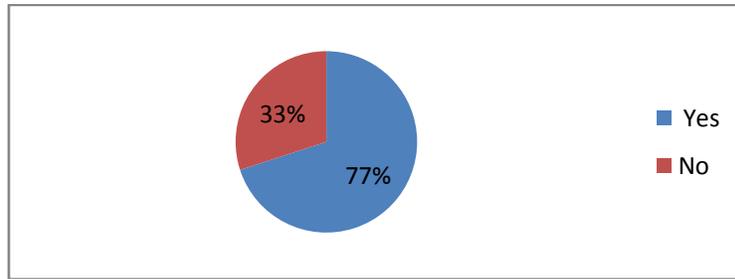
located 6°51'36''N latitude and 37°46'51'' E longitude (Wolaita Zone Finance and Economic Development office, 2010).

Figure 1. MAP OF WOLAITA ZONE



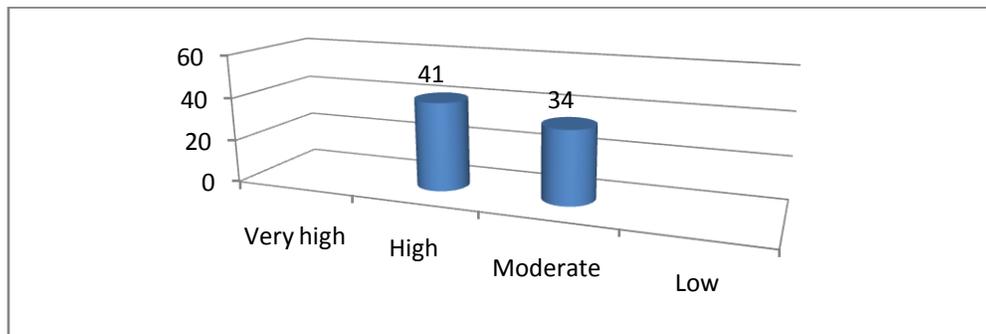
5. RESULTS AND DISSUSSION

Figure .2. Awareness about disposal of solid wastes in the town



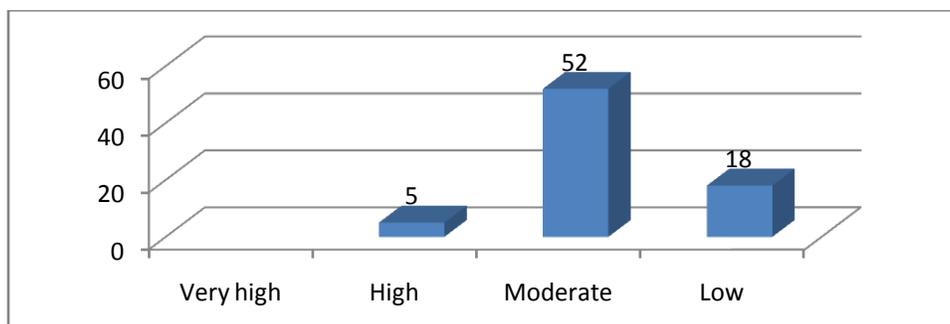
Regarding chart, shows 58(77%) of residents responded that the community members have awareness about disposal of solid wastes in the town, and the remaining 17(33%) of residents were responded the community members have no awareness about disposal of solid wastes in the town. This implies that the community members have enough awareness about disposal of solid wastes in the town.

Figure .3. The Rate of Solid Waste Disposal



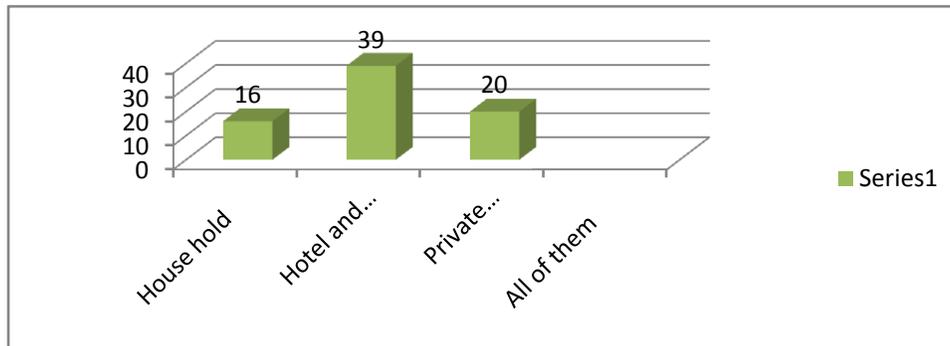
According to column chart, reveals, 41(57%) of residents were responded that the rate of solid waste disposal habit was high in the sub city, and the remaining 34(43%) of residents were responded that the rate of solid waste disposal habit was moderate in the sub city. This implies that the rate of solid waste disposal habit was high and low solid waste management system in the sub city of a town.

Figure .4. The Stakeholder Organizations Activities in the Town



As indicated in above column chart1, reveals 5(7%) of residents were replied that the commitment of municipality in stating residents of the disposal of wastes was high in the town, where as 52 (69%) of residents were replied that the commitment of municipality in stating residents of the disposal of wastes was moderate in the town, the remaining 18(29%) of residents were responded that the commitment of municipality in stating residents of the disposal of wastes was low in the town. This indicates that most of respondents replied the municipality has moderate commitment in stating residents of the disposal of wastes in the town.

**Figure .5. Households taken measures the main source of solid waste problem**



Regarding in the column chart2, shows 16(21%) of residents were replied that the households were taken measures the main source of solid waste problem, whereas 39(52%) of residents were replied that hotels and restaurants were taken measures the main source of solid waste problem, and the remaining 20(27%) of residents were replied that private business organizations were taken measures the main source of solid waste problem in the town. This implies that the hotels and restaurants were taken measures for the main source of solid waste problem in the town.

**4.6. THE CONTRIBUTIONS OF SOLVING THE PROBLEMS OF SOLID WASTE DISPOSAL**

**Table 1: The contributions of solving the problems of solid waste disposal in the town**

No	Item		Respondents	
			Residents	
			No	%
1	In your community, is their removal techniques/means of solid wastes in the town?	A. Yes	62	83
		B. No	13	17
		<b>Total</b>	<b>75</b>	<b>100</b>
2	Who get the benefit from the environmental cleaning in the town?	A. Residents	58	77
		B. Community members	10	13
		C. Community leaders	7	10
		<b>Total</b>	<b>75</b>	<b>100</b>

According to table VI, items 1, reveals 62(83%) of respondents were replied that there was the removal techniques/means of solid wastes in the town, and the remaining 13(17%) of residents were responded there was no the removal techniques/means of solid wastes in the town. This implies that in the community there was the removal mechanism of solid wastes in the town.

Regarding to table VI, item 2, shows, 58(77%) of respondents replied that the residents get the benefit from the environmental cleaning in the town, whereas 10(13%) of respondents replied that the community members get the benefit from the environmental cleaning in the town, and the remaining 7(10%) of respondents replied that the community leaders get the benefit from the environmental cleaning in the town. This shows that the residents get great contributions from the environmental cleaning in the town.

Moreover, open ended items and interview were presented to kebeles administrative bodies to express the idea on the problems that encountered throughout the disposal of solid wastes, and the following respondents were indicated:-

- Allocation of inadequate budget to clean the environment;;
- Low community participation;
- Lack of municipality follow up, monitoring and evaluation;
- Inadequate leadership skill of the community leaders;
- Low awareness of the community about the impact of solid wastes;
- Weak solid wastes management system and so on..

This implies that most of the respondents mentioned that the main problems that the impact of solid waste disposal in the town.

The kebeles administrative bodies forwarded the following possible solutions to overcome the problems of solid wastes in the town indicated:-

- Allocating adequate budget to clean the environment;
- Strengthening community participation in the community affairs;
- Strengthening municipality follow up, monitoring and evaluation;
- Giving adequate training for the kebeles leaders to improve their capacity in the town;
- Creating awareness and discussion with communities about the impact of solid wastes;
- Strengthening solid wastes management system.

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## REFERENCES:

1. Abu Thaher, A., (2005). Solid Wastes Collection, Disposal, and Financial Aspect 3<sup>rd</sup> edition in U.S.A
2. Abu-Eisheh, S.( 2002). Final Evaluation of Water and Sanitation. Washington D.C . internet [www.com?03](http://www.com?03) journal
3. Ashtone M., (2003). Controlling and Management System of Solid Waste Materials civil and environmental research 8(12)28) 44-56.
4. BadanLainyachhyon(, 2006). Prospects and constraints of public private partnership for urban waste management international journal of current research

5. Bartone, C. , 2000 . Strategies for Improving Municipal Solid Waste Management: Lessons from World Bank Lending and CWG Activities. Workshop on Planning for Sustainable and Integrated Solid Waste Management, Manila, 18-22 September 2000. Washington, DC: Urban Management Division, World Bank.
6. Central statistics Authority Census Data of 2007. Developing countries, Economics -Presented at the Annual Meeting of the Western Political Science Association,
7. Encyclopedia of World, 2000. Existing situation in Color Town of Turkey. Faculty of Graduate Studies, Brazil. Municipality.
8. Kaushik K.R., Bansal K.K. (2012) "Foreign direct investment in Indian retail sector pros and cons "International Journal of Emerging Research in Management & Technology Vol.1(1) pp 7-14
9. Nicolas C.M., (1996). Some Problems of Waste Management in Developing Countries. of New York; press, Albany.
10. Palczynski, R.J. and W.N. Scotia, 2002. Study on Solid Waste Management Options for Africa. Project Report. Final Draft Version. Prepared for African Development Bank Sustainable Development and Poverty Reduction Unit, Abidjan.
11. Pankhurst, R., 2010 . Who were the 'Young Ethiopians' (or Young Abyssinians): An historical inquiry. Education Issue, Vol. 2, no.2, p: 129.
12. Puma L. (1990), Waste Management System in Developing Countries. USA: state University
13. Rushton ,(2003). Some Problems of Waste Management. New York; press, Albany. Site, Master thesis Addis Ababa, Ethiopia.
14. TymnzI., (2005). Good Planning for Sanitary Landfill: as a Case Study. Master Thesis
15. UNIDO, 2006. United Nation Environmental Program Division of Industry, Technology and World Health Organization (W.H.O). Report, 2000.