

Assessment of Attitude and Perception of Communities Towards Solid Waste Disposal, and Its Implication to Urban Pollution, Sodo Town, SNNPR, Ethiopia

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Abstract

The study was conducted to assess the community attitude and perception level towards solid waste disposal in Wolaita, Sodo town. A multi-stage sampling technique was used to select the survey participants. The study used both the primary and secondary source data. The primary data were collected through interviewer-administered questionnaires and observation check list were used to collect field data and secondary data were collected through documentation from Sodo city administration, internet sources, journal and books. Individual informed consent was obtained before questionnaires were administered. Results of the study revealed that 90% of the respondents don't perceive burning of solid waste materials in open space as improper disposal method and commonly used storage containers for household waste was Polythene bags (40%), while 37%, 10%, 9%, and (4%) of the respondents dump the waste on Dump site, plastic containers, Old bucket and Waste bins respectively. 88% of them perceived the solid waste litters the town. Among this proportion, 49(49%) of respondents perceived it as a problem, 25% perceived as a Major problem, 14% said that a minor problem. The community perception towards solid waste and their attitude to reuse the plastic bags which they were using to carry vegetables, grains etc. from markets was very. Hence, efforts should be directed towards training and awareness creation for purpose of enhancing their awareness attitude.

Keywords: Perception, Attitude, Solid waste, urban pollution

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1. Introduction

Solid wastes are defined as “the unwanted remains, residues, discarded materials or by-products which are no longer required by the initial user” (Nyang’echi, 1992). Disposal includes the process of getting rid of the wastes that are generated by people (Mantel, 1972). The methods used to dispose domestic wastes are land disposal, incineration, recycling and waste reduction (World Book Encyclopedia, 1994). Land disposal is where garbage is hauled to an area owned by a community or private firm. Such areas range from unsanitary open dump to properly operated sanitary landfills. According to (Lenkiewicz, 2016), half of the waste generated by Earth’s 7 billion people is not properly disposed of.

In most of developing country cities, large proportions between thirty and fifty percent of the solid waste generated by the residents are never collected for disposal and end up rotting on the streets, in drains and in streams (Hardoy et al., 2001; Pacione, 2005). Negative perception towards solid waste disposal leads the person not to give proper attention for solid waste management. Efforts to address solid waste disposal problems in developing countries, have failed due to the negative perception people have towards solid waste disposal (Gyankumah, 2004).

Research’s revealed that solid wastes that are generated in major cities of Ethiopia are not appropriately handled and managed, mainly due to institutional, regulatory, financial, technical and public participation problems (Lema, 2007; Melaku, 2008; Dereje, 2009). In addition to the above stated problems, studies revealed that the perception and behavior of people towards waste management is considered to be a factor that can affect the success of a waste management system (Haider et.al. 2015).

1.1. Statements of the problem

Much of the solid wastes from homes, offices and municipal wastes end up littering road sides and collecting in ugly dumps. When the wastes are put in to open dumps, they ruin the attractiveness of the surrounding areas and would potentially endanger the healthy environment necessary for human existence. Ecological phenomena such as water and air also attributed to improper management of solid wastes (Monroe, 1997).

A more serious risk is the transfer of pollution to ground water and land as well as the pollution of air from improper burning of waste. Many waste activities generate greenhouse gases; e.g., Refuse fleets are significant sources of carbon dioxide and nitrous oxide. Open burning dumpsites produce volatilized heavy metals (e.g. mercury and lead), dioxins, and furan. Leachate from unlined and uncovered dumpsites contaminates surface and ground waters (Singhal et al., 2001). A damaged local environment will first hit the most vulnerable groups of society, those who lack the resources needed to reduce the negative effects of a degraded environment. In addition,

people living under poor circumstances are also directly dependent on their close natural environment for their daily survival.

Solid waste management requires among other things effective local planning and citizen participation backed by clear, integrated and comprehensive strategy towards effective and safe solid waste disposal mechanisms (Aarne, *et al*, 2002). As indicated by Alemayehu (2007) the world population whether living in developing or developed countries are now worried too much about wastes. One of the most difficult problems facing humans today is the disposal of solid wastes.

As stated above poor management of solid waste have a devastating impact up on the environment. Unless the responsible body timely aware of the impact of improper management of solid waste and decide to take the necessary measures to tackle the problem, damages on the environment due to uncontrolled solid waste management activities aggravate endangering the safe and healthy existence of the community. The researcher observed that the community residing in the study area disposes of their household refuses near to their house, roadside, ditches and on nearby green space. This makes the researcher to assess the community attitude and perception level towards solid waste disposal.

1.2 Objectives of the study

1.2.1 General objective

The general objective of this study was to assess the residents' attitude and perception towards solid waste disposal and its implication to the town pollution.

1.2.2 Specific objectives

- ✓ Explore resident's perception and attitude towards solid waste disposal.
- ✓ To examine the common solid waste storage and disposal system dominantly practiced by the residents.
- ✓ Assess resident's perception of solid waste problem.
- ✓ Identify the possible solutions towards the adoption of safe and effective solid waste disposal mechanism in Sodo town.

1.3 Research questions

- What is resident's current perception and attitude level about solid waste disposal?
- What are the common solid waste storage and disposal system mainly practiced by the residents?
- What is the resident's perception of solid waste problem?
- In what ways the problem of solid wastes can be reduced in the study area?

1.4 Significance of the study

It has intended that the findings of this research project could be used by local and regional authorities to evaluate the current solid waste disposal situation and could help to reveal how the level of resident's perception and attitude towards solid waste disposal and its implication to the urban pollution. This finding could be used to show the area that needs improvement, for the current solid waste management system development in the area. As well as it could provide information for similar researches that would conduct with similar study area. Furthermore, by identifying the level of community attitude and perception about solid waste problem and disposal system, it can indicate the necessary training that would be given for the community to improve their awareness.

2. Methodology of the study

2.1 Description of the study area

2.1.1 Location

Wolaita Sodo town, the administrative center of the Wolaita zone of the southern nations, nationalities and peoples region, that extends from 6°48'0" - 6°54'0" N latitudes and 37°45'0" - 37°46'30" E longitude with an elevation between 1600 and 2100 meters above sea level. Located 390 Km South and 167 Km of South West of Addis Ababa and Hawassa, respectively.

2.1.2 Area

Currently, the total area of the town is about 3,200 hectares and is divided in to three sub towns ("Kifle- ketema"), eleven "kebeles" (administrative units) and ninety nine villages ("mender").The town connects commercially important zonal capital such as Arba minich (capital of Gamo Zone), Sawulla (capital of Gofa Zone), Hosanna (capital of Hadiya Zone), and Shashe mane town (capital of Western Arsi Zone).

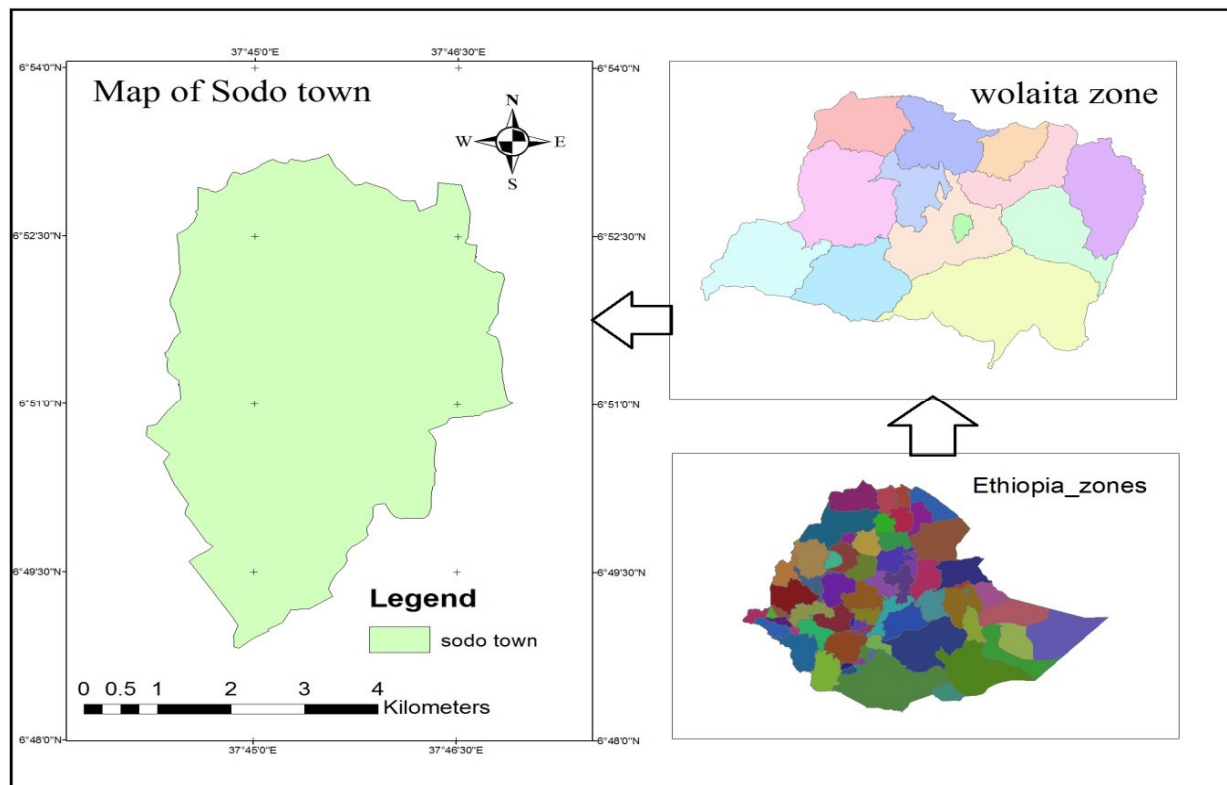


Fig 1: location map of the study area (Wolaita Sodo town)

2.1.3 Demographic characteristics

Based on the 2018 population projection by (CSA, 2018), the town has a total population of 254,294 of whom 125,855 are men and 128,439 are women this make wolaita sodo the third most populous city in south region next to Arbaminch and Hawasa. According to town administration report of 2014 (Sodo City Administration, 2014), the number of population is increasing at high level due to continuous rural-urban migration.

2.2 Source of data

Both primary and secondary data was a central in the whole process of data collection. Each source of data is discussed here under.

2.2.1 Primary data

Primary data are those data which are collected afresh and for the first time and thus happen to be original in character, Kothari (2004). In this study, primary data were collected throughout the use of observation, interview, and questionnaire that contained both closed and opened ended questionnaires.

2.2.2 Secondary data

Secondary data is referred to the data which have already been collected and analyzed by someone else (Kothori, 2004). Secondary data may either be published data or unpublished data, in this case the researcher must be very careful in using secondary data and scrutiny because it is just possible that the secondary data may be unsuitable or may be inadequate in context of the problem which the researcher wants to study.

2.3 Data collection methods

Data were collected by use of Observation, Interview, and Questionnaire which contained structured questions.

2.3.1 Observation method

Observation Method is the most commonly used method especially in studies relating to behavioral sciences (Kothori, 2004). The information was sought by way of researcher's own direct observation without asking the respondents in order to avoid the subjective bias. This method obtained information about attitudes and behavioral of respondents towards to solid waste management by using observation checklist prepared. Observation data were collected using checklist and it was conducted by the researcher at HH level and on different sites at field in the town. Observation involved watching and recording what people say and do and at household level it included onsite handling and collection of SWs, transport and disposal methods, etc.

2.3.2 Interview method

Interview Method of collecting data is the presentation of oral-verbal stimuli and reply in terms of oral-verbal responses Kothari (2004). This method requires a researcher asking questions generally in a face-to-face contact

to the respondent. This Method of collecting data through interview was carried out in structured questions based on specific objective and requires the Interviewer to be on the spot and has to meet people from whom the primary data have to be collected.

2.3.3 Questionnaire method

Questionnaire is a written list of questions that are answered by a number of people so that information can be collected from the answers Kothari (2004). In this method a questionnaire was distributed to the respondent that can read and write properly and for those respondents who cannot read and write the researcher administered.

2.4 Sample size determination and sampling technique

Multistage stage sampling method was used including stratified random sampling and simple random sampling to select the study sites and HHs. Sodo town is divided in to three sub-towns or “kefele ketema” for administrative purpose, namely, “Merkato”, “Mehal ” and “Arada“. From each sub-town one “kebele” was randomly selected namely Fana kebele”, “Wadu kebele and “Delebetegel kebele” respectively represent each cluster. Then a random sample of required size was allocated to each selected kebele using a stratified sampling method (proportional allocation technique) based on population distribution which resulted in unequal number of respondents being selected. Finally, households were selected by simple random sampling method according to their population proportion. Sample size from a population was determined using Yamane (1967) simplified formula.

$$n = \frac{N}{1 + N(e)^2}$$

Where: n = size of the sample, N = total population of selected areas, e = accepted margin of error in the estimates; As the total population (N) of the three kebele households was 5,592, margin of error (e) was taken 10% and size was calculated as 99.

$$n = \frac{5,592}{1+5,592(0.1)^2} = 99$$

By following the method of proportional allocation under which the sizes of the samples from the different strata are kept proportional to the sizes of the strata.

That is, if Pi represents the proportion of population included in stratum i, and n represents the total sample size, the number of elements selected from stratum i is n x Pi.

To illustrate it, the sample size n = 99 to be drawn from a total household population of size N = 5,592 which is divided into three Kebeles of size Fana (N₁) = 2615, Wadu (N₂) = 1492 and Dilbetegel (N₃) = 1485. Adopting proportional allocation, we shall get the sample sizes as under for the different strata (Kebele):

$$\begin{aligned} N_1 = 2615, \text{ we have } P_1 &= 2615/5,592 \\ \text{And hence, } n_1 = n \times P_1 &= 99 (2615/5,592) = 46 \\ N_2 = 1492, \text{ we have } P_2 &= 1492/5,592 \\ n_2 = n \times P_2 &= 99 (1492/5,592) = 27 \quad \text{and} \\ N_3 = 1485, \text{ then } P_3 &= 1485/5,592 \\ n_3 = n \times P_3 &= 99 (1485/5,592) = 26 \\ n = n_1 + n_2 + n_3 & \\ &= 46 + 27 + 26 = 99 \end{aligned}$$

Table 1: Total households and sampled respondents.

| No | sub-town | Kebeles | Total households (N) | Proportional allocation (n) |
|--------------|----------|-------------|----------------------|-----------------------------|
| 1 | Merkato | Fana | 2615 | 46 |
| 2 | Mehal | Wadu | 1492 | 27 |
| 3 | Arada | Delebetegel | 1485 | 26 |
| Total | | | 5,592 | 99 |

2.5 Data analysis and interpretation

The data that was collected from primary data sources i.e. sampled households, key informants and field observation, and secondary data sources i.e. published and unpublished materials; the researcher was analyze and interpret in accordance with the nature of the data that was replied by respondents. And the data summarized by a simple descriptive statistics using tables, graphs and figures. Data processing was done using Statistical Package for Social Sciences (SPSS) version 20.0.

The quantitative data mainly obtained using close-ended questionnaire was analyzed by simple descriptive statistics like percentage, average and etc..., and the result summarized in the form of table and graph. The qualitative data, perception, opinion, and attitude collected using open ended and close-ended questionnaire, and the researcher’s observation was analyzed, described and interpreted in the form of narration.

3. Result and Discussion

3.1 Socio-economic characteristics of the respondents

The underlying table illustrates socio-economic characteristics of the sampled respondents. As shown in Table 4.1, the percentage of male and female household respondents accounts 53(53.5%) and (46.5%) respectively, and 20 (20.2%) respondents were lies between the age of 18-24 years, 38 (38.4%) of them were lies between the age of 25-34 years, 28 (28.3%) of them were lies between the age of 35-44 years, 10(10.1%) of them were lies between the age of 45-64years, and 3(3.0%) of them were lies on the age of 65 and above years old. Religion 49 (49.5%) of them were Protestant, 42 (42.4%) of them were Orthodox, 8 (8.1%) were Muslims. The level of education was 20 (20.2%), 20 (20.2%), 25(25.3%) and 34(34.3%) had educational status of basic education, elementary, high school and higher education respectively.

Table 2: Showing the Socio-economic characteristics of Households

| No | Characteristics of respondents | Description of characteristics | Frequency | Percentage (%) |
|----|--------------------------------|--------------------------------|-----------|----------------|
| 1 | Sex | Male | 53 | 53.5 |
| | | Female | 46 | 46.5 |
| | | Total | 99 | 100 |
| 2 | Age groups (years) | 18-24 | 20 | 20.2 |
| | | 25-34 | 38 | 38.4 |
| | | 35-44 | 28 | 28.3 |
| | | 45-64 | 10 | 10.1 |
| | | Older than 65 | 3 | 3.0 |
| | | Total | 99 | 100 |
| 3 | Religion | Protestant | 49 | 49.5 |
| | | Orthodox | 42 | 42.4 |
| | | Muslim | 8 | 8.1 |
| | | Total | 99 | 100 |
| 4 | Educational Status | Basic Education | 20 | 20.2 |
| | | Elementary | 20 | 20.2 |
| | | High School | 25 | 25.3 |
| | | Higher Education | 34 | 34.3 |
| | | Total | 99 | 100 |

3.2 Community attitude and perception towards solid waste disposal

Attitude is a hypothetical construct that represents an individual's like or dislike for an item. Waste generation is conditioned to an important degree by people's attitudes towards waste: their patterns of material use and waste handling, their interest in waste reduction and minimization, the degree to which they separate wastes and the extent to which they refrain from indiscriminate dumping and littering (Bower sox et al., 2005).

Table 2: showing the Attitude of households on solid waste disposal

| No | Attitude | Frequency | Percentage % | |
|----|---|--------------|--------------|------|
| 1 | Do you segregate biodegradable and non-biodegradable solid waste into different bins? | Yes | 12 | 12.1 |
| | | No | 87 | 87.9 |
| | | Total | 99 | 100 |
| 2 | Are you willing to segregate biodegradable and non-biodegradable solid waste into different bins, if bins are provided? | Yes | 89 | 89.9 |
| | | No | 10 | 10.1 |
| | | Total | 99 | 100 |
| 3 | Do you reuse the plastic bags which you were using to carry vegetables, grains etc... From market? | Yes | 21 | 21.2 |
| | | No | 78 | 78.8 |
| | | Total | 99 | 100 |

About 88% of the households were not segregate biodegradable and non-biodegradable solid waste into different bins at the source, and 12(12.1%) were segregating it. As the environmental awareness of the households seems to be low due to this they are completely disposing the waste into the same storage and carried to dump site.

About 89(89.9%) of the households are willing to segregate biodegradable and non-biodegradable solid waste into different bins, if bins are provided and 10(10.1%) of the respondents were not willing to segregate because they think that it is tedious work. The majority of the households about 78(78.8%) responded that not reuse the plastic bags which they were using to carry vegetables, grains etc. from markets because of negative attitude and inaccessibility of covered waste bin; and the remaining 21(21.2%) of the respondents were responded that they reuse the plastic bags.

The majority of the respondents was expressed their willingness to use the recyclable products and

segregating the recyclables at the source. However, currently the researcher observation check list revealed that the majority of solid wastes generated from the households were stored in a recyclable plastic that can be used to carry vegetables, grains etc., and then collected in to Polythene bag without segregation.

Table 3 Residents description of poor solid waste disposal

| No | Description of solid waste disposal | Frequency | Percentage (%) |
|--------------|---|-----------|----------------|
| 1 | Dropping of solid wastes randomly on the street | 49 | 49.5 |
| 2 | Dumping of refuse in open space | 40 | 40.4 |
| 3 | Burning of waste materials in open space | 10 | 10.1 |
| Total | | 99 | 100 |

Table 3 shows when the respondents asked if they know what constitute poor solid waste disposal, 49(49.5%) responded that it is dropping of solid wastes randomly on the street, 40(40.4%) claimed that it is dumping of refuse in open space, and 10(10.1%) claimed that it is burning of waste materials in open space. This indicates that most of the respondents don't consider burning of solid waste materials in open space as improper disposal method.

3.3. Commonly used solid waste storage and disposal system by households

In order to realize the target of the study regarding the identification of SW disposal system dominantly practiced by the community and the type of solid waste storage used in the study area, in relation to their impact both on the surrounding environment and on the health of the community of the study area questionnaires were distributed to sampled respondents. The response of sampled households on the major solid waste disposal methods practiced by the community and storage using in the study area illustrated in the underlying table.

Table 4.2 Showed that Commonly used storage containers for household waste was Polythene bags 40 (40.4%), while 36(36.4%),10(10.1%), 9(9.1%),and 4(4.0%) of the respondents dump the waste on Dump site, plastic containers, Old bucket and Waste bins respectively .

Table 4: Household solid waste storage and disposal system in Sodo town

| No. | Variable | Frequency | Percentages % |
|--------------|--|-----------|---------------|
| 1 | Storage containers for household waste | | |
| | Plastic containers | 10 | 10.1 |
| | Old bucket | 9 | 9.1 |
| | Polythene bags | 40 | 40.4 |
| | Waste bins | 4 | 4.0 |
| | Dump(no storage) | 36 | 36.4 |
| Total | | 99 | 100 |
| 2 | Method of household waste disposal | | |
| | Burning | 30 | 30.2 |
| | Burying | 5 | 5.1 |
| | Open space dumping | 49 | 49.5 |
| | Composting | 5 | 5.1 |
| | Government collected | 10 | 10.1 |
| Total | | 99 | 100 |

From the listed method of solid waste disposal system, commonly practiced in the study area are 49 (49.5%) of the sampled households responded as they use Open space dumping at solid waste disposal site, road side, near to house and in drainage canals to dispose their wastes. And 30(30.2%) of the respondents indicated they are using open burning of wastes and the remaining sampled households 10(10.1%), 5(5.1%) and 5(5.1%) of them practice Government collected, Burying and Composting was used respectively. The above information indicates open space dumping and burning of wastes have been extensively used in most parts of the town. This means less was done on awareness creation campaign to enable the community to practice the preferable ways of solid waste disposal methods. Composting of organic waste makes available nutrients for soil replenishments and reduces amounts of waste to land filled (Carlson, 2005).

Open burning is the most unacceptable method of disposal of solid waste. The low temperature burning of plastics and PVC emit highly toxic gases such as dioxins and nitrous oxides to the atmosphere. Open dumping is uncontrolled and scattered deposit of wastes at a site. It leads to acute pollution problems, fires, high risk of disease transmission and open access to scavengers animals. It is not a scientific way of waste disposal because open dumping is an uncovered site used for disposal without environmental controls (Mohammed *et al*, 2012). Although both open dumping and open burning are environmentally able to cause a serious pollution in the air we breathe and water we drink and soil and land degradation, regarding the communal disposal system of the study area the information obtained from sampled households makes open dumping and open burning the two dominantly practiced disposal methods in Sodo town.

Findings from field observation using check list by the researcher revealed that, lack of environmentally

effective and efficient solid waste disposal methods and storage at household level, the dominance of environmentally hazardous solid waste disposal methods was observed by the researcher, therefore, the need for rapid solution measures to change those environmentally hazardous solid waste disposal methods in to safe and scientifically advisable ways of disposal methods before causing unmitigated damage to the surrounding environment of the town and health condition of the residents.

3.4 Respondents' perception of solid waste problems

Table 4 showed that on the respondents' perception of sanitation situation in the town from the total respondents, 90 (91%) of them perceived the solid waste litters the town. Among this proportion, 48 (48.5%) of respondents perceived it as a problem, 25(25.3%) perceived as a Major problem, 17(17.2%) said that a minor problem. 9% perceived as no problem. the majority of the respondents expressed positive perception to the manner with which waste litter the whole town however only very few perceived it as no problem.

Table 5: Respondents' perceptions of solid waste problems

| No | Variable | Response | Frequency | Percent (%) |
|----|---|-------------------------------|-----------|-------------|
| 1 | How do you perceive the current solid waste situation in Sodo town? | No problem | 9 | 9.0 |
| | | Minor problem | 17 | 17.2 |
| | | Problem | 48 | 48.5 |
| | | Major Problem | 25 | 25.3 |
| | | Total | 99 | 100 |
| 2 | What do you think the effects of poor solid waste disposal? | offensive smell | 29 | 29.3 |
| | | health problems | 20 | 20.2 |
| | | it blocked drainage ditches | 20 | 20.2 |
| | | affects the aesthetic quality | 30 | 30.3 |
| | | Total | 99 | 100 |

On the effects of poor waste disposal, 29(29.3%) of the respondents perceived it associated with offensive smell, 20(20.2%) claimed it blocked drainages ditches and 20(20.2%) claimed that it caused health problems, and 30(30.3%) of the respondents think that it affects the aesthetic quality of the environment. This revealed that majority of the households have low perception on the health and environmental pollution effect of solid waste.

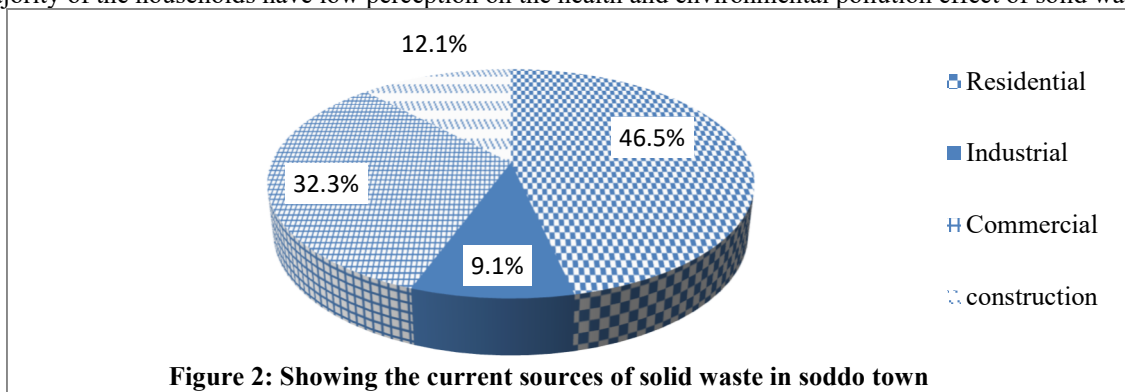


Figure 2: Showing the current sources of solid waste in sodd town

From the figure 2, that majority of the respondents or 46.5% believe that the major source of solid wastes in Sodo town currently is residential that means solid wastes generated from the households, and 32.3% of the respondents indicate that solid wastes generated form commercial, the remaining 12.1% and 9.1% of the respondents indicated that from construction and industries respectively. This revealed that, once the major sources of solid wastes are identified, the problem could be minimized through teaching and providing solid waste receptacles for households and the markets communities.

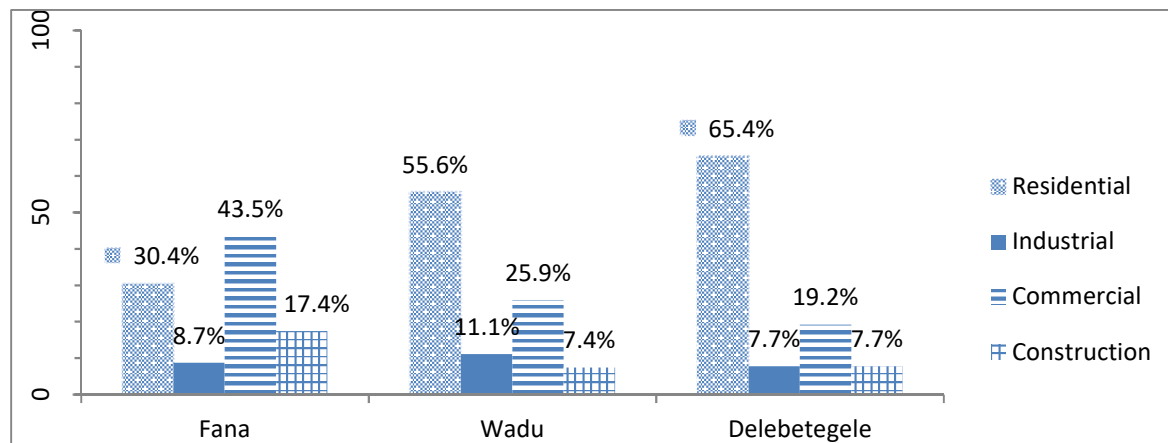


Figure 3: Showing the sources of solid waste in each kebele.

Figure 3 showed that the major sources of solid waste on each kebele; As indicated by the respondents' in Fana kebele 43.5%, 30.4%, 17.4% and 8.7% of the respondents stated commercial, residential, construction and industrial are the major source of solid waste respectively. In Wadu kebele, 56.6%, 25.9%, 11.1% and 7.4% of the respondents responded that residential, commercial, industrial and construction is the dominant source of solid waste in their kebele respectively. Finally, the study participants residing in Delebetegele kebele 65.4%, 19.2%, 7.7% and 7.7% of the respondents responded that residential, commercial, industrial and construction is the dominant source of solid waste in their kebele respectively.

3.5 The possible solution measures needs to be taken towards the adoption of safe and effective solid waste disposal mechanism.

Regarding the solution measures needs to be taken to make the solid waste disposal activities, the sampled households made their suggestion, but most of them suggested that the town municipality is responsible for the measure that needs to be taken. This indicates most of households were think that they are not responsible for the poor management of solid wastes in their town.

The municipality must prepare sufficient solid waste disposal sites, the municipality should provide solid waste disposal container in their surroundings separately for recyclables and non- recyclable solid wastes, enforcement of law on the residents who dispose refuses improperly, and must employ labor engaged with the removal of those wastes to solid waste disposal sites. Few of the sampled households also believed that, it is not only the responsibility of the municipality to take the necessary measure but also the community must participate in the process.

4. Conclusion

The study mainly examined the attitude and perception of people towards solid waste disposal in the Sodo town. From the findings all the objectives were accomplished. Though the majority 90% of the households were not segregate biodegradable and non-biodegradable solid waste into different bins at the source, and 12% were segregating it. It appears that most of these respondents who said not segregate biodegradable and non-biodegradable solid waste into different bins at the source indicate their low attitude towards the importance of solid waste segregation. As the environmental awareness of the households seems to be low due to this they are completely disposing the waste into the same storage and carried to dump site.

The majority of the households about 79% responded that not reuse the plastic bags which they were using to carry vegetables, grains etc. from markets because of negative attitude and inaccessibility of covered waste bin. However, About 90% of the households are willing to segregate biodegradable and non-biodegradable solid waste into different bins, if bins are provided and 10% of the respondents were not willing to segregate because they think that it is tedious work

The existing practice of solid waste disposal system in Sodo town does not fulfill the required conditions for environmental safeguard; that means, the low attitude and perception level of the community towards solid waste disposal system, absence of scientific disposal methods and sufficient disposal container, and lack of private sector involvement are responsible for the poor management of solid waste of the town. This study revealed that majority of the households has low perception on the health and environmental pollution effect of solid waste.

From the listed method of solid waste disposal system, commonly practiced in the study area are 50 (50%) of the sampled households responded as they use Open space dumping at solid waste disposal site, road side, near to house and in drainage canals to dispose their wastes.

The refuse that are seen commonly in Sodo town have a negative impact on the beauty of the town as well as causes a serious environmental pollution. Therefore, Programs to disseminate knowledge and to improve behavior

patterns and attitudes regarding waste management are critical.

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