

ADDIS ABABA UNIVERSITY

COLLEGE OF DEVELOPMENT STUDIES

CENTER FOR REGIONAL AND LOCAL DEVELOPMENT STUDIES



**THE CONTRIBUTIONS OF URBAN SOLID WASTE MANAGEMENT FOR
EMPLOYMENT CREATION: A CASE STUDY OF BISHOFTU CITY**

ADMINISTRATION, OROMIA REGION, ETHIOPIA

BY

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The Contributions of Urban Solid Waste Management for Employment Creation: A case Study
of Bishoftu City Administration, Oromia Region, Ethiopia

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A thesis is prepared by Amare Fenta entitled “The Contributions of Urban Solid Waste Management for Employment Creation: A Case Study of Bishoftu City Administration, Oromia Region, Ethiopia”, which is submitted in partial fulfillment of the requirements for the Award of Degree of Master of Arts in Regional and Local Development Studies (RLDS), fulfill with the rules of the University and meets the received standards with value to originality and superiority.

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Acronyms

COVID-Corona Virus Infectious Disease

CSA-Central Statistics Agency

FDRE-Federal Democratic Republic Of Ethiopia

FED-Finance and Economic Development

FGD- Focus Group Discussion

HHs-House Holds

ISWM -Integrated Solid Waste Management

MSWM- Municipal solid waste management

MSES- Micro and small enterprises

NGOs-None Governmental Organizations

RECP-Renewable energy cooperation program

SBPDD- Sanitation Beatification and Parks Development

SUSWM- Sustainable Urban solid waste management

SWM- Solid waste management

UNDP-United Nation Development Program

USWM-Urban solid waste management

WB-World

Abstract

This study was carried out in Bishoftu city in Oromia region. The aim of the study was to assess the contributions of urban solid waste management for employment creation. Descriptive research method was used in this study which includes qualitative and quantitative or mixed approach to explore the job creation, urban solid waste management practice and livelihood improvement of cooperatives. Accordingly, questionnaire survey, interview and field observation were conducted. Questionnaire survey included the whole 176 cooperative members in the city. Using a purposive sampling procedure twelve (12) participants were interviewed out of which one (1) SBPDD head, five (5) SBPDD employee staff members and six (6) head of cooperatives. The data from the questionnaire survey was organized and analyzed using Microsoft Excel. Results show that the number of cooperative respondents engaged in urban solid waste collection was 80 (45.45%). Those working street cleaning, compost preparation and solid waste sorting account were 48 (27.27 %), 24 (13.63%) and 24 (13.63 %), respectively. And after employed in SBPDD; their livelihood improvement shows in progress. The composition of urban solid waste in the city is composed of both biodegradable and non-degradable components, the current urban solid waste management practice of city is weak and also there is a problem on solid waste reduction strategy: segregation, reuse, recycling, and resource recovery. It is also noted that three main factors that aggravate the existing poor status of SBPDD practice in the city are: socio-cultural, technical and institutional factors. The participation of households in the solid waste management activities is insignificant. From the findings, it is clear that the study area is under serious threat of environmental degradation, which calls for immediate intervention from all concerned bodies to bring sustainable urban solid waste management by collaboration and integrating with other sectors.

Keywords: - cooperatives, employment, SBPDD, urban solid waste management, Bishoftu

CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

Nowadays; the amount of solid waste at a global level is increasing due to rapid population expansion, continuous economic growth, expansion of urbanization and industrialization. In developing countries, high population growth and urbanization, collectively with fast economic intensification accelerates the utilization rates. These patterns have increased the generation rate of urban solid waste and changed the composition characters of solid waste. It is becoming a headache for national and local governments to ensure effective and sustainable management of waste in the city (Yukalang, Clarke, and Ross 2017).

According to Goa & Sota (2017), in rapidly urbanizing cities, local governments need to consider the key activities of SWM including; waste generation and separation, appropriate solutions for recycling, collection, transfer and transport, treatment and proper final disposal. Poor USWM processes can lead to causes for human health, living resources and the environment, including water contamination, rodents and insect attraction and flooding due to blocked drainage like Philippines and India (Ayuba et al, 2013).

Urbanization with inadequate waste management practices, disposal of waste on the road, waste dumping in drains-that cause clogging, littering waste around house and uncontrolled dump sites together with ever increase in types of waste produced, worsens the problems of low cleanliness and health levels around the African countries like Kenya, Nigeria, Tanzania and Senegal(Van Dijk and Tilay, 2013).

Ethiopia is a developing lower income country, with a rising urban population, an improving economic situation and changing lifestyles. Hence, it faces the same urban solid waste management challenge as other lower income countries. Ethiopia's government policies promote conditions for domestic solid waste disposal, community education of sustainable waste management, standards for sanitation technologies across all socioeconomic groups, and partnerships among the government, communities, and NGOs for an integrated solid waste management system (Alem, 2007).

Girma WoldeGiorgis (former president of FDRE 2001-2013) approved the first proclamation regarding to solid waste in 2007 cited as Solid Waste Management Proclamation No.513/2007.

The objective of this proclamation is to improve at all levels capacities to prevent the possible adverse impacts while creating economically and socially beneficial assets out of solid waste (solomon , 2011).

Meaza (2016), mentioned in his research paper; in Bishoftu city unsatisfactory sustainable urban solid waste management systems, due to accumulated solid waste masses on the road or streets and drains all around the city the habitants suffer for bad environment.

Solid waste practicing or handling activities at source and by municipality submits all activities or efforts of separation of recyclable, reusable, compostable wastes to sell or to recover resources by the societies. involved these types of activities is very important to waste generators as well as municipality since it minimizes cost of disposal, generates income, and extending lifespan of dumping site and creates the suitable environment for community as well it creates job opportunity for different community groups(Gedefaw, 2015).

According to UNDP (2016), Ethiopia has developed a number of strategies supporting sustainable urban green development that cover both integrated solid waste management with contribution for job creation and urban green infrastructure. Cooperatives or enterprises benefitted in providing collection services and removal of solid waste and considered as an important step in enhancing livelihood and creating job opportunity. However, unsustainable urban solid waste management and illegal waste transports can have causes for both environment of the city and employee health condition due to different handling and removal activities resulting in soil, water and air pollution (Elagroudy, 2016). improper disposed or unprocessed solid waste cause severe health issues for populations near the area of dumping (Solid Waste Management, 2018). Leaving the whole process for the Cooperatives could lead to a situation where properly designed sanitary land fill sites could be converted to unsafe dump sites due to poor operation. And therefore; the general objective of this study is to assess the contributions of urban solid waste management for employment creation in Bishoftu city administration.

1.2. Statement of the Problem

In recent years, Bishoftu city has been practicing for sustainable urban solid waste management. Urban solid waste service provision for community is one of the most visible to generation, prevention, characterization, monitoring, treatment, handling, reuse and residual disposition. There is various types of wastes generating from municipal sources like; (residential, institutional, commercial), agricultural product wastes, and special (health care, household hazardous wastes, sewage sludge whose success and sustainability serves as an indicator for good governance, effective municipal management and successful urban management systems (Ogwueleka, 2009).

Gedefaw (2015), mentioned that, in Ethiopia more than 15 towns similar to Addis Ababa, Gondar, Asella, Jimma, Dessie, Ambo, Hossania, Wolaita Sodo, Bishoftu ,Bahir Dar, and Dera Dawa is characterized by rapid population growth that due to increase by birth and migration from rural to urban area. Such this fast population increment together with rapid development of the city has generate high volume of urban solid waste and required well infrastructural demand, good institutional setup and participation of community for its urban solid waste management practices (Regassa, Sundaraa and Seboka, 2011).

Solid waste management gap is a serious challenge mainly for most cities in the countries of like Ethiopia where a dense population lives together. Due to high generation rate of solid waste and its diverse nature it is difficult to manage urban solid wastes (Zurbrügg, 2009).

According to Elagroudy (2016), random dumping of solid waste and unsuccessful full collection system in a populated community would soon cause many health problems, urban pollution, ecological disorder such as water and air pollution has also been attributed to improper management of solid wastes. In communities level of education had a negative effect on household solid waste disposal in open spaces, along the roads but a positive effect on recycling , reuses and compost or natural fertilizers preparation (Alemayehu et al., 2017).

Ethiopia established laws in 2007 related to urban solid waste management, and the proclamation has incorporated; i.e. mandating safe, designated waste sanitation sites for society and the urban environment, as well as household sorting or separation of recyclables and community-level waste management plans (FDRE, 2007).

Bishoftu city administration has practiced rapid industrialization, urbanization and these leads to increased generation of urban solid waste, has chance for economic sources for people which is beyond the existing infrastructure in place. Improper urban solid waste collection and inappropriate disposal of solid waste has caused in water, land and air pollution, posing risks to human health and the environment in Bishoftu city (Caravani et al., 2017). According to Abrham (2018), from producing urban solid wastes in the city households take great share of generated covers 75%, street commercial institutes 3%, commercial institutions 12%, industries 5%, hotels 4% and hospitals 1%.

The recent assessment of solid waste management systems in the cities showed that in Adama, Bahir Dar, Bishoftu, Dire Dawa, Hawassa and Mekelle targeted by the UNDP-implemented and GEF-financed compost project. It is found that both the collection efficiency of urban solid waste management at the household level and the solid waste disposal rate at the landfill are, at most 75% and with a low disposal rate (70%), these rates give an overall system efficiency of 52% of USW being disposed of at landfills with little contribution of economic significance (UNDP, 2016).

According to Elagroudy (2016), Nigatu et al., (2011) and Abiot et al., (2012) those expert information the management of urban solid waste as a recyclable resource, as well as a potentially harmful and poisonous material in these; therefore human skills are a basic component for the creation of employment, the use of urban agricultural inputs and improvement of sustainable urban solid waste management in the city.

Due to skilled manpower, budget, facilities and producing high volume of urban solid waste in the city were the reasons for low performance of urban solid waste management, and require appropriate urban solid waste management education, formalizing the informal waste recovery system, establishing public-private partnership in all the waste management segments (Goa and Sota, 2017).

In general, there is a research gap conducted on the sustainable urban solid waste management system in line with i.e., continues employment creation, contribution of solid waste for employee livelihood, overall working conditions, intention to make better use of skills, workload, a safer

working environment, benefits or an employer who contributes to the income scheme according to managing their households in sustainable way on waste management resource.

Therefore, this research would be initiated to analyze and provide the contribution of urban solid waste management for employment or job creation of the study sites. And the result will help to modify what major priorities need to be considered in the sustainable urban solid waste management program in line with employment creation ` opportunity in Bishoftu City Administration.

Some research have been conducted on the area by Mohammed (2015),Solomon (2011) and Van Dijk and Tilay (2013) which have relevance to sustainable urban solid waste management of the area. And the works mainly focuses on solid waste management and identifying its problems in urban area. This study identified the following research gaps that have not been adequately address by those studies.

- The integration of sustainable urban solid waste management system in line with i.e., employee or job creation is investigated in this study.
- The contribution of sustainable urban solid waste management for employee livelihood is examined.
- Some new parameters (not used in the mentioned works), which could describe the relationship between Sustainable urban solid waste management, job creation and employee livelihood are better employed.

1.3. Objective of the Study

1.3.1. General Objective

The general objective of this study is to assess the contributions of urban solid waste management for employment creation in Bishoftu City Administration, Oromia Regional State, Ethiopia.

1.3.2. Specific Objectives

- To explore the current urban solid waste management practices in Bishoftu city.
- To examine existing institutional collaboration on urban solid waste management in the study area.

- To assess contribution of urban solid waste management for employment creation and the livelihoods of the cooperatives in Bishoftu city.

1.4. Research Questions

- How does currently practices urban solid waste management in Bishoftu city?
- How institutional collaboration does works on urban solid waste management in the study area?
- How does urban solid waste management contribute to employment creation and the livelihoods of the cooperatives?

1.5. Significance of the Study

The outcome and findings of the research are expected to contribute as a source of information who is interested to carryout similar research. And Bishoftu Sanitation Beautification Park Development Department would be also use as a source of information inputs for re-adjusting strategies and programs regarding to sustainable urban solid waste management for employee opportunities, effective management and problem what the job creation facing to the government, private, NGOs, and the community. Furthermore; this study may contribute in narrowing the wider gab of Sustainable Urban solid waste management of Bishoftu city Administration in relation to research emphasis and it also provides insightful clues for further research in the area.

1.6. Scope of the Study

The scope of the study would be highly articulated on the contributions of urban solid waste management for employment creation. And also the interviews and questionnaires are both covered on cooperatives members and their livelihood in line with urban solid waste management by using descriptive research method to provide appropriate and reliable information. And also the study is concentrated on how the cooperatives are try to manage their household by the income generation from sustainable urban solid waste management and what problems they are facing in doing.

1.7. Limitations of the Study

The research paper focused on the contributions of urban solid waste management for employment creation. The researcher suffered a lot of problems when conducted of this research in the study area like; shortage of time, finance and lack of relevant source of literature review,

focus group discussions not considered, and some cooperatives was misunderstanding and all this faced problems the researcher tries to control all those troubles of time, finance and lack of relevant source of literature review, some cooperatives was misunderstanding to answer the questions and due to these problems elaboration of unclear words and questions is given by the researcher and FGD is not include but the basic issues are collected and well-articulated during survey questionnaires and personal interviews. Generally all the above mentioned problems is not significant for the study.

1.8. Organization of the Paper

The study was divided into five chapters. The first chapter deals with introduction part which includes: the background of the study, statement of the problem, objective of the study, significant of the study, the scope of the study and limitation of the study. The second chapter deals with review of related literatures on sustainable urban solid waste management in line with job creation and employment. Third chapter focuses on research methodology which contains research design which includes: sampling size, sampling techniques, and data type and data sources and data analysis with interpretation. The fourth chapter provides; the results and discussion. Finally, the fifth chapter comprises conclusion and recommendation.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.1. Review of Theoretical Literature

In this portion the concept, composition, source and types of urban solid waste with the particular emphasis to urban solid waste distribution at the globally, African, Ethiopia and Bishoftu city and its impact on economy, environment, social and institution are articulated in sound and scientific manner.

2.1.1. Concept and Definition of Solid Waste

Solid waste can be defined as any useless and not needed substances in solid state, removed by members of the households. And also it can be any solid substances that have no more use or value for human beings or institute that it, and also to be removed (Kolekara et al., 2016). And according to Gatzweiler (2016), Solid waste can be defined as non-liquid material that no has additional value for long time to human beings who is accountable future for it. The words rubbish, garbage, trash, or refuse are often used as synonyms when talking about solid waste

According to the Federal Democratic Republic of Ethiopia (FDRE) Proclamation No. 513/2007, urban solid waste management practices Proclamation "Solid Waste Management" states that the collection system, transportation, storage space, reusing and recycling or removal of urban solid waste, or the successive value of a dumping site that is not for long time.

According to (Alemayehu (2017), urban solid waste management activities mostly practicing in collection, accumulation in places, transportation from sites, processing activities, treatment, recycling and reusing and final dumping of solid waste.

Urban solid waste management systems have to easy, reasonable, and in sustainable ways basically in financial, environmental and social and also should be unbiased, service provide for collection to low income level society and as well as rich households. The complicated systems of solid waste management need effectiveness, sustainability, the integration and collaboration of concerned bodies or stakeholders.

2.1.2. Composition of Urban Solid Waste

According to Hailu (2019), urban solid waste is heterogeneous in composition and can be grouped into two major components that recyclable and non-recyclable. The recyclable part of urban solid waste have organic solid wastes like foodstuff waste, backyard waste, and

agricultural product solid waste which carry out biological deprivation under controlled environment and can be changed into organic fertilizer called compost. Whereas non- recyclable solid wastes has an inorganic substance which is not decayed and degraded. In urban areas, solid waste is generated by domestic households, commercial and industrial enterprises, and institutional activities, generating from public and government institution office, different religious institution, school, university etc. Street refuse contains a mixture of refuse from organic and inorganic sources, because streets are used as dumping grounds by all generators of solid waste.

2.1.3. Source and Types of Urban Solid Waste

Urban solid waste substances or materials that are collected from any different types of substances from a massive quantity of source, urban solid waste sources are dependent on the socio economic condition of the society and technological level of the communities.

Table 1. Types and Source of Urban Solid Waste

Source	Typical generators of waste	Solid wastes types
housing	Single and many household members dwellings	Food staff wastes, piece of paper, carton, plastics(festal), textiles, skin and leather, enclosure wastes, timber glass, metals, ashes, special wastes and house unsafe wastes
manufacturing	simple and huge manufacturing industries, production, building sites, power and compound plant	organization wastes, covering, food staff wastes, edifice and demolition substances, risk wastes, ruins, unusual wastes
business	Provisions, hotels, café or restaurants, markets, place of work buildings, etc.	Piece of Paper, carton, festal or plastics, wood, food staff wastes, different glass, metals, unusual wastes, risk wastes

Institutional	Religious, Schools, different hospitals, prisons, administration centers	Similar to commercial
building and destruction	New building or construction places, repairing road, restoration sites, destruction of building	timber, harden steel, concrete, dirt, etc
urban or municipal services	Any street cleaning, landscape, different parks, beaches, other recreational areas, treatment plants of water and wastewater	Street sweepings, landscape and tree accompaniments, all wastes from parks, beaches, and from other recreational area, mud
Process	different manufacturing, refineries, chemical industries, power plants, extraction of mineral and processing	manufacturing processing wastes, scrap substances, off requirement goods, slag, kind of tailings
Agriculture	Different crops, orchards, vineyards, dairies, feedlots, farms	decomposed foods wastes, agricultural wastes, unsafe wastes (e.g. herbicides)

Source: (the waste hierarchy- Hoornweg -Bhada-Tata-2012; Benjamin et al., 2014; Ukwabaet al., 2018)

2.1.4. Urban Solid Waste

2.1.4.1. Global Solid Waste Status

Globally about 1.3 billion tons of urban solid waste produces per year and also expected to rise by 2.2 billion tons per year by 2025. This shows a significant change in per assets urban solid waste generation rates, from 1.2 to 1.42 kg per individual per day in the coming fifteen years (Igbinomwanhia, 2011a; Igbinomwanhia *et al.*, 2011b; Hoornweg *et al.*, 2013).

In African cities, the per capita waste generation rate is range of 0.45 to 1.3 kg/capita/ day. The waste generation rate in developed countries varies from 0.8 to 2.0 kg/capita/day. Similarly, in developing countries, the volume of waste generated varies from day to day and season to season (Jayarama, 2011). In sub- Saharan Africa the rate of generation urban solid wastes are estimated to 62 million tons per year and it predicts wide range of 0.09 to 3.0 kg per head per day with an average of 0.65 kg/capital/day (Hoornweg *et al.*, 2014).

Despite the accelerated pace of production, waste collection rates are often lower than 70% in developing countries. More than 50% of the collected waste is often disposed of through uncontrolled land filling while 15% is processed through unsafe and informal recycling. Household waste takes the lion's share in African countries (Mohammed, 2017).

2.1.4.2. Urban Solid Waste in Africa

Solid waste generation and management are major problems facing Africa countries like Nigeria, Ghana, Cameroon, etc. Most cities and towns in this region spend 20-50% of their environmental budget on solid waste management and only 20-80% of the waste is collected (Orhorhoro and Oghoghorie, 2019). Generation of solid waste increases in line with developmental rate of any country. Africa is known to be the least developed region in the world with 38% urbanization (Yukalang, 2017). Although, this is low compared to many other countries in the world, African countries are experiencing rapid development with growth rate of 4% per annum and are now faced with huge amount of SW which has direct effect on the human health, safety and environment (Adebayo Bello and bin Ismail 2016).Urbanization with inadequate waste management practices, disposal of waste on the road, waste dumping in drains- that cause clogging, littering waste around house and uncontrolled dump sites together with ever increase in types of waste produced, worsens the problems of low cleanliness and health levels around the African countries (Van Dijk and Tilay, 2013).

Urban solid waste management practices (USWM) has frequently a serious problem in current times outside the capacity of most urban/state governments of the country. In this case the city is expected to refuse loads being removing in the urban area in densely occupied or populated cities as usually only about 40 to 50% of urban solid waste is reportedly being collected in the city (Dijk 2014). inadequate handling and practicing of urban solid waste represents as a source of water, land and air pollution make disorder the urban situation or environment and the health condition of the society living in the cities and which is the mainly critical environmental challenges that cities in Africa countries are exposing today. The current capacity of most solid waste management systems in Africa is inadequate and too slow to meet the increasing demand of the solid waste generated (Adebayo Bello and bin Ismail ,2016)

2.1.4.3. Urban Solid Waste in Ethiopia

Nowadays, In Ethiopia urban solid waste management practices are currently becoming a widely major concerning to public health and environment. Most developing countries like Ethiopia, As result of rapid expansion of urbanization and high population huge amount of urban solid waste is produced. “The average urban solid waste production rate is about 0.221kg per head per day and it is also expected that only 2% of the population established urban solid waste collection services” (Hailu, 2019).

And also the current daily waste production of Addis Ababa city is estimated to be 1,220 ton solid waste is generated per day (Wondimu, 2015). The waste production rate per person is about 0.45 kg/day.

According to Ababa (2019), still Ethiopia is under pressure to deal with the difficulty of proper management systems of urban solid wastes. With the recent rate of urbanization urban solid waste collection, transportation and removal have been a main challenge of municipalities in most of the Ethiopian cities. Collection of urban solid waste in most of the cities is difficult and more complex because the generation rate of housing, marketable and manufacturing waste is a spread process that carried out in every households, every building and every profitable and manufacturing facility as well as in the streets or roads, parks and even in the unoccupied place available within the society. Additionally, as confirmed by (Abebe et.al, 2009; Yukalang, 2017),

many cities exposed those problems such as lack of skilled manpower and equipment and financial scarceness.

2.1.4.4. Urban Solid Waste in Bishoftu

Bishoftu city is characterized by fast population growth which caused by natural increase and migration from rural to urban area (Gedefaw, 2015). Such this rapid population growth together with rapid development of the city has huge amount of urban solid waste and in twist it needed highly infrastructural demand, institutional setup and community participation for its urban solid waste management in the city (Nigatu et al, 2011).

In city solid waste generated in the Households take most shares of urban solid waste produced 75%, street business areas 3%, commercial institutions 12%, light and heavy industries 5%, hotels and restaurants 4% and health institute or hospitals 1% (Abrham, 2018). The major problem of solid waste management in the city is random dumping or improper disposal of solid waste. And also the collection system in the city cause many health problems, urban pollution, and ecological disorder such as water and air pollution (Nigatu et al, 2011).

Many municipal cities in low and middle income countries use integrated solid waste management as the ideal principal concept for their municipal solid waste management (Gedefaw, 2015). Due to the insufficient sustainable urban solid waste management system in Bishoftu, the city suffering by accumulated waste loads on the streets, water bodies, recreational areas and drains in all around.

2.1.5. Sustainable Urban Solid Wastes Management

According to (Bank, 2009) a more systematic way of thinking and looking at waste management is provided by an approach called sustainable and integrated solid waste management.

The strategy of internationally recognized waste management hierarchy is management systems of municipal urban solid wastes and it is a basic component of sustainable urban solid waste management. It also seats more emphasis on strategies and programs for removing and minimizing waste, with treatment and discarding being the smallest amount preferential options. The role of the waste management Hierarchy is to make urban solid waste management practices as environmentally sound as likely.

According to Efficient (2016), at the top is waste reduction, which means not generating waste in the first place or minimizing the amount of waste produced. Below that is waste reuse (for example, refilling a drinks bottle), followed by recycling (processing of wastes into new raw materials). A fourth option is the recovery of energy by burning or biological treatment. Disposal, ideally in a landfill site, is the final option for any wastes that cannot be dealt with in any other way. A landfill site is an area of land set aside for the final disposal of solid waste.

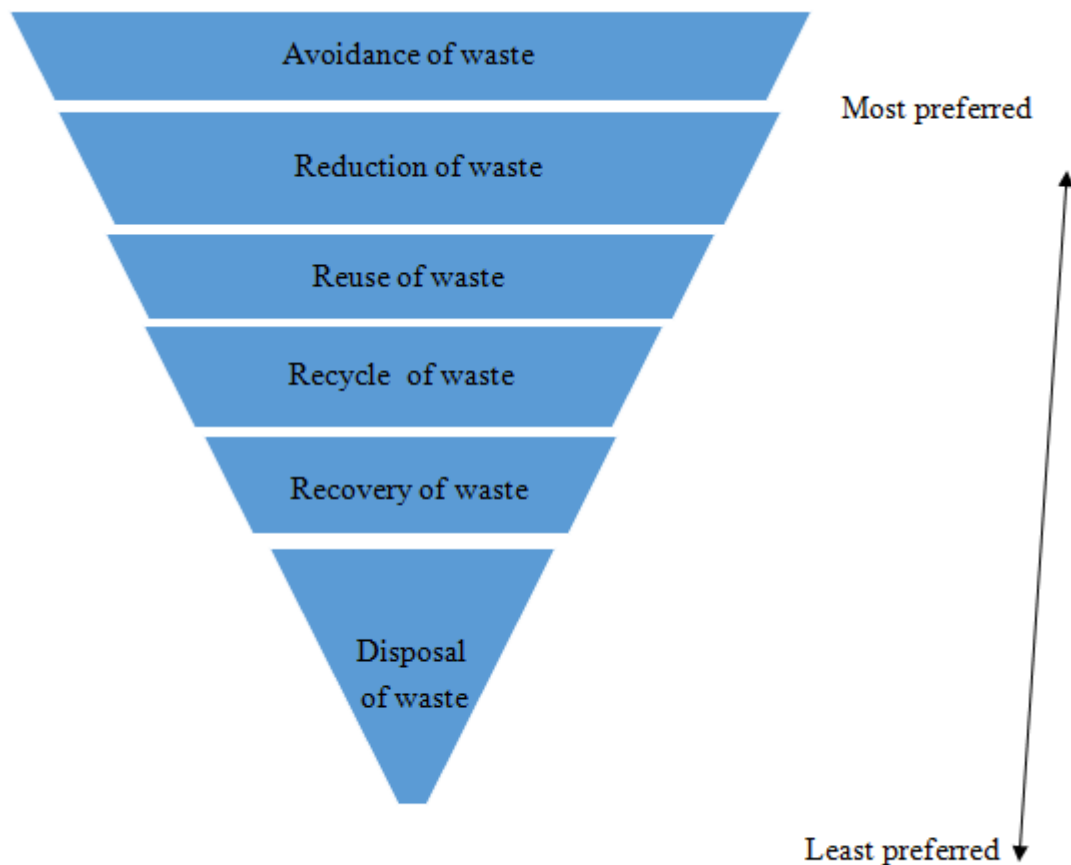


Figure 1. Waste Management Hierarchy

Source : (Newman, 2015)

A. Avoiding and reducing

According to Open Wash (2016), Avoiding and reducing the generation of waste is the most preferred approach. Because it preserves resources, avoids the use of additional resources to manage waste that would have been generated, and aims to eliminate disposal costs. The goal is to maximize efficiency and avoid unnecessary consumption through such positive behaviors as: selecting items with the least packaging or that require the least resources to produce, avoiding disposable goods or single-use materials, buying products that are recycled, recyclable, repairable, refillable, reusable or biodegradable, using leftover food rather than throwing it away.

Waste reduction is important at the household level. In Ethiopia, a number of waste reduction initiatives have been put in place in big cities like Addis Ababa and Mekelle by informal organizations and private sector enterprises. These initiatives frequently involve several different stakeholder groups including urban Health Extension Workers (HEWs), civil society, private sector enterprises and organized women's development groups (Open Wash, 2016).

B. Reuse and Recycling

Reuse the materials without further processing, avoiding the costs of energy and other resources requires for recycling. For example, many household and industrial items can be repaired, reused, sold or donated to charities. The next step in the hierarchy is recycling, which involves processing waste materials to make the same or different products. This includes composting, which recycles nutrients back into the soil. Recycling keeps materials in the productive economy and benefits the environment by decreasing the need for new materials and waste absorption (Njoroge et al., 2013).

According to Cunningham (2008), reusing is most efficient than recycling and preparing composting making procedures for the reason that cleaning and reusing substances in their at hand form reduced the cost of energy for remaking or rework them in to something els.

Recycling a product generally requires fewer resources than drawing virgin materials from the environment to create a new one. Where further recycling is not feasible, it may be possible to recover the energy from the material and feed that back into the economy where this is acceptable to the community. Some materials may be inappropriate to reuse, recycle or recover

for energy and instead require treatment to stabilize them and minimize their environmental or health impacts. Finally, the waste hierarchy recognizes that some types of waste, such as hazardous chemicals or asbestos, cannot be safely recycled and direct treatment or disposal is the most appropriate management option.

Waste recycling method is used to decrease the use of matter and energy resources, cuts pollution, creates local jobs, and saves money (Azam& Ali, 2014).

C. Energy Recovery

The third option in the waste hierarchy is recovery. Recovery is about finding other uses for wastes that enable some value to be extracted or recovered from them, usually by using them as a source of energy. Accordingly, recovering energy from waste on a large scale using an advanced incineration plant is a high- technology, a high-cost option that is common in many developed countries. However, it needs a highly developed infrastructure (a reliable source of waste, good roads, a reliable waste collection service, a power distribution grid, etc.) and large amounts of waste. This technology is currently rarely used in low-and-middle-income countries, but as cities develop there is great potential for energy-from-waste in the future in Ethiopia and many other countries (Scarlat et al., 2015 cited in National WASH Coordination Office, 2016).

D. Waste Disposal

This is the last option of the waste hierarchy. Nevertheless, waste disposal is the most widely used practice in all over the world. However, dumping of solid wastes on land has serious environmental impacts. Most importantly, the leachate through the waste infiltrates the soil contaminating the ground water. Frequent outbreaks of water-borne diseases, especially during the rainy season, have been reported in developing countries. Waste disposal should, therefore, be carried out in a properly designed landfill i.e. an engineered landfill. This engineered landfill is not a dump but is a waste disposal facility designed on scientific principles to protect the environment and public health (Abiot Abera Aydamo, Akhila S. Nair & Zuberi, 2012).

2.1.6. Impact of Urban Solid Waste on Economy, Environment, Social and Institution

2.1.6.1. Impact on Economy

According to Mohammed (2016), sustainable urban solid waste management practices generate significant socioeconomic co-benefits, particularly in developing countries, like Ethiopia, Kenya, Uganda and Tanzania where they can create employment, improve urban public health and governments have an alternative to capital-intensive solutions to waste management. In Ethiopia Partnerships with the informal waste sector may offer less expensive arrangements while generating larger social and economic benefits. And also solid wastes are collected by the government employees, private companies 'based on contractual agreements and Micro and Small Enterprise.

Sustainable solid waste management involves evaluating local needs and conditions, and then selecting and combining the most appropriate waste management activities (Agarwal& Chaudhary, 2015). Economic sustainability is achieved when the waste sector generates secondary material in a cost-effective manner, establishes new enterprises, provides more jobs, supplies affordable carbon neutral energy and minimizes the amount of residual waste disposed. Funds and investments need to be directed to appropriate practices, infrastructure, equipment and services that are affordable to operate and maintain over their lifetime. Wherever possible, economic investments should encourage the financing of local technologies and enterprises in urban solid waste management.

Inclusive solid waste management requires an integrated, holistic and multi stakeholder approach that optimizes synergies between state-led, market-driven and community-based strategies. At the grassroots level, greater attention needs to be given to replicating and up scaling emerging but still isolated best practices, such as organizing informal workers into cooperatives or employing them in microenterprises or public-private partnerships (Sudmant et al, 2018).

2.1.6.2. Impact on Social Aspects

Van Dijk (2014), Socio-economic sustainability of waste management system indicates its financial viability for households, private enterprises, organizations, and local authorities. Waste management jobs, especially in manual sorting for recycling, are clearly of poor quality but may provide a route into employment for the socially-excluded.

On the potential sustainable urban solid waste management across the urban solid waste hierarchy, with a focus on waste collection, sorting and recycling. Aside from providing an important contribution to increasingly regard as an opportunity to promote social inclusion and upgrade the quality of existing jobs of both women and men (Fetene, 2015).

In the urban solid waste management, the ability of the population to pay the service varies; the social sustainability is achieved when all segments of the community have access to the service without considering their income. This is possible if the government establishes a financial mechanism that enables self-financing to cover service cost at the same time comprehending all strata of the society – such as cross-subsidy for urban poor communities. In Ethiopia where service user charges have been set considering the household's income level (Nishimwe P. et al., 2016).

Employment in the urban solid waste management needs to be concerned with other social factors such as the aspects of child labor, social protection and freedom of association (Elagroudy , 2016).

2.1.6.3. Impact on the Environment

Sustainable solid waste management complements the green economy concept, especially when one considers the fundamental role of the solid waste sector in creating a low-carbon, circular economy whereby the generation of waste and harmful substances is minimized, the materials being reutilized, recycled or recovered are maximized and disposed waste is minimized, with all of these processes being managed to avoid damage to the environment and human health. The principles to be taken into account in designing green SWM include sustainability, equity, efficiency, economic viability and diversity, producer responsibility, reliability, inclusivity and participation and job creation (Prepared and Safe ,2014).

Environmental sustainability implies that solid waste collection and disposal should be transformed into a closed-cycle to minimize its burden on the environment and resources. This is possible through the implementation and enforcement of waste separation at the source to increase the recycling rate which reduces waste ending into dump sites (Nishimwe P. et al., 2016).

2.1.6.4. Impact on the Institution

According to Wegmann (2019), waste management services in most countries central government is responsible for the governance of waste management and sets out national policy and guidelines for waste management.

Meine Pieter (2014), sustainable and integrated solid wastes management builds institutional capacity, adequate local authority and autonomy is provided to enable good municipal governance of the solid waste sector and self-sustainable financing and cost recovery. And the actual collection of waste is generally done at a local level, by municipalities. Department of environmental affairs has oversight over the management of waste in the country and creates the policy framework.

Responsibility of the full range of waste management including the collection and disposal of waste, regulating and monitoring the activities of waste companies and enforcing waste laws and by-laws, has been given to the local municipality (Van Niekerk, 2019).

Institutional setup can help to identify and assess local context in terms of roles, responsibilities as defined by legislation and policy, environmental rules, political drivers, key institutions, governance processes and actors, how governments make decisions, processes at national and sector levels related to urban solid waste management (FDRE, 2007).

2.2. Empirical Literature

This topic provides the contributions of urban solid waste management to job/employment/creation, livelihood improvement and its benefit to sound environment with conceptual framework.

2.2.1. Contributions of Urban Solid Waste Management

Enhanced urban solid waste management is essential for supporting sustainable economic development and uses for reducing poverty in the long term by decoupling resource use and economic growth; limiting air, soil and water pollution; and creating different jobs and livelihoods changes (Oates, Gouldson, & Gillard, 2014).

2.2.1.1. Job Creation Concerns

Enhanced urban solid waste management is essential for supporting sustainable economic development and uses for reducing poverty in the long term by decoupling resource use and economic growth; limiting air, soil and water pollution; and creating different jobs and livelihoods changes (Oates, Gouldson, & Gillard, 2014).

Improving livelihoods of the solid waste workers and their occupational health can help build their resilience to climate-related shocks. A pro-poor waste management strategy that balances environmental objectives with the interests of low-income urban residents therefore presents an opportunity to move towards both more efficient climate action and more effective poverty alleviation (Environmental Policy Update, 2012).

Alie (2015), stated in his research paper, on the potential sustainable urban solid waste management across the urban solid waste hierarchy, with a focus on waste collection, sorting and recycling. Aside from providing an important contribution to increasingly regard as an opportunity to promote social inclusion and upgrade the quality of existing jobs of both women and men.

According to Gedefaw (2015), the use of micro and small enterprises for creating job opportunity to low income community in providing collection, sorting, street cleaning and disposal of solid waste could be considered as an important step in enhancing livelihood of cooperatives and creating job opportunity for jobless youths in the city.

2.2.1.2. Livelihood Assets Concern

According to Oates (2018), the livelihood improvement approach is a technique that developed to improve the lives of people or cooperatives these involve in working urban solid waste management had the same sorts of problems that many developing countries face today in areas such as daily living, sanitation and health.

Assets are often represented as five categories: natural resources (also called ‘natural capital’), physical reproducible goods (‘physical capital’), monetary resources (‘financial capital’), manpower with different skills (‘human capital’), social networks of various kinds (‘social capital’) (Oates, L., 2018).

- Human capital: labour power, health and nutritional status, skills and knowledge;
- Natural capital: access to land, water, wildlife, flora, forest;
- Social capital: refers to those stocks of social trust, norms and networks that people can draw upon to solve common problems. It is mediated through kin networks and group membership;
- Physical capital: houses, vehicles, equipment, livestock;
- Financial capital: savings, gold/jewelers, access to regular income, net access to credit, insurance.

Increasingly, it is being recognized that in addition to these five categories, it is important to include analysis of political capital. This goes beyond social capital, in that, an individual's stock of political capital will determine his/her ability to influence policy and the processes of government.

2.2.1.3. Environment Concerns

Beyond protect public health, the main purpose of solid waste management is the conservation of the (global) resource base and the protection of environment. Achievement of these environmental goals is measured through resource and environmental sustainability. The method of health risk assessment to describe threats to humans is also to be assessed for environmental sustainability (Zurburgg et al., 2014, Yang et al., 2012). In the context of organic waste management in residential areas a sustainable system should not release pollutants into environment, protects existing natural habitat, restores viability of ecosystems, recycles organic nutrients and creates top soil, produces food, because no health impacts to the users and conserves renewable resources (ISSOWAMA, 2011).

Urban solid waste recycling can save energy, supply valuable raw materials to industry and create jobs, although avoiding or reducing the production of waste. And poorly collected or improperly disposed of waste can have a detrimental impact on the environment (Alie, 2015).

2.2.4. Conceptual Framework

The contributions of urban solid waste management for employment creation were identified for the aspect of cooperative members. Figure 2 conceptual framework shows the detailed pictorial representation of integrated urban solid waste management and its benefit for job/employment creation and safe environment.

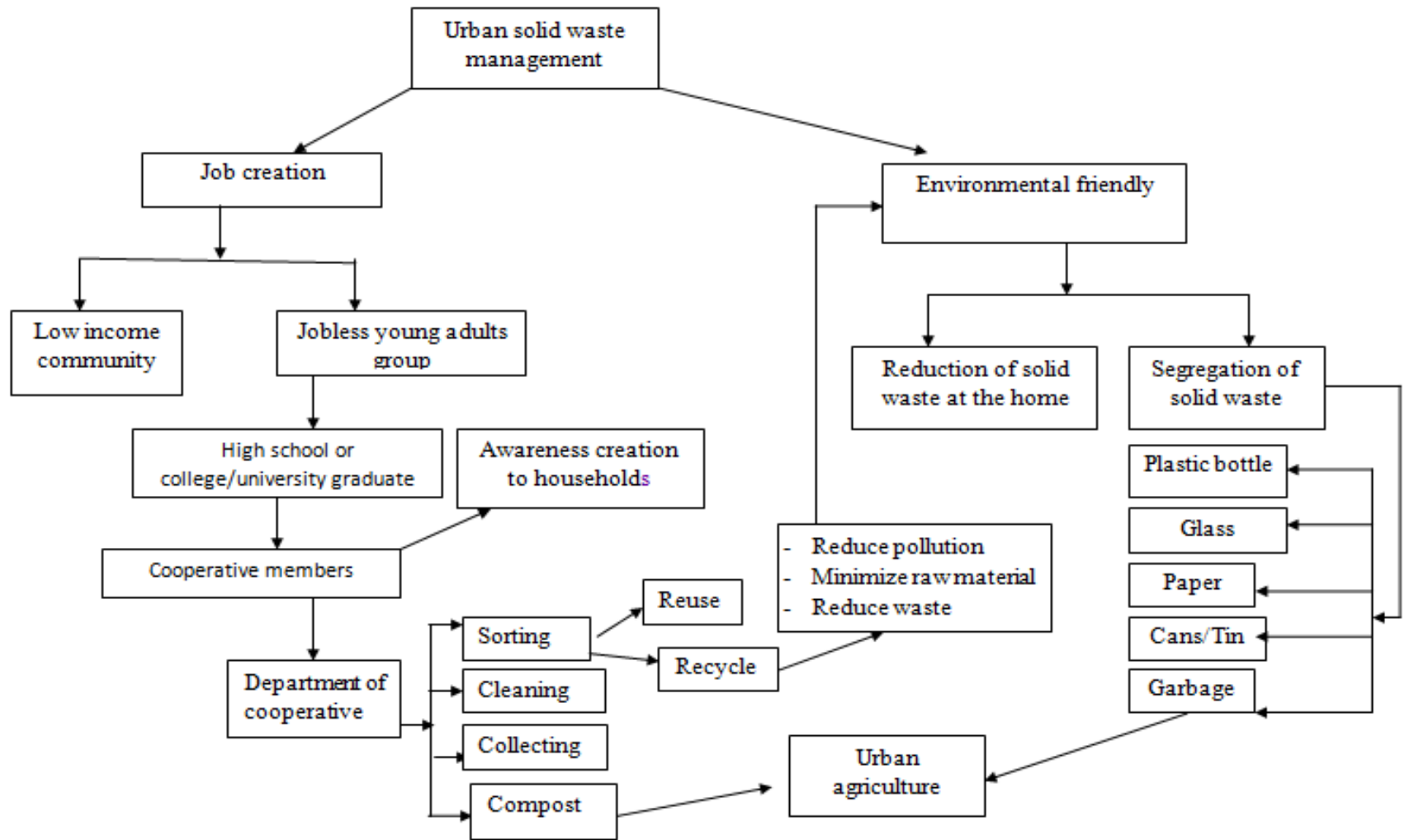


Figure 2. conceptual frame works for the study

Source: Developed by the researcher, 2020

CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Description of the Study Area

3.1.1. Area and Location

Bishoftu is located at East Shewa Zone in the Oromia National Regional State which is situated between 8°42' 30"-8°47' 30"N latitude and 38°57'30"-39°2'30"E longitude. It is placed at a distance of 47.9 km in south east of Addis Ababa and the geographical area of the city is about 18,278 hectars and it lies at an altitude in the range of 1900 to 1995 MASL (Bishoftu City Administration FED Office, 2018). Its average Temperature and Rainfall is 26.08 degree centigrade and 735 mile meter respectively (Bishoftu, 2016).

In the city, there are about a total of 14 (fourteen) kebeles and out of which 9 (nine) urban and 5 (five) rural kebeles. From 1995 to still nowadays, it is the first stage city administration which is administrate by Mayor. As concerning its spreading out the urban becomes the administrative center of Adea Liban woreda from 1935 to 1982 E.C. And again it was the administrative center of Adea woreda from 1983-1994 E.C (Bishoftu City Administration FED Office, 2018).

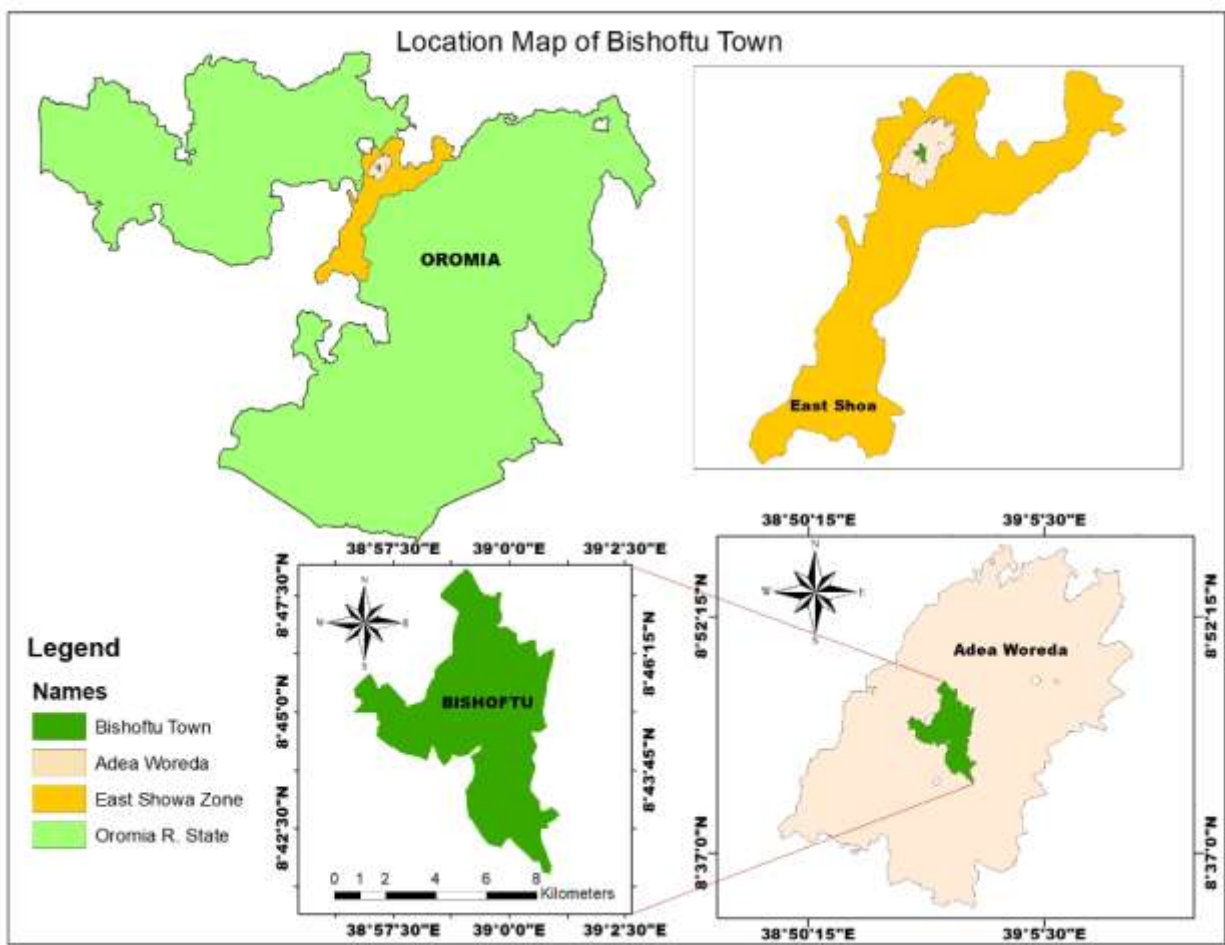


Figure 3. Map of Bishoftu City /Study area.

Source: Developed by the researcher in GIS, 2020

3.2. Research Design

The data collection was conducted from December 25, 2019 to May 23, 2020 jointly with house hold survey, interviews and observations. Descriptive research type was used in this study which is mixed research approach (qualitative and quantitative approach. Both qualitative and quantitative approach was applied to explore the employment creation, SUSWM practice and livelihood improvement of cooperatives in urban solid waste management in Bishoftu city. The qualitative method is used for conceptual development at the early stage and for interpretation, clarification and illustration of the findings as well as the collection and analysis of subjective opinions, attitudes and views of cooperatives during interview. The qualitative information extracted from interview was grouped into thematic categories and has been analyzed qualitatively. This could support quantitative data which has been collected using questioner and analyzed using simple descriptive statistics. This together could support the line of arguments and strength the data sets from various sources by cross checking evidence. Survey questionnaires and interviews which describes the participation and attitudes of cooperatives to words the contribution for sustainable urban solid waste management and the benefits of working on it to their livelihood improvement.

3.2.1. Sample Size and Sampling Techniques

3.2.1.1. Sample Size

The total of 22 (twenty-two) cooperatives registered in the SBPDD office are included in the study. Each cooperative has eight members. The total number of cooperatives' population was 176. Among these, 71 are males and the rest 105 are female.

3.2.1.2. Sampling Techniques

All 176 members of the cooperatives are considered in this study using comprehensive or availability sampling method (Thornhill et al., 2012) because it was easy to manage the data obtained from this limited number of cooperatives. The interviews were conducted to experts, head of SBPDD and head of cooperatives.

3.2.2. Data Type and Sources

In order to attain the objectives of the research both primary and secondary data was used to perform the study. The survey questionnaire obtained from primary data was used as the main

data gathering instrument, and the secondary data that are nominal and ordinal type of data has been gathered from books, research articles, government documents and appropriate websites that are relevant to this study.

3.2.2.1. Instruments of Data Collection

According to Richards (1985), data can be collected through such instruments: questionnaire, interviews as well as participant observation. In the context of investigating the practice of sustainable urban solid waste management both quantitative and qualitative ways of collecting data were deployed. The researcher used questionnaire as the major data gathering tool and the data were validated using experts, officials and head of cooperatives interviews including documents. The required data were found from Bishoftu city.

3.2.2.1.1. Questionnaire

McDonough (1997), believes that using a questionnaire is a popular means of data collections. It is believed that they have some advantages over other data collection instruments. The Data was collected directly from the respondents or/and operators of the cooperatives and officers using questionnaires, personal interview and observation to collect and secure adequate and reliable data. Open-ended questions are used to dig out reply and further rationalization. Before undertaking the field work for data collection, the first draft survey questionnaire was developed in English and Amharic, and submitted to the research advisor for comments and suggestions. Based on the feedback, some improvements were accordingly made.

3.2.2.1.2. Key Informant Interview

One of the qualitative methods of collecting data used in the study is interview which is most often used method in qualitative inquiries. The interviews are semi structured. This is the most common interview type in applied linguistics (Dornyei, 2007). A total of twelve (12) participants were interviewed about sustainable urban solid waste management on job creation out of which one (1) SBPDD head, five (5) SBPDD employee staff members and six (6) head of cooperatives selecting purposefully based on their working experience and skills. The interview data from twelve participants was recorded using mobile recorder, transcribed and analyzed.

3.2.2.1.3. Focus Group Discussion

Focus group discussions are excluded from this study because of COVID-19 pandemic. And basic issues are collected and well-articulated during survey questionnaires and personal interviews.

3.2.2.2.4. Field Observation

The researcher field observation was carried out in different area of the Bishoftu city. These areas most urban solid wastes generated are around roads, commercial areas, residential, the composting and recycling sites in Bishoftu city.

3.3. Data Analysis and Interpretation

All the collected data was sorted out, tallied and converted manually in to percentage. The information from the questionnaire, interview and observation was analyzed simultaneously to cross check the internal consistency of the data. Both quantitative and qualitative data were individually presented and analyzed. And also the figures analyzed and presented using Microsoft Excel. Finally, summary, conclusions, and recommendations of major findings were drawn and forwarded based on the study.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1. Characteristics of the Respondents

This chapter presents and discusses the results of the study.

As shown in figure 4, from a total of 176 cooperative members, 40.34 % (71 HHs) of the respondents are male and the remaining 59.66 % (105 HHs) are females. In our communities females are engaged on urban solid waste management practices in the city rather than male and women are better in handling, sorting and collecting on urban solid wastes in their house (Solomon, 2011).

4.1.1. Demographic Characteristics of the Respondents

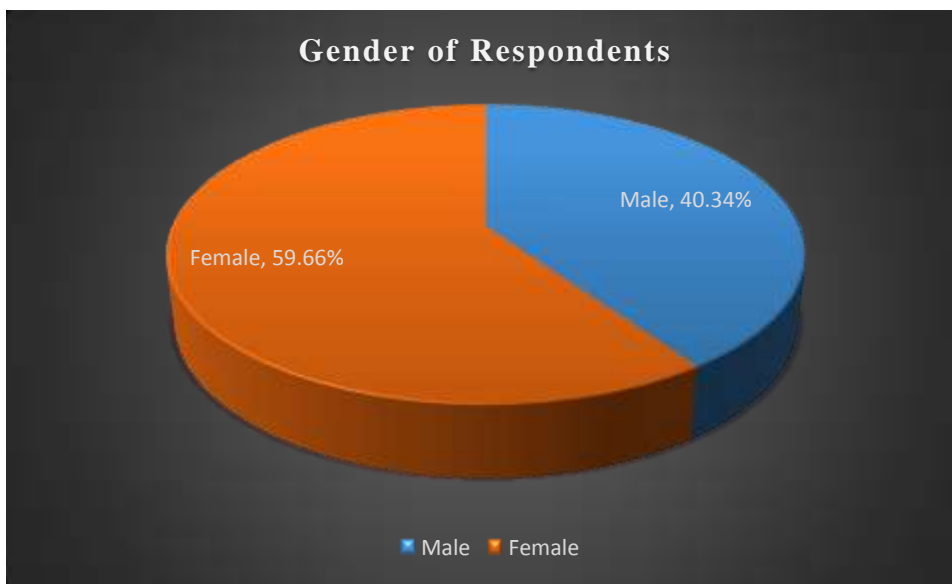


Figure4. Gender of Respondents

Source: (Field survey, 2020)

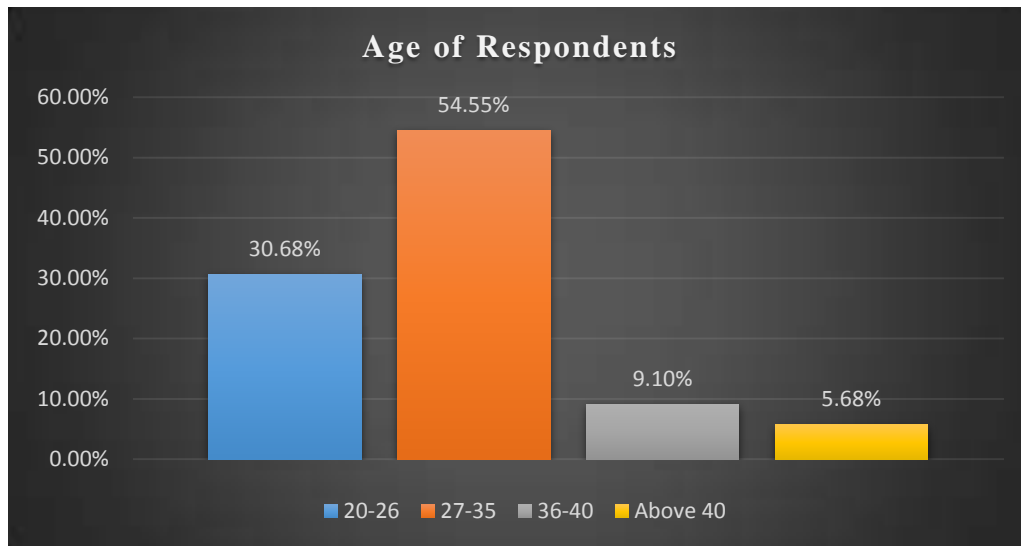


Figure 5. Age of Respondents

Source :(Field survey, 2020)

As shown in figure 5, from the total respondents 96 (54.55 %) of sample are near to 27-35 and 54 (30.68%) from 20– 26 age a group. And the rest 16 (9.10%) and 10 (5.68%) respondents is under 36-40 and above 40 age group respectively. This implies that the majority of the respondent ages fall under young adults and energetic working age group. Young adult age group that makes the urban solid waste management to be efficiently sorting, cleaning and collecting from the city as compared from adults or elderly age groups.

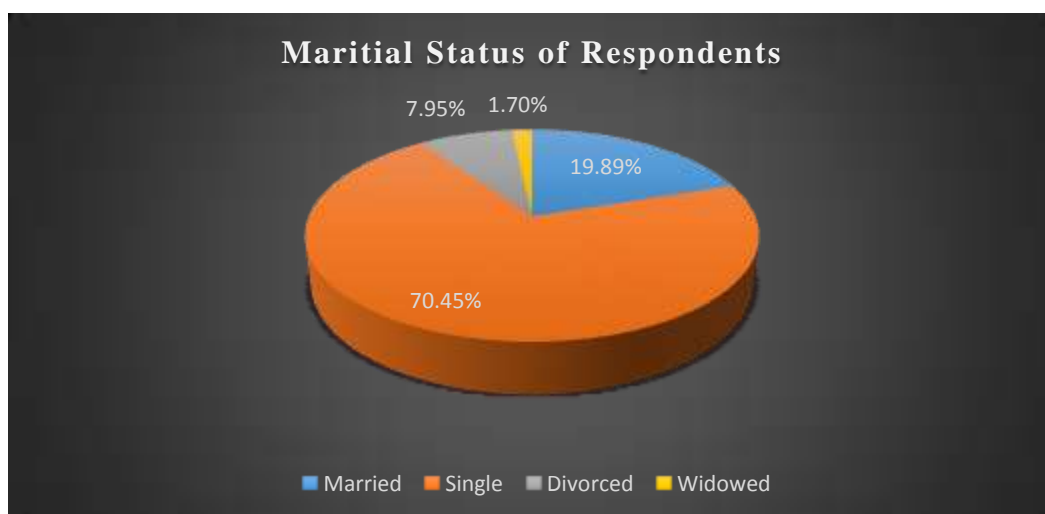


Figure 6. Marital Status of Respondents

As shown in figure 6, that 35 (19.89 %) of marital status of the respondents were married and most married female cooperative members have responsible for house management, child care, nursing mother and other additional house work. And 124 (70.45%) were single/ unmarried respondents have no burden in their home and work freely on urban solid waste management. 3 (1.70%) and the remaining 14 (7.95%) were widowed and divorced respectively. And they are economic dependant on relatives or family members due to this working on urban solid waste management have a good opportunity to handling, collection and street cleaning for them.

4.1.2. Socio-Economic Status of the Respondents

4.1.2.1. Respondents Educational Level and Family Size

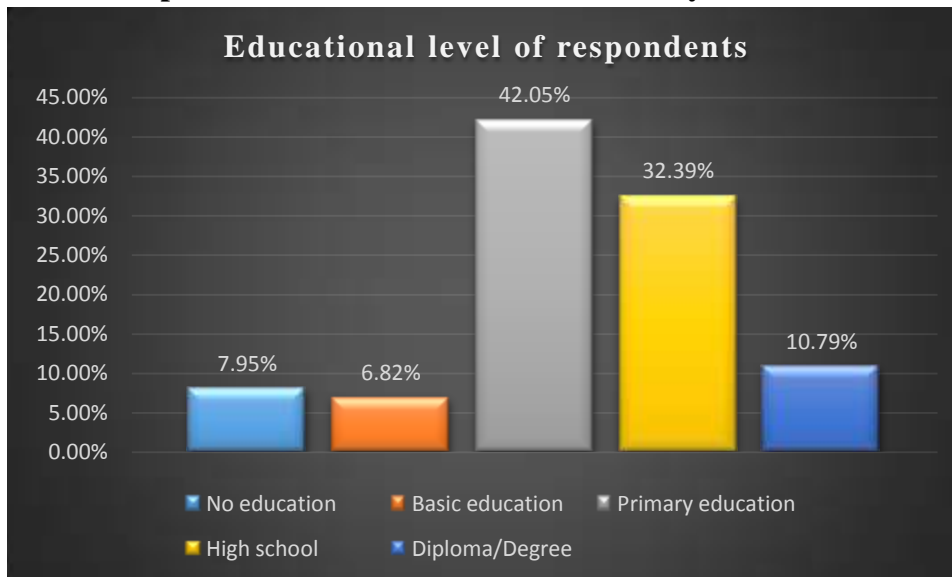


Figure7.Educational levels of Respondents

As shown in figure 7, the education level of the respondents from cooperatives members 42.05% and 32.31 % were primary and high school education completed respectively and they are not educated or graduated from college or university. The rest 10.79 % of respondents have Diploma or Degree holders. The majority of communities perceived that uneducated persons only work on solid waste collection, sorting, street cleaning and compost preparation and they are supposed this work as required low level of education. And most respondents mentioned that the past 5(five) years educated person are not involved in this department as compared from other sector. As we know education is one of the human's capitals that required technical skill to manage

urban solid waste in the city and significantly influenced perception of people about the effect of solid waste on the environment.

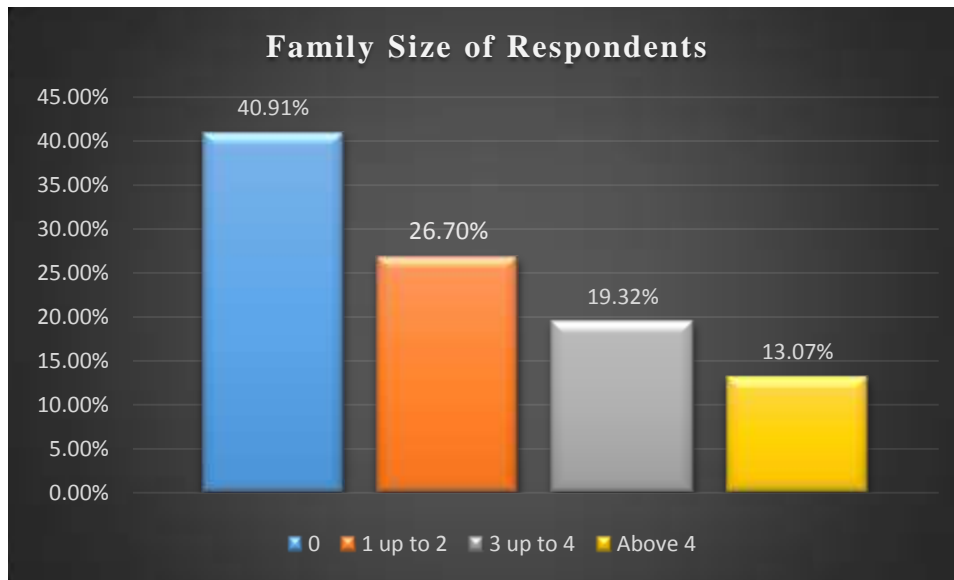


Figure 8. Family Size of Respondents

Source: (Field survey, 2020)

As shown in figure 8, the description of family size can be summarized as follows; out of the total cooperative members 72 (40.91%) respondents have no household members. Those cooperative members came and works on urban solid waste management after completed primary, secondary school and college graduated. And they are also mentioned that working on collection, sorting, and cleaning of urban solid waste management as good chance for income generation. Also 47 (26.70 %), 34(19.32%) and 23 (13.07%) have 1-2, 3-4 and more than 4 household members respectively and the majority of the respondents requires to achieve the demands of basic needs to their family members like clothes, shelter and house by generating income from urban solid waste management especially i.e., cleaning, collection, sorting and making compost.

4.1.2.2. Respondents Occupation and Monthly Income Before Employed

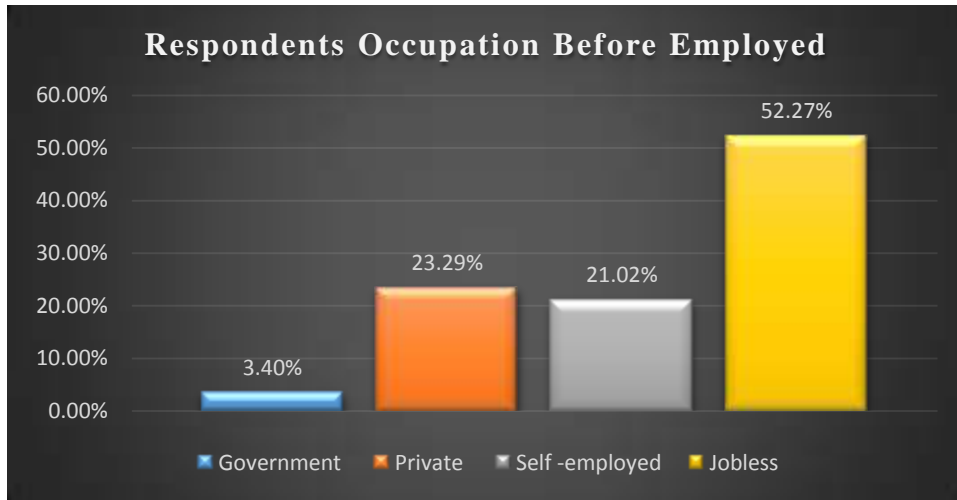


Figure 9. Respondents Occupation before employed

Source ;(Field survey, 2020)

As it is shown in figure 9, 52.27% of respondents were jobless and daily labor in the city in occasional when they get a chance to work. And also 23.29 and 21.02 % of the respondents have been generated their income from private company and self-employed respectively

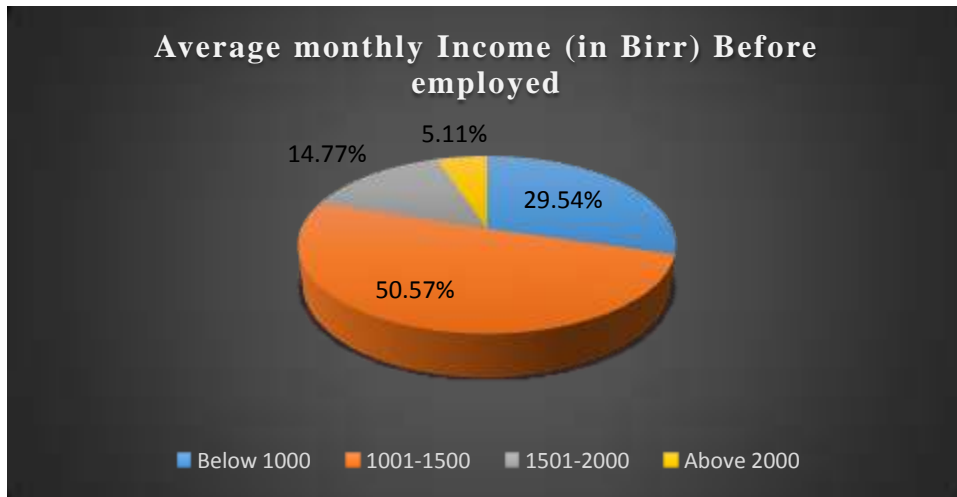


Figure 10. Average Monthly Income (In Birr) before employed

Source: (Field survey, 2020)

As it is shown in figure 10, out of 176 respondents' 89 (50.57%) cooperative members' monthly income before employed was very low and not enough to lead their life and family with 1001-

1500 amount of birr in Ethiopian. 52(29.54 %) are earned below 1000 birr and they were suffering in life with these. And the rest 35(19.88 %) and 9 (5.11%) of the respondents have earned 1501 and 2000 birr respectively. As respondents mentioned that their monthly income before employed was not attractive.

4.1.2.3. Working with urban solid waste, House ownership and Job condition

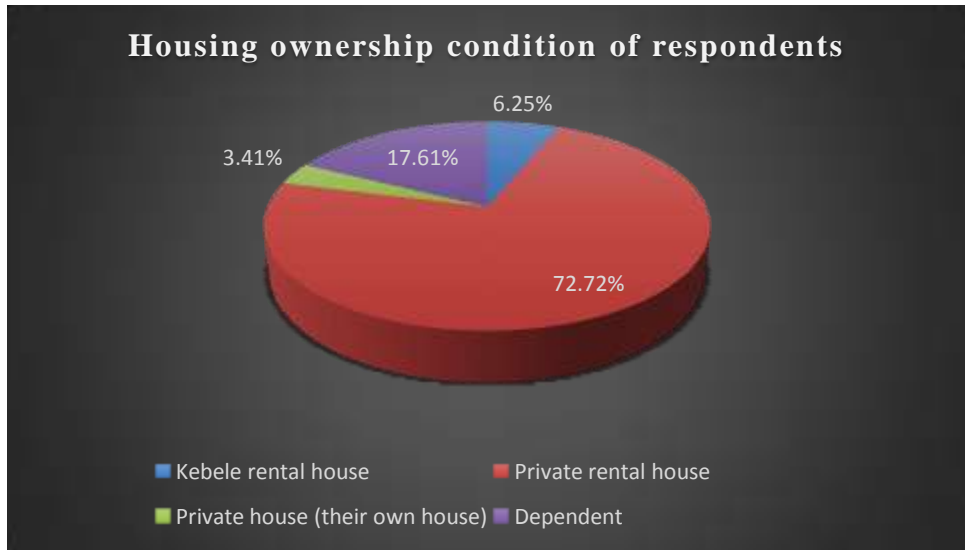


Figure 11. House Ownership condition of Respondents

Source: (Field survey, 2020)

As it is shown in figure 11, According to the household survey result showed that the house condition of the respondents out of the total respondents 6 or 3.41 % of them have private house (their own house). 128 (72.72 %) and 11 (6.25 %) of the respondents have Private and Kebele rental house respectively. While the rest 31(17.61 %) of respondents have dependent. The majority of respondents mentioned that working on urban solid waste management can makes them to afford their house rental cost and resolve exposure of economic dependency on others.

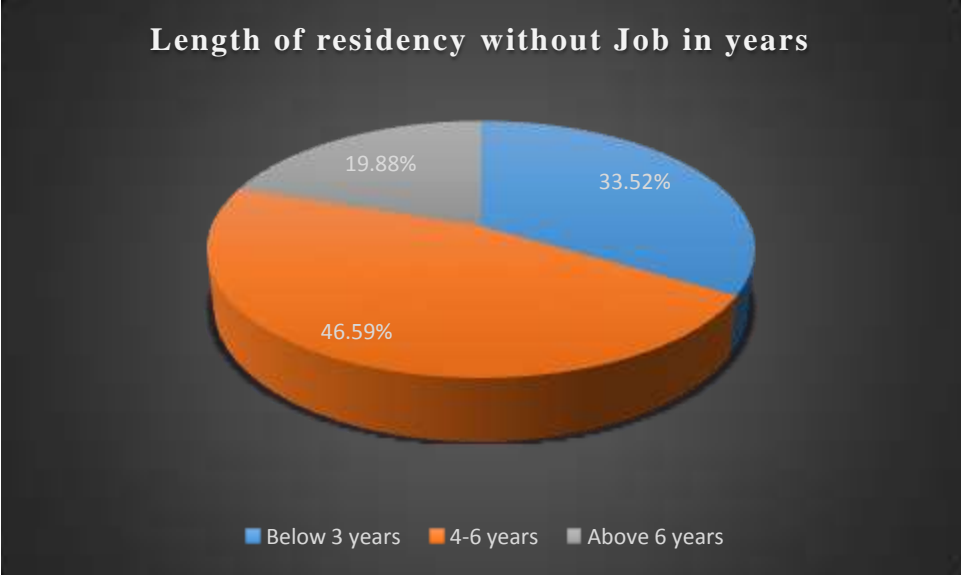


Figure 12.Length of Residency without Job in years

Source: (Field survey, 2020)

As it is shown in figure 12, that from the total respondents living below 3 years in the residency without job were 59 (33.52 %), 82 (46.59 %) between 4-6 years and above 6 years were 35(19.88 %). This implies that there is high unemployment rate living without jobs in a long period of time in the city. Moreover, high urbanization, industrialization and huge amount of solid waste production in Bishoftu city create alternative job opportunity for cooperative members working with urban solid waste management collection, sorting, cleaning and preparation of compost.

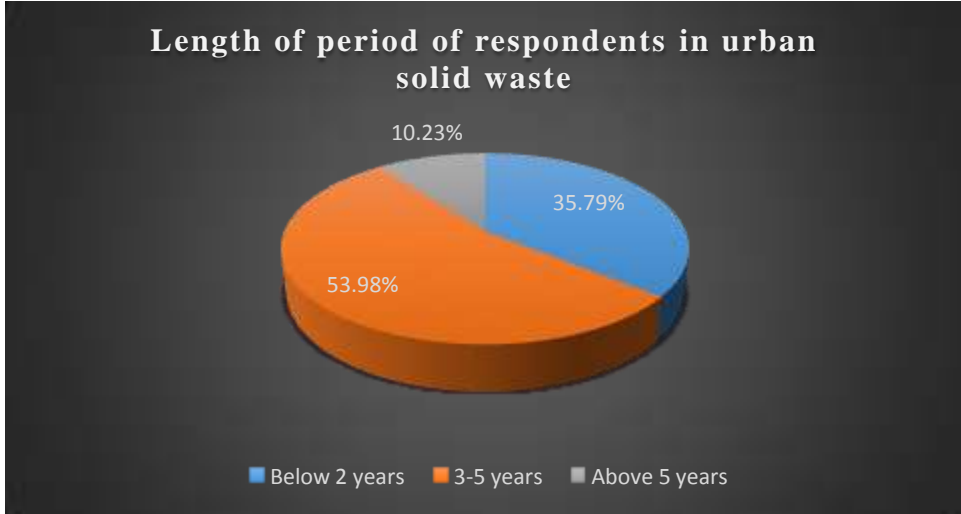


Figure 13.Length of period of Respondents in USWM

Source: (Field survey, 2020)

As it is shown in figure 13, length of period of respondents in urban solid waste Management below 2 years are 63 (35.79 %), 95 (53.98 %) between 3-5 years and above 5 years are 18 (10.23%). SBPDD creates income sources to the majority of cooperative members for the last few years and brought beauties of the city by cleaning and collecting urban solid waste beyond awareness creation and attitude of people about solid waste management.

4.2. Characteristics of Urban Solid Waste

4.2.1. Type and Source of Solid Waste in Bishoftu city

As it is shown in figure 14, the total households participated in this study were 176. And also the number of households participate exceeds to 622 due to result of various response rate. The respondents were asked frequently concerning the types of urban solid waste formed from their residence, and 125 (21.1 %) responded fruit and vegetables peels; 81 (13.02 %) responded dust or ash; 42 (6.75 %) responded festal or plastic; 62 (9.97 %) responded used paper and cardboard; 77 (12.38 %) responded plot trappings or leafs; 86 (13.83 %) responded peels of fruit and vegetables and Ash; 53(8.52 %) responded peels of vegetables, Ash and garden and trimming or leafs; 62 (9.97 %) responded peels of vegetables and festal and 34 (5.47 %) responded additional wastes are in general twisted from their residences. In the city administration urban solid waste is grouped organic and inorganic wastes and six main sources of urban solid waste that is household's areas, road marketable organizations, profit-making institutes, manufacturing industries areas, different hotels and health centers like hospitals are well-known by the city administration. Existing data for 2016/2017 shows that households areas urban solid waste take the great share of generated in the city.

The contribute of housing urban solid waste is 75%, road marketable institutes 3%, profitable institutions 12%, industries or manufacturing 5%, hotels and restaurant 4% and health institutions like hospitals 1%.

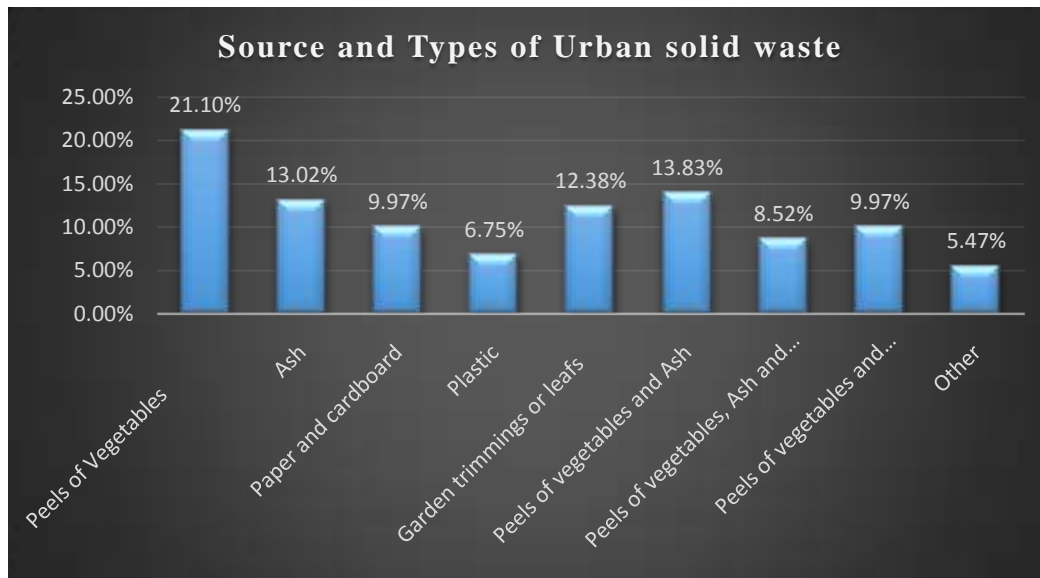


Figure 14. Source and types of urban solid waste

Source: (Field survey, 2020)

4.2.2. Composition of urban Solid Waste in the City

As shown in literature parts of this research sustainable urban solid waste is a word usually functional to a variety of jumble of solid waste formed in municipal areas. But regularly urban solid waste can be classified in to two broad parts that recyclable and non- recyclable. The recyclable component of urban solid waste constitutes natural waste such as foodstuff waste, plot waste, farming waste which undergoes biological deprivation under restricted conditions and can be twisted in to compost or natural fertilizer. While non- recyclable urban solid wastes include inert materials which can't be decaying and tarnished. Alike, from investigator surveillance in disposal site illegitimately removal areas and in inhabited areas of Bishoftu city bodily composition of urban solid waste is also collected from recyclable and non- recyclable components.

4.2.3. Researcher Field Observation

Visual observations made during a transit walk-through the Bishoftu city, the dominant types of recyclable solid wastes (input for urban agriculture after preparation of compost) are foodstuff removal, vegetable and fruit covering, animal or human wastes, ash or residue, dirt levels, slip of chat, marketplace wastes (vegetable and fruit wastes), paper or documents, bones, any dead animals, cartons & paper protective materials etc., while non- recyclable urban solid wastes of the city includes different types of plastics (like, plastic bags or “festal” plastic packaging

materials) glass or bottles , cans, textile scraps, discard old shoes and etc. In general it can be said that the current practice has short comings regarding solid waste separation and sorting out at the source of generation. A part from these, construction and demolition solid waste that is generated during the course of repair, construction, destruction activity consisting broken pieces of ceramics, sands, soil, stone, nails and cement concrete are also observed in the city. This is due to high construction activity of the city and such wastes are not stored by solid waste producer within their residences rather they accumulated immediately outer surface in street and open space but these wastes from construction activities containing cement products have high re-use value. It is used to prepare residential parking areas, car hard standing, and walk ways, sometime trough pulverization it can be used as a selected material for back filling in construction activities wastes are not a serious problem relatively due to their high re-use value.

4.3. Sustainable Urban Solid Waste Management in Bishoftu City

In this study urban solid waste separation, processing and recovery practicing activities at place and SBPDD pass on practicing all activities or pains of sorting of recyclable, reusable, compostable urban solid wastes for selling or for resource recovering by itself. Doing such types of activities is essential to urban solid waste generators as well as the city since it reduces cost of the removal, generates income, and elongate lifespan of dumping site. This is the fact that managers of urban solid waste in many parts of the country are now describing ways to reduce flow of biological recyclable and recyclable substances to landfill sites. However, in the case of Bishoftu City such practicing activities are originated at a small level at starting point without any significant impact and progress. In general, the examiners saying that separation, processing and recovery activities both at cooperative members and SBPDD level of the city but very poor at the households stages.

4.3.1. Solid Waste Separation, Processing and Recovery Activities of Cooperatives

4.3.1.1. Urban Solid Waste Separation/Sorting Activities

As it is shown in table 2, as respondents mentioned that during the month of May, 2020 the dominant types of solid waste have separated. Such wastes include: Bottle and glass (15.94 %), Plastic bottle (14.68 %), bone (13.85 %), plastic bottle cover (12.56 %), Metals and tin (11.96 %) and electronic wastes (3.64 %). And from field observation, the practices of solid waste separation in the city by the women is that, only solid wastes that are sellable to Quraleos,

exchangeable to Liwach, and to some extent organic wastes are separated for urban agriculture. Society awareness about usefulness of such discarded wastes for Quraleos and Liwach together with their low economic performance led households to separately store such wastes and generate income and new equipment's to their house.

Table 2. Types and amount of waste separated

Types of waste separated	Amount of waste produced in percent	Currently price to sell for different enterprise
Metals and tin	11.96 %	11 birr/kilo
electronic wastes	6.4 %	8.75 birr/kilo
Bone	13.85 %	350 birr/m ³
Bottle and glass	15.94 %	13 birr/kilo
Plastic bottle	14.68 %	6 birr/kilo
Plastic bottle cover	12.56 %	16 birr/kilo
Sack/madabera	8.87 %	5 birr/kilo
Kurtupestial	6.28 %	6 birr/kilo
Bekan soap and berekina	4.75 %	26 birr/kilo
Textile and old shoes	4.71 %	4.50 birr/kilo

Source: -Bishoftu city SBPDD (Sanitation Beatification and Parks Development Department on May, 2020 at Bishoftu city)

However, beyond such solid wastes, separation of other types of solid wastes in different dwellings of the town is very high, respondents are currently separating solid wastes for different purposes: -

- Ash, dust, agricultural waste, and food wastes for the purpose of using it as home garden
- Grass, leaf, waste of sugarcane, waste of cattle's (after dried by sun), wood scrap, waste of chat to use them as fuel
- Used papers are reused as toilet paper by family

- Plastic, paper and other burnable solid wastes for reducing the volume of waste by burning, makes throwing convenient and contributing to environmental protection.



Photo 1: -Urban Solid Waste Sorting Activity (Source: field survey, 2020)

4.3.1.2. Urban Solid Waste Resource Recovery Activities

In order to evaluate urban solid waste resource revitalization activity of inhabitants the examiner used recycling, for reusing and preparing composting activities as a baseline and tried to accumulate the responses of sample cooperative members. Therefore, it is found that participation of the public is motionless near to the ground even as it is compared to severance/sorting of urban solid waste. As of the exceptionally establishment the number of respondents who have responsiveness about the perception of solid waste recycling, for reusing, and preparation of compost are very low. This reality demonstrates that there is not having of responsiveness about sustainable urban solid waste management practicing within the people as reusing, recycling and preparing composting ideas are painstaking since pillars of sustainable urban solid waste management practice. To the side from alertness of the community, the numbers of participants who are presently working such activities are in addition very important in number. The main types of resources which are reused by the social order are spectacles, different bottles, tinny materials; artificial materials, textiles, and umbrellas with associated some

hygiene and maintenance actions by themselves or through taking it to maintenance experts. In conditions of recycling, none of the respondents are practicing this task. The major reason at the rear low recycling and reusing activities of the society is their less interest and very low economic feasibility of recycled materials. Even though few people have interest to practice such activities, lack of technical capability, financial facility, material and room, and nonexistence of support from their family and humanity dispirited them.



Photo 2: - Partial View of Plastic Recycling Activity (Source: field survey, 2020)

The rapid rate of knots of expansions urbanization of Bishoftu city and comparable growth of its urban solid waste volume are accumulation weigh down to SBPDD of the city, the presented waste composition of the city which carries a soaring possible for composting generate a better ability to SBPDD for task environmentally in addition to cost-effectively feasible sustainable urban solid waste management. Three cooperatives (24 members) on the other aspect 13.63 % respondents are at the moment prepare compost. According on the reaction of those respondents and from the researcher observation most of compost preparation activities of cooperatives are success due to technical skill of experts who support enterprise, well trainee cooperative members, business opportunity for cooperatives who take the product of compost preparation.

Waste + Animal waste + normal top-soil +water = compost is produced and changed to money.



Photo 3: - Partial view of cooperatives composting Activity (Source: field survey, 2020)

4.3.2. Urban Solid Waste in Bishoftu City Collection and Transportation Systems

At this time, there are two types of waste collection system in Bishoftu city which means door to door and transport stations collection. The collected works of the solid waste management is one of the mainly multifaceted and hard responsibilities in Sanitation, Beautification, Park, and Development Department. In gather the urban solid waste from at sources and transporting them to the leave where the available containers be supposed to be not fully and remove to dumping site.



Photo 4: -Field survey SW collection and transporting system (Source: field survey, 2020)

4.3.2.1. Door to Door solid waste collection and transportation systems in Bishoftu city

The responsibilities of urban solid waste collection in the city “SBPDD” are more entrusted. The sector was accountable for the on the whole urban solid waste supervision in the city whereas there are 10 cooperatives 51 male and 29 female totally 80 members collect door to door wastes in the city. Generally, the service of Door to Door solid waste collection and transportation is reached to high or 74.02 % number of residents. In this enterprise all cooperatives have resource 9 Tractor and 3 Bajaj to use for transporting of produced urban solid waste collection and their work is generally simplified and easy to continue the activities. From nine tractors 3 females are driver and gender participation is very interesting.

4.3.2.2. Solid Waste Disposing Activities in the Container at Bishoftu city



Figure 15. Disposing Container Availability

Source : (Field survey, 2020)

As shown in figure 15, that 169 (96.02%) of sample of respondents be acknowledged that public solid waste jug is accessible and the rest 7 (3.98 %) of sample respondents affirmed that public solid waste jug is not accessible.

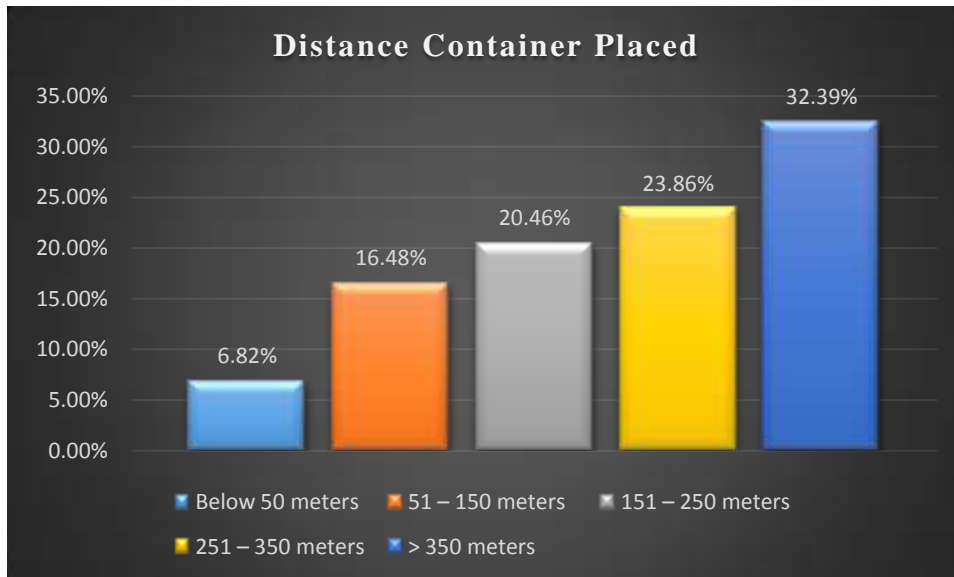


Figure 16. Distance container placed

Source: (Field survey, 2020)

As it is shown in figure 16, the respondents were asked to know the regular distance among a habitation and a public container therefore, respondents mentioned that a container is situated for

12 (6.82 %) of households under 50 meters' radius; among 51 - 150 meters for 29 (16.48 %) of households; among 151-250 meters for 36 (20.46 %) of households; among 251 - 350 meters for 42 (23.86 %) of households, and greater than 350 meters for 75 (32.39 %) of respondents.

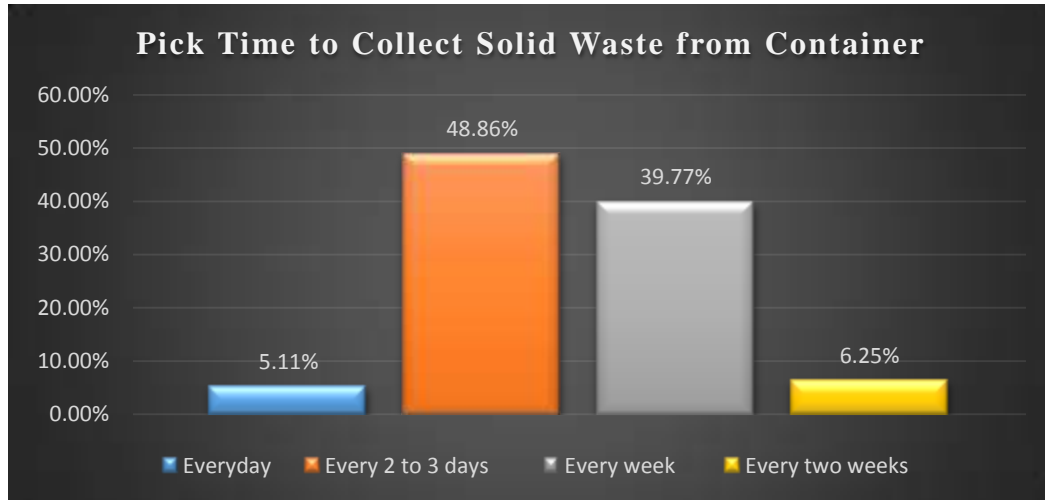


Figure17.Pick time to collect solid waste from the container (Source: Field survey, 2020)

As can be clearly seen from aforementioned figure 17, out of 176 respondents, 86 (48.86 %) of the respondents to collect the solid waste every 2 to 3 days. 70 (39.77%) and 11 (6.25 %) of the respondents to collect solid waste every week and every two weeks respectively. While the rest 9 (5.11 %) respondents collect every day.

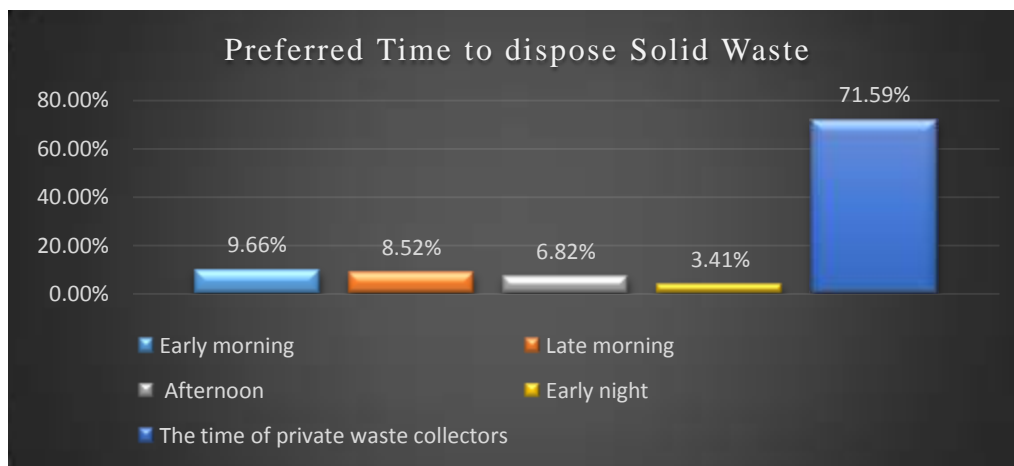


Figure 18.preferred time to dispose solid waste

(Source: Field survey, 2020)

As can be clearly seen from aforementioned figure 18, the respondents stated that, 17 (9.66%) illegal disposers chosen early in the morning to dispose of their wastes. in addition, about 6 (3.41%) of the households chosen to dispose their solid wastes illegal disposer at near the beginning in the night. The rest 12(6.82%) and 15 (8.52%) of those illegal disposers are chosen hours of daylight and delayed morning to dispose solid wastes correspondingly. though, 126(71.59 %) of the authorized disposers inclined their solid wastes at the time during private urban solid waste collectors they come. Therefore, they store solid wastes in passing storages at source and give away to house to house urban solid waste collectors at the regular time of the schedule. And also they use the examination of personal urban solid waste collectors that often similar to enhanced to dispose their wastes in allowed spaces at the time of official running hours.

4.3.2.3. Street Sweeping Activity in Bishoftu city

In street sweeping 6 cooperatives or enterprise 2 male and 46 female members participated and the activities are routine which works each day while it wants to be completed more regularly because of there is not enough street containers or dustbins and frequently production of urban solid wastes like napkins, useless papers, peels of vegetables and fruits. The street cleaners are independently on streets spaced, and by using brooms cleaning the roads that talented from the section. After cleaning the workers used wheelbarrows to accumulate heaps of urban solid wastes from the streets, and next most normally they be on fire it in gullies in the order of streets, shipment into the city means of transportation if it comes while liability their job, or else store it in bag/sack and sited in remove station. The majority of street sweeping working around the midpoint of the city anywhere streets are demanding with loads of activities. Also, inhabitants are very slapdash to sanitary their obverse yards and street and observe it as the liability of the city.



Photo 5: -Street Sweeping Activity in Bishoftu city (Source: field survey, 2020)

4.4. Urban Solid Waste Storage Facility and its Management

4.4.1. Urban Solid Waste Storage Material Used by Cooperative Members

Urban solid waste storage facility and its handling in Bishoftu city is key influence for safely management of urban solid waste management action. That is the point of classification of type and amount of storage space substance to be used, suitable place (sitting) of it, putting the collection types to be use, and escaping of healthiness, surroundings and aesthetics/allergies impacts of stock up substances. While a consequence of this, we composed in sequence about urban solid waste storage space and handle put into practice of Bishoftu city and give details in briefly in two parts. The first parts constitute primary storage facility of respondents, while the second parts contain secondary or communal storage facility of a city which includes container and dustbins of public urban solid waste in the city.

4.4.1.1. Primary Urban Solid Waste Storage capability and its treatment

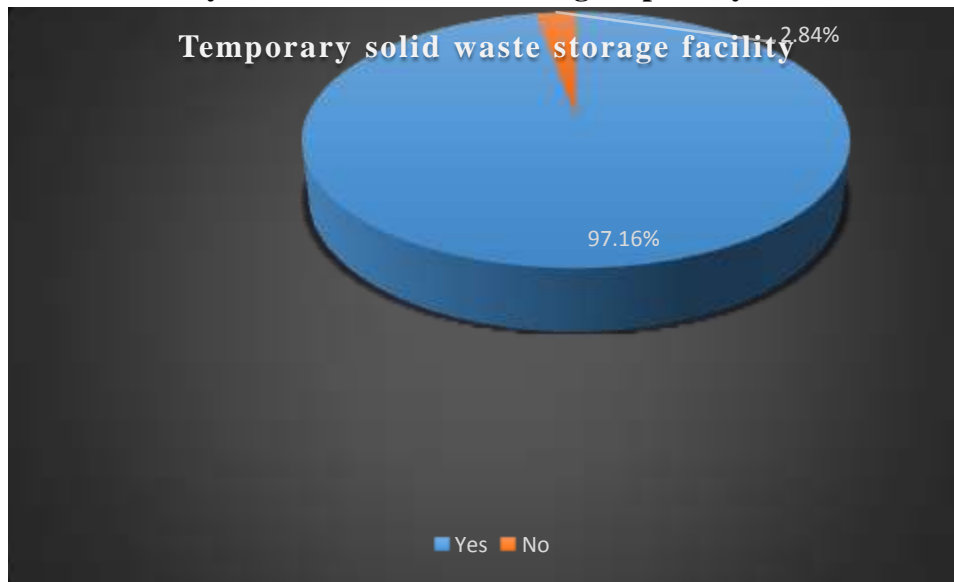


Figure 19. Temporary urban solid waste storage capability

Source : (Field survey, 2020)

From the total selected sample respondents that were asked first to facilitate households passing urban solid waste storage capability and the result indicated that most, 171 (97.16%) of sample households had passing urban solid waste storage capability and the remaining 5 (2.84%) of sample households doesn't have storage capability in temporary urban solid waste and with considering to the storage capability respondents use to accumulate their urban solid waste at residence by generous respondents other option in the form of various alternatives.

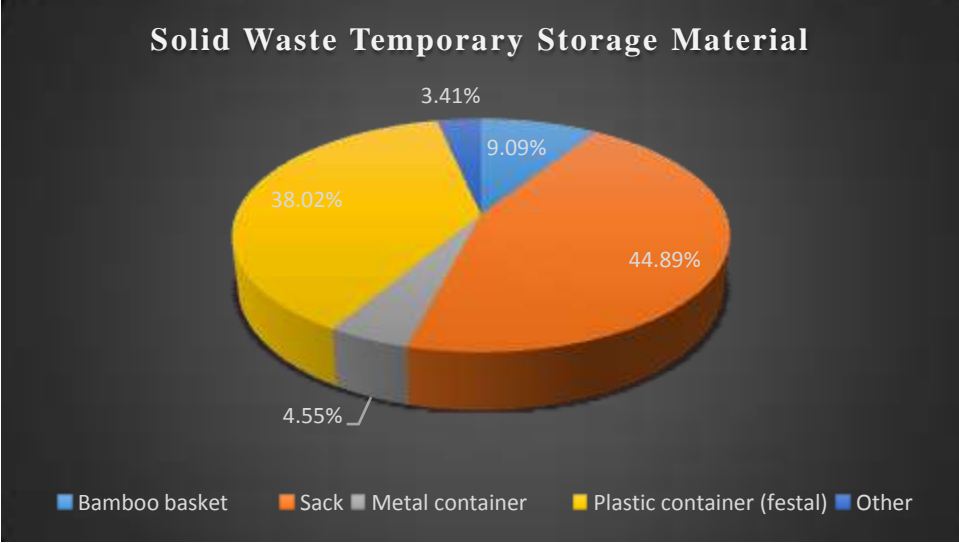


Figure 20. Solid waste temporary storage material

(Source: Field survey, 2020)

As can be seen from the figure 20, Residents of the city used currently a different type of materials for storage purpose in their village which is locally available material making from bamboo like basket and sacks or “Madaberia” available plastic material that known „festal” and others materials. Most The result has indicated that 79 (44.89 %) of sample of households respondents were used sacks. This means respondents prefer that related to the cost effective of sack local availability material in the area, its capacity and appropriateness for to holding large amount of urban solid wastes and easily giving services by micro and small enterprises (MSEs) of the Bishoftu City and material making from plastic about 67 (38.02 %) has subsequently to Madaberia about (9.09 %) has also used making from basket because of their recurrent however small generation rate of urban solid waste and economic power to make use of replicable or many times storage materials such as plastic bags, and while the remaining 6 (3.4%) used other option storage material. It is also practical doing that majority of the respondents use Festal, as a storage material for their urban solid waste at the house, remove it away in concert with the waste it contains. These trends of the respondents indicated that storage materials are destined one-time only use. This means that no additional value is given for the harvesting substance once they are used for waste storage and, extremely soon, the accommodated materials become part of the urban solid waste that produce high amount of non-recyclable urban solid waste that increasingly littering most part of the city. Though, one way to handle urban solid waste is to

minimize the waste we produce at the source and hence storage materials have to be considered for many times use so that these items do not wear out so quickly and become part of waste instead.

4.4.1.2. Secondary Urban Solid Waste Storage Services and Their Management

As obtained to the data from Bishoftu Sanitation, Beatification, Park, Development Department office were allocated 114 communal urban solid waste materials have a capacity of 8m³ was distributed to in all 9 kebeles for temporary storage, afterward to be collected and moved to the dumping site by the city available transporting system and the rest 5 communal materials was placed in store of the institution consequence the be short of transport skip loaders for secondary collection. But this solid waste management system was source of odor and dust harms. This was the reason for frequent collection of those communal urban solid waste containers, and unwise uses of the community. Accordingly, the Bishoftu city SBPDD was required to move those communal urban solid waste containers and placed some of the containers in transport station site i.e. Kebele 01 and Kebele 09, some of on disposal site and others in store instead of serving the intended purpose. Based on the interview with SBPD head, those transporting stations provide service only to SBPDD workers who collect urban solid wastes from respondents, different institutions and basic commercial areas. In addition to public container transfer stations, there are also dustbins which used to assemble walkers' solid wastes like napkins, used paper, and leftovers of fruits and vegetables. In the other side, information's gaining from the interview taken from head of SBPDD, there were about 132 dust bins that was available at the main roads, recreational areas, institution and common market places.

4.5. Job Opportunities in Sustainable Urban Solid Waste Management

Officials and head of SBPDD mentioned that solid waste collection, separation, processing and recovery activities at source and by city refer all activities or efforts of separation of recyclable, reusable, compostable wastes to sell or to recover resources by themselves. Practicing these types of activities is very important to waste generators as well as municipality since it minimizes cost of disposal, generates revenue, and prolongs lifespan of disposal site. Additionally, it creates permanent job for 176 cooperative members living in the city, 6 guards that protect the dumping site and 108 contract or temporary workers working on different activities in separate organic and inorganic urban solid waste management.

Table 3. Job opportunities in sustainable urban solid wastes management

S.R	Department of cooperatives	number of cooperatives	number of cooperatives member			
			Male	Female	Total	Percent
1	Solid waste collection	10	51	29	80	45.45%
2	Street cleaning	6	2	46	48	27.27%
3	Compost preparation	3	12	12	24	13.63%
4	Solid waste sorting	3	6	18	24	13.63%
	Grand total	22	71	105	176	100.00%

Source; Bishoftu city Sanitation Beatification and Parks Development Department data, 2020

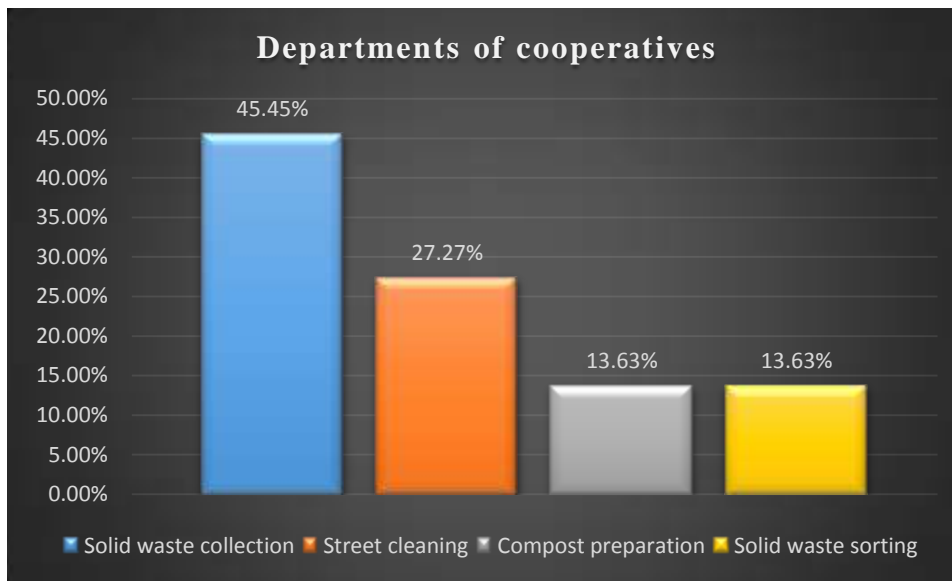


Figure 21. Department of Cooperatives

Source:(Bishoftu city SBPDD)

As shown in the figure 21, the distribution of cooperative respondents on urban solid waste management shows that 80 (45.45%) of the respondents are working with solid waste collection and the rest followed by street cleaning, compost preparation and solid waste sorting that account 48 (27.27 %), 24 (13.63%) and 24 (13.63 %) of the respondents respectively. And also the head

of SBPDD mentioned that, Bishoftu City SBPDD is carried out some type of composting activities as a pilot test in two kebeles and this activity creates job opportunity for 24 (twenty-four) persons and in the near future it would be scaling up in the other kebeles. This is an implication of sustainable urban solid waste management in the city.

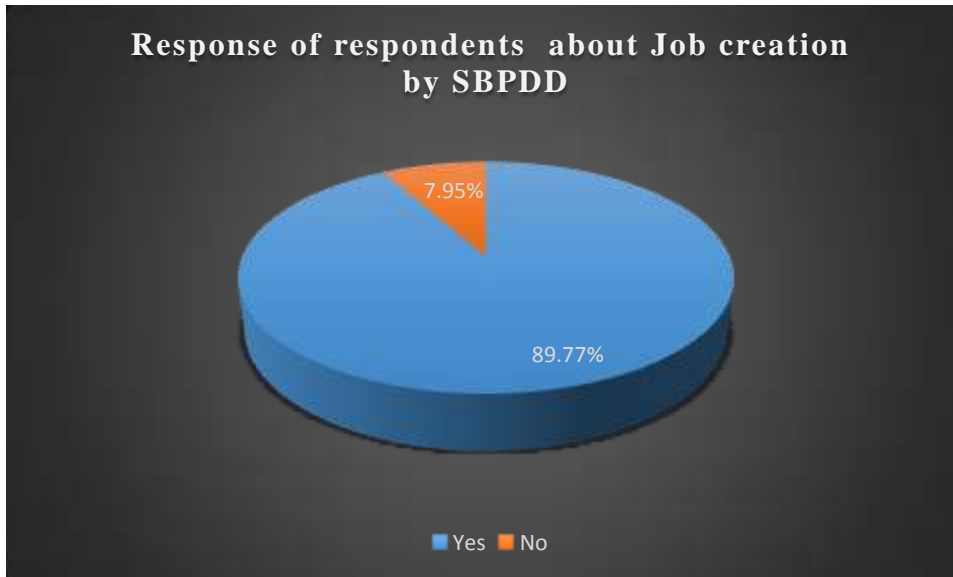


Figure 22. Response of respondents about Job creation

Source: (Field survey, 2020)

As shown in the figure 22, respondents were asked yes or no questions with relevant examples supporting their answers whether they thought that urban solid waste management activities in Bishoftu city led to jobs creation or not. The majority of the respondents 158 (89.77%) mentioned that 'yes' SBPDD is created job opportunity to jobless and low income people living in the city more specifically to the young adults who work in solid waste collection, street cleaning, recycling and disposal. This is attributed to the fact that people in the jobs could be benefited. And the rest 14 (7.95 %) of the respondents said 'No' as SBPDD creates job opportunity only for few numbers of the cooperative members.

Table 4. Employment Opportunity in five years Bishoftu city Administration

Employment opportunities	Category	2006		2008		2009		2010		2011	
		Frequency	(%)	Frequency	(%)	Frequency	(%)	Frequency	(%)	Frequency	(%)
	Male	18	25.71	12	24.00	4	28.57	28	93.33	9	75.00
	Female	52	74.28	38	76.00	10	71.43	2	6.67	3	25.00
	Total	70	100.0	50	100.0	14	100.0	30	100.0	12	100.0

Source; Bishoftu city Sanitation Beatification and Parks Development Department office, 2020

Currently the expansions of urbanization, industrialization and huge amount of solid waste have increasing its pressure on environment of Bishoftu city. And Even if huge amount of solid waste is produced in the city, the SBPDD is not working aggressively by creating job opportunity especially jobless youths. In the aforementioned table 4, showed that job creation and female gender participation is decreasing year to year. The office is not eagerly working on job creation and SBPDD not strictly organized new cooperative members to work on urban solid waste management particularly in the year 2007 and 2012. Due to this huge amount of solid wastes disposal is observed in the city such as roads, around institution (kebeles, schools, courts and hospitals) fence, communal area and local market. And city loses her beauty and cleanliness.

4.5.1. Gender and Urban Solid Waste on Job Opportunity

In Bishoftu city SBPDD staff reported that more female than male work in the formal waste management activities. For example, in sorting and street cleaning participate more female and solid waste collection and preparing compost is predominantly a male occupation. Out of 105 females, 46 (48.00 %) women mostly participated in street cleaning and the rest 29(30.52 %) on solid waste collection. In the formal sector, collection and disposal of urban solid waste has been working traditionally by male. However, in street cleaning and solid waste sorting there are often more women employed than men. The last six years to employing more women in these sectors than male and the study noted that 59.65 % of municipal employees in the waste sector are women but they are less number in the administrative positions and working on the trucks based on the respondents' response.

4.5.2. Health and Safety of Cooperative Members

Waste workers in Ethiopia are often working under extremely dangerous conditions that put their health and safety at risk. Their work is generally poor, difficult and dangerous. A waste worker is worsened by their exposure to toxic and hazardous substances in their daily work-lives. This is particularly acute for both informal and formal waste workers who must deal with dirty, contaminated and toxic material every day. This daily exposure to harmful substances that waste workers face whether they are informally or formally employed; whether they collect household waste, industries or commercial waste, or work on landfill sites impacts on their rights to health, safe food and water, safe and healthy working conditions, and a healthy environment. It is thus vitally important that proper attention is given to improving the health and safety standards for all waste workers. Workers in both the formal and informal sector suffer from a lack of

appropriate equipment such as gloves and sturdy shoes; this is a particularly severe problem for informal workers. As informal waste workers pick over waste on landfill sites, in bins and on open dumps, they are exposed to hazardous substances, sharp items and contaminated objects. It is therefore not surprising that the rate of diseases, infections and also deadly accidents are very high. A formal worker involved in the study was wearing protective equipment (i.e. gloves, mask, boots, and overalls) and none had medical insurance coverage.

Most dangerous, and sometimes deadly, are the working conditions of workers on unsafe landfills and dumps. Landslides on landfills add another risk to the already dangerous work in March 2017, 113 people died at the Koshe landfill in Addis Ababa.

4.6. Contribution of Urban Solid Wastes Management to the Cooperatives

4.6.1. Urban Solid Wastes Management Income Contribution to the Cooperatives

As it is shown in the figure 23, that the respondents with monthly income greater than 2501 ETB constitute 151 respondents or 86% of respondents are given positive response or sufficient payment with monthly income and their livelihood improvement shows in progress and 25(14.20%) are not well satisfied and difficult to managing their households.

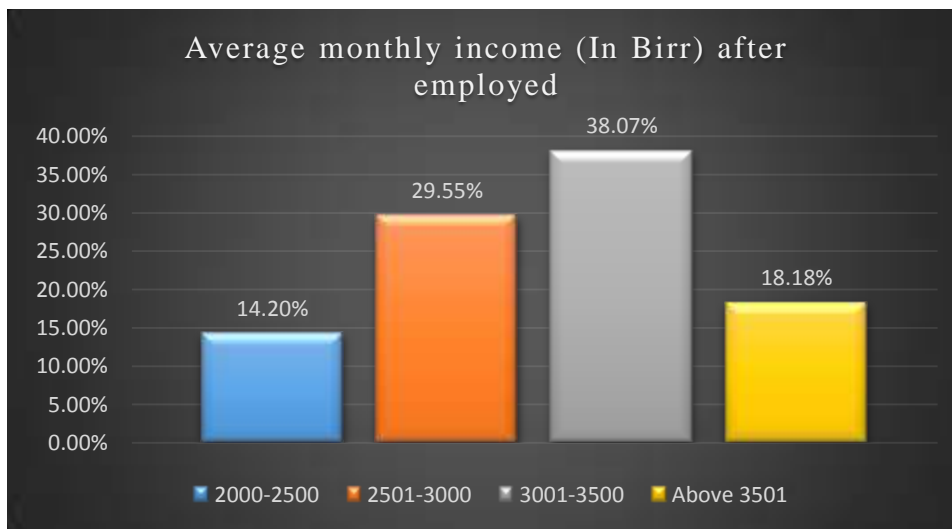


Figure 63. Average monthly income (In Birr) after employed

As it is shown in figure 24, out of the total respondents 67(38.07%) are not satisfied by the monthly income they earned. However; from these 109 respondents with 61.93% of the total respondents give positive response and they are satisfied by their monthly income.

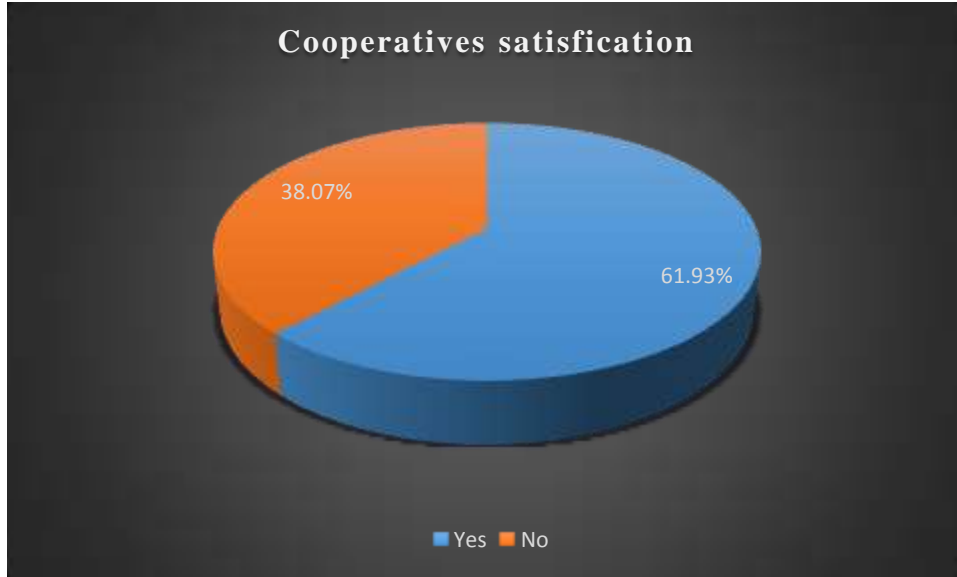


Figure 24.Cooperatives satisfaction

(Source: Field survey, 2020)

4.6.2. Urban Solid Waste Management for the Cooperative Livelihood Improvement

Some Scholars mentioned that a livelihood is sustainable which can cope with and recovers from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and national levels and in the short and long term. Most respondents mentioned is that after employed in SBPDD their livelihood improvement shows in progress (figure 24). Due to these respondents have achieved the basic necessities in life, which are food, water, shelter, i.e., (the respondents have their own house, private and, Kebele rental) and clothing. Therefore, all activities involved in finding food, searching for water, shelter, clothing and all necessities required for human survival at individual and household level are referred to as a livelihood.

4.6.3. The Use of Urban Solid Wastes Management for the Cooperative's Livelihoods

Assets

Some researchers stated that urban solid wastes Management contribute the livelihood improvement of the cooperatives human capital, physical capital, social capital, financial capital and natural capital. Human capital is a combination of knowledge, habits, social behavior and personality that contribute to economic benefits for an individual and/or community. This knowledge can be attained through education, creativity, availability of skills and talents, experience, training and exposure. Human capital also includes health of an individual, household and community. Generally, In the survey the respondent's response in yes in creating Human capitals are 136(77.27%) and no response in creating human capital 40(22.73%)(Table 5).

Physical capital and financial capital that helps to turn raw materials into finished products and/or services like equipment such as a tractor, Bajaj, a sewing machine for a tailor, buildings and computers that boosts productivity and enhances income earned by a household. As field information 152 or 86.36 % respondents argue for create Physical capital and financial capital asset in SUSWM jobs and 24 or 13.64 % not understand that says no create anything.

Social capital 161 or 91.48 % positive response that refers to relationships, institutions and norms that shapes societal interactions. Social networks are considered as horizontal associations between individuals, which increase productivity by reducing the costs of doing business and facilitate coordination and cooperation.

Table 5. Urban solid wastes management for the community's livelihoods assets

Community's livelihoods assets	Category	Frequency	Percentage
in human capital	Yes	136	77.27
	No	40	22.73
	Total	176	100.00
Community's livelihoods assets	Category		
in physical capital and financial capital			

	Yes	152	86.36
	No	24	13.64
	Total	176	100.00
Community's livelihoods assets in social and natural capital	Category		
	Yes	161	91.48
	No	15	8.82
	Total	176	100.00

Community's livelihoods assets: Source (Field survey, 2020)

4.6.4. Contribution of Urban Solid Wastes Management for the Environment

Environment and human health can be affected by poor urban solid waste management. And the rising population, wealth and urbanization; it is a main challenge for many nations to manage increasing quantity of solid waste. Many respondents mentioned that integrated urban solid waste management contributes to community health and environment.

4.6.5. Cooperatives Activity in Urban Solid Wastes Management

The total cooperative respondents participated in this study was 176 but appropriate to various response rate the number of households exceeds to 1056. As discussed Table 6, below indicated the foremost types of urban solid waste management systems. Therefore, the sample of respondents were asked about the types of general management systems the management systems in urban solid waste frequently managed respondents response very good 731(69.22%) from the total, response good 232(21.97%), poor 75(7.10%) and 18(1.70%) responded worst follow management systems; as a result the general management systems that follow cooperatives are clear, transparent and v. good management.

Table 6.Cooperatives Activity in urban solid wastes management.

Major activities	V.good	Good	Poor	Worst
Financial management system	152	11	12	1
Administrative part	106	44	22	4
Suitable environment for related to health issues	96	57	17	6
Activity on workload and payment	128	37	8	3
Leading Skilled management	120	51	4	1
Have Mandate for controlling managers	129	32	12	3
Total	731	232	75	18
Percentage (%)	69.22	21.97	7.10	1.70

Cooperatives Activity: Source (Field survey, 2020)

4.7. Existing Situation and Management of Urban Solid Waste in Bishoftu

Bishoftu city a total population of 205,858 annually generates 98,812 m³ of solid waste and produce 0.48 kg/person/day. Appropriate urban solid waste management also needs appropriate removal of waste in a suitable place. During in the field observation, the researcher observed that Bishoftu city solid waste dumping site and its handling is insufficient and under the requirement. The collected waste is dumping on open area at a place known as “Golba” in between two Kebeles that 04 and 05 and away from the center of the city at 1.5 km. The dumping site is bounded by mountains, settlement areas, church and agricultural fields for use in different purpose, children play ground) just adjacent to the predisposed waste.



Photo 6: Recent dumping site (a) Source :(field survey, 2020)

The windblown waste is spotted all over the dumping site and some glow festal and a part of paper might take a trip back again to the city. Transportation of solid wastes and final dumping is not well organized and matched as refuses are pragmatic to have been disposed of intermittently, litters cover all over the place before success the elected final removal site and such kinds of urban solid waste practices are even corrosion through the wet seasons. In the city there are a number of agro-industries that disposal the waste inappropriately sources of a series risk to human health and urban environment.



Photo-7: present dumping site (b) Source: (field survey, 2020)

The main troubles related with the disposal site are: the area is covered with crop field and grazing area where children and farmers regularly reside, no protecting fence, no soil cover, it is together with this by settlement and religious area, impatience and health risks for people living and closer to Ethiopian air- force Bishoftu base airport and located in a regular overflow or water logging area etc.

4.7.1. Factors that Affect Urban Solid Waste Management

4.7.1.1. Socio-cultural Factors on Urban Solid Waste Management

As scholars mentioned that socio-cultural factors is regularly to be expected to have an impact on the success of family unit on urban solid waste management handlings. Since it highly emphasized on people's sensitivity and the patterns of waste practicing. In the city urban solid waste management at the initial from the areas of respondent's waste storage, waste diminution strategies: recycling, reuse and recovering systems of resource, separation waste at source, and location to sitting of waste containers and dumping capability depend on public attentiveness and

contribution. A person strictly restricts use of community-based approaches in under developing nations and also main causes for failure of an urban solid waste management practice in developing nations (Zurbrugg, 2009).

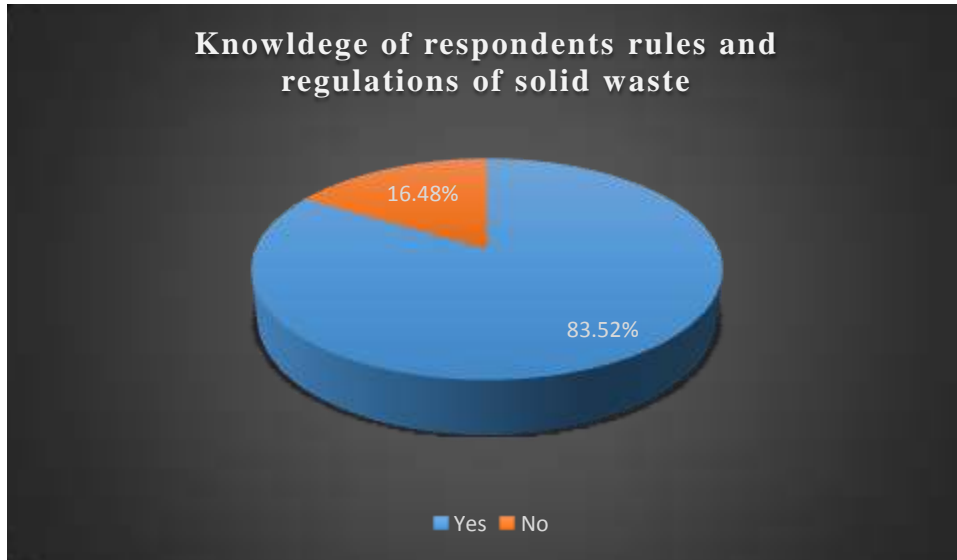


Figure 25. Knowledge of respondents on rules and regulations of solid waste

As it is shown in figure 25, out of the total respondents 147 (83.52%) respondents revealed that they know that there are solid waste related laws and regulations are available. The rest 29 (16.48%) of the selected respondents stated that they don't know about the rules and regulation presence in the city. Awareness for community in education for urban solid waste management and its handling is very critical to progress management system. Public perception for the appropriate disposal of solid wastes must be accustomed in order to keep away from placing of extra work on the collection system. For this many of the households were not clearly known about the risks of reduced solid waste handling and dumping systems in the city.

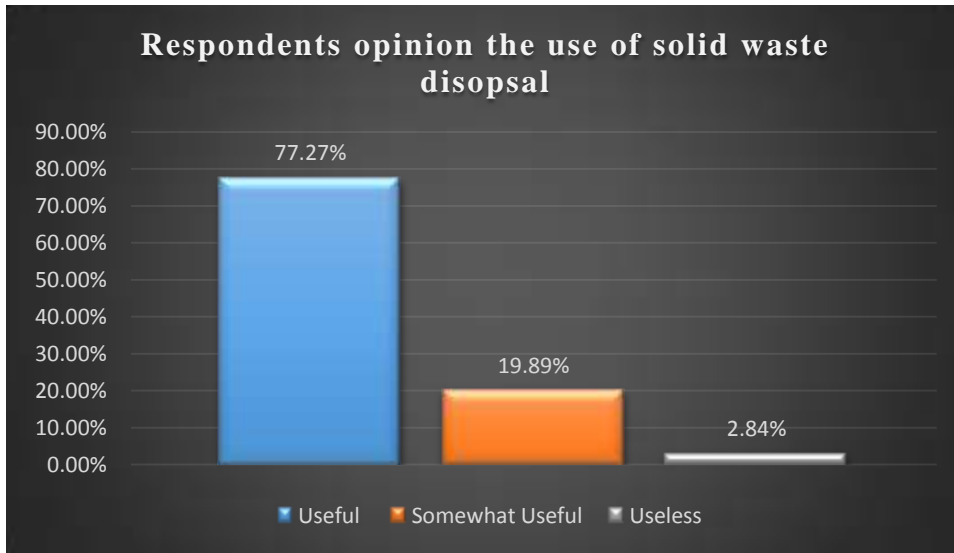


Figure 26. Respondents opinion the use of solid waste disposal

(Source: Field survey, 2020)

As it is shown in figure 26, out of the total respondents 136 (77.27%) respondents confirmed that urban solid waste means useful for community in general while, 35 (19.89 %) were confirmed somewhat useful and again 5 (2.84 %) were also confirmed urban solid wastes are useless for community. This figure indicates that, it needs awareness creation for community usefulness of urban solid waste resources in the city.



Figure 27. Respondents opinion on the location of SW disposal

(Source: Field survey, 2020)

As it is shown in the figure 27, As respondents mentioned the municipality of the city potential to afford urban solid waste management tune-up is that 2 (1.14%) respondents answered that the attempt is not good or bad; 12 (6.82%) of the respondents complained that the municipality effort is reasonable. whereas 45 (25.57%) of respondent answered that the effort is good and about 117 (66.48%) of respondent answered that the effort of the city is very good.

4.7.1.2. Technical Factors on Urban Solid Waste Management

The majority of the respondents exposed that in the city there is a chance to dispose urban solid waste by digging the ground near the house, burns, fling it on an open place, in gullies or water ways and disposing on around the house. This implies that government give weak attention for urban solid waste recycling and resource recovery as a common practicing activity like street cleaning. In general, The disposal sites of the city is also indicates as no give more attention for environmental impacts of urban solid waste, wastes in all by nature improper dumping without any treatment in the recent disposing site. The main problems related with the dumping site are: the site being agricultural activities are practiced. Where young children and people regularly stay in the site, has no protective fence, no soil to cover, enclosed by housing and near to different religious sites. As mentioned the above, Due to this problem technical factors are another causes of SBPDD the challenges of the Bishoftu city.

4.7.1.3. Institutional Factors on Urban Solid Waste Management

The institutional organizations are the measure challenges that mostly affect urban solid waste management practice in the city; or the most sources for the subsistence of such waste management associated to like other the above two main basic factors. In this part, the researcher examined the institutional factors that causes during the solid waste management systems; especially enforcement of law, materials (equipment's), allocated finance and skilled manpower are basic influential factor that affect the city to weak performance (Appendix 1).

4.8. Institutional Arrangement and Capacity of SBPDD for Urban Solid Waste Management

According to many scholars improving solid waste management means practicing better waste collection systems and followed efficient disposal systems, create more for public awareness and implement the rules of urban solid waste management in the city. A well-planned USWM system operating within an attractive institutional structural framework and capable of generating fiscal

resources necessary convention working, maintenance or repairing, and costs of investments are the precondition of planning to minimize the factors (Solomon, 2011). The investigator was give more emphasis on organizational structure of the department, the goal of the institution and general objectives, mandate of the institution, in human, in material and fiscal resources, enforcement of rules, and inter collaboration of organizational and stakeholders'. Bishoftu SBPDD is have mandate primarily wishes to have well arranged management systems that give services within an appropriate institutional setup, manpower which is skilled and financial resources, implemented law and directive, planned strategy, and well-integration with different participant stakeholders.

4.8.1 Organizational Structure of Sanitation, Beautification and Parks Development Department

Bishoftu city urban solid waste management system is planned under the authority of municipality of the city and has eight main work processes known as Sanitation, Beautification, and Parks Development Department. The Bishoftu SBPDD organizational structure has constituting together with urban solid waste management, urban liquid waste management, city beautification and parks development department office. The city of SBPDD is accountable to directly for Bishoftu city municipality office. And internal the organizational structural arrangement has one work process general manager and has five case teams and also one case team is not functional because of an expert available on that position. This is structural internal organizational arrangement of the cities of SBPDD (Figure 28).

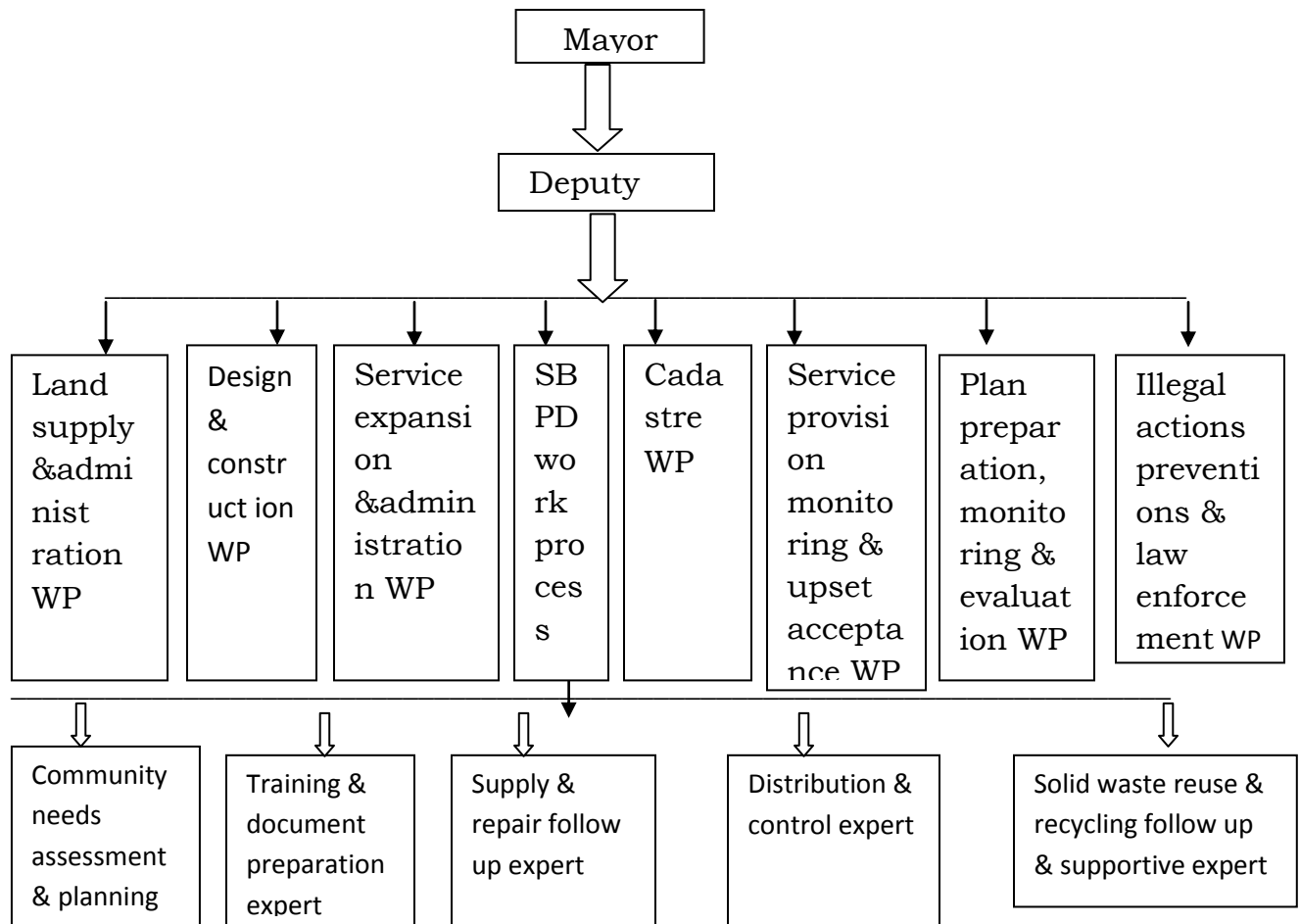


Figure 28. Bishoftu city SBPDD organizational structure

Source: (SBPDD, 2020)

As it is observed in the figure 28, the institutional organizational structure of different work processes are better to give services for urban community by reducing bureaucracy and challenges of works to different case teams. For this important and valued adjustment, still there is gap which contributed for the recent ineffective performance of USWM of the city. Delay of work process at ground level is the main significant weakness impossible since the department to avoid lack of practical applications of in these structures and their relevant works. And also during interview; these organizational structure problems is highlighted by SBPDD workers and department head. In addition to this, they have mentioned that there is great holdup in decision

making and implementation process on municipal solid waste management due to long bureaucracy and low concern of higher officials to SBPDD.

4.8.2. Institutional Mandate of Sanitation, Beautification and Parks Development

Department

Contrasting to the vital aim and general objectives of SBPDD, the responsibility given to the office is not wide chance to USWM service stipulation i.e. collection of solid waste, transportation and removal of solid waste in the cities. However, according to the new organizational structure of the city environmental health regulation of Oromia regional state 2000 hygiene these most linked mandates are given to the cities institution like law and order enforcing office and health office for example, the mandate to control illegitimate urban solid waste discarding and discipline rejecter when they dumping solid wastes in illegal places law and order enforcing office has responsibility. Whereas office of health has such mandates like:

- Set directives related to urban solid waste practicing or handling
- Giving education for urban and rural communities
- Evaluation, Monitoring and give supervision in different institutions in city sanitation provision,
- To give efficient service for the community construct unavailable infrastructure to difficult pick of urban solid waste transport problem. Because of have no cooperation and give low attention of those organizations, this department observed more weakness on the cities USWM. As mentioned the department of SBPDD manager justification this environment exposed to more stress of collecting illegally discarded urban solid waste to the city.

4.8.3 Rules and Regulations of Sanitation, Beautification and Parks Development Department

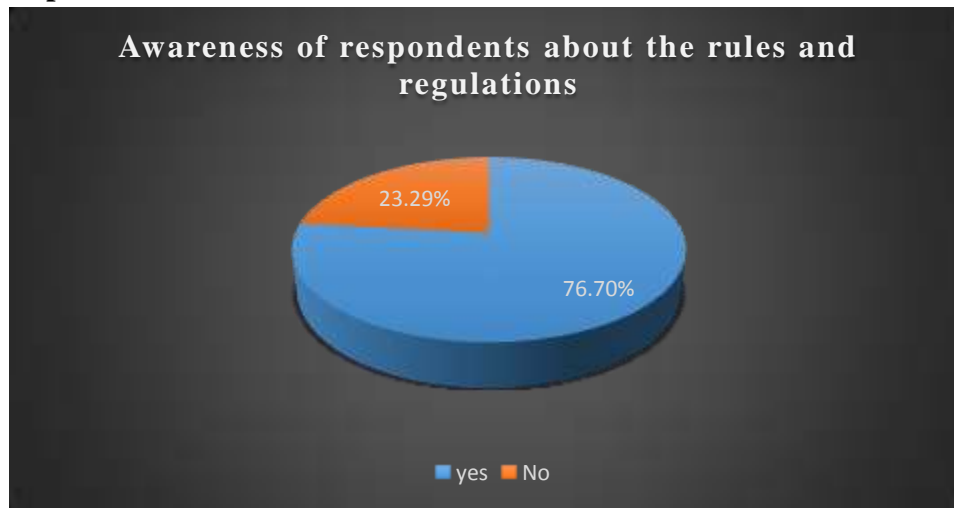


Figure 29. Awareness respondents about the rules and regulations

Preparing rule and regulation has no mandate to Bishoftu city SBPDD, but it could applied urban solid waste management interrelated rules and regulations adopted from in 2000 and 2002 hygiene and environmental health regulation of Oromia regional. The rules and regulations are stressed on solid waste handling household tasks and duty of persons, establishments of different organizations. It didn't consider particular rules like; sustainable urban solid waste management system. The SBPDD officials mentioned that there is low enforcement based on rules and regulations and also giving education to community about the rules and regulations of the city. yet; more than 135 (76.70 %) of the respondents mentioned that they did not clearly know the cities rules and regulations associated with urban solid waste management systems and also some of them responded that they didn't observe any person penalized when missing the rule of law in the city. The rest 41(23.29 %) respondents have knowledge about rules and regulations (figure 29). Therefore, the absence of formally arranged and low enforcement of rules and regulations slowed down effective solid waste collection, storage and disposal system of the city at wide.

4.9. Organizational Linkage of Sanitation, Beautification and Parks Development Department in Different Organization

Generally, the researcher observed in Bishoftu city organizational linkage which refers to multi-dimensional relations between more institutions on the basis of their institutional norms and

principles and estimated household tasks to perform their individual roles. The SBPDD has inter-organizational linkage with city administration office, office of health, law and law ordering office, urban and rural agricultural department, micro and small enterprise department, public relation and communication office, and sanitation agents 'in kebele work on USWM. All the above mentioned the organizations have responsibilities which are expected to play in SBPDD of the city. During interviews of SBPDD experts and managers confirmed that organizations that have been participated in working solid waste management activity of the cities like; health office; law and ordering office, micro and small enterprise department and kebele sanitation agents are the only collaboration.

4.10. Institutional Capacity of Sanitation, Beautification and Parks Development Department

These dominant resources which determine an institutional capacity in the area of urban solid waste management are: skilled and unskilled manpower together with different material, and financial capacity. Otherwise, they can root causes for crash of intended goal since the administration of an organization with a comparatively poor capacity has its have shock on its success. Through this objective, in order to handle urban solid waste effectively the capacity of the institution that is given with SBPDD of the city and also needs to be raised to a higher level with satisfactory budget, human man power, practical skills and equipment used. Still, standing of the offered institutional ability of SBPDD in Bishoftu is fundamentally insufficient arising out of lacking human manpower, fiscal, and material resources.

4.10.1. Human Resource Capacity of Sanitation, Beautification and Parks Development Department

The most significant factors that have predisposed level and eminence of process of urban solid waste management provisions are skilled manpower. It is supposed that the success of institution is more affected by the numbers of employees, staff members, job constraint and real department of staff members, recompense system, and systems of staff management like incentives and outstanding opportunities, competence of urban waste management instruction and technical assistances, and ethical ambition of employees. Recently; the SBPDD has 29 (twenty-nine) workers. From this figure, 2 (two) water supply pipeline stretching and repair employees, 3(three) drivers and assistance, 5 (five) truck assistants, 19 (nineteen) beauty development workers are occupied in stipulation of urban solid waste management in Bishoftu (Appendix-1).

Though, at this time the department continues its role using only 29 (49.15%) human manpower but the remaining 30(50.85%) employees are not up till now employed. During interview with SBPDD head, department has very weak manpower, that the institution is not fully employed in the area in different position due to scars of budget allocated in the municipality and not givin more attention for the department. And also, through value to specialization of employees majorities are placed in right position with orientation to the department in handbook. In general lack of skilled manpower, collapse to give basic need of employees such as earnings increments, incentives, employment type, and other opportunities are also painstaking as following major cause that participated to SBPDD of the city. And also the department is successful its farm duties of stipulation of proper health protection mechanism like hand gloves, safety shoes, wearing clothes etc. Due to this, most of the staff workers are irritated to leave their jobs with long time. Currently, workers are resigned their jobs in different seasons from the institution. In general the department would expose a more severe job preservation problem.

4.10.2. Financial Resource Capacity of SBPDD

The major important factor for any public service is finance liberation in any tune in the city. Bishoftu the provision of adequate funding for SBPDD is a sever challenge which causes the environment to be deteriorated. Solid waste is one of the treats which cause the urban environment and human health. In the past 3 physical years the total budgets allocated in the SBPDD was estimated to 1,879,451.28 Ethiopian birr in 2009, 2,998,456.72 Ethiopian birr in 2010, and 3,417,758.63 Ethiopian birr in 2011 with an incremental rate associated with an increase in total allocated SBPDD budget. But, when we see the ratio of the total allocated budget for the department (1,879,451.28 birr) is compared to the total municipality of the city budget of 18,987,047.38 birr, it only roofed is not significant part of it 9.91 %. This is the result of unbalanced division of funding in different institutions'; the main financial resource was owed to those organizations which have given more attention by the top managers of the municipality. While institutions like SBPDD acknowledged small allocated budget as it has obtained modest concentration by top managers. Therefore; Bishoftu city should afford adequate budget to protect and manage its urban environment without damaging.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

5. Summary, Conclusion and Recommendation

This research paper deals with the summary, conclusion and the recommendations articulated based on the findings. The major purpose of this study was to assess the contributions of urban solid waste management for employment creation of Bishoftu city administration. This survey study was covered by questionnaires, structured interview with head of the department and staff members of the institution, field observation and reviewing documents. Ultimately, based on the quantitative and qualitative analysis of the data, the major findings of the paper are summarized and conclude as follows.

5.1. Summary

The distribution of cooperative respondents on urban solid waste collection shows that 80 (45.45%) of the respondents are working with solid waste collection and the rest followed by street cleaning, compost preparation and solid waste sorting that account 48 (27.27 %), 24 (13.63%) and 24 (13.63 %) percent of the respondents respectively. And also Bishoftu City sanitation, beautification and park development department was practicing composting preparation activities as a demonstration site in two kebeles and this urban solid waste practice contributes for job creation as opportunity for 24 (twenty-four) people and in the near future it would be scaling up in the other kebeles. Beyond job creation; this is an implication of sustainable urban solid waste management in the city but it is not significantly. Almost half of the respondents mentioned that their monthly income before employed was very low and not enough to lead their life and family. However; after employed in SBPDD their income is better and day-to-day life shows in progress. The Bishoftu SBPDD institution structural arrangement has three core work processes such as, solid waste management, liquid waste management, city beautification and parks development. But the SBPDD is not fully functional due to lack of experts. Nowadays, due to lack of skilled manpower, fiscal and facilities institutional capacity of the city SBPDD office is mainly not give appropriate services for urban community.

The SBPDD has institutional linkage or collaboration with administration office, office of health, law and ordering office, rural and agricultural office, micro and small department, public relation and communication sector, and kebele agent sanitation work offices on urban solid waste

management. However; more than 135 (76.70 %) of the respondents mentioned that rules and regulations of related with urban solid waste management did not clearly known in the society and also some of them responded that they couldn't observe any person to punishment when gap of implementing law. The rest 41(23.29 %) respondents know about rules and policy of urban solid waste (figure 29). As a result, a gap of controlling, working framework and low implementing of rules and regulations slowed down effective urban solid waste collection system, storage and dumping system of the city is still challenge.

5.2. Conclusion

In this section, general conclusion is presented based on urban solid waste management and household findings survey, interview and observations by the researcher at the selected Bishoftu city. In Bishoftu city administration urban solid waste are categories into organic and inorganic wastes and household's production wastes, street commercial waste products, commercial wastes, industries or manufacturing wastes, hotels and restaurant and health institutions are identified major sources of urban solid waste.

As obtaining from information, most of the respondents exposed to removing urban solid waste in different areas like; digging a hole around the house and burnings, throwing it on an open area, in water way or on road and dumping around the house. These results showed that, the institution was not work more strictly in sustainable way on recycling and resource recovery activities as a common practice or regular activity at household level. The results from this study showed that separation, processing and recovery activities both at cooperative members and SBPDD level of the city but not at the households. The SBPDD created jobs for 176 cooperative members and 24 (twenty-four) people for those working on composting activities as a pilot test in two kebeles.

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town administration office, health office, law and order securing office, urban agricultural office, micro and small enterprise office, information and communication office, and kebele sanitation agent to work together on urban solid waste management. From field observation, the researcher observed that the disposal site of urban solid waste and its management and handling system is poor and below the level of requirements in the city. The collected urban solid waste is disposed on open space at a place known as “Golba” in among Kebele 04 and 05, that far from 1.5 km away from the center of the city.

The general awareness and participation of households in the solid waste management are very low. Assessment results revealed that very few of the households have the awareness of solid waste and its management. The participation of households in the solid waste management activities is insignificant. As a conclusion, this study investigated three main factors that aggravate the existing poor status of urban solid waste management practice in the city. These are: socio-cultural, technical and institutional factors. The present finding clearly indicated that the study area is under serious threat of environmental degradation, which calls for immediate intervention from all concerned bodies to bring sustainable urban solid waste management by collaboration and integrating with other sectors.

5.3. Recommendations

Based on the findings, the study has come up with the following recommendations.

- Disposal of solid waste on an open space or ditch, in sewerage or on street and disposing on the backyards of the house is observed in the city. And it should be resolve through door-to-door solid waste collection system and by implementation and enforcement of laws in the city.
- Separation, processing and recovery activities should be promoted as a common practice at household level. And also at every institution especially emphasis should be given to integrated urban solid waste management.
- The current urban solid waste management practice by SBPDD may be a cause of environmental degradation in the city. And therefore; high attention must be given to urban solid management by all concerned bodies.
- The law enforcement of the local government gives little attention. And the law to be effective people need to know the presence of laws through awareness creation by concerned

body and decision makers (implementer) should be aggressively work to minimize illegal disposal activities through continuous follow up.

- The status of the existing institutional capacity of SBPDD is basically inadequate arising out of insufficient manpower, financial, and material resources. And also little attention is given by officials. Therefore; highly emphasis should be given to SBPDD.
- The study is not conducted on the health and environmental aspect. And therefore; further study should be conducted in this aspect.

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Appendix 1: - Human resources and number of workers in SBPD task in 2020

Job title	Employment type	Required no of workers	Existing no of workers
WP manager	Permanent	1	1
WP assistant (secretary)	Permanent	1	1
Community need assessment & planning expert	Permanent	6	4
Training & document preparation expert	Permanent	6	3
Solid waste reuse & recycling follow up & supportive expert	Permanent	13	5
Distribution & control expert	Permanent	8	3
Supply & repair follow up expert	Permanent	8	4
Driver(Solid waste collection vehicle)	Permanent	8	5
Assistant(Solid waste collection vehicle)	Permanent	8	3
Total		59	29

Source: Bishoftu city SBPDD WP manual, 2020

Appendix 2: - Cooperatives data in Bishoftu city administration urban solid waste management.

No.	Name of Cooperatives	Member of Cooperatives		Year of establishing	Department on working	Vehicle /transport
		male	female			
1	Bikiltu	5	3	2008	SW collection	1 tractor
2	Azebe and Getahun	5	3	2006	SW collection	2 tractor
3	Hangatu	5	3	2006	SW collection	2 tractor
4	Surafal and theirs	5	3	2008	SW collection	1 tractor
5	Mesifen and theirs	5	3	2006	SW collection	Bajaj
6	Iyerusalem and theirs	5	2	2011	SW collection	Tractor
7	Almaz and Tilahun	5	4	2008	SW collection	Bajaj &Tractor
8	Negeha	5	3	2006	SW collection	Bajaj
9	Genet	5	3	2009	SW collection	Tractor
10	Negenya	6	2	2011	SW collection	
11	Abdiguda	1	7	2006	Street cleaning	
12	Jivenyaboru	0	8	2006	Street cleaning	
13	Damasa	1	7	2008	Street cleaning	
14	Fekeny Total	0	8	2006	Street cleaning	
15	Guddinatokuma	0	8	2008	Street cleaning	
16	Idegat	0	8	2008	Street cleaning	
17	Ayinalem and theirs	6	2	2006	SW sorting	
18	Mamitu and Shitaye	8	0	2006	SW sorting	
19	Sintayehu and Bamilaku	8	0	2009	SW sorting	
20	Hawiboru	4	4	2010	Compost preparation	
21	Nagenya	4	4	2010	Compost preparation	
22	Hora	4	4	2010	Compost preparation	

Appendix 3: Survey Questionnaire to Cooperative members (Respondents)

Date _____ Time started _____ Time ended _____

Kebele _____ Code _____

Part One: Socio-economic and demographic characteristics of the respondent

1. Gender: A. Male. B. Female
2. Age: -----
3. Family size: -----
4. Educational level:
A. No formal education
B. Grade _____
5. Marital condition:
A. Married B. Single C. detached D. Widowed
6. Occupational Status before employee in cooperatives:
A. Government B. Private sector
C. Self-employed D. Other /jobless
7. When was the urban solid waste cooperative organized? -----
8. Do you think the cooperative functions transparently in doing all of its activities?
A. Yes B. No
9. If the answer is No “Q.8” what is the reason behind? -----
A. Mismanagement system B. Lack of knowledge
C. Loads of activities D. Does to expose to corruption
E. Lack of commitment F. Over computation
10. How do you select your leader from your cooperative members?
A. Random selecting B. Due to burden of economic risks
C. Based on relations of kebele leader’s D. Due to economic interest of members
E. no alternative options to other jobs F. Gender sensitive
11. Length of time without job or residency (in years) in the city.
.....
12. House ownership condition:
A. Keble rental house C. Private House
B. Private Rental house D. Dependent on others home

13. Average monthly income of cooperative members before employed (in birr):

14. Average monthly income of cooperative members after employed in solid waste (in birr):

15. Are there cooperative members satisfied by monthly salary earned from urban solid waste service delivery? A. Yes B. No
16. If your answer for question No. 15 is ‘No’, what do you think the reason behind?
 A. View of workloads C. System of solid waste management
 B. Community attitude towards cooperatives D. Time of collection
 E. All
17. Length of period employed (in Years) in urban solid waste?

18. Is cooperatives members’ sustainability work in urban solid waste management?
 A. Yes B. No
19. If the answer is “No” question18, why?
 A. The work environment is not attractive C. Less acceptance by the family
 B. Over workload D. Less attention is given by the government
 E. Others
20. Do you think sustainable urban solid waste management is contributes for job creation?
 A. Yes B. No
21. If the answer is “Yes “for question No.20, how many numbers of people benefited from this job opportunity?

22. How do you see the overall activities (tick) ‘√’.

No	Responsible activities on USWM	v. good	Good	Poor	worst
.					
A	Financial management system of the cooperative				
B	Administrative part of the cooperative				
C	Equipment facility issues of the cooperative				

D	Payment and related issues of the cooperatives				
E	Leadership and empowerment of the cooperative				
F	Managerial role of the head of the cooperatives				

Part Two: Questions related with urban solid waste management practices

1. What kinds of the household wastes are mostly produced from your house? (Multiple response possible)
 - A. Peels of fruit and Vegetables
 - B. Ash
 - C. Paper and carton
 - D. Festal or Plastic
 - E. Garden trimmings or leafs
 - F. Other (specify)
2. Does the household have a temporary solid waste storage facility? (If No, go to Q3)
 - A. Yes.
 - B. No
3. If No, how household store solid wastes or how you come across with the problem of solid waste storage?
4. What type of solid waste storage material do you use in your house to store solid wastes and also the households in the city?
 - A. from Bamboo constructed basket
 - B. Sack (madaberia)
 - C. Metal sheet container
 - D. plastic (festal) container
 - E. Other _____
5. Do you have adequate space in your backyard to make compost?
 - A. Yes
 - B. No
6. Do you have evidences how the household practices solid waste separation practices?
 - A. Yes
 - B. No
7. If your answer for question No. 6 is 'Yes' for what purpose do you separate those solide wastes in the city?
 - A. To reusing
 - B. To sell / exchange purpose
 - C. To present as a gift to others
 - D. To recycling
 - E. To help urban solid waste collectors (to make the collection easier)
8. If your answer for question No 6 is „No“, what do you think the reason behind?
 - A. I do not have the knowledge about solid waste separation practices
 - B. It is not my responsibility
 - C. I don't know the importance of separation practices
 - D. if any other reason, please specify it
9. Is there sufficient refuse container in the Bishoftu city available?
 - A. Yes
 - B. No

10. If your answer is 'yes' for question No. 9. Accessibility refuses container to household in meters?
- A. below 50 meters
 - B. Between 51 – 150 meters
 - C. Between 151 – 250 meters
 - D. Between 251 – 350 meters
 - E. > 350 meters
11. Is there any mechanisms to refusing/disposing solid waste by households?
- A. Throwing it on an open space, in sewerage or water ways and on street
 - B. Digging a hole around the house and burning
 - C. Disposing on the backyards of the house
 - D. Dumping in different areas likes the river, lakes and constructed bridges
 - E. personal collectors take it
 - F. Others, please specify _____
12. How often do you empty your wastes to either of your choice dumping place?
- A. Everyday
 - B. Every 2 to 3 days
 - C. Every week
 - D. Every two weeks
 - E. Once a month
13. What time they preferred to dispose solid waste by the households?
- A. Early morning
 - B. Late morning
 - C. Afternoon
 - D. Early night
 - E. The time of private waste collectors

Part three: -Perception of cooperative respondents about urban solid waste management

1. What do you think about solid waste?

- A. Useless B. Useful C. to some extent useful D. others (specify)

2. Do you think the urban solid waste management system is leading in sustainable ways interims of environment, social, economic and political aspect?

- A. Yes B. No

3. If your answer is 'No' for question No. 2 is No, what is your reason?

.....

4. Do you believe that cooperatives create social capital: refers to those stocks of social trust, norms and networks that people can draw upon to solve common problems. It is mediated through kin networks and group membership;

- A. Yes B. No

5. Do you believe that cooperatives create financial capital: savings, access to regular income, and net access to credit monthly?

- A. yes B. No

6. If your answer is yes for question No.5, please mentioned the way and how to save financial capital by the cooperatives?

.....

7. Do you believe that cooperatives create physical capital: houses, vehicles, equipment, and livestock?

- A. Yes B. No

8. If your answer is yes for question No.7, How many cooperative members create physical capital?

.....

9. Do you have any idea about recycling and reusing in general?

- A. Yes B. No

10. If your answer is yes for question No.9, What solid waste material do you use for reuse purpose in your house?

.....

20. If your answer for question **no 19** is “**No**”, what is the reason behind?
- A. More attention is not given
 - B. Gap of skills how urban solid wastes are managed
 - C. Government institutional structures of urban solid wastes
 - D. not has of experts working on urban solid wastes
 - E. Mandate of interest in different institution of administer urban solid wastes
 - F. All are necessary for urban solid wastes
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
22. Are households satisfied by the urban solid waste management service which is delivered by sanitation, beautification and park development?
- A. Very satisfactory C. Fair
 - B. Satisfactory D. Unsatisfactory
23. How do evaluate the practices of solid waste disposing system in hotels and resorts, business organizational, institution and etc.
- A. They try to dumps in legal vicinity C. They dump in dumping place/ container
 - B. They dispose in road and drained in water ways D. They dispose anyplace
 - F. They use solid wastes for compost, reuse and recycle for income purpose
24. What do you think to improve urban solid waste management system like, reuse, recycle and making compost in hotels and resorts, business organizational, institutions?
- A. Awareness creation is very important
 - B. through Training and education
 - C. By using rules and regulations in the society
 - D. all

Appendix 4: - Interview questions for Sanitation, Beautification and Parks Development Department staff members (workers) and cooperatives head

Dear respondent this Interview is conducted for an academic purpose for the fulfillment of requirement of MA Degree in Regional and Local Development Studies. The General objective of this study is to assess The Contributions of Urban Solid Waste Management for Employment Creation: The Case of Bishoftu City Administration, Oromia Regional State, Ethiopia. Thus, for the success of the study your response is highly essential because all information that you afford determines the analysis of the data and conclusion of the research.

Part one: Background information about the respondents

1. Job title _____

5. Earned salary _____.

Part two: Structured Questions regarding sustainable urban solid waste management

1. Have you ever been participated in urban solid waste management trainings given in our country?
2. Does your institution give incentives, promotions and salary growth to you?
3. If your answer for question no 2 is 'yes', how do you evaluate the level of training, education, incentives, promotions and salary increment opportunities offered to MSWM workers?
4. Does your SBPDD work with other government and non-government organization in its urban solid waste management operations? If your department works, please list the organization and their activities on solid waste management of the town.
5. How do you evaluate your institution status on interaction with other government and nongovernment organizations regarding USWM of the town?
6. How do you evaluate the institutional arrangement of SBPDD? Are there any problems on the performance of your work on urban solid waste management?
7. Do you feel your organization has well-organized structure to handle USWM of the Town?
8. Do you think the urban solid waste controlling mechanism of SBPDD is effective?
9. Do you work on weekends? If your answer is 'yes', do you get over time payment?
10. Do your collection, transportation and disposal service cover all parts of the town? If it not covered, please specify the major reasons?
11. Are you provided with medical care, safety wares, and other materials that are necessary to keep your health?

12. Do you think residents of Bishoftu city have clear and adequate awareness about urban solid waste management systems?

13. What do you think should be done to improve the situation of USWM of the town in general?

Appendix-5: Interview questions prepared for head of SBPDD

Part one: Background information about the respondents

1. Job title _____
5. Earned salary _____.

Part two: Structured Questions regarding sustainable urban solid waste management

1. What types of solid waste collection types does adopt your department?
2. Mention the types and number of equipment or facilities that your department used for collection, transportation and disposal of USW of the city?
3. Is there adequate public solid waste or refusing containers and street bins at the major roads or places of Bishoftu city?
4. Does your SBPDD institution practice different types of resource recovery, waste reduction or waste treatment activities?
5. Do you explain the overall organizational structure, mandate and functions of SBPDD and, the major positive and negative impact of this arrangement on the presented performance USWM of the city?
6. Do you explain Policies, Strategic plans, and its implementation and monitoring systems which is related to urban solid waste management and its success for sustainable urban solid waste management?
7. Could you explain the current annual budget of SBPDD and its major challenges that facing your institute?
8. Does your department USW service delivery collect income from the residents of the city?
9. Are there any problems of employment related with man power in your organization?
10. Is there instability of employee in your institution?
11. Do you think that your institution has sufficient autonomy from other levels of government in its every day decision making.
12. Does your department integrating with different stakeholders to work on urban solid waste management? If yes, please describe those actors and their significant activity.
13. Does your department give education to the community about urban solid waste management and prepared cleanup campaigns?
14. Could you explain about the major challenges of your department?