

**Addis Ababa University
School of Graduate Studies**

Regional and Local Development Studies

**The Involvement of Micro and Small Enterprises in
Solid Waste Management Services in Addis Ababa:
The Case of Bole and Arada Sub-cities**

**A Thesis Presented to the School of graduate Studies,
Addis Ababa University in Partial Fulfillment for the
Degree of Master of Arts in Regional and Local
Development Studies**

By:

ABEBE TEGEGNE

ID.NO. GSE/1373/96



**June 2006
Addis Ababa**

Addis Ababa University
School of Graduate Studies
Regional and Local Development Studies (RLDS)

**The Involvement of Micro and Small Enterprises in Solid
Waste Management Services in Addis Ababa:
The Case of Bole and Arada Sub-cities**

Approved by Board of Examiners

Signature

1. Chairman, Graduate Committee

Tefera Alemayehu

Tefera

2. Advisor

Tefera Alemayehu

Tefera

3. Internal Examiner

Dr. M. D. BAWAIAH

M. D. Bawaiya

4. External Examiner

Wondimu Abeje

[Signature]



ACKNOWLEDGEMENT

First and for most I thank my advisor Dr Tegegne Gebre Egziabeher for his strict follow up and constructive comments and suggestions from the beginning to the finalization of the study. With out his continuous support I doubt the completion of this paper.

My grateful thank also goes to my wife Kassanesh Alemu, Children Fassil, Kidist and Dawit Abebe for their great patience and support during my work and my brother Ato Belay Bezabih who he helped me to attend modern education for the first time.

I would like also thank my friend Wole Jamal for his uninterrupted material and technical support and Ato Matebu Tadesse for his contribution in editing the text.

I indebted also to thank institutions like SBPDA operation Department, Addis Ababa City Micro and Small Enterprise Market Expansion Department, Bole and Arada sub-cities' Solid Waste management team leaders, Network Association of Addis Ababa City Solid Waste management Enterprise, and ECA and World Bank Library staffs who supplied me with necessary information.

Last but not least, my thanks also goes to Haimanot who she typed the manuscript timely.

TABLE OF CONTENT

	Page
Acknowledgement-----	i
Table of Contents-----	ii
List of Tables -----	v
List of Pictures -----	vi
Acronyms -----	vii
Abstract -----	viii
CHAPTER ONE	
INTRODUCTION -----	1
1.1. Background-----	1
1.2. Statement of the Problem-----	2
1.3. Objective of the Study-----	4
1.3.1. General Objective -----	4
1.3.2. Specific Objectives -----	4
1.4. Research Questions -----	4
1.5. Research Methodology -----	5
1.5.1. Research Design -----	5
1.5.2. Survey Instruments -----	5
1.5.3. Sampling Procedure -----	6
1.5.4. Method of Data Analysis -----	7
1.5.5. Significance of the Study -----	7
1.5.6. Scope of the Study-----	8
1.5.7. Limitation of the Study-----	8
1.6. The Study Area-----	8
1.7. Organization of the Thesis -----	9

CHAPTER TWO

RELATED LITERATURE -----	10
2.1. The Role of Micro and Small Enterprises in Solid Waste Management Services -----	10
2.1.1. The Involvement of MSEs in Solid Waste Management Services -----	10
2.1.2. Types of MSEs in Solid Waste Collection-----	17
2.1.3. Characteristics of Micro and Small Enterprises -----	19
2.2. Empirical Literature -----	20
2.2.1. The Experience of Latin America -----	20
2.2.2. The Experience of Asian Countries -----	23
2.2.3. The Experience of Africa -----	25
2.3. Policy Environment and Legal Framework -----	26
2.3.1. Policy Environment-----	26
2.3.2. Legal Framework -----	26

CHAPTER THREE

RESULTS AND DISCUSSION -----	28
3.1. Business, Operators and Employees Characteristics -----	28
3.1.1. Operators and Employees Characteristics -----	28
3.1.2. Business Characteristics -----	35
3.2. The Nature and Operation of Solid Waste Service -----	43
3.2.1. The Nature of Solid Waste Service -----	43
3.2.2. The Operation of Solid Waste Service-----	48
3.2.3. Current Status of the Business Activity-----	57
3.2.4. Future Plan of the Enterprise-----	58
3.3. Method of Involvement in Solid Waste Activity-----	59
3.3.1. Open-Competition -----	59
3.3.2. Zoning -----	60
3.3.3. Contracting and Concession -----	61

3.4. Income and Employment Conditions of Employees -----	62
3.4.1. Employment Conditions -----	62
3.4.2. Income of Employees -----	66
3.4.3. Employees Future Prospects -----	68
3.5. Constraints, Problems and Institutional Support for Enterprise Growth-----	69
3.5.1. Institutional Support-----	69
3.5.2. Constraints and Problems-----	71
CHAPTER FOUR	
CONCLUSION AND RECOMMENDATIONS-----	73
4.1. Conclusion-----	73
4.2. Recommendations-----	74
BIBLIOGRAPHY-----	77
APPENDICES	
APPENDIX A -----	1
APPENDIX B-----	5
APPENDIX C-----	6

LIST OF TABLES

	Page
Table 1: Sample size of MSE employees in bole and Arada sub-cities -----	7
Table 2: Solid Waste Micro and Small Enterprises and Cooperatives in Latin-America by Country and Activity-----	21
Table 3: The Participation of Men and Women in the Waste Collection Enterprises -----	23
Table 4: Age of enterprise operators by sub-city -----	28
Table 5: Age composition of employees by sub-city-----	29
Table 6: Cross tabulation of marital status of enterprise operators by the number of dependents -----	30
Table 7: Employees marital status by sub-city -----	30
Table 8: Birth place and ethnic background of enterprise operators by Region -----	31
Table 9: Employees Ethnic background by origin -----	32
Table 10: Educational status of enterprise operators by sub-city -----	33
Table 11: Employees level of education by sub-city -----	33
Table 12: Distribution of enterprise operators by type of experience -----	34
Table 13: Employees dependency before employment by type -----	35
Table 14: Establishment of enterprises by year -----	36
Table 15: Enterprises office ownership by sub-city-----	37
Table 16: Enterprises organizational ownership by sub-city -----	37
Table 17: Head of enterprises by type -----	39
Table 18: Enterprises start- up capital by sub-city -----	40
Table 19: Enterprises start up capital by source -----	41
Table 20: Enterprise initial and current total employees by sex ⁴ and Sub city -----	43
Table 21: Enterprise lines of work in waste collection by sub-city -----	44
Table 22: Service recipient by sub-city -----	45
Table 23: Enterprises total number of clients by sub city -----	46

Table 24: Attitude of enterprises towards their client number/ market by sub-city -----	47
Table 25: Enterprises by number of pushcarts owned by sub city -----	49
Table 26: Ownership of garbage storage by sub-city -----	50
Table 27: Frequency of waste collection from clients by sub-city-----	51
Table 28: Type of Waste Handling by Enterprises -----	51
Table 29: Enterprise temporary storage by sub-city -----	53
Table 30: Type of waste transportation by ownership -----	53
Table 31: Enterprise solid waste dumping site by sub-city -----	55
Table 32: Use of enterprises separated material by sub-city -----	56
Table 33: Attitudes of MSEs how their involvement contribute to Minimize solid waste management problems by sub-city-----	57
Table 34: Enterprises current general standard of the business by Sub-city -----	58
Table 35: Enterprises future plan by sub-city -----	59
Table 36: Workers employment by type -----	63
Table 37: Workers recruitment criteria by sub-city-----	63
Table 38: Employees working hours per day by sub-city -----	64
Table 39: Employees working days per-week by sub-city -----	65
Table 40: Gender segregation in employment by sub-city -----	66
Table 41: Distribution of employees by sex and sub-city -----	66
Table 42: Employees wage payment per month by sub-city (in Birr) -----	67
Table 43: Employees wage payment by period -----	67
Table 44: Employers' Future Plan by Sub-city -----	69
Table 45: Enterprises type of support by source-----	70
Table 46: Number of enterprise operators trained in different activities -----	71

LIST OF PICTURES

Picture 1: Temporary storage of enterprises -----	52
Picture 2: MSEs door-to-door collection by pushcarts -----	54

ACRONYMS

- MSE = Micro and Small Enterprise
- WBG = World Bank Group
- SBPDA= Sanitation, Beautification and Parks Development Agency
- EPA = Environmental Protection Authority
- MEDC = Ministry of Economic Development and Cooperation
- NGO = Non-Governmental Organization
- CBO = Community-Based Organization
- ORAAMP = Office for Review of Addis Ababa Master plan Project.
- MoTI= Ministry of Trade and Industry
- AACAFEDB= Addis Ababa City Administration Finance and Economic
Development Bureau.
- CSA= Central Statistical Authority.

ABSTRACT

In Addis Ababa as in many cities of the developing countries, solid waste micro and small enterprises are involved in solid waste management services and generating employment opportunities for urban labor force since 1998/1999. This research is mainly emphasizing the management and job creation role that the involving MSEs can play in solid waste services.

In order to achieve the objective of the study, a social survey with a questionnaire covering a total population of 37 enterprises and a sample of 80 workers was conducted on two purposely selected sub-cities, i.e. Bole and Arada. The survey indicated that MSEs to do solid waste activity with limited start-up capital, traditionally made labor-intensive working tools and workers with only few health protective materials. Joblessness and Capability for physical work are the major criterion for employment. The results of the research in general showed that over three fourths of the MSEs participated in primary solid waste collection using hand pushcarts up to the municipal transfer points through door to door collection system. Entrepreneurial activities in sorting, compost processing and recycling are less developed though it is encouraging. MSEs are involved in solid waste activity with the method of open-competition and zonal monopoly and have personal relations to clients in terms of contracts and payment of service charges. Lack of working tools and shortage of finance are the two major constraints for the operation and growth of MSEs. Some financial support for entry in the activity depends on the social network of friendship and relatives rather than formal financial institutions. Most of the MSE operators started solid waste activity without any training but attracted by it as a survival strategy.

Generally there is a need for strengthening the MSEs growth by expanding the micro- finance institutions and providing especial financial support for the solid waste sector. Government and NGOs support should also be focused on training and consultancy services or in general informative services concerning market, documentation or accounting system. Encouraging public-private partnership with medium-scale enterprises to reduce the problem of waste transporting and disposal is one of the main issues to be focused. In addition, government (municipal) partial intervention on the method of MSEs participation should be based on an objective assessment of the reality to minimize the conflict that arises between the new entrants and existing MSEs in case of unnecessary competition to be the sector effective. There is also a need for the government to negotiate with the MSEs owners to ensure employees get at least the minimum wage of the country.

CHAPTER ONE

INTRODUCTION

1.1. Background

Solid waste management is one of the most important urban services provided under a municipal responsibility nearly in all developing countries. In urban areas, especially in the rapidly urbanizing cities of the developing world, problems and issues of municipal solid waste management are of immediate importance (Moningka, 2000: 5).

As some studies show, huge amount of solid waste is produced in urban areas. In developing countries, it is common for municipalities to spend 20 to 50 percent of their available recurrent budget on solid waste management but 30 to 60 percent of the waste remains uncollected and it is only less than 50 percent of the population that is served (Schubeler, 1996: 15 and WBG, 2001: 1). In some cases, as much as 80 percent of the collection and transport equipment is out of service and is in need of repair or maintenance (Ibid, 2001: 1). This indicates the coverage of solid waste collection service is so low that the waste generated is dumped at many undesignated sites such as streets, open spaces, drainage systems, or into or beside rivers which in turn contributes to flooding, breeding of insect and vectors and the spread of diseases (Bartone, 1995: 2 and Haan, Coad and Lardinois, 1998: 8).

Most developing countries employ open dumping as their form of land disposal. These dumpsites make very uneconomical use of the available space, allow free access to waste pickers, animals and flies and often produce unpleasant and hazardous smoke from slow-burning fires. Such unsanitary disposal system has a negative impact on the health of residents and environment (WBG, 2001). In general solid waste management is given low priority in developing countries.

Municipal solid waste management is a complex task which depends upon the organization and cooperation between households, communities, private enterprises particularly the involvement of micro and small enterprises and municipal authorities in order to have appropriate waste collection, transfer, recycling and disposal. Furthermore, waste management is an essential task which has important consequences for public health and well-being, the quality and sustainability of the urban environment (Schubeler, 1995: 15). Although solid waste management is the coordinated effect of all these actors, this paper focuses on the participation of micro and small enterprises.

1.2. Statement of the Problem

Addis Ababa, the metropolitan city of Ethiopia, like many other towns and cities of the developing countries has a serious problem in the provision of adequate solid waste management services. Efficiency is low and a wide geographical area is not adequately covered (Haan, Coad and Lardinois, 1998: 9). However, solid waste management from storage through collection, transporting and disposal has been the responsibility of the municipal government for a long period of time. Although several efforts were made to improve the management of services, the aesthetic quality of the city has deteriorated and the health situation of the community has come under serious threat (SBPDA, 2003: 1). Especially children, refuse collection workers and scavengers are directly exposed to excreta related pathogens and intestinal parasites. Children are particularly vulnerable and excreta-related diseases are responsible for one quarter to one half of the deaths of children under the age of five (Bartone, Bernstein and Wright, 1990: 3).

According to the study made by Gordon (1995) as cited in SBPDA (2003) in Addis Ababa per capita generation rate 0.252 kg/cap/day, total daily generation is 0.851 tons/day and the total annual generation is about 838,405m³. From the total waste generated in the city of Addis Ababa, 1482m³

of waste is collected and transported per day and 540,789m³ per annual. This accounted for about 65% of the total collection and disposal of waste. The rest 5% composted, 5% recycled and 25% of the waste is dumped in unauthorized and open dumping areas. Based on this study, households account for 76% of the total generation of waste, institutions/commercial, factories, hotels and health facilities comprised 18% and street sweeping for 6% of the total generation.

The real situation indicates that the problem of solid waste management cannot be solved with the mere efforts of the municipal government. So there is a need for the involvement of the private sector in general and the micro and small enterprises in particular and the participation of the community at large.

Currently a number of micro and small enterprises are emerging to participate in primary solid waste collection. The emerging MSEs have tried to collect garbage at the source from the household and transport it to the municipal waste containers and transfer points.

This activity fills a gap in municipal waste collection effort. In addition to this, MSEs in solid waste collection have a potential of creating employment. These dual roles make these MSEs to be an important area of investigation. From the point of view of solid waste collection, it will be worth looking at how the MSEs fill the gap; what constraint they face and how they could be upgraded to involve in higher-level municipal service. From the employment generation point of view it will also be worthwhile to examine their capacity to generate more employment and reduce poverty.

1.3. Objective of the Study

1.3.1. General Objective

The general objective of the study is to assess the involvement or participation of micro and small enterprises (MSEs) in solid waste management services and examine their constraints for growth.

1.3.2. Specific Objectives

The specific objectives of the study include the following:

1. To examine the nature and operation of solid waste service provided by MSEs.
2. To identify the method of involvement of MSEs in solid waste management.
3. To examine the income and employment condition of the MSEs employees as well as their gender participation.
4. To identify the constraints and problems that hamper the operation and development of MSEs and institutional support they receive in solid waste management.

1.4. Research Questions

1. What are the main activities of MSEs in solid waste management and how are these organized?
2. Do solid wastes MSEs have a potential to form a strong entrepreneurship by expanding their function into recycling, composting and disposing to final dumpsite?
3. Do solid wastes MSEs play a role in generating employment and income for the poor?
4. How is gender participation in primary solid waste collection?
5. What type of support do the MSEs need?

1.5. Research Methodology

The study areas for this survey are Bole and Arada sub-cities. These were purposely selected because of their relatively better participation of solid waste MSEs in solid waste management activities. The two study areas will also help to compare the MSEs participation in these two different locations. Since they are found in different neighborhoods, they show different level of income.

1.5.1. Research Design

This study was a social survey research design in order to collect information from MSEs and from their sample workers. The survey research design is selected to consider the MSEs and their sample workers variation in the study areas. Data on the variables of interest are collected more or less simultaneously at the same time through structured questionnaire and unstructured interviews method.

1.5.2. Survey Instruments

Primary Information: A structured questionnaire was administered to enterprises and their sample employees who were engaged in solid waste management services in Bole and Arada Sub-Cities. These enterprises and the sample workers were identified from a list of registered solid waste micro and small enterprises from the two sub-cities' solid waste management team leaders' office. The instruments used for data collection were face to face interviews and direct observation methods. The researcher with the help of thirteen research assistants filled-out the structured questionnaire. The observation method was used in conjunction with the interview to validate and compare information collected by the structured questionnaire.

Unstructured interviews were also conducted with sub-cities' solid waste team leaders, SBPDA's Operation Department, Addis Ababa MSEs Development Agency's Market Expansion Department and with Network Association of Addis Ababa City Solid Waste Management Enterprise.

Secondary Information: Information was collected from reference books, international organizations publications and reports, journals, archives, SBPDA documents and annual reports, CSA documents, other published and unpublished materials and internets.

Data Collection Method: Thirteen enumerators carried out data collection i.e. seven in Bole and six in Arada. The enumerators were trained for two days to clearly understand the questions and pilot surveys were done at selected MSEs by the researcher for four days. To complete the questionnaire enumerators used telephone addresses (calls) to make an appointment with the MSEs respondents and filled out questionnaires. Data gathering was completed from May 20 to June 20, 2005.

1.5.3. Sampling Procedure

I. Population Understudy

The populations to be studied under the study areas were the whole 37 MSEs which were legally registered in Bole and Arada sub cities in solid waste management activity. These are 22 enterprises in Bole and 15 enterprises in Arada. The sample frame was the list of the names of all enterprises employees under investigation in the two study areas.

The whole enterprises were taken as a study population in the two study areas. Thus census method was used to take the whole MSEs which are engaged in solid waste management services in the two study areas.

II. Sample Size and Sampling Method for Employees

The total number of MSEs workers were 801 in which 299 are found in Bole and 502 in Arada. Sample taking has two stages. First 10% of the 801 total employees (80 sample workers in both study areas) were taken to represent the whole employees. In the second stage, 19 enterprises or (50 percent) were randomly selected from the 37 enterprises i.e. 11 MSEs from Bole and 8 from Arada sub-cities to select sample workers from each enterprises. However 18.3% was used for total sample selection, Sample workers were randomly selected using 17% from each 11 enterprises in Bole and 19.5% from each 8 enterprises in Arada through proportion

to size method due to some variation in the two study areas. The numbers of samples selected are shown below.

Table 1: Sample size of MSE employees in Bole and Arada sub-cities (n = 80)

S. No	List of MSEs in Bole	Employees		List of MSEs in Arada	Employees	
		Total	Sample (17%)		Total	Sample (19.5%)
1	Abbay Sweeping Service	17	3	Berhan Cleaning Service	69	13
2	Berueh Tesfa Company	12	2	Checheliya Sanitary Service	14	3
3	Dynamic Sanitary Services	26	4	Dink Cleaning Service	10	2
4	Hiwot Fana Sweeping Service	12	2	Fikat Sweeping Service	20	4
5	United Friends 94 Sanitary Service	17	3	Nib cleaning service	9	2
6	Goh Sweeping service	15	3	Tibeb Berhan Share Company	100	19
7	Haimanot and Families	5	1	Tsedat Letena	8	2
8	Negat Solid Waste Disposal	6	1	ZebSef Initiative	26	5
9	Senary Cleaning Service	12	2			
10	Tesfa Berhan Cleaning Service	12	2			
11	Unity Integrated Sanitary Services	45	8			
	Total	179	30	Total	256	50

Source: Archives of Bole and Arada Sub-Cities' Sanitation, Beautification and Parks Development Office.

1.5.4. Method of Data Analysis

The method of data analysis was descriptive type, which mainly focused on data presentation and analyzing using ratios, percentages and mean with the help of SPSS statistical techniques.

1.5.5. Significance of the Study

The Federal Constitution of Ethiopia on article 44 (1) says all persons have the right to have a clean and healthy environment. This is also supported by the National Environmental policy of Ethiopia (EPA and MEDC, 1997) which has given due attention to sustainable environmental improvement to all parts of the country. But a city like Addis Ababa has a serious health and environmental problem, especially inadequate handling and disposal of municipal solid waste is the most viable cause of environmental degradation (ORAAMP, 2002: 4). So it is very important to study the role of MSEs that play in sustainable environmental management activities and their significant contribution in generating employment opportunities.

Thus the study is hoped to provide some information to policy makers and environmental protection practitioners interested to assist financial, training and legal provision which in turn minimize the constraints of MSEs growth. The study could also help as background information for those researchers who want to do an in-depth study in the future in Addis Ababa in general and the problem areas Bole and Arada sub-cities in particular.

1.5.6. Scope of the Study

The assessment of all micro and small enterprises involved in solid waste management services and their impact on economic growth in depth study is a very complex activity due to time and finance constraints. So the main focus of this study was on those MSEs that were legally registered up to 2003/2004 to do solid waste management activity.

1.5.7. Limitation of the Study

The main problem during the survey period was irregular addresses of MSEs. Most of the MSEs had no specified working offices. So getting the responsible individuals were very tedious and demanding frequent appointments. In addition to this, sub-cities information handling system was inadequate. For instance, changes in the names of MSEs and the current number of workers for each MSEs were not timely recorded. Most of the respondents were also involuntary to tell MSEs monthly income and expenditure. Finally workers interview was also problematic due to long hours of working time.

1.6. The Study Area

The study areas for this survey are Bole and Arada sub-cities. These were purposely selected because of their relatively better participation of solid waste MSEs in solid waste management activities. The two study areas will also help to compare the MSEs participation in these two different locations. Since they are found in different neighborhoods, they show different level of income. Bole is located in the Eastern and Northeastern part of Addis Ababa while Arada is at the central part of the city.

According to the Office for Review of Addis Ababa master plan project (2001/2002), Bole has the total area of 6955.4 hectare of land and Arada 1156.24 hectare. Based on the 2005, population estimates of Addis Ababa city Administration Finance and Economic Development Bureau, Bole has a total population of 325,022 while Arada has 330,344. In terms of sex ratio, female population is a little bit larger than male population in both sub-cities. For instance, Bole has 172,108 female and 152,194 male populations and Arada has 174,647 female and 155,697 male populations. Administratively, Bole and Arada are two of the ten sub-cities of Addis Ababa City Administration. Sub-city is the second administrative level next to municipal government while kebele is the least administrative level next to sub-city. Bole sub-city is comprised of eleven kebeles while Arada is composed of ten kebeles.

1.7. Organization of the Thesis

The thesis is organized in four chapters. The first chapter presents information about the introductory part including statement of the problem, objective of the study and research questions, methodology, significance, scope and limitation of the study and the study area. The second chapter reviews the necessary information that can enable to interpret the field results. The third chapter focuses on the results and discussion of the operators, employees and business characteristics, the nature and operation of solid waste service, method of involvement, income and working conditions of employees and support and constraints of enterprises. The fourth chapter includes the concluding and recommending points.

CHAPTER TWO

RELATED LITERATURE

2.1. The Role of Micro and Small Enterprises in Solid Waste Management Services

2.1.1. The Involvement of MSEs in Solid Waste Management Services

Sustainable solid waste management services should not be achieved through isolated or sectoral approaches but it can be attained through the participation of different stakeholders (actors) such as local authorities, NGOs and CBOs, service users, private formal and informal sectors (MSEs) and donor agencies (Schubeler, 1996: 19). This survey stresses on the involvement of micro and small enterprises in solid waste activities.

The involvement of MSEs in waste services is not new. The oldest garbage collection MSEs have been found in Latin America (e.g. Guatemala and Costa Rica) since early 1950s. These MSEs were set up without any specific stimulus from public or private agencies, but began as business opportunity. The greatest obstacle has been the reluctance to hire the sanitary services offered by MSEs, the municipalities' lack of confidence in establishing contacts with the MSEs and in most cases officials in charge prefer companies with large capital investments and advanced technology even though this technology was not adequate for cities in developing countries and can not be afforded by them (Querubin, 1996 as cited in Haan, Coad and Lardinois, 1998: 14). It was in the last two decades that MSEs have come in to focus as an important economic sector, providing employment and incomes to a large section of the population of low income countries (Ibid, 1998). In the literature two types of enterprises in the private sector (formal and informal) are involved in solid waste management services.

I. Formal Private Sector Enterprises

The formal private sector refers to private sector corporations, institutions, firms and individuals, operating as registered and/or incorporated businesses with official business licenses. It has an organized labor force governed by labor laws, some degree of capital investment, and generally modern technology (Furedy, 1990 cited in Klundert and Lardinois, 1995: 10).

The formal private sector includes a wide range of enterprise types including large business establishments. As potential service suppliers, private enterprises are primarily interested in earning a return on their investment by selling waste collection, transfer, treatment, recycling and/or disposal services (Schubeler, 1996: 23). As Klundert and Lardinois (1995) argued, they may involve in the waste management system in a number of ways:

1. Entering into contracts paid by the municipality to perform collection, processing, disposal or cleaning services for compensation.
2. Purchasing the right to perform services and keep (all or part of) the income generated.
3. Entering into contracts with individuals or businesses for collection services.
4. Functioning as a purchaser of recovered materials from the municipality or the collector.

Private sector waste collectors, therefore, may be contracted directly by individual households, neighborhood associations or business establishments. More often, they operate under contractual agreement with municipal authorities (Schubeler, 1996: 10).

II. Informal Private Sector

The informal private sector comprises unregistered, unregulated activities carried out by individuals, families, groups, or small enterprises. The basic motivation is revenue generation. Informal waste workers are often driven to work as waste collectors or scavengers by poverty and the absence of more

attractive employment possibilities (Schubeler, 1996 and Klundert and Lardinois, 1995: 11).

As **Klundert** and Lardinois (1995) indicated informal activities are initiated personally and spontaneously (haphazardly) in the struggle for survival although some enterprises, especially the ones engaged in recycling activities manage to make considerable profits. In general waste work is done by religious, caste or ethnic minorities or rural immigrants who are looking for a way to generate subsistence income in an urban context.

The methods of MSEs Participation in Solid waste Management

The participation of the private sector which is common to all solid waste management services are put into four different ways by Cointreau (1994: 2):

1. **Contracting:** in this system the government awards a finite-term contract to a private firm for the delivery of solid waste collection service, street sweeping service, the collection of recyclables, transfer station operation, disposal site operation, or fleet maintenance. Haan, Coad and Lardinois (1998: 42) added that the cost incurred can be recovered by the municipality by charging user fees, through local taxation, or by other means. Most experiences in contracting waste services by MSEs is found in South America i.e. in Colombia, Peru and Bolivia, for example, the majority of the waste management MSEs are contracted by municipalities as an extension of the municipal solid waste systems. Micro and small enterprises work in places where municipal waste collection trucks can not go, or in peri-urban areas that have a low population density, where conventional municipal services are too expensive. Among the various options for private sector participation contracting for solid waste service holds the greatest promise to developing countries as a way of lowering cost.
2. **Concession:** here the government awards a concession to a private firm to set up a facility that utilizes the government owned resources-refuse. This system may enable the private firm to recycle materials (paper, plastic, metal and glass) from refuse. It can also be to recover resources

such as compost, heat and electricity from refuse or to transfer or dispose of refuse. This concession can be long-term or after a specified period of private ownership or operation. As Haan, Coad and Lardinois (1998: 44) mentioned, concessions are not common with MSEs because they demand high capital investment for the purchase or construction of facilities. There are few examples of concessions involving MSEs in the waste sector that could derive income from the sale of recovered materials, such as plastics, clothes, glass and tin cans in Guatemala. Concession arrangements involve building, owning, and operating facilities through long-term ownership agreements.

3. **Zonal Arrangement:** with this system the government awards a finite term of zonal monopoly to a private firm for the delivery of solid waste collection service. The private firm deposits a performance bond with the government and pays a license fee to cover the government's costs of monitoring. The private firm recovers its cost and profit through direct charges to the households and establishments that are served. The government provides control over the tariff charged to the consumer through development of adequate competition and control of price collusion or price regulation. By zonal system, private firms collect user charges from each household and establishment that receives private service. Thus, the private firms must individually bear the cost of billing and collecting user charges. Zonal arrangement is popular in large cities in the united state from large generators, such as a large commercial establishment (hotels, department stores) and large industries.

4. **Open Competition:** in this system the government freely allows qualified private firms to compete for refuse collection, recycling, or disposal services. In open competition individual households and establishments make private arrangements with individual firms for refuse collection, recycling, or disposal services. Competition is a key factor to getting low-cost solid waste service from private contractors. Here no firm holds a

zonal monopoly and any number of firms may compete within the same zone. In open competition government grants a license to qualified individual firms for the private provision of disposal services. The government's role in open competition is to license, monitor, and as needed, sanction private firms.

III. Rationale and Justification for Private Sector (Formal and informal) Participation in Waste Management Systems

Klundert and Lardinios (1995: 13-16) have identified potential benefits of formal and informal private sector in the waste management system, local economy and social and environmental benefits in the following ways:

A. Formal Private Sector:

Potential benefits to the waste management system include:

1. Greater efficiency and enhanced performance due to organization, more flexible employee and the introduction of competition;
2. Better management and accountability due to the private business functions as a contractor ;
3. Faster response- associated with the ability of private business people to raise capital as opposed to the relatively long lead times involved in government decision-making and/or the donor grant process, or with government procurement procedures;
4. Higher service ethics attract new clients;
5. Greater flexibility in terms of purchase of land and siting of facilities;
6. Greater access to experience and technology due to its potential to create partnerships with experienced private businesses in other countries and regions; and
7. Risk reduction by transferring unpredictable costs or unreliable revenues on to the private operator.

Potential benefits to the local economy include:

1. Creation of a more robust commercial sector in the economy;
2. Generation of sustainable employment; and

3. The recovery of valuable materials from recycling activities, which can be locally used without loss of hard currency or foreign exchange.

Social and environmental benefits include:

1. Conservation of resources when materials are recovered.
2. Reduction in environmental change from exploiting primary resources, including mining and deforestation.

B. Informal Private-Sector:

Potential benefits to the waste management system:

1. The successful recovery and return of waste to productive use which would have ended in the waste stream;
2. The handling of large volumes of materials at no or marginal cost to the municipal government;
3. Reduction of the amount of waste materials requiring collection and transport;
4. Risk reduction, by transferring marginal activities, unpredictable costs or unreliable revenues to the private operator;
5. Provision of waste removal and sanitary services to un-served (generally poor) sectors of the city; and
6. Provision of service at no-cost to the municipality.

Potential benefits to the local economy include:

1. The supplying of raw materials to the local manufacturing sector without recourse to foreign exchange or import;
2. The maintenance of a large and available stock of secondary resources to stimulate industrial production;
3. Providing of income-generating activity for a large number of people; and
4. The availability of a tier of products for poor people, such as containers, harnesses, and wheels made from recycled materials which improve the living standard of poor people at a price that they can afford.

Social and environmental benefits include:

1. Providing employment for a number of people who might otherwise not be able to survive;
2. Supporting communities and providing family and neighborhood cohesion;
3. Conservation of resources when materials are recovered;
4. Reduction in environmental damage from exploiting primary resources, including mining and deforestation;
5. Reduction in use of water in primary production; and
6. Improvement of health and safety conditions when informal activities are recognized and supported.

IV. Disadvantages of MSEs in Solid Waste Collection:

According to Scheinberg (2001:31-32) solid waste MSEs has disadvantages in waste collection activities in the following aspects.

Policy and Legal Aspect:

1. A more complex legal construction and
2. More complex task for the local authority.

Institutional Aspect:

1. There are many points of management, not just one and
2. There is always a danger of failing; also they may not dare to signal problems.

Social and Cultural Aspect:

1. They may be conservative and unwilling to introduce change;
2. Innovation and social change may also be difficult to stimulate and
3. They may be subject to local partisanship and local alliances.

Economic and Financial Aspect:

1. the access to large outside sums of money is reduced;
2. There are difficulties to mobilize capital for investment;
3. May be conflicts between desired service levels and hygienic considerations;
4. The work is dirty and has low social status and

5. The work is hard and may cause physical problems or damage in workers and their draught animals.

Environmental Aspect:

1. Short hauling potential limits ability to remove waste to safe disposal and
2. Risks development of a lot of uncontrolled secondary collection sites which become illegal dumps.

Technical and Performance Aspect:

1. Not all clients can pay for the service, so the MSE may not cover its costs and
2. Local rivalries may introduce problems.

2.1.2. Types of MSEs in Solid Waste Collection

There are five types of MSEs in solid waste management services including:

1. Service-based MSEs: these are enterprises which get their income from performing a service paid by clients, beneficiaries or a combination. The unit of payment is done by the hour, day and month; by district or street or by the quantity of waste. The major services done by these MSEs are waste collections, park maintenance, street sweeping and industrial or commercial cleaning (Scheinberg, 2000: 7).
2. Commodity-based MSEs- such type of MSEs are set up by local entrepreneurs (or small businessmen) who perceive the delivery of waste services as a business opportunity. These enterprises are entirely 'demand-led', seeking to fill a gap and generate income. They bring some capital (or funds borrowed from friends and relatives and, probably relevant technical and management skills). The operators are profit-driven and motivated to continue the delivery of the service, and if possible, steadily improve the efficiency and size of the operations and the quality of the service Fasika and Daniel (1997: 140) and Haan, Coad and Lardinois (1998: 13).

As Scheinberg, Klundert and Rudin (2000: 7-10) commodity based enterprises get their income by selling at a profit materials or products which they have salvaged, produced or bought. Unit of payment is by weight, volume, or item such as kilos of paper, cubic meters of compost or a lamp made from a tin can. Examples of such activities are recyclers, junk shops, tire ret readers, small scale manufacturers and compost businesses.

3. Value-based MSEs: enterprises which serve a social, religious, environmental, or cultural purpose, whose primary goal is some form of social or cultural change or strengthening or environmental protection, and who see involvement in urban waste management as either an economic activity to support their promotion of values, or as a means to raise awareness and consciousness in their chosen areas of focus (Scheinberg, 2000: 13). These services are mostly set up by external agencies for social purposes usually to provide employment (Haan, Coad and Lardinois, 1998: 13).
4. Private MSEs: a private MSE is basically a small private company, in which an owner or entrepreneur organizes employees and resources to generate a profit from waste activity. The owner chooses to work in the field of waste management because he sees an opportunity in this form of work or because he has particular resources, skills, experience or contacts in the field. A private MSE is concerned about profit, not about the needs of the community and the protection of the environment. As a result they tend to work in the areas where their profits will be greatest that is, the middle-and high-income areas Fasika and Daniel (1997:140) and Haan, Coad and Lardinois (1998: 22-23).
5. Co-operatives: many forms of MSE contain an element of 'collective' action. One model in this in which self-employed waste workers, previously working independently, decide to work together (e.g. in Brazil and Colombia). Workers are often motivated to join together because of outside threats such as from government or "middlemen" dealers (Haan, Coad and Lardinois, 1998: 23).

2.1.3. Characteristics of Micro and Small Enterprises Involved in Waste Collection

Small firms have some special characteristics that set them apart and make the process of management different from that of large firms. The main characteristics of small enterprises set by Burns (1996: 5) are:

1. One person- the owner manager has an overwhelming influence on the firm. Their views and values influence all aspects of its activities. Business decisions become personal decisions and there is also the risk of over-dependency upon one individual for the well-being of the firm.
2. Most small firms are unlikely to be able to exert much influence on their market. They are likely to face significant competition, which makes the risk of failure high.
3. Small firms are likely to be over-reliant on a small number of customers. They are particularly vulnerable to losing any one customer and the effect on the firm of such a loss will be disproportionately large.

The following identifiable criterion was developed by Ali, Cotton and Beall (1998: 5) to elaborate the characteristics of micro-enterprises, however, entrepreneurship' may change from one group to another:

1. The service provider is profit-motivated and so the service is charged and non-payers may be excluded.
2. The service is marketed by an individual or a small group to a small area such as a neighborhood, or group of houses with a total number of units not more than 1000.
3. The service provider will manage the service and invest in the organization, keeping in view all the market risks.
4. The service provider may take the triple role of laborer, manager and owner of the enterprise.
5. The service provider has the major role in hiring and firing the workers, fixing their remuneration, negotiating new contracts and subcontracts.

Haan, Coad and Lardinois (1998: 12-13) mentioned that solid wastes MSEs have the following characteristics:

1. MSEs often use low-cost and labor intensive equipment and machinery, such as hand carts or donkey carts. Other MSEs also use tractors and trucks.
2. MSEs characteristically employ few regular workers. Often laborers are hired on a casual or short-term basis. Many MSEs rely on family workers who are often not paid for their work.
3. There is often limited division of labor in that most of the workers doing most of the tasks with little specialization.
4. MSEs may work without written contracts. MSEs in some areas are mostly in the informal sector in that they are not legally registered and operate without a license, without paying tax, and without conforming to labor legislation (such as minimum pay laws, provision for pension and insurance, and safety requirements). But in other places they are registered and conform to all legal requirements.
5. The wages of employees are often low, irregular and insecure.

Scheinberg, Klundert and Rudin (2000: 7) also add the following characteristics of MSEs:

1. Personal and family networks subsidies operations in hidden ways.
2. Poor ability to analyze own cost factors and performance, in part due to the entanglement of personal, social and economic functions.
3. Allow for relatively high degree of personal autonomy and independence.
4. Innovative and flexible.
5. Personal relationships to clients.

2.2. Empirical Literature

2.2.1. The Experience of Latin America

A study of private sector participation in Latin America shows that most of the firms were small to medium-sized indicating that there were no barriers to entry (Cointreau, 1994: 21). As Haan, Coad and Lardinois (1998: 19) indicated

that all technical tasks are handled by MSEs, but the majority of small contractors are involved in cleaning of public areas, collection and waste recovery such as recycling and composing. The following table shows the principal activities/services provided by MSE in different Latin American countries. It seems that collection is the most important service offered by many MSEs. Recovery is also undertaken especially by MSEs in Costa Rica and Guatemala.

Table 2: Solid Waste Micro and Small Enterprises and Cooperatives in Latin-America by Country and Activity

Country	Principal Activity/Service	No of Enterprises
Guatemala	Street sweeping and cleaning	2
	Collection and transportation	6
	Final disposal	1
	Recovery and sorting	5
El Salvador	Collection	5
	Recovery and sorting	4
	Composting	1
Costa Rica	Collection	7
	Recovery	8
	Final Disposal	1
	Beach Cleaning	1
Colombia	Collection	5
	Recovery	3
Brazil	Recovery	1
	Selection/Collection	2
Bolivia	Sweeping/Collection	9
	Street Collection + Transport	9
Peru	Sweeping/Cleaning	1
	Collection	15
	Final Disposal	1
	Recovery and Segregation	2

Source: Arroyo (1998) Cited by Haan et al, (1998: 20)

These MSEs are organized and initiated by different actors. These are:

1. **Small entrepreneurs** (Private MSEs): In the cities of Guatemala, El Salvador and Costa Rica, small entrepreneurs offer waste collection services directly to the population with municipal approval.
2. **Informal recovery workers**: Recovery workers (waste pickers and itinerant waste buyers) initiate an organization and undertake entrepreneurial work. They receive support from churches.

Cooperatives in Brazil and Colombia are examples of this type of initiative.

3. **Community-Based Organizations:** These are organizations formed by the community to respond to its own needs. Examples are found in Costa Rica, El-Salvador and Guatemala. These cooperatives basically respond to community interests and usually have very limited relationships with the municipalities.
4. **NGOs:** These types of initiative comprises small and micro enterprises formed with the support of NGOs that have close links with the communities and which generally work in waste collection in low income areas. This can be found in Bolivia, Peru and Colombia (www.gdrc.org).

Haan, Coad and Lardinois (1998: 22) mentioned that there are four basic types of solid waste MSEs in Latin America. These are:

1. Private MSEs, working to make a profit;
2. Cooperatives, providing mutual support for their workers;
3. Community-based enterprises, established to meet a local need.
4. Labor contracted by individual or local organization, again to meet a local need.

Micro and small enterprises in Latin America are found to have significant employment contributions. It was learned that about 10,000 jobs were created in Guatemala, Columbia and Peru out of the total of 500 enterprises. A significant aspect of MSEs involved in waste collection is their gender participation. It is evident that the street sweeping private enterprises and cooperatives prefer to contract women because they consider them to be more efficient at this work than men. This decision is based on the gender stereotype which views women to clean the home, feel comfortable with this type of work, and can transfer their domestic cleaning experience to the public arena.

Table 3: The Participation of Men and Women in the Waste Collection Enterprises

Country	Total No of Workers	No of Women	No of Men	Percent Women	Percent Men
El-Salvador	25	2	23	8	92
Costa Rica	31	2	29	6	94
Guatemala	49	1	48	1	99
Colombia	55	9	46	16	84
Peru	123	72	51	59	41
Bolivia	231	76	155	33	67

Source: (www.gdrc.org)

Table 3 above shows the participation of women in the waste collection enterprises in Central America is minimal. In Peru and Bolivia, the participation of women is much higher. This is due to the influence of the majority of the NGOs, who guided the formation processes of the enterprises, including the selection of the poor, unemployed women from the marginal urban areas. Studies in Peru show that women remain in the enterprises longer where as most of the men consider it to be a temporary job. Quite many men prefer to leave the private enterprises and cooperatives immediately upon finding a job or occupation considered more prestigious than garbage collection. Women on the other hand, see this job as their only source of income and perform well with more responsibility and continuity. The majority of the active associates are women and almost 70 percent are informal or formal leaders.

2.2.2. The Experience of Asian Countries

In 1987, Bangkok contracted for services three districts. The cost for the contract service appears to have been lower for each ton than the costs for public services. The private service was also considered to be of adequate quality. In 1988 Jakarta began to experiment with the private contracting for collection in 261 sub districts (10 percent of the city's waste generating area),

which were comprised of middle-to high-income residents in relatively laid out developments (Cointreau, 1994: 22).

Two types of enterprises participate in solid waste management activities in South Asia. These are:

1. Community- based enterprises and
2. Labor contracted by community leaders or social organization.

Community participation is supported by an international NGO. For instance, EXNORA is an international NGO which is active in many Indian cities such as Chennai (Madras). This NGO seeks to act as a catalyst to create local 'Civic EXNORAS' which are street-level community-based associations of some 75 to 100 local households that organize waste-services. They contract local waste pickers (who are renamed 'street beautifiers') for waste collection and street cleaning. They are provided with a small loan (about US 165 dollars) for the purchase of a waste cart (often a specially designed tricycle) and working capital, and collect waste management fees (approximately 0.30 US dollars per family per month) (Rankumar, 1996 cited in Haan, Coad and Lardinois, 1998: 24) . In areas excluded from regular solid waste collection, residents may decide to organize such services themselves in order to ensure cleaner urban environment.

Labor contracted by community leaders or social organizations in South Asia mainly refers to the provision of waste services by direct labor contracting by a group of residents, community leaders, CBOs, NGOs or another organization (Ibid, 1998: 24).

In Indonesia, for instance, many local leaders, especially of low-income neighborhoods, organize the community to deliver household refuse to a communal depot, or hire and manage workers from the neighborhood for door-to-door waste collection using handcrafts (Cointreau, 1994: 28). In Seoul (Korea), approximately 35 percent of the solid waste is collected by 85 private contractors, each of which is a relatively small firm with an average of 6 vehicles (Cointreau, 1994: 21).

The informal waste collectors in South East Asia participate in different ways. For example, Jakarta had a daily waste production of over 21,000m³, 25 percent of which was recovered by an estimated 37,000 scavengers. These activities save the city about 270,000 to 300,000 US dollars per month. The recycling rates for glass and paper are as high as 60 to 80 percent. The waste paper collected by scavengers comprises 90 percent of the secondary raw material in this sector. By delivering 378,000 tons of waste paper per year to paper factories for recycling purposes, the scavengers save 6 million trees from being cut down (Klundert and Lardinois, 1995: 15).

As Klundert and Lardinois quoted in CCAPS, 1992 and Bentley, 1988, in Metro Manila an estimated number of 17,000 people make their living as dumpsite scavengers and over 20,000 women work as paper pickers in Ahmedabad.

2.2.3. The Experience of Africa

Private solid waste entrepreneurs are spread all over the city of Dares Salaam. Most of their activity is concentrated in residential neighborhoods and is biased towards the middle and higher income areas. There is absolutely no private sector solid waste collection activity in low-income areas. In a recent survey about 70 percent of the small firms mainly serve middle-income and some lower-middle income areas. On average each of these small firms serves about 500 clients (www.unchs.org).

In Cairo, an informal sector solid waste collection system involving 12,000 workers has existed for the past century (Cointreau, 1994: 28). In Nairobi in 1988 organized commercial private sector companies such as Bins and Disposal Services Limited is registered to manage, collect and dispose solid waste from industries, institutions, commercial establishments and high-income residential areas. By 1996 the combined daily collection capacity of the two private companies was 400 and 100 tons respectively (www.unchs.org).

In Lagos (Nigeria), there are nearly 100 private contractors, most with only 1 or 2 vehicles and less than 10 with more than 5 vehicles (Ibid, 1994: 21).

In Lagos the younger workers are considered to be less motivated to work in solid waste MSEs, while the older workers are considered to be more hardworking and reliable. This is because younger workers are better educated than the older workers and view their job in sanitation as temporary employment, whereas the older workers view it as life-long career (Cointreau, 1994: 10).

2.3. Policy Environment and Legal Framework for MSEs Involved in Waste Management in Addis Ababa

2.3.1. Policy Environment

The solid waste management policy of Addis Ababa City Administration (2003: 13) allowed the private sector to participate in the following areas:

1. Private sectors should participate in solid waste collection or transporting or in the provision of disposal sites or in all management services privately or in partnership with government
2. Institutional waste collection, transporting and disposal services should be covered by the private sector.
3. The private sector should participate in solid waste management machinery maintenance, in machinery and vehicles provision services or participate in the production of equipments, alternative transporting vehicles or spare parts.
4. Those organized micro business enterprises and associations participated in solid waste related services should be encouraged.
5. Private sectors should be encouraged to participate in the areas of selling and use of compost processing, in the purchasing, selling transporting or in the recycling activities.
6. Private investors should support or give aid for municipal solid waste management activities in order to accomplish their social responsibilities.

2.3.2. Legal Framework

Legislation related to solid waste management in developing countries is usually fragmented, and several laws (for example, public Health Act, Local Government Act, Environmental protection Act, etc) include some clauses on rules/regulations regarding solid waste management. The rules and regulations are enforced by the

different agencies (Bartone, 1995:3). This is also true in Ethiopia regarding solid waste management laws.

The federal constitution of Ethiopia on article 44(1) says all persons have the right to a clean and healthily environment. Although there is no standardized rules and regulations in Ethiopia, the Addis Ababa City Government issued very recently regulations 13/2004 on waste management collection and disposal. The regulation on its preamble says, it is appropriate to manage, collect, transport and dispose waste generated from the city of Addis Ababa in a manner that does not pollute the environment and harm health. In this regulation article 3(6) also says any person has the responsibility to keep the area clean covering up to 20 meters in front of and away from the end of his household, organization or institution, on which he has possession. In addition article 4 prohibits disposing of waste in unauthorized place.

In its part article 17 (1) allowed the private sectors to participate in the collection, transportation and disposing of solid waste through different participatory or transferring methods. On the responsibilities of private organizations, micro and small-scale enterprises engaged in sanitary service 18(1) says any person or a cooperative, or micro and small enterprise that provides sanitary service, shall take appropriate safety measures, to protect the health of the community and preserve the welfare of the environment.

On the power and functions of the agency (SBPDA), article 21(6) the responsibility to encourage private investors, cooperatives, and micro and small enterprises, NGOs and community associations to engage in solid waste management. According to article 25 (1) any person residing in the territorial jurisdiction of Addis Ababa city Government, shall pay sanitation fee for the sanitary service he/it receives. Finally, it passed a penalty for a person, who has committed one or more fault provided in these regulations. The small and micro enterprises engaged in sanitary service shall obtain, for limited period of time, and free of charge service of landfill owned by the government as incentives (article 29(2)).

CHAPTER THREE

RESULTS AND DISCUSSION

3.1. Business, Operators and Employees Characteristics

3.1.1. Operators and Employees Characteristics

I. Sex and Age Composition

The sex composition of the people engaged in solid waste micro and small enterprise activity in the two study areas revealed that 86.5 percent of the enterprises were run by male operators whereas only 13.5 percent are run by female operators. At the sub-city level, 20 percent of the enterprises in Arada and 9.1 percent in Bole are run by female operators. This shows that male operators are larger by far than female operators in the study areas.

Table 4 shows that 86.3 percent of the operators in Bole and 80 percent in Arada were found in the age group of 25-39 years. About 63.3 percent of young (25-29 years) solid waste entrepreneurs were found in Bole. This indicates that most of the MSEs operators were young entrepreneurs probably because the activity of solid waste management can be done more easily by youngsters than older people.

Table 4: Age of enterprise operators by sub-city (N= 37)

Age category	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
25-29	14	63.6	4	26.7	18	48.6
30-34	2	9.1	5	33.3	7	18.9
35-39	3	13.6	3	20.0	6	16.2
40-44	3	13.6	1	6.7	4	10.8
>45	-	-	2	13.3	2	5.4
Total	22	100%	15	100%	37	100%

Source: Own survey, Addis Ababa, 2005

F=Frequency

The age structure of the employee shows that about 60 percent of the workers belong to the age group of 20-29 years in the two sub-cities in general and in each sub-city in particular in the study areas. Table 5 showed that 88.8 percent of the employees were found at the age group 15-34 years where as only 11.3 percent were at the age group 35 and above. As the study results showed most of the employees were young which were at the age groups of 15-34 years. This is probably due to the high unemployed people at this age group. Therefore, the survey result is inconsistent with the study made in Lagos by Coninteanu (1994) that younger workers are less motivated to work in solid waste MSEs while older workers are considered to be hard working and reliable.

Table 5: Age composition of employees by sub-city (n = 80)

Workers age	Sub-City				Total	
	Bole		Arada			
	F	%	F	%		
15-19	2	6.7	9	18.0	11	13.8
20-24	11	36.7	17	34.0	28	35.0
25-29	7	23.3	13	26.0	20	25.0
30-34	7	23.3	5	10.0	12	15.0
35-39	1	3.3	3	6.0	4	5.0
40 and above	2	6.7	3	6.0	5	6.3
Total	30	100%	50	100%	80	100%

Source: Own survey Addis Ababa, 2005

II. Marital Status and Dependency

About 70.3 percent of the operators in the study areas were married, whereas 29.7 percent were single (Table 6). About 51.4 percent of both married and single operators had a dependent of two to five and 32.4 percent of the operators had six to ten family members (children and adults) with some variation at the sub-city level. According to the results, most of the operators have a large family which is directly dependent on them. This implies that MSEs in solid waste service support a large number of people. Thus solid waste MSEs can play a significant role in urban poverty reduction strategy.

Table 6: Cross tabulation of marital status of enterprise operators by the number of dependents (N = 37)

Dependents	Marital status								Total	
	Single		Married		Divorced		Widowed			
1	2	18.2	3	11.5					5	13.5
2-5	5	45.5	14	53.8					19	51.4
6-10	4	36.4	8	30.8					12	32.4
>10	-	-	1	3.8					1	2.7
Total	11	29.7	26	70.3					37	100%

Source: own survey, Addis Ababa, 2005

The survey indicated that about 65 percent of the employees were single and 30 percent were married. In terms of sub city, single accounted for 70 percent in Arada and 56.7 percent in Bole. Married employees are higher in Bole (43.3 percent) than Arada sub-city (22 percent) (Table 7). From the total unmarried employees, about 43.8 percent made their living alone with rented house and 18.8 percent together with their mother and father. As the survey results showed most of the MSE employees are single probably due to low income and job insecurity. This implies that low -income has a negative impact on employees' family formation.

Table 7: Employees marital status by sub-city (n= 80)

Marital status	Sub-City				Total	
	Bole		Arada			
	F	%	F	%		
Single	17	56.7	35	70.0	52	65.0
Married	13	43.3	11	22.0	24	30.0
Divorced	-	-	3	6.0	3	3.8
Widowed	-	-	1	2.0	1	1.3
Total	30	100%	50	100%	80	100%

Source: Own survey Addis Ababa, 2005

III. Ethnic Background

About 54.1 percent of the operators were from the Amhara nationality.

However according to the population and Housing Census of Ethiopia (CSA, 1994) they represented about 48.3 percent of the total population of Addis Ababa. The rest comprises the Oromo 27 percent, Guraghe 13.5 percent and Tigrai 5.4 percent (Table 8).

Data regarding the birth place of operators revealed that 54.1 percent of the operators were from Addis Ababa, 21.6 percent from Amhara Region, 13.5 percent from Oromiya Region and 5.4 percent from southern Nations Nationalities and Peoples Region and Tigrai Region each. This indicates that most of the operators are not migrants.

Table 8: Birth place and ethnic background of enterprise operators by region (N = 37)

Birth Place	Ethnic Background								Total	
	Amhara		Oromo		Tigrai		Gurage			
Addis Ababa	10	50.0	7	70.0			3	60.0	20	54.1
Amhara R.S.	8	40.0							8	21.6
Oromiya	2	10.0	3	30.0					5	13.5
SNNPR.S							2	40.0	2	5.4
Tigrai R.S.					2	100%			2	5.4
Total	20	54.1%	10	27%	2	5.4%	5	13.5%	37	100%

Source: Own survey, Addis Ababa, 2005

About 48.6 percent of the operators were migrants. Among the migrants, however, about 32.4 percent are urban migrants from the four Regions to Addis Ababa. Urban to urban migration is higher than rural to urban migration. In general about 54.6 percent of the migrant operators were found in Bole and 40 percent in Arada. This shows that most of the operators in Bole were migrants than Arada. The results of the two study areas were inconsistent with the review of Klundert and Lardinois (1995) who said waste activity is done by rural immigrants who are looking for a way to generate subsistence income in an urban context. He also added that it is also done by religious, caste or ethnic minorities. This however is not true in the case of Addis Ababa.

Table 9 showed that 47.5 percent of the employees were the Amhara people, and 28.8 percent are the Oromos. About 77.5 percent (62) of the employees were migrants originated from four regional states (i.e. Amhara, Oromiya, Southern Nations and Nationalities and Tigrai). Of the total employees 60.1 percent (48) of the migrants were recent arrivals (since 1988-2005) and most of the migrants had ethnic ties with the Amhara and Oromo who are living in Addis Ababa. At the sub-city level, 52 percent of the employees in Arada were the Amhara people and 20 percent the Oromos. In Bole, 43.3 percent of the employees were the Oromo people and 40 percent Amhara people. Therefore, the two dominant ethnic groups that are involved in solid waste MSEs in the two study areas are the Amhara and the Oromo.

Table 9: Employees ethnic background by origin (n = 80)

Employees ethnic origin	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Amhara	12	40.0	26	52.0	38	47.5
Oromo	13	43.3	10	20.0	23	28.8
Tigrai	1	3.3	2	4.0	3	3.8
Gurage	2	6.7	5	10.0	7	8.8
Wolayita	-	-	4	8.0	4	5.0
Hadiya	2	6.7	3	6.0	5	6.3
Total	30	100%	50	100%	80	100%

Source: Own survey Addis Ababa, 2005

IV. Educational Status

Most of the solid waste operators had gone through primary education to diploma level (Table 10). Only 2.7 percent of the operators were illiterate while another 2.7 percent can only read and write. About 27 percent of the operators have attended primary education level, and 64.8 percent have attended secondary education and above. This shows that most of the operators in solid waste collection activity are educated people who are engaged in self-employment. However, about 54.1 percent of the enterprise operators were not trained in solid waste management activity. Thus it would be necessary for government to arrange for training in solid waste management for the activity to be effective.

Table 10: Educational status of enterprise operators by sub-city (N = 37)

Educational status	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Illiterate	1	4.5			1	2.7
Can read and write	1	4.5			1	2.7
Primary education (1-8)	6	27.3	4	26.7	10	27.0
Secondary education (9-12)	4	18.2	4	26.7	8	21.6
12 th Complete	6	27.3	2	13.3	8	21.6
TVS graduate	1	4.5	2	13.3	3	8.1
College Diploma	2	9.1	3	20.0	5	13.5
Degree level	1	4.5			1	2.7
Total	22	100%	15	100%	37	100%

Source: Own survey, Addis Ababa, 2005

Table 11 shows that about 45 percent of the employees are at primary school level, 17.5 percent at secondary level and 16.3 percent are able to read and write. Generally 65.1 percent of solid waste employees in the two study areas were below secondary education level including 3.8 percent illiterates. As results indicated level of education is not a major criterion for employment in solid waste MSEs.

Table 11: Employees level of education by sub-city (n = 80)

Educational Background	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Illiterate	1	3.3	2	4.0	3	3.8
Read and write	4	13.3	9	18.0	13	16.3
Primary education (1-8)	10	33.3	26	52.0	36	45.0
Secondary education (9-12)	7	23.3	7	14.0	14	17.5
12 Completed	5	16.7	4	8.0	9	11.3
TVS Graduates	3	10.0	2	4.0	5	6.3
Total	30	100%	50	100%	80	100%

Source: Own survey Addis Ababa, 2005

As data in Table 12 shows about 27 percent of the enterprise operators were jobless, 24.3 percent operated their own enterprise and 21.6 percent worked as daily laborer before they involve in MSE to collect waste. At sub-city level 31.8 percent of the operators in Bole were daily laborers, 27.3 percent were self-

employed and 18.2 percent jobless. In Arada 40 percent were jobless, 26.7 percent were employed in government institutions and 20 percent were worked on own enterprise. The results showed almost half of the operators were found unemployed before they started solid waste collection. As a result of this, the involvement of MSEs not only plays a significant role for urban sanitation but also provides jobs to the unemployed people.

Table 12: Distribution of enterprise operators by type of experience (N= 37)

Type of experience	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Operate own enterprise	6	27.3	3	20.0	9	24.3
Student	2	9.1	1	6.7	3	8.1
Employed in Government institutions	3	13.6	4	26.7	7	18.9
Jobless	4	18.2	6	40.0	10	27.0
Daily Laborer	7	31.8	1	6.7	8	21.6
Total	22	100%	15	100%	37	100%

Source:- Own survey, Addis Ababa, 2005

About 48.7 percent of the employees in the study areas responded that they had work experience before they were employed in solid waste MSEs while 47.5 percent had no work experience. This indicated that 50 percent of the employees were unemployed before they engage in solid waste MSEs. There is a variation at the sub-city level. For instance, 60 percent of the employee in Bole had work experience and 36.7 percent had no work experience. In Arada, 54 percent of the employees had no work experience and 42 percent had work experience. This shows that most of the employees in Arada were unemployed than Bole. Of the previously unemployed people 15 percent were street men, 11.3 percent dependent on family and student each (Table 13). Street men were the highest which is 20 percent in Arada and 6.7 percent in Bole sub-city. Unemployment was the highest in Arada (77.8percent) than Bole (22.2 percent). From the total employees about 42.5 percent stayed unemployed for one to four years, 8.8 percent five to eight years and 7.5 percent nine to twelve years. At

the sub-city level, 43.3 percent of the employees in Bole and 42 percent (21) in Arada were unemployed from one to four years before they engage in solid waste MSEs. This indicates that the participation of private sectors in solid waste management can create job opportunity and reduce poverty in the two study areas.

Table 13: Employees dependency before employment by type (n=80)

Type of dependency	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Dependent on Family	2	6.7	7	14.0	9	11.3
Student	3	10.0	6	12.0	9	11.3
Unpaid Family Laborer	-	-	3	6.0	3	3.8
Living on Streets	2	6.7	10	20.0	12	15.0
House Worker	1	3.3	2	4.0	3	3.8
Total	30	26.7	50	56.0	80	45.0

Source: Own Survey Addis Ababa. 2005

3.1.2. Business Characteristics

I. Organization of MSEs

A. Establishment

About 31.8 percent of the enterprises in Bole were established in 2002/2003 and 27.3 percent in 2000/2001. In Arada, about 46.7 percent were established in 2003/2004 and 40 percent in 2002/2003 (Table 14). The first solid waste MSE which started as private enterprises in 1988/99 to do solid waste activity was Dynamic solid waste sanitary service in Bole sub-city. This was supported by the informants of the Network Association of Addis Ababa City Solid Waste Management Enterprise As the survey results indicated private enterprises were involved in solid waste management activities very recently. The MSEs in Bole began earlier than Arada.

Table 14: Establishment of enterprises by year (N = 37)

Year of establishment	Sub-City				Total	
	Bole		Arada			
	F	%	F	%		
1998/1999	1	4.5	-	-	1	2.7
1999/2000	2	9.1	1	6.7	3	8.1
2000/2001	6	27.3	-	-	6	16.2
2001/2002	3	13.6	1	6.7	4	10.8
2002/2003	7	31.8	6	40.0	13	35.1
2003/2004	3	13.6	7	46.7	10	27.0
Total	22	100%	15	100%	37	100%

Source: Own survey, Addis Ababa, 2005

Solid waste MSEs were interviewed about the legality or illegality of their involvement in solid waste activity. Almost all (97.3 percent) of the enterprises except one in Arada were legally registered. This survey result was inconformity with the review of Furedy cited in Klundert and Lardinois (1995) which says operating private firms and individuals are registered with official business licenses.

About 40.9 percent in Bole and 46.7 percent in Arada have working offices, whereas 59.1 percent in Bole and 53.3 percent in Arada have no working offices. About 31.8 percent of the enterprises in Bole used their own rooms/buildings as office while 9.1 percent rent offices from individuals (Table 15). In Arada 20 percent of the enterprises had got office from Kebele for free, 13.3 percent rented from Kebele, 6.7 percent rented from individual and only 6.7 percent used own house/room as office. The enterprises that had no regular office had used residences as office in both sub-cities. In general the result showed that most of the enterprise operators have no fixed working office location.

Table 15: Enterprises working office ownership by sub-city (N = 37)

Working Office ownership	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Own property	7	31.8	1	6.7	8	21.6
Rented from individuals	2	9.1	1	6.7	3	8.1
Rented from Kebele	-	-	2	13.3	2	5.4
Freely given from kebele	-	-	3	20.0	3	8.1
No working office	13	59.1	8	53.3	21	56.8
Total	22	100%	15	100%	37	100%0

Source: Own survey, Addis Ababa, 2005

B. Ownership

About 56.8 percent of the enterprises in both sub-cities were owned by shareholders. Shareholder in Arada form 66.7 percent while they form 50 percent in Bole. Sole ownership at both study areas was 29.7 percent. This ownership amounted to 36.4 percent in Bole and 20 percent in Arada (table 16). Most of the solid waste enterprises in the study areas are owned by shareholders. This indicates that most of the solid waste operators are organized into groups probably to solve the problem of start-up capital.

Table 16: Enterprises organizational ownership by sub-city (N = 37)

Type of ownership	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Family based			2	13.3	2	5.4
Sole ownership	8	36.4	3	20.0	11	29.7
Shareholders	11	50.0	10	66.7	21	56.8
Entrepreneur with spouse	3	13.6			3	8.1
Total	22	100%	15	100%	37	100%

Source: Own survey, Addis Ababa, 2005

Solid waste MSEs were also interviewed about their motives to engage in solid waste management activity. About 40.5 percent of the interviewees were motivated to be engaged in solid waste activity for survival purposes with a similar proportion of 40.9 percent in Bole and 40 percent in Arada. The motives to benefit from the untapped opportunity of the sector and low quality of the

city environment together accounted for a similar proportion of 40.8 percent in Bole and 40 percent in Arada. Most of the motives of enterprises were consistent with the commodity-based MSEs of Haan Coad and Lardinois (1998) which are set up by local entrepreneurs who perceive the delivery of waste services as a business opportunity. Enterprises are entirely demand-led, seeking to fill a gap and generate income.

About 67.6 percent (25) of the enterprise operators were members of a business association and 32.4 percent (12) were not. At sub-city level, 80 percent (12) of the enterprises in Arada and 59.1 percent (13) in Bole were member of Network Association of Addis Ababa city solid waste management Enterprise. Most of the enterprises in Arada were organized in associations. But 40.9 percent in Bole and 20 percent in Arada were not a member of a business association. The result was partly consistent with Haan, Coad and Lardinois (1998) who indicated self-employed waste workers are often motivated to join together in order to protect out side threats from government or “middlemen” dealers. The organization partly benefited the MSEs in dealing with the government for training, service charge fluctuations and negotiation with local administrations when conflicts arise due to competition.

II. Heads of Enterprises

Solid waste MSEs in the two study areas were run by different people. The result indicate about 45.9 percent of the enterprises were run by committees, 24 percent by husbands and 16.2 percent by friendship groups (Table 17). About 66.7 percent of the enterprises in Arada and 31.8 percent in Bole were run by committees. About 20 percent in Arada and 27.3 percent in Bole were run by husbands. As the survey results showed 40.9 percent of the enterprises in Bole and 26.7 percent in Arada were managed by wives and husbands. This finding is partly consistent with the literature reviewed by Ali, et al. (1998) that the service provider may take the triple role of laborer, manager and owner of the enterprise. This shows more over-dependency of the whole activity of the enterprise on the individual. This implies that the progress or decline of the enterprise growth depends on the individual since new business ideas and

Enterprises were also interviewed whether there are particular tools they need but do not have at hand. About 100 percent (15) of the enterprises in Arada and 95.5 percent (21) in Bole responded that they need particular tools but did not have at the time of the study. Enterprises in both study areas like to have waste transporting and disposal vehicles, temporary waste storage containers and pushcarts. In addition to these, enterprises in Arada like to have machinery for compost preparation and space for operation. As the study results indicated, shortage of working tools particularly pushcarts are the major constraint for the proper management of solid waste collection. Government and NGOs need to support MSEs along this line. Recycling and compost preparation are constrained by shortage of machinery and problem of land provision.

III. Solid Waste Handling

A. Storage Bins and Frequency of Collection

About 73 percent of the enterprises had given bins to their customers to store the garbage until the enterprise collects. About 27 percent use clients own bins as storage. In terms of sub-city, 100 percent of the enterprises in Bole and 33.3 percent in Arada had distributed bins to their customers (Table 26). Individual household wastes are put along side of the fences until collection. Most of the bins are plastic bags. This indicates that those enterprises found in Arada have little capacity to distribute bins. This is probably due to users' lower payment of the service fee for enterprises in Arada than Bole.

Table 26: Ownership of garbage storage by sub-city (N = 37)

Ownership of garbage bins	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Clients own bins			10	66.7	10	27.0
Bins given by enterprise	22	100%	5	33.3	27	73.0
Total	22	100%	15	100%	37	100%

Source: Own Survey, Addis Ababa, 2005

Wastes from clients are collected twice in a week by 43.2 percent while it is collected once or twice in a month by 16.2 percent. Table 27 shows the collection of waste twice a week is a common practice. For instance, 50 percent of the enterprises in Bole and 33.3 percent in Arada collect twice a week from their

clients. According to respondents, wastes mostly collected on daily basis or every three days come from hotels and fruits and vegetable shops. The high frequency of waste collection was observed in Arada probably due to the presence of more hotels and fruit and vegetable shops in the locality.

Table 27: Frequency of waste collection from clients by sub-city (N= 37)

Period of waste collection	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Daily	1	4.5	2	13.3	3	8.1
Twice in a week	11	50.0	5	33.3	16	43.2
Once in a week	4	18.2	-	-	4	10.8
Three times in a week	1	4.5	2	13.3	3	8.1
Daily and twice in a week	4	18.2	2	13.3	6	16.2
Daily and once in a week	1	4.5	1	6.7	2	5.4
Based on the frequency of waste generation	-	-	3	20.0	3	8.1
Total	22	100%	15	100%	37	100%

Source: Own survey, Addis Ababa, 2005

B. Waste Storage by Enterprises

About 64.9 percent of the enterprises in both sub-cities used municipal containers for temporarily dumping of the collected garbage until disposal. Twenty four percent load directly on to municipal vehicle at communal stations. Table 28 showed municipal containers was highly used by 81.8 percent of the MSEs in Bole and 46.7 percent in Arada. About 40 percent of MSEs in Arada use municipal vehicle to dispose directly. It was one enterprise in Bole that used own container for handling and disposing directly into Reppi the waste disposal center.

Table 28: Type waste handling by enterprises (N=37)

Type of waste handling	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Municipal container	18	81.8	7	46.7	25	67.6
Disposed by enterprise own vehicle	1	4.5			1	2.7
Disposed by municipal vehicle	3	13.6	6	40.0	9	24.3
Municipal container + by municipal vehicle			2	13.3	2	5.4
Total	22	100%	15	100%	37	100%

Source: Own survey, Addis Ababa, 2005

Enterprises operators were also interviewed about where they store the collected waste if municipal containers are full or not emptied in time. About 56.8 percent of the enterprises in both sub-cities said they wait until the municipal truck comes and 27 percent said they burn the waste. At sub-city level, 77.3 percent of the enterprises in Arada and 45.5 percent in Bole said they wait until the municipal truck comes. About 40.9 percent of the enterprises in Bole and 6.7 percent in Arada burn the waste (Table 29). However, enterprises said that even if they properly store the collected waste, wastes are found scattered out of the municipal container in the nearby areas and pollute the surrounding. This is partly due to the under capacity of municipal transport system and the lack of controlling system. This implies a need for sub-city or municipal supervision at the various transfer stations or temporary dumping sites. Otherwise residences living in the nearby areas could be exposed for health related diseases.

Picture 1: Temporary storage of enterprises



Source: Field Survey, Addis Ababa, 2005

Table 29: Enterprise temporary storage by sub-city (N = 37)

Temporary Storage	Sub-City				Total	
	Bole		Arada			
	F	%	F	%		
Will wait until municipal truck comes	10	45.5	11	73.3	21	56.8
Dispose it near full containers	-	-	-	-	-	-
Bury it under the Holes	-	-	-	-	-	-
Store it with own temporary handling	3	13.6	3	20.0	6	16.2
Burn it	9	40.9	1	6.7	10	27.0
Total	22	100%	15	100%	37	100%

Source: Own survey, Addis Ababa, 2005

B.1. Transportation Systems

It was indicated earlier that about 97.3 percent of the enterprises in the study areas collect wastes through door to door collection system and move it to the municipal transfer points and municipal loading trucks using own pushcarts. Only two enterprises one in Bole and the other in Arada use their own and rented vehicles (Table 30) for door to door waste collection up to the municipal transfer points. The survey result is consistent with the observation of Haan, Coad and Lardinois who mentioned that MSEs often use low-cost and labor intensive equipment and machinery such as handcarts or donkey carts but only very few used trucks.

Table 30: Type of waste transportation by ownership (N = 37)

Type of Transportation	Sub-City				Total	
	Bole		Arada			
	F	%	F	%		
Own vehicles	-	-	-	-	-	-
Own pushcarts	21	95.5	15	100.0	36	97.3
Rented pushcarts	-	-	-	-	-	-
Rented vehicles	-	-	-	-	-	-
Own + Rented vehicles	1	4.5	-	-	1	2.7
Total	22	100%	15	100%	37	100%

Source: Own survey, Addis Ababa, 2005

plans are dominated by him/her. This is mainly observed in Bole sub-city than Arada.

Table 17: Head of enterprises by type (N = 37)

Head of enterprise	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Wives and husbands	3	13.6	1	6.7	4	10.8
Husband	6	27.3	3	20.0	9	24.3
Son or Daughter	-	-	-	-	-	-
By Committees	7	31.8	10	66.7	17	45.9
Employed professional	1	4.5	-	-	1	2.7
Wife	-	-	-	-	-	-
Friendship	5	22.7	1	6.7	6	16.2
Total	22	100%	15	100%	37	100%

Source: Own survey, Addis Ababa, 2005

III. Start up Capital, Source and Income of Enterprise

In terms of the amount of start-up capital, most of the enterprises have low start-up capital. In the study areas, about 45.9 percent of the enterprises began solid waste management activity with the initial capital of 1001 to 3000 Birr. These MSEs with similar amount of initial capital in Bole form 54.5 percent and 33.3 percent in Arada. Nearly nineteen percent of the enterprises had an initial capital of 200 to 1000 Birr. This accounted for 18.2 percent of the enterprises for Bole and 20 percent for Arada. Twenty percent of the enterprises in Arada had no initial capital. Only two enterprises one in Bole and the other in Arada had a start-up capital of 110,000 and 25,000 Birr respectively (Table 18). Generally most of the solid waste enterprises in the study areas have low start-up capital. This is one of the main barriers for business entry.

Table 18: Enterprises start-up capital by sub-city (N = 37)

Amount of Start up Capital	Sub-City				Total	
	Bole		Arada			
	F	%	F	%		
Below 200			3	20.0	3	8.1
200-1000	4	18.2	3	20.0	7	18.9
1001-2000	9	40.9	3	20.0	12	32.4
2001-3000	3	13.6	2	13.3	5	13.5
3001-4000	2	9.1	1	6.7	3	8.1
4001-5000	1	4.5	1	6.7	2	5.4
5001-6000	1	4.5			1	2.7
> 6000	1	4.5	1	6.7	2	5.4
No response	1	4.5	1	6.7	2	5.4
Total	22	100%	15	100%	37	100%

Source: Own survey, Addis Ababa, 2005

Own saving was the main source of capital for about 51.4 percent of the enterprises. Own savings accounted for 59.1 percent in Bole and 40 percent in Arada. Borrowings from friends/relatives and loan from micro finance institutions accounted for 13.5 percent each. Loan from micro finance institutions alone accounts for 18.2 percent in Bole and borrowings from friends and relatives together accounted for 20 percent in Arada. About 20 percent of the enterprises in Arada sub-city had a start-up capital of below 200 Birr and began solid waste collection by giving free cleaning service. However, there was no enterprise in Bole with out start-up capital (Table 19). This indicates enterprises in Bole used own start-up capital and obtained loan from micro finance institutions than Arada because of their better economic background.

The result was consistent with the observation of Fasika and Daniel (1997) and Haan, Coad and Lavdinois (1998) who mentioned that the important source of start-up capital open to micro and small enterprises in developing countries are own savings and borrowings from friends and relatives.

Table 19: Enterprises start up capital by source (N=37)

Source of Start-up capital	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Own savings	13	59.1	6	40.0	19	51.4
Given from friends and relatives	-	-	1	6.7	1	2.7
Borrowed from friends and relative	2	9.1	3	20.0	5	13.5
Bank loan	-	-	-	-	-	-
Loon from micro finance institutions	4	18.2	1	6.7	5	13.5
With joint partnership	1	4.5	-	-	1	2.7
Own gift from friends and relatives	1	-	1	6.7	1	2.7
Gift from friends and relatives + partnership	1	4.5	-	-	1	2.7
Without initial capital	-	-	3	20.0	3	8.1
Total	22	100%	15	100%	37	100%

Source: Own survey, Addis Ababa, 2005

A significant portion, 63.6 percent in Bole and 60 percent in Arada were not interested to indicate their monthly income. This is due to poor accounting system and fear of tax payments. Those enterprises which revealed their monthly income and expenditure seem to report incorrectly. For instance, Dynamic solid waste sanitary service reported a monthly income of 31-32, 000 Birr and an expenditure of 30,000 Birr. Thus its net profit was only 1000-2000 Birr per month. The result fits with the remarks of Scheinberg, et al. (2000) who said MSEs have poor ability to analyze own cost factors and performance partly due to the entanglement of personal, social and economic functions.

IV. Employment in Waste Management Enterprises

The study found that about 73.5 percent (252) of the employees in Bole were permanent workers and 26.5 percent (91) were causal employees during the survey period. In Arada about 96.9 percent (484) of the employees were permanent and 3 percent (15) were causal employees.

The gender distribution of employment shows that during the beginning of waste management about 79.1 percent of the employees in Bole and 39.5 percent in Arada were male employees (Table 20). Female employees constituted 20.9 percent in Bole and 60.5 percent in Arada. During the survey

period male employees constituted 83.1 percent in Bole and 38.5 percent in Arada. Female employees were 16.9 percent in Bole and 61.5 percent in Arada. So there is a great variation in employment in the two sub-cities in terms of sex. Female employees were the highest in Arada sub-city in both periods but low in Bole sub-city. However, respondents said there was no gender bias in enterprises employment.

Respondents had given different reasons for the variation in number of female and male employees in the two sub cities. In Bole, respondents mentioned that female job seekers were not registered for recruitment in solid waste activities. In Arada more women were organized in associations to do solid waste activities. In addition to this, street children and women who were previous commercial sex workers were involved in solid waste management in Arada sub-city. This may be due to high poverty in this sub-city.

All 100 percent (37) of the respondents agreed on the positive role of MSE to the creation of job opportunity for the unemployed people. For example, employment jumped from 344 at the initial period to 842 at the time of the survey (Table 20) In addition to the creation of job opportunity, all respondents in both study areas appreciated the role of solid waste management in reducing poverty in the sub-cities. They said unemployment is reduced because a significant number of street people, some commercial sex workers especially in Arada and other unemployed people are now employed in MSEs.

The finding is consistent with the observation of Haan, Coad and Lardinois who said that MSEs are by far more important as a source of jobs than the modern industrial sector and the government services combined as it has relatively high potential for growth in employment.

Table 20: Enterprise initial and current total employees by sex and sub-city (N = 37)

Sub-City	Number of Employees											
	Initial period						Survey Period					
	Male		Female		Total		Male		Female		Total	
Bole	102	79.1	27	20.9	129	100%	285	83.1	58	16.9	343	100%
Arada	85	39.5	130	60.5	215	100%	192	38.5	307	61.5	499	100%
Total	187	54.4	157	45.6	344	100%	477	56.7	365	43.3	842	100%

Source: Own survey, Addis Ababa, 2005

3.2. The Nature and Operation of Solid Waste Service

3.2.1. The Nature of Solid Waste Service

I. Nature and Service Type

The solid waste service is a risky venture in terms of market and health. Some of the MSEs are found at risk in getting clients due to competition. According to the observation of Burns (1996) MSEs are likely to face significant competition which makes the risk of failure high. Solid waste service is also a risky activity in terms of health because of low use of health protective materials like gown, gloves, masks and boots. For instance, it is 66.7 percent of the enterprises in Arada and only 9.1 percent in Bole who distributed gown for their employees. In addition, 93.3 percent of the enterprises in Arada and only 9.1 percent in Bole had distributed gloves to their employees. Other health protective materials like mask and boots are not provided in both study areas. Generally MSEs in Arada have shown a higher usage of gloves and gown than Bole. This shows the health of MSEs employees are found to be at high risk and there is a need for partial government intervention and follow up of MSEs in workers health aspects.

The line of work for MSE shows that there is a high level of concentration on transporting activity. Table 21 shows that about 75.7 percent of the enterprises in the study areas focus on transporting wastes. About 81.8 percent in Bole and 66.7 percent in Arada reported transporting is their main activity. Transporting of waste mainly refers picking waste from houses and moving

them to the municipal container or transfer stations. A study in some Latin American countries showed that waste collection is the main activity of MSEs. Transporting of the collected waste up to the disposal site was practiced only by a few MSEs like Dynamic solid waste sanitary service. About 33.4 percent of the enterprises in Arada and 18.2 percent in Bole make compost and recycling in addition to waste collection. As the area demands some capital it is necessary to encourage able to expand their activity.

Table 21: Enterprise lines of work in waste collection by sub-city (N=37)

Lines of work in waste collection	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Transporting	18	81.8	10	66.7	28	75.7
Processing /compost	-	-	2	13.3	2	5.4
Recycling	-	-	1	6.7	1	2.7
Transporting and Recycling	-	-	1	6.7	1	2.7
Transporting + compost + Recycling	2	9.1	1	6.7	3	8.1
Transporting and compost	2	9.1	-	-	2	5.4
Total	22	100%	15	100%	37	100%

Source: Own survey, Addis Ababa, 2005

As far as the total amount of solid waste collection per day, month and year is concerned about 91.9 percent of the enterprises responded no records. As results indicated it was only 8 percent of the enterprises that properly documented the collected waste. The main reason given by MSEs for the poor documentation was due to the difficulty to measure the amount of waste in units. Others have no written records and still others mentioned lack of experience in accounting system.

II. Service Users / Clients

The three service users of MSEs are households, private and government institutions. Households are the major service users of MSEs in both study areas. As data in table 22 indicated that about 70.3 percent of the enterprises in the study areas served all segments of the community and 18.9 percent of the enterprises served middle and high-income groups. Enterprises that serve all users were 80 percent in Arada and 63.6 percent in Bole. In Bole 36.4

percent of the enterprises served the middle and high-income groups of the population but in Arada 13.4 percent of the enterprises served this group. This variation in the two areas is due to more low income groups in Arada than Bole. In both study areas enterprises were not observed serving only the high income groups. This is a result of the mixed nature of the residential areas in the study areas.

The service is given to the segment of the community who can afford the service charge. Ali, Cotton and Beall (1998) mentioned that service providers are profit- motivated and as a result non-payers are excluded.

Table 22: Service recipient by sub-city (N = 37)

Type of service recipient	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Lower income group			1	6.7	1	2.7
Middle-income group	2	9.1	1	6.7	3	8.1
High- income group						
Middle and high income groups	6	27.3	1	6.7	7	18.9
All segments of the community	14	63.6	12	80.0	26	70.3
Total	22	100%	15	100%	37	100%

Source: Own survey, Addis Ababa, 2005

About 83.8 percent of the enterprises used own effort to attract their clients. They distribute pamphlets; give plastic bins freely for storage, clean the surroundings and drainages for free and provide door to door education about environmental sanitation as a strategy in both sub-cities. As the results indicated this method was used by 77.3 percent of the enterprises in Bole and 93.3 percent in Arada at the sub-city level.

Enterprises were asked the total number of their clients. At the beginning of solid waste management activities MSEs in Bole had 1034 clients. Of these, households accounted for 98.6 percent (1020) of the customers and private institutions accounted for 1.4 percent. The share of government institutions as a client was very few. It formed only 0.1 percent. In Arada sub-city households

constituted the highest share too. For instance, from the total (1328) clients, households accounted for 95.9 percent (1273) and private institutions accounted for 4.1 percent while government institutions did not form a client

During the survey period (currently) the total number of customers in Bole was 7540 and 6463 in Arada. The share of households both in Bole and Arada sub-cities were still the highest. For instance, households in Bole accounts for about 98.5 percent (7429) of the clients and private institutions about 1.4 percent and still the share of government institution is negligible i.e. 0.1 percent of the clients. In Arada, households were about 97.8 percent (6324), private and government formed 2.1 percent and 0.02 percent respectively.

Regarding individual enterprise, there is a variation in the number of clients. For instance, in Bole there was a big gap between the minimum and maximum enterprise clients during the initial and survey period. During the initial period of solid waste collection, the number of clients ranged from 3 to 300 and during the survey period the number of clients rose from 20 to 1250. In Arada the number of clients during the initial and survey period were 15 to 300 and 40 to 1000 respectively (Table 23, Appendix B). Enterprises in the study areas have least number of private and government institutions' clients. This is probably due to the low capacity of the MSEs to dispose institutional wastes using vehicles. Because institutional wastes are dumped in the containers already set by the municipality. Thus most of the institutions are the clients of the municipality. This is contrary to the policy of Addis Ababa City Administration (2003) which allows the private sector to cover institutional wastes collection and disposal.

About 45.9 percent of the enterprise operator in the study areas responded that the number of their clients was increasing. Nearly nineteen percent said it was highly increasing (Table 24). At the sub-city level, there is a variation in this regard. For instance, about 27.3 percent of the operators in Bole and 6.7 percent in Arada said their clients are highly increasing. This is because of good

3.2.2. The Operation of Solid Waste Service

1. Types of Waste Collected by the Enterprise

Interview results showed that different types of wastes are generated by households, government and private institutions. In both sub-cities, eight types of wastes were commonly collected by enterprises:

These include:

1. Left-over and spoiled food, vegetables and fruits,
2. Paper,
3. Grass clippings and bones,
4. Ash or sand
5. Textiles,
6. Plastics and Rubber,
7. Glass, bottles and ceramics, and
8. Metals.

In terms of sub-city, different types of wastes are produced. For instance, in Bole food, vegetables and fruits; paper; grass clippings and bones, and Ash or sand were the main wastes generated. In Arada, except Ash or sand which was least produced, the rest mentioned above were highly produced.

Respondents were also asked which waste types were mostly probably produced by customers. They responded that food, vegetables and fruits were the major wastes frequently produced followed by paper and grass clippings in both sub-cities. Thus wastes generated from household activities are more dominant. The result fits with the concepts of Rand, et al ((2000) Append A) who mentioned that in low income countries domestic waste is dominated by food waste and food markets may contribute a larger proportion of the commercial waste. The coffee ceremony in the study areas may contribute for the generation of high grass clippings. In addition to this, enterprises were interviewed whether there are wastes which are not collected by them. It was indicated that industrial, hospital and liquid wastes were not collected in both study areas by enterprises. This is because hospital and industrial wastes (based on the type of industry) are infectious and hazardous wastes which need special treatment.

II. Types of Waste Management Tools

The commonly used working tools were pushcarts, shovel (spade), fork, glove, hoe, gown, broom and rake. Pushcarts, shovel and fork were the most widely used tools in both study areas. Glove, hoe, gown and broom were highly used in enterprises in Arada and least used in Bole. One enterprise in Bole and another one in Arada used vehicle for waste collection. Using vehicle by MSEs was not common.

As the SBPDA operation department illustrates, almost all of the MSEs used local tools for solid waste management activities. Pushcarts were the main working tools for primary collection from sources to municipal transfer stations. In waste collection, both big and small pushcarts were used in both sub-cities. Large pushcarts were used to accumulate huge amount of waste and they demand large labor. This enables to absorb large labor force. The ownership of pushcarts varied in the study areas. For instance, 43.2 percent of the enterprises had two to five pushcarts and 29.7 percent had six to ten pushcarts in both sub-cities.

At the sub-city level, about 60 percent of the enterprises in Arada had more than six pushcarts and 54.5 percent of the enterprises in Bole had two to five pushcarts. One enterprise had 81 pushcarts (Table 25).

The use of local pushcarts, have different advantages. It reduces imports of pushcarts and saves foreign exchange earnings. It also encourages local metal works and creates linkage between solid waste MSEs and local metal works.

Table 25: Enterprises by number of pushcarts owned in sub cities (N = 37)

Number of pushcarts	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
1	3	4.5	2	13.3	5	13.5
2-5	12	54.5	4	26.7	16	43.2
6-10	6	27.3	5	33.3	11	29.7
>10	-	-	4	26.7	4	10.8
No response	1	4.5	-	-	1	2.7
Total	22	100%	15	100%	37	100%

Source: Owen survey, Addis Ababa, 2005

Picture 2: MSEs door-to-door collection by push carts



Source: Field Survey, Addis Ababa, 2005

B.2. Dumping

About 89.1 percent of the enterprises in the study sub-cities dump the collected waste at the municipal transfer points, and load directly in to the municipal truck (Table 31). At the sub-city level, 63.6 percent of the enterprises in Bole used to transport up to the municipal transfer points. In Arada on the other hand, about 53.3 percent of the enterprises loading the collected waste at the municipal truck directly and about 40 percent of the enterprises use both the municipal transfer points and directly load on the municipal trucks. This difference in temporary dumping is probably caused by the availability of space for temporary storage in Bole and scarcity of space in Arada. But 18.1 percent of the enterprises in Bole transport the collected waste up to the Reppi dumpsite. The result shows that private MSEs least participated in final waste disposal activity in the study areas. Still government plays a dominant role in final waste disposal. This fits with the experiences of MSEs in some Latin American countries as Arroyo (1998) cited in Haan, et al (1998).

Table 31: Enterprise solid waste dumping site by sub-city (N = 37)

Waste dumping site	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
At municipal transfer points	14	63.6	1	6.7	15	40.5
At final dumpsite (Reppi)*	3	13.6	-	-	3	8.1
At the municipal truck	2	9.1	8	53.3	10	27.0
At municipal transfer points + final dumpsite	1	4.5	-	-	1	2.7
At municipal transfer points + municipal truck	2	9.1	6	40.0	8	21.6
Total	22	100%	15	100%	37	100%

Source: Own survey, Addis Ababa, 2005

* Using rented vehicles

B.3. Sorting

The survey showed that currently usable materials were little separated. About 26.7 percent of the enterprises in Arada and 9.1 percent in Bole sort usable materials from its source. This means about 90.9 percent in Bole and 73.3 percent of the enterprises in Arada disposed the collected waste into the waste stream without separation.

About 33.3 percent of the enterprises in Arada and 9.1 percent in Bole used to separate compostable goods. But large amounts of the waste were added to the waste stream as it is. Thus, recyclable and compostable materials were least separated. Thus MSEs in the study areas are not privileged from sorting of usable waste materials.

Respondents were also asked about what the enterprises do with the separated materials. Table 32 showed that 18.9 percent of the enterprises made compost in both sub-cities. On the other hand some enterprises in Bole (13.6 percent) sale the recyclable materials to other recyclers and one enterprise used to generate biogas in Bole. However the solid waste policy of Addis Ababa City Administration encourages the private sectors to involve in all areas of activity, it is lately in practicing it. Enterprises are not adequately encouraged in loans, land provision and training. That is why very few enterprises (32.2 percent) only engaged in waste collection, compost processing, recycling, generating biogas

and selling of raw materials at the same time. These are the major options for the growth and expansion of entrepreneurship in the study areas. The experience of Latin American countries indicates this reality. However the area has high potential for the growth of entrepreneurs, still it is least exploited in the study areas due to capital constraints, problem of land provision and low skill in the activity. However beginnings are encouraging. For example, Dynamic Sanitary Service in Bole sub- city is participating in both collection and final disposal using 4 vehicles.

Table 32: Use of enterprises separated material by sub-city (N= 37)

Use of separated material	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Make compost by enterprise	2	9.1	5	33.3	7	18.9
Reuse it as a raw material by enterprise	-	-	1	6.7	1	2.7
Sale to other recyclers	3	13.6	-	-	3	8.1
Generate biogas	1	4.5	-	-	1	2.7
Total	22	27.2%	15	40.0%	37	32.4%

Source: Own survey, Addis Ababa, 2005

Respondents were interviewed whether enterprises involvement contribute to minimize solid waste management problems or not. Data in table 33 shows that about 67.6 percent of the enterprises in the study areas said that primary solid waste collection problem is reduced very highly. It was also agreed by 73.3 percent of the enterprises in Arada and 63.6 percent in Bole. According to SBPDA, MSEs in general covered most of the house to house collection and contributed 4-5 percent of the solid waste management services of the city. Currently the municipality has stopped door to door collection and instead places containers at some central places for those who do not contract with MSEs. About 27 percent of the enterprises in the study areas with a slight variation at the sub-city level responded that their contribution is modest in minimizing solid waste management problems. This is because there are households who are excluded from the service due to their inability to pay the service charge. Although waste is collected house to house by MSEs, the collected wastes were not picked timely by the municipality.

Table 33: Attitudes of MSEs how their involvement contribute to minimize solid waste management problems by sub-city (n=37)

MSEs Attitude	Sub-City				Total	
	F	%	F	%		
High	14	63.6	11	73.3	25	67.6
Medium	6	27.3	4	26.7	10	27.0
Low	1	4.5			1	2.7
Very low	1	1.5			1	2.7
Total	22	100%	15	100%	37	100%

Source: Own survey, Addis Ababa, 2005

3.2.3. Current Status of the Business Activity

Although, a lot of problems hinder the growth of the enterprise, about 48.6 percent of the enterprises in the study areas responded that solid waste management activity is progressing while it is only 18.9 percent of the enterprises who said it is declining. But there is a variation in terms of sub-city. About 66.7 percent of the enterprises in Arada and 36.4 percent in Bole express their business activity to be progressing. About 27.3 percent of the enterprises in Bole exceptionally express their enterprises were strongly progressing. This exceptional high progress in Bole is due to the participation of the MSEs in the high and middle income areas than Arada. In addition to this, about 20 percent of the enterprises in Arada and 18.2 percent in Bole responded their solid waste activity was declining and 13.3 percent of the enterprises in Arada strongly declining. Those who said declining have lost their customers due to competition (Table 34). Out of these alternatives, about 18.2 percent of the enterprises in Bole responded that their business activity did not show improvement.

Table 34: Enterprises current general standard of the business by Sub-city
(N = 37)

Standard of the business	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Strongly progressing	6	27.3			6	16.2
Progressing	8	36.4	10	66.7	18	48.6
Strongly Declining			2	13.3	2	5.4
Declining	4	18.2	3	20.0	7	18.9
No change	4	18.2			4	10.8
Total	22	100%	15	100%	37	100%

Source: Own Survey, Addis Ababa, 2005

3.2.4. Future Plan of the Enterprise

Enterprises were also interviewed what intend to do in the future. About 35.1 percent of the enterprises in the study areas responded that they intend to expand the existing business and 27.6 percent of the enterprises planned to start extra business in the future. In terms of sub-city there is a variation in future business planning. For instance, about 40.9 percent of the enterprises in Bole and 26.7 percent in Arada intend to expand the existing business (solid waste activity).

In general as the results in table 35 showed about 72.7 percent of the enterprises in Bole and 66.7 percent in Arada planned to expand the existing solid waste activity and start extra business in the future. This indicates that the large number of enterprises in the study areas became profitable in solid waste management activities. Therefore, the results were consistent with the literature of Haan, Coad and Lardinois (1998) who mentioned that micro and small enterprises is not a survival activity but the owners of the firms are seeking to expand and develop their operations and their business have a definite potential for growth and development.

Enterprises intended to expand the existing business activity were also expressed their interest to separate useful waste materials and recycle by themselves to make compost for urban agriculture and for beautifying city parks and to generate biogas.

In addition to this enterprises in Arada were intended to create more employment opportunity for street children and commercial sex workers, to build moveable latrine and shower houses by expanding the existing activities into different kebeles. This special interest for enterprises in Arada is probably due to the high unemployment condition of the sub-city which most probably the area exposed for the mentioned problems.

Table 35: Enterprises future plan by sub-city (N = 37)

Sub-City	Enterprises Future Plan												Total	
	Expand the existing business 1		Continue the existing business 2		Change a business activity 3		Start extra business 4		1 + 4		1 + 2 + 4			
Bole	9	40.9	3	13.6	1	4.5	7	31.8					22	90.9
Arada	4	26.7	1	6.7			1	6.7	5	33.3	1	6.7	15	80.0
Total	13	35.1	4	10.8	1	2.7	8	21.6	5	13.5	1	2.7	37	86.5

Source: Own survey, Addis Ababa, 2005

3.3. Method of Involvement in Solid Waste Activity

The literature indicates that private sector can involve or participate in solid waste management through four methods. These include open competition, zoning, contracting and concession.

3.3.1. Open-Competition

In this method the government freely allows qualified private firms to compete for refuse collection, recycling composting or disposal service without zonal monopoly. The role of government here is to license, monitor and as needed sanction private firms where problems arise in service provision (Cointreau, 1994). The data showed that about 48.6 percent of the enterprises in the study areas participate through the method of open-competition. At the sub-city level, 50 percent of the enterprises in Bole and 46.7 percent in Arada participate in this method. The method has varied advantages like low cost of service charge to customers, quality of solid waste collection services, higher service ethics attract new clients and provides a room for private contracts with households and establishments. But, conflicts arise among enterprises working at a

particular location due to competition for customers. This is because of a large numbers of solid waste MSEs who participate within the same zone. This implies the stronger firms are able to proceed to higher levels and the weaker ones may die-out from the business activity. This is the disadvantage of this method.

Currently open-competition is supported by the municipal solid waste policy. This method reduces government's monopoly in solid waste activity and facilitates free market economy. However the method is more preferable for private sector participation, the new guideline of zonal monopoly planned by SBPDA may weaken it.

3.3.2. Zoning

In zoning, the government gives a finite-term of zonal monopoly to a private firm for the delivery of solid waste collection service. The private firm provides a performance bond with the government and pays a license fee to cover the government's costs of monitoring. But the private firm recovers its cost and makes profit through direct charges to the households and establishments that are served.

However interviewees revealed that about 48.6 percent of the enterprises in both study areas are involved in zonal monopoly, there is no official arrangement of zonal monopoly made by the government. Some enterprises participate implicitly within a particular area in zonal monopoly. But, this does not mean that the area is completely closed for competition. Until now there is no legal provision that restricts the policy of open-competition in the study areas.

At the sub-city level, about 46.7 percent of the enterprises in Arada and 45.5 percent in Bole are involved in zonal monopoly. The presence of zonal monopoly implies the restriction of open-competition which in turn increases the service charge and reduces the quality of service. These are the disadvantages of this method. The advantage of zonal monopoly is that it prevents conflicts when it

arises due to competition for customers among enterprises. Sanitation, Beautification and Parks Development Agency (SBPDA) had planned and prepared a guideline of zonal arrangement for private sector participation in solid waste management. This is mainly intended to prevent conflicts among enterprises due to competition for customers and to open more employment opportunities for unemployed. But, this arrangement is opposed by the Network Association of Addis Ababa city solid waste management Enterprise as it said the new guideline is contrary to the solid waste policy of open competition. Because the new guideline obliges formerly established enterprises to quit 50 percent of their customers to the newly establishing enterprises. Although the government intends as one strategy to reduce urban poverty, the progress of the existing enterprises restricted and the employees could be displaced. This indicates more government intervention in the activity. However, the guideline is not still applicable.

3.3.3. Contracting and Concession

In contracting, the government gives a finite-term contract to a private firm for the delivery of solid waste collection service, street sweeping service, the collection of recyclables, transportation operation, disposal service operation or fleet maintenance service as an extension of the municipal solid waste system by charging user fees. It also encourages public- private sector partnership.

As interviewees revealed, government currently did not make any contract in its payment with enterprises. This is contrary to Latin American countries of Colombia, Peru and Bolivia in which most of the MSEs contracting the municipality by charging the user fees. About 43.2 percent of the enterprises in the study areas have made private contract agreement with the households and establishments and the rest 8.1 percent of the enterprises collect waste without any private agreement. Private agreement with open-competition accounted for 46.7 percent of the enterprises in Arada and 40.9 percent in Bole. About 37.8

percent of the MSEs in the study areas said that the government had given them a zonal monopoly license in a specified area. This accounts for 40 percent in Arada and 36.4 percent in Bole. The finding supports the literature which indicates that households and establishments make private agreements with individual firms for refuse collection, recycling or disposal services (Cointreau, 1994, Schubeler, 1996). However the study in Colombia, Peru and Bolivia shows that the majority of the waste management MSEs are contracted by municipalities to work in places where municipal waste collection trucks can not reach or in peri –urban areas that have a low population density and where municipal services are too expensive.

In concession, the government accepts an agreement to a private firm to set up a facility that utilizes the government owned refuse to recycle paper, plastic, metal and glass. This can be long term or after a specified period of private ownership or operation. There is no any concession agreement in the study areas with government as it demands high capital investment for the purchase or construction of facilities.

Generally the survey result showed that the involvement of MSEs in the study areas is consistent with open-competition method of Cointreau (1994) although nearly 49 percent of the enterprises implicitly said the government has licensed to involve in zonal arrangement.

3.4. Income and Employment Conditions of Employees

3.4.1. Employment Conditions

This section looks at the employment situation, requirements to be employed, working hours, wage payment and health protection at work in solid waste. The workers survey revealed that about 56.3 percent of the workers are permanently employed and 38.3 percent are temporary employed in both sub-cities. This finding is contrary to the literature of Haan, et.al. (1998) who said often laborers are hired on a casual or short-term basis and many MSEs rely on family workers who are often not paid for their work. This is because most of

the employees are permanently employed. The numbers of permanent employees are higher in Bole compared to Arada (Table 36).

Regarding the type of employment, about 71.3 percent were employed for waste collection and 21.3 percent are accountants and site supervisors. This indicates that there is limited division of labor.

Table 36: Workers employment by type (n= 80)

Type of employment	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Temporary Employees	9	30.0	22	44.0	31	38.8
Permanent Employees	18	60.0	27	54.0	45	56.3
Self-Employed	1	3.3	-	-	1	1.3
No response	2	6.7	1	2.0	3	3.8
Total	30	100%	50	100%	80	100%

Source: Own survey Addis Ababa 2005

Concerning the recruitment criterion, about 62.5 percent of the employees said joblessness as major requirement while 22.5 percent mentioned capability for physical work is an important recruitment criterion. Educational level as requirement criteria was least observed. It accounted only for 3.8 percent of the employees (Table 37). Therefore, Joblessness and capability for physical work were the two major requirements for employment in solid waste MSEs. This shows the necessity of high energy for solid waste collection.

Table 37: Workers recruitment criteria by sub-city (n= 80)

Recruitment criteria	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Educational level	2	6.7	1	2.0	3	3.8
Joblessness	18	60.0	32	64.0	50	62.5
Capability for physical work	8	26.7	10	20.0	18	22.5
Joblessness and Capability for Physical work	2	6.7	7	14.0	9	11.3
Total	30	100%	50	100%	80	100%

Source: Own survey Addis Ababa, 2005

About 53.8 percent of the employees work for 8 hours a day, 22.5 percent work for about 6 and half hours and 15 percent work for 7 hours a day. There is

some variation regarding the working hours of the employees. This is because the waste generation frequency of the area made the working hours longer. For instance workers are working for longer hours in Arada than Bole because of the presence of hotels and fruits and vegetable shops. This implies employees working hours are dependent on the waste generating capacity of the area. Generally longer working hours (9 and above) were recorded in Arada sub-city (Table 38). However the wages paid are not proportional to their work in Arada compared to Bole.

Table 38: Employees working hours per day by sub-city (n= 80)

Sub-city	Working Hours Per day												Total	
	Below 6		6-6:30		7		8		9		10-11			
Bole	3	10.0	8	26.7	6	20.0	13	43.3	-	-	-	-	30	100%
Arada	-	-	10	20.0	6	12.0	30	60.0	3	6.0	1	2.0	50	100%
Total	3	3.8	18	22.5	12	15.0	43	53.8	3	3.8	1	1.3	80	100%

Source: Own survey, Addis Ababa, 2005

Employees' working days per week also varied (table 39). Of the total interviewed employees about 35 percent said they work seven days per week (all week days), 32.5 percent work from Monday to Saturday or for 6 days and 26.3 percent said they work from Monday to Fridays or for 5 days. Moreover, 6.3 percent of the employees work two to three days per week. These people are probably part time workers. The results show that working days are longer in Arada sub-city than Bole. This is probably due to the nature of Arada which is a business center and thus generating huge amount of was.

Table 39: Employees working days per-week by sub-city (n= 80)

Sub-city	Working Days Per Week									
	Monday-Friday		Monday-Saturday		All week Days		Two-Three Days		Total	
Bole	5	16.7	20	66.7	3	10.0	2	6.7	30	100%
Arada	16	32.0	6	12.0	25	50.0	3	6.0	50	100%
Total	21	26.3	26	32.5	28	35.0	5	6.3	80	100%

Source: Own survey, Addis Ababa 2005

Solid waste collectors (employees) were asked to express the views of the community to wards their employment in solid waste activity. About 82.5 percent (66) of the employees had got encouragement from the community to continue with the activity, 5 percent (4) were advised to stop the activity and 2.5 percent (2) of the employees were excluded from any social affairs. This implies that solid waste collection is recognized as important source of employment by the workers as well as the community.

Health hazard is a major threat of workers in solid waste management. As workers work in healthy and unhygienic environment, they need all kind of protection including vaccination. The result showed that 30 percent of the employees have work gown, 25 percent have gloves, masks and gown together, 16.3 percent have gloves and gown only and 8.8 percent have gloves, boots and gown at the same time. There is no variation in the health protection of workers in the study areas. Therefore, it is clear from the results that the health condition of solid waste employees are at high risk since health protection materials are not fully provided to workers. The Operation Department of SBPDA informed that offices are opened in each sub-city with two health workers to assist the enterprises and their employees in health aspects. But respondents replied they have weak relationships.

About 93.8 percent of the interviewees responded that there is no gender bias (segregation) in employment and 6.3 percent responded that there is gender bias. Those who responded for the existence of gender bias mentioned that women were excluded from employment in solid waste MSEs due to the physical work involved in solid waste activity. As the survey results showed in Table 40 gender

segregation was almost nil in the two study areas even though large number of women were employed than men employees.

Table 40: Gender segregation in employment by sub-city (n = 80)

Gender segregation	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Yes	2	6.7	3	6.0	5	6.3
No	28	93.3	47	94.0	75	93.8
Total	30	100%	50	100%	80	100%

Source: Own survey, Addis Ababa, 2005

According to the information obtained from the field survey, about 65 percent of the employees are females whereas 35 percent are males. Data in Table 41 showed that there is a significant involvement of females in both sub-cities.

Table 41: Distribution of employees by sex and sub-city (n= 80)

Sex	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Male	9	30.0	19	38.0	28	35.0
Female	21	70.0	31	62.0	52	65.0
Total	30	100%	50	100%	80	100%

Source: Own survey Addis Ababa, 2005

3.4.2. Income of Employees

The income distribution of the employees shows that the majority (47.5 percent) of the employees earn 100 to 150 Birr per month, 21.2 percent earn 151-200 Birr and 13.8 percent earn 201 to 250 Birr (table 42). In addition to this 7.5 percent were paid below 100 Birr per month and 10.1 percent are paid 251 Birr and above. There is a variation in the wage payment of the two study areas. For instance, 46.6 percent of the employees in Bole receive between 201 - 300 Birr per month while 66 percent of the employees in Arada receive 100-150 Birr. Employees in Bole receive higher income than Arada. This wage variation is probably due to differences in MSEs earning as they operate in high and low income areas.

In general about 76.2 percent of the employees receive wages below 205 Birr or the minimum wage in the country in both study areas. This figure is higher in Arada (92 percent) compared to Bole (50 percent). This finding is confirmed with the observation of Haan, et al (1998) who mentioned that the wages of employees are often low, irregular and insecure. This is because most of the MSEs are not governed by workers law. This implies the intervention of government between the two for negotiation.

Table 42: Employees wage payment per month by sub-city (in Birr) (n= 80)

Wage per month	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Below 100	5	16.7	1	2.0	6	7.5
100-150	5	16.7	33	66.0	38	47.5
151-200	5	16.7	12	24.0	17	21.2
201-250	7	23.3	4	8.0	11	13.8
251-300	7	23.3	-	-	7	8.8
Above 300	1	3.3	-	-	1	1.2
Total	30	100%	50	100%	80	100%

Source: Own survey, Addis Ababa, 2005

The majority of the employees (96.3 percent) are paid their salary once in a month and only 3.8 percent are paid twice in a month (Table 43). This shows that solid waste employees are regularly paid as the other sectors do.

Table 43: Employees wage payment by period (n = 80)

Period of wage payment	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Twice in a month	1	3.3	2	4.0	3	3.8
Once in a month	29	96.7	48	96.0	77	96.3
Total	30	100%	50	100%	80	100%

Source: Own survey, Addis Ababa, 2005

Employees were requested to express their attitude whether the income they earn was sufficient to support their family or not. About 70 percent of the employees responded that the income is not sufficient while 22.5 percent said it is sufficient. Those who responded income is insufficient are higher in Arada 72 percent than in Bole (66.7 percent). This is an indication that MSE participants can not support their lives properly from the incomes they derive. Despite this

however, a significant portion 73.8 percent mentioned that they have a better life now compared to their previous life. The survey result has shown that most of the participants were unemployed, street men and immigrants who were suffering from poverty before they join the solid waste activity.

3.4.3. *Employees Future Prospects*

Concerning the future plan of the employees, the majority (51.3 percent) like to shift to government and private sectors while 44 percent like to stay in the business. Of the former group 20 percent mentioned that they like to be engaged in other private sector while 31 percent want to be employed in government institution. Of those who wanted to be in the business, 26 percent mentioned that they like to start their own business. The fact that most want to leave the sector is an indication of the poor working conditions of the sector. It is important to overcome the constraints and problems of the sector in order to convince them to stay in the business. The fact that a significant proportion (26 percent) want to start their business activity the need to put in place an enabling environment to encourage them with their plans. At the sub-city level, there is a variation of employees' future plan. For instance, more employees in Bole (36.7 percent) want to start their own business than in Arada (20 percent). This is because employees in Bole earn more income than Arada. That is why 64 percent of the employees in Arada wanted to shift to other sectors than those in Bole (30 percent). Employees who intended to start own business on solid waste collection were asked regarding their source of start up capital. The two main sources are own savings and loan from micro finance institutions. No one mentioned loan from banks due to collateral problems of the employees (Table 44). This implies the need for the revision of loan procedures of financial institutions in the country.

Table 44: Employees' Future Plan by Sub-city (n = 80)

Employees	Sub-city				Total	
	Bole		Arada			
	F	%	F	%		
Start own business on solid waste	11	36.7	10	20.0	21	26.3
To be employed in government institutions	3	10.0	22	44.0	25	31.3
Continue in the enterprise	6	20.0	8	16.0	14	17.5
Change to other service sector	6	20.0	10	20.0	16	20.0
No response	4	13.3			4	5.0
Total	30	100%	50	100%	80	100%

Source: Own survey, Addis Ababa, 2005

3.5. Constraints, Problems and Institutional Support for Enterprise Growth

3.5.1. Institutional Support

This part examines in which areas institutions provide support for micro and small enterprises in order to improve solid waste management activities..

About 21.6 percent of the enterprises in the study areas received support at present while 78.4 percent had not received any support during the year (Table 45).

Table 45: Enterprises type of support by source (N = 37)

Source of Support	Type of Support							
	Training		Financial		Technical + Material		Consultancy	
1. Government	17	45.9	1	2.7	7	18.9	17	45.9
2. NGOs					3	8.1		
3. Chamber of commerce								
4. Private Banks								
5. Government Banks								
6. Micro Finance Institutions			3	8.1				
7. Private organization					1	2.7	1	2.7
8. 1 + 2	3	8.1	1	2.7			4	10.8
9. 2 + 3	1	2.7						
10. 2 + 7			1	2.7				
Total	37	56.8	37	18.9	37	29.7	37	59.5

Source: Own survey, Addis Ababa, 2005

In terms of financial support only 18.9 percent of the enterprises received some support from few institutions. Micro finance institutions provided loan only for 8.1 percent of the enterprises. This is mainly because most of the solid waste entrepreneurs had collateral problems which are the requirement to get the loan.

According to the information obtained from interviewees, 29.7 percent of the enterprises had got technical and material support from government and private institutions and NGOs. Government institutions contributed relatively better than NGOs. Information from SBPDA indicates that enterprises are made to use municipal containers freely as incentives. MSEs that could dispose at the final dumpsite are allowed to dispose freely. Nearly 60 percent of the enterprises had got consultancy service from government, NGOs and private organization. Government takes the highest share in consultancy service. About 45.9 percent of the enterprises received consultancy from government.

The result indicates that majority of MSEs do not adequately receive support by various institutions. This could restrict the full participation of MSEs in different areas of solid waste management activity and its progress at high levels of activity.

Government also ranks first in providing training for 45.9 percent of the enterprises and 8.1 percent of the enterprises encouraged by both government and NGOs together. The contributions of institutions other than the government are very low. At the sub-city level, about 46.7 percent (4) of the enterprises in Arada and 45.5 percent (10) in Bole were trained by government institutions.

About 45.9 percent of the enterprise operators were trained in solid waste collection, separation and recycling and compost preparation before they were involved into solid waste management activity. Of this Arada accounted for 29.7 percent and Bole for 16.2 percent at the sub-city level. Data in table 45 indicate that about 54.1 percent of the enterprise operators had no training directly related to solid waste activities. This low training skill reduces enterprises productivity in the work and exposed for high health risk (Table 46).

Table 46: Number of enterprise operators trained in different activities
(N= 37)

Type of training	Sub-city				Total Trainees	
	Bole		Arada			
	NO.of Trainees		NO. of Trainees			
Waste collection	3	13.6	2	13.3	5	13.5
Waste separation	1	4.5	2	13.3	3	8.1
Recycling	-	-	2	13.3	2	5.4
Compost preparation	2	9.1	5	33.3	7	18.9
Total	22	27.3	15	73.3	37	45.59

Source: Own survey, Addis Ababa, 2005

3.5.2. Constraints and Problems

The interviewees in both study areas generally confirmed that lack of working tools and finance are their major problems for the growth and development of the enterprises. This is ascertained by about 40 percent of the enterprises in both sub-cities. Shortage of finance is the core of the problem in both study areas. This is because the availability of capital means the availability of working tools like pushcarts, disposal vehicles and other hygiene protecting materials.

The main sources of start-up capital were own savings, and borrowing from friend and relatives. This implies that institutional support both governmental and non-governmental is meager. This has a negative influence on MSEs solid waste service.

Legal framework was also mentioned as the second problem in the study areas by about 16.2 percent of the enterprise. It is indicated that the municipality has issued a solid waste policy and procedure. However, the legal framework provided by the city administration is found problematic. This is because the new guideline prepared by SBPDA allows all enterprises to engage in solid waste activity through zonal monopoly.

This procedure contradicts with the free market policy. The guideline is challenged by the Network Association of Addis Ababa City Solid Waste Management Enterprise as contrary to open-competition. Problem of temporary storage for the collected waste due to shortage of municipal containers and disposal trucks, wastes are found scattered in the nearby areas of temporary dumping sites and transfer stations.

Inadequate and unsustainable training in solid waste related activity might contribute for inefficient solid waste management and low health protection of workers in the study areas. It also caused for the poor performance of accounting system.

Shortage of machinery and problem of land provision are also the other constraints for compost processing and recycling of wastes. Workers low wage payment may reduce their working ethics and moral which in turn has a negative impact on sustainable waste management.

CHAPTER FOUR

CONCLUSION AND RECOMMENDATIONS

4.1. Conclusion

Currently, solid waste micro and small enterprises are seen as one vehicle for urban environment management and to fill the gap created by the municipality. The MSEs can also generate employment and income for the poor.

Solid waste MSEs have expanded in the sub-cities. Most of the solid wastes directly disposed at the nearby open spaces, rivers, ditches and road sides due to inaccessible roads, rough surfaces and congested houses are now reduced due to the activities of MSEs. These MSEs mainly play a role in primary collection, which is the collection of refuses from households to municipal (sub-city) transfer stations. The involvement of MSEs in solid waste management services has resulted not only in reducing the illegal disposal of wastes along the pass ways but also is able to create the sense of community ownership to urban sanitation. The communities have learned to share waste management expenses and proper handling of wastes. It has also indicated its potential for job creation and income generation for some unemployed people.

Furthermore, the role of solid waste MSEs has expanded from environmental sanitation and poverty alleviation and employment creation objectives to business development. This is because solid waste MSEs have begun to play a role in business growth by increasing the supply of reusable raw materials through sorting (separation), local recycling and composting.

According to the findings of the research, a substantial number of MSEs in the study areas are involved in primary waste collection through door to door method and dump it into the municipal transfer points and directly loading onto municipal trucks using own pushcarts. Households are found to be the

major service users of MSEs in both study areas. However, the health conditions of waste workers are found to be at high risk due to low follow up and inadequate training in health aspects. The findings relating to entrepreneurial activities of separation, compost processing and recycling are found to be least growing, though it is encouraging.

The research finding also portrayed that the method of involvement in solid waste activity is based on open-competition and zonal monopoly arrangement. However MSEs implicitly licensed to zonal monopoly, open-competition is not prohibited until now even in zonal licensed areas. The study finding on the income and employment section also indicates that a significant number of jobless people are permanently employed in solid waste MSEs. It is also showed that a substantial number of females are employed in Arada sub-city while it was insignificant number in Bole. However the income paid by a large number of MSEs is found to be below the minimum wage of the country for Arada and it is nearly fifty percent for Bole sub-city. The findings in both study areas also pointed out that lack of working tools and shortage of finance are the major constraints for the operation and growth of MSEs. Shortage of finance is the core of the problem due to inadequate institutional support.

4.2. Recommendations

Though solid waste MSEs play a very significant role in environmental management, poverty reduction and employment creation, however their full potential is not yet realized. They need to be strengthened invigorated. The following are some ideas that could be pursued to strengthen solid waste MSEs.

- The role of micro and small enterprises in solid waste management services such as collection, transporting, disposal, sorting, recycling and composting are very essential. But most of solid wastes MSEs are attracted to involve and operate in the activity slowly. This is mainly due

to the low participation of government and non-governmental organizations in providing loans and support. Almost all of the MSEs in the study areas have shortage of start-up capital and credit for entry and the expansion of the business activity into higher levels. The main sources of start-up capital for most of the MSEs were informal sources such as individuals and relatives. The municipal government should expand the micro-finance institutions and provide especial support for the sector in the study areas. NGOs can also participate by providing material and financial supports.

- Solid waste activity is a risky work; especially workers are highly exposed to health related problems. Therefore, the SBPDA officials are expected to provide health related educations either on-job or prior to job training. This will reduce the health risk of employees because most of the employees are now working without hygienic protective materials.
- Although solid waste MSEs are very recently involved in solid waste management services, they contribute to some extent in reducing urban pollution, especially primary collection from households to municipal transfer points. But still there are problems of timely picking and disposing at the final dumpsite. This activity (nearly all) is monopolized by the municipality (sub-cities). The municipality alone cannot solve this problem. As a result of this the collected waste stays for a long hours and even days at municipal containers and transfer stations. The municipal government should encourage public-private partnership to involve private investors at medium scale enterprise level to participate in transporting waste to the final dumpsite. Thus MSEs will collect household wastes up to municipal containers and transfer stations with payment made by users while medium-scale enterprises will transport the waste to the final dumpsite. The government should be able to pay the medium scale enterprise for transporting waste to final dumpsite.

- Municipal government intervention and NGOs support should also be based on training and consultancy services or in general informative services concerning market, documentation or accounting systems. These enable MSEs to have good recording system of income and expenses and the amount of waste collected which in turn could be used to analyze and identify which one needs priority for encouragement.
- The municipal intervention on the method of MSEs involvement should be based on establishing operational procedures which will be practiced by both MSEs. This could minimize the conflict that arises between the new entrants and existing MSEs in case of unnecessary market competition. The responsibilities of the municipality should also include making contractual agreements with enterprises for solid collection activity.
- Even though solid waste MSEs has great potential for employment generation for the unemployed, the monthly wage paid to the employees is not comparable to the hard work of the employees. The municipal government should negotiate with the MSE owners to ensure employees get at least the minimum wage of the country.

BIBLIOGRAPHY

- Addis Ababa City Administration Finance and Economic Development Bureau, Population Estimates, Addis Ababa, 2005.
- Addis Ababa City Administration, **Solid Waste Policy**, Addis Ababa, 2003.
- Addis Ababa SBPDA, (2003). **Solid Waste Management Status Report of Addis Ababa: The Way for Ward**, Addis Ababa, July, 2003.
- Ali, M., Cotton, A. and Beall, J., (1998). **Micro enterprise Development for Primary Collection of Solid Waste**, 24th WEDC Conference, Islamabad, Pakistan, 1998.
- Allal, M. (1993). **Micro and Small enterprise Development and Poverty Alleviation in Thailand: MSEs Definitions and Contributions**, Working Paper 6, ILO/UNDP Project, Bangkok, 1993.
- Andualem Tegegne, (1997). **Small Scale Enterprise and Entrepreneurship Development in Ethiopia: Proceedings of the 6th Annual Conference on the Ethiopian Economy**, Addis Ababa, November, 1997.
- Bartone, C.R. Bernstein, J. and Wright, F. (1990). **Investments in Solid Waste Management: Opportunities for Environmental Improvement** IBRD, May 1990.
- Bartone, C.R., (1995). **The Role of the Private Sector in Developing Countries: Keys to Success on Solid Waste Management**, Paper Presented in ISWA Conference, Singapore, 24-25 September, 1995.
- Burns, P. (1996). **The Significance of Small Firms: Small Business and Entrepreneurship**, 2nd edition, 1996.
- Cointreau-Levine, S. (1994). **Private Sector Participation in Municipal Solid waste Services in Developing Countries**, Vol. 1, The Private Sector, Washington, D.C., 1994.
- CSA,(1994). **Population and Housing Census of Ethiopia**, April, 1996.
- EPA and MEDC, (1997). **Environmental Policy of the Federal Democratic Republic of Ethiopia**, Addis Ababa, April 2, 1997.

- Fasika Damte and Daniel Ayalew, (1997). ***Financing Micro and Small Scale Enterprises in Urban Ethiopia***. Addis Ababa, November, 1997.
- Haan, H.C., Coad, A. and Lardinois, I., (1998). ***Involving Micro and Small Enterprises in Municipal Waste Management: Guide Lines for Municipal Managers***, Co-publication with GTZ, SKAT and ILO, 1998.
- Hyuba, T.S. and Turibo- Habwe, G.P., (1999). ***Gender and Entrepreneurship: Open Space Agricultural Produce Enterprises in Uganda, Dar-es Salam, Tanzania***, 1999.
- Klundert, A. Vande and Lardinois, I., (1995). ***Community and Private (formal and Informal) Sector Involvement in Municipal Solid Waste Management in Developing Countries: Background Paper for the UMP Workshop in Ittingen, 10-12 May, 1995***.
- Michael, B., (1986). ***Encyclopedia of Britannica***, No. 15, 1986.
- Moningka, L., (2000). ***Community Participation in Solid Waste Management: Factors Favoring the Sustainability of Community Participation, A Literature Review***, the Netherlands, June 2000.
- MOTI, (1997). ***Micro and Small Enterprises Development Strategy: A Draft Strategy***, Addis Ababa, Ethiopia, November, 1997.
- Neck, P.A. and Nelson, R.E., (1987). ***Small Enterprises Development: Policies and Programs***, 2nd edition, International Labor Office, Geneva, 1987.
- ORAAMP, (2001). ***The Number of Kebeles and Sub-cities in the New Structure of Addis Ababa***, 2001.
- ORAAMP, (2002). A Project Proposal for Addis Ababa: ***Municipal Waste Management Program***, Addis Ababa, April, 2002.
- Rand, T., Haukohl, J. and Marxen, U. (2000). ***Municipal Solid waste Incineration Requirements for a Successful Project: World Bank Technical Paper No. 462***, Washington, D.C., June, 2000.
- SBPDA, (2004). ***Assessment of Micro and Small Enterprises Engaged in Solid Waste Management in Addis Ababa***, Research and Coordination Department, Addis Ababa, April, 2004.

- Scheinberg, A. (2001). **Micro and Small Enterprise in Integrated Sustainable Waste Management: Tools for Decision Markers, Experiences from the Urban Waste Expertise Programme (1995-2001) Netherlands; Waste, 2001.**
- Scheinberg, A., Klundert, A. and Rudin, V., (2000). **MSEs in Urban Environmental Improvement: Panacea, Strategy or Transition Stage, the Netherlands, May, 2000.**
- Schubeler, P., (1996). **Conceptual Framework for Municipal Solid Waste Management in Low Income Countries: Urban Management and Infrastructure, UNDP/UNCHS (Habitat) /World Bank/ SDC Collaborative Programme, Working Paper No. 9, August, 1996.**
- The Constitution of the Federal Democratic Republic of Ethiopia, Federal Negarit Gazeta, 1st year No. 1, Addis Ababa, August 21, 1995.**
- Waste Management, Collection and Disposal Regulations of the Addis Ababa City Government, Addis Negari Gazeta, Regulations No. 13/2004, 2nd Year No. 29, February 21, 2004.**
- WBG, (2001). Urban Development: **World Bank Solid waste Management, 2001.**
<http://www.gdrc.org/uem/waste/swm-waste.htm/>.
<http://www.gdrc.org/uem/waste/swm-waste.glossary-htm1>

APPENDIX A

Conceptual and Operational Definitions

The actual definition of municipal solid waste varies from country to country and even place to place. As Rand et.al (2000: 10) classified the type of waste into six categories including:

- **Domestic waste:** waste from household activities such as food preparation, cleaning, fuel burning, old clothes and furniture, obsolete utensils and equipment, packaging, news print garden wastes. In lower-incomes countries domestic waste is dominated by food waste and ash whereas middle and higher-income countries have a larger proportion of paper, plastic, metal, glass, discarded items and hazardous matter.
- **Commercial waste:** waste from shops, offices, restaurants, hotels, and similar commercial establishments typically consisting of packaging materials, office supplies and food waste. In lower-income countries, food markets may contribute a larger proportion of the commercial waste. It may also include hazardous components such as contaminated packaging materials.
- **Institutional waste:** waste from schools, hospitals, clinics, government offices, military bases, and so on. It is similar to both domestic ad commercial wastes, although there is more packaging materials than food waste. Hospital and clinical waste include potentially infectious and hazardous materials.
- **Industrial waste:** waste components similar to domestic and commercial source waste including food wastes from kitchens and canteens, packaging materials, plastics, paper and metal items. Some production processes, however, utilize or generate hazardous (chemical or infectious) substances. Disposal routes for hazardous wastes are usually different from those for non-hazardous wastes.

The composition of industrial waste depends on the kind of industries involved.

- **Street sweeping:** this waste is dominated by dust and soil together with varying amounts of paper, metal, and other litter from the streets. In lower income countries, street sweepings may also include drain cleanings and domestic waste dumped along the roads, plant remains, and animal manure.
- **Construction and demolition waste:** the composition of this waste depends on the type of building materials but typically includes soil, stone, brick, concrete and the like.

As some studies indicated there is no also a standardized definition accepted by all countries concerning micro and small enterprises. Because of this problem different countries use their own definitions that are suitable to each countries socio-economic condition. In the literature it is indicated that in the mid 1970s a study of small enterprises identified over 50 different definitions in 75 countries (Neck and Nelson, 1987: 2). For instance, many countries use different criterion such as the number of employees, paid-up capital and annual turnover of capital to define MSEs. Of which the number of workers criteria is the most commonly used and the easiest classification criterion used by many countries. But this single criterion is disadvantageous because an enterprise using 20 workers may be considered as a small enterprise while it has the characteristics of a micro-enterprise with a few hand tools, low fixed assets and low yearly turnover of capital. On the other hand, an enterprise with five workers may be classified as a micro-enterprise having a highly capital-intensive technology with a high yearly turnover of capital (Allal, 1993: 15).

Thus the absence of a nationally accepted definition of MSEs affects the promotion and development strategy to be adopted and also causes confusion and conceptual differences even among the various

implementing agencies and bodies leading to inconsistent support or development efforts to MSE sector in general (Andualem, 1997: 7).

Hence, some formally agreed national definitions are of vital importance for research purposes, consistency of legislation and policy makers as well as financial and enterprise promotion agencies to make appropriate measures to particular sectors (Hailey, 1991 as cited by Ibid 1997: 7). Based on this MSEs use both qualitative and quantitative definitions. Qualitatively MSEs are focusing on characteristics or size of enterprise of micro and small enterprises which prefers to dwell on their role in development such as the creation of employment, income distribution, poverty reduction, etc. Quantitatively MSEs are rely on clearly defined parameters (or a combination of parameters) which include the number of employees, sales turnover, and assets and capital.

Operational Definitions

- An MSE can be defined as a group of people working together for financial gain subject to the limits on numbers of workers and capital (Haan, Coad and Lardinois, 1998: 12).
- **Micro-Enterprises:** as those business activities that are independently owned and operated by the owners and employing five or less employees (Burns, 1996: 3) and as Scheinberg (2001: 8) employing 1 to 10 workers.
- **Small Enterprises:** as those business enterprises that are independently owned and operated by the owners and employing 6-49 employees (Andualem, 1997: 8) and by Scheinberg (2001: 8) employing 11 to 50 workers.
- **Micro and small Enterprises:** solid waste pre-collection providers with low capital intensive (SBPDA, 2004:5)

So the definition of Scheinberg is more relevant for this study. The ministry of trade and industry of Ethiopia (1997: 3) also defined:

- **Micro-Enterprises:** as small business enterprises with a paid-up capital of not exceeding 20,000 birr and excluding high tech consultancy firms.
- **Small Enterprises:** are those business enterprises with a paid-up capital of above 20,000 up to 500,000 Birr and excluding high tech. Consultancy firms and other high tech establishments.
- **Family Ownership of Enterprises:** an enterprise which is dependence on family labor force, or sole or joint ownership with few members of a family (Hyuba and Turibo Habwe, 1999: 249).
- **Sole Ownership:** is a single person who holds the entire firm as his personal property and operates and manages on a day to day basis (Michael, 1986: 410).
- **Partnership:** is an establishment owned and operated by more than one person with unlimited liability (Ibid: 1986: 410).
- **Share Holder (Company):** is a business organization formed by an agreement made between at least five or more persons with limited liability and the shares are transferable (Michael, 1986: 411).
- **Municipal Solid Waste:** comprises refuse from households, non-hazardous solid waste from industrial, commercial and institutional establishments, market waste and street sweepings (Schubeler, 1996: 18).
- **Municipal Solid Waste Management (MSWM):** refers to the collection, transfer, treatment, recycling, resource recovery and disposal of solid waste in urban areas (Schubeler, 1996: 8). *
- **Recycling:** is separating a given waste material from the waste stream and processing it to be used again as useful material for products which may or may not be similar to the original (SBPDA, 2004: 5).

- **Composting:** is the controlled decomposition of organic matter by micro-organisms, mainly bacteria and fungi, into a humus-like product (Ibid, 2004: 5).
- **Transfer point:** a designated point, often at the edge of a neighborhood, where small collection vehicles transfer waste to larger vehicles for transport to disposal sites (www.gdrc.org).
- **Waste collection:** the process of picking up wastes from residences, businesses, or collection point, loading them into a vehicle, and transporting them to a processing, transfer, or disposal site (www.gdrc.org).
- **Disposal:** the final handling of solid waste, following collection, processing, or incineration (www.gdrc.org).

APPENDIX-B

Table 24: Enterprises total no. of clients (initial and current) by sub-city

(N = 37)

Bole Sub-city Name of Enterprises	No. of clients	
	Initial	Current
Abbay Solid Waste Disposing Service	27	700
Addis Gabbage Cleaning Service	10	400
Beruh Tesfa Company	130	130
Dolphin Cleaning Service	50	600
Dynamic Sanitary Service	19	502
Environmental Care Service	20	306
Fana Clearing Service	30	265
Four Friends 95 Clearing Service	30	150
United Friends Clearing Service	60	405
Gerji and Surroundings Cleaning Service	35	1250
Goh Cleaning Service	15	400
Hebret Cleaning Service	5	20
Haimanot and Families Solid Waste Service	52	82
Melkam Addis Ababa Cleaning Service	2	200
Negat Solid Waste Disposal	25	112
Ediget Behebret Clearing Crevice	25	25
Senay Cleaning Service	90	300
Star Clearing Service	40	180
Tesfa Birhan Cleaning Service	40	120
Tiret Solid Waste disposal	3	243
Unity Integrated Sanitary Service	300	650
Wai-founder	26	500
Total	1034	7540
Arada Sub-city		
Birhan Sanitary Service	30	1000
Beruh Tesfa Clearing Association	15	300
Chechelia Cleaning Service	35	285
Dink Cleaning Service	28	339
Ediget Fana Cleaning Service	150	87
Fikat Cleaning Service	30	500
Hebret Chora Cleaning Service	50	450
Nib Cleaning Service	100	300
Selam Sanitary Service	20	280
Temsalet Solid Waste Cleaning Service	60	40
Tibeb Berhan Share Company	120	852
Tsedat Leleamat	250	500
Tesdat Letena	40	380
Yehaebret Fire	100	900
ZebSef Initiative	300	250
Total	1328	6463

Source: Own Survey, Addis Ababa, 2005

APPENDIX C-1

**Micro and Small Enterprises' Involvement in
Solid Waste Management Services in
Bole and Arada Sub-Cities**

(Interview Schedule with Enterprise Managers/Owners)

Date: _____
Time: _____
Respondent Number: _____
Place of Birth: _____

PART I: Demographic Characteristics

1. Sex of owner a. Female
b. Male
2. Age _____ years
3. Ethnicity a. Amhara c. Tigray e. Wolayita
b. Oromo d. Gurage f. Specify/any -----
4. Marital status
a. Single c. Divorced
b. Married d. Widowed
5. Family size _____ in number
a. Female _____
b. Male _____
6. Number of children you have _____ in number
a. Female _____
b. Male _____
7. What is your level of education?
a. Illiterate f. Technical and vocational school
graduate
b. Read and write g. College diploma
c. Primary school level (1-8) h. 1st degree holder
d. Secondary school level (9-12) i. Specify if any

e. 12th Completed
8. When do you start to live in Addis Ababa? Since
_____.
9. If your place of residence was out of Addis, where is your place of
origin?
a. Rural b. Urban

PART II: Characteristics of the Enterprise

10. Who is the manager/head of the enterprise?
a. Spouse
b. Husband
c. Son or daughter
d. By Committees
e. Employed professional
f. Wife
g. Specify if any _____
11. When was your enterprise established to do solid waste management? In _____
12. Is your MSE legally registered?
a. Yes
b. No
13. If your answer for question number 12 is "No" what is your basic reason?
a. Afraid tax payments
b. Inability to pay register fee (license fee)
c. Bureaucratic processes of registering
d. Specify /any _____
14. Does your enterprise have an office?
a. Yes
b. No
15. If your response for question 14 is "Yes" whose property is it?
a. Own property
b. Rented from individuals
c. Rented from kebele
d. Specify/any _____
16. How is the organizational structure of your MSE?
a. Family based (relatives)
b. Sole ownership
c. Share holder with friends
d. Entrepreneur with spouse
17. What motives initiated you to involve in this activity?
a. Untapped opportunity of the sector
b. Income generation
c. Low quality of the city environment
d. Had enough experience and knowledge
e. For survival
f. Family business
g. Initiated by NGOs
h. Specify if any _____
18. Where do you find the start-up capital at first?
a. Own savings
b. Given from friends and relatives
c. Borrowed from friends and relatives
d. Bank loan
e. Loans from micro finance institutions
f. With joint partnership
g. Safety nets
h. Specify if any _____

19. What were you doing before you start this business?

- a. Farming
- b. Operate own enterprise
- c. Student
- d. Employed in government institutions
- e. Jobless
- f. Family unpaid worker
- g. Specify if any _____

20. Is the previous experience enables you to run the present business activity.

- a. Yes
- b. No

21. If the answer for question 20 is "yes" in what ways?

22. Are you a member of a business association?

- a. Yes
- b. No

23. Have you got any training in solid waste management before you start the activity?

- a. Yes
- b. No

24. If your response for question number 23 is "Yes" in which areas of activity you trained?

- a. Waste collection
- b. Waste separation/sorting
- c. Waste recycling
- d. Compost
- e.

Specify/any _____

- c. Waste recycling

25. What is your line of work in waste collection?

- a. Transporting
- b. Processing
- c. Recycling
- d.

Specify/any _____

26. What working tools do you use to provide waste management service? (In number)

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____
- g. _____
- h. _____

27. Are there particular tools (materials) you need, but you don't have?

- a. Yes
- b. No

28. If yes what are they?

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

29. How many employed workers does the enterprise have at present?

- Permanent employees: _____
 - a. Female _____
 - b. Male _____
- Temporary _____
 - a. Female _____
 - b. Male _____

30. If the response in question 29 is No female employees what would be the reason

31. How many workers had the enterprise when it started solid waste management?

-
- a. Female _____
 - b. Male _____

32. Is it possible to say that the participation of the enterprise in solid waste management create job opportunity for the unemployed?

- a. Yes
- b. No

33. If the response is "yes" can the sector play a role to reduce poverty in the city?

- a. Yes
- b. No

34. If the response for question 33 is "yes" in what way poverty is reduced? _____

35. What amount was the start-up capital of the enterprise?
_____ birr.

36. Can you indicate the total monthly expenditure of the enterprise?

- a. Yes
- b. No

37. If the response for question 36 is "yes" what is the total amount?
_____ birr.

38. If the response for question 36 is "No" what is the reason for this?

- a. Have no idea about expenditure
- b. Afraid someone will come to know the information for tax purposes.
- c. It is personal
- d. Specify if any _____

39. Can you indicate the enterprise's monthly income?

- a. Yes
- b. No

51. How many times your enterprise collects solid waste from clients?
- a. Daily
 - b. Twice in week
 - c. Once in a week
 - d. Twice- in a month
 - e. Once in a month
 - f. Others/ specify _____

PART IV: Waste Collection by MSEs

52. Where is the collected garbage handled until disposed?
- a. Enterprise's own container
 - b. Municipal container
 - c. Transported and disposed directly by enterprises vehicles.
 - d. Transported and disposed directly by municipal vehicles.
53. Where does the enterprise store the collected waste if municipal containers are full or not emptied timely?
- a. Will watch until the municipal truck comes
 - b. Dispose it near to full containers
 - c. Burry it under the holes
 - d. Store it with own temporary handling
 - e. Burn it
 - f. Specify/any _____
54. What transportation systems the enterprise used to transport the garbage from its source to transfer points?
- a. Own vehicles
 - b. Own carts
 - c. Rented pushcarts
 - d. Rented vehicles
 - e. _____
 - f. Specify/any _____
55. Where the enterprises dump the collected waste?
- a. At municipal transfer points
 - b. At final dump site of the municipality
 - c. At the municipal truck
 - d. Specify/any _____
56. Do you know the total amount of solid waste (garbage) the enterprise collect daily, monthly or yearly?
- a. Yes
 - b. No
57. If the response for question number 56 is "Yes" specify in grams, kilograms or tons _____
- a. Daily _____
 - b. Monthly _____
 - c. Yearly _____
58. If the answer for 56 is "No" what would be the reason?
- a. No written records
 - b. Difficult to measure in units
 - c. No experience of recording
 - d. Do not know
 - e. Specify/any _____

59. Which kind of wastes is collected by the enterprise?
- Paper _____
 - Glass, bottles and ceramics _____
 - Metals _____
 - Plastics and Rubber _____
 - Textiles _____
 - Grass Clippings and bones _____
 - Food, vegetables and fruits _____
 - Ash or sand _____
60. Is there a waste which can not be collected by the enterprise?
- Yes
 - No
61. If the response for question 60 is "Yes" Specify which waste (s)?
- _____
-
62. Based on question '59' which wastes are highly produced by your clients? Mention at least three of them in a rank order.
- _____
 - _____
 - _____
63. Is the enterprise currently separating recyclable goods?
- Yes
 - No
64. Is the enterprise currently separating compostable goods?
- Yes
 - No
65. What would the enterprise do with the separated material?
- Make compost by the enterprise
 - Reuse it as a raw material by the enterprise
 - Sale to other recyclers
 - Generate biogas
 - Specify/any _____
66. What relationship does the enterprise have with the kebeles?
- Registration and license renewal
 - Technical and material support
 - advisory or counseling service
 - Providing short-term training
 - Specify/any _____
67. What relationship does the enterprise have with the sub-city?
- Registration and license renewal
 - Technical and material support
 - advisory or counseling service
 - Providing short-term training
 - Loan provision
 - Specify/any _____

PART VI: Institutional Support

76. Does the enterprise get external support at this time?

- a. Yes
- b. No

From questions 77 to 80 will be answered based on "a" options a through "h" and one question may have more than one response.

Type of support/marketing	Source of support	When (in years)
	a. Government b. NGOs c. Donors d. Chamber of commerce e. Private banks f. Government banks g. Micro finance institutions h. Private organization	
77. Training		
78. Financial		
79. Technical and material		
80. Consultancy/counseling		

81. What are the major constraints that hinder the enterprise development? Put in rank.

- a. Legal framework _____
- b. Market _____
- c. Skilled manpower _____
- d. Information _____
- e. Working tools _____
- f. Financial _____
- g. Specify if any _____

82. How is the current general standard of the business activity of the enterprise?

- a. Strongly progressing
- b. progressing
- c. strongly declining
- d. Declining

83. What the enterprise intend to do in the future?

- a. Expand the existing business
- b. Continue the business at the present situation
- c. Change a business activity
- d. Start extra business
- e. Specify if any _____

APPENDIX C-2

**Micro and Small Enterprises' Involvement in
Solid Waste Management Services in
Bole and Arada Sub-Cities
(Interview Schedule with MSE Workers)**

Date: _____

Time: _____

Respondent Number: _____

Place of Birth: _____

PART I: Demographic Characteristics

1. Worker's Sex
a. Female _____ b. Male _____
2. Age of worker _____ years
3. Ethnicity
a. Amhara c. Tigrai e. Wolayita
b. Oromo d. Gurage f. Specify/any _____
4. Marital status
a. Single _____ c. Divorced _____
b. Married _____ d. Widowed _____
5. Family size under you _____ in number
a. Female _____
b. Male _____
6. Number of children you have _____ in number.
a. Female _____
b. Male _____
7. If your response for question number 4 is "a" how do you make a living?
a. With father and mother _____ d. Alone with rented house _____
b. With brother or sister _____ e. Specify if any _____
c. With relatives _____
8. What is your level of education?
a. Illiterate _____ e. 12th completed _____
b. Read and write _____ f. Technical and vocational school graduated _____
c. Primary school level (1-8) _____ g. College diploma _____
d. Secondary school level (9-12) _____ h. Degree holder _____

PART II: Background

9. When do you start to live in Addis Ababa? Since _____
10. Do you have any occupation before you engaged in this enterprise?
a. Yes _____ b. No _____

11. If your response for question 11 is "yes" what was your occupation?
- a. Government institutions
 - b. Private institutions
 - c. Own business activity
 - d. Farming
 - e. Specify/any _____
12. If your response for question 10 is "yes" for how many years served before this enterprise? _____ years.
13. If your response for question 10 is No what did you do before?
- a. Dependent to my family
 - b. Student
 - c. Daily laborer
 - d. Unpaid family laborer
 - e. living on the streets
 - f. Specify if any _____
14. When do you engaged in this enterprise? Since ____ Ethiopian Calendar.
15. For how many years you stay unemployed before you engaged in this enterprise? _____ years.

Part III: Work Condition

16. How the employment situation in this enterprise?
- a. (Temporary) employed
 - b. Permanent employed
 - c. Unpaid family laborer
 - d. Self-employed
 - e. Specify any _____
17. What are the main requirements to be employed in the enterprise?
- a. Work experience
 - b. Educational level
 - c. Jobless
 - d. Strong in physical work
 - e. Specify/any _____
18. What is your responsibility in this enterprise?
- a. Secretary/Typist
 - b. Personnel
 - c. Accountant
 - d. Waste collector
 - e. Supervisor
 - f. specify/any _____
19. How many hours do you work in the enterprise per day? _____ hours.
20. How many days do you work within a week?
- a. Monday to Friday
 - b. Monday to Saturdays
 - c. All week days
 - d. Specify/ any _____
21. How is the attitude of the community towards you working on solid waste collection?
- a. Encouragement
 - b. exclusion from any social affairs
 - c. giving advice to stop the work
 - d. Specify if any _____
22. What health and hygiene risk protection do you use at work? Circle all if necessary.
- a. Gloves
 - b. Masks
 - c. Boots
 - d. Gown (Outer garment)

PART IV: Gender Participation

23. Is there gender segregation to be employed in the enterprise?
a. Yes b. No
24. If your response for question 23 is "Yes" which sex type is prohibited not to be employed?
a. Women b. Men
25. If the response for question 24 is "women" what would be the reason not to be employed?

26. If there are employed women what special treatment is done by the enterprise?
a. Giving high employment opportunity for women employees
b. Giving special rest during pregnancy with payment
c. Supervisor
d. Accountant
e. No special treatment

PART V: Income

27. How much is your monthly payment by the enterprise _____ birr.
28. How is your wage paid by your employer?
a. Per day c. Twice in a month
b. Once in a week d. Once in a month
29. Is your monthly income sufficient to support your family life?
a. Yes b. No
30. Do you believe that this job opportunity improves your standard of living than your previous life?
a. Yes b. No

PART VI: Future Prospects

31. What do you intend to do in the future?
a. Start own business on solid waste collection
b. To be employed in government institutions
c. Continue in this enterprise
d. Change to other service sector
32. If your response for question 33 is "a" where do you find the source of start-up capital?
a. Own savings
b. Borrowing from relatives/friends
c. Loans from banks
d. Loan from micro financial institutions
e. Gift from relatives/friends
f. Specify/ any _____

Declaration

The thesis is my original work and has not been presented for a degree in any other university and that all the sources of materials used for the thesis have been dully acknowledged.

Name: Abebe Tegege

Signature: 

Date: 12/07/06

Confirmed by the Advisor:

Name: Tegege G/Egziabeher (Ph.D.)

Signature: _____

Date: _____