

**COMMUNITY PARTICIPATION IN SOLID WASTE
MANAGEMENT WITHIN URBAN INFORMAL SETTLEMENTS: A
CASE STUDY OF KIBERA, NAIROBI.**

BY

ANN MARY MUTHONI

**A THESIS SUBMITTED IN PARTIAL FULFILMENT FOR THE
REQUIREMENTS OF THE DEGREE OF MASTER OF ARTS IN
PLANNING IN THE UNIVERSITY OF NAIROBI**

University of NAIROBI Library



0356435 8

JUNE, 1999

Declaration

This is my original work and has not been presented for a degree in any other
university

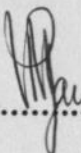
Signature 

ANN MARY MUTHONI

(Candidate)

To my husband, Godfrey Mugo, for your support and encouragement

This work has been submitted for examination with the approval of the university
supervisor

Signature 

DR. P.M. NGAU

(Department of Urban and Regional Planning

University of Nairobi)

Dedications

- ANPPCAN African Network for Prevention and Protection of Child Abuse and Neglect
- CBOS Community Based Organizations
- ILCO Institutional Labor Organizations
- NEA Nepal Environmental Conservation Agency
- EAR Kenya AIDS Relief
- NSB Nepal Society
- KUCBP Kenya Urban Environmental Sanitation Project
- NCC Nairobi City Council
- NCHS New Christchurch Organization
- SDO Social Development Office
- To my husband, Godfrey Mugo, for your support and encouragement***
- TEAO Technical Education Agency
- UN United Nations
- UNEP United Nations Environment Programme
- UNEP Global Warming Assessment and Response
- UNICEF United Nations Children's Fund
- WCD World Commission for Environment and Development

List of Abbreviations

ANPPCAN	African Network for Prevention and Protection of Child Abuse and Neglect
CBOs	Community Based Organisations
ILO	International Labour Organisation
JICA	Japan International Corporation Agency
KAR	Kenya African Rifles
Ksh.	Kenya Shilling
KUESP	Kibera Urban Environmental Sanitation Pilot project
NCC	Nairobi City Council
NGOs	Non-Governmental Organisations
SDO	Social Development Officer
SWM	Solid Waste Management
TBAs	Traditional Birth Attendants
UN	United Nations
UNCHS	United Nations Centre for Human Settlements
UNEP	United Nations Environmental Programme
UNICEF	United Nations Children's Fund
WCED	World Commission for Environment and Development

Acknowledgements

I wish to acknowledge the contributions and assistance of a number of persons and institutions without which this work could not have been a success. First, I would like to express my gratitude to the Ministry of Lands and Settlement for offering me a post-graduate scholarship, through Physical Planning Department. Special regards go to Dr. P.M. Ngau for his close supervisory work from the initial stages and throughout the course of compiling this work. I also owe many thanks to the Director of Environment (Nairobi City Council), Col. Nthigah, for availing published and unpublished information on solid waste management in Nairobi. A vote of thanks is extended particularly to the cleansing Superintendent, Western Division, Nairobi, Mr. Kigo for his kind response on the situation of community based solid waste management in Nairobi and particularly in Kibera informal settlement.

I acknowledge the contributions of World Bank staff working with KUESP, especially Mr. J. Mbuvi, and those of UNICEF, UNEP and UNCHS (Habitat), for availing the relevant information on this work. I also gratefully acknowledge the contribution of ANPPCAN, particularly the regional co-ordinator, Dr. P. Onyango for allowing me to use the documentation centre in Nairobi. Credit goes to Mr. D. Onduu for his great assistance and advice in accessing the relevant materials for this study. I am also indebted to Mrs F. Juma and other social workers from ANPPCAN and other NGOs working among community groups in Kibera like Undugu Society of Kenya for their response and their assistance in accessing some of the community groups who were the major subjects of this study. I also thank the chief and his Assistant in Kibera for their response and assistance in helping me reach the Kibera residents. Thanks to Mzee Idi, the Kibera Community Health Workers Co-ordinator, for his work in organising some of the community groups for a focus group discussion. I cannot forget Mr. G. Otieno who agreed to walk with me round the settlement throughout the field survey period and especially for helping me to be appreciated by individual residents and some community leaders who were major respondents in this study. Lastly and most important, I give God glory for His continued grace.

None of the above persons or institutions should be considered responsible for any errors and shortcomings which may be in this work. These remain solely my responsibility.

Abstract

This study examines the factors that influence the performance of community groups in solid waste management within informal settlements and the role of women in the same. A case study of Kibera, Nairobi is used. This is with a view to investigating the conditions under which community participation succeeds or fails in solid waste management within informal settlements.

Both primary and secondary data were used. Samples of community groups involved in solid waste management were randomly selected and their various characteristics studied. A scoring method was used to classify these groups according to their levels of success, considering the various indicators. Performance is shown to be directly influenced by organisational and management factors of community groups. These factors are in turn influenced by the socio-economic characteristics of the groups' members, which are considered as the indirect factors in community based solid waste management. Explanation of success was sought from different groups of people - the group members, non-group members, Non-governmental Organisations and other development agencies and the Nairobi City Council. The role of women - their socio-economic characteristics and challenges in solid waste management are discussed at length.

The study has found out that the success of community based waste management depends on the organisational and management capacities of community groups in order to improve their performance. These capacities are indirectly influenced by the socio-economic characteristics of the group members. With regard to these factors, the capacities of community groups in informal settlements to carry out solid waste management have been found wanting. The youth are inadequately involved in organised community based solid waste management and they need to be more involved in the same. There is also the need to encourage more income generating activities among those community groups that are involved in solid waste management, order to cater for the economic needs of the members and motivate them. Furthermore, women form the majority of community group members. They face several

constraints, problems and challenges, but they have a crucial role to play in community based solid waste management.

CHAPTER 1	1
CHAPTER 2	2
CHAPTER 3	3
CHAPTER 4	4
CHAPTER 5	5
CHAPTER 6	6
CHAPTER 7	7
CHAPTER 8	8
CHAPTER 9	9
CHAPTER 10	10
CHAPTER 11	11
CHAPTER 12	12
CHAPTER 13	13
CHAPTER 14	14
CHAPTER 15	15
CHAPTER 16	16
CHAPTER 17	17
CHAPTER 18	18
CHAPTER 19	19
CHAPTER 20	20
CHAPTER 21	21
CHAPTER 22	22
CHAPTER 23	23
CHAPTER 24	24
CHAPTER 25	25
CHAPTER 26	26
CHAPTER 27	27
CHAPTER 28	28
CHAPTER 29	29
CHAPTER 30	30
CHAPTER 31	31
CHAPTER 32	32
CHAPTER 33	33
CHAPTER 34	34
CHAPTER 35	35
CHAPTER 36	36
CHAPTER 37	37
CHAPTER 38	38
CHAPTER 39	39
CHAPTER 40	40
CHAPTER 41	41
CHAPTER 42	42
CHAPTER 43	43
CHAPTER 44	44
CHAPTER 45	45
CHAPTER 46	46
CHAPTER 47	47
CHAPTER 48	48
CHAPTER 49	49
CHAPTER 50	50
CHAPTER 51	51
CHAPTER 52	52
CHAPTER 53	53
CHAPTER 54	54
CHAPTER 55	55
CHAPTER 56	56
CHAPTER 57	57
CHAPTER 58	58
CHAPTER 59	59
CHAPTER 60	60
CHAPTER 61	61
CHAPTER 62	62
CHAPTER 63	63
CHAPTER 64	64
CHAPTER 65	65
CHAPTER 66	66
CHAPTER 67	67
CHAPTER 68	68
CHAPTER 69	69
CHAPTER 70	70
CHAPTER 71	71
CHAPTER 72	72
CHAPTER 73	73
CHAPTER 74	74
CHAPTER 75	75
CHAPTER 76	76
CHAPTER 77	77
CHAPTER 78	78
CHAPTER 79	79
CHAPTER 80	80
CHAPTER 81	81
CHAPTER 82	82
CHAPTER 83	83
CHAPTER 84	84
CHAPTER 85	85
CHAPTER 86	86
CHAPTER 87	87
CHAPTER 88	88
CHAPTER 89	89
CHAPTER 90	90
CHAPTER 91	91
CHAPTER 92	92
CHAPTER 93	93
CHAPTER 94	94
CHAPTER 95	95
CHAPTER 96	96
CHAPTER 97	97
CHAPTER 98	98
CHAPTER 99	99
CHAPTER 100	100

Table of Contents

	Page
Declaration	i
Dedication	ii
List of Abbreviations	iii
Acknowledgements	iv
Abstract	v
Table of Contents	vii
List of Figures	xii
List of Plates	xiii
List of Tables	xiv
List of Appendices	xviii

Chapter One

The Introduction

1.1	General Introduction	1
1.2	Statement of the Problem	2
1.3	Research Objectives	4
1.4	Study Assumptions	5
1.5	Literature Review	5
1.5.1	Definitions	5
1.5.1.1	Community	5
1.5.1.2	Community Participation	6
1.5.1.3	(Solid) Waste	7
1.5.1.4	Solid Waste Management	7
1.5.1.5	Informal Settlements	7
1.5.2	The Problem of Solid Waste Management	9
1.5.3	Approaches to Solid Waste Management	11
1.5.3.1	Public Agencies	12
1.5.3.2	Private Companies	12
1.5.3.3	Community Participation	14
1.5.3.4	The Role of Community Based Organisations	16
1.5.3.5	The Role of Partnership	17
1.5.4	Women in Solid Waste Management	18
1.5.5	Conclusion	19
1.6	Justification of the Study	20
1.7	The Conceptual Framework	21
1.8	The Scope	24
1.9	Organisation of the Study	25

Chapter Two

The Study Area

2.1	Position and Size	26
2.2	Physical Background	26
2.3	Administration	29
2.4	Historical Background	29
2.5	Population	32
2.6	Social Background	33
2.7	Economic Background	34
2.8	Infrastructure and Environment	36
2.9	Waste Disposal and Drainage	37
2.10	Household Level Solid Waste Management	40
2.11	Health Facilities	43
2.12	Housing	44
2.13	Roads	45
2.14	Conclusion	46

Chapter Three

Research Methodology

3.1	Data Collection Procedures	47
3.1.1	Primary Data Sources	47
3.1.2	Secondary Data Sources	47
3.2	Sampling Techniques	48
3.2.1	Sampling Design	48
3.2.2	Sampling Methods	48
3.2.2.1	Group Members	48
3.2.2.2	Non-Group Members	48
3.3	Problems Experienced in Data Collection	49
3.4	Data Presentation	50
3.5	Analytical Framework	51
3.5.1	Classification	51
3.5.2	Explanation	51
3.5.3	Case Studies	52

Chapter Four

Factors of Success in Solid Waste Management among Community Groups in Kibera

4.1	Introduction	53
4.2	Organisational Indicators of Success	53
4.2.1	Membership and Success among Community Groups	53
4.2.2	Registration	55

4.2.3	Frequency of Group Meetings	57
4.2.4	Networking	59
4.2.5	Resolving Problems	61
4.2.6	Strategies of Attracting More Members.....	63
4.2.7	Classification According to Organisational Indicators of Success	66
4.3	Management Indicators of Success.....	67
4.3.1	Solid Waste Management Initiative	67
4.3.2	Number of Group Activities	69
4.3.3	Presence of Income Generation Activities	72
4.3.4	Sources of Finances	74
4.3.5	Attitudes towards Members Needs.....	76
4.3.6	Attitudes Towards Solid Waste Management Responsibility.....	78
4.3.7	Classification of Community Groups According to Management Indicators of Success.....	80
4.4	Performance Indicators of Success.....	81
4.4.1	Types of Solid Waste Management Activities	81
4.4.2	Frequency of Solid Waste Management Activities	84
4.4.3	Consistency in Solid Waste Management.....	86
4.4.4	Period of Operation	88
4.4.5	Classification According to Performance of Community Groups.....	90
4.5	Identification of the Community Groups According to Success	91
4.6	Socio-Economic Characteristics of Members	93
4.6.1	Age	93
4.6.2	Marital Status	95
4.6.3	Household Size	97
4.6.4	Formal Education	99
4.6.5	Occupation	101
4.6.6	Household Income	104
4.6.7	Period of Residence	106
4.7	Explanation of Success among Community Groups in Solid Waste Management.....	111
4.7.1	Group Members	111
4.7.2	Non-Group Members.....	113
4.7.3	Local Administrators	115
4.7.4	NGOs and Other Development Agencies	116
4.7.4.1	ANPPCAN	116
4.7.4.2	Undugu Society of Kenya	118
4.7.4.3	World Bank	119
4.7.5	Nairobi City Council	121
4.8	Case Studies.....	123
4.8.1	Usafi na Maendeleo Group - Kianda	123
4.8.1.1	Origin of the Group.....	123
4.8.1.2	Socio-Economic Characteristics of Members	124
4.8.1.3	Organisation of Solid Waste Management Activities	124
4.8.1.4	Problems Encountered in Solid Waste Management.....	128
4.8.1.5	Other Group Activities	129

4.8.1.6	Other Indicators of Success in the Group	130
4.8.1.7	Involvement of Other Organisations/Groups	130
4.8.1.8	Future Plans.....	132
4.8.2	Pamoja Community Group - Soweto	133
4.8.2.1	Origin of the Group.....	133
4.8.2.2	Characteristics of the Group Members	133
4.8.2.3	Organisation of Group Activities	134
4.8.2.4	Other Indicators of Failure	134
4.8.2.5	Factors Leading to Termination Of Solid Waste Management Activities in the Group.....	135
4.8.2.6	Future Prospects of Solid waste Management Activities.....	137

Chapter Five

The Role of Women in Community Based Solid Waste Management

5.1	Introduction	139
5.2	Women and Environmental Management.....	139
5.3	Significance of Women in Community Based Solid Waste Management in Kibera	141
5.4	Socio-Economic Characteristics of Female Members of Community Groups	141
5.4.1	Age Among Female Members of Community Groups	141
5.4.2	Household Size of Female Members of Community Groups	143
5.4.3	Marital Status of Female Members of Community Group.....	144
5.4.4	Type of Occupation among Female Members of Community Groups	145
5.4.5	Income among Female Members of Community Groups	147
5.4.6	Period of Residence among Female Members of Community Groups	148
5.4.7	Education Level Among Female Members of Community Groups	149
5.5	Explanation for the Role of Women in Community Based Solid Waste Solid Waste Management	150
5.6	Challenges of Women in Community Based Solid Waste Management.....	155

Chapter Six

Summary of Findings, Recommendations and Conclusions

6.1	Findings.....	157
6.2	Recommendations	161
6.3	Suggestions for Further Research	163
6.4	Conclusions	164

Bibliography

List of Figures

Figure 1:1:	Solid Waste Management in Informal Settlements	23
Figure 2.1:	Position of Nairobi in Kenya	27
Figure 2.2:	Position of Kibera in Nairobi	28
Figure 2.3:	Kibera Villages	31
Plate 4:	Open Defecation	39
Plate 5:	A Clean Inside of A House in Kibera: Interview with one of the residents	42
Plate 6:	Garbage Scattered around Housing Units in Kibera	42
Plate 7:	Common Dumping Site Next to the Railway Line in Kibera	43
Plate 8:	Poor and Overcrowded Houses in Kibera	45
Plate 9:	A Graduation Ceremony after a Community Organisation Training Programme (ANPPCAN)	118
Plate 10:	Ushafi in Maendeleo - Kianda Group on a Day of receiving Implements from a Donor	126
Plate 11:	Ushafi Maendeleo Group Members Depart from Meeting with a Donor After a Routine Clean Up day	127
Plate 12:	A Poorly Attended Pamoja Community Group Meeting with These Community Leaders (Middle - Male)	137

List of Plates

Plate 1:	Informal Food Selling in an Unhealthy Environment in Kibera	35
Plate 2:	Part of Kibera Informal Settlement	36
Plate 3:	Dirty Drainage: After an Attempted Clean-Up in Kibera.....	38
Plate 4:	Open Defecation.....	39
Plate 5:	A Clean Inside of A House in Kibera: Interview with one of the residents.....	42
Plate 6:	Garbage Scattered around Housing Units in Kibera	42
Plate 7:	Communal Dumping Site Next to the Railway Line in Kibera	43
Plate 8:	Poor and Overcrowded Houses in Kibera	45
Plate 9:	A Graduation Ceremony after a Community Organisation Training Programme (ANPPCAN).....	118
Plate 10:	Usafi na Maendeleo - Kianda Group on a Day of receiving Implements From a Donor	126
Plate 11:	Usafi na Maendeleo Group Members Disperse from Meeting with a Donor After a Routine Clean Up day	127
Plate 12:	A Poorly Attended Pamoja Community Group Meeting with Three Community Leaders (Middle - Male).....	137

List of Tables

Table 4.1:	Membership Among Community Groups in Kibera	54
Table 4.2:	Frequencies of Community Groups in Kibera According to Membership	55
Table 4.3:	Registration Status of Community Groups in Kibera	56
Table 4.4:	Frequencies of Community Groups in Kibera According to Registration Status	57
Table 4.5:	Frequency of Group Meetings among Community Groups in Kibera	58
Table 4.6:	Frequencies of Community Groups According to Frequencies of Meetings ..	59
Table 4.7:	Networking Among Community Groups in Kibera.....	60
Table 4.8:	Frequencies of Community Groups According to Number of Interaction Groups	61
Table 4.9:	Resolving Problems Among Community Groups in Kibera.....	62
Table 4.10:	Frequencies of Community Groups in Kibera According to Their Ways of Problem Resolution	63
Table 4.11:	Strategies of Attracting More Members among Community Groups in Kibera	64
Table 4.12:	Frequencies of Community Groups in Kibera According to Strategies of Attracting More Members.....	65
Table 4.13:	Classification of Community Groups in Kibera According to Organisational Indicators of Success	67
Table 4.14:	Source of Solid Waste Management Initiative Among Community Groups in Kibera	68
Table 4.15:	Frequencies of Community Groups According to Origin of Initiative.....	69
Table 4.16:	Number of Activities Among Community Groups in Kibera	70
Table 4.17:	Frequencies of Community Groups in Kibera According to Number of Activities.....	71
Table 4.18:	Presence of Income Generation Activities among Community Groups in Kibera	72

Table 4.19:	Frequencies of Community Groups in Kibera According to Presence of Income Generating Activities	73
Table 4.20:	Sources of Finances Among Community Groups in Kibera.....	74
Table 4.21:	Frequencies of Community Groups According to Major Sources of Finance. .	75
Table 4.22:	Attitudes towards Members Needs among Community Groups in Kibera.....	76
Table 4.23:	Frequencies of Community Groups in Kibera According to Members Perceived Needs.....	77
Table 4.24:	Attitudes Towards Solid Waste Management Responsibility Among Community Groups in Kibera	78
Table 4.25:	Frequencies of Community Groups According to Members Attitudes Towards Solid Waste Management Responsibility	79
Table: 4.26:	Classification of Community Groups In Kibera According to Management Indicators of Success	81
Table 4.27:	Types of Solid Waste Management Activities Among Community Groups in Kibera	82
Table 4.28:	Frequencies of Community Groups in Kibera According to Type of Solid Waste Management Activities	83
Table 4.29:	Frequency of Solid Waste Management Activities among Community Groups in Kibera	85
Table 4.30:	Frequencies of Community Groups in Kibera According to the Frequency of Solid Waste Management Activities	86
Table 4.31:	Consistency in Solid Waste Management among Community Groups in Kibera	87
Table 4.32:	Frequencies of Community Groups According to Consistency in Solid Waste Management Activities.....	88
Table 4.33:	Period of Operation among Community Groups in Kibera.....	89
Table 4.34:	Classification of Community Groups in Kibera According to Performance ...	90
Table 4.35:	Classification of Community Groups in Kibera According to All the Indicators of Success	92
Table 4.36:	Average Age for Community Groups in Kibera.....	94

Table 4.37:	Frequencies of Community Groups in Kibera According to Average Age	145
	Age	95
Table 4.38:	Marital Status among Community Groups in Kibera	96
Table 4.39:	Frequencies of among Community Groups in Kibera According to Marital Status	97
Table 4.40:	Household Size among Community Groups in Kibera	98
Table 4.41:	Frequencies of Community Groups in Kibera According to Average Household Size	99
Table 4.42:	Average Formal Education among Community Groups in Kibera	100
Table 4.43:	Frequencies of Community Groups in Kibera According to Formal Education	101
Table 4.44:	Occupation among Community Groups in Kibera	102
Table 4.45:	Occupation among Community Groups in Kibera	103
Table 4.46:	Income among Community Groups in Kibera	104
Table 4.47:	Frequencies of Community Groups in Kibera According to Average Household Incomes	105
Table 4.48:	Period of Residence among Community Groups in Kibera.....	106
Table 4.49:	Period of Residence among Community Groups in Kibera.....	107
Table 4.50:	Sex Ratios Among Community Groups in Kibera	109
Table 4.51:	Frequencies of Community Groups in Kibera According to Percentage of Women.....	110
Table 5.1:	Age Pattern among Female Group Members	142
Table 5.2:	Relationship between Proportion of Women and Age among Community Groups in Kibera	143
Table 5.3:	Relationship Between Proportion of Women and Household Size among Community Groups in Kibera	144
Table 5.4:	Relationship between Proportion of Women and Marital Status among Community Groups in Kibera	144

Table 5.5:	Type of Occupation among Women in Community Groups	145
Table 5.6:	Relationship between Proportion of Women and Occupation among Community Groups in Kibera	146
Table 5.7:	Relationship Between Proportion of Women and Income Among Community Groups in Kibera	147
Table 5.8:	Relationship Between Proportion of Women and Period of Residence Among Community Groups in Kibera	148
Table 5.9:	Relationship Between Proportion of Women and Average Years in School Among Community Groups in Kibera	149
Appendix 6:	Questionnaire - To Department of Environment - Nairobi City Council	194
Appendix 7:	Formal Guidelines - Nairobi City Council	197
Appendix 8:	SWISS-Source: Socio-Economic Characteristics of Community Groups in Kibera	198

List of Appendices

Appendix 1: Questionnaire 1: To Non-Group Members 173

Appendix 2: Questionnaire 2: To Non-Group Members 178

Appendix 3: Questionnaire 3: To Social Workers..... 182

Appendix 4: Questionnaire 4: To Community Group Leaders 188

Appendix 5: Questionnaire 5: To Local Administrators..... 192

Appendix 6: Questionnaire 6: To Department of Environment - Nairobi City Council 194

Appendix 7: Focus Discussion Questions 197

Appendix 8: Socio-Economic Characteristics of Community Groups in Kibera..... 198

Chapter One

Introduction

1.1 Introduction

The rapid pace of urbanization in developing countries has greatly increased demands for urban services (Yeung and McGee, 1986; UNCHS, Habitat, 1987; UNEP, 1995; Dolores, 1997; JICA, 1997). This has seriously challenged the capacities of urban governments to provide services to their increasing populations. The local authorities are experiencing diminishing resources for the provision of basic services (Kibwage, 1994; JICA, 1997). This situation has been exacerbated by the many informal settlements that now exist within the urban areas. These settlements are the result of the unfavourable economic conditions, under-investment in urban infrastructure, high natural growth rates coupled with rural-urban migration (KUESP, 1997). In Nairobi, for example, informal settlements account for 60 percent of the total urban residential population (KUESP, 1997).

Although the local authorities have the statutory responsibility of providing services to their populations, they have been unable to do so. Solid waste management is one of the major urban services that has greatly deteriorated. Nairobi City Council (NCC) has been unable to cope with the high demand for this service. This is due to the large cost of dealing with increasing population and amount of solid waste being generated (Geerts, 1996). Private services have therefore been introduced (Makopa, 1996) and preferred (Moser, 1996). However, the monthly charges for these services can only be afforded by a few high- and middle-income households (Kibwage, 1994). Thus more than half (60 percent) of the city population which consist of low income earners living in informal settlements are left to look

for their own strategies in dealing with their solid waste in the living environments. UNCHS (Habitat) (1990) noted that the majority of the poorest of the people living in these settlements are especially women. The report emphasized the fact that female-headed households are on the increase. The problems faced by the ever-increasing numbers of the urban poor cannot therefore be solved without the full participation of women.

Community participation has been proposed as being capable of providing a cheap and sustainable solution to solid waste management within these settlements (Dolores, 1997).

Community members in these settlements have organized themselves into groups in order to deal with the problem of solid waste in their neighbourhoods. However, these groups have not been able to effectively deal with solid waste management due to a number of problems and constraints. This study is set to investigate into these factors as those that have influenced the performance of these community groups in their involvement in solid waste management within their settlements, the conditions under which some of community groups have performed better than others and the conditions under which others have performed poorly. The role of women in solid waste management in these settlements is also examined.

1.2 Statement of the Problem

In the absence of formal methods of providing urban services and facilities (through the local authorities and private companies), community participation has been recommended as a sustainable strategy for solid waste management within informal settlements. However, despite the fact that many community groups have been involved in solid waste management activities, the residential environment of the informal settlements has continued to deteriorate with time. Community groups involved in solid waste management show different levels of

success. It is not yet clear why some community groups are more successful in solid waste management than others. Few studies have been carried out to find out the reasons behind the general poor performance of community participation in solid waste management in these areas. This study aims at finding out the conditions under which some community groups perform better than others in solid waste management in the informal settlements. Since women have been found to contribute to a substantial portion of labour required for shelter and infrastructure development, their full participation is essential if attempts to improve the current human settlements conditions are to succeed. Furthermore, due to the importance of women in self-help groups in informal settlements, it is vital to examine the role of women in solid waste management. This study seeks to find out factors that have influenced the success of some groups and the constraints that have worked against effective community based solid waste management.

The success or failure of the community groups dealing with solid waste management in the informal settlements can be indirectly explained by a number of socio-economic characteristics of the members forming these groups. Other reasons could be due to organisational, management and performance factors within the specific community groups dealing with solid waste management. Problems being experienced by these organizations are bound to contribute to the general ineffectiveness in dealing with solid waste within these areas. Furthermore, it may be noted that other organizations working within the communities may have created an environment that could influence the effectiveness of these community groups in their solid waste management activities. Further still, other forces outside the community may have interfered with the community capacity to effectively carry out their solid waste management activities. This study is set to look into these issues with a view to

finding out the factors that influence the success of some community groups and the role of women in solid waste management in informal settlements.

Policy recommendations are made towards alleviating the problem of low performance of community participation in solid waste management within informal settlements. These recommendations are expected to improve the effectiveness of the community groups in carrying out solid waste management activities and therefore managing their living environment.

1.3 Research Objectives

The major objective of this study is to examine the factors that influence success in solid waste management through community participation and the role of women in the same in informal settlements. The specific objectives are:

1. To investigate the conditions under which community groups are successful in solid waste management within informal settlements using the case study of Kibera, Nairobi.
2. To examine the factors that contribute to the success or failure of community groups in solid waste management in the study area.
3. To examine the role of women in solid waste management within urban informal settlements in the study area.
4. To make policy recommendations towards the improvement (especially of the less successful community groups) in solid waste management through community participation in informal settlements.

1.4 Study Assumptions

This study is carried out on the basis of the following assumptions:

1. Socio-economic characteristics of members of community groups involved in solid waste management within informal settlements indirectly influence their success.
2. Organisational and management factors significantly influence the performance success of community groups involved in solid waste management within informal settlements.
3. Women constitute a significant proportion of membership in community groups involved in solid waste management within informal settlements and have a significant role to play in the same.

1.5 Literature Review

This section begins with definitions of the different terms used in this study followed by a review of existing literature on the problems of solid waste management in urban areas of developing countries and in the city of Nairobi. Further, the role of the various agencies in dealing with the problem of solid waste management is reviewed with a view to finding out their weaknesses and strengths in serving the low-income people in informal settlements. Finally, literature on the role of women in community participation for solid waste management in the low-income settlements is examined.

1.5.1 Definitions

1.5.1.1 *Community*

There are various definitions of the term "community". Sanders (1962) showed that a community is characterized by: an area that can be mapped, an area with distinctive

geographical and resource features, a set of relationships, an already organized group to have things done, leadership, loyalty, experience in solving local problems, and a set of social values to which the majority of the people subscribe. According to The Oxford Learners Dictionary, "community" is people living in one place, district or country considered as a whole; a group of persons having common interests or a condition of sharing, having things in common, being alike in some way. UN (1991) defined the term as a group in face to face contact, bound by common values and objectives with basic harmony of interest and aspirations. In the context of this study, the above characteristics and definition will be adopted, considering the urban community as being made up of a number of diverse social groups. Thus the communities referred to in this study are found in the informal settlements having the objective of tackling the problem of lack of solid waste management services within their localities, by involving themselves in the same, as groups.

1.5.1.2 Community Participation

Communities are involved in different activities to address common issues. Community participation is defined by WCED (1987) as a process through which a community mobilizes its resources, initiating and taking responsibility for its own development activities and sharing in decision making for, and implementation of, all the development programmes. In this study, community participation is used to refer to the involvement of organized groups in the informal settlements in solid waste management activities within their localities. It is assumed that this approach could only contribute to better solid waste management programmes in informal settlements when the problems being experienced within the community groups are resolved.

1.5.1.3 (Solid) Waste

Waste generally refers to something that is used up which is therefore bound to be thrown away. Majani (1991) defined waste as unwanted discarded materials. When these materials are not liquid or gaseous in nature, they are referred to as solid waste. These definitions are adopted in this study and solid waste is considered. Any of the solid remains, which are no longer to be used in the household, are thrown away. Household waste is considered in this study among the informal settlements in urban areas.

1.5.1.4 Solid Waste Management

Solid waste management refers to the development and operation of refuse handling in a healthy, economic and environmental manner (Majani, 1991). Mabuba (1991) saw solid waste management as an important component of environmental quality control with important social, economic and financial implications. Mbui (1995) referred to solid waste management as the purposeful, systematic control of the generation, storage, collection, transportation, separation and disposal of municipal waste. This study considers all these stages of solid waste management.

1.5.1.5 Informal Settlements

Matrix (1993) considered an informal settlement as an urban area with the following characteristics:

- i) Owners of structures have either a quasi-legal right of occupation or no rights at all. The structures are constructed largely of temporary materials and do not conform to minimum standards,
- ii) Majority of the structures is let on a room to room basis and majority of the

- households occupies a single room or part of a room,
- iii) Densities are high, typically 250 units per hectare,
- iv) Physical layouts are relatively haphazard making it difficult to introduce roads, pathways, drainage and sanitation,
- v) Majority of the inhabitants has low or very low incomes,
- vi) Urban services such as water and sanitation are non-existent or minimal,
- vii) Morbidity and mortality rates caused by diseases stemming from environmental conditions is significantly higher than other areas of the city.

UNCHS (Habitat) (1996) referred to informal settlements as unplanned settlements, which are illegal, with overcrowded, unauthorized construction of unplanned dwelling units, built of unsuitable materials and without proper sanitation. They are also referred to as squatter settlements (UNCHS (Habitat) (1982) because of the absence of legal rights on the land on which they are built. However, Hukka (1991) noted that although the terms squatter settlements originally referred to the inhabitants who squat on or do not have legal tenure to the land, now squatter settlements refer to the "new" slums where the inhabitants sometimes do have legal title. These residential areas do not present healthy living conditions for their inhabitants - they lack minimum amenities and infrastructure to support the ever increasing populations, yet their residents have no financial resources to improve that condition themselves (Dolores, 1997). This study adopts most of the above characteristics and the definition of informal settlements which refer generally to the residential areas which house the poor of the city dwellers who need cheap housing and infrastructure services affordable to them.

1.5.2 The Problem of Solid Waste Management

The problem of disposal (management) of waste can be traced from the time when humans first began to congregate in tribes, villages and communities (Khadaka, 1988). This means that as the number of people living together (on limited size of land) increased, the amount of waste generated also increased and needed more systematic ways of disposing it. Thus Makopa (1996) saw the problem of solid waste management as stemming from the increasing amount of waste due to the increasing numbers of the waste generators (people). Therefore, despite other measures required to achieve satisfactory management of waste, waste should be reduced as a necessity to decrease the cost for waste disposal and treatment, through recycling, for example (Frijris, 1993). This is particularly applicable to areas where land for disposal becomes more and more scarce e.g the urban area. He points out that in developing countries for example, out of the total amount of waste generated, 30 percent to 50 percent of it is not collected.

The problems of dealing not only with greater volumes of waste and also more dangerous waste materials are particularly acute in developing countries (Esho, 1997). This is especially where these have not developed efficient waste management technologies. All these present daunting challenges for the future compounded by the new demand and constrained resources.

The problem of solid waste management in urban areas of developing countries can also be attributed to the lack of finding out the most suitable combination of methods and equipments to meet local conditions (Khadaka, 1988). This problem is experienced in developing countries because of the high population growth rates involved (Yeung and McGee, 1986;

(UNCHS (Habitat), 1987). Most studies show that the high rates of urbanization are mainly brought about by high rural-urban migration rates as people flock to the urban areas to look for jobs (Makopa, 1996).

Kibwage (1994); Makopa (1996); and JICA (1997) noted that the local authorities had been charged with the statutory obligation of providing solid waste management services for their populations in their areas of jurisdiction. However, because of the high rates of population increase in the urban areas, their local authorities are unable to provide most of the urban services required such as that of solid waste management (Yeung and McGee, 1986). JICA (1997) recorded that strict resource constraints prevented them from initiating programmes of solid waste management. Frijris (1993) noted that although the collection and disposal (management) of solid waste is traditionally the responsibility of local authorities, maintenance of these services, operation of the assets involved and the financial basis of many of these agencies were weak. Sui-Kei et al added that the major weakness in local governments in providing such services to their population could be found in their administrative overload, bureaucratic inefficiency, inadequate co-ordination of programmes and departments, insufficient resources and the conflict between government and the people in regard to service provision. However, UNCHS (1982) attributed this to the general decline in the economic situation thus leading to a decline in the supply of basic infrastructure and services.

One of the major reasons why dealing with the problem of solid waste management in urban areas is complex in developing countries is the development of informal settlements (Khadaka, 1988). As noted earlier, high rates of rural-urban migration of people looking for

jobs is a major reason for high urbanization rates in developing countries (Makopa, 1996). Since these jobs are hardly ever available, these people, impoverished and highly unskilled seek shelter in the already overcrowded informal settlements. Most of these settlements are composed of sub-standard and un-serviced land, which in most cases neither the landlord nor the tenant, has legal rights to the title. Matrix (1993) outlined the major characteristics of informal settlements, some of which are high housing densities, low incomes and inadequate services. These conditions contribute to the poor health and environment of these areas as a result of, among other factors, an improper sanitation system including solid waste management. This situation is expected to deteriorate with time due to high population growth rates in these areas.

Informal settlements receive the lowest level of service from the agencies concerned (Frijris, 1993). This is because of lack of a clear policy framework and effective programme for meeting the needs of the urban poor. Thus, the resulting rapid expansion and densification of informal settlements are left without adequate planning for infrastructure and services (KUESP, 1997). Service improvements are made even more difficult by the poor and inadequate access routes within the settlements, the limited capacity for the low income people to pay for urban services and the fact that the majority of these communities pay little or no municipal tax, the illegality of the settlements and difficulties in organizing an efficient solid management system (Mbui, 1995). Macharia (1992); UNCHS (Habitat) (1987) argued that the high costs and the administrative complexities of delivering infrastructure to these areas through conventional means would require governments to look for alternatives.

1.5.3 Approaches to Solid Waste Management

1.5.3.1 Public Agencies

Geerts (1996) carried out a study on solid waste management as a function of local government. She stated that municipalities and cities were responsible for the delivery of public urban services including solid waste management. Most studies review the incapacibilities of the public agencies to carry out this task leading to the general deterioration of urban environment. Geerts (1996), for example, found out that financial limitation is a major problem being experienced by Nairobi City Council. This is because the major source of revenue (central government grants) has been frozen. The council has also difficulties in getting its own resources as the money collection system and information system have not been updated and are therefore inadequate. The fee for the collection of waste is set at a level far below the cost. Also, labour force is too large compared to the limited working tools and equipment. The poor operation, maintenance and repair limit the productivity of the vehicles in use for, example.

UNCHS (Habitat) (1996) reported that though solid waste management often consumes 20 percent to 40 percent of the municipal revenue, it often suffered more than any other municipal services when budget allocations were made. Thus, this area has almost experienced complete breakdown.

1.5.3.2 Private Companies

Many governments are coming to the realisation that demand-orientation, competition and accountability in infrastructure service delivery may be more readily achieved through the involvement of the commercial private sector. This would be in selected service delivery functions rather than attempting to incorporate these commercial principles into the public

institutions (Esho, 1997).

The perception that solid waste management is a problem to local authorities alone need to be dispelled. In appreciating the inability of the local authorities to provide adequate services, private services have been introduced (Makopa, 1996) and preferred (Moser, 1996). Geerts (1996) argued that privatisation could stimulate the private sector and the overall economic growth, could allow growth of the market for collection services and market competition and provide more effective service of waste collection at no public cost. However, she argued that privatisation would lead to a decline in employment as labour productivity is even higher in the private sector than in the public organizations and subsequently less personnel would be required. Problems may also arise in control and enforcement of laws, as regulations would often increase the cost of collection. Furthermore, the risk of false competition may emerge. Macharia (1992) noted that the management of solid waste has been privatized in the high-income areas. While this is a good idea, it adversely affect the service to the poor. The poor tend to be neglected since they cannot afford to pay the private investors at the commercial rates (UNCHS (Habitat), 1987) and their influence on the local authorities is very limited (Macharia, 1992). Therefore, the commercially uninteresting low income and slum areas will not be provided with the service. This is also because commercial companies are mainly interested in the sometimes valuable waste of the high-income areas and the business centre (Kibwage, 1994). Thus full privatisation is an inadequate option considering the needs of the urban poor and their living conditions (Geerts, 1996). Also, experience in Nairobi shows that private collectors tend to dispose the waste in haphazard manner. They often dump the waste in the low income areas, by the roadside, or in public spaces at night.

An alternative to full privatisation would be that of contracting out the public services. Here the public agency purchase the service which is delivered by a private organization or non-profit making organization by using their own means or by managing publicly owned assets (Geerts, 1996). There are two types of operation in this case: franchise and leasing. The former method erases the competition factor but abuse is prevented by the public agency, so it is an efficient system where the public agency does not meet the cost of collection but meets the cost of monitoring. In the latter case, there is need for the public agency to improve revenue collection.

Private solid waste entrepreneurship in Nairobi seems to be useful in addressing the solid waste management problem in the city as established by Esho (1997). However the current private sector involvement does not address the needs of all areas within the city especially the low-income areas and in open spaces.

1.5.3.3 Community Participation

Internationally, emphasis is being placed on the challenges of sustainable development. Participation is increasingly recognised as a necessary part of sustainable development strategies. Involvement of the communities in the development and related service issues is an essential to the optimal solution of problems (Nga'yu, 1997).

At the local levels, due to the inability of local governments to provide solid waste management services to low income residents of informal settlements and the inability of these communities to pay for the private services, community participation is recommended (Kibwage, 1994). Khadaka (1988) noted that this could have an important role to play in

improving the efficiency of the service where public funds are limited.

Thus, solid waste management in general should be regarded as being of community wide concern in which the active support of the community as a whole is required if significant improvements are to be made (JICA, 1997). This is because environmental degradation is felt most acutely at the community level and the residents often have a greater understanding of local needs, conditions and resources and can devise more innovative and effective solutions than the public sector.

Geerts (1996) classified community participation in solid waste management in two groups. One is the case in which collectors are managed and paid by the community organization and the second one is where the individual collectors are paid directly by the households. The advantage of the latter system is that the local authority plays a minor role in primary collection. It imposes little time, investment, administration and monitoring cost to the public authority.

Dolores (1997) saw community participation as providing cheap and sustainable waste management. However, she cited the constraints to community participation in waste management in informal settlements. One of the problems cited is that there was little community solidarity because the inhabitants of informal settlements are loosely associated by the incidence of the locality of their residence. Also, males dominate the informal settlements but they are not available to contribute to development initiative. This presents difficulties to mobilize the community. There is also failure of the willingness to participate because of the believe that some are paid to clean the area and therefore the exercise is taken simply as

employment and not a community concern. Finally the low income informal residents have the wrong motivations in their thinking that they will get something out of it rather than doing it for their own good.

1.5.3.4 The Role of Community Based Organisations

Every inhabitant of the city is an infrastructure user with regard to residential areas. The basic unit of decision making and action regarding infrastructure is always the individual and in practical terms, a household. Individual households may produce services e.g through construction and use of such facilities as sanitary latrines. To establish facilities that go beyond a single household level, for example, waste collection services, a certain level of organisation among users is necessary. For communal efforts that relate to infrastructure services, households form more specific user associations of Community Based Organisations (CBOs).

The goals of CBOs are self-development. They are sometimes referred to as self help groups. They usually spring up to fill the gaps left by the national and local governments in the development process. Their strength lies in their ability to tackle local problems and seek their solutions. These groups relate closely with members and are best placed to articulate their aspirations and interests (Nga'yu, 1997). They sometimes form the best link between the national and local governments and Non-Governmental Organisations (NGOs).

Generally, the CBOs have several weaknesses such as inadequate finances, low technical skills and low education levels. However, they possess valuable information and expertise on solutions regarding the living environment in their neighbourhoods (Nga'yu, 1997). Nevertheless, the significant improvement of the living environment in most neighbourhoods

can be ensured through the intensive and deliberate involvement of the communities.

1.5.3.5 *The Role of Partnership*

Partnership is a mechanism for ensuring that the comparative advantage of different actors in the development process are exploited in a mutually supportive way. The strengths and weaknesses of the public, commercial private and non-governmental sectors are harmonised so that the maximum use is made of the strengths while minimising the potential for efficiency caused by the weaknesses. It seems to embrace both privatisation and participation.

Public-private ventures in the areas of solid waste management is another alternative in dealing with the problem of solid waste. Geerts (1996) quoted the advantages of spreading risks, public control on safe disposal, lower public cost, management according to commercial principles and possible increased efficiency and lower tax cost for the private partner. However, there are weaknesses especially related to conflict arrangements and coverage of great financial losses. False competition is created towards private disposal companies. Private management does not also implicate that the public monitoring is unnecessary, there is still need for control.

Ouano (1993) advocated for multi-sectoral partnerships in dealing with effective programmes of solid waste management. These would include industrialists, product distributors, advertising agents, politicians, the mass media, consumer groups, the general public, NGOs and the informal sector. Public authorities may be involved directly, for example, as partners in joint venture, with producing industries. They could also be involved indirectly, for example, by providing low interest finance capital investment (Fernandez, 1993). The present study will explore the idea of partnership in relation to community groups and other

agencies in solid waste management in order to improve community based solid waste management.

1.5.4 Women in Solid Waste Management

Women carry the more burden of poor living environment than men. Women are the providers of basic services and infrastructure in the majority of human settlements especially among the poor. However, Schlyter and Johal (1990) noted that their contributions were unrecorded and their participation in the planning management of community services and infrastructure was unrecognized and hindered. Studies show the role of women in managing their households and the welfare projects and programmes within their communities. Moser (1996) noted that women's community managing activities were often critical in ensuring the provision and maintenance of basic services. They could have enormous impact on conservation of the environment because of their multiple roles (UNEP, 1995).

1.5.5 Conclusion

Outside the household, women are shown to be the main contributors to community self-help projects although they lack adequate time for perfect participation (Wijk-Sijbesma, 1985). National governments, donor countries and international development agencies consider women groups to be an important means of getting them to participate in the process of national development as well as to improve their local living standards (Hekken, 1976). Women are shown to be the heroines and victims of the tragedy of poverty, and even more than men, they suffer the consequences of failure (Moser, 1996). Therefore, they need to be more involved in community development activities. They tend to bear a disproportionate burden of disadvantage in the urban areas (Girradet, 1990) and in many circumstances those women who are the heads of household with children ('95 Preview, 1993).

The situation of women living in informal settlements has greatly been neglected thus overlooking their special needs and contributions (Tinker, 1976). Women live most of their lives in their neighbourhoods and even if they are employed outside their homes their workplace tend to be close to their houses while men travel far afield (Papaneck, 1976). This is because of women's role as child-care takers and managers of household. This is the reason as to why women are in charge of domestic sanitation and waste (UNFPA, 1991). They maintain latrines and supervise the hygienic maintenance by young children and assist and educate them in correct latrine use (Wijk-Sijbesma, 1985). Thus the contributions of women to urban settlements need to be recognized. Therefore, the problems faced by the ever-increasing numbers of the urban poor cannot be solved without the full participation of women.

1.5.5 Conclusion

The above literature shows the deteriorating provision of urban services especially those related to solid waste management and therefore environmental deterioration. Public authorities are shown to be weakly involved in solid waste management while they ignore the low-income informal settlements. On the other hand private companies are not attracted to the low-income areas because of the inability of the households here to pay for the services. High-income areas and some proportion of the middle income areas can depend on the private services because they are able to pay for these services at the commercial rates offered. It is not clear however about the fate of the other proportion of the middle income areas who do not receive public services and at the same time they are unable to pay for the private services. What is clearer is the complete neglect of the low-income informal

settlements. With proper support, community approach to the management of solid waste in informal settlements could be an alternative to solid waste problems in these areas.

This study is set to investigate into factors that have contributed to the mixed performance of community groups in the management of solid waste in informal settlements with a view to proposing more workable strategies for effective performance. This is hoped to show positive impacts both at the household and the community level.

1.6 Justification of the Study

Community participation has a significant role to play in the sustainable development especially of the low income groups in society. This is after the realisation that the problems of development among these people could be alleviated through the use of the local resources, which are the people, themselves. This also applies to one of the major challenges of urban settlements of the low-income people - solid waste management.

Community based solid waste management has been the only alternative way of dealing with the problem. This is because the local authorities cannot afford to provide this service to these settlements. At the same time the residents in these areas cannot afford to pay from the profit making private companies for the service. It is therefore important that the success of the community groups involved in solid waste management in these areas is scrutinized so as to provide the basis for improving the performance of the less successful groups in the same areas. This is the essence of this study.

Women have been recognised as the major vehicles of development and environmental

management, not only in the rural areas, but also in the urban areas. Their role in solid waste management in informal settlements should be examined in order to promote more of their participation for more success among the community groups.

The study focuses on Kibera, the largest informal settlement in Kenya and the second largest in Africa. This area provides a typical example of the conditions of the people and groups in informal settlements that influence the success of community based solid waste management.

The findings of this study could be used to alleviate the problem of poor performance of community based solid waste management in other similar settlements in Nairobi and other similar cities of developing countries. This is expected to eventually alleviate the environmental problems associated with uncollected waste being experienced in these settlements by the residents and which are affecting mostly the vulnerable groups of the community - women and children.

This study therefore focuses on the conditions that influence success of community groups in solid waste management, using the case study of Kibera, Nairobi. The role of women is examined and policy recommendations made on improving solid waste management through community participation in informal settlements.

1.7 The Conceptual Framework

This study examines solid waste management in informal settlements. Private companies are not active in this area because the residents cannot afford to pay for their services. On the other hand, inadequate financial resources, low managerial capacity and the inherent physical constraints in these settlements incapacitate the legal body supposed to provide the same

services. The only option left for the residents is to get involved directly in the management of their own waste in their residential areas (Figure 1:1)

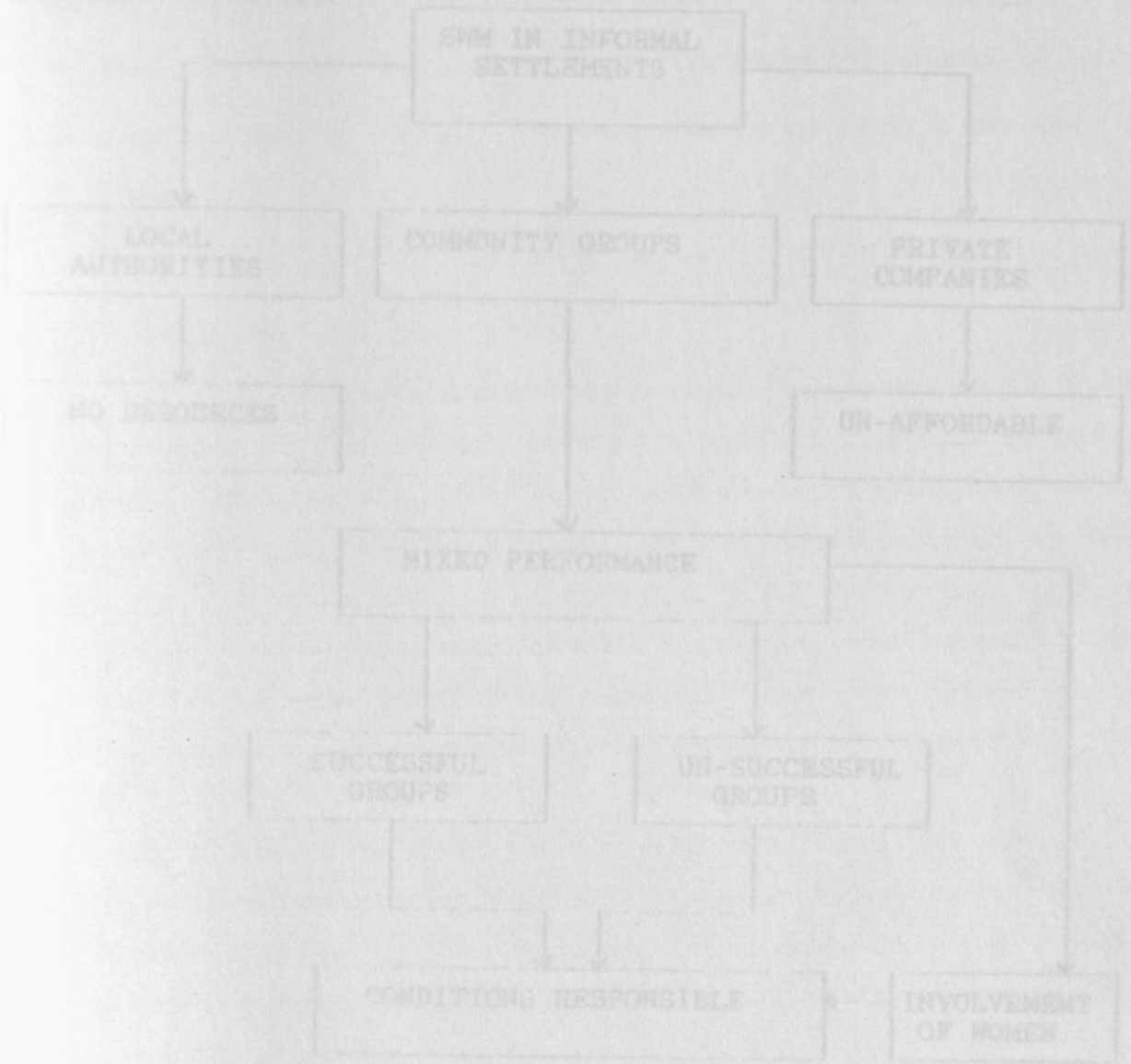
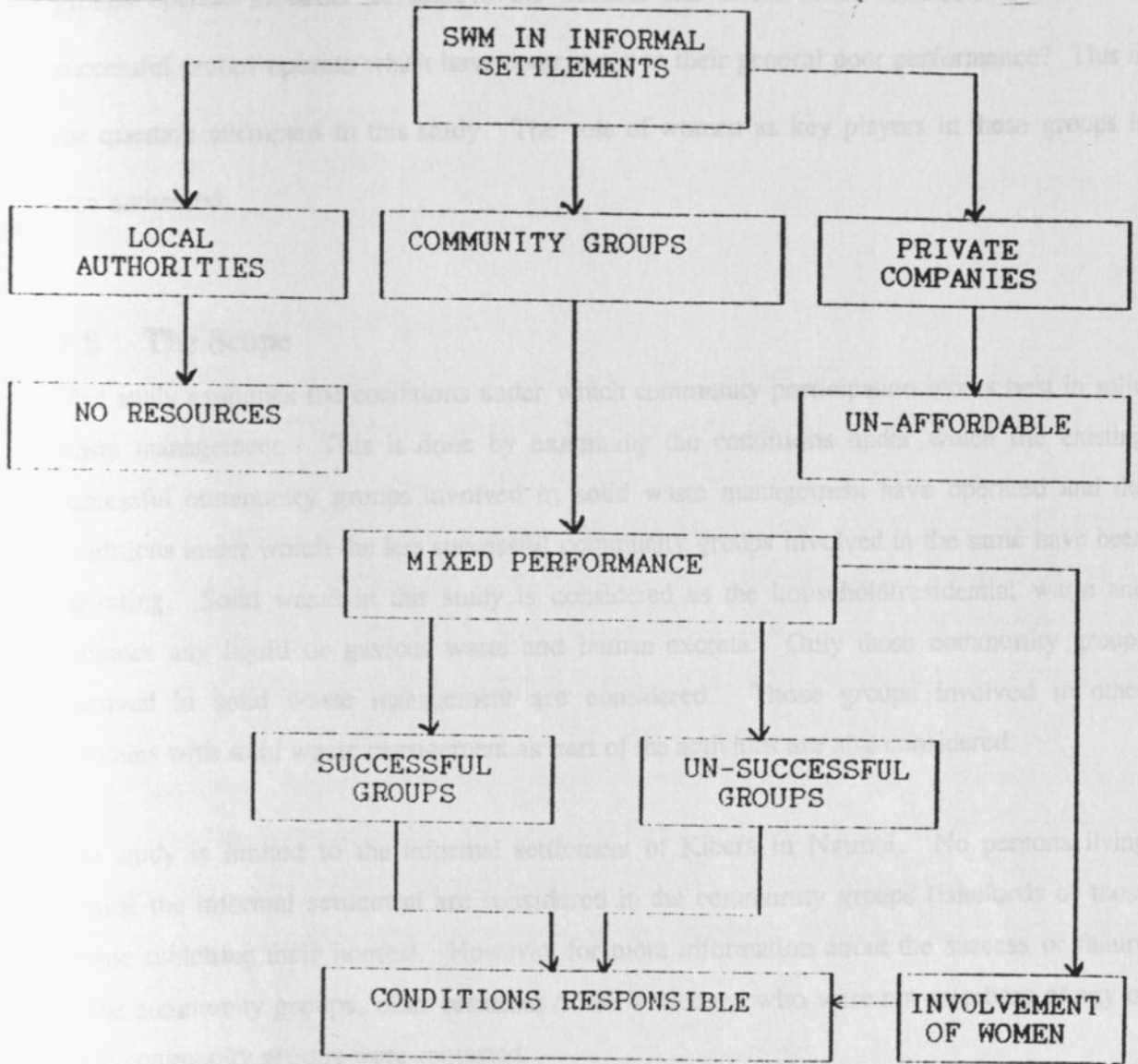


Fig 1:1 Solid Waste Management In Informal Settlements



Source: Author, 1998.

Some of the community groups involved in solid waste management in the informal settlements are more successful than others. The question is, under what conditions do these groups operate in order to achieve the success and under what conditions do the less successful groups operate which have contributed to their general poor performance? This is the question attempted in this study. The role of women as key players in these groups is also addressed.

1.8 The Scope

This study examines the conditions under which community participation works best in solid waste management. This is done by examining the conditions under which the existing successful community groups involved in solid waste management have operated and the conditions under which the less successful community groups involved in the same have been operating. Solid waste in this study is considered as the household/residential waste and excludes any liquid or gaseous waste and human excreta. Only those community groups involved in solid waste management are considered. Those groups involved in other activities with solid waste management as part of the activities are also considered.

The study is limited to the informal settlement of Kibera in Nairobi. No persons living outside the informal settlement are considered in the community groups (landlords or those people subletting their houses). However for more information about the success or failure of the community groups, other residents of the settlement who were not members of any of these community groups were contacted.

The community groups considered in this study covered the nine villages of Kibera. These groups include:

1. Usafi Na Maendeleo Group - Kianda
2. Kisumu Ndogo Afya Group
3. Laini Saba Afya Group
4. Lindi Community Health Workers

5. Umoja Usafi Na Maendeleo Group - Makina
6. Youth in Action Group
7. Silanga Community Health Workers
8. Gatwikira Sanitation Group
9. Pamoja Community Group - Soweto
10. Kichinjio Community Health Workers
11. Inter-Villages Youth Group
12. Mashimoni Community Health Workers

1.9 Organisation of the Study

This study has been organised into six chapters. This chapter has introduced the study in its various aspects. Chapter two presents the study area, Kibera, in relation to solid waste management activities. Chapter three presents the methodology used in this study with reference to data collection, presentation and analysis. Chapter four analyses and interprets the data collected in terms of the direct indicators and indirect factors of success among the community groups involved in solid waste management. The discussion of these issues leads to the identification of the most successful group and the least successful one. Thus the two case studies are presented with a view to showing the characteristics and therefore the conditions under which community groups are most successful and the conditions under which some are less successful. The fifth chapter presents the analysis of the role of women in community based solid waste management. Finally, chapter six presents the summary of the findings, the major policy recommendations, suggested areas of further research and conclusions.

Chapter Two

The Study Area

2.1 Position and Size

Kibera is situated in Nairobi, a province situated in the central part of Kenya (Figure 2.1). Kibera is located approximately seven Kilometres South West of the city centre of Nairobi. The valley of Mutuini River borders it to the South. This river is a tributary of Nairobi River, and Otiende Estate of Langata area. To the East there is the Nairobi Dam estate. To the North is the Royal Golf Course, Ngummo and Magiwa Estates. To the West there are the Ayany, Fort Jesus and Woodley estates. Kenya Rail-line traverses the area to form a very distinct boundary between the squatter settlement (New Kibera) and the other estates like Makina (Old Kibera) among others. It has an area of about 23,000 ha (Figure 2.2).

2.3.1 Physical Background

Kibera shares the same altitude with the city centre (1680 m). Climatically it lies in the highland zone and has an average annual rainfall of 855 mm distributed over the year in two rainy seasons. Much of the original vegetation has disappeared due to a long history of settlement. Black cotton soils covers over half the area while the rest has patches of red soil and exposed rocks, which dominate the area. These conditions influence the frequent flooding of the area, which carries waste, including human excreta down the residential area. This has been a major cause of cholera outbreaks in the area. There is need for effective solid waste management to alleviate the health problems in the area.

Fig 2.1: Position of Nairobi in Kenya

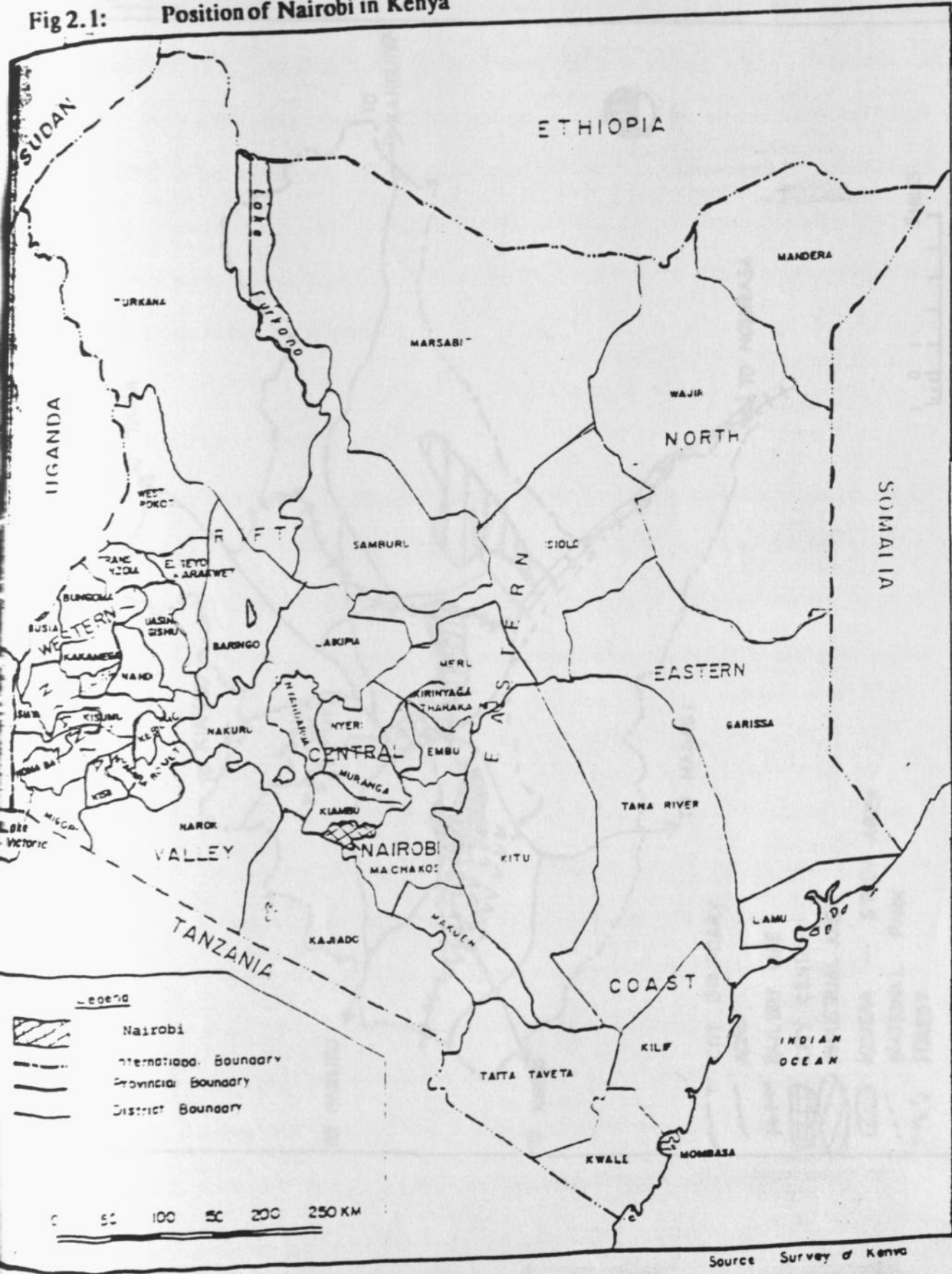
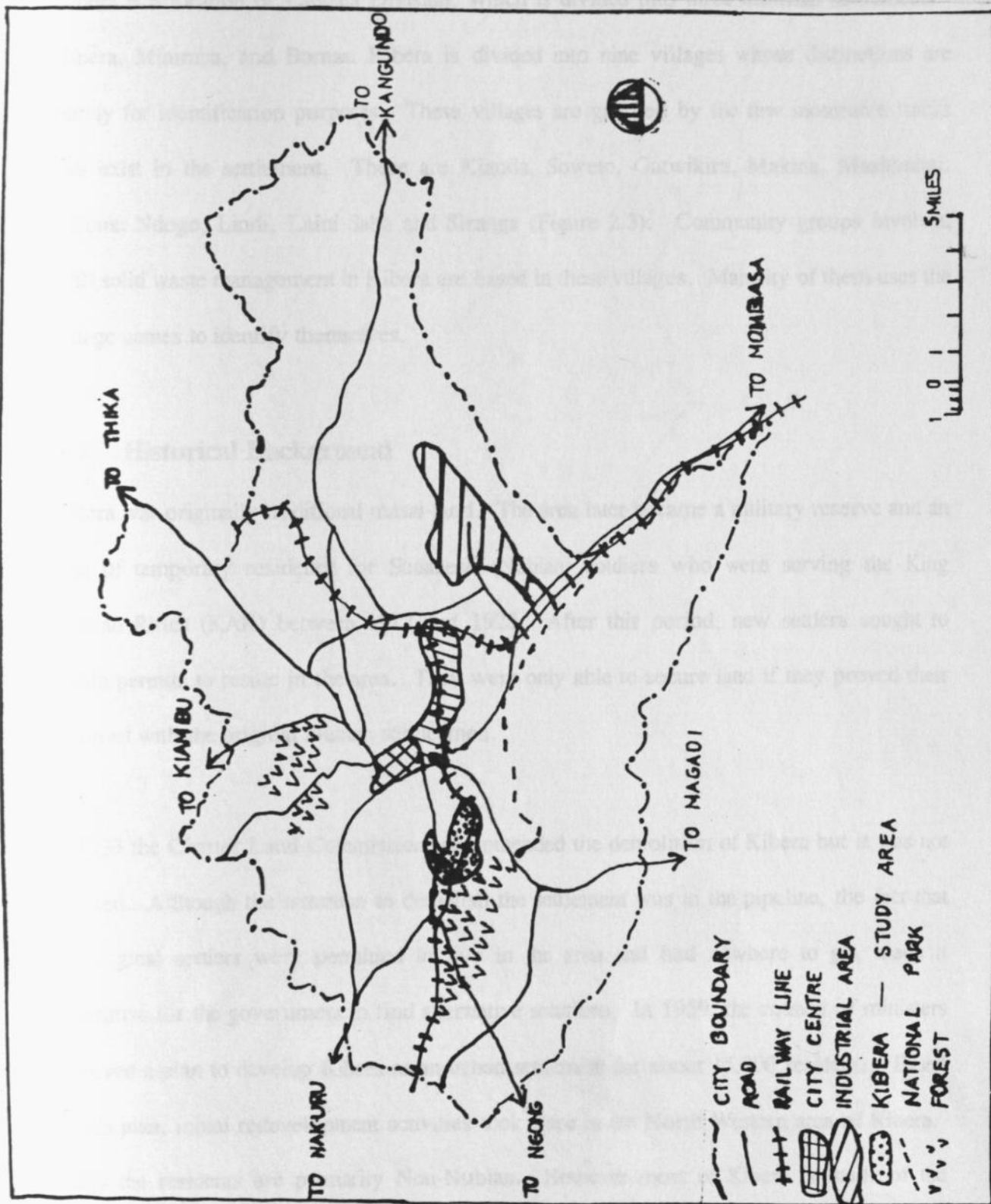


Fig 2.2: Position of Kibera in Nairobi



2.3 Administration

Figure 2.3: Kibera Villages

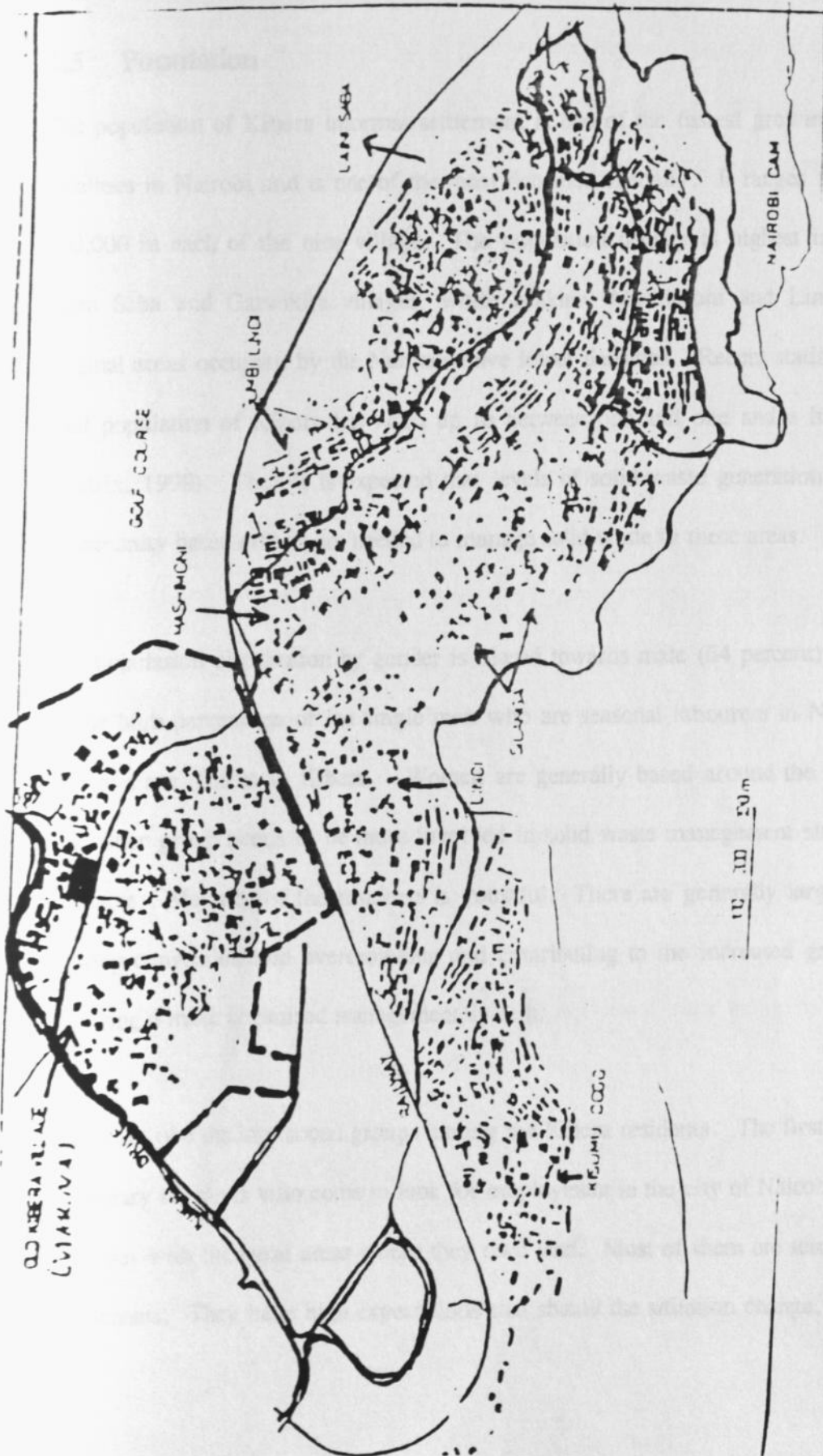
Kibera is a location of Langata Division, which is divided into three informal settlements - Kibera, Mitumba, and Bomas. Kibera is divided into nine villages whose distinctions are purely for identification purposes. These villages are guarded by the few motorable tracks that exist in the settlement. These are Kianda, Soweto, Gatwikira, Makina, Mashimoni, Kisumu Ndogo, Lindi, Laini Saba and Siranga (Figure 2.3). Community groups involved with solid waste management in Kibera are based in these villages. Majority of them uses the village names to identify themselves.

2.4 Historical Background

Kibera was originally traditional masai-land. The area later became a military reserve and an area of temporary residence for Sudanese (Nubian) soldiers who were serving the King African Rifles (KAR) between 1912 and 1928. After this period, new settlers sought to obtain permits to reside in the area. They were only able to secure land if they proved their relations with the original Nubian servicemen.

In 1933 the Charter Land Commission recommended the demolition of Kibera but it was not effected. Although the intention to demolish the settlement was in the pipeline, the fact that the original settlers were permitted to live in the area and had nowhere to go, made it imperative for the government to find alternative solutions. In 1959, the council of ministers approved a plan to develop Kibera as an urban settlement for about 15,000 residents. Based on this plan, initial redevelopment activities took place in the North Western area of Kibera. Today the residents are primarily Non-Nubian. However most of Kibera is made of the informal settlement and presents the most challenging environmental problems

Figure 2.3: Kibera Villages



especially with regard with solid waste management.

2.5 Population

The population of Kibera informal settlement is one of the fastest growing among the sub-localities in Nairobi and is one of the most densified spatially. It ranges from 20,000 up to 100,000 in each of the nine villages. The population density is highest in Kisumu Ndogo, Laini Saba and Gatwikira villages, while Makina, Mashimoni and Lindi which are the original areas occupied by the Nubians have lower densities. Recent statistics show that the total population of Kibera has risen up to between one and one and a half million people (Matrix, 1998). Thus it is expected that levels of solid waste generation have also risen. Community based efforts are needed to manage solid waste in these areas.

The population distribution by gender is biased towards male (64 percent) probably because of the high percentage of the single men who are seasonal labourers in Nairobi's industrial area and are tenants in Kibera. Women are generally based around the residential areas. The latter group needs to be more involved in solid waste management since they are more available. Majority of the residents is youthful. There are generally large household sizes causing congestion and overcrowding and contributing to the increased generation of waste requiring a more organised management system.

There are two distinct social groups among the Kibera residents. The first group consists of temporary residents who come to look for employment in the city of Nairobi. They therefore keep ties with the rural areas where they own land. Most of them are tenants and some are sub-tenants. They have high expectations that should the situation change, they would move

out of Kibera. However they remain here for long because the situation becomes worse with high rates of unemployment. The second group consists of permanent residents, including the original Nubians and the rural landless who have no rural home to go back to. The first subgroup consists of the landlords (usually Nubians and Kikuyus) and the others are tenants (rural landless). Most of them have lived in this area for a long time, some for a lifetime. This group has closer ties with the community. They are often involved in community groups and participate in activities to better their lives.

2.6 Social Background

The population of Kibera typically comes from mixed social backgrounds. The different ethnic groups represented in Kibera are many. The majority is the Nubians, Luhya, Luos, Kikuyus and Kalenjins.

By contrast to rural communities, this population has fragmented family and community bonds. In addition to precarious legal and physical conditions of habitation, there is a relatively short history of community life and high population mobility. These are the factors responsible for the general lack of cohesiveness in the urban communities. Social problems cannot therefore find solutions among the local community groups. This is also a major factor that affects the success of community groups in solid waste management. Most of the people have become individualistic and can only participate in those activities that directly benefits (especially financially) the individuals and their families.

2.7 Economic Background

A review of income data contained in various existing surveys in Nairobi indicate that the majority of the households in Kibera have a monthly income of less than Ksh. 2,500 (Geerts, 1997). This amount is far below the estimated median household income in Nairobi as a whole which was Ksh 3,000 per month in 1991 (Housing Indicators World Bank). Action Aid in 1990 estimated that the minimum expenditure needed to feed and house a household of five members was at Ksh. 980. This figure has increased considerably given the devaluation of the Kenya shilling and therefore the steep rise in the cost of basic necessities. Such residents can hardly afford to pay for the services such as solid waste collection among others. They are therefore expected to be directly involved in solid waste management.

Informal retailing (hawking) is an important source of income for Kibera residents. Most of them trade in perishable goods such as vegetables and fruits, as well as other commodities like sweets, cigarettes, charcoal, cooked foodstuffs, soft drinks and second hand clothes (Mitumba). Furthermore local brews are sold between the houses and along the paths. Such an environment is prone to too much waste from these activities and needs more attention from the users of the environment themselves. This could be done through community based efforts.

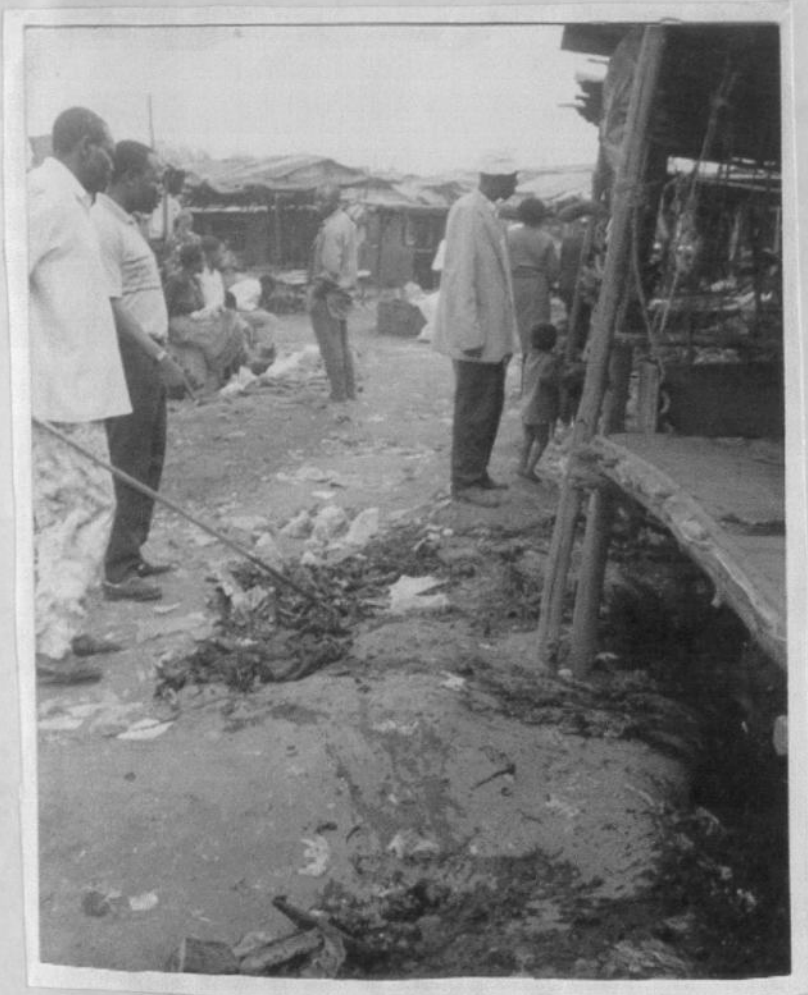


Plate 1: Informal Food Selling in an Unhealthy Environment in Kibera

Education levels are generally low for the older population but high for the younger generation, usually school leavers looking for employment. Such people need to be involved in activities to alleviate the environmental problems in the residential area such as solid waste management. These activities could also be carried out along with income generating activities, which could earn the group members income.

the provision of such services as waste collection to the informal settlement. This has contributed to the general poor performance of the community groups involved in solid waste management in the area. Furthermore, most of these activities are generally the transfer of waste from one section of

2.8 Infrastructure and Environment

Kibera informal settlement is not formally controlled and most of the dwelling units are built on illegally occupied land. The dwelling units are located on land unsuitable for conventional residential, commercial and industrial development. They lack minimal infrastructure and community facilities.

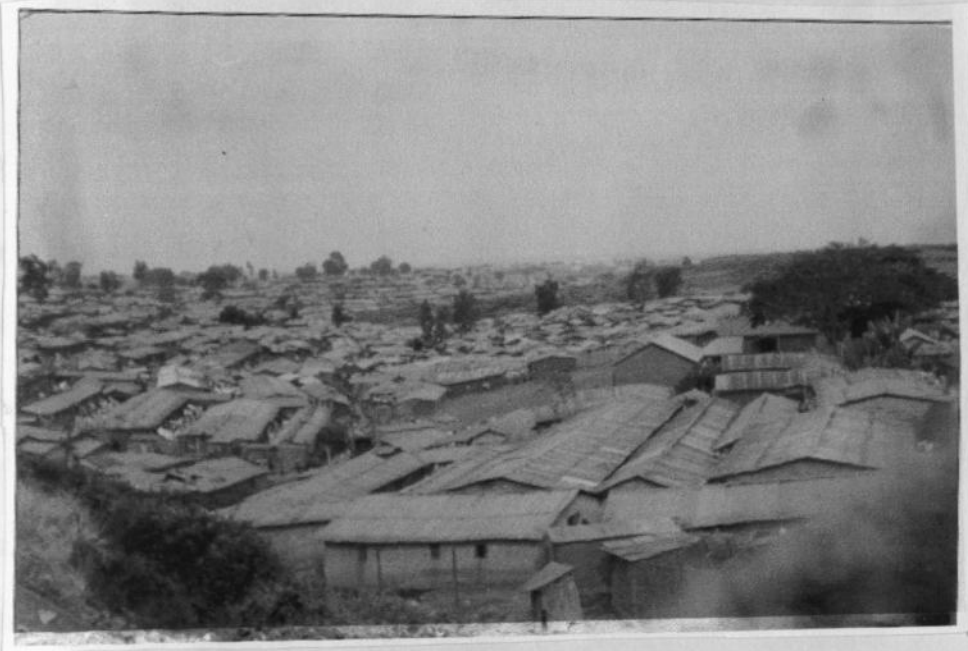


Plate 2: Part of Kibera Informal Settlement

This is the reason why NCC does not consider seriously the provision of such services as waste collection in the informal settlement. This has contributed to the general poor performance of the community groups involved in solid waste management in the area. Furthermore most of these activities are generally the transfer of waste from one section of

the residential area to another.

There are inadequate services such as water supply, sanitation, drainage, and garbage collection. These areas are therefore marked with open sewage, stench from garbage, scattered litter every where, human faeces and narrow and dusty mud paths. The latrines are overflowing and there is lack of bathing places. These problems require not only the attention of the government and the local authority but also the involvement of the communities living in these areas.

2.9 Waste Disposal and Drainage

The physical environment in Kibera is mostly found with different forms of solid waste. All over the place mixed organic waste resulting from the processing and consumption of mainly food, inorganic waste such as plastics, metals and paper. The tendency of mixing the organic and the inorganic waste that is later thrown haphazardly increases the degree of solid waste problem in the area. There is little form of garbage collection by the community groups and individuals around their houses. The most common practice is disorganised disposal consisting of dumping or burning in front of the houses and gullies, drainage trenches pits or the nearby rivers. Inadequate garbage disposal is the prime cause of the clogging in drainage canals.

There are no regular sewage disposal services in Kibera. NCC sometimes offers transport facilities of garbage along the main road (Kibera Drive). There are no private waste collection services in Kibera. This is because, generally, the people cannot afford to pay for them. The very few who can afford have a negative attitude towards paying for the services.



Plate 3: Dirty Drainage: After an Attempted Clean-Up in Kibera

They argue that it is the responsibility of NCC to provide collection services to residential areas.

Most of the plots have detached pit latrines, which serve between 200 and 300 individuals. The over use of the latrine and lack of regular cleaning poses a serious sanitation problem. Most landlords do not provide toilets for their tenants. Refuse disposal services are not available in Kibera and the drainage in the area is very poor in cases where it exists. During

the rainy seasons, floods occur especially in low-lying grounds and over the pit latrines and the solid waste dumping grounds. This promotes health risks within the area.

There is no sewer system in Kibera. All the residents have to do with the makeshift latrines or the wrap and dispose method of excreta disposal. Children openly defecate the surrounding even during the day.

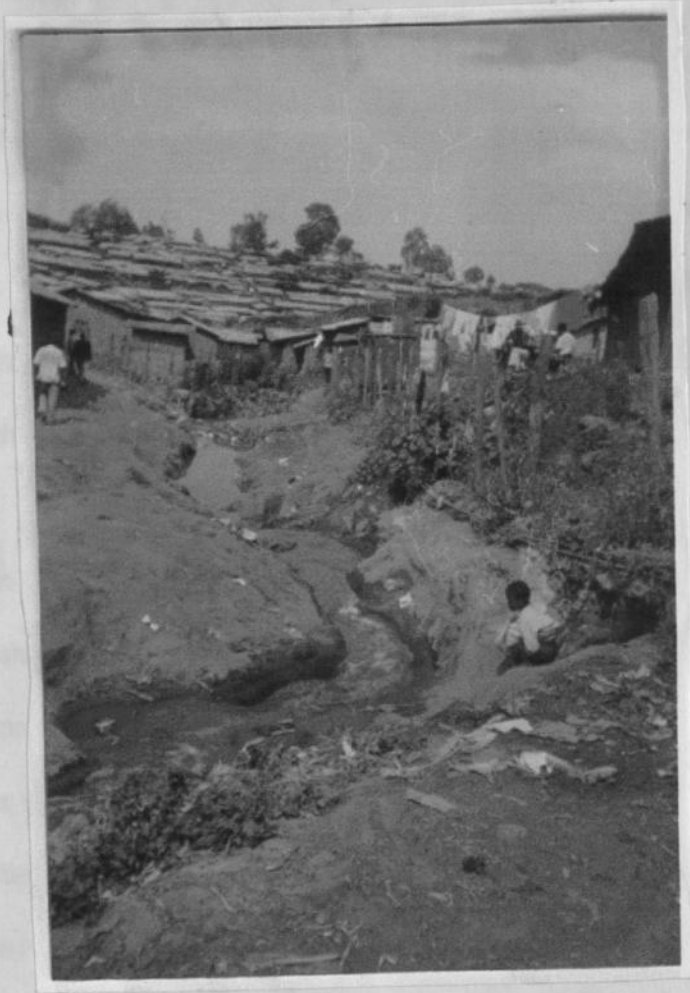


Plate 4: Open Defecation

Waste is thrown wherever there is space, in the open trenches and along the paths. This presents serious problems in community based solid waste management because the people are unwilling to be involved in the filthy environment. This could be one of the reasons as to why most of the residents are not willing to be involved in solid waste management activities in the area.

2.10 Household Level Waste Management

At the household level, solid waste management is inadequate among the residents. Most of the residents simply dump the waste on the waste dumps where the neighbours throw the waste. Sometimes the residents burn the waste in this area during the dry weather. Other times the waste is left to accumulate and rot in the dumping areas. This causes a health hazard to the nearby households and especially to the children playing in the open spaces, which are used as the dumping areas.

The open drains in the residential area are clogged up with solid waste. These are also common wastes dumping grounds by the residents. Very few of the residents have dustbins for storage of waste within the house for a future disposal. Thus waste disposal in these inappropriate places is done on a daily basis and sometimes as soon as the waste is generated. This includes human excreta especially from the children who live in the plots where the landlords do not provide for the pit latrines.

The community groups in the area only organise for clean ups by sweeping the areas in particular days of the week. In some cases there are no such activities because the residents in such places are unwilling to co-operate and appreciate the activities of the residents and

therefore the groups had stopped working in these areas. Where the members of such groups are located, that is, in the villages, the areas next to their houses are very clean but a short distance from here, is a rotting dump of waste.

Why there is a general reluctance of the residents to keep their residential areas clean immediately after their houses is their attitude towards this responsibility. This is perceived mainly as the responsibility of NCC, landlords or any other group but not the individual household or the community.



Plate 5: A Clean Inside of A House in Kibera: Interview with one of the residents



Plate 6: Garbage Scattered around Housing Units in Kibera

Some of the problems encountered by the households in disposing off their waste include, prohibition of dumping in some areas especially next to the railway line, long distance to the dumping areas, and difficulty in burning the waste during the rainy season.



Plate 7: Communal DumpSite Next to the Railway-line

2.11 Health Facilities

Health services are inadequate and this area has the lowest provision of public health facilities. The services are provided by a number of NGOs, private clinics and informal health providers such as herbalists and traditional doctors.

The nearest public health facilities are far from the informal settlement and they include: a Maternal Child Health and Family Planning Centre at the Chief's camp (which was built through an harambee fund-raising by the local community), Kenyatta National Hospital, Woodley Clinic and Ngong Road Dispensary. This situation has contributed to the deteriorating health conditions especially among young children. During epidemics, caused by the poor environmental conditions, NCC usually step in to provide curative and preventive treatment. A preventive method would be to involve the local residents to clean up the environment in order to prevent the occurrence of environment-related diseases.

2.12 Housing

Most of the housing units are poor. The majority of the houses are made of mud and wattle and corrugated iron sheets. Others have been plastered. These are usually arranged in rows consisting of single room structures occupied by a single household of up to ten members. This portrays a situation of overcrowding and lack of privacy among and between households.

The rents of these poor structures are high. Although most of the rooms are valued at Ksh. 500 or less, a significant proportion of the rooms were going at more than this amount. The highest rent recorded is Ksh. 1500 per room. This is quite un-affordable for most of the residents who earn small irregular incomes.

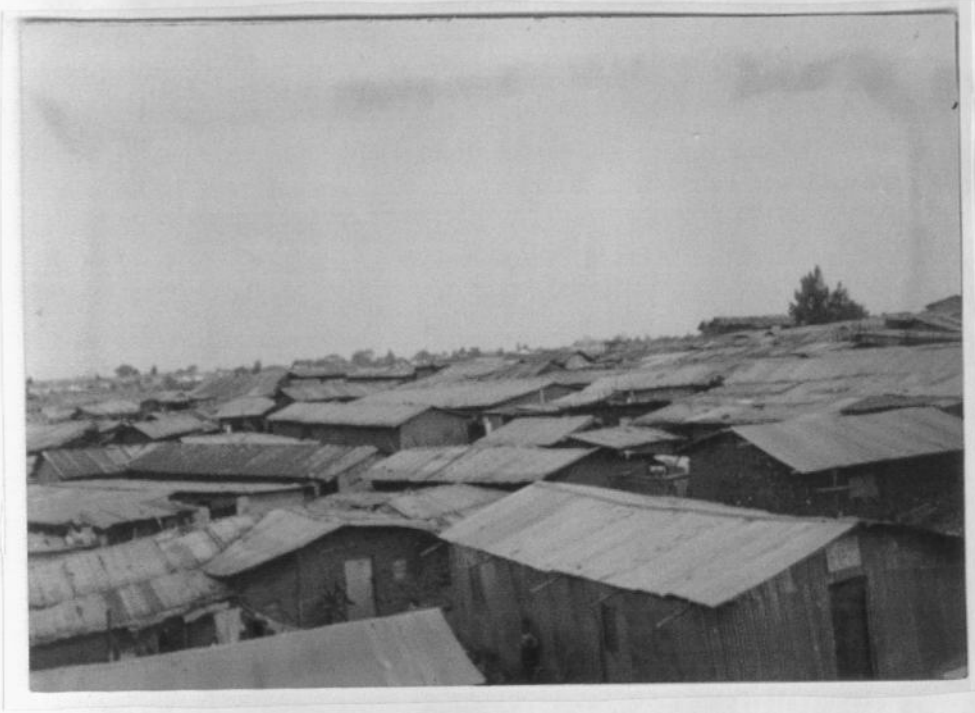


Plate 8: Poor and Overcrowded Houses in Kibera

Overcrowding of these structures makes solid waste management very difficult because of the inaccessibility of the residential area to transport the waste collected out of these areas.

2.13 Roads

The residential areas are crowded with people and housing structures. Since they are unplanned, only narrow paths are let to serve the movement and transport needs within the settlement. Garbage and other solid waste block some of these narrow paths. Bringing garbage collection and exhauster and other services into the area is difficult due to

undeveloped access road system in the area. This has resulted to deteriorating environment.

The health consequences are usually more pronounced among the women and children.

Research Methodology

2.14 Conclusion

The above shows the major characteristics of Kibera informal settlement where the study is based. It is clear that solid waste management has been made difficult by the conditions of the area. The most appropriate framework of dealing with solid waste management is through community participation. Residents ought to perceive this as their own responsibility otherwise they are to suffer the consequences of unsanitary living conditions caused by lack of proper waste management. This is especially so among the women and children living in these areas. The former group needs to be more involved in community based solid waste management activities.

Chapter Three

Research Methodology

3.1 Data Collection Procedures

3.1.1 Primary Data Sources

Field surveys were carried out to collect primary data. Standardized questionnaires were administered on samples of members of community groups involved in solid waste management (Appendix 1) and non-members of the same (Appendix 2) in Kibera (the study area). Other questionnaires were administered to social workers representing the various organisations working in the settlement among the community groups (Appendix 3). The community group leaders, the local administrators and local authority representatives in the Department of Environment of NCC were also interviewed (Appendix 4,5 and 6). Focus group discussions were also held using a guided questions (Appendix 7). Observations in the study area and during the various groups meetings attended were recorded in the field note book and photographs were taken. This type of information was used to back up the other types of data collected.

3.1.2 Secondary Data Sources

Existing literature on community based solid waste management and related issues was reviewed from the various libraries accessible. These include university libraries, World Bank Library, UNEP library and Nation Newspapers library. Both published and unpublished information was identified. This information was used as background information and to identify the existing gaps on solid waste management, which have been

pursued in this study.

3.2 Sampling Techniques

3.2.1 Sampling Design

The study area (Kibera) consists of nine villages, which were covered, in this study. At least ten households per village were targeted for interview. Out of the ten, at least five were to be group members of those groups involved in solid waste management and the other five from those people who did not belong to any of the community groups involved in solid waste management.

3.2.2 Sampling Methods

3.2.2.1 Group Members

The community groups in Kibera involved in solid waste management were obtained from the Social Development Officer (SDO) and the area chief for those which were registered and unregistered respectively. A list was compiled against the villages represented by each. At least one group was selected randomly from each of the villages. From those villages which had a very large number of groups, an extra group was also selected randomly. A total number of 12 groups were sampled. The lists of the members in these community groups were also obtained from the same sources and random samples were obtained from these lists. Five members represented each group, to make a total sample of 60.

3.2.2.2 Non-Group Members

A systematic random sampling method was used to select five households from each of the nine villages. The first household entered at the border of each of the villages from the

"main road" was considered in the study sample. The next tenth household (in terms of house structure which are usually rooms) was included in the sample until five households were obtained from each of the nine villages.

3.3 Problems Experienced in Data Collection

The targeted sample size of 105 households (45 non-group members and 60 group members) was not reached because of the poor response among the group members and the limited time. Some of the members were not willing to give any information concerning their groups. Most of these members were from those groups which had problems especially in regard to mismanagement of group finances and the members feared to be discovered by their leaders that they could have given such information. However the next member in the list was selected and interviewed instead.

It was also difficult to obtain information from most of the community group leaders about their groups. Due to the general poor performance of some of these groups, most of their leaders were not available for interview probably because they were responsible for the situations in their groups. However, in the groups that finally did not have their leaders to respond to the questionnaires, the information was obtained from the members who responded and from the NGOs working with the groups.

Other than the residents of Kibera (both the group and non-group members), other respondents were difficult to get. These included the officers in the various organisations working among the community groups in Kibera especially those concerned with solid waste management. After several attempts to make appointments with some in vain, their recently

written reports were used to obtain some of the information needed for this study. This was the case because some of the organisations, for example UNICEF and World Bank were not working directly with the community groups. Most of the relevant information was obtained from the NGOs that were directly involved in the activities of community groups in the study area.

It was notably difficult to get information from the local administrators because of their limited time and their general ignorance on solid waste management among community groups. These groups of people were only well informed about the income generating activities being carried out among these groups. Solid waste management activities, in this case, were not considered as development activities. The informal leaders in each of the villages were relied upon to give some of the relevant information.

3.4 Data Presentation

Descriptive methods were used to present the data obtained in this study. Percentages and means were used to present the various characteristics of community groups and the individuals interviewed during the study, obtained using SPSS computer programme.

Various responses from the residents interviewed were also fed into the computer to show their frequencies, which helped to draw the various conclusions on the same. Tables, maps and flow diagrams were used. Also photographs were presented in the appropriate sections of the study.

3.5 Analytical Framework

Notably, it is generally difficult to measure success, in this case, of community groups involved in solid waste management. Therefore the major questions, which were attempted in data analysis, were:

1. How is success among community groups involved in solid waste management measured?
2. How do you explain this success?

3.5.1 Classification

The performance of community groups was considered with regard to types, frequency and consistency in solid waste management and the period of operation in the same.

Classification of the various community groups in the sample was made according to the indicators of success shown below. Scores were allocated to each group and the various groups classified according to their performance. Organisational and management factors were considered as directly influencing performance of these groups. Scores for each group, according to these factors were given and calculated as a percentage. The socio-economic characteristics of the groups were then examined as the factors that influence the management and organisation of the community groups.

3.5.2 Explanation

Furthermore, information was obtained from alternative sources on the various explanations given for the success of the more successful groups and for the poor performance of the less successful ones. Information on the explanation for success among community groups involved in solid waste management in the informal settlement was obtained for members of

community groups undertaking solid waste management activities. Other people in the community who were not members of these groups were also contacted for the same information. Local administrators, NGOs and other development agencies working within Kibera and NCC representatives also gave their views on the same.

3.5.3 Case Studies

To identify the definitive characteristics of success and failure, case studies of the most successful group and the least successful group were made. These groups were studied in depth and their characteristics presented to show the conditions under which one was more successful and the other less successful. The strengths of the more successful group and the weaknesses of the less successful group were emphasized. Conclusions were made on the same.

The role of women was discussed in the light of the findings of this study. Information from all the sources of data used in this study was used in this case.

Organisational Indicators of Success

Membership and Success among Community Groups

A number of factors in every group was obtained. Success was given to each of the groups with more members and those with fewer members, and

Chapter Four

Factors of Success in Solid Waste Management among Community Groups in Kibera

4.1 Introduction

This study examines the extent to which, organisational, management, and socio-economic factors influence the performance of community groups in solid waste management within informal settlements. Organisational indicators of success considered include, membership, registration, frequency of group meetings, networking, resolution of group problems and the type of strategies for attracting more members to the group. Management indicators here include, source of solid waste management initiative, number of group activities, presence of income generating activities, sources of finance, attitudes towards the major group need, and attitude towards the responsibility of solid waste management in the area. Performance indicators include, type of solid waste management activities, frequency of solid waste management activities, consistency in the same and period of operation. The socio-economic characteristics include age, marital status, household size, education level, occupation, income level, duration of residence and the proportion of women among the group members. This leads to the identification of groups: those that have been successful and those that have been less successful. Detailed case studies of two groups, the most and the least successful, are presented from the community groups in Kibera.

4.2 Organisational Indicators of Success

4.2.1 Membership and Success among Community Groups

1. The number of members in every group was obtained. Scores were given in such a way that the groups with more members scored the most and those with fewer members had

the least scores. The groups with less than 30 members scored 1, the ones with 30 to 39 members scored 2. Those groups with 40 to 50 members had 3 scores and the groups with more than 50 members scored 4. This information can be seen in Table 4.1.

Figure 4.2: Frequencies of Community Groups in Kibera According to Membership

Table 4.1: Membership among Community Groups in Kibera

Group	No. of Members	Score
Usafi - Kianda	160	4
Kisumu N.A.G.	20	1
Laini S.A.G.	200	4
Lindi CHWs	20	1
Umoja - Makina	40	3
Youth in Action	37	2
Silanga CHWs	36	2
Gatwikira S.G	20	1
Pamoja - Soweto	25	1
Kichinjio CHWs	45	3
Inter-villages	36	2
Mashimoni CHWs	20	1

Source: Field Survey, 1998.

Laini Saba had the largest number (200) of members compared to the other groups. This group is likely to handle more waste and cover a larger area than other groups, holding the other factors of efficiency constant. Kisumu Ndogo Afya Group, Lindi Community Health Workers, Gatwikira Sanitation Group, Pamoja - Soweto and Mashimoni Community Workers had the least number of members. These groups are therefore likely to handle less waste and cover less area. The overall average membership among the community groups in Kibera is

55.

Registration

(3) assess the registration status of community groups involved in solid waste

engagement in Kibera. Those that are registered scored 1 and those unregistered scored 0.

Table 4.2 shows the frequencies of the community groups according to membership.

Table 4.2: Frequencies of Community Groups in Kibera According to Membership

Category (Members)	Frequency	Percentage
< 30	5	42%
30 - 50	5	42%
> 50	2	16%
Total	12	100%

Source: Field Survey, 1998.

Table 4.18 indicates that only 16 percent of the community groups in Kibera have more than 50 members. The majority of the groups (84 percent) have less than 50 members. Although small groups could be said to be manageable, in terms of solid waste management activities, larger groups are likely to perform better in terms of the manual work and large space involved. This is because "many hands make light work".

Membership in community groups involved in solid waste management is important because of the amount of work involved. It is likely that the groups with more members are able to cover larger areas in solid waste management and handle more waste and are therefore likely to succeed in terms of the amount of work done.

4.2.2 Registration

Table 4.3 shows the registration status of community groups involved in solid waste

management in Kibera. Those that are registered scored 1 and those unregistered scored 0.

Table 4.3: Registration Status of Community Groups in Kibera

Group	Registration (Yes/No)	Score
Usafi – Kianda	Yes	1
Kisumu N.A.G.	No	0
Laini S.A.G.	No	0
Lindi CHWs	No	0
Umoja – Makina	No	0
Youth in Action	No	0
Silanga CHWs	Yes	1
Gatwikira S.G.	No	0
Pamoja – Soweto	No	0
Kichinjio CHWs	No	0
Inter-villages	No	0
Mashimoni	No	0

Source: Field Survey, 1998.

The only groups that are registered are Kianda and Silanga.

Table 4.4 shows the frequencies of community groups in Kibera according to their registration status.

Table 4.4: Frequencies of Community Groups in Kibera According to Registration Status

Category (Yes/No)	Frequency	Percentage
Yes	2	17%
No	10	83%
Total	12	100%

Source: Field Survey, 1998.

Generally it is indicated that majority (83 percent) of the community groups carrying out solid waste management in Kibera are not registered. Only 17 percent of the groups are registered.

It is expected that group registration influences the commitment of the group members to the stated objectives of its registration. Such a registered group is also able to network easily with other organisations and groups and which is therefore likely to improve such a group's performance. Thus the unregistered group were therefore considered to be less likely to perform well in solid waste management activities than the unregistered ones.

4.2.3 Frequency of Group Meetings

According to the frequency of meetings, these were given scores from 4 to 1 respectively.

Table 4.5 shows this information.

4.6.1 Frequencies of Community Groups According to Frequencies of Meetings

Table 4.5: Frequency of Group Meetings among Community Groups in Kibera

Group	Frequency of Meeting	Score
Usafi - Kianda	Weekly	4
Kisumu N.A.G.	Weekly	4
Laini S.A.G.	Weekly	4
Lindi CHWs	Weekly	4
Umoja - Makina	Monthly	2
Youth in Action	Fortnightly	3
Silanga CHWs	Weekly	4
Gatwikira S.G.	Weekly	4
Pamoja - Soweto	Weekly	4
Kichinjio CHWs	Fortnightly	2
Inter-villages	When Necessary	1
Mashimoni	Weekly	4

Source: Field Survey, 1998.

The groups, which meet more regularly, do so once per week. Inter-villages Youth Group was found to succeed in solid waste management because the members meet whenever it is necessary. This was found to be very rare.

Table 4.6 shows the frequencies of community groups according to their frequency of meetings.

Table 4.6: Frequencies of Community Groups According to Frequencies of Meetings

Category (Frequency of Meetings)	Frequency	Percentage
Weekly	8	67%
Fortnightly	2	17%
Monthly	1	8%
When Necessary	1	8%
Total	12	100%

Source: Field Survey, 1998.

Majority (67 percent) of the groups meet weekly, usually after the weekly clean ups.

Group meetings are considered important to any group. This is because this is the time when the members can review their progress and discuss the problems of the group. Generally, groups that meet more regularly are expected to succeed in any of their activities, including solid waste management, than those that meet less regularly. Most community groups in Kibera meet weekly, fortnightly, monthly and whenever necessary.

4.2.4 Networking

Those groups that are working with more than 5 groups scored 3. The groups which were working with 5 and more than 3 groups scored 2. Those groups with three or less working groups scored 1. Table 4.7 shows the number of other groups that network with each group.

Table 4.7: Networking Among Community Groups in Kibera

Group	No. of Groups Involved	Score
Usafi - Kianda	7	3
Kisumu N.A.G.	2	1
Laini S.A.G.	3	1
Lindi CHWs	5	2
Umoja - Makina	7	3
Youth in Action	2	1
Silanga CHWs	3	1
Gatwikira S. G.	2	1
Pamoja - Soweto	3	1
Kichinjio CHWs	5	2
Inter-villages	4	2
Mashimoni CHWs	4	2

Source: Field Survey, 1998.

All the groups considered interact with other groups. Usafi - Kianda and Umoja - Makina

Groups work with seven other groups and therefore are more likely to be sustainable.

Kisumu Ndogo Afya Group, Youth in Action and Gatwikira Sanitation Group interact with only two other groups.

Table 4.8 shows the frequencies of the groups according to the number of interaction groups or organisations.

Table 4.8: Frequencies of Community Groups According to Number of Interaction Groups

Category (No. of Groups)	Frequency	Percentage
< 4	6	50%
4 - 5	4	33%
> 5	2	17%
Total	12	100%

Source: Field Survey, 1998.

Half (50 percent) of the groups interact with less than 4 other groups. Only 17 percent of the groups interact with more than 5 other groups. Networking should therefore be encouraged among the community groups in order for them to improve their activities.

Interaction of community groups with other groups or organisations is considered important as this expose the groups to more ideas and motivation to enable them carry their activities more effectively. This is true even for those groups involved in solid waste management.

4.2.5 Resolving Problems

Groups were divided into 3 categories. Those who depended on outsiders, partly from within the group, and purely from within. These groups were given the scores 0, 1, and 3 respectively. Table 4.9 shows how the groups indicated their way of solving problems.

Table 4.9: Resolving Problems among Community Groups in Kibera

Group	Resolving Problems	Score
Usafi - Kianda	Partly within	1
Kisumu N.A.G.	Partly within	1
Laini S.A.G.	Purely within	2
Lindi CHWs	Partly within	1
Umoja - Makina	Partly within	1
Youth in Action	Purely within	2
Silanga CHWs	Partly within	1
Gatwikira S.G.	Partly within	1
Pamoja - Soweto	From Outside	0
Kichinjio CHWs	From Outside	0
Inter-villages	Purely within	2
Mashimoni CHWs	Partly within	1

Source: Field Survey, 1998.

Three of the groups - Laini Saba, Youth in Action and Inter-villages were found to depend purely from within the groups to solve their own group problems. Pamoja, and Kichinjio depend purely on external help to resolve their conflicts. The former category of groups is more united than the latter category and therefore likely to succeed in solid waste management activities.

Table 4.10 shows the frequencies of the groups according to their ways of solving problems.

Table 4.10: Frequencies of Community Groups In Kibera According to Their Ways of Problem Resolution

Category (Ways of Solving Problems)	Frequency	Percentage
Purely Within	3	25%
Largely Within	6	50%
Partly Within	1	8%
External	2	17%
Total	12	100%

Source: Field Survey, 1998.

Only a quarter (25 percent) of the groups seek problem resolution purely within the group. A significant percentage (17 percent) depends on outside intervention in resolving group problems. Groups should be encouraged to resolve their problems among the members.

The sustainability of the groups involved in solid waste management depends on how much the group members are able to solve their own problems. This means that the groups should be capable of resolving their internal conflicts through group problem resolution. This is a sign of unity, which is likely to positively influence the success of groups in solid waste management.

4.2.6 Strategies of Attracting More Members

The groups that had employed strategies that influenced the effectiveness of the groups operations in solid waste management around the villages are considered likely to be more successful and scored 3. Others stated that they would attract more members by starting to pay the existing members. This is unsustainable and the groups scored 0. Other groups stated that they would appeal the members to be more united or include more activities in the

group. These scored 2 and 1 respectively. This information is shown in Table 4.11.

Table 4.11: Strategies of Attracting More Members among Community Groups in Kibera

Group	Strategies Attracting more members	Score
Usafi - Kianda	Unity Appeal	2
Kisumu N. A.G.	Unity Appeal	2
Laini S.A.G.	Unity Appeal	2
Lindi CHWs	Cleanliness of Area	3
Umoja - Makina	Payment of Members	0
Youth in Action	Cleanliness of Area	3
Silanga CHWs	Payment of Members	0
Gatwikira S.G.	Payment of Members	0
Pamoja - Soweto	Payment of Members	0
Kichinjio CHWs	Unity Appeal	3
Inter-villages	Add more activities	1
Mashimoni	Cleanliness of Area	3

Source: Field Survey, 1998.

Groups, such as Umoja - Makina, Silanga Community Health Workers, Gatwikira Sanitation Group and Pamoja - Soweto find that paying their members would attract others. This is less likely to be sustainable. Others, Lindi Community Health Workers, Youth in Action and Mashimoni Community Health Workers are positive about improving the cleanliness of their areas in order to attract more members. This strategy is appropriate and sustainable in terms of improved solid waste management activities.

Table 4.12 shows the frequencies of community groups according to their strategies of attracting more members to each group.

Table 4.12: Frequencies of Community Groups in Kibera According to Strategies of Attracting More Members

Category (Strategies)	Frequency	Percentage
Cleanliness of Area	3	25%
Unity Appeal	4	33%
Add More Activities	1	8%
Payment of Members	4	33%
Total	12	100%

Source: Field Survey, 1998.

A third (33 percent) of the groups are more likely to succeed in that they were interested in improving their performance through making their areas cleaner which is part of more effective solid waste management. However the same percentage (37 percent) of the groups would pay their members in order to attract others into their groups. This is considered inappropriate and unsustainable in the case of solid waste management activities.

In Kibera, groups that are involved in solid waste management consist of relatively small membership compared to the population of the informal settlement. There is therefore the need to attract more members in these groups for them to be more effective.

The strategies that were used by each of the groups to attract more members into the groups

were examined and considered in terms of sustainability of the new comers into the groups.

The more sustainable strategies were considered as those that involved the effectiveness of group operations in solid waste management around the villages.

4.2.7 Classification According to Organisational Indicators of Success

The community groups were classified and therefore ranked according to organisational indicators of success discussed above. The scores are shown in Table 4.13. Those groups that scored 70 percent or more were classified as very successful. Those that scored 60 percent to 69 percent were classified as successful. Those groups that scored between 50 percent and 59 percent were classified as medium and those groups that scores less than 50 percent were classified as not successful.

Group Name	Number of Groups	Percentage Score	Classification
Ujan Kanda	15	88%	Very Successful
Ujan S.A.G.	13	76%	Very Successful
Lindi	11	65%	Successful
Kichigo	10	59%	Medium
Ujan -	8	53%	Medium
Silanga CHWs	9	53%	Medium
Kizimu N.A.G.	8	47%	Not Successful
Inter-villages	8	47%	Not Successful
Garwira S.G.	7	41%	Not Successful
Pitsoja Eweto	6	33%	Not Successful

Field Survey, 1998.

Management Indicators of Success

Solid Waste Management Initiative

which undertake solid waste management purely out of members own initiative while those that rely on purely external influence scored only 7. There is an

Table 4.13: Classification of Community Groups in Kibera According to Organisational Indicators of Success

Rank	Group	Total Scores	% Scores	Class
1	Usafi - Kianda	15	88%	Very Successful
2	Laini S.A.G	13	76%	Very Successful
3	Lindi CHWs	11	65%	Successful
4	Youth in Action	11	65%	Successful
5	Mashimoni CHWs	11	65%	Successful
6	Kichinjio CHWs	10	59%	Medium
7	Umoja - Makina	9	53%	Medium
8	Silanga CHWs	9	53%	Medium
9	Kisumu N.A.G.	8	47%	Not Successful
10	Inter-villages	8	47%	Not Successful
11	Gatwikira S.G.	7	41%	Not Successful
12	Pamoja - Soweto	6	33%	Not Successful

Source: Field Survey, 1998.

4.3 Management Indicators of Success

4.3.1 Solid Waste Management Initiative

Groups which undertake solid waste management purely out of members own initiative scored 3, while those that rely on purely external influence scored only 1. There is an

intermediate category of those groups that had some external influence. These scored 2.

Table 4.14: Source of Solid Waste Management Initiative among Community Groups in Kibera

Group	Source of Initiative	Score
Usafi - Kianda	Partly members	2
Kisumu N.A.G.	Partly members	2
Laini S.A.G.	External	1
Lindi CHWs	Partly members	2
Umoja - Makina	External	1
Youth in Action	Purely members	3
Silanga CHWs	Partly members	2
Gatwikira S.G.	Partly members	2
Pamoja - Soweto	External	1
Kichinjio CHWs	Partly members	2
Inter-villages	Partly members	2
Mashimoni CHWs	External	1

Source: Field Survey, 1998.

Youth in Action is more likely to succeed because the group is operating from purely member's initiative. However groups less likely to succeed were those that had purely external influence in their initiative. These were Laini Saba Afya Group, Umoja - Makina, Pamoja - Soweto and Mashimoni Community Health Workers. Once their external support is withdrawn, the groups are unlikely to be committed to their activities.

Table 4.15 shows the frequencies of the groups according to the origin of their initiative in

solid waste management activities.

Table 4.15: Frequencies of Community Groups According to Origin of Initiative

Category (Origin of Initiative)	Frequency	Percentage
Purely Members	1	8%
Partly Members	7	59%
External	4	33%
Total	12	100%

Source: Field Survey, 1998.

A significant percentage (33 percent) of the groups in Kibera carrying out solid waste management activities have purely external influence in the initiative to do so. Only 8 percent of the groups had group members' initiative of solid waste management.

It can be considered that solid waste management is likely to succeed when carried out by people who have appreciated this as a need and their responsibility. This means that solid waste management is a felt need.

4.3.2 Number Of Group Activities

Those groups which are involved in only solid waste management activities were considered unsustainable and scored 1. According to the number of the other activities, other groups which had 2, 3 and 4 activities scored 2, 3 and 4 respectively.

Table 4.16: Number of Activities among Community Groups in Kibera

Group	Number of Activities	Score
Usafi - Kianda	4	4
Kisumu N. A.G.	2	2
Laini S.A.G.	2	2
Lindi CHWs	2	2
Umoja - Makina	2	2
Youth in Action	3	3
Silanga CHWs	2	2
Gatwikira S.G.	2	2
Pamoja - Soweto	2	2
Kichinjio CHWs	1	1
Inter-villages	1	1
Mashimoni CHWs	2	2

Source: Field Survey, 1998.

The group that was most sustainable is Usafi - Kianda that had four different activities. Kichinjio Community Health Workers and Inter-villages Youth Group scored the least because they had only solid waste management being carried out by their members.

Table 4.17 shows the frequencies of community groups in Kibera according to the number of activities in each group.

Table 4.17: Frequencies of Community Groups in Kibera According to Number of Activities

Category (No. of Activities)	Frequencies	Percentage
1	2	17%
2	8	67%
3	1	8%
4	1	8%
Total	12	100%

Source: Field Survey, 1998.

More than three-quarters (84 percent) of the groups have two or less activities. A significant percentage (16 percent) has only solid waste management activities. Only a few of the groups (16 percent) have more than two activities.

Sustainability of a group depends largely on the number and therefore the diversification of group activities. Most of these activities could be income generating thus motivating the group members to carry out their solid waste management activities on a regular basis and more effectively.

There is need to encourage groups to be more involved in other activities other than solid waste management in order for their members to be motivated and for the group to be more sustainable.

4.3.3 Presence of Income Generation Activities

Those groups which did not have any income generating activities scored nothing but those which scored 1.

Table 4.18: Presence of Income Generation Activities among Community Groups in Kibera

Group	Presence of IGA (Yes/No)	Score
Usafi - Kianda	Yes	1
Kisumu N.A.G.	Yes	1
Laini S.A.G.	Yes	1
Lindi CHWs	Yes	1
Umoja - Makina	Yes	1
Youth in Action	No	0
Silanga CHWs	No	0
Gatwikira S.G.	Yes	1
Pamoja - Soweto	Yes	1
Kichinjio CHWs	No	0
Inter-villages	No	0
Mashimoni CHWs	Yes	1

Source: Field Survey, 1998.

Table 4.19 indicates the frequencies of community groups in Kibera with regard to presence of IGAs.

Table 4.19: Frequencies of Community Groups in Kibera According to Presence of Income Generating Activities

Category (Yes/No)	Frequency	Percentage
Yes	8	67%
No	4	33%
Total	12	100%

Source: Field Survey, 1998.

Two thirds (67%) of the groups have income generating activities. However, Youth in Action, Silanga, Kichinjio and Inter-villages Groups do not have any income generating activities and are considered less sustainable in solid waste management activities.

Income generating activities need to be encouraged among community groups involved in solid waste management to make them more sustainable.

It is important to note that most of the residents in Kibera face unemployment problems. Most of the residents are unskilled and semi-skilled and given the general unemployment rate in the city and in the country, then most of the residents in Kibera. Therefore the groups in these areas that are involved in any community development work ought to have some income generating activities to help the group members cater for some of their needs.

This is the essence of income generating activities even in those groups that are involved in solid waste management activities in Kibera. This also acts as a motivation to carry out solid waste management activities. These groups are likely to be more sustainable in solid waste management activities.

4.3.4 Sources of Finance

In Kibera there were those community groups that were entirely dependent on donations. There were those that depend on both the members contributions and the donations. Other groups depend on only contributions while others have IGAs, which are not adequate and therefore sought members' contributions. Finally there were those groups which depend entirely on income generating activities. These were coded with the first category of groups scoring nothing and the last category scoring 4 in that order.

Table 4.20: Sources of Finances among Community Groups in Kibera

Group	Source of Finance	Score
Usafi - Kianda	Contribution + Donation	1
Kisumu N.A.G	IGAs	4
Laini S.A.G.	IGAs + Contributions	3
Lindi CHWs	IGAs + Contributions	3
Umoja - Makina	IGAs	4
Youth in Action	Donations	0
Silanga CHWs	IGAs + Contributions	3
Gatwikira S.G.	Contributions	3
Pamoja - Soweto	IGAs	4
Kichinjio CHWs	Contributions	2
Inter-villages	Contributions	2
Mashimoni CHWs	IGAs + Contributions	3

Source: Field Survey, 1998.

Youth in Action Group depend solely on donations for their group activities and is likely to be less sustainable. However, Kisumu Ndogo Afya Group, Umoja - Makina and Pamoja -

Soweto groups depend on income generating activities.

Table 4.21 shows the frequencies of community groups in Kibera according to major sources of finance.

Table 4.21: Frequencies of Community Groups According to Major Sources of Finance

Category (Sources)	Frequencies	Percentage
IGAs	3	25%
IGAs+Contributions	5	42%
Contributions	2	17%
Contribut + Donations	1	8%
Donations	1	8%
Total	12	100%

Source: Field Survey, 1998.

Only a quarter (25 percent) of the groups depend on income generating activities for their group activities, which is a more sustainable source. A significant percentage (8 percent) depends on donations to carry sustain the group activities. A larger percentage (42 percent) of the groups depends on both members' contributions and income generating activities.

Financial independence is desirable in any project or programme. Thus the assumption is that the financially independent groups are more successful and therefore more sustainable.

4.3.5 Attitudes towards Members Needs and Success among Community

Those community groups involved in solid waste management in Kibera that indicated the need for technical support and unity among the members scored 2 and 3 respectively.

Those that indicated payment or donations received the least - zero and 1 respectively.

Table 4.22 shows each group's members' attitudes towards needs.

Table 4.22: Attitudes towards Members Needs among Community Groups in Kibera

Group	Members Needs	Score
Usafi - Kianda	Unity	3
Kisumu N.A.G.	Donations	1
Laini S.A.G.	Unity	3
Lindi CHWs	Donations	1
Umoja - Makina	Payment	0
Youth in Action	Donations	1
Silanga CHWs	Payment	0
Gatwikira S.G.	Technical Support	2
Pamoja - Soweto	Payment	0
Kichinjio CHWs	Technical support	2
Inter-villages	Donations	1
Mashimoni CHWs	Unity	3

Source: Field Survey, 1998.

Usafi - Kianda, Mashimoni Community Health Workers and Laini Saba Afya Group were the group members value unity as the most important factor in the success of their groups.

Other groups that desire that the members be paid for their work are unlikely to be sustainable in the same. These included Umoja - Makina, Silanga Community Health Workers, Gatwikira Sanitation Group and Pamoja - Soweto. These latter groups are likely

to be unsustainable considering the inherent scarcity of resources within and without the groups to pay the members.

Frequency analysis of the groups with regard to members needs indicate the following results (Table 4.23).

Table 4.23: Frequencies of Community Groups in Kibera According to Members' Perceived Needs

Category (Needs)	Frequency	Percentage
Unity	3	25%
Tech. Support	2	17%
Donation	4	33%
Pay Members	3	25%
Total	12	100%

Source: Field Survey, 1998.

A significant percentage (25 percent) of the groups indicated that their members' greatest need is to be paid. A third (33 percent) of the groups indicated that they need donations in order to improve in their performance in solid waste management.

However, these groups are less sustainable, unlike the groups (25 percent) which indicated that their greatest need was unity or technical support. These are considered more sustainable with regard to solid waste management activities.

The attitudes towards the needs of the members are important in showing the commitment of the members to solid waste management. The groups most likely to be successful are those that do not expect any payment but desire those attributes which would enhance the groups activities in solid waste management.

4.3.6 Attitudes towards Solid Waste Management Responsibility

Those groups that stated that solid waste management is the responsibility of the residents therefore view the same as their responsibility and scored 4. There were other groups that perceived this responsibility as being that of NCC scored 1. There are some groups of people in the villages who have been selected to oversee the cleanliness of the villages. Those who saw the responsibility as belonging to this group of people scored 3. Others perceived it to be the responsibility of the landlords. These scored 2.

Table 4.24: Attitudes towards Solid Waste Management Responsibility among Community Groups in Kibera

Group	SWM Responsibility	Score
Usafi - Kianda	Residents	4
Kisumu N.A.G.	CHWs	3
Laini S.A.G.	CHWs	3
Lindi CHWs	CHWs	3
Umoja - Makina	Residents	4
Youth in Action	Residents	4
Silanga CHWs	Landlords	2
Gatwikira S.G.	Landlords	2
Pamoja - Soweto	NCC	1
Kichinjio CHWs	CHWs	3
Inter-villages	Residents	4
Mashimoni CHWs	Residents	4

Source: Field Survey, 1998.

Pamoja - Soweto group members indicated that solid waste management in the village is the responsibility of NCC. This clearly shows that the members have not accepted the

same as their responsibility and are less likely to be committed in the same.

Table 4.25 shows the results of frequencies of the community groups according to their attitudes towards solid waste management responsibility.

Table 4.25: Frequencies of Community Groups According to Members Attitudes towards Solid Waste Management Responsibility

Category (Responsibility)	Frequency	Percentage
Residents	5	42%
CHWs	4	33%
Landlords	2	17%
NCC	1	8%
Total	12	100%

Source: Field Survey, 1998.

There is an indication of acceptance of solid waste management among the community group members. This could be seen by the significant percentage (42 percent) of community groups that indicated that solid waste management in the area is the responsibility of the residents. However, a significant percentage (8 percent) indicated that this is the responsibility of NCC. Community awareness is needed among the residents for them to change their attitudes towards solid waste management so that they can accept it as their own responsibility. This would make community groups more committed to the same.

It is also important to note that the groups involved in solid waste management activities in

Kibera have many other activities. The priority of group activities is important because it indicates that the group is committed at achieving the objectives concerned with these activities. The major achievement of the group indicates the commitment to those activities among the others in the group. Almost all the groups indicated that their major achievement was in keeping the residential area clean. This should be the aim of every community group involved in solid waste management.

The appreciation of group members of solid waste management as their responsibility is important for the success of such groups in solid waste management activities. We want to examine whether the groups treated solid waste management as a felt need or otherwise.

4.3.7 Classification of Community Groups According to Management Indicators of Success

The community groups in Kibera were classified according to the management indicators of success as shown in Table 4.26.

Group	Score	% Score	Class
N.A.G.	14	70%	Very Successful
Ulini S.A.G.	13	65%	Successful
CHWs	12	60%	Successful
Carwira S.G.	12	60%	Successful
Udiaga	10	50%	Medium
Silanga CHWs	9	45%	Not Successful
Pansya Sowers	9	45%	Not Successful

Field Survey, 1978.

Management Indicators of Success

(a) Of Solid Waste Management Activities.

Of these groups found carrying out more than one activity, that is more than just these kinds of two. The rest of the groups with only collection served one.

Table: 4.26: Classification of Community Groups in Kibera According to Management Indicators of Success

Rank	Group	Scores	% Scores	Class
1	Usafi - Kianda	16	80%	Very Successful
2	Mashimoni CHWs	14	70%	Very Successful
3	Kisumu N.A.G.	13	65%	Successful
4	Laini S.A.G.	13	65%	Successful
5	Lindi CHWs	12	60%	Successful
6	Umoja - Makina	12	60%	Successful
7	Gatwikira S.G.	12	60%	Successful
8	Youth in Action	11	55%	Medium
9	Kichinjio CHWs	10	50%	Medium
10	Inter-villages	10	50%	Medium
11	Silanga CHWs	9	45%	Not Successful
12	Pamoja - Soweto	9	45%	Not Successful

Source: Field Survey, 1998.

4.4 Performance Indicators of Success

4.4.1 Types Of Solid Waste Management Activities

There were those groups found carrying out more than one activity, that is more than just collecting. These scored two. The rest of the groups with only collection scored one.

Table 4.27: Types of Solid Waste Management Activities among Community Groups in Kibera

Group	Type of SWM Activities	Score
Usafi - Kianda	Collection+ Transport	2
Kisumu N.A.G.	Collection+ Composting	2
Laini S.A.G.	Collection	1
Lindi CHWs	Collection	1
Umoja - Makina	Collection	1
Youth in Action	Collection	1
Silanga CHWs	Collection	1
Gatwikira S.G.	Collection	1
Pamoja - Soweto	Collection	1
Kichinjio CHWs	Collection	1
Inter-villages	Collection	1
Mashimoni CHWs	Collection	1

Source: Field Survey, 1998.

Usafi - Kianda is involved in collection and transporting of waste from the village. Kisumu Ndogo Afya Group was involved in the treatment in form of composting of the waste.

This group was considered to be involved in more than collection of waste. the other group which was involved in another stage in solid waste management was Kianda which was transporting the waste from the residential area to along the main road in the hope that NCC would collect the waste.

Table 4.28 indicates the results of frequencies of community groups according to the number of solid waste management activities.

Table 4.28: Frequencies of Community Groups in Kibera According to Type of Solid Waste Management Activities

Category (Type of SWM Activities)	Frequency	Percentage
Collection + Transport	1	8%
Collection + Composting	1	8%
Collection	10	83%
Total	12	100%

Source: Field Survey, 1998.

The table shows that majority (83 percent) of the community groups in Kibera involved in solid waste management only engages in collection. Only 17 percent of the groups are engaged more than one stage in solid waste management. Community groups should be encouraged to get involved in more solid waste management activities towards the final elimination of waste.

Figure 4.29: Frequency of Solid Waste Management Activities among Community Groups in Kibera

Solid waste management has many stages. In this case they are called the types of solid waste management activities. These are collection, storage, separation and sorting, transportation and the final disposal or treatment.

Community Group	Frequency of SWM	Score
N.A.G.	Weekly	2
S.A.G.	Weekly	2
CHW	Weekly	2
S.G.	Weekly	2
Sewers	Stopped	0
CHW's	Weekly	2
Wages	Weekly	2
Mini CHW's	Weekly	2

Field Survey, 1998.

One group has stopped solid waste management activities. The rest are carrying out the activities twice a week or on a weekly basis.

Figure 4.29 shows the frequencies of community groups in Kibera according to frequencies of solid waste management activities.

Table 4.29: Frequency of Solid Waste Management Activities among Community Groups in Kibera

Group	Frequency of SWM Activities	Score
Usafi - Kianda	Weekly	2
Kisumu N.A.G.	Weekly	2
Laini S.A.G.	Weekly	2
Lindi CHWs	Weekly	2
Umoja - Makina	Weekly	2
Youth in Action	Fortnightly	1
Silanga CHWs	Weekly	2
Gatwikira S.G.	Weekly	2
Pamoja - Soweto	Stopped	0
Kichinjio CHWs	Weekly	2
Inter-villages	Weekly	2
Mashimoni CHWs	Weekly	2

Source: Field Survey, 1998.

Pamoja group has stopped solid waste management activities. The rest are carrying out the activities twice a week or on a weekly basis.

Table 4.30 shows the frequencies of community groups in Kibera according to frequencies in solid waste management activities.

Table 4.30: Frequencies of Community Groups in Kibera According to the Frequency of Solid Waste Management Activities.

Category No. of Times	Frequency	Percentage
Weekly	10	83%
Fortnightly	1	8%
Stopped	1	8%
Total	12	100%

Source: Field Survey, 1998.

More than three-quarters (83%) of the groups carry out solid waste management activities on a weekly basis. The rest do it less frequently. Community groups involved in solid waste management activities should be encouraged to be engaged more frequently and even on a daily basis. This is because solid waste is generated in the same basis - in a continuous process.

It is desirable that community groups engage more frequently in solid waste management activities so that they can be more effective in dealing with the residential waste that is continuously being generated. Thus it is desirable that the groups are engaged in the same on a daily basis. These are considered to be more effective.

4.4.3 Consistency in Solid Waste Management

There was a group that had stopped solid waste management activities. This one scored no scores. Other groups were not consistent, others were just consistent and another very consistent. These scores 1, 2, and 3 respectively as shown in Table 4.31.

Table 4.31: Consistency in Solid Waste Management among Community Groups in Kibera

Group	Consistency	Score
Usafi - Kianda	Very Consistent	3
Kisumu N.A.G.	Consistent	2
Laini S.A.G.	Consistent	2
Lindi CHWs	Consistent	2
Umoja - Makina	Consistent	2
Youth in Action	Consistent	2
Silanga CHWs	Consistent	2
Gatwikira S.G.	Not Consistent	1
Pamoja - Soweto	Stopped	0
Kichinjio CHWs	Not Consistent	1
Inter-villages	Not Consistent	1
Mashimoni CHWs	Not Consistent	1

Source: Field Survey, 1998.

Pamoja - Soweto Group have stopped solid waste management activities and has performed very poorly in the same. On the other hand Usafi - Kianda has been very consistent in solid waste management activities. This is considered to perform the best.

Table 4.32 shows the frequencies of community groups according to consistency in solid waste management activities.

Table 4.32: Frequencies of Community Groups According to Consistency in Solid Waste Management Activities

Category (Level Of Consistency)	Frequency	Percentage
Very consistent	1	8%
Consistent	6	50%
Not consistent	4	42%
Stopped	1	8%
Total	12	100%

Source: Field Survey, 1998.

Half (50 percent) of the groups involved in solid waste management activities in Kibera are consistent in the same. However, a significant percentage (33 percent) of the groups is not consistent and 8 percent of the groups have stopped solid waste management activities.

The consistency in the involvement of a group in solid waste management activities is crucial to its performance.

Attention should be focused on increasing the consistence of community groups in solid waste management so that they would raise their level of performance in the same. At the same time those that have stopped should be revived.

4.4.4 Period of Operation

Those groups that were found to operate for less the five years were considered the least successful and scored only one score. Those that had operated for five to nine years scored two. The groups which had operated for ten to fourteen years scored three and finally the groups which had operated longest, that is more than fourteen years received four scores.

Table 4.33: Period of Operation among Community Groups in Kibera

Group	Period of Operation	Score
Usafi - Kianda	18	4
Kisumu N.A.G.	18	4
Laini S.A.G.	3	1
Lindi CHWs	3	1
Umoja - Makina	18	4
Youth in Action	2	1
Silanga CHWs	6	2
Gatwikira S.G.	23	4
Pamoja - Soweto	3	1
Kichinjio CHWs	18	4
Inter-villages	5	2
Mashimoni	10	3

Source: Field Survey, 1998.

It can be seen from the table above that half of the groups have operated for a long time - fifteen years and above. The group likely to succeed in solid waste management activities is Gatwikira Sanitation Group that had operated for twenty-three years. The group that operated for the shortest time was Inter-villages Youth Group and was therefore found less successful at the time.

Time period is found important in any group activities. This is because the longer the group works the more time it has to improve its performance by appreciating the responsibility of solid waste management. The groups that have operated longer means that they have persisted in the group activities for a longer time. They are well known and therefore bound to perform better.

4.4.5 Classification According to Performance of Community Groups

The community groups were classified according to performance as shown in Table 4.34.

Table 4.34: Classification of Community Groups in Kibera According to Performance

Rank	Group	Scores	% Scores	Class
1	Usafi -Kianda	10	100%	Very Successful
2	Kisumu N.A.G.	9	90%	Very Successful
3	Umoja - Makina	8	80%	Very Successful
4	Silanga CHWs	7	70%	Very Successful
5	Gatwikira S.G.	7	70%	Very Successful
6	Kichinjio CHWs	7	70%	Very Successful
7	Mashimoni CHWs	7	70%	Very Successful
8	Laini S.A.G.	6	60%	Successful
9	Lindi CHWs	6	60%	Successful
10	Inter-Villages	6	60%	Successful
11	Youth in Action	5	50%	Medium
12	Pamoja - Soweto	2	20%	Not Successful

Source: Field Survey, 1998.

4.5 Identification of the Community Groups according to Success

The community groups in Kibera were finally grouped according to their overall level of success, considering the scores according to organisational, management and performance indicators of success. The average was sought to find out the overall percentage of scores as indicated in Table 4.35.

Group	Organisational Score	Management Score	Performance Score	Overall Score	Class
Mamimoni CHWs	65%	70%	70%	68%	Successful
Kileleshwa N.A.O.	47%	65%	90%	67.3%	Successful
Lumi S.A.G.	76%	65%	60%	67%	Successful
Umoya-Machua	53%	60%	80%	63.3%	Successful
Lindi CHWs	65%	60%	60%	62.3%	Successful
Youth in Action	65%	55%	70%	61.6%	Successful
Lichinga CHWs	39%	50%	70%	59.6%	Medium
Levishwa S.G.	41%	60%	70%	57%	Medium
Silanga CHWs	53%	45%	70%	56%	Medium
Ujeru-He-ages	47%	50%	60%	52.3%	Medium
Ujuzi C.O.	33%	45%	20%	32.6%	Not Successful

Field Survey, 1998.

Table 4.35: Classification of Community Groups in Kibera According to All the Indicators of Success

Rank	Group	Organisational Score	Management Score	Performance Score	Overall Average Score	Class
1	Usafi-Kianda	88%	80%	100%	89%	Very Successful
2	Mashimoni CHWs	65%	70%	70%	68%	Successful
3	Kisumu N.A.G.	47%	65%	90%	67.3%	Successful
4	Laini S.A.G.	76%	65%	60%	67%	Successful
5	Umoja-Makina	53%	60%	80%	63.3%	Successful
6	Lindi CHWs	65%	60%	60%	62.3%	Successful
7	Youth in Action	65%	55%	70%	61.6%	Successful
8	Kichinjio CHWS	59%	50%	70%	59.6%	Medium
9	Gatwikira S.G.	41%	60%	70%	57%	Medium
10	Silanga CHWs	53%	45%	70%	56%	Medium
11	Inter-Villages	47%	50%	60%	52.3%	Medium
12	Pamoja C.G.	33%	45%	20%	32.6%	Not Successful

Source: Field Survey, 1998.

According to this classification, the most successful group is Usafi na Maendeleo Group Kianda. The unsuccessful group is Pamoja Community Group - Soweto

4.6 Socio-economic Characteristics of Group Members

4.6.1 Age

The average age of members for each group involved in solid waste management in Kibera was calculated from the age of the different members interviewed. This information is presented in Table 4.36.

Kianda	39
Usafi na Maendeleo	41
Ujuzi	35
Ujuzi CHW	37
Ujuzi CHW	49
Ujuzi CHW	57
Ujuzi - Soweto	40
Ujuzi CHW	33
Ujuzi	30
Ujuzi CHW	42

Field Survey, 1998

The lowest average age for the community group members is 22 years, which is found among the members of Youth in Action Group. The highest average age is 57 years among the members of Gatwikira Sanitation Group. The overall average age among the group members

The community groups according to average age are shown in Table 4.37

Table 4.36: Average Age for Community Groups in Kibera according to Average Age

Group	Average Age
Usafi - Kianda	39
Kisumu N. Afya	40
Laini S. Afya	40
Lindi CHWs	35
Umoja - Makina	45
Youth in Action	22
Silanga CHWs	49
Gatwikira S.G	57
Pamoja - Soweto	40
Kichinjio CHWs	33
Inter-Villages	30
Mashimoni CHWs	42

Source: Field Survey, 1998

The lowest average age for the community group members is 22 years, which is found among the members of Youth in Action Group. The highest average age is 57 years among the members of Gatwikira Sanitation Group. The overall average age among the group members is 39 years.

Frequencies community groups according to average age are shown in Table 4.37.

Table 4.37: Frequencies of Community Groups in Kibera According to Average Age

Category (Years)	Frequency	Percentage
< 30	2	17%
30 - 40	6	50%
> 40	4	33%
Total	12	100%

Source: Field Survey, 1998.

From the above table, it is clear that the groups with average age of between 30 and 40 years predominate. A relatively small percentage (17 percent) of community groups has an average age of their members being less than 30 years. The groups represented by older people (more than 40 years) are almost twice the number of those with an average age of less than 30 years. It is observed that few youth (below 30 years) concern themselves with organised community solid waste management. Considering the large number of youth, there is need for more participation of the youth groups in community based solid waste management in the area. The young people have more formal education and therefore more informed and are expected to have good leadership skills, administrative and other qualities required in community groups.

4.6.2 Marital Status

The marital status of the groups was examined to determine if there exists a pattern (Table 4.38).

Table 4.38: Marital Status among Community Groups in Kibera

Group	Marital Status
Usafi - Kianda	100% married
Kisumu N. A.G	100% married
Laini S. Afya	100% married
Lindi CHWs	100% married
Umoja - Makina	66.7% single
Youth in Action	80% single
Silanga CHWs	100% married
Gatwikira S.G.	100% married
Pamoja - Soweto	48% married
Kichinjio CHWs	100% married
Inter-villages	100% married
Mashimoni CHWs	100% married

Source: Field Survey, 1998.

Majorities of the members interviewed were married according to Table 4.3. The group with the least number of married people was Youth in Action, which mainly consist of young school leavers.

Table 4.39 below shows frequencies of marital status among the groups.

Table 4.39: Frequencies of Among Community Groups in Kibera According to Marital Status

Marital Status	Frequency	Percentage
50% + married	9	75%
< 50% married	3	25%
Total	12	100%

Source: Field Survey, 1998.

Three quarters (75 percent) of the groups have majority (50% and more) of the members married. It can therefore be said that groups, which carry out solid waste management activities in Kibera, involve more of the married people.

4.6.3 Household Size

The average household size for each of the groups considered was calculated. Some households have relatives, not necessary part of the "family" and these members were considered part of the household because they influence the amount of waste generated. This could be one the reasons why households among the low-income groups of people in the area are generally large as shown in Table 4.40.

Table 4.40: Household Size among Community Groups in Kibera

Group	Average HH Size
Usafi - Kianda	8
Kisumu N. A.G.	6
Laini S. A.G.	7
Lindi CHWs	5
Umoja - Makina	8
Youth in Action	2
Silanga CHWs	5
Gatwikira S.G.	8
Pamoja - Soweto	6
Kichinjio CHWs	10
Inter-villages	5
Mashimoni CHWs	8

Source: Field Survey, 1998.

The highest average household size is found among members of Kichinjio Community Health Workers whose members come from households averaging 10 persons. The lowest average household size is 2, among the members of Youth in Action Group. Finally the overall average household size among the community group members in Kibera is 7.

Frequency analysis for household size was done. Table 4.41 shows the results.

Table 4.41: Frequencies of Community Groups in Kibera According to Average Household Size

Category (No. of Persons)	Frequency	Percentage
< 6	4	33%
6 - 8	7	58%
> 8	1	8%
Total	12	100%

Source: CHV Field Survey, 1998.

Table 4.41 shows that more than half (58 percent) of the groups have members from medium sized households (6 to 7 persons). A third (33 percent) of the groups have their members from small households. Only a few (8 percent) have members from relatively large households (more than 8 persons).

It is expected that household size influence the amount of waste generated. Thus group members from large households are expected to generate more waste than the ones from the smaller households, holding other factors (e.g. income) constant. The question is: are groups having members from the large households likely to perform better than those members with smaller household sizes?

4.6.4 Formal Education

The average years in school for each of the community groups were calculated and recorded in Table 4.42.

Table 4.42: Average Formal Education among Community Groups in Kibera

Group	Av. years in School
Usafi - Kianda	10
Kisumu N. A.G.	8
Laini S. A.G.	12
Lindi CHWs	11
Umoja - Makina	5
Youth in Action	12
Silanga CHWs	5
Gatwikira S.G.	8
Pamoja - Soweto	5
Kichinjio CHWs	11
Inter-villages	11
Mashimoni CHWs	9

Source: Field Survey, 1998.

Among community group members in Kibera 12 years is the highest average period in school. This is equivalent to secondary school education. The groups, which have members with this level of education, are Laini Saba Afya Group and Youth in Action. The least educated members have 5 years formal schooling found among Pamoja - Makina, Silanga Community Health Workers and Pamoja Community Group members.

The average number of years in school among the community group members is 9 (equivalent to post-primary level education). The following table (Table 4.43) shows the frequencies of community groups according to the number of years in formal school.

Table 4.43: Frequencies of Community Groups in Kibera According to Formal Education

Category (yrs in sch.)	Frequency	Percentage
< 6	3	25%
6 - 9	3	25%
> 9	6	50%
Total	12	100%

Source: Field Survey, 1998.

Half (50 percent) of the groups have an average formal education of post primary education. Significant percent of groups (25 percent) have members who have very little formal education (5 or less schooling years). Awareness campaigns are needed especially among the less educated members of the community in order more to be involved in community based solid waste management.

Education is important in every aspect of life. The more educated people are expected to influence the success of their groups in terms of leadership and the ability to network with other organisations. On the other hand, it is possible that formal education can negatively influence participation in communal activities. This is because formal employment among the educated people is likely to make many people unavailable for group activities within the community.

4.6.5 Occupation

The major occupations of the majority of the members in each group were considered as shown in Table 4.44.

Table 4.44: Occupation among Community Groups in Kibera

Group	Major Occupation
Usafi - Kianda	60% Hawkers
Kisumu N. A.G.	50% Housewives
Laini S. A.G.	80% Hawkers
Lindi CHWs	50% Hawkers
Umoja - Makina	50% Employed
Youth in Action	100% Unemployed
Silanga CHWs	50% Hawkers
Gatwikira S.G.	50% Employed
Pamoja - Soweto	100% Hawkers
Kichinjio CHWs	50% Business
Inter-villages	50% Employed
Mashimoni CHWs	50% Hawkers

Source: Field Survey, 1998.

Pamoja - Soweto has all members as hawkers. The one with the highest percentage of housewives is Kisumu Ndogo Afya Group. These groups are considered as having more available members for solid waste management since they are occupied within the residential area. Some other groups (Gatwikira Sanitation Group, Umoja - Makina and Inter-villages Youth Group) have half of their members formally employed. This indicates that half of their members are not available for solid waste management activities during the working days.

Frequencies of the community groups were done according to the major occupations of their members as shown in Table 4.45.

Table 4.45: Occupation among Community Groups in Kibera

Category (Major Occupation)	Frequency	Percentage
Hawkers	6	50%
Formal Employment	3	25%
Housewives	1	8%
Business	1	8%
Unemployed	1	8%
Total	12	100%

Source: Field Survey, 1998.

It can be seen from Table 4.10 that half (50 percent) of the groups have majority of their members working as hawkers. Only a quarter (25 percent) of the groups have majority of their members in formal employment. Smaller proportions (8 percent) of the groups have majority of their members as housewives, in business and unemployed. There is need to consider the latter groups in community solid waste management.

The people who are expected to influence success in solid waste management are those who have more time for other activities apart from their routine ones. Availability of time is an important aspect of solid waste management activities. Those who are in formal employment, for example, do not have time for such communal activities. Other people such as housewives and hawkers, can easily adjust their time schedules from their daily routines, and are more likely to get involved in solid waste management on a communal basis.

4.6.6 Household Income

Obtaining people's incomes proved very difficult. This is a common experience in developing countries. Most of the urban dwellers are under wage employment. Those people in informal business often do not know the exact monthly incomes due to the lack of proper record keeping, yet there are many and immediate uses for such money (ILO, 1964).

Many people also did not want to disclose their incomes and others tended to give inflated figures. Assessing the types of jobs and interview questions in income levels did estimates of monthly incomes. The average monthly household incomes were calculated for each of the community groups as shown in Table 4.46.

Table 4.46: Income among Community Groups in Kibera

Group	Average Household Income
Usafi - Kianda	8000
Kisumu N.A.G.	2500
Laini S.A.G.	3000
Lindi CHWs	3500
Umoja - Makina	3750
Youth in Action	1000
Silanga CHWs	6000
Gatwikira S.G.	6000
Pamoja - Soweto	3550
Kichinjio CHWs	3000
Inter-villages	1750
Mashimoni CHWs	1600

Source: Field Survey, 1998.

The highest average household income (Ksh 8,000) was recorded among members of Usafi - Kianda Group. The group with the least average income (Ksh. 1,000) among its members is Youth in Action. The overall average monthly household income among the groups is very low (approximately Ksh. 3,600).

Table 4.47 below shows the frequencies of the community groups according to household incomes.

Table 4.47: Frequencies of Community Groups in Kibera According to Average Household Incomes

Category (Ksh.)	Frequency	Percentage
< 2501	4	33%
2501-5000	5	42%
> 5000	3	25%
Total	12	100%

Source: Field Survey, 1998.

More community groups (42 percent) have members with average monthly household income of between Ksh. 2500 and Ksh. 5001. A third (33 percent) of the groups had very low-income earners (less the Ksh. 2500) and a quarter (25 percent) of the groups have members earning relatively high incomes (more than Ksh. 5000). There is need for income generating activities among community groups in order to raise their members income. There is also a need to address the generally low incomes among the community group members in Kibera.

This could be done through initiating more income generating projects within the groups.

Income is an important factor in every area of development. Those people with lower income cannot meet the needs of their families and are busy looking for extra income to meet these needs. These people are therefore not likely to be more committed to the other activities including solid waste management, which do not pay directly. People with little income are also not likely to be committed to solid waste management activities, which offer no direct financial returns.

4.6.7 Period of Residence

The average numbers of years each of the groups have lived in Kibera were calculated as in Table 4.48.

Table 4.48: Period of Residence among Community Groups in Kibera

Group	Av. Years of Residence
Usafi - Kianda	21
Kisumu N.A.G.	39
Laini S.A.G	10
Lindi CHWs	23
Umoja - Makina	30
Youth in Action	22
Silanga CHWs	21
Gatwikira S.G.	44
Pamoja - Soweto	14
Kichinjio CHWs	10
Inter-villages	5
Mashimoni	26

Source: Field Survey, 1998.

The longest period of residence recorded among the community groups in Kibera (44 years) is among members of Gatwikira Sanitation Group and the lowest (5 years) among members of Inter-villages Youth Group. The overall average number of years of residence among community groups in Kibera is 22 years.

Frequencies of community groups according to the member's average years' residence in Kibera are shown in Table 4.49.

Table 4.49: Period of Residence among Community Groups in Kibera

Category (years)	Frequency	Percentage
< 11	3	25%
11 - 20	1	8%
21 - 30	6	50%
> 30	2	17%
Total	12	100%

Source: Field Survey, 1998.

Two-thirds (67 percent) of the community groups in Kibera have members who have lived in Kibera for more than 20 years. However, a significant percentage (25 percent) of the groups has members who have lived here for 10 or less years.

Most of the residents have lived in Kibera for a long time. The people who have stayed longest in an area are expected to understand the problems of the area than those who have stayed a shorter time. They are likely to appreciate their responsibility in the maintenance of

their residential environment. They are also likely to understand the solid waste problems in the area out of the experience they have had throughout the years and are therefore expected to be committed in alleviating the problem. They are also less likely to migrate from the area, thus making the community groups more stable.

	Sex Ratios
Kianda	1:3
N.A.G.	1:3
A.G.	1:3.7
CHWs	1:3
Makina	1:3
Action	1:0.13
CHWs	1:0.5
S.G.	1:10
Soweto	1:5
CHWs	1:0.6
CHWs	1:2
CHWs	1:10

Field Survey, 1998.

with the greatest proportion of women is Pamoja - Soweto. On the other hand, the least proportions is Youth in Action. The frequency table (Table 4.51) shows the frequencies of community groups in Kibera according to the percentage of

4.6.8 Proportion of Women Community Groups in Kibera According to Percentage of Women.

Table 4.50 shows the ratios of women in each of the community groups studied in Kibera.

Table 4.50: Sex Ratios among Community Groups in Kibera

Group	Sex Ratios
Usafi - Kianda	1:3
Kisumu N.A.G.	1:3
Laini S.A.G.	1:3.7
Lindi CHWs	1:3
Umoja - Makina	1:3
Youth in Action	1:0.13
Silanga CHWs	1:0.5
Gatwikira S.G.	1:10
Pamoja - Soweto	1:5
Kichinjio CHWs	1:0.6
Inter-villages	1:2
Mashimoni	1:10

Source: Field Survey, 1998.

The group with the greatest proportion of women is Pamoja - Soweto. On the other hand, the one with the least proportions is Youth in Action. The frequency table (Table 4.51) shows the frequencies of community groups in Kibera according to the percentage of women.

Table 4.51: Frequencies of Community Groups in Kibera According to Percentage of Women.

Category (% of Women)	Frequency	Percentage
< 50%	3	33%
50 % +	9	67%
Total	12	100%

Source: Field Survey, 1998.

Majority (67 percent) of the groups has more than 50 percent of their members as women. Only a third (33 percent) of the groups have less than half of their members as women. Therefore, women form the largest proportion of members in the community groups in Kibera.

Women in developing countries face serious problems related to living conditions because of financial conditions, illiteracy, lack of tradable skills and educational deficiencies (UNCHS, 1982). The proportion of women headed households is also greater than previously thought. Tinker (1976), observed that women suffer greater discrimination than men in establishing and maintaining households especially on their own. Furthermore a higher proportion of low-income families are female headed according to Lewis (1969). Meeting the housing requirements for low income women is a specific aspect of the human settlement issue which has begun to receive a lot of attention in the light of the growing general concern of women in the development process.

This study considers that women are important in every aspect of development including environmental management. More women remain back in the residential areas as men are

away working. The role of women in community based solid waste management is discussed in details later in this study.

4.7 Explanation of the Success Among Community Groups in Solid Waste Management

4.7.1 Group Members

The information on to the idea of success in community groups involved in solid waste management was from their own experience. The members from different groups explained why they thought that their group had succeeded in solid waste management. The idea of members' unity was brought out by many of the members. It was indicated that most of their activities were successful when they agreed to be united in carrying out the clean up activities. In this case they covered large areas and cleaned the places effectively.

The attribute of different groups working together in the waste management exercise motivated the members to continue with the activities.

It was reported that the groups which had involved other residents saw themselves achieving much because such residents could not be engaged in indiscriminate disposal of waste after clean ups and therefore it was easier for the community groups to collect waste from the residential area without much problems henceforth. The involvement of landlords in providing such facilities as dustbins was also important in helping the groups to succeed in collecting more waste from around the houses.

Nairobi City Council sometimes provides the transport facilities to the groups gathering waste from around the residential areas. This helps the groups to effectively clean up the residential areas and gather the waste at strategic points outside the settlement.

Involvement of NGOs in the group activities also has a positive influence in their success. They provide financial resources, technical advice on handling the waste and equipments used to collect and transport waste. This helps the groups to reach and attend to those areas which have been neglected for a long time and where has been rotting.

The sensitisation campaigns among the residents in Kibera are an important influence on success of some of the groups that were engaged in the same. Together with some NGOs, for example, Undugu Society and ANPPCAN, the groups would organize seminars which were used to sensitize the other residents on the importance of environmental management therefore making them more keen on waste disposal and making the work of the groups easier. Again, this wiped out the idea that the group members were being paid and therefore made the residents appreciate the clean up work of the groups. Sometimes these residents joined the groups in the clean up exercises.

Another factor cited by the members who contribute to the success of groups was the membership in these groups. Thus they argued that the larger the number of members the better because the groups would cover larger areas than the smaller groups.

The issue of financial gains among the group members was an important aspect in solid waste management activities. The members cited that income generating activities were

important to them because they provided a means of earning their living and taking care of their children. As the clean ups are made, members know that there was something to gain from the group work through the income generating activities, for example, selling of water from the tank projects.

Concerning group meetings, most of the people indicated that failure in this regard contributes to failure in all the other group activities and vice versa. In those groups where the members were strictly fined for lateness or absence from meetings, members were very committed even to their other group duties.

4.7.2 Non-Group Members

The study found out that people who do not belong to any community group engaged in solid waste management in Kibera are not aware of the details of such groups. For example, eleven out of forty seven people interviewed stated that they were not aware of community based solid waste management in Kibera. Some were aware of only one group in the whole of the area and could not therefore have a group for comparison.

This type of respondents have a negative attitude towards community based solid waste management. This is because these groups are not being paid for their work. This makes the people less concerned about the affairs of such groups.

Most of the respondents indicated that lack of success in the groups was due to lack of financial support (mostly payment of members). That the handouts being given to the members motivated the groups that had external support agencies especially the NGOs.

According to non-group members, the more successful groups are so due to the following factors:

1. More members in the groups
2. Ability to buy tools and equipment for Solid waste management
3. Guidance and technical advice by NGOs
4. Solidarity among group members
5. Financial support from NGOs
6. More clean up days
7. Active members

The reasons why these people had not joined the groups is due to the weaknesses found in these groups. These included

1. Poor leadership - mismanagement of group financial resources and competition among leaders of existing groups.
2. Irregular clean up routines and the short time scheduled for solid waste management activities.
3. Lack of financial handouts to the group members.
4. Lack of unity among the members of the existing groups
5. Lack of equipment.
6. The general attitude that solid waste management is not the residents responsibility, but NCC's responsibility.
8. Lack of involvement of the young people and the general involvement of elderly women.

Apart from the alleviation of the group problems, it was suggested that the groups should consider including more income generating activities in their programmes, and that the groups should receive support, especially, financial from the government and Nairobi City Council. Most of the women suggested that their work has not been recognised by the government and this should be done in order to motivate them. Finally that more awareness campaigns should be done among the residents so that they can co-operate in the activities.

4.7.3 Local Administrators

Kibera Location Chief was contacted on the explanation of success among some groups solid waste management in the area. Generally it was indicated that this office was not directly involved in community based solid waste management. That their responsibility is to monitor the groups' activities. This office often is concerned with giving the necessary discipline and security measures in regard to mismanagement and misuse of group financial resources and equipment.

Nevertheless, the chief made general observations on the groups performance. He perceived the more successful groups as those that have a financial base either through income generating activities or through direct donations from the NGOs working in the area. He reckoned that many people could not work if they are not assured of the daily bread. That the community groups already existing in the area should be motivated by financial support by these NGOs so that they can continue well with their activities. This could be by giving them the technical support and advice on group activities organisation.

4.7.4 NGOs and Other Development Agencies

4.7.4.1 ANPPCAN

The African Network of Prevention and Protection of Child Abuse and Neglect (ANPPCAN) is an NGO that started in 1987 in Kenya. Its role in solid waste management in Kibera is particularly on organising the communities involved in various activities including solid waste management. The aim of the organisation is to empower the community to tackle issues affecting them. It trains the community organisers. It mobilises the communities to handle solid waste management. It also helps the community groups to write proposals to other development agencies in order to be financed in their various activities. The organisation also creates awareness among the community groups on environmental health.

So far ANPPCAN has formed four CBOs in Kibera and this has been considered as a great achievement by the organisation. It is therefore involved also in Kianda, Makina and Laini Saba villages in Kibera.

The NGO faces a great challenge in its activities especially with regard to the resistance to change presented by various people due to the culture of silence and poverty among the low-income people.

On the success of community groups in solid waste management activities in Kibera, ANPPCAN indicated that there is a general failure of the groups to make a significant impact on the living environment of the people in the informal settlement. The example given was that solid waste is still dumped everywhere. The factors that were attributed to

the general failure of community groups to effectively manage solid waste related to the general marginalisation of the informal settlements by the central and the local government.

NCC is very reluctant in collecting the waste that is gathered from around the residential areas by the groups. This discourages the community groups. The NGO suggested that there should be greater support by the government and the local authority. The government should formulate a policy on the servicing of informal settlements.

The less successful groups are those that are inconsistent with their activities. These are the groups that are formed by the NGOs being promised financing by the same. These are what were called the benefit-induced groups. This presents poor formation also being led by selfish leaders who hope to take advantage of the finances promised. Furthermore, some of the NGOs concerned with community development do not use the community organisation approach to community development.

The success of community groups in solid waste management depends on the willingness and the determination of the members. Those groups with members who are willing to work and therefore determined to maintain a clean living environment are more successful.

The ones most successful are those that have external support from the NGOs working in the settlement. These NGOs support the groups financially even by buying the equipment needed for clean ups. Others like ANPPCAN provide training courses for the organisers of the community groups. Such groups are motivated in their activities.



Plate 9: A Graduation Ceremony after a Community Organisation Training Programme (ANPPCAN)

ANPPCAN observed that there is a general lack of awareness among the residents in the informal settlement on waste reduction, reuse and recycling. These are waste management strategies in these areas that should be applied in order to achieve a greater sense of community participation in solid waste management.

4.7.4.2 *Undugu Society of Kenya*

Undugu Society of Kenya is an organisation situated in Kibera carrying out different

development projects in the area. Some of these activities include the issue of street children and community mobilisation in environmental management. The community organisation team facilitates the process of community mobilisation and participation. Social workers organise, mobilise and train groups, communities and leaders in various skills. The NGO specialises in sanitation and is recycling of solid waste. It works with the village development committees especially in Lindi village. Due to financial constraints, Undugu Society of Kenya has stopped its operations with this group in regard to recycling activities. Thus the reason as to the failure of the groups could be attributed to the inability of the groups to finance their activities. Too much dependence of external sources of finance is a major problem facing those groups which are working closely with the NGOs in the area.

4.7.4.3 **World Bank**

World Bank is an international development agency involved in improving water and sanitation for poor communities in many countries. In Kenya, the agency is currently reviewing options for improving environmental sanitation through the Kibera Urban Environmental Sanitation Pilot Project (KUESP). Its main objective is to look into the ways of improving the state of infrastructure and services within Kibera area. Its activities are mainly based on community participation.

Some of the achievements so far made is the involvement of CBOs and other segments of the community in the construction, improvement and maintenance of the drainage facilities. At least 338 tones of garbage have been cleared.

The success of the community groups in solid waste management in the areas according to World Bank depends on the provision of regular garbage collection service by the local authorities. The piling of garbage discourages the community from transporting waste to designated dumping sites. There is also lack of the provision of accessible collection points near the houses meant to discourage the residents from dumping the waste on drains.

World Bank noted that the community groups get the most felt needs and transfer Furthermore the community has not been adequately empowered to raise the level of participation. There has also been little attempt of the NGOs to work with the existing CBOs. Rather, each NGO has established its own CBOs in each of the villages they work in. These NGOs overlap their areas of operation. Most of them appear to be working in the same villages.

Council has a department of Environment where the Cleansing Section is Hygiene awareness among the residents in Kibera has not been linked to activity - improving the environmental sanitation. Thus hygiene is not a problem at the household level. General cleanliness has been observed to be high in most households. It is only a problem at the community level. Waste outside the house is not seen as a household problem - this is evident in the poor environmental sanitation. Messages should therefore be targeted at the community level not the household level. Key issues to address are the community perception of the problem and its links to hygiene and health.

The problem with the community groups in the settlement is that garbage is being moved from one place to another. There is lack of solid waste disposal facilities and collection services. There is limited or no vehicular access for solid waste. Furthermore there is limited space within the settlement for on site separation and recycling.

Another issue is that those addressing the problem of waste are not responsible for it - that is the women and daytime audience. The problem is that the message has not been passed to the people causing the problem - the working population. Otherwise the effects of clean ups activities are not appreciated and last for a short time.

Finally World Bank noted that the community groups get the most felt needs and transfer them to the NGOs concerned (KUESP, 1997). The groups should first attempt to solve the problems and then ask for help in the later stages of their activities. These activities include solid waste management.

4.7.5 Nairobi City Council

Nairobi City Council has a department of Environment where the Cleansing Section is based. Through this section this is the only agency collecting solid waste out of informal settlements including Kibera. The community groups there are only involved in clean up - sweeping the paths and dumping the waste within the residential area. The council collects waste from various collection points along the main road (Kibera Drive). However the amount collected from here is still small compared to the amount generated every day.

This is because of the irregularities in collecting the waste due to the inadequate number of vehicles and the inaccessibility of the settlement.

Through the Cleansing Section, the Council participates in community based solid waste management by attending the clean up days of the various community groups. The divisional environmental committees in informal settlements advice the groups on the proper ways of storage and disposal of waste. In Kibera, NCC sees the need for accessible

collection points where the waste can easily be accessible. This is where the groups can take their waste after collection from the residential areas instead of dumping it within. The Council encourages people to be more involved in solid waste management than they are currently involved by carrying out the clean ups more frequently.

According to NCC, the success of groups in solid waste management can be attributed to the presence of income generating activities within the groups. That these are usually the groups that enjoy external financial and technical support from NGOs. Thus the least successful groups are those without income generating activities to motivate them, neither are they involved with any NGOs or international development agency which could support them financially or technically. The problem with the groups involved in solid waste management activities in Kibera is that the members have the hope of being paid for their work. This is not forthcoming. Eventually the members are not motivated and they concentrate on other activities apart from those concerned with solid waste management.

It was indicated that there was a lot of research currently going on in Kibera. Different NGOs, development agencies and individuals have been carrying out research in the same community groups, promising them financial sponsorship. These groups feel cheated because nothing has been granted to many of them, which could benefit the group members and the group activities. Most of the residents therefore no longer want to join any of the groups because of the unfruitful and un-implemented research.

Another reason for the lack of success among the community groups is due to individualism, which is dominating among the community groups. Most of the people

therefore will get involved in those activities that will directly benefit the family and not the whole community. Therefore it is common that the people are more active in income generating activities than solid waste management activities in the groups.

The NGOs working in Kibera are very many and they work in different community groups. Their activities are un-co-ordinated and most of them are competing within the groups. This leaves most of the group members confused and cannot do well in any one particular activity including solid waste management. Too many NGOs are duplicating issues among the same community groups. The use of handouts by the NGOs is very dangerous because when the funds are stopped, any other external agency cannot continue to work within the same community groups without handouts especially those who are interested in giving technical advice.

4.8 Case Studies

4.8.1 Usafi na Maendeleo Group - Kianda

Usafi na Maendeleo is a community group located in Kianda village, Kibera. The village is found in the extreme west of the informal settlement. It has a population of about 71,336 persons occupying an area of 18.3 Hectares.

4.8.1.1 Origin of the Group

The group was formed in April 1980. Originally it had only twenty members. Nairobi City Council visited the village the same year due to cholera outbreak in the area. Among the residents, the most affected by the outbreak were the young children. UNICEF also visited the area and the residents were advised to form a group to oversee the cleanliness of

the village. Initially the group would go round the village sensitizing the residents on the disease and other diseases related to the unhealthy environment. The major problems were identified as lack of basic services like toilets, clean drinking water, garbage disposal and sewage system.

4.8.1.2 Socio-Economic Characteristics of Members

Through the sensitization of the residents in the area, the group managed to attract more members and the current number is 160, which is a relatively large number. Female members are three times more than the men. The average age of the members is 39 years. All the members are married with an average household size of 8 persons. The average education among the members is up to ten years formal schooling. This is equivalent to post-secondary education. About 60 percent of the members are hawkers while others are businesspersons usually operating within the village. A few others are employed in formal jobs in the city centre. The monthly household incomes of the members are relatively high (Ksh. 8,000) considering the general incomes of the residents in informal settlements. Members of the groups have a relatively long period of stay in the village - an average of twenty-one years. Some members of the group indicated that they were born here and they therefore had a good experience of the living conditions of the area.

4.8.1.3 Organisation of Solid Waste Management Activities

The group is subdivided into eight groups namely KA,KB,KC,KD,KE,KF,KG, and KH. "K" here stands for Kianda. Solid waste management activities are organised as weekly clean ups of the different sections of the village, each of the sub groups cleaning its own section. These subgroups have their own committees to oversee the operation of the group

the village. Initially the group would go round the village sensitizing the residents on the disease and other diseases related to the unhealthy environment. The major problems were identified as lack of basic services like toilets, clean drinking water, garbage disposal and sewage system.

4.8.1.2 Socio-Economic Characteristics of Members

Through the sensitization of the residents in the area, the group managed to attract more members and the current number is 160, which is a relatively large number. Female members are three times more than the men. The average age of the members is 39 years. All the members are married with an average household size of 8 persons. The average education among the members is up to ten years formal schooling. This is equivalent to post-secondary education. About 60 percent of the members are hawkers while others are businesspersons usually operating within the village. A few others are employed in formal jobs in the city centre. The monthly household incomes of the members are relatively high (Ksh. 8,000) considering the general incomes of the residents in informal settlements. Members of the groups have a relatively long period of stay in the village - an average of twenty-one years. Some members of the group indicated that they were born here and they therefore had a good experience of the living conditions of the area.

4.8.1.3 Organisation of Solid Waste Management Activities

The group is subdivided into eight groups namely KA,KB,KC,KD,KE,KF,KG, and KH. "K" here stands for Kianda. Solid waste management activities are organised as weekly clean ups of the different sections of the village, each of the sub groups cleaning its own section. These subgroups have their own committees to oversee the operation of the group

activities, including solid waste management activities. These groups sweep their areas, burn some of the waste and unblock the wastewater drains. Most of the waste is transported from the village to the main road (Kibera Drive) so that the city council can collect using their trucks. The group uses spade, rakes, jembes and wheelbarrows in these activities. Therefore, the group is involved in waste collection and transportation activities. However the group is very consistent in these activities and therefore is considered as successful in the same. This consistency can be attributed to the fact that members meet regularly to discuss the issues of other group activities.



Plate 10: Usafi na Maendeleo - Kianda Group on a Day of Recieving Implements From a Donor

The group has also obtained bins through ANPPCAN donated by UNICEF. Ten households are responsible for the proper use and safety of the bin to see to it that it is not stolen, or vandalised and to empty the bins during the clean up exercise. This makes the activities very easy because it minimises the chances of indiscriminate dumping of the waste by the residents.

The clean up exercise usually takes place in the morning section of the clean up day (Wednesday). The different sub-groups meet together in the afternoon section for the general meeting. Here they discuss matters concerned with the clean up activities and those concerned with other projects in the group. Sometimes the group organises a clean up with other community groups in Kibera. This is meant to sensitize the other residents who are



Plate 11: Usafi na Maendeleo Group Members Disperse After Meeting with a Donor After a Routine Clean Up day

not members of the groups on the issue of voluntary solid waste management in the village. In this case, they cover larger sections of the area and encourage other residents to join in the clean up exercise.

The general perception of solid waste management responsibility among the members is that the residents should be involved in the same. This is because they are the generators of the waste and the consequences of unsanitary environment falls back on them and their children. Therefore, according to the group members the major achievement of the group can be seen in terms of improved environmental management of the village. Another closely related achievement is that the general awareness of the residents on the importance of proper management of their waste has been improved. Although this has not been fully achieved there is a general improvement of the residents on their perception of environmental sanitation.

4.8.1.4 *Problems Encountered in Solid Waste Management*

The group faces some problems in the process of solid waste management in their areas. One of them relates to the un-co-operatives of the rest of the residents in the village. Most of the residents still indiscriminately dispose of the waste in the already cleaned up space. This therefore points out the fact that the residents are not sensitized enough on the issue of managing their waste appropriately. One of the reasons given for this behaviour is that there are no nearby alternative sites for waste disposal.

Another problem facing the group members is the issue of inadequate tools. This means that some of the members of the group are idle while others are working with the available tools. This makes the clean up exercise slow and sometimes can take the members the whole morning to complete their respective section of the village. However the members cope by sharing the few available tools and borrowing from the neighbouring community groups which do not have clean ups on the same day. Also the group members complained

that the distance to the dumping place is very long and there are no provisions for dumping places within the village.

Some of the members in the group are not co-operative when it comes to issues concerning clean ups. Some of those that keep some of the tools are not available during the clean up time. This delays the operations of other members. It also discourages other members from attending the clean ups. This sometimes involves the group leaders taking away some of these tools from such members and giving them to some other trusted and responsible persons. Furthermore some of the group members feel that the landlords in the area should be involved in the waste management activities. This is because they would encourage their tenants to be involved in the same.

4.8.1.5 Other Group Activities

The group is involved in the following other activities (projects)

1. Constructing wastewater drains.
2. Construction of communal latrines and bathrooms
3. Operation of water kiosks and the construction of water tanks

These projects are prioritised by the various subgroups. These other activities have motivated the group members in their solid waste management activities. This is because it is only during the clean up days that the members meet to discuss the other projects matters.

Involvement of Other Organizational Groups

The above projects are geared towards waste management and are therefore in line with the issue of solid waste management. This provides an integrated approach to waste

management in the area. This is because both liquid and solid wastes are being considered including human waste (excreta). This is aimed at improving the general environmental management of the area.

The water kiosk projects are supposed to generate income for the group members. This also motivates them.

4.8.1.6 Other Indicators of Success in the Group

Most of the group activities highly involve the members in the identification of the problems being experienced in the village, planning how to tackle the problems and implementing projects. This shows the true impression of community participation in search of solutions of the problems common among the community members.

The group resolves conflicts arising among the members largely from within. This shows a sign of unity among the members. It is a registered group, and therefore determined to continue with group activities to better their lives. It is important to note that the group members have a relatively high formal education level and therefore leadership does not present related problems in the group. This means that most of the members understand fairly well the processes of project planning and implementation. They are therefore able to participate in all stages of their group projects.

4.8.1.7 Involvement of Other Organisations/Groups

Apart from the community groups in Kibera dealing with clean ups within the village, Usafi na Maendeleo Group is involved with many other organisations. These include,

ANPPCAN, MSF, UNICEF and NCC and other community groups within Kibera.

ANPPCAN is an NGO, mostly dealing with children welfare and community organisation in Kenya and other parts of Africa. The NGO sensitised the group on the need to clean up the village on a regular basis among other activities. ANPPCAN facilitates the participation of the community in all aspects of the development problems in the area. In dealing with the other projects of the group, the NGO identifies the project sites in agreement with the beneficiaries. It facilitates the involvement of the community members in the community counterpart in terms of unskilled labour and cash contribution, safe keeping of materials and supplies. It also facilitates participation in the technical designing of the project to ensure appropriateness and compatibility to the local situation and assists in the management of the projects at the field level. It participates in the project designs and mobilises that community in different activities of the projects. It facilitates the formation of the committees concerned with the different projects. It co-ordinates closely with the different partner agencies to effectively implement the projects. It is through ANPPCAN that the group got the assistance of UNICEF as the major donor of the various sanitation projects.

UNICEF has helped the group to come up with a clinic and build toilets. The organisation facilitates the purchase of the materials being used in the sanitation projects of the group. It is therefore a major donor of the projects of the group. Therefore it ensures that the funds are available for the various processes of the projects.

Nairobi City Council is involved in the transportation of the collected waste (which has

been collected from the residential area) from the main road. However, this is not effectively done. As far as the other projects in the group are concerned the city council is responsible for the technical aspects in the implementation of the various sanitation projects among the group. It ensures that there is proper implementation of the designs through close supervision and monitoring. It co-ordinates closely with UNICEF to ensure that quality materials are purchased. It also co-ordinates closely with ANPPCAN for effective implementation of the project.

4.8.1.8 *Future Plans*

The group plans to compliment the bins with garbage collection carts that will be used to collect the garbage from the bins on a regular scheduled clean up days by the organised group and take it to the designated sites in the village. The group hopes that the cleansing Department of NCC will collect the garbage from the dumpsite regularly.

The group plans to increase regular contributions to maintain the bins and the collection carts and each household using the bin will contribute ten shillings more per month. The organised groups will manage these funds and each household and the landlords will do the collection. This is because the waste problem is perceived as a concern of all the residents in the village. The group therefore hopes to include all the residents in the management of the environment in the whole village.

4.8.2 Pamoja Community Group - Soweto

4.8.2.1 *Origin of the Group*

Pamoja Community Group started after UNICEF advised the villagers to form a group to oversee the cleanliness of the village in 1995. Originally the group had two hundred members. Currently membership stands at twenty-five. The group has therefore within the short period of operation of three years lost most of its members. The group's formation was purely an external initiative because the local administration through the local chief was involved in pressing for the formation of the group. Today, the area representative has a lot of influence over the affairs of the group. The group is not yet registered.

4.8.2.2 *Characteristics of the Group Members*

Majority of the group members is women, some of which are elderly. The others are those Traditional Birth Attendants (TBAs). The average age of the members is forty years. More than half of the members is single. The members are hawkers. Overall, the members come from average household sizes (consisting of 6 persons).

Other Indicators of Failure

There are low educational levels among the members in the group. The average years in formal school are five. There are also a significant number of illiterate members especially among the elder women in the group. The average level of income among the members is relatively low. The majority of the members are hawkers. The members of the group have lived in Soweto for an average of fourteen years.

4.8.2.3 *Organisation of Group Activities*

The group is involved in only one type of activity because solid waste management activities had stopped at the time of the study. Solid waste management was in form of weekly clean ups and involved only the collection of the waste. There is a water project which acts as the main source of income for the group. The project was started in 1994. This brought most of the people in the village together in the hope that through it, they would improve their standard of living. The group prior to the stop of solid waste management activities used to do weekly clean ups. On this day (Saturday), the group would have a meeting in the afternoon. Meetings were well attended and the places cleaned up well. Members were actively involved in the decisions of the group. They used to sensitize the other residents on the issue of environmental health. In most of the clean up days, the other residents used to join them and they would cover almost the whole village. Today the group meets on the same day but to discuss the issues concerned with their water project. They have a water tank from which they sell water to the other residents in the village.

4.8.2.4 *Other Indicators of Failure*

The group does not involve many other groups or agencies in their activities. However, when there are conflicts among the group members, outsiders are contacted to resolve the same. This gives the members no sense of unity and they easily disagree due to the outside influence.

One of the misconceptions of the members is that they cannot engage in community activities without pay. This means that if they are to revive solid waste management

activities in their village, some form of payment is a condition. This is the reason why the group concentrates only on the water project because it generates money for the group. Asked about their opinion on who is responsible for solid waste management in the village, most of the group members cited that this should be the responsibility of the city council. They did not therefore perceive this as their responsibility.

4.8.2.5 *Factors Leading to Termination of Solid Waste Management Activities in the Group*

The group stopped doing their regular clean ups early the beginning of the year. Trouble started when the water tank project had accumulated enough money to purchase houses for the members. This first phase of the water project was supposed to provide with some members with houses within the village. Those members who had allegedly completed to pay their monthly contributions towards the purchase of the houses were given the priority in the allocation of the houses.

Those members who obtained the houses stopped being committed to any of the group activities. They stopped attending the group meetings and the clean up activities on Saturdays. The other group of the members who did not get the houses complained that the houses were not allocated as they had agreed but some other crude means were used. It was alleged that even some of the members who had not completed their contributions were given houses, especially even those members who had their own houses in the villages. They argued that the people who did not have their own houses should have been given the priority in this first phase.

Some of the members would come for the meetings as usual but because of the poor turn

out and the lateness of the other members, they would give up and could not do anything concerned with the clean ups.

With these disagreements, most of the other members are now reluctant to continue with any of the activities which is not income generating. They are concentrating on the water tank project, by taking turns to sell the water and managing the finances well so that they could also be able to purchase houses for themselves. However these are only the few people who did not give up after the first phase.

The initial members who had kept the group clean up tools disappeared with them. Some of them were lost and there were allegations that some of the people sold such implements as the wheelbarrows and the spades. Due to the lack of interest in the activities which are not income generating, there has never been a follow up of these issues. Furthermore there are no more tools for the clean ups and this is the reason the members give for stopping the clean up activities.



Plate 12: A Poorly Attended Pamoja Community Group Meeting with Three Community Leaders (Middle - Male)

There is no commitment of some of the members to the group activities. The members respond poorly to the meetings held. Even those who attend these meetings come very late and there is very little time left for the members to discuss seriously the group issues.

4.8.2.6 *Future Prospects of Solid Waste Management Activities*

The group members have no hope of reviving the solid waste management activities. The

members suggested that donors should start paying those managing waste in the residential area. However, the group plans those members should continue with the water tank project and include other income generating activities such as a nursery school for their children and other residents in the area.

Firstly, women are often overlooked because most of their programmes are regarded as petty because administrators may be unaware of their special needs and potential contribution. Secondly, in many ways, women lag behind men in educational and socio-economic and therefore require special attention to encourage and enable them to advance. Finally, much of the success in community development depend on women (WHO, 1967). Many studies have proved that women are the backbone of the social-economic development and environmental management (Jebbitts, 1984; Swartz, 1985; and Sijbeema, 1985). In comparison with rural areas, very little information is available on the involvement of women in environmental protection.

3.1 Women and Environmental Management

The financial difficulties and other problems brought about by rapid urbanisation have prompted Nairobi residents especially women to organise themselves in self help groups to improve their living conditions (Mugure, 1983). The strength of women is inherently in the co-operative organisation and participation in all processes of development (Kariuki, 1985). They tend to make the world a better place for themselves and the whole mankind through their self help activities. This is especially so in the living conditions in the urban areas, which have been neglected of late due to the rapid population growth and scarcity of resources. Thus their full

Chapter Five

The Role of Women in Solid Waste Management

5.1 Introduction

There is need to study women because most of their programmes are neglected perhaps because administrators may be unaware of their special needs and potential contributions. Secondly, in many ways, women lag behind men in educational and socio-status and therefore require special attention to encourage and enable them to advance. Finally, much of the success in community development depend on women (WHO, 1992). Many studies reveal that women are the backbone of the social-economic development and environmental management (Mbithi, 1984; Swantz, 1985; and Sijbesma, 1985). In comparison with rural areas, very little information is available on the involvement of women in environmental sanitation.

5.2 Women and Environmental Management

The financial difficulties and other problems brought about by rapid urbanisation have prompted Nairobi residents especially women to organise themselves in self help groups to improve their living conditions (Mugure, 1993). The strength of women is inherently in the co-operative organisation and participation in all processes of development (Kariuki, 1985). They tend to make the world a better place for themselves and the whole mankind through their self help activities. This is especially so in the living environments in the urban areas, which have been neglected of late due to the rapid population growth and scarcity of resources. Thus their full

Chapter Five

The Role of Women in Solid Waste Management

5.1 Introduction

There is need to study women because most of their programmes are neglected perhaps because administrators may be unaware of their special needs and potential contributions. Secondly, in many ways, women lag behind men in educational and socio-status and therefore require special attention to encourage and enable them to advance. Finally, much of the success in community development depend on women (WHO, 1992). Many studies reveal that women are the backbone of the social-economic development and environmental management (Mbithi, 1984; Swantz, 1985; and Sijbesma, 1985). In comparison with rural areas, very little information is available on the involvement of women in environmental sanitation.

5.2 Women and Environmental Management

The financial difficulties and other problems brought about by rapid urbanisation have prompted Nairobi residents especially women to organise themselves in self help groups to improve their living conditions (Mugure, 1993). The strength of women is inherently in the co-operative organisation and participation in all processes of development (Kariuki, 1985). They tend to make the world a better place for themselves and the whole mankind through their self help activities. This is especially so in the living environments in the urban areas, which have been neglected of late due to the rapid population growth and scarcity of resources. Thus their full

participation is essential if attempts to improve the current human settlement conditions are to be successful. This is so especially in the low-income areas of urban areas.

4.1 Significance of Women in Community Based Solid Waste Management

There were no pure women groups in Kibera involved in solid waste management activities. The groups studied had both male and female members. The number of women in each of the community groups was examined. This was compared with the number of men in the groups. Table 4.9 above shows the different sex ratios in each of the groups. It was found that only three groups out of twelve has fewer women than men in the group. In general, women were found dominating in the community groups involved in solid waste management in Kibera. In some of the groups, there were very few men apart from the women. These included Mashimoni Community Health workers and Moyo Group.

In the community groups studied, women were also found to dominate in leadership. This shows that women are seriously involved in solid waste management activities in the area.

4.2 Socio-Economic Characteristics of Female Members of Community Groups

4.2.1 Age among Female Members of Community Groups

The number of female members of community groups studied was twenty-two out of the twenty-five community group members studied. The following was the classification of age among female members.

The traditional involvement of women in sanitation has implications for programmes designed to improve their provisions. This demonstrates that women have a potential role to play in such programmes that will contribute to wider development.

5.3 Significance of Women in Community Based Solid Waste Management

There were no pure women groups in Kibera involved in solid waste management activities. All the groups studied had both male and female members. The number of women in each of the community groups was examined. This was compared with the number of men in the same groups. Table 4.9 above shows the different sex ratios in each of the groups. It was found that only three groups out of twelve has fewer women than men in the group. However, in general women were found dominating in the community groups involved in solid waste management in Kibera. In some of the groups, there were very few men compared to the women. These included Mashimoni Community Health workers and Pamoja Afya Group.

In the community groups studied, women were also found to dominate in leadership. This implies that women are seriously involved in solid waste management activities in the area.

5.4 Socio-Economic Characteristics of Female Members of Community Groups

5.4.1 Age among Female Members of Community Groups

The number of female members of community groups studied was twenty-one out of the thirty-nine community group members studied. The following was the classification of age among the female members.

Table 5.1: Age Pattern among Female Group Members

Age-Group	Frequency
< 30 years	1
30 - 39 years	9
40 - 49 years	3
50 years +	8
Total	21

Source: Field Survey, 1998.

There were very few young female members among the groups studied. Most of the young members are men especially in the Youth groups studied. Inter-villages Youth group and Youth in Action Group. It is therefore important to recruit younger female members in the groups. These are expected to be more active than their older counterparts. These younger people will attract more other young people into these activities since most of the population in Kibera is young job seekers.

A significant proportion of the female group members in Kibera are old that is fifty years and above. Furthermore, among the community groups studied, those with more women were found to have older members (Table 5.2).

Table 5.2: Relationship between Proportion of Women and Age among Community Groups in Kibera

Age % Women	< 31 Years	31 - 40 Years	> 40 Years	Total
< 50%	1	1	1	3
50% +	1	5	3	9
Total	2	6	4	12

Source: Field Survey, 1998.

The table indicates that the majority of the groups with more women have older members. These are physically not expected to contribute much to the solid waste management activities in terms of the manual work involved. Younger women should be encouraged to join groups carrying out solid waste management.

5.4.2 Household Size of Female Members of Community Groups

The average household size for the female members of the groups studied is eight. Also, the study shows that the two groups with average small households have relatively smaller proportions of women. This can be compared to the four groups with averages of relatively larger households that had a larger proportion of women (Table 5.3).

< 50% Married	> 50% Married	Total
1	1	2
1	5	6
2	4	6
3	9	12

Field Survey, 1998.

Table 5.3: Relationship between Proportion of Women and Household Size among Community Groups in Kibera

Household Size % Women	< 6 Persons	6 - 8 Persons	> 8 Persons	Total
< 50%	2	0	1	3
50% +	2	7	0	9
Total	4	7	1	12

Source: Field Survey, 1998.

The question is: Should women be more involved in community based solid waste management than men? This is in consideration that larger households are expected to generate more waste. The community groups where women dominate have members from larger households.

5.4.3 Marital Status of Female Members of Community Groups

Among the groups studied there was an observation that those groups with more women have larger proportion of the married members (Table 5.4).

Table 5.4: Relationship between Proportion of Women and Marital Status among Community Groups in Kibera

Marital Status % Women	> 50% Married	< 50% Married	Total
< 50%	2	1	3
50% +	7	2	9
Total	9	3	12

Source: Field Survey, 1998.

Furthermore, marital status of the female members studied was examined. Out of the 21 women, 17 are married, 4 are single. This shows that married women respond to community based solid waste management activities. They are more committed to the management of their living environments perhaps to protect their family members especially the children from being infected with environmentally related diseases while their husbands are away working.

The most successful group in Kibera (Usafi na Maendeleo - Kianda) aimed at eradicating infectious diseases among the residents at the start of the group. This has been achieved through the weekly clean up programmes and the clinic sponsored by UNICEF. This should be the goal of every community group in the area. Notably most of the members in this group were women 3 times more than men).

5.4.4 Type of Occupation among Female Members of Community Groups

The following table (Table 5.6) shows the pattern of the different female occupations in the community groups.

Table 5.5: Type of Occupation among Women in Community Groups

Type of Occupation	Frequency
Housewife	7
Hawker	12
Business person	1
Formal employment	1
Total	21

Source: Field Survey, 1998.

Also, the relationship between the proportion of women and occupation was observed among the community groups studied.

Table 5.6: Relationship between Proportion of Women and Occupation among Community Groups in Kibera

Occupation % Women	Hawkers	Formal Employment	House Wives	Business	Unemployed	Total
< 50%	1	0	0	1	1	3
50% +	5	3	1	0	0	9
Total	6	3	1	1	1	12

Source: Field Survey, 1998.

Those groups that have a higher proportion of women majority of the members generally remain around the residential area according to their main occupations (hawkers and housewives)

Occupation among women is an important aspect in their community development activities. This is because of their inherent roles as homemakers and as breadwinners in the modern society. Women's occupations should allow more time for these activities.

Most of the women in the community groups are either housewives or hawkers. A very small proportion of them is occupied outside their residences. This is a conducive condition for the involvement of women in community based solid waste management. Furthermore, the activities that most of the women engage in are within the residential areas and therefore

Also, the relationship between the proportion of women and occupation was observed among the community groups studied.

Table 5.6: Relationship between Proportion of Women and Occupation among Community Groups in Kibera

Occupation % Women	Hawkers	Formal Employment	House Wives	Business	Unemployed	Total
< 50%	1	0	0	1	1	3
50% +	5	3	1	0	0	9
Total	6	3	1	1	1	12

Source: Field Survey, 1998.

Those groups that have a higher proportion of women majority of the members generally remain around the residential area according to their main occupations (hawkers and housewives)

Occupation among women is an important aspect in their community development activities. This is because of their inherent roles as homemakers and as breadwinners in the modern society. Women's occupations should allow more time for these activities.

Most of the women in the community groups are either housewives or hawkers. A very small proportion of them is occupied outside their residences. This is a conducive condition for the involvement of women in community based solid waste management. Furthermore, the activities that most of the women engage in are within the residential areas and therefore

women need a cleaner and hygienic environment from where to work. More of the women should therefore be more involved in solid waste management in these areas.

Notably, most of the women are around the residential areas most of the time. They are therefore available for the activities taking place within the living environment. In contrast most of the men are away in search of jobs or employed outside the area and are therefore not available most of the time. Women should therefore be encouraged to form groups or join the existing ones for community based solid waste management.

5.4.5 Income among Female Members of Community Groups

In solid waste management, the activities involved are not directly paying. However, as seen earlier, most of the community groups involved in solid waste activities are engaged in income generating activities to raise the members' level of income.

However, most of the community groups with higher proportions of women are earn less incomes (Table 5.5).

Table 5.7: Relationship between Proportion of Women and Income among Community Groups in Kibera

Income % Women	< Ksh. 2501	Ksh. 2501 - 5000	> Ksh. 5001	Total
< 50%	1	1	1	3
50% +	3	4	2	9
Total	4	5	3	12

Source: Field Survey, 1998.

Emphasis should be laid on improving the income status of women in these groups. Nevertheless more women should be encouraged to join in the groups and initiate income generating activities which would raise their incomes.

5.4.6 Period of Residence among Female Members of Community Groups

The duration of residence is important in regard to the understanding and appreciating the challenges of the living environment. The period of residence among the female members of community groups was obtained. The average number of years of residence among this group of people is 27 years. This considerably long period has given the women enough experience in living in the area and therefore to appreciate the major environmental challenges.

Furthermore, the groups with an average of longer period of stay in Kibera consisted of more women than men and vice versa (Table 5.6).

Table 5.8: Relationship between Proportion of Women and Period of Residence Size among Community Groups in Kibera

Period % Women	< 11 Years	11 - 20 Years	21 - 30 Years	> 39 Years	Total
< 50%	1	0	2	0	3
50% +	2	1	4	2	9
Total	3	1	6	2	12

Source: Field Survey, 1998.

Women have therefore appreciated the responsibility of environmental management. More of the women should the challenge to take up this responsibility.

5.4.7 Education Level Among Female Members of Community Groups

Generally it is documented that women suffer high illiteracy levels that men, especially in developing countries. This problem is also responsible for the challenges of women self help activities in community development projects. This limits their effectiveness in their activities.

Table 5.10 shows the relationship between proportions of women among community groups and levels of education.

Table 5.9: Relationship between Proportion of Women and Average Years in School among Community Groups in Kibera

Years in School % Women	< 6	6 - 9	> 10	Total
< 50%	1	0	2	3
50% +	2	3	4	9
Total	3	3	6	12

Source: Field Survey, 1998.

A significant number of those groups which have higher proportions of women than men show relatively lower levels of formal education. Furthermore the average years of formal schooling among the female members of community groups is 7. This is equivalent to primary level of education, which is too low in modern development perspective. It is only the first level of education, which is regarded as basic education. Most of the women therefore are not exposed to the appropriate perception of the modern challenges in terms of more self help efforts in alleviating most of the current development problems. This is

evidenced by the attitude presented by the members of the least successful group (considered earlier) on the responsibility of solid waste management activities. Most of the members indicated that it was the city council's responsibility. Thus the members do not yet understand that the council is financially incapacitated to do this. These members have not accepted this as their own responsibility. This is why the groups members are not committed to solid waste management activities. they are more interested in the financial aspect and believe that no person can continue with the activities without direct payment.

There is therefore the necessity for community group members involved in solid waste management activities to be more educated on the aspects of residential environmental management so that they can improve their performance.

5.5 Explanation for the Role of Women in Community Based Solid Waste Management

The study found out that women are the majority in community groups involved in solid waste management activities in Kibera. Majority of the respondents among the group members and non-group members stated that women are and should be more involved in community based solid waste management activities in the area. These respondents explained why they thought women should be more involved and why at present they are more involved than men.

It was stated that women are more involved in clean up activities in the area because they are normally involved in cleaning activities as they do their routine jobs in the houses - washing utensils and clothes, and cleaning the houses among others. They are used to keeping their

houses and compounds clean. This is confirmed by studies that indicate that cleanliness inside the houses in high-density low-income residential areas is not the problem. The major problem is the cleanliness of the areas immediately after the houses, which is associated with a group of households or the community. Thus environmental management in these areas has to involve community-based efforts to be more effective. Women are therefore perceived to maintain cleanliness around the houses and they can be more effective by working together with other neighbouring households.

Some respondents stated that the women are more conscious of hygiene because they deal with work that requires a lot of cleanliness. Thus cooking and bringing up children is a major female role traditionally and significantly visible at present. The responsibility of women over health of their families is a reason given as why they should be involved in community based solid waste management activities in the area. Some of the groups studied were prompted to start clean up activities and awareness creation after disease outbreak, which had affected mostly the young children. Majority of the people who initiated such activities is women.

Women also suffer more the consequences of poor environmental conditions than men. This is because they spend most of the time around their residential areas as mentioned earlier. The sensitization programmes carried out among the residents by some community groups indicated that they were able to reach more women than men. Therefore more women are aware of the need for community based solid waste management in the area than men. Women are and can therefore be determined to protect themselves from being infected with environmentally related diseases. This is an important aspect of environmental management

considering the poor sanitation facilities in the informal settlements. The "Wrap and Throw" method of human waste disposal has become a common alternative and practice due to the unavailability of toilets in most of the plots. Thus increasing amounts of human waste is significantly becoming an issue in solid waste management around the informal settlements. It has been thought that it was more difficult for men to handle such waste or educate the residents on proper waste disposal than women. Women could also provide such initiatives as solid waste separation directly from their household in order to ease collection, recycling and re-use of some of the materials.

The fact that women are more available around the residential environment is also a factor which was used to justify the involvement of women in community based solid waste management. Low-income women are not occupied in formal employment outside their residential areas. Some of them are housewives while others are hawkers. Even those who look for employment, women prefer to work near their houses because of their role in looking after the welfare of the family members. Women are also said to carry the burdens of their households' welfare and they are responsible for children's upbringing. These responsibilities are more pressing for those women who are household heads. They are the breadwinners and at the same time they are the homemakers and environmental managers.

It is generally held that women form the largest proportion of the population in rural areas. However, in urban areas, the proportions are smaller because of the importance of more male rural-urban migrations in search of employment, leaving their families in the rural areas. However, the trend is changing for women because there are increasing rates of female migrations to the urban areas from the rural areas due to the increasing levels of

education among women and the increasing phenomenon of female heads of households. Some of the respondents quoted that women are more involved because they are more in number than men. This is in consideration of the number of women present in the residential area daytime when men were away working.

Apart from the traditional role of women involvement in hygiene related activities in the living environments, it has been indicated that women have more experience in community based development activities especially in residential areas. This is in recognition of the fact that women are more involved in self-help community development activities than men, in both urban and rural areas. Thus they are used to the operations of self-help groups and give many opinions on the same. They accept that most of their effectiveness will depend on voluntary work towards achievement of their goals. Women are generally better managers of money belonging to groups than men. This is because of their experience in merry-go-round activities, which are carried out informally.

There are about three thousand groups working within Kibera and most of them are women groups. However, none of the women groups was to be involved in solid waste management activities. All these groups are carrying out income generating activities and the common practice of merry-go-round. This shows that a lot of education campaigns should be directed towards women groups so that they could consider environmental management activities to be part of their groups activities. This would increase the numbers of people involved in the same and they would also attract men in the same activities during the clean up days, for example. This would also act as one of their income generating activities in that they would engage in such activities as composting and selling the compost

to the farmers around and outside Nairobi.

Thus they will not only be cleaning the environment but also making money out of their clean up activities. They would also include other households in the process by informing them about storing their organic waste separated from other types of waste and therefore making it easier for collection. This would also reduce indiscriminate waste disposal around the residential area. By earning money through waste management activities, they would also raise the living standards of their families. This would therefore be an integrated approach to solid waste management in the informal settlements. Income generating activities in this sense are important especially in regard to the fact that women are confronted with lower employment rates than their men counterparts. This is because women have lower educational levels and that they suffer a lot of employment discrimination. Studies have it that women have a lower literacy level within groups than in the general female population.

Due to the unemployment problem generally facing women, most respondents indicated that women are more in community groups than men are because they join the hope that they would earn some money from their activities, mainly through donations. This is with regard to the fact that most groups form and seek support (usually financial) from the NGOs and other development agencies working within the area. Women usually receive more sympathy than men because of their generally low social status. Most of the NGOs give women financial support to improve the living standards of their families. This would therefore receive more support than men would in order to improve their social status.

5.6 Challenges of Women in Community Based Solid Waste Management

... makes them desire to get involved in those activities which are income generating other

There was little response as to the disadvantages of having more women in groups. However the little information obtained shows that there are more disagreements among women than men. This causes quarrels especially among themselves leading to disunity among the group members and lack of motivation and therefore general ineffectiveness of the group activities. Sometimes women influence one another negatively in groups. In this case it was quoted that the people who advocate for payment of the members for clean up activities are women. They easily influence one another against carrying out these activities without pay.

... women in Kibera such that the existing women groups have not included solid waste management as some of their activities in their groups.

Another disadvantage of having more women than men in the groups are that the former is unable to do much manual work. Thus they need the men to do this and then the women to carry out lighter activities like sweeping. However the difference between these two groups of people is fading out because of more involvement in manual activities.

... made dirty by the area residents. Some of these residents think that the

The time available for women to engage in community based solid waste management is also becoming more limited with time. Apart for the role of women being involved in household chores, they are increasingly becoming important breadwinners, especially those who are heads of their households. However, despite these shortcomings women still remain the major role players in community based solid waste management activities in informal settlements.

Women also face serious problems in accessing incomes for group based activities. Women

generally do not own physical assets and they get problems in accessing credit facilities. This makes them desire to get involved in those activities which are income generating other than those activities which are not financially paying.

Women also face problems generally in their involvement in community development self-help programmes because of lack of recognition of their efforts by the relevant authorities especially the central governments. These have failed to provide women with the necessary support needed for women programmes. The women lack the necessary morale to carry on development programmes in their localities. This is true even with solid waste management among the women in Kibera such that the existing women groups have not included solid waste management as some of their activities in their groups.

The general problem of un-co-operativeness of the other residents when the clean up activities have been made around their dwelling units is also a problem facing the women in these groups. This easily discourages them because the areas that have been cleaned are immediately made dirty by the areas residents. Some of these residents think that the women have been paid to do the work and cannot join them in these activities.

Chapter Six

Summary of Findings, Recommendations and Conclusions

6.1 Findings

1. The performance of community groups in regard to solid waste management reviewed that the most successful groups have the following characteristics.

- i) They carry out more solid waste management activities
- ii) They are frequently involved in solid waste management activities
- iii) They are consistent in solid waste management
- iv) They have operated for a long period of time.

2. The less successful groups have the following characteristics.

- i) They are involved in only the collection of solid waste.
- ii) They are not frequent in solid waste management activities.
- iii) They are inconsistent in solid waste management activities. The least successful had actually stopped solid waste management activities.
- iv) They have operated for a very short period of time.
- iv) Community groups have more females than male members.

3. According to organisational indicators of success, the most successful groups possess the following characteristics.

- i) The groups have more members.
- ii) They are registered.
- iii) Their members meet more frequently.

- iv) They interact with many other groups.
 - v) The members resolve problems within the group.
 - vi) They apply more sustainable strategies that would influence the effectiveness of the group in solid waste management to attract other members.
4. The least successful groups have the following characteristics according to organisational factors of success.
- i) The groups have fewer members.
 - ii) They are not registered.
 - iii) They meet less regularly.
 - iv) They interact with few other groups.
 - v) They depend on external intervention to resolve group problems.
 - vi) They intend to apply unsustainable strategies like paying their members to attract more.
5. With regard to management indicators of success, the following are the characteristics of the most successful groups.
- i) Groups operate from members' initiative.
 - ii) They are engaged in more activities apart from solid waste management.
 - iii) They have income generating activities to support their members.
 - iv) The group's greatest need is to enhance group activities particularly those concerned with solid waste management.
 - v) The group members perceive solid waste management as their own responsibility.
6. The following are the characteristics of the less successful groups with regard to management factors of success.

- i) Groups operate from external initiative
- ii) They are involved in fewer activities other than solid waste management activities
- iii) The greatest need of the members is payment
- iv) The members do not perceive solid waste management as their own responsibility.

7. The following socio-economic characteristics of community groups involved in solid waste management in Kibera indirectly influence their success in the same.

- i) The average age among the members is 39 years and majority of them are 30 to 40 years old.
- ii) Majority of the members is married.
- iii) Majority of members is from relatively large households. The average size is 7 persons per household.
- iv) Half of the members have attained post-secondary school education. The average years in formal schooling among the community groups' members are 9.
- v) Majority members of community groups earn low incomes. The average monthly household income is approximately Ksh. 3,600.
- vi) Majority of the members has stayed for a long period of time in Kibera. The average period of residence in Kibera among the group members is 22 years

8. Apart from the above findings, the following other conditions were indicated as necessary for group's success in solid waste management activities.

- i) Sensitisation of the general residents.
- ii) Involvement of other residents in communal solid waste management activities.
- iii) Adequate implements for solid waste management activities.

- iv) Involvement of the local authority in collection of solid waste from strategic dumping points in the residential area.
- v) Community empowerment.

9. Furthermore, the following were indicated as other major weakness of community groups involved in solid waste management in informal settlements.

- i) Lack of finances and financial support.
- ii) Poor leadership.
- iii) Lack of government recognition of, and involvement in, the groups activities.
- v) Benefit induced groups which are unsustainable.
- vi) Group formed without regard of community organisation concept.
- vii) Poor co-ordination of NGOs involved in community development in the residential areas.

6.2 Recommendations

1. It is important to encourage the youthful residents in the informal settlements to participate in organised community based solid waste management. This is in consideration of the large number of youth, their high education and potential leadership and administrative skills required in the organisation and management of community groups, especially those involved in solid waste management activities.
2. The local authorities need to provide regular solid waste collection services in informal settlements. This would help those community groups involved in solid waste management in these areas to effectively clear the waste from the residential areas and therefore be more effective.

3. It is necessary that accessible collection points be designated near the housing structures in informal settlements. This would be done in order to discourage the residents from dumping waste anywhere and would ease the work of the community groups in solid waste management.
4. Community groups involved in solid waste management need the support of the local administration. This would ease the community groups in local activities.
5. It is important that groups be encouraged to initiate income-generating activities in order to promote household income. It would be a meaningful strategy in the development of the urban poor in addition to the fact that it would motivate community groups in their solid waste management activities.
6. Community groups need to be encouraged to engage in composting activities as a final stage in solid waste management. Giving loans to prospective groups could do this. An overall popularisation of compost in the agricultural sector as a suitable alternative to chemical fertilisers would expand the market for the compost. This would trigger the interest of the composting activities and increase composting activities and increase compost production in addition to clearing the collected solid waste in the poor residential areas.
7. For effective participation of the communities in solid waste management within informal settlements, agencies need to establish offices within the communities. Donor agencies would be more useful among the residents if they increased interest in home improvement and social welfare. It is important that existing CBOs be used as entry points to the communities instead of starting new ones.
8. There is need for partnerships to be encouraged between the city council, the NGOs

and the community groups. The council could collect waste from the designated collection points, NGOs to finance the communities with tools and technical skills to the community groups. The community could collect waste through cleaning their living environment. The community groups could also organise recycling and composting activities within the groups and also be involved and informed on the re-use method of waste management. The local administrators should be involved in organising community campaigns on the need for community based action on the environment. This will provide an integrated approach to solid waste management in the informal settlements.

9. It is important that community groups are empowered and the level of awareness increased through seminars and workshops to ensure continuity, empowering mechanisms such as training strengthening financing and legal status of community groups, self and support for initiatives of communities.
10. It would be necessary that joint committees could be made between community groups in order to tackle the same problems. The level of awareness of waste generators on the importance of maintaining a clean environment and the implications of the irresponsible waste handling practices such as indiscriminate dumping will influence the effectiveness of community participation.

6.3 Suggestions for Further Research

More research is needed in the following areas in order to understand better the conditions under which community groups in informal settlements succeed in solid waste management. This should be focused in the following areas, which were not attempted in this study due to the limited time and other resources.

1. The determination of conditions of success among the middle income and high income as compared to low-income community groups involved in solid waste management in urban areas.
2. A further study on the significance of socio-economic factors on performance of community groups in solid waste management.
3. There is need to examine the influence of the conditions of sanitation with regard to human waste disposal on the effectiveness of solid waste management among community groups in informal settlements.
4. It is important to find out the role of the local administration up to the grassroots level in the management of environmental sanitation through community based efforts in informal settlements.
5. Leadership qualities need to be scrutinized with regard to performance of community groups involved in solid waste management in informal settlements.

6.4 Conclusions

There are many community groups involved in solid waste management in Kibera. However the conditions under which these groups are working do not favour their effectiveness in the same. The socio-economic characteristics of the members indirectly influence the success of these groups in solid waste management activities. The direct indicators of success among the community groups in informal settlements are organisational, management and performance factors. Most of the community groups have inadequate capacities in this regard

to succeed in solid waste management activities in these areas. For example, majority of the groups only do primary waste collection through clean ups.

The youth is not adequately involved in organised solid waste management in informal settlements. This group of the residents needs to be more involved. There is therefore the need for awareness campaigns among the youth towards this. Interventions towards helping the groups towards more successful solid waste management need to be pursued. These should also create an enabling environment for these groups. Notably, there is need to focus on other group activities along with solid waste management. There is need to encourage income generating activities within solid waste management groups in order to cater for the economic needs of the group members and also motivate them.

The majority of the members of community groups engaged in solid waste management activities in Kibera are women. They are faced with challenges and at the same time they have potential in dealing with the problem of solid waste in the area. There is need for more women involvement in community based solid waste management activities especially among the existing women groups in the area.

Support is needed from NGOs, local authorities, local administration and the development agencies, which could create an enabling environment for the community groups. Women have a significant role to play in the same.

Bibliography

Amunga, W.E.O (1976) **A Study of the Housing Policy in Kibera with Specific Reference to Low Income Communities.**

Unpublished M.A (Planning) Thesis, Nairobi:University of Nairobi, Kenya.

Breese, G. (1966) **Urbanisation in Newly Developing Countries.** Princeton: Prentice-Hall.

Burinic', M. et al (1983) **Women and Poverty in the Third World.** London: The John Hopkins University Press

Clark, D. (1971) **Social Organisation in Kibera, Nairobi.** Unpublished M.A (Sociology) Thesis. Kampala: Makerere University, Uganda.

✓ Clinard, M. B. (1966) **Slums and Community Development: Experiments in Self-Help.** New York: The Free Press.

Dolores, Rio (1997) **Role of Communication in Promoting Community Participation in Solid Waste Management in Informal Settlements: A Case Study of Kibera, Nairobi.** UNCRD- Kenya and ISTOM - France

Dwyer, D.J (1975) **People and Housing in Third World Cities: Perspectives in the Problem of Spontaneous Settlements.** London: Longman.

Fernandez, A.K. (1993) "Public-Private Partnerships in Solid Waste Management" UNCHS (Habitat) (1993) ***Regional Development Dialogue***, Vol. 14 No. 3 Autumn 1993 p. 3-23.

Fraser, A. and K. Mountoux (1985) **Forward Looking Strategies on the Advancement of Women to the Year 2000.** Herbert, H. Humphrey Institute of Public Affairs. University of Minnesota, Minneapolis, USA.

Frijris, J.A.G (1993) **Disposal Treatment and Utilisation of Solid Waste in Developing Countries: Technological Options and Hygienic Conditions.**

Girardet, H. (1996) **The EAIA Atlas of Cities: New Directions for Sustainable Urban Living** Gaia Books Limited.

Geerts, F. (1996) **Solid Waste Management as a Function of Local Government: A Case Study of the City of Nairobi** UNCRD, University of Twente, the Netherlands.

Hekken Van N. (ed) (1976) **Women's Social and Economic Projects: Experiences from Coast Province** Food and Nutrition Planning Unit Ministry of Planning and National Development, Nairobi Kenya and African Studies Centre Leiden, Netherlands.

Huyck, A. P. Van and J.D. Herbert (1968) **Urban Planning in Developed World** London: Croomhelm.

Kenya, Republic of (1976) **Kenya's National Report to the United Nations Conference on Human Settlements.**

Khadaka, V.L. (1988) **Problems of Solid Waste Management in the City of Nairobi.** Unpublished M.A (Planning) Thesis, University of Nairobi, Kenya.

Kibwage, J.K. (1994) "Towards the Privatisation Of Household Waste Management Services In the City of Nairobi, Kenya" Paper presented at the African Waste Forum '94 UNCHS (Habitat) Nov, 1994)

KUESP (1997) **Kibera Infrastructure Project: Urban Environmental Sanitation Pilot Project.** Republic of Kenya, Republic of Kenya.

Ladu, M. B. (1989) "Low Income Housing in Nairobi: An Alternative Approach" Centre for Urban and Community Studies, University of Toronto.

Leonard, H.J. (1989) **Environment and the Poor: Development Strategies for the Common Agenda.** News Brinswick, New Jersey: Transaction Books.

Macharia, L. (1992) **Sanitation Options for Kibera Low Income Areas in Nairobi.** No. B 53 Tampere University of Technology. Institute for Water and Environmental Engineering, Tampere, Finland.

Mabuba, P.B. (1991) "Community Based Waste Management" A Paper Presented at the 17th WECD Conference, Nairobi, Kenya, 19th to 23rd August 1991

Mairura, E.O. (1988) **Development of Water and Sanitation Infrastructure in Unplanned Urban Settlements of Kitui, Karuku and Kinyago, Nairobi.** Unpublished M.A (Planning) Thesis, University of Nairobi, Kenya.

Majani, O.P. (1991) "Solid Waste Management in the Markets" A Paper Presented at the 17th WECD Conference, Nairobi, Kenya, 19th to 23rd August 1991.

Maina, A (1980) **The Use of the Non-Directive Approach to Community Development in Solving the Problem of Organisation in Kinyago Community, Nairobi.** Diploma in Education, institute of Adult Studies, University of Nairobi

Mairura, E.O (1988) **Development of water and Sanitation Infrastructure in Unplanned Urban Settlements of Kitui, Karuku and Kinyago, Nairobi.** Unpublished M.A (Planning) Thesis, University of Nairobi.

Makopa, J. (1996) "Capacity Building For Solid Waste Management in Nairobi" Final Report of National Consultancy Mission UNCHS (Habitat)

Matrix Development Consultants (1993) **Nairobi's Informal Settlements: An Inventory.** Nairobi, Kenya, March 1993.

Mbithi, P.M (1974) **Rural Sociology and Rural Development** Kenya Literature Bureau, Nairobi

Mbithi, P.M (1984) **The Impact of Women Self Help Groups on Community Development: A Case Study of Muthetheni Location, Machakos.**

Mbui, P.M. (1995) **The Role of Community Participation in Residential Solid Waste Management: The Case for the Urban Poor, Nairobi.** Unpublished M.A (Planning) Thesis. Nairobi University of Nairobi, Kenya.

Moser, C.O.N. (1996) **Confronting Crisis: A Comparative Study of Household Responses to Poverty and Vulnerability in Four Poor Urban Communities** The International Bank for Reconstruction and Development, The World Bank, Washington D.C.

Muchena, O.N. (1980) **Women in Town: A Socio-Economic Survey of African Women in Highfield Township, Salisbury.** Women in Development Unit Centre for Applied Social

Sciences, University of Zimbabwe.

Mugeni, A.W. (1995) **The Impact of Water and Sanitation on Health: A Case Study of Kibera Laini Saba, Nairobi.** Unpublished B. Sc. (Geography) Dissertation. Nairobi: University of Nairobi, Kenya.

Mugure, E. (1993) **The Role of Women Self Help Groups In Urban Development with Special Reference to Housing Development: A Case Study of Women Self Help Groups in Embakasi Division, Nairobi.** Unpublished M.A (Planning) Thesis, University of Nairobi.

Ngayu, M (1997) "Community Participation and Local Development" Paper Presented at MELSSA Workshop in Dakar, Senegal 19-21 Nov. 1997.

Ngayu, M (1997) "Dealing with The City: Housing as An Anchoring Point for Urban Development".

Obudho, R.A (ed) (1990) "Women in Human Settlement Development and Management in Africa" Special Issue *African Urban Quarterly* Vol 6, Nos. 3 and 4 August and November 1990.

Obudho, R.A. and G.O. Aduwo (1989) "Slum and Squatter Settlement in Urban Centres of Kenya: Towards a Planning Strategy" *Housing and Development Res.* Vol 4 No. 1 1989.

Obudho, R.A et al (1990) "Urban Environmental problems in Kenya" A Paper presented at the 17th WECD Conference, Nairobi, Kenya, 19th to 23rd August 1991.

Okoth, F.P. (1986) **Determination of Rental Values in Squatter Settlements.** Unpublished B.A (Land Economics) Dissertation, University of Nairobi, Kenya.

'95 Preview **International Women Tribune Centre**

Ouano E.A.R and H. Ogawa (1993) "Partnership Towards Responsive Solid Waste Management" UNCHS (Habitat) (1993) *Regional Development Dialogue*, Vol. 14 No. 3 Autumn 1993 p v-ix.

Sanders, L.T. (1962) Making Good communities Better. Bombay: Allied Pacific Private Limited.

Schlyter, A. and D. Johal (eds) Women in Human Settlement Development and Management in Africa. Special Issue African Urban Quarterly Vol 5 No. 3 and 4 August and November 1990.

Serageldin, I. and M.A. Cohen (1994) "The Face of the Human Environment" A Report to the Development Community on the Second Annual Conference on Environmentally Sustainable Development Environmentally Sustainable Development Proceedings Series No. 5.

Swantz M-L (1985) Women in Development: A Creative Role Denied? Hurst and Company, London.

Tinker I. and B.B. Michele (eds) (1976) Women and World Development Overseas Development Council

Townley, G. and G.W. Reid (1977) "Final Report on the Cost Effectiveness of the Socio-Cultural and Health Benefits of Sewerless: Alternatives for Domestic Waste Disposal in Developing Countries" USAID: Washington DC

UN (1971) Making Popular Participation in Development: Emerging Trends in Community Development. New York

UN (1981) World Survey on the Role of Women in Development Department of International Economic and Social Affairs. New York.

UN (1996) Habitat Agenda and Istanbul Declaration. Second UN Conference on Human Settlements, Istanbul, Turkey. New York: Department of Public Information.

UNCHS (Habitat) A New Agenda for Human Settlements

UNCHS (Habitat) (1982) Survey of Slum and Squatter Settlements. Dublin: Tycooly International Publishing Limited.

UNCHS (Habitat) (1984) The Role of Community Participation in Human Settlements Work. Nairobi.

UNCHS (Habitat) (1987) Shelter, Infrastructure for the Poor in Developing Countries: Some Policy Options. Nairobi.

UNCHS (Habitat) (1989) Solid Waste Management in Low Income Housing Projects: The Scope for Community Participation. Nairobi, Kenya.

UNCHS (Habitat) (1990) Towards a Strategy for the Full Participation of Women in All Phases of the UN Global Strategy for Shelter to the Year 2000. Nairobi.

UNCHS (Habitat) (1990) "Women and Shelter in Eastern and Southern Africa" in Schlyter, A. and D. Johal (eds) Women in Human Settlement Development and Management in Africa. Special Issue African Urban Quarterly Vol 5 No. 3 and 4 August and November 1990 pp 224-245.

UNCHS (Habitat) (1996) An Urbanising World: Global Report on Human Settlements. New York: Oxford University Press.

UNEP (1995) Poverty and Environment: Reconciling short-term and long term Sustainable Goals. Nairobi

UNCRD (Habitat) (1993) Regional Development Dialogue Vol. 14 No. 8 Autumn 1993

UNDP (1975) Integration of Women in Development.

UNFPA (1991) Population and the Environment: The Challenges Ahead.

WCED (1987) Our Common Future. New York: Oxford University Press.

Were, G.S. (1985) Women and Development in Africa G.S. Were Press Nairobi.

WHO (1992) Women Health and Development. Geneva

Annex 1: Questionnaire 1: To Group Members

Wijk -Sijbesma, Van, C. (1985) "Participation of Women in Water Supply and Sanitation: Roles and Realities". Technical Paper No. 22. International Reference Centre for Community Water Supply and Sanitation. The Hague, Netherlands.

Yeung, Y.M and T. McGee (1986) Community Participation in Delivering Urban Services in Asia International Development Research Centre, Ottawa, Canada.

Name: _____

Address: _____

Village: _____

Age Characteristics _____

Sex of the Respondent (Optional) _____

Sex: Male _____ Female _____

Age: _____ Years

Marital Status: Married _____ Single _____ Others (specify) _____

Relationship to household head: _____

Household size: _____

Number of rooms occupied: _____

Monthly per capita income: Ksh. _____

Highest level of education attained: _____

Occupation: _____

Monthly income (Ksh.) _____

_____ 2500

_____ 3000

_____ 4000

_____ (if any) Ksh. _____

Appendix 1: Questionnaire 1: To Group Members

Introduction

I am a student at University of Nairobi, Department of Urban and Regional Planning, currently carrying out a study on community participation and the role of women in solid waste management in informal settlements. I would like to establish why some community groups have done better than others in solid waste management and the role played by women in the same. This can only be possible if you offered to answer the following questions. Your answers will help in giving recommendations on how to improve the performance of community groups in solid waste management. This study is purely academic and the information given will be treated very confidentially. Thank you in advance.

Questionnaire No.:

Date of Interview:

Name of Village:

Household Characteristics

1. Name of the Respondent (Optional)
2. Sex Male..... Female.....
3. Age Years
4. Marital status Married..... Single..... Others (specify).....
5. Relationship to household head.....
6. Household size
7. Number of rooms occupied
8. Rent paid per month Ksh.....
9. Highest level of education attained.....
10. Occupation.....
11. Monthly income (Ksh.)

0	-	2500
2501	-	5000
Over 5001		
12. Subletting income (if any) Ksh.....

13. For how long have you lived in this place?..... yrs Months

Household Level Solid Waste Management

14. How much of the following types of waste does your household generate per day?
 Kitchen/Vegetable waste.....
 Paper.....
 Plastics
 Cloth.....
 Others (specify).....

15. What methods do you use to dispose of your waste?
-

16. What problems do you experience in disposing of this waste?
-

- 17.a) In your opinion who is responsible for solid waste management in your residential area?
-

- b) Give reasons for your answers in (a) above
-

Community Solid Waste Management

18. What is the name of your group?
-

19. How many members are you in the group?
-

20. When did this group start? Month Year

21. How did it start?
-

22. What solid waste management activities does your group carry out?

.....

23. How do you organize these activities?

.....

Factors Contributions to Success or Failure in Solid Waste Management

24. What achievements has your group made in solid waste management?

.....

25. What factors have contributed to these achievements?

.....

26. What problems does your group experience in solid waste management?

.....

27. How has your group coped with these problems?

.....

28. What suggestions do you have to make your group more successful in solid waste management?

.....

Role of Women in Solid Waste Management

29. Are there women members in your group? Yes No.....

30. If yes, how many women members are there in your group?

.....

31. Do you think women are more involved in solid waste management? Yes..... No

32. What are the major contributions of women in your group?

.....

33. a) Do you think women should be more involved in solid waste management?
Yes..... No.....

b) Give reasons for your answer in (a) above

.....

34. a) What do you think are the major advantages of having women in your group?

.....

b) What could be the disadvantages?

.....

Sustainability and Networking

35. What other activities does your group carry out?

36. Does your group work together with other groups or organizations?
Yes No

37. If yes, state the names of the organizations and groups.

.....

38. In what ways have you worked together?

.....

39. a) Do you think this has helped your group to be more successful in its activities?
Yes No

b) Give reasons for your answer in (a) above

.....

40. How does your group ensure sustainability of its activities? (tick and specify where appropriate)

Harambees.....

Income generating activities.....

Employment of members in projects.....

Savings.....

Support from NGOs and other agencies.....

Other (specify).....

41. What suggestions do you have that can make them more sustainable?

.....

42. What do you think can be done to attract more members to your group?

.....

43. What do you think can be done to enhance more community-based efforts in solid waste management in your residential area?

.....

Thank you for your co-operation

Marital status: Married..... Single..... Other (specify).....
 Relationship to household head.....
 Household size.....
 Number of rooms occupied.....
 Monthly expenditure (Ksh).....
 Highest level of education attained.....
 Occupation.....
 Monthly income (Ksh.)
 0-2500
 2501-3000
 3001-
 Monthly income (if any) Ksh.....

Appendix 2: Questionnaire 2: To Non-Group Members

Introduction

I am a student at University of Nairobi, Department of Urban and Regional Planning, currently carrying out a study on community participation and the role of women in solid waste management in informal settlements. I would like to establish why some community groups have done better than others in solid waste management and the role played by women in the same. This can only be possible if you offered to answer the following questions. Your answers will help in giving recommendations on how to improve the performance of community groups in solid waste management. This study is purely academic and the information given will be treated very confidentially. Thank you in advance.

Questionnaire No.:

Date of Interview:

Name of Village:

Household Characteristics

1. Name of the Respondent (Optional)
2. Sex Male..... Female.....
3. Age Years
4. Marital status Married..... Single..... Other (specify).....
5. Relationship to household head.....
6. Household size
7. Number of rooms occupied
8. Rent paid per month Ksh.....
9. Highest level of education attained.....
10. Occupation.....
11. Monthly income (Ksh.)

0	-	2500
2501	-	5000
Over 5001		
12. Subletting income (if any) Ksh.....

13. For how long have you lived in this place?..... yrs Months

Household Level Solid Waste Management

14. How much of the following types of waste does your household generate per day?
- Kitchen/Vegetable waste.....
- Paper.....
- Plastics
- Cloth.....
- Others (specify).....
15. What methods do you use to dispose of your waste?
-
16. What problems do you experience in disposing of this waste?
-
- 17.a) In your opinion who is responsible for solid waste management in your residential area?
-
- b) Give reasons for your answers in (a) above
-

Community Solid Waste Management

18. a) Are you aware that there some community groups currently carrying out solid waste management in this area? Yes No
- b) If yes, state the various activities of these groups
-
19. Why have you not joined any of these groups?
-

Factors Contributing To Success or Failure in Solid Waste Management

20.a) Are there group dealing with solid waste management that are more successful than others? Yes..... No

b) If yes, state the names of the more successful ones

21. In your opinion, what factors have made these groups more successful?

22.a) Name the groups that seems less successful in their solid waste management activities

23. What factors may have contributed to the relatively poor performance of these groups?

24. What are your suggestions, which could make these groups, become more successful in their solid waste management activities?

Role of Women in Solid Waste Management

25. a) Are there women groups dealing with solid waste management in this area? Yes..... No

b) If yes, name them

26. a) Do you think they have succeeded in solid waste management? Yes No.....

b) To what extent do you think they have succeeded?

27. What factors have contributed to their success?

.....

28. What problems do these groups face in carrying out their solid waste management activities?

.....

29. In your opinion, what factors have contributed to these problems?

.....

30. a) Are there community groups with both women and men members carrying out solid waste management activities in these area? Yes No
b) If yes, name them

.....

31. What is the approximate proportion of women in these groups?.....

32. a) Do you think women are generally involved in solid waste management in this area? Yes No
b) Give reasons for your answer in (a) above

.....

33. a) Do you think women should be involved in solid waste management in this area? Yes..... No
b) Give reasons for your answer in (a) above

.....

34. What can make community groups involved in solid waste management more attractive to you and other members of the community?

.....

35. Make your general comments on community based solid waste management in your residential area?

.....

Thank you for your co-operation.

Appendix 3: Questionnaire 3: To Social Workers

Introduction

I am a student at University of Nairobi, Department of Urban and Regional Planning, currently carrying out a study on community participation and the role of women in solid waste management in informal settlements. I would like to establish why some community groups have done better than others in solid waste management and the role played by women in the same. This can only be possible if you offered to answer the following questions. Your answers will help in giving recommendations on how to improve the performance of community groups in solid waste management. This study is purely academic and the information given will be treated very confidentially. Thank you in advance.

Questionnaire No.:

Date of Interview:

Name of the Village:

Organisation Background

1. What is the name of your organization?.....
2. When did it start? Month Year.....
3. In which areas of the city has this organization worked?
.....
4. What was the role of the organization in these areas?
.....
5. For how long has the organization been involved in each of these areas?
.....
7. In what other areas is the organization still working?
.....
8. What aspects is this organization dealing with in each of these areas?
.....
9. How successful has the organization been in its activities in the city?

.....

10. What problems does the organization face in achieving its goals in the informal Settlements?

.....

11. What factors have contributed to these problems?

.....

12. How has the organization been able to cope with these problems?

.....

13. What achievements has your organization made in these area?

.....

14. What factors have contributed to these achievements?

.....

Community Based Solid Waste Management

15. State the names of the community groups in which the organization is involved.

.....

16. State the groups involved in solid waste management.

.....

17. In which village is each of these groups based in Kibera?

.....

18. In what ways are you involved in the groups dealing with solid waste management?

.....

19. What achievements has the organization made in these groups?

.....

20. What factors have contributed these achievements?

.....

.....

21. What problems has the organization experienced in working with these community groups?

.....

22. What factors have contributed to these problems?

.....

23. How has the organization coped with these problems?

.....

The Role of Women in Solid Waste Management

24. Are there community groups, which consist of only women? Yes.... No

25. If, yes, give the names of these groups

.....

26. What are the activities of each of the women groups?

.....

27. What achievements has each of the groups made?

.....

28. What factors have contributed to their achievements?

.....

29. What problems are these groups facing in their activities?

.....

30. What factors have contributed to these problems?

.....

31. How has each of the groups coped with these problems?

.....

32. What do you think should be done to solve these problems?

.....

33. What is the proportion of women compared to that of men in each of the (other) community groups?

.....

34. What do you think is the role of women in solid waste management in informal settlements?

.....

35. a) Do you think women should be more involved in solid waste management in the informal settlements than men? Yes No

b) Give reasons for your answer in (a) above

.....

Factors Contributing to Success or Failure in Solid Waste Management

36. a) Are there community groups involved in solid waste management which are more successful than others? Yes..... No.....

b) If yes, please name the more successful groups

.....

37. What factors do you think have contributed to the achievements of each of the successful groups?

.....

38. Please name the less successful groups

.....

39. What factors do you think have contributed of the generally poor performance in these groups?

.....

40. How has each of the groups been able to cope with these problems?

.....

41. What are your suggestions towards improvement of the performance of the less successful groups in solid waste management?

.....

Sustainability and Networking

42. How does each of the groups carrying out solid waste management activities ensure their sustainability?

.....

43. What strategies has your organization applied to improve solid waste management through community groups in the informal settlements?

.....

44. What other strategies in your opinion need to be introduced in order to improve solid waste management through community groups in informal settlements?

.....

45. a) Are there any other organizations/agencies dealing with the same community groups in the same settlement? Yes No

b) If, yes, please state the names, and the specific roles in specific groups

.....

46. a) Are the organizations aware of one another's activities in the same groups? Yes No

b) If yes, state the advantages and/or the consequences of your answer in (a) above

.....

47. Please state the role of the following agencies in community based solid waste management in informal settlements?

a) Central Government

.....

b) Nairobi City Council

.....

c) Non-Governmental Organizations

.....

48. Please indicate the roles of the same agencies in community based solid waste management in informal settlement?

a) Central Government

.....

b) Nairobi City Council

.....

c) Non-Governmental Organizations

.....

49. Please give your comments on solid waste management through community participation in informal settlements.

.....

Thank you for your co-operation.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Appendix 4: Questionnaire 4: To Community Group Leaders

Introduction

I am a student at University of Nairobi, Department of Urban and Regional Planning, currently carrying out a study on community participation and the role of women in solid waste management in informal settlements. I would like to establish why some community groups have done better than others in solid waste management and the role played by women in the same. This can only be possible if you offered to answer the following questions. Your answers will help in giving recommendations on how to improve the performance of community groups in solid waste management. This study is purely academic and the information given will be treated very confidentially. Thank you in advance.

Questionnaire No.:

Date of Interview:

Name of Village:

Name of the community group:

Post held by the interviewee in the group:

Socio-Economic Characteristics

1. Give the name of your group.....
2. When did this group start? Month.....Year.....
3. How did the group start?
.....
4. How many members constituted the group when it started? Male.... Female
5. How many people are currently members of this group? Male.....Female
6. What are the general socio-economic characteristics of members in terms of
 - Age.....
 - Household size.....
 - Occupation.....
 - Education level.....
 - Income level.....
 - Ethnic Background.....
8. What activities is your group currently involved in?
.....

Community Based Solid Waste Management

9. State the solid waste management activities carried out in your group?
.....
10. What has contributed to the success of your group in these activities
.....
11. What problems do you experience in carrying out these solid waste management activities?
.....
12. What factors have contributed to these problems?
.....
13. How has your group coped with these problems?
.....
14. Please make your suggestions as to how the above problems could be solved
.....
15. What future plans does your group have which could improve its performance of in solid waste management?
.....
16. What do you think should be done to attract more members to your group?
.....

The Role of Women in Solid Waste Management

17. How many female members are there in your group.....
18. How does this figure compare with that of men?.....
19. a) Do you think women are more involved in solid waste management in the informal settlements in general? Yes..... No.....

b) Give reasons for your answer in (a) above

20. a) Do you think women should be more involved in solid waste management than men? YesNo.....

b) Give reasons for your answer in (a) above

Networking and Sustainability

21. Are there community groups, which are more successful than others in solid waste management activities? Yes..... No.....

22. What factors do you think contribute to their success?

23. What factors may have contributed to less success in some other groups?

24. Does your group work together with other groups or organizations? Yes..... No

25. If, yes, state the group or organization and how you work together

26. a) Has any of these groups contributed to success in your group? Yes..... No.....

b) Give reasons for your answer in (a) above

27. How does your group ensure sustainability of its activities? (Tick and specify where appropriate)

- Harambees.....
- Income generating activities.....
- Employment of members in projects.....
- Savings.....
- Support from NGOs and other agencies.....
- Other (specify).....

28. What future plans do you have to make your group more sustainable?

.....

29. What can be done to improve solid waste management in informal settlements?

.....

Thank you for your co-operation

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Appendix 5: Questionnaire 5: To Local Administrators

Introduction

I am a student at University of Nairobi, Department of Urban and Regional Planning, currently carrying out a study on community participation and the role of women in solid waste management in informal settlements. I would like to establish why some community groups have done better than others in solid waste management and the role played by women in the same. This can only be possible if you offered to answer the following questions. Your answers will help in giving recommendations on how to improve the performance of community groups in solid waste management. This study is purely academic and the information given will be treated very confidentially. Thank you in advance.

1. State the name of your location.....
2. Name the community groups in the location
.....
3. Of these groups, which ones are involved in solid waste management?
.....
4. What solid waste management activities does each of these groups carry out?
.....
5. Are there groups that are more successful in solid waste management than others?
Yes.... No
6. If yes, which groups are more successful than others?
.....
7. What factors, in your opinion have contributed to their success?
.....
8. What problems are the less successful community groups experiencing in solid waste management?
.....
9. What factors have contributed to these problems?
.....

10. How are these groups coping with these problems?

.....

11. What organizations/agencies are working together with the community groups?

.....

12. Please specify the activities of these agencies/organizations within the community groups.

.....

13. How successful has each of the organizations been in their activities within these groups?

.....

14. What factors have contributed to their success?

.....

15. What problems do they experience in carrying out their activities?

.....

16. What factors have contributed to these problems?

.....

17. How have these organizations/agencies been coping with these problems?

.....

18. How has your office been involved in community activities, particularly those concerned with solid waste management in this location?

.....

19. What do you think should be done to improve solid waste management particularly through community groups?

.....

Thank you for your co-operation.

Appendix 6: Questionnaire 6: To Department of Environment - Nairobi City Council

Introduction

I am a student at University of Nairobi, Department of Urban and Regional Planning, currently carrying out a study on community participation and the role of women in solid waste management in informal settlements. I would like to establish why some community groups have done better than others in solid waste management and the role played by women in the same. This can only be possible if you offered to answer the following questions. Your answers will help in giving recommendations on how to improve the performance of community groups in solid waste management. This study is purely academic and the information given will be treated very confidentially. Thank you in advance.

Background Information on Solid Waste Management in Nairobi

1. How much solid waste is generated in the city?.....
2. How much of this solid waste is collected?.....
3. What is the arrangement of solid waste management within the city?
.....
4. Who are the players in solid waste management in the city?
.....
5. What areas does each of these groups operate in the city?
.....
6. What proportion of waste does each of these groups handle?.....
7. What obstacles does each of these groups face in their solid waste management activities in the city?
.....
8. What factors have contributed to these problems?
.....
9. How have these different groups been able to cope with these problems?

-
10. How has the department enabled these groups to carry out their solid waste management activities more effectively?
-

Legal Basis and the Major Actors in Solid Waste Management in Informal Settlements

11. Please give the legal basis of solid waste management in informal settlements?
-
12. Who is currently involved in solid waste management in the informal settlements?
-
13. How much of the solid waste is being handled by each of these groups?
-
14. Of the total solid waste generated in the informal settlements, what approximate proportion is this?
-
15. How successful is each of these groups in solid waste management in these areas?
-
16. What are the factors influencing their success?
-
17. What are the problems being experienced by each of these groups?
-
18. What factors have influenced these problems?
-

Nairobi City Council and Solid Waste Management in Informal Settlements

19. How is Nairobi City Council involved in solid waste management in informal settlements?

.....

20. How is Nairobi City Council involved in community based solid waste management in informal settlements?

.....

21. What plans do Nairobi City Council has to improve solid waste management in informal settlements?

.....

22. What suggestions can you make towards the general improvement of solid waste management in the informal settlements through community groups?

.....

Thank you for your co-operation

Appendix 7: Focus Discussion Questions

1. What community groups are there in this area?
2. How many members does each of the groups constitute?
3. Where is each of these groups operating from?
4. What activities do each of these groups carry out?
5. Which of these community groups are involved in solid waste management?
6. What solid waste management activities does each of these groups carry out?
7.
 - a) Are there groups which are more successful than others?
 - b) Please name the more successful groups?
8. What achievements have each of these groups made?
9. What factors have contributed to these achievements?
10. What problems do each of these groups and the less successful ones experience in these activities?
11. What factors have contributed to these problems?
12. How have these groups tried to cope with these problems?
13. How many women are members of each of those involved in solid waste management?
14. What do you think is the role of women in solid waste management in residential areas?
15. What organisations/agencies are currently working among what community groups involved in solid waste management?
16. How have these organisations/agencies helped these groups in their solid waste management activities?
17. What other assistance do you think community groups need to improve in solid waste management in their residential areas?
18. State the community groups in this area, which have stopped their operations in SWM and the factors that have led to this?
19. What suggestions can you make towards improvements in solid waste management activities through community groups in this area?