

**PREPARATORY SURVEY  
FOR  
INTEGRATED SOLID WASTE MANAGEMENT  
IN NAIROBI CITY  
IN  
THE REPUBLIC OF KENYA**

**FINAL REPORT**

**VOLUME 4**

**DATA BOOK**

**SECTION F**

**PUBLIC AND ESTABLISHMENT AWARENESS FOR SWM**

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### 1. Main NGOs operating in SWM in Nairobi City

No.	Name of NGO	Address/Phone No.
1	Practical Action	
2	Kenya Institute of Waste Management	
3	Kenya Alliance of Residents Association (KARA)	Suite E39, Natu Court, Ngong Rd/Ring Rd, Kilimani, Tel. 3873828
4	Kayole Environment Management Association	
5	Destiny Africa & Green Africa International Limited	P.O. Box 30852-00100 Nairobi Tel. 254-20-313588
6	Ecoplast	
7	Youth Initiatives-Kenya (YIKE)	Tel. 2403697
8	St. Jhon Community Centre	
9	Pamoja Trust	Tel. 565752
10	Umande Trust	
11	Maji Na Ufanisi	Tel. 0726939309
12	Shelter forum	Tel. 3753182
13	Udungu Society	Tel. 535944
14	Plan Kenya	Tel. 562593

Source: Department of Environment, CCN

## 2. List of CBOs in Nairobi City dealing with SWM (1/5)

N <sup>o</sup>	Name of Group	Location	Activity	Contact	Postal Address/Email
1	The Lugiyo Community Youths Group (42 members)	Kayole in Embakasi constituency	Waste Collection	Peris Njeri-patron 0726014727 Bob otieno – Secretary 0722 309307	61149-00200 Nairobi
2	South 'B' Mkokoteni transkport S.H.G	Mukuru/Nyayo Location	Waste Collection	Festus ochenje Ocholi – project manager 0724 960290	6907-00200 Makadara Nairobi
3	Down Hill Youth Group	Mathare	Waste Collection	George odhiambo Samuel – Chairman 0721 949210	64376-00200 Nairobi
4	Afya Njema Youth Group	Mabatini located in Mathere	Waste Collection	Timothy Liani – Director – 0725-627380	4399200100 Email ieci@live.com
5	Community Suport program (CSP)	Kibera	Waste Collection	Wycliffe O. Alutalala- Manager 0725 224344/072657290	66395-00800 Email communityprogramm2008@yahoo.com
6	Huruma Residents Youths Environments care and Development Group	Huruma	Waste Collection	Hilary Ayako Oyaro 0712 440966	Emailrashiloya@yahoo.com
7	Ngei Development Youth Group	Huruma	Waste Collection	Office 020 2403697/0721 402004	10427-00100 Nairobi Email ngeiyouth@yahoo.com
8	Peace and Development Community Based Organization	Kibera	Waste Collection	Ken – Chairman	55906-00200 Nairobi
9	Tuongane Selp Help	Mabatini	Waste Collection	0722 838600	
10	Why not Community	Mabatini	Waste Collection	0720 574254	
11	Mathare No. 10 Youth Group	Mabatini	Waste Collection	0715 353857	
12	Muoroto Inside Youth Organization	Mabatini	Waste Collection	0720 05142	
13	Ngara youth pellico	Ngara	Waste Collection	Stephen Ndaika 0723 932881	
14	Badilika	Huruma	Waste Collection	Fred Oyugi 0724 328989	
15	Gotoka Youth	Mathare	Waste Collection	Tubas Oloo 0729 786683	
16	Blesses Hands	Huruma	Waste Collection	Peter Karuri 0724 296672	
17	Visions	Huruma	Waste Collection	Dorcus Kemunto 0721 880905	
18	Yvonne Njeri Tia Zii Group	Huruma	Waste Collection	Yvonne Njeri 0711292089	
20	Ben clean	Mathare	Waste Collection	Benard Mutie 0720443231	tezke@g may.com
21	Show Bay	Mathare	Waste Collection	Paul Kioko 0720556414	
22	Street light		Waste Collection	Josphat Kiiru 0723133184	

## 2. List of Community Base Organizations in Nairobi dealing with SWM (2/5)

N°	Name of Group	Location	Activity	Contact	Postal Address/Email
23	Mazigira Bora	Ziwani	Waste Collection	Edy Otieno 0722297649	
24	Kibichoi	Huruma	Waste Collection	Moses Ntisinga 07211647602	
25	One stone youth group		Waste Collection	Robert K. Masangi 0727982235	
26	King Stone Y.G		Waste Collection	Peter Ndungu 0727661816	
27	Huruma Initiative		Waste Collection	Peter Maina 0721115410	
28	H Town y g		Waste Collection	Godgy 0738332208	
29	Huruma Pamoja		Waste Collection	Daniel Odhiambo 0721880178	
30	Huruma centre		Waste Collection	John Kiruma 0720200149	
31	Pendo pamoja		Waste Collection	Peter Kimani 0736696825	
32	Grogon y. group		Waste Collection	Joyce Muthoni 0720978943	
33	John saza y g		Waste Collection	Fredric Wathika 0720353105	
34	Environment c. g p		Waste Collection	Joseph Mutisya 0727130741	
35	SW liberty		Waste Collection	Elizabeth 0725641106	
36	Youth leader		Waste Collection	James Mwangie 0720352975	jamesndiba@yahoo.com
37	Mwariro Market		Waste Collection	Stephen Wagathoni 072189589	
38	Akapa		Waste Collection	James Mwangi 0721375797	
39	Pamoja Ziwani		Waste Collection	Robert Mwangi	
40	Umeme Sports	Ziwani	Waste Collection	Amos Atanga 020-3562947	umemesg@yahoo.com
41	Kisima		Waste Collection	Owino	
43	Mlango kubwa y Dev.Org.		Waste Collection	Joseph Wanda 0711714966	
44	Valley Care Vadation		Waste Collection	Benson Gitau 0723447148	
45	Mathare Slum y Group	Mathare	Waste Collection	Isaac Kingoli 0713088302	
46	Amsterdam y group		Waste Collection	Lawrence Njenga 0713088302	
47	Kiamutisya Youth group	Mathare	Waste Collection	Martin Ndirangu 0728204773	
48	Pequininas women group		Waste Collection	Dorothy Khanzi 0727842261	
49	Mathare Environmental Pequininos youth group	Mathare	Waste Collection	Isaac Mwasa 0727842261	Mecyg-p@yahoo.com.
50	Mathare Area 11 Y.Group	Mathare	Waste Collection	Paul Gichane 0738399362	
51	Mpuna Area 1 youth group	Huruma	Waste Collection	Philip Chege 0727353273	Philip-chege@yahoo.com.

## 2. List of Community Base Organizations in Nairobi dealing with SWM (3/5)

Nº	Name of Group	Location	Activity	Contact	Postal Address/Email
52	Heshima star		Waste Collection	John Kingori 0734313992	
53	Manygro youth Group.		Waste Collection	Kennedy Mashindi 0710871688	
54	Afya Stack Sack Youth		Waste Collection	Daniel Makhoha 0724515186	
55	Pat zero Waste	Karanja Road Kibera	Waste Collection		
56	Mashamoni youth Group	Kibera	Waste Collection		
57	Katwekera Tosha	Kibera	Waste Collection		
58	Kibera Pillars	Kibera	Waste Collection		
59	Labuor youth Group	Kibera	Waste Collection		
61	Ushirika s.h. group		Waste Collection		
62	Makina Usafi		Waste Collection		
63	Soweto youth group	Kibera	Waste Collection	Nicholas Imbe 0721793884	
64	Ndugu youth group		Waste Collection		
65	Nicofeli	Kibera	Waste Collection		
66	Women of Vision	Teresia Nganga		0727865334	Wanjiru NYthe.Com
67	Muthuoma Eco club	Ngara	Waste Collection	Alex Munala 0725990535	<a href="mailto:Meclub2004@yahoo.com">Meclub2004@yahoo.com</a> Box 26573-00100Nrb
68	FN OF HOPE		Waste Collection	Akhona 0722965096	akhonokoko@yahoo.com
69	Maji na ufanisi		Waste Collection	J. Mugambi 0726939309	<a href="mailto:smugabin@yahoo.com">smugabin@yahoo.com</a>
70	Viwandani omm. Dess Ass		Waste Collection	Viginia Kaki 0725038745	Box 30012 Nrb
72	Big five youth G.	Kasarani	Waste Collection	0725 083136	
73	Baba Ndogo youth network	Kasarani	Compost	0720 879337	
74	Extreme Impact	Mathare	Waste Collection	0724 58191	
75	Young Women	Ruraka	Waste Collection	0727 684888	
76	Munalo	Kasarani	Waste Collection	0720 460517	
77	Baba Ndogo focus	Kasarani	Paper	0723 761529	
78	Kariobangi CBO	Kariobangi	Plastic	0723 706220	
79	Kamukunji Youth	Kamukunji	Waste Collection	0720 693876	
80	Jua Kali youth	Umoja	Waste Collection	0725 471482	
81	Yukon	Kasarani	Waste Collection	0726 661881	
82	Juhudi Youth	Kasarani	Waste Collection	0729 73 1246	
83	Zimmerman youth	Kasarani	Waste Collection	0725 627380	

## 2. List of Community Base Organizations in Nairobi dealing with SWM (4/5)

N°	Name of Group	Location	Activity	Contact	Postal Address/Email
84	Wazalendo Youth	Kasarani	Waste Collection	0723 314861	
85	Mlango Kubwa Welfare Ass.	Mathare	Waste Collection		
86	Valley Improvement self Help Group	Mabatini	Waste Collection		
87	Solidarity Youth Group	Huruma	Waste Collection		
88	Kidine Greel Youth Group	Huruma	Waste Collection		
89	Kiamaiko Combines	Huruma	Waste Collection		
90	Livity Unity Youth Group	Kiamaiko	Waste Collection		
91	Young Adult Youth Group	Kiamaiko	Waste Collection		
92	Little Bees Chiefos Help	Huruma	Waste Collection		
93	Facatlanck youth Group	Makadara	Waste Collection		
94	Kamaliza youth Group	Mbotela	Waste Collection		
95	Babu Youth Group	Mbotela	Waste Collection		
96	Eastlands Waste	Mbotela	Waste Collection		
97	Kaloleni Youth Group	Kaloleni	Waste Collection		
98	Hygiene Youth Group	Kaloleni	Waste Collection		
99	Baltimore Youth Group	Kaloleni	Waste Collection		
100	Lumumba Trench	Kaloleni	Waste Collection		
101	Kingstone Youth Group	Kaloleni	Waste Collection		
102	South B. Youth Group	South B	Waste Collection		02055738
103	Maringo No.10 Youth Group	South B			
104	Harambe Youth Group	South B			
105	Garbfree Youth Group	South B			
106	Hitch Youth Group	South B			
107	Clean World	Embakasi			
108	Vijana youth Group	Embakasi			
109	Umoja Youth	Embakasi			
110	Vissioners	Embakasi			
111	Ebenezer	Embakasi			
112	Jelope	Embakasi			
113	Neone	Embakasi			
114	Vigpen	Embakasi			
115	Damlar	Embakasi			
116	Umoja Eastend	Embakasi			
117	Century Youth	Embakasi			
118	Allains Bins	Embakasi			
119	Duo Youth	Embakasi			
120	Funigenic	Embakasi			

## 2. List of Community Base Organizations in Nairobi dealing with SWM (5/5)

N°	Name of Group	Location	Activity	Contact	Postal Address/Email
121	State Clean	Embakasi			
122	Chantal	Embakasi			
123	Pamoja Youth	Embakasi			
124	Sunrick	Embakasi			
125	Mocha Bins	Embakasi			
126	Billocon	Embakasi			
127	Bins Collector	Kamukunji			
128	Timboroa Youth	Kamukunji			
129	New Generation Youth Group	Kamukunji			
130	Robomo Youth Group	Kamukunji			
131	Enywa youth	Kamukunji			
132	Mwamko Wa Vijana Youth	Kamukunji			
133	South Pole Youth Group	Kamukunji			
134	Uprising Youth Group	Kamukunji			
135	Eastsides Youth	Kamukunji			
136	Catskill Youth	Kamukunji			
137	Bimal Fumigation	Kamukunji			
138	Rokongo Youth Group	Kamukunji			
139	Millemmum Youth Development	Kasarani	Waste collection	0726 508568 Edward Kingori	
140	Chillers Youth Volunteers outreach and network Club	Ngara Pangani	Waste collection	Email <a href="mailto:voicechillers@yahoo.com">voicechillers@yahoo.com</a>	P.O. Box 59525-00200 Nairobi



### 3. Questionnaires for Public Awareness and Establishment Survey

#### 3.1 Household Questionnaire

##### I. Items for Interviewer

1. Date: \_\_\_\_\_
2. Interviewer name: \_\_\_\_\_
3. Area classification: \_\_\_\_\_
  - 1 Residential Area (High Income)
  - 2 Residential Area (Middle Income)
  - 3 Residential Area (Low Middle Income)
  - 4 Residential Area (Low Income)
  - 5 Residential Area (Slum Area)
4. Distance from the house to road (road width about \_\_\_\_\_m): \_\_\_\_\_
  - 1 In front of the premises
  - 2 Less than 10 m
  - 3 10- 29 m
  - 4 30- 49 m
  - 5 50 m or more
5. Distance from the house to communal container or discharge point: \_\_\_\_\_
  - 1 In front of the premises
  - 2 Less than 10 m
  - 3 10- 29 m
  - 4 30- 49 m
  - 5 50 m or more
  - 6 There is no communal container or garbage collection point in this area.

##### II. General Questions

6. Type of interviewee: \_\_\_\_\_
  - 1 Housewife (Age:\_\_\_\_)
  - 2 The master (Age:\_\_\_\_)
  - 3 Children (Age:\_\_\_\_)
  - 4 Other house member
  - 5 Housekeeper (servant)
  - 6 Others (please specify): \_\_\_\_\_
7. Address: \_\_\_\_\_
8. Employment of the housemaster: \_\_\_\_\_
  - 1 Primary industry (agriculture & mining)
  - 2 Secondary industries (manufacturing)
  - 3 Tertiary industries (service oriented profession)
  - 4 Pensioner (retired)
  - 5 Unemployed
  - 6 Others (please specify): \_\_\_\_\_
  - 7 I don't know
9. Number of persons living in your household: \_\_\_\_\_

	Age Group	Male	Female	Relation to household
(a)	0 - 6			
(b)	7 - 25			
(c)	26 - 60			
(d)	Above 60			

10. Number of dwelling years at this place: \_\_\_\_\_
1. Less than 5 years
  2. 5- 9 years
  3. 10- 19 years
  4. 20 years or more
  5. I don't know
11. Main income
- 1 from Householder
  - 2 from Housewife
  - 3 from other family member (Please specify):
12. Total income of your household per month: \_\_\_\_\_
1. Less than 5,000 Kshs per month
  2. 5,001 - 15,000 Kshs per month
  3. 15,001 - 25,000 Kshs per month
  4. 25,001- 35,000 Kshs per month
  5. 35,001- 45,000 Kshs per month
  6. 45,001- 55,000 Kshs per month
  7. 55,001- 65,000 Kshs per month
  8. More than 65,001 Kshs per month
13. Total expenditure of your household per month: \_\_\_\_\_
1. Less than 5,000 Kshs per month
  2. 5,001 - 15,000 Kshs per month
  3. 15,001 - 25,000 Kshs per month
  4. 25,001- 35,000 Kshs per month
  5. 35,001- 45,000 Kshs per month
  6. 45,001- 55,000 Kshs per month
  7. 55,001- 65,000 Kshs per month
  8. More than 65,001 Kshs per month

Please describe the breakdown of your average monthly family expenditure by item.

No.	Expenditure Item	Average Monthly Expenditures (Kshs)	Composition Share (%)
1	Foods and Drinks		
2	Housing (Restructuring, Maintenance, Rental Fees, etc.)		
3	Transportation and Communication		
4	Culture/Leisure		
5	Education		
6	Medical Care		
7	Personal Goods		
8	Clothing		
9	House Equipments (Furniture, Electrical Products, etc.)		
10	Vehicles (Repairs, Fuel, etc.)		
11	Waste Charges (If your household is now paying)		
12	Electricity Charges (Power Rates)		
13	Water Charges		
14	Sewer Charges		
15	Other Expenditures		
16	Tax		
17	Social Obligatory Insurances (NHIF, NSSF)		

### III. Questions on Discharge of Waste from Your House

14. Who discharges waste from your house? \_\_\_\_\_  
1 Housewife  
2 The Housemaster  
3 Children  
4 Other house member  
5 Housekeeper (servant)  
6 Others (please specify): \_\_\_\_\_  
7 I don't know
15. Where do you discharge waste from your house? \_\_\_\_\_  
1 Into containers to be collected by worker  
2 Around my premises without containers  
3 Communal container  
4 Discharge point  
5 Garbage compartment fixed in the house  
6 Others (please specify): \_\_\_\_\_  
7 I don't know
16. What types of container do you use for carrying waste to discharge point in Question No.15? \_\_\_\_\_  
1 Plastic bag (provided by a private collection company)  
2 Plastic bag (others)  
3 Plastic buckets  
4 Metal buckets  
5 Others (please specify): \_\_\_\_\_  
6 I don't know
17. Why do you use it? \_\_\_\_\_  
1 It is clean after collection work  
2 It prevents foul odor  
3 It is manageable  
4 Keeps away pest such as flies  
5 Others (please specify): \_\_\_\_\_
18. How much capacity does such container hold? \_\_\_\_\_  
1 Less than 10 Kg  
2 10- 19 Kg  
3 20- 29 Kg  
4 30 Kg or more  
5 I don't know
19. How frequent is the waste discharged out of your house? \_\_\_\_\_  
1 Twice every day  
2 Once every day  
3 Once every two days  
4 Once every three days  
5 Once a week  
6 Irregularly  
7 I don't know
20. Do you discharge waste at a fixed time? \_\_\_\_\_  
1 Yes  
2 No  
3 I don't know

21. If "Question No.20 answer Yes", what time do you usually discharge your waste? \_\_\_\_\_

1 6:00- 8:59

2 9:00- 11:59

3 12:00- 14:59

4 15:00- 17:59

5 Others (please specify): \_\_\_\_\_

6 I don't know

22. Do you have ever discharged waste soon after it was collected? \_\_\_\_\_

1 Yes

2 No

3 I don't know

If you have containers to be collected by worker (for Question No.15 answer 1 only), please answer the followings (No.23 - No.29);

23. How many containers do you have? \_\_\_\_\_

1 1

2 2

3 3

4 4

5 5 or more

6 I don't know

24. What type of containers do you use? \_\_\_\_\_

1 Plastic bucket

2 Metal bucket

3 Drum can

4 Others (please specify): \_\_\_\_\_

5 I don't know

25. How much capacity does your container hold? \_\_\_\_\_

1 Less than 30 Kg

2 30- 49 Kg

3 50- 99 Kg

4 100 Kg or more

5 I don't know

26. Where do you put your container to be collected by worker? \_\_\_\_\_

1 In front of my premises

2 Behind the premises

3 In the house (kitchen)

4 In the garden

5 Others (please specify): \_\_\_\_\_

6 I don't know

27. Is the container with or without lid? \_\_\_\_\_

1 With

2 Without

3 I don't know

28. Are you able to co-operate to carry your waste to communal containers fixed in your area if you are so requested? \_\_\_\_\_

1 Yes

2 No

3 I don't know

29. If “Question No.28 answer No”, what are the reasons? \_\_\_\_\_
- 1 Present system is better
  - 2 We have nobody who will carry the waste to communal containers
  - 3 Communal containers are far
  - 4 Communal containers are not hygienic
  - 5 Others (please specify): \_\_\_\_\_

30. Do you have ever seen human scavengers and animals on your waste? \_\_\_\_\_
- 1 Yes
  - 2 No
  - 3 I don't know

31. How do you discharge garden waste (fallen leaves and cut trees or grasses)? \_\_\_\_\_
- 1 Discharge to collection point fixed by municipality
  - 2 Discharge in front of the house
  - 3 Open combustion/ burning
  - 4 Composting (producing fertilizer from waste)
  - 5 I don't know
  - 6 Needless to discharge garden wastes
  - 7 Others (please specify): \_\_\_\_\_

If “Question No.31 answer 3”, please answer the followings: (No.32)

32. If the waste discharged from your house will be collected, will you discharge the garden wastes (fallen leaves and cut trees or grasses) with other wastes? \_\_\_\_\_
- 1 Yes
  - 2 No

33. Does anyone in your house sweep the road shoulder or adjacent public area in front of your house? \_\_\_\_\_
- 1 Yes, everyday
  - 2 Yes, sometimes
  - 3 No
  - 4 I don't know

34. Does anyone in your house clean the drain around your house? \_\_\_\_\_
- 1 Yes, everyday
  - 2 Yes, sometimes
  - 3 No
  - 4 I don't know

35. How is your bulky waste disposed? (bulky waste such as large condemned furniture or electric appliances): \_\_\_\_\_
- 1 Collected by municipal worker
  - 2 Sold/ collected by special collectors
  - 3 Disposed by ourselves
  - 4 Sold to junkyards
  - 5 Others (please specify): \_\_\_\_\_
  - 6 I don't know

#### IV. Questions on Services of Waste Collection in Your Area

36. Is there a collection service in your area? \_\_\_\_\_
- 1 Yes
  - 2 No
  - 3 I don't know
37. Are you satisfied with the collection? \_\_\_\_\_

- 1 Very Satisfactory
- 2 Relatively Satisfactory
- 3 Average
- 4 Relatively Unsatisfactory
- 5 Very Unsatisfactory
- 6 I don't know

38. If you answer 4 or 5 in Question 37, what are the reasons? \_\_\_\_\_

- 1 Frequency of collection service is low
- 2 Collection time is irregular
- 3 Collection time is very early or late
- 4 Behavior of worker is bad
- 5 Collection work is crude
- 6 Collection fee is expensive
- 5 Others (please specify): \_\_\_\_\_

39. Do you know how the waste discharged from your house is collected? \_\_\_\_\_

- 1 Yes
- 2 No
- 3 I don't know

40. If "Question No.39 answer Yes", how is the waste collected? \_\_\_\_\_

- 1 Door to door collection system by using collection vehicles
- 2 Door to door collection system by collection workers
- 3 Residents themselves carry waste to a collection point
- 4 Collection from dust chute in the building
- 5 Others (please specify): \_\_\_\_\_
- 6 I don't know

41. How many times a week is your waste collected? \_\_\_\_\_

- 1 Everyday
- 2 Six times a week
- 3 Three times a week (every other day)
- 4 Twice a week
- 5 Once a week
- 6 Others (please specify): \_\_\_\_\_
- 7 I don't know

42. Is collection service done at a fixed time in the day? \_\_\_\_\_

- 1 Yes
- 2 No
- 3 I don't know

43. If "Question No.42 answer Yes", what time is your waste normally collected? \_\_\_\_\_

- 1 6:00- 8:59
- 2 9:00- 11:59
- 3 12:00- 14:59
- 4 15:00- 17:59
- 5 Others (please specify): \_\_\_\_\_
- 6 I don't know

#### V. Questions on Recycling

44. Do you know that newspaper, bottles etc. are recycled? \_\_\_\_\_

- 1 Yes
- 2 No

45. Do you know that there are people scavenging resource materials from refuse at the dumping ground? \_\_\_\_\_

- 1 Yes
- 2 No

46. Do you have someone who comes around to collect or buy your unused or recyclable materials?

- \_\_\_\_\_
- 1 Yes
  - 2 No
  - 3 I don't know

If "Question No.46 answer is Yes", please answer the followings; (No.47 - No.50), otherwise go to No.51.

47. If "Yes", how often does the collector comes around your place? \_\_\_\_\_

- 1 Once a week
- 2 Once a month
- 3 Once every other week
- 4 Once every other month
- 5 Once every 6 months
- 6 Once a year
- 7 I don't know

48. What kind of transport vehicles does the collector uses to haul them? \_\_\_\_\_

- 1 Tri-cycle
- 2 Bicycle
- 3 Motorcycle
- 4 Pick-up truck
- 5 Small lorry
- 6 Handcart
- 7 Others (please specify): \_\_\_\_\_

49. Please state the kind of recyclable materials and their prices: \_\_\_\_\_

- |                           |              |
|---------------------------|--------------|
| 1 Newspaper               | Kshs/ kg     |
| 2 Other paper             | Kshs/ kg     |
| 3 Glass bottles           | Kshs/ bottle |
| 4 Textile                 | Kshs/ kg     |
| 5 Plastic                 | Kshs/ kg     |
| 6 Ferrous metal           | Kshs/ kg     |
| 7 Other metal (_____)     | Kshs/ kg     |
| 8 Other materials (_____) | Kshs/ kg     |

50. Please state the mount of each item which you sell to him: \_\_\_\_\_

- |                           |               |
|---------------------------|---------------|
| 1 Newspaper               | kg/ month     |
| 2 Other paper             | kg/ month     |
| 3 Glass bottles           | bottle/ month |
| 4 Textile                 | kg/ month     |
| 5 Plastic                 | kg/ month     |
| 6 Ferrous metal           | kg/ month     |
| 7 Other metal (_____)     | kg/ month     |
| 8 Other materials (_____) | kg/ month     |

51. If the resident association or club in your area were to raise some funds (in order to engage beneficial activities for residents), through sale of reusable or recyclable materials, would you be able to contribute or participate? \_\_\_\_\_

- 1 Yes
- 2 No
- 3 I don't know

52. Do you use food wastes and garden wastes (fallen leaves and cut trees or grasses) as fertilizer? \_\_\_\_\_  
 1 Yes  
 2 No
53. Do you like to have guidance on methods of producing fertilizer from food wastes and garden wastes? \_\_\_\_\_  
 1 Yes  
 2 No  
 3 I don't know

#### VI. Questions on Housewives

If you are a housewife, please answer the questions No.54 - No.61 about yourself. If you are not a housewife and your spouse is a housewife, please answer the questions No.62 - No.66 about your wife.

54. Do you have a job outside home or inside home for making money? \_\_\_\_\_  
 1 Yes. Outside home  
 2 Yes. Inside home  
 3 No
55. How many hours do you spend for housework (e.g. washing, cooking, baby care, etc.) per day? \_\_\_\_\_  
 1 More than 6 hours  
 2 4- 6 hours  
 3 2- 4 hours  
 4 0- 2 hours
56. How many hours does your husband spend for housework (e.g. washing, cooking, baby care, etc.) per day? \_\_\_\_\_  
 1 More than 1 hours  
 2 0.5- 1 hours  
 3 less than 0.5 hours  
 4 None
57. Does your husband consult you when he decides something related to your home? \_\_\_\_\_  
 1 Yes  
 2 No  
 3 It depends on matters (please specify) \_\_\_\_\_  
 \_\_\_\_\_
58. Have you ever participated in social activities for improving sanitary conditions? \_\_\_\_\_  
 1 Yes (please specify what activities): \_\_\_\_\_  
 \_\_\_\_\_  
 2 No
59. If "Question No.58 answer No", are you interested in social activities for improving sanitary conditions? \_\_\_\_\_  
 1 Yes (please specify what activities): \_\_\_\_\_  
 \_\_\_\_\_  
 2 No
60. What are you doing in order to reduce discharging waste from your house? Please choose the following as many as applied: \_\_\_\_\_  
 1 Do not buy products which produce waste if possible  
 2 Do not make the leavings of meals  
 3 Give clothes which are not used any more to others



- 4 Compost the leavings of meals
- 5 Burn combustible wastes
- 6 Sell valuables
- 7 Others (please specify): \_\_\_\_\_

61. How are you training your children in order to reduce discharging waste from your house?

Please choose the following as many as applied: \_\_\_\_\_

- 1 Not to buy products which produce much waste
- 2 Not to make the leavings of meals
- 3 Others (please specify): \_\_\_\_\_

62. Does your wife have a job outside home or inside home for making money? \_\_\_\_\_

- 1 Yes. Outside home
- 2 Yes. Inside home
- 3 No
- 4 I don't know

63. How many hours does your wife spend for housework (e.g. washing, cooking, baby care, etc.) per day? \_\_\_\_\_

- 1 More than 6 hours
- 2 4- 6 hours
- 3 2- 4 hours
- 4 0- 2 hours
- 5 I don't know

64. Do you consult your wife when you decide something related to your home? \_\_\_\_\_

- 1 Yes
- 2 No
- 3 It depends on matters (please specify) \_\_\_\_\_

65. Has your wife ever participated in social activities for improving sanitary conditions? \_\_\_\_\_

- 1 Yes (please specify what activities): \_\_\_\_\_
- 2 No
- 3 I don't know

66. If "Question No.65 answer No", would you agree if your wife wanted to participate in social activities for improving sanitary conditions? \_\_\_\_\_

- 1 Yes (please specify what activities): \_\_\_\_\_
- 2 No
- 3 I don't know

## VI. Solid Waste Management Service

67. The waste management cost is insufficient. If municipality will supply enough cleansing services including garbage collection services and requests extra, how much can you contribute towards management of waste in addition to the present collection fee?: \_\_\_\_\_ Kshs.

68. Do you know which authority is responsible for disposal of solid waste discharge by residents? \_\_\_\_\_

- 1 State
- 2 Municipalities (City Council)
- 3 Yourselves
- 4 State sanitary company

- 5 Private contractors
- 6 Others (please specify): \_\_\_\_\_
- 7 I don't know

69. Have you ever had any guidance on methods of proper discharge? \_\_\_\_\_

- 1 Yes
- 2 No

70. In your area, is there "Clean Day" in which people are requested to participate on the "Public Cleansing" basis? \_\_\_\_\_

- 1 Yes
- 2 No
- 3 I don't know

71. If you answered "Yes" in Question No.71, did you participate in such "Public Cleansing" in your area? \_\_\_\_\_

- 1 Yes
- 2 No
- 3 I don't know

## VII. Willingness to Pay (WTP) and Affordability to Pay (ATP)

### Willingness to Pay (WTP)

- In the case which this Project, "Waste Management Plan" would not be implemented

The amounts of wastes in the Nairobi City have increased mainly because the Nairobi City has been rapidly urbanized by increase of urban population and by flowing into of rural population. The average daily amounts of wastes in Nairobi City are 2,400 tons and the 50% of the wastes have been illegally thrown away and the residuals have been transported to the final disposal site but they are openly dumped into the various places in the City without sanitary treatment. Then if this Project would not be implemented, the following negative effects would be brought to the circumstances for your daily life and your health.

- (i) To accelerate to make more uncomfortable circumstances of daily life by bad smell emitted from the perished wastes
- (ii) To accelerate to spoil the appearance of the streets in the City by scattered wastes and to lead to the image down of the City to tourists
- (iii) To accelerate to contaminate more the Nairobi River by the illegal throwing away of wastes and by discharge of the wastes by the inhabitants in the slum along the basin of the Nairobi River
- (iv) To accelerate to generate more the various diseases by air pollution affected by the dusts of dried wastes
- (v) To accelerate to generate more the various diseases by contamination of the Nairobi River or by the vector's transmitted disease in the area of accumulated wastes

- In the case which this Project, "Waste Management Plan" would be implemented

When this project would be implemented and the waste collection service is significantly improved, you will be able to have "satisfactory municipal waste management services", which thereby can be realized in the following way.

- (1) The public waste collection system will have enough capacity to regularly collect your municipal wastes; and
- (2) The collected municipal wastes will be safely treated to avoid the contamination of your environment.

In this context, the following benefits would be brought to the circumstances of your daily life and your health.

- (i) To accelerate to make comfortable circumstances of daily life by mitigating the bad smell emitted

- from the perished wastes
- (ii) To accelerate to maintain of appearance of the streets in the City by collection of scattered wastes and to avoid the image down of the City to tourists
  - (iii) To accelerate to eliminate contamination of the Nairobi River by reduction of illegal throwing away of wastes and by refraining from discharge of the wastes by the inhabitants in the slum along the basin of the Nairobi River
  - (iv) To accelerate to prevent or to minimize the various diseases by air pollution affected by the dusts of dried wastes
  - (v) To accelerate to prevent or to minimize the various diseases by contamination of the Nairobi River or by the vector's transmitted disease in the area of accumulated wastes

Taking into consideration of these improvements of the circumstances of your daily life and health because of the "satisfactory services" mentioned above, please answer to the following questions on your willingness to pay (WTP) for the waste management services.

72. Willingness to Pay (WTP) for Waste Management Services

Your household would enjoy the benefits by the improvements of the circumstances of your daily life and of your health by the "satisfactory waste management services" as explained before. If your household is not paying the waste charges for those benefits, how much is your household willing to pay per month? : \_\_\_\_\_

- 1. Less than 50 Kshs
- 2. 51 - 100Ksh
- 3. 101 - 200 Kshs
- 4. 201 - 300 Kshs
- 5. 301 - 500 Kshs
- 6. 501 - 700 Kshs
- 7. 701 – 900 Kshs
- 8. 901 - 1,200 Kshs
- 9. 1,201 - 1,500 Kshs
- 10. 1,501 - 2,000 Kshs
- 11. 2,001 - 3,000 Kshs
- 12. 3,001 – 4,000 Kshs
- 13. 4,001 Kshs – 5,000 Kshs
- 14. More than 5,000 Kshs

Affordability to Pay (ATP)

If your waste is collected by municipality or private collector, please answer the followings

(No. 73 - No. 77)

73. Are you now paying waste charges??

- 1 Yes
- 2 No
- 3 I don't know

74. If you answer was "1 Yes "in No.73, how much are you paying for waste charges per a month?  
\_\_\_\_\_ Kshs/ month

75. Are you paying the waste charges directly to the collection company (municipality) or through your community? \_\_\_\_\_

- 1 Directly (by myself)
- 2 Through the community

76. In the case you are paying the waste charges through community, who collect the charges? : \_\_\_\_\_

- 1 Chief of ban
- 2 A person who is in charge of sanitation matter in my community
- 3 A representative person selected by the residents
- 4 Others

77. Affordability to Pay (ATP)

It must be recognized that the funds for costs of the investment and the maintenance and operation are necessary to implement this project. Then the waste charges are necessary to be paid to recover the part of those costs. In the case your answer was “2 No”, in Question 73 and you can have “Satisfactory Waste Management Services” as explained in Question 37, how much are your household affordable to pay per month by taking account for the allowance of your household income and expenditures mentioned above? :

1. Less than 50 Kshs
2. 51 - 100Ksh
3. 101 - 200 Kshs
4. 201 - 300 Kshs
5. 301 - 500 Kshs
6. 501 - 700 Kshs
7. 701 – 900 Kshs
8. 901 - 1,200 Kshs
9. 1,201 - 1,500 Kshs
10. 1,501 - 2,000 Kshs
11. 2,001 - 3,000 Kshs
12. 3,001 – 4,000 Kshs
13. 4,001 Kshs – 5,000 Kshs
14. More than 5,000 Kshs

If a waste discharged from your household is not collected by municipality or private contractor, please answer the followings (No.78- No.80)

78. Do you want to receive a collection service? \_\_\_\_\_

- 1 Yes
- 2 No

79. If you want to receive a collection service, do you like to make a contract of the collection service in direct or through your community? \_\_\_\_\_

- 1 Direct
- 2 Communities

80. Does anyone come to collect your food waste? \_\_\_\_\_

- 1 Yes
- 2 No

#### VIII. Others

If anyone comes to collect your food waste, please answer the followings (No.81 - No.83)

81. How many times a week is your food waste collected? \_\_\_\_\_

- 1 Once - twice a week
- 2 Three times - four times a week
- 3 Everyday
- 4 Others (please specify): \_\_\_\_\_

82. How much money do you receive from a collector in exchange for your food waste? \_\_\_\_\_ Kshs.

83. How many Kg of food wastes do you sale at one time? \_\_\_\_\_  
 1 Less than 5 kg  
 2 5- 10 kg  
 3 10- 15 kg  
 4 20 kg  
 5 Others (please specify): \_\_\_\_\_

#### IX. Environmental Sanitation

84. Do you know sickness vectors breeding in the domestic solid waste?  
 Yes *please enumerate* a) b) c)  
 No
85. Do you know the sickness that can be transmitted by these vectors  
 Yes *please enumerate* a) b) c)  
 No
86. There are some items of domestic waste that can contents harmful materials for the environment.  
 How do you dispose of the following? :  
 i. residues of insecticides  
 ii. batteries  
 iii. others
87. Do you know the consequences on the environment and the public health due to a poor management of domestic solid waste in the city?  
 Yes *please specify*  
 No
88. Have you ever participated in a public education program on solid waste management  
 Yes  
 No

### **3.2 Commercial Establishments Questionnaire**

#### I. Items for Interviewer

1. Date: \_\_\_\_\_
2. Interviewer name: \_\_\_\_\_
3. Area classification: \_\_\_\_\_  
 1 Commercial Area (CBD)  
 2 Commercial Area (Other Urban Area)  
 3 Commercial Area (Suburban Area)  
 4 Commercial and Residential Area (BCD)  
 5 Commercial and Residential Area (Other Urban Area)  
 6 Commercial and Residential Area (Suburban Area)
4. Distance from the institution to road (road width about \_\_\_\_\_m): \_\_\_\_\_  
 1 In front of the premises  
 2 Less than 10 m  
 3 10- 29 m  
 4 30- 49 m  
 5 50 m or more

5. Distance from the shop to communal container or discharge point: \_\_\_\_\_
- 1 In front of the premises
  - 2 Less than 10 m
  - 3 10- 29 m
  - 4 30- 49 m
  - 5 50 m or more
  - 6 There is no communal container or garbage collection point in this area.

## II. General Questions

6. Name of Company/Business Establishment: \_\_\_\_\_

7. Position of interviewee: \_\_\_\_\_

- 1 President (Age:\_\_\_\_)
- 2 Secretary (Age:\_\_\_\_)
- 3 Staff of Information (Age:\_\_\_\_)
- 4 Staff in Charges of Waste Discharge (Age:\_\_\_\_)
- 5 Others (please specify): \_\_\_\_\_

8. Address: \_\_\_\_\_  
\_\_\_\_\_

9. Number of employee/s in your company/Business Establishment: \_\_\_\_\_

	Age Group	Male	Female
(b)	18 - 25		
(c)	26 - 60		
(d)	Above 60		

10. How long has your business executed the business at this place?

- 3 10- 19 years
- 4 20 years or more
- 5 I don't know

11. Total income of your company per month: \_\_\_\_\_

1. Less than 100,000 Kshs per month
2. 100,001 - 200,000 Kshs per month
3. 200,001 - 300,000 Kshs per month
4. 300,001- 400,000 Kshs per month
5. 400,001- 500,000 Kshs per month
6. 500,001- 600,000 Kshs per month
7. 600,001- 700,000 Kshs per month
8. 700,001- 800,000 Kshs per month
9. 801,000 - 900,000 Kshs per month
10. 900,001 - 1,000,000 Kshs per month
11. 1,000,000 - 2,000,000 Kshs per month
12. 2,000,001 – 3,000,000 Kshs per month
13. 3,000,000 - 4,000,000 Kshs per month
14. 4,000,001 - 5,000,000 Kshs per month
15. 5,000,001 - 75,000,000 Kshs per month
16. 75,000.001 – 100,000,000 Kshs per month
17. More than 100,000,001 Kshs per month

13. Total expenditure of your company per month: \_\_\_\_\_

1. Less than 100,000 Kshs per month
2. 100,001 - 200,000 Kshs per month
3. 200,001 - 300,000 Kshs per month
4. 300,001- 400,000 Kshs per month
5. 400,001- 500,000 Kshs per month
6. 500,001- 600,000 Kshs per month
7. 600,001- 700,000 Kshs per month
8. 700,001- 800,000 Kshs per month
9. 801,000 - 900,000 Kshs per month
10. 900,001 - 1,000,000 Kshs per month
11. 1,000,000 – 2,000,000 Kshs per month
12. 2,000,001 – 3,000,000 Kshs per month
13. 3,000,000 - 4,000,000 Kshs per month
14. 4,000,001 - 5,000,000 Kshs per month
15. 5,000,001 - 75,000,000 Kshs per month
16. 75,000.001 – 100,000,000 Kshs per month
17. More than 100,000,001 Kshs per month

### III. Questions on Discharge of Waste from Your Company

14. Who discharge waste from your company? \_\_\_\_\_

- 1 Staff in Charge of Wastes to be Discharged
- 2 Others (please specify): \_\_\_\_\_
- 3 I don't know

15. Where do you discharge waste from your company? \_\_\_\_\_

- 1 Into dustbins to be collected by worker
- 2 Around my premises without dustbins
- 3 Communal container
- 4 Discharge point
- 5 Garbage compartment fixed in the company
- 6 Others (please specify): \_\_\_\_\_
- 7 I don't know

16. What types of container do you use for carrying waste to discharge point in Question No.15?

- 1 Plastic bag (providing by a private collection company)
- 2 Plastic bag (others)
- 3 Plastic bucket
- 4 Metal bucket
- 5 Others (please specify): \_\_\_\_\_
- 6 I don't know

17. Why do you use it? \_\_\_\_\_

- 1 It is clean after collection work
- 2 It prevents foul odor
- 3 It is manageable
- 4 Keeps away pest such as flies
- 5 Others (please specify): \_\_\_\_\_

18. How much capacity does such container hold? \_\_\_\_\_

- 1 Less than 10 liters
- 2 10- 19 liters
- 3 20- 29 liters
- 4 30 liters or more
- 5 I don't know

19. How frequent is the waste discharged out of your company? : \_\_\_\_\_

- 1 Twice every day
- 2 Once every day
- 3 Once every two days
- 4 Once every three days
- 5 Once a week
- 6 Irregularly
- 7 I don't know

20. Do you discharge waste at a fixed time? \_\_\_\_\_

- 1 Yes
- 2 No
- 3 I don't know

21. If your answer "Yes" in Question No.20, what time do you usually discharge your waste?

- 1 6:00- 8:59
- 2 9:00- 11:59
- 3 12:00- 14:59
- 4 15:00- 17:59
- 5 Others (please specify): \_\_\_\_\_
- 6 I don't know

22. Do you have ever discharged waste soon after it was collected? \_\_\_\_\_

- 1 Yes
- 2 No
- 3 I don't know

If you have dustbins to be collected by worker (for Question No.15 answer 1 only), please answer the followings (No.23 - No.29);

23. How many dustbins do you have? \_\_\_\_\_

- 1 1
- 2 2
- 3 3
- 4 4
- 5 5 or more
- 6 I don't know

24. What type of dustbins do you use? \_\_\_\_\_

- 1 Plastic bucket
- 2 Metal bucket
- 3 Drum can
- 4 Others (please specify): \_\_\_\_\_
- 5 I don't know

25. How much capacity does your dustbin hold? \_\_\_\_\_

- 1 Less than 30 liters
- 2 30- 49 liters
- 3 50- 99 liters
- 4 100 liters or more
- 5 I don't know



26. Where do you put your dustbin to be collected by worker? \_\_\_\_\_  
 1 In front of my premises  
 2 Behind the premises  
 3 In the company (kitchen)  
 4 Others (please specify): \_\_\_\_\_  
 5 I don't know
27. Is the dustbin with or without lid? \_\_\_\_\_  
 1 With  
 2 Without  
 3 I don't know
28. Are you able to co-operate to carry your waste to communal containers fixed in your area if you are so requested? \_\_\_\_\_  
 1 Yes  
 2 No  
 3 I don't know
29. If you answer "No" in "Question No.28", what are the reasons? \_\_\_\_\_  
 1 Present system is better  
 2 We have nobody who will carry the waste to communal containers  
 3 Communal containers are far  
 4 Communal containers are not hygienic  
 5 Others (please specify): \_\_\_\_\_
30. Do you have ever seen human scavengers and animals on your waste? \_\_\_\_\_  
 1 Yes  
 2 No  
 3 I don't know
31. How do you discharge garden waste (fallen leaves and cut trees or grasses)? \_\_\_\_  
 1 Discharge to collection point fixed by municipality  
 2 Discharge in front of the house  
 3 Open combustion/ burning  
 4 Composting (producing fertilizer from waste)  
 5 I don't know  
 6 Needless to discharge garden wastes  
 7 Others (please specify): \_\_\_\_\_

If "Question No.31 answer 3", please answer the followings: (No.32)

32. If the waste discharged from your company/shop will be collected, will you discharge the garden wastes (fallen leaves and cut trees or grasses) with other wastes? \_\_\_\_\_  
 1 Yes  
 2 No
33. Does anyone in your company sweep the road shoulder or adjacent public area in front of your house? \_\_\_\_\_  
 1 Yes, everyday  
 2 Yes, sometimes  
 3 No  
 4 I don't know

34. Does anyone in your company clean the drain around your company? \_\_\_\_\_  
 1 Yes, everyday  
 2 Yes, sometimes  
 3 No  
 4 I don't know
35. How is your bulky waste disposed? (bulky waste such as large condemned furniture or electric appliances): \_\_\_\_\_  
 1 Collected by municipal worker  
 2 Sold/ collected by special collectors  
 3 Disposed by ourselves  
 4 Sold to junkyards  
 5 Others (please specify): \_\_\_\_\_  
 6 I don't know

#### IV. Questions on Services of Waste Collection in Your Area

36. Is there a collection service for your company? \_\_\_\_\_  
 1 Yes  
 2 No  
 3 I don't know
37. Are you satisfied with the collection? \_\_\_\_\_  
 1 Very Satisfactory  
 2 Relatively Satisfactory  
 3 Average  
 4 Relatively Unsatisfactory  
 5 Very Unsatisfactory  
 6 I don't know
38. If you answer 4 or 5 in Question 35, what are the reasons? \_\_\_\_\_  
 1 Frequency of collection service is low  
 2 Collection time is irregular  
 3 Collection time is very early or late  
 4 Behavior of worker is bad  
 5 Collection work is crude  
 6 Collection fee is expensive  
 5 Others (please specify): \_\_\_\_\_
39. Do you know how the waste discharged from your company is collected? \_\_\_\_\_  
 1 Yes  
 2 No  
 3 I don't know
40. If "Question No.38 answer Yes", how is the waste collected? \_\_\_\_\_  
 1 Door to door collection system by using collection vehicles  
 2 Door to door collection system by collection workers  
 3 Residents themselves carry waste to a collection point  
 4 Collection from dust chute in the building  
 5 Others (please specify): \_\_\_\_\_  
 6 I don't know

41. How many times a week is your waste collected? \_\_\_\_\_  
 1 Everyday  
 2 Six times a week  
 3 Three times a week (every other day)  
 4 Twice a week  
 5 Once a week  
 6 Others (please specify): \_\_\_\_\_  
 7 I don't know
42. Is collection service done at a fixed time in the day? \_\_\_\_\_  
 1 Yes  
 2 No  
 3 I don't know
43. If "Question No.40 answer Yes", what time is your waste normally collected? \_\_\_\_\_  
 1 6:00- 8:59  
 2 9:00- 11:59  
 3 12:00- 14:59  
 4 15:00- 17:59  
 5 Others (please specify): \_\_\_\_\_  
 6 I don't know

#### V. Questions on Recycling

44. Do you know that newspaper, bottles etc. are recycled? \_\_\_\_\_  
 1 Yes  
 2 No
45. Do you know that there are people scavenging resource materials from refuse at the dumping ground? \_\_\_\_\_  
 1 Yes  
 2 No
46. Do you have someone who comes around to collect or buy your unused or recyclable materials? \_\_\_\_\_  
 1 Yes  
 2 No  
 3 I don't know

If "Question No.44 answer is Yes", please answer the followings; (No.45 - No.48), otherwise go to No.49.

47. If "Yes", how often does the collector comes around your place? \_\_\_\_\_  
 1 Once a week  
 2 Once a month  
 3 Once every other week  
 4 Once every other month  
 5 Once every 6 months  
 6 Once a year  
 7 I don't know

48. What kind of transport vehicles does the collector uses to haul them? \_\_\_\_\_

- 1 Tri-cycle
- 2 Bicycle
- 3 Motorcycle
- 4 Pick-up truck
- 5 Small lorry
- 6 Handcart
- 7 Others (please specify): \_\_\_\_\_

49. Please state the kind of recyclable materials and their prices: \_\_\_\_\_

- |                   |         |              |
|-------------------|---------|--------------|
| 1 Newspaper       |         | Kshs. / kg   |
| 2 Other paper     |         | Kshs/ kg     |
| 3 Glass bottles   |         | Kshs/ bottle |
| 4 Textile         |         | Kshs/ kg     |
| 5 Plastic         |         | Kshs/ kg     |
| 6 Ferrous metal   |         | Kshs/ kg     |
| 7 Other metal     | (_____) | Kshs/ kg     |
| 8 Other materials | (_____) | Kshs/ kg     |

50. Please state the mount of each item which you sell to him: \_\_\_\_\_

- |                   |         |               |
|-------------------|---------|---------------|
| 1 Newspaper       |         | kg/ month     |
| 2 Other paper     |         | kg/ month     |
| 3 Glass bottles   |         | bottle/ month |
| 4 Textile         |         | kg/ month     |
| 5 Plastic         |         | kg/ month     |
| 6 Ferrous metal   |         | kg/ month     |
| 7 Other metal     | (_____) | kg/ month     |
| 8 Other materials | (_____) | kg/ month     |

51. If the business association in your area were to raise some funds (in order to engage beneficial activities for residents), through sale of reusable or recyclable materials, would you be able to contribute or participate? \_\_\_\_\_

- 1 Yes
- 2 No
- 3 I don't know

52. Do you use food wastes and garden wastes (fallen leaves and cut trees or grasses) as fertilizer? \_\_\_\_\_

- 1 Yes
- 2 No

53. Do you like to have guidance on methods of producing fertilizer from food wastes and garden wastes? \_\_\_\_\_

- 1 Yes
- 2 No
- 3 I don't know

#### VI. Solid Waste Management Service

54. What is the present cost of waste management in your company?

- Collection services: \_\_\_\_\_ Kshs
- Street sweeping: \_\_\_\_\_ Kshs
- Drain cleansing: \_\_\_\_\_ Kshs
- Total : \_\_\_\_\_ Kshs
- Tree and grass cutting: \_\_\_\_\_ Kshs

What do you think of this rate? \_\_\_\_\_

1. Expensive
2. Reasonable
3. Cheap
4. I don't know

55. The waste management cost is insufficient. If municipality will supply enough cleansing services including garbage collection services and requests extra, how much can you contribute towards management of waste in addition to the present collection fee?: \_\_\_\_\_ Kshs.

56. Do you know which authority is responsible for disposal of solid waste discharge by residents? \_\_\_\_\_

- 1 State
- 2 Municipalities (City Council)
- 3 Yourselfs
- 4 State sanitary company
- 5 Private contractors
- 6 Others (please specify): \_\_\_\_\_
- 7 I don't know

57. Have you ever had any guidance on methods of proper discharge? \_\_\_\_\_

- 1 Yes
- 2 No

58. In your company, is there "Clean Day" in which the staff is requested to participate on the "Public Cleansing" basis? \_\_\_\_\_

- 1 Yes
- 2 No
- 3 I don't know

## VII. Willingness to Pay (WTP) and Affordability to Pay (ATP)

### Willingness to Pay (WTP)

- In the case which this Project, "Waste Management Plan" would not be implemented the amounts of wastes in the Nairobi City have increased mainly because the Nairobi City has been rapidly urbanized by increase of urban population and by flowing into of rural population. The average daily amounts of wastes in Nairobi City are 2,400 tons and the 50% of the wastes have been illegally thrown away and the residuals have been transported to the final disposal site but they are openly dumped into the various places in the City without sanitary treatment. Then if this Project would not be implemented, it has been worried about that the following serious influences would be brought to the circumstances for your daily life and your health.
  - (i) To accelerate to make more uncomfortable circumstances of daily life by bad smell emitted from the perished wastes
  - (ii) To accelerate to spoil the appearance of the streets in the City by scattered wastes and to lead to the image down of the City to tourists
  - (iii) To accelerate to contaminate more the Nairobi River by the illegal throwing away of wastes and by discharge of the wastes by the inhabitants in the slum along the basin of the Nairobi River
  - (iv) To accelerate to generate more the various diseases by air pollution affected by the dusts of dried wastes
  - (v) To accelerate to generate more the various diseases by contamination of the Nairobi River or by the vector's transmitted disease in the area of accumulated wastes
- In the case which this Project, "Waste Management Plan" would be implemented  
When this project would be implemented and the waste collection service is significantly improved, you will be able to have "satisfactory municipal waste management services", which thereby can be realized in the following way.

- (1) The public waste collection system will have enough capacity to regularly collect your municipal wastes; and
- (2) The collected municipal wastes will be safely treated to avoid the contamination of your environment.

In this context, the following benefits would be brought to the circumstances of your daily life and your health.

- (i) To accelerate to make comfortable circumstances of daily life by mitigating the bad smell emitted from the perished wastes
- (ii) To accelerate to maintain of appearance of the streets in the City by collection of scattered wastes and to avoid the image down of the City to tourists
- (iii) To accelerate to eliminate contamination of the Nairobi River by reduction of illegal throwing away of wastes and by refraining from discharge of the wastes by the inhabitants in the slum along the basin of the Nairobi River
- (iv) To accelerate to prevent or to minimize the various diseases by air pollution affected by the dusts of dried wastes
- (v) To accelerate to prevent or to minimize the various diseases by contamination of the Nairobi River or by the vector's transmitted disease in the area of accumulated wastes

Taking into consideration of these improvements of the circumstances of your daily life and health because of the "satisfactory services" mentioned above, please answer to the following questions on your willingness to pay (WTP) for the waste management services.

#### 59. Willingness to Pay (WTP) for Waste Management Services

Your company would enjoy the benefits by the improvements of the circumstances of your daily life and of your health by the "satisfactory waste management services" as explained before. If your company is not paying the waste charges for those benefits, how much is your company *willing to pay*? \_\_\_\_\_ Kshs per month

## **2. Affordability to Pay (ATP)**

If your waste is collected by municipality or private collector, please answer the followings

(No. 60 - No. 64)

60. Are you now paying collection service charge?

- 1 Yes
- 2 No
- 3 I don't know

61. If you answer was "1 Yes" in No.60, how much are you paying for the collection services per a month? \_\_\_\_\_ Kshs per month

### **Affordability to Pay (ATP)**

It must be recognized that the funds for costs of the investment and the maintenance and operation are necessary to implement this project. Then the waste charges are necessary to be paid to recover the part of those costs. If your company is not paying the waste charges, how much are your company *affordable to pay* by taking account for the allowance of your company income and expenditures mentioned above? \_\_\_\_\_ Kshs per month

62. In the case you answer 2 in Question 60 and you can **have** "Satisfactory Waste Management Services" as explained in Question 37 before, are you newly willing to pay the following charge per month?

1. Less than 250 Kshs/month
2. 250 – 500 Kshs/month
3. 500 – 750 Kshs/month
4. 750 – 1,000 Kshs/month
5. 1,000 – 1,250 Kshs/month
6. 1,250 – 1,500 Kshs/month

- 7. 1,500 or more Kshs/month
- 8. I don't know

If a waste discharged from your company is not collected by municipality or private contractor, please answer the followings (No.63- No.65)

63. Do you want to receive a collection service? \_\_\_\_\_

- 1 Yes
- 2 No

64. Does anyone come to collect your food waste? \_\_\_\_\_

- 1 Yes
- 2 No

65. How do you evaluate the present municipal waste management services in Nairobi? (Please check with x in box.)

- ☐ Very Satisfactory
- ☐ Relatively Satisfactory
- ☐ Normal
- ☐ Relatively Unsatisfactory
- ☐ Very Unsatisfactory
- ☐ I don't know.

66: WILLINGNESS TO PAY (WTP) FOR WASTE MANAGEMENT SERVICE

Your company would enjoy the benefits of the improvements of the circumstances of your daily operations by the "satisfactory waste management services" as explained before. If your company is not paying the waste charges for those benefits, how much is your company *willing to pay over and above your current costs?* : \_\_\_\_\_ Kshs per month

67. Affordability to Pay (ATP) (Only if there are no costs for waste management)

It must be recognized that the funds for costs of the investment and the maintenance and operation are necessary to implement this project. Then the waste charges are necessary to be paid to recover the part of those costs. If your company is not paying the waste charges, how much is your company *able to pay* by taking account for the allowance of your company income and expenditures mentioned above? : \_\_\_\_\_ Kshs per month

68. Who collects the waste charges which your company pays? (Please check with x in box)

- ☐ Nairobi City
- ☐ Private Company

### 3.3 Medical Facilities Questionnaire

Questionnaire number: \_\_\_\_\_

Respondent: (Name: Mr. /Mrs. /Dr. \_\_\_\_\_, Title: \_\_\_\_\_)

#### 1. General Question

- 1.1. Facility Name: \_\_\_\_\_
- 1.2. Address: \_\_\_\_\_
- 1.3. Tel/Fax: \_\_\_\_\_
- 1.4. Description of the facility
- 1.4.1. Ownership of facility
- (a) Government (Ministry of Public Health/ Ministry of Local Government /  
Nairobi City Council / Others)  
if others, (specify \_\_\_\_\_) )
- (b) Private sector (specify \_\_\_\_\_) )
- (c) Others (specify \_\_\_\_\_) )
- 1.4.2. Total Number of employees: \_\_\_\_\_ staffs
- 1.4.3. Total Number of beds: \_\_\_\_\_ Beds
- 1.4.4. Average Number of Monthly Inpatient: \_\_\_\_\_
- 1.4.5. Average Number of Monthly Outpatient: \_\_\_\_\_
- 1.4.6. Approximate Monthly Turn Over of the Facility: \_\_\_\_\_ Kshs
- 1.4.7. Average Number of Visitors (other than the patient) per day: \_\_\_\_\_
- 1.4.8. Approximate Monthly Expenditure of Facilities: \_\_\_\_\_ Kshs
- (a) Expenditure for Solid Waste Management (including general & medical)  
( \_\_\_\_\_ KHz) ( \_\_\_\_\_ %)
- 1.4.9. Description of the medical services provided
- (a) ( \_\_\_\_\_ )
- (b) ( \_\_\_\_\_ )
- (c) ( \_\_\_\_\_ )
- (d) ( \_\_\_\_\_ )
- (e) ( \_\_\_\_\_ )
- (f) ( \_\_\_\_\_ )

#### 2. Solid Waste Management System in the Facility

##### 2.1. Solid Waste Administration within the facility

2.1.1. Is there a specific department in the facility responsible for solid waste administration?

(a) Yes ☐ If Yes, then:

(a.1) \_\_\_\_\_ Describe \_\_\_\_\_ its \_\_\_\_\_ responsibilities

(a.2) how many staffs are in this Department? ( \_\_\_\_\_ )

(b) No ☐ If No, then:

(b.1) which department/personnel have responsibility for solid waste management?

2.1.2. Are there any specific rules/regulations for the solid waste management in the facilities? (*In case regulations are available obtain copy*)

(a) Yes ☐ If Yes, then

(a.1) Describe the details of specific rules/regulations

(b) No ☐ If No, then

(b.1) Describe the real process of undertaking solid waste management



2.1.3. Is there an in-house education program for the staff on SWM of medical wastes? *(Single) (In case program is available obtain copy)*

(a) Yes ☐ If Yes, then concerning the program

(a.1) Program prepared by the hospital

(a.2) Program prepared by the Ministry of Health

(a.3) Program prepared by other governmental organization

☐  
☐  
☐

(b) No ☐

(c) Others (specify \_\_\_\_\_ )

## 2.2. Waste Generation Amount and Segregation in the Facility

2.2.1. Does the facility have any definition of medical wastes in the solid wastes generated within medical facilities *(In case definition exists obtain copy)*

(a) Yes ☐ If Yes, then

(a.1) Describe the details of definition

(b) No ☐

2.2.2. Are there any categorization and segregation of infectious/medical waste and noninfectious/general waste for the solid wastes generated within medical facilities?

(a) Yes ☐ If Yes, then

(a.1) Describe the details of categorization and segregation

(b) No ☐

2.2.3. What is the solid waste amount generated in the facility (by category) in kg/day or m<sup>3</sup>/day? State separately the kinds of infectious/medical and non-infectious/general wastes.

(a) [ \_\_\_\_\_ ] ( ) kg/day

(b) [ \_\_\_\_\_ ] ( ) kg/day

(c) [ \_\_\_\_\_ ] ( ) kg/day

(d) [ \_\_\_\_\_ ] ( ) kg/day

(e) [ \_\_\_\_\_ ] ( ) kg/day

## 2.3 Waste Collection and Intermediate Treatment of the Solid Waste

2.3.1. Who conducts solid waste collection from your medical facilities?

(a) Responsible Government

(b) Nairobi City Council

(c) Medical Facility itself

(d) Private Company

(e) Others

☐  
☐  
☐  
☐  
☐

2.3.2 What is the frequency of collection? *(Single)*

(a) Do not know

(b) Collected every day

(c) Collected every two days

(d) Collected every three days

(e) Collected once a week

(f) Irregular collection

☐  
☐  
☐  
☐  
☐  
☐

2.3.3. Do you pay collection service charge?

(a) Yes ☐ If Yes, then answer the following questions:

(a.1) How much do you pay per month? ( \_\_\_\_\_ )

Kshs)

(a.2) The unit charge ( \_\_\_\_\_ )

Kshs/kg or Kshs/m<sup>3</sup>)

(a.3) Whom do you pay to?

(i ) Responsible Government

(ii ) Nairobi City Council

(iii) Medical Facility itself

(iv) Private Company

(v ) Others

☐  
☐  
☐  
☐  
☐

(b) No ☐

2.3.4. If the question of No.2.2.2 is answered “Yes”, are segregated wastes respectively collected as segregated?

(a) Yes ☐ If Yes, then

(a.1) Containers/bags for segregation of wastes are also collected every time?

Yes

No

(b) No ☐

2.3.5. Who conducts treatment for collected solid wastes?

(a) Responsible Government

(b) Nairobi City Council

(c) Medical Facility itself

(d) Private Company

(e) Others

2.3.6 What is the frequency of the treatment? (Single)

(a) Do not know

(b) Every day

(c) Every two days

(d) Every three days

(e) Once a week

(f) Other specify ( )

2.3.7. If the question of No.2.2.2 is answered “Yes”, are segregated wastes respectively treated?

(a) Yes ☐ If Yes, then

(a.1) what kinds of treatment are applied to respective segregated wastes?

(i) ( )

(ii) ( )

(iii) ( )

(iv) ( )

(v) ( )

(b) No ☐ If No and the question of No 2.2.2 is answered “No”, then

(b.1) Describe what kinds of treatment are applied.

2.3.8. Do you pay treatment service charge?

(a) Yes ☐ If Yes, then answer the following questions:

(a.1) How much do you pay per month? ( Kshs)

(a.2) The unit charge ( Kshs/kg or Kshs/m<sup>3</sup>)

(a.3) Whom do you pay to?

(i) Responsible Government

(ii) Nairobi City Council

(iii) Medical Facility itself

(iv) Private Company

(v) Others

(b) No ☐

2.4. Final Disposal

2.4.1. Do you know where the treated/collected wastes are respectively disposed?

(a) Yes ☐ If Yes, then

(a.1) describe respective disposal sites

(i) ( )

(ii) ( )

(iii) ( )

(iv) ( )

(v) ( )

(b) No ☐ If No, then

(b.1) Describe where is assumed as disposal site

2.4.2. Do you pay final disposal charge?

- (a) Yes ☐ If Yes, then answer the following questions:
- (a.1) How much do you pay per month?..... Kshs)
- (a.2) The unit charge .....Kshs/kg or Kshs/m<sup>3</sup>)
- (a.3) Whom do you pay to?
- (i ) Responsible Government
- (ii ) Nairobi City Council
- (iii) Medical Facility itself
- (iv) Private Company
- (v) Others
- (b) No ☐

### 3. Public Health

3.1 Please categorize in percentage the main diseases that this hospital had recorded in 2008 and 2009 year for Nairobi city residents

Main diseases	2008	2009
Waterborne diseases (typhoid fever, dysentery, cholera, etc)		
Yellow fever		
Malaria		
Respiratory infection		
Heart disease		
Cancer		
Dengue		
Other		
Other		
Other		

3.2 Please fill out the table indicating the number of patients that were attended at this hospital according to the kind of diseases and the zone of their living in Nairobi city

Main diseases	Number of patients at different zones of Nairobi city				
Location	Dandora	Kariobangi	Mathare North	Kibera slum	Others
Waterborne diseases (typhoid fever, dysentery, cholera, etc)					
Yellow fever					
Malaria					
Respiratory infection					
Heart disease					
Cancer					
Dengue					
Other					
Other					
Other					

#### 4. Raw Data on Public Awareness & Establishment Survey

**Table 4.1 Predetermined Sample Size**

Sample Area	Samples	Proportion of Samples
Households	250 households	The proportion of the samples in each income group is 20% (50 households) of the total sample frame.
Commercial Establishments & Medical Facilities	67 establishments	The proportion of the samples in each business category was not even

**Table 4.2 Summary of the Household Questionnaire Contents**

<b>PART A: HOUSEHOLDS</b>
<b>1. General Information</b>
Location Solid Waste Management Conditions in the Area
<b>2: Description of Interviewed Subject</b>
Number of Members Type of Dwelling Unit Rent or Ownership Household Income
<b>3: Solid Waste Conditions</b>
Waste Containers Used Waste Discharge Habits Discharge Location Separation and Recycling Waste Collection System ChargePaid
<b>4: Awareness on SWM issues</b>
Conception on Solid Waste Management in the City Willingness to Pay to Improve Solid Waste Management Affordability to Pay to Improve Solid Waste Management

**Table 4.3 Content of the Questionnaires for the Commercial Establishments and Institutions**

<b>PART B: COMMERCIAL ESTABLISHMENTS AND INSTITUTIONS</b>
<b>1. General Information</b>
Location Solid Waste Management Conditions in the Area
<b>2: Description of Interviewed subject</b>
Number of Employees/Bed Capacity Ownership Income / Expenditure
<b>3: Solid Waste Conditions</b>
Waste Containers Used Waste Discharge Habits Discharge Location Separation and Recycling Waste Collection System Charge Paid For Medical Facilities Treatment Methods for Segregated Waste
<b>4: Awareness on SWM issues</b>
Conception on Solid Waste Management in the City Willingness to Pay to Improve Solid Waste Management Affordability to Pay to Improve Solid Waste Management

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**A. HOUSEHOLD SURVEY**

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**Table 4.4 Distribution of Respondents by Area (households)**

	<b>Income Group</b>	<b>Estate/Areas</b>	<b>Number of Respondents</b>
<b>Distribution of Respondents by Area</b>	<b>High Income</b>	Kitisuru	25
		Karen	25
	<b>Middle</b>	South B	25
		Lang'ata	25
	<b>Low-Middle</b>	Umoja	25
		Riruta	25
	<b>Low</b>	Bahati	25
		Dandora	25
	<b>Slum</b>	Kibera	25
		Mukuru	25

**Table 4.5 Distance from the House to the Main Road**

	High Income	Middle Income	Low-Middle Income	Low Income	Slum Area	Total
In front the premises	13	15	8	9	5	50
Less than 10m	22	14	16	15	7	74
10-29m	10	12	10	9	2	43
30-49m	2	5	11	9	21	48
50m or more	3	4	5	8	15	35
Total	50	50	50	50	50	250

**Table 4.6 Distance of the Communal Waste Container from the House**

	In front of the premises	less than 10m	10-29m	30-49m	50m or more	No communal discharge point
High Income	29	4	0	0	0	15
Middle Income	24	4	2	0	0	21
Low-Middle Income	24	7	5	1	0	15
Low Income	19	4	4	5	2	12
Slum area	4	9	2	4	7	27
Percentage	40	11.2	5.2	4	3.6	36

**Table 4.7: Distribution of Respondents by Age**

Area Classification		Age of interviewee				
		9-25	25-36	37-50	51-60	>60
High Income	House wife	1	3	9	1	0
	The master	0	1	7	2	3
	Children	5	1	1	0	0
	Other house member	0	4	2	0	0
	House keeper (servant)	0	3	4	0	0
	Others (specify)	0	1	2	0	0
	<b>Total</b>	6	13	25	3	3
Middle Income	House wife	2	7	6	2	1
	The master	0	6	7	3	0
	Children	7	2	0	0	0
	Other house member	2	1	0	0	0
	House keeper (servant)	1	2	0	0	1
	<b>Total</b>	12	18	13	5	2
Low-Middle Income	House wife	3	20	6	0	0
	The master	3	10	2	0	0
	Children	2	0	0	0	0
	Other house member	1	1	0	0	0
	Others (specify)	0	2	0	0	0
	<b>Total</b>	9	33	8	0	0
Low Income	House wife	3	9	5	2	0
	The master	4	13	3	1	3
	Children	4	0	0	0	0
	Other house member	0	0	1	0	0
	House keeper (servant)	0	0	1	0	0
	Others (specify)	0	1	0	0	0
	<b>Total</b>	11	23	10	3	3
Slum Area	House wife	9	14	4	1	0
	The master	0	11	7	1	0
	Other house member	2	0	1	0	0
	<b>Total</b>	11	25	12	2	0

**Table 4.8 Distribution of Respondents by Status**

Area Classification	Type of Interviewee							Total
		House wife	The master	Children	Other house member	House keeper (servant)	Others (specify)	
High Income	Karen	10	8	5	0	2	1	25
	Kitisuru	4	5	2	6	7	2	25
	Total	14	13	7	6	9	3	50
Middle Income	Lang'ata	12	8	5	0	1	0	26
	South B	6	8	4	3	2	0	24
	Total	18	16	9	3	3	0	50
Low-Middle Income	Riruta	15	8	0	2	0	1	26
	Umoja	14	7	2	0	0	0	24
	Total	29	15	2	2	0	1	50
Low Income	Bahati	10	18	3	3	1	1	33
	Dandora	9	6	1	1	0	0	17
	Total	19	24	4	4	1	1	50
Slum area	Kibera	13	12	0	0	0	0	27
	Mukuru Kwa Njenga	15	7	0	0	0	0	23
	Total	28	19	0	0	0	0	50



**Table 4.9 Main Occupation of the Respondent**

Area Classification	Type of Interviewee							
	Industry	House wife	The master	Children	Other house member	House keeper (servant)	Others (specify)	Total
High Income	Primary industry (agriculture & mining)	2	0	1	1	0	0	4
	Secondary industry (manufacturing)	0	5	1	2	0	0	8
	Tertiary industry (service oriented professional)	8	7	5	2	5	0	27
	pensioner (retired)	1	1	0	0	0	1	3
	Others ** (Jua kali, masons)	3	0	0	1	1	1	6
	I don't know	0	0	0	0	1	1	2
	<b>Total</b>	14	13	7	6	7	3	50
Middle Income	Primary industry (agriculture & mining)	0	1	1	0	0	0	2
	Secondary industry (manufacturing)	3	0	1	0	0	0	4
	Tertiary industry (service oriented professional)	14	12	4	0	2	0	32
	pensioner (retired)	1	0	0	0	1	0	2
	Unemployed	0	1	2	3	0	0	6
	Others** (Jua kali, masons)	1	2	1	0	0	0	4
	<b>Total</b>	19	16	9	3	4	0	50
Low-Middle Income	Primary industry (agriculture & mining)	0	1	0	0	0	0	1
	Secondary industry (manufacturing)	3	0	0	0	0	0	3
	Tertiary industry (service oriented professional)	13	5	1	1	0	2	22
	pensioner (retired)	0	1	0	0	0	0	1
	Unemployed	2	3	0	1	0	0	6
	Others** (Jua kali, masons)	11	6	0	0	0	0	17
	<b>Total</b>	29	16	2	2	0	2	50

Area Classification	Type of Interviewee							
	Industry	House wife	The master	Children	Other house member	House keeper (servant)	Others (specify)	Total
Low Income	Secondary industry (manufacturing)	2	2	1	1	0	0	6
	Tertiary industry (service oriented professional)	9	10	2	0	1	0	22
	pensioner (retired)	1	0	0	0	0	0	1
	Unemployed	4	1	0	0	0	0	5
	Others** (Jua kali, masons)	3	8	1	0	0	3	15
	<b>Total</b>	19	21	4	1	1	1	50
Slum area	Secondary industry (manufacturing)	0	4	0	0	0	0	4
	Tertiary industry (service oriented professional)	5	8	0	2	0	0	15
	pensioner (retired)	1	2	0	0	0	0	3
	Unemployed	3	0	0	1	0	0	4
	Others** (Jua kali, masons)	19	5	0	0	0	0	24
	<b>Total</b>	28	19	0	3	0	0	50

Note: \*\* Other sources of income as per the responses included non-formal employment in the Jua Kali sector, casual labor and artists for example musicians.

**Table 4.10 Average Number of Persons per Income Group**

Survey Area	Residential Area	Average Number of Persons per Household
High Income	Karen Kitisuru	4.34
Middle Income	Langata South B	3.12
Low-Middle Income	Umoja Riruta	3.26
Low Income	Dandora Bahati	2.34
Slum Area	Kibera Mukuru	3.20

**Table 4.11: Number of Years at the Dwelling Place**

	Upper Income	Middle Income	Lower Middle Income	Low Income	Slum Area	Total
Less than 5 yrs	28	18	27	16	25	114
5-9 yrs	12	12	11	15	12	62
10-19 yrs	4	8	3	10	13	38
20 yrs or more	3	8	9	5	0	25
I don't know	3	4	0	4	0	11
<b>Total</b>	50	50	50	50	50	250

**Table 4.12: Main source of household income**

	From Head of Household	From Housewife	From other family members
Upper income	47	2	1
Middle income	45	4	1
Lower middle income	48	2	0
Low income	39	6	5
Slum area	48	1	1
<b>Total</b>	227	15	8
<b>Percentage (%)</b>	90.8	6.0	3.2

**Table 4.13: Total income of the household**

Amount (Kshs/Month)		Upper income	Middle income	Lower middle income	Low income	Slum area	Total
Total income of your household per month	Less than 5000	0	0	3	3	27	33
	5001-15000	0	6	18	27	14	65
	15001-25001	0	5	8	17	5	35
	25001-35000	5	6	8	2	4	25
	35001-45000	2	5	2	1	0	10
	45001-55000	1	6	5	0	0	12
	55001-65000	4	5	3	0	0	12
	65001	38	17	3	0	0	58
<b>Total</b>		50	50	50	50	50	250

**Table 4.14: Person responsible for discharges of waste the house**

Area Classification	House wife	The master	Children	Other house member	House keeper (servant)	Others (specify)
Upper income	27	2	1	0	18	2
Middle income	21	5	4	2	15	3
Lower middle income	23	5	8	0	12	2
Low income	19	17	6	0	5	3
Slum area	20	16	2	0	4	8
<b>Total</b>	<b>110</b>	<b>45</b>	<b>21</b>	<b>2</b>	<b>54</b>	<b>18</b>

**Table 4.15: Where Waste is discharged**

Area Classification		Where do you discharge waste from your house?						
		Into containers to be collected by worker	Around my premises without container	Communal container	Discharge point	Garbage compartment fixed in the house	Others	Total
Upper income	House wife	19	3	2	1	1	0	26
	The master	0	1	0	0	0	0	1
	Children	0	0	0	0	0	1	1
	House keeper	6	0	0	1	9	2	18
	Others (specify)	2	2	0	0	0	0	4
	<b>Total</b>	<b>27</b>	<b>6</b>	<b>2</b>	<b>2</b>	<b>10</b>	<b>3</b>	<b>50</b>
Middle income	House wife	15	0	1	3	0	2	21
	The master	2	0	1	2	0	0	5
	Children	3	0	0	0	0	1	4
	Other house member	0	1	0	1	0	0	2
	House keeper	15	0	0	0	0	0	15
	Others (specify)	3	0	0	0	0	0	3
	<b>Total</b>	<b>38</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>3</b>	<b>50</b>
Lower middle income	House wife	17	4	1	0	1	2	25
	The master	0	0	1	1	0	0	4
	Children	1	2	0	0	1	0	4
	Other house member	1	2	0	0	2	0	5
	House keeper (servant)	7	0	2	0	0	1	10
	Others (specify)	0	0	0	0	1	3	2
	<b>Total</b>	<b>26</b>	<b>8</b>	<b>4</b>	<b>1</b>	<b>5</b>	<b>6</b>	<b>50</b>

Area Classification		Where do you discharge waste from your house?						
		Into containers to be collected by worker	Around my premises without container	Communal container	Discharge point	Garbage compartment fixed in the house	Others	Total
Low income	House wife	9	1	0	0	9	1	20
	The master	7	1	0	1	2	0	11
	Children	1	0	0	0	0	0	1
	Other house member	3	0	0	0	2	0	5
	House keeper	2	0	0	0	1	1	4
	Others (specify)	4	0	2	0	1	2	9
	<b>Total</b>	26	2	2	1	15	4	50
Slum area	House wife	2	0	7	0	2	1	14
	The master	0	4	3	0	10	0	18
	Children	0	0	1	0	0	1	1
	Other house member	1	0	0	1	3	0	6
	House keeper	0	1	0	0	0	0	1
	Others (specify)	0	1	0	0	12	0	13
	<b>Total</b>	3	6	11	1	27	2	50

**Table 4.16: Containers used for carrying waste to discharge points**

Area Classification	plastic bag (provided by a private collection company)	Plastic bags (bought by self)	Plastic bucket	Metal bucket	Others (basket, cartons, synthetic sack)	Total
Upper Income	29	9	12	0	0	50
Middle Income	28	9	13	0	0	50
Lower Middle	20	14	6	0	10	50
Low Income	15	5	4	4	22	50
Slum Area	4	3	26	0	17	50

**Table 4.17: Reasons for choice of containers**

Why do you choose to use it?						
Area Classification	It is clean after collection work	It prevents foul odor	It is manageable	Keeps away pests such as flies	Others (tidy, aesthetic value)	Total
Upper Income	21	5	14	2	8	50
Middle	11	5	18	3	13	50
Low Middle	17	3	20	1	9	50
Low Middle	17	4	19	5	5	50
Slum	33	3	14	3	0	50

**Table 4.17-A: Capacity of containers used to carry waste to discharge point**

Income Group	>10kg	10-19kg	20-29kg	30kg or more	Unknown
High income	20	9	8	10	1
Middle income	16	21	4	9	1
Low middle income	19	12	9	0	12
Low income	28	9	2	1	6
Slum area	24	17	5	3	4
<b>Total</b>	107	68	28	23	24
<b>Percentage (%)</b>	42.8	27.2	11.2	9.2	9.6

**Table 4.18: Frequency of discharging waste from the house**

Area classification							
		Upper income	Middle income	Lower middle income	Low income	Slum area	Total
How frequent is the waste discharge out of your house?	Twice every day	18	9	20	2	8	57
	Once every day	11	18	23	21	23	96
	Once every two days	2	3	0	3	3	11
	Once every three days	3	10	2	1	5	21
	Once every week	14	9	2	15	1	41
	Irregularly	2	1	3	7	6	19
	I don't know	0	2	1	1	1	5

**Table 4.19: Variations in Fixed Time for Waste Discharge**

Area Classification	6:00-8:59am	9:00-11:59am	12:00-14:59pm	15:00-17:59pm	Other time	Total
Upper Income	23	14	3	10	0	50
Middle Income	33	10	0	1	0	50
Lower Middle Income	20	5	2	1	0	50
Low Income	10	9	0	2	29	50
Slum Area	4	0	0	0	46	50

**Table 4.20: Discharge of Waste Soon After Collection Time**

Area Classification		Do you ever discharge waste soon after it is collected?			
		Yes	No	I don't know	Total
Upper income	Twice every day	6	9	3	18
	Once every day	9	2	0	11
	Once every two days	2	0	0	2
	Once every three days	5	0	0	5
	Once every week	10	4	0	14
	<b>Total</b>	32	15	3	50
Middle income	Twice every day	4	3	2	9
	Once every day	10	8	0	18
	Once every two days	1	2	0	3
	Once every three days	7	2	1	10
	Once every week	3	6	0	9
	Irregularly	1	0	0	1
	I don't know	0	0	0	0
	<b>Total</b>	26	21	3	50
Lower middle income	Twice every day	14	5	0	19
	Once every day	21	2	0	23
	Once every three days	1	1	0	2
	Once every week	0	2	0	2
	Irregularly	1	2	0	3
	I don't know	0	1	0	1
	<b>Total</b>	37	13	0	50
Low income	Twice every day	2	0	0	2
	Once every day	14	7	0	21
	Once every two days	1	0	0	1
	Once every three days	1	0	3	4
	Once every week	4	11	0	15
	Irregularly	7	0	0	7
	<b>Total</b>	29	18	3	50
Slum area	Twice every day	4	4	0	8
	Once every day	15	12	0	27
	Once every two days	2	1	0	3
	Once every three days	3	2	0	5
	Once every week	1	2	1	4
	Irregularly	1	2	0	3
	<b>Total</b>	26	23	1	50

**Table 4.21: Number of containers**

Income group	1	2	3	4	5 or more
Upper income	7	15	4	1	0
Middle income	22	11	5	0	0
Low middle income	15	8	3	0	0
Low income	20	5	1	0	0
Slum area	2	1	0	0	0
<b>Total</b>	66	40	13	1	0
<b>Percentage (%)</b>	55	33.3	10.8	0.8	0

**Table 4.22: Type of container used to discharge waste**

	Plastic bucket	Metal bucket	Drum can	Others (empty packaging materials)
Upper income	3	7	11	6
Middle income	16	3	0	19
Low middle income	3	6	3	14
Low income	4	0	0	22
Slum area	0	0	2	1
<b>Total</b>	26	16	16	62
<b>Percentage (%)</b>	21.7	13.3	13.3	51.7

**Table 4.23: Capacity of Waste Containers**

	Less than 30kg	30-49kg	50-99kg	100kg or more
Upper income	9	12	3	3
Middle income	12	18	8	0
Low middle income	18	6	2	0
Low income	21	4	1	0
Slum area	3	0	0	0
<b>Total</b>	63	40	14	3
<b>Percentage (%)</b>	52.5	33.3	11.7	2.5

**Table 4.24: Location of waste container**

	In front of my premises	Behind my premises	In the garden.	others (please specify)
Upper income	25	1	1	0
Middle income	37	1	0	0
Low middle income	23	3	0	0
Low income	24	2	0	0
Slum area	1	2	0	0
<b>Total</b>	110	9	1	0
<b>Percentage (%)</b>	91.7	7.5	0.8	0.0



**Table 4.25: Willingness to carry waste to a communal container**

Willingness to carry waste to a communal container	Upper Income	Middle Income	Low Middle Income	Low Income	Slum Area	Total
Yes	38	41	39	31	30	179
No	12	9	11	19	20	71
<b>Total</b>	50	50	50	50	50	250

**Table 4.26: Reasons for not cooperating to carry waste to communal containers**

	Present system is better	No one to carry the waste to communal containers	Communal containers are far	Communal containers are not hygienic	Others (specify)
Upper income	5	6	0	8	0
Middle income	13	5	2	1	0
Low middle income	6	3	1	1	0
Low income	9	6	1	1	0
Slum area	0	0	3	0	0
<b>Total</b>	33	20	7	11	0
<b>Percentage (%)</b>	46.5	28.2	9.9	15.5	0

**Table 4.27: Human scavengers or animals Observed going through the waste**

	Yes	No	I don't know
Upper income	25	20	5
Middle income	30	17	3
Low middle income	26	17	7
Low income	21	26	3
Slum area	18	30	2
<b>Total</b>	120	110	20
<b>Percentage (%)</b>	48	44	8

**Table 4.28: Means of discharging garden waste**

	Discharge to collection point fixed by the municipality	Discharge in front of the house	Open combustion/ burning	Composting (producing fertilizer from waste)	I don't know	Needless to discharge garden waste
Upper income	9	13	14	8	3	3
Middle income	8	12	15	6	2	7
Low middle income	7	10	21	0	4	8
Low income	6	17	15	2	5	5
Slum area	1	8	29	2	1	9
<b>Total</b>	31	60	94	18	15	32
<b>Percentage (%)</b>	12.4	24	37.6	7.2	6	12.8

**Table 4.29: Possibility of discharging garden waste with other waste**

Possibility of discharging garden waste with other waste	Upper Income	Middle Income	Low Middle Income	Low Income	Slum Area	Total
Yes	12	10	19	9	24	74
No	2	5	2	6	5	20
Total	14	15	21	15	29	94

**Table 4.30: Does anyone from your house sweep the road shoulder in front of your house**

	Yes, every day	Yes, sometimes	No	I don't know
Upper income	6	12	18	14
Middle income	5	13	21	11
Low middle income	2	14	29	5
Low income	2	9	37	2
Slum area	1	9	38	2
Total	16	57	143	34
Percentage (%)	6.4	22.8	57.2	13.6

**Table 4.31: Does anyone from your house clean the drain in from of your house**

	Yes, every day	Yes, sometimes	No	I don't know
Upper income	8	15	24	3
Middle income	6	13	29	2
Low middle income	3	12	33	2
Low income	0	7	37	6
Slum area	0	4	40	6
Total	17	51	163	19
Percentage (%)	6.8	20.4	65.2	7.6

**Table 4.32: Means of disposing bulky household waste**

	Collected by municipal worker	sold/collected by special collectors	Disposed by ourselves	Sold to junk yards	I don't know
Upper income	3	25	9	7	6
Middle income	2	27	7	6	8
Low middle income	4	33	5	2	6
Low income	4	16	11	12	7
Slum area	6	23	8	11	2
Total	19	124	40	38	29
Percentage (%)	7.6	49.6	16	15.2	11.6

**Table 4.33: Availability of Collection Service**

	Yes	No	I don't know
Upper income	44	6	0
Middle income	39	6	5
Low middle income	31	15	4
Low income	17	27	6
Slum area	12	32	6
<b>Total</b>	143	86	21
<b>Percentage (%)</b>	57.2	34.4	8.4

**Table 4.34: Payment for Collection Services**

Area Classification	30-80 Kshs/Month	81-130 Kshs/Month	131-250 Kshs/Month	More than 250 Kshs/Month	Total Respondents
High income	0	5	9	30	44
Middle income	2	11	13	13	39
Low middle income	11	9	8	3	31
Low income	13	4	0	0	17
Slum area	10	2	0	0	12
<b>Total</b>	36	31	30	46	143

**Table 4.35: Authority responsible for the disposal of waste**

Area Classification							
		Upper income	Middle income	Low middle income	Low income	Slum area	Total
Which authority is responsible for solid waste disposal	State	2	2	5	2	7	18
	City Council	26	30	18	28	34	136
	Yourselves	6	0	0	2	2	10
	state sanitary company	1	0	2	0	0	3
	private contractor	12	17	18	13	3	63
	others	2	0	2	3	0	7
	don't know	1	1	5	2	4	13
<b>Total</b>		50	50	50	50	50	250

**Table 4.36: Received guidance or Specific regulation on methods of proper waste discharge and collection**

		Area Classification					
		Upper income	Middle income	Low middle income	Low income	Slum area	Total
Ever had guidance on methods of proper discharge	yes	28	18	8	5	8	67
	no	26	32	42	45	42	183
Total		50	50	50	50	50	250

**Table 4.37: Awareness about 'Clean Day'**

		Area Classification					
		Upper income	Middle income	Low middle income	Low income	Slum area	Total
Any "Clean day"?	yes	18	8	20	17	22	85
	no	25	32	25	28	20	130
	don't know	7	10	5	5	8	35
Total		50	50	50	50	50	250

**Table 4.38: Participation during 'Clean Day'**

		Area Classification					
		Upper income	Middle income	Low middle income	Low income	Slum area	Total
Did you participate during the 'clean days'?	Yes	1	8	14	3	25	51

**Table 4.39: Degree of Satisfaction with the collection service**

Area classification	Very satisfactory	Relative satisfactory	Average	Relative unsatisfactory	Very unsatisfactory	I don't know	Total
Upper income	9	26	5	1	2	1	44
Middle income	10	12	10	6	1	0	39
Low middle income	3	8	9	6	5	0	31
Low income	2	1	4	6	4	0	17
Slum area	0	1	2	5	4	0	12
Total	24	48	30	24	16	1	143

**Table 4.40: Reasons why respondents are not satisfied with the collection service**

Area Classification	Frequency of collection service is low	Collection time is irregular	Collection time is very early or late.	Behavior of the worker is very bad	Collection work is very crude	Collection fee is very expensive.
Upper income	0	2	1	0	0	0
Middle income	0	3	1	0	1	2
Low middle income	1	4	2	3	1	0
Low income	2	1	2	4	0	1
Slum area	2	1	0	1	2	3
<b>Total</b>	5	11	6	8	4	6

**Table 4.41: How the waste discharged is collected**

Do you know how the waste discharged from your house is collected?			
	Yes	No	I don't know
High income	39	4	1
Middle income	35	2	2
Low middle income	23	7	1
Low income	9	4	4
Slum area	3	7	2
<b>Total</b>	109	24	10

**Table 4.42: Methods of collecting discharged waste**

	Door to door collection system using collection vehicles	Door to door collection by collection workers	Residents themselves carry the waste to the collection point	Collection from the dust chute of a building.	Others (specify)	I don't know.
High income	26	9	3	0	0	1
Middle income	22	10	2	1	0	0
Low middle income	3	9	11	0	0	0
Low income	0	1	7	0	0	1
Slum area	0	0	3	0	0	0
<b>Total</b>	51	29	26	1	0	2

**Table 4.43: Willingness to participate in cleaning campaign**

Ability to contribute or participate in cleaning campaign				
Area Classification	Yes	No	I don't know	Total
Upper income	41	7	2	50
Middle income	27	22	1	50
Lower middle income	21	27	2	50
Low income	24	26	0	50
Slum area	9	40	1	50
<b>Total</b>	122	122	6	250

**Table 4.44: Willingness to pay collection service fee**

Area Classification							
	Amount in Kshs/Month	Upper income	Middle income	Lower middle income	Low income	Slum area	Total
<b>How much can you contribute towards management of waste in addition to present fee</b>	0	16	19	15	23	25	98
	5	8	8	13	1	5	35
	10	9	0	5	2	11	27
	20	1	1	1	3	6	12
	30	0	0	2	1	1	4
	40	0	0	0	5	0	5
	50	0	2	3	6	2	13
	80	0	0	0	1	0	1
	100	0	11	6	7	0	24
	120	0	0	1	0	0	1
	150	0	1	2	0	0	3
	200	1	0	2	1	0	4
	300	2	3	0	0	0	5
	500	6	5	0	0	0	11
	600	2	0	0	0	0	2
	700	1	0	0	0	0	1
	800	1	0	0	0	0	1
	1000	3	0	0	0	0	3
<b>Total</b>		50	50	50	50	50	250
<b>Average Amount Payable (Weighted)</b>		Kshs. 72.8					

**Table 4.45: Average Household Expenditures by Item (1): Without the Waste Charges in Disposable Income**

Income Group	Disposable Income											Tax and Other Obligatory Charges								Total
	Food and Drinks	Housing	Transport and Communication	Leisure	Education	Medical Care	Personal Goods	House Equipments	Vehicles	Other Family Expenditure	Subtotal	Waste Charges	Electricity	Water Charges	Sewer Charge	Other Charges	Tax	Social Insurance	Subtotal	
Slum Area	1,454	1,260	1,302	42	-	148	198	46	-	18	4,468	15	-	152	-	4	-	112	284	4,752
Low income	3,290	2,672	1,160	70	154	104	140	4	-	15	7,609	36	249	576	-	52	80	334	1,326	8,935
Low Middle Income	5,286	5,072	2,056	40	1,990	424	527	766	122	50	16,333	99	99	820	10	10	70	796	1,904	18,237
Middle Income	6,663	9,487	5,223	2,919	9,037	779	1,183	1,875	615	151	37,931	508	288	2,494	437	81	577	4,354	8,738	46,669
High Income	7,250	17,083	5,188	2,083	11,938	531	809	1,833	719	2,292	49,725	1,146	2,194	7,133	1,137	42	146	2,894	14,692	64,417

**Table 4.46: Composite ratio of Average Household Expenditures by Item (1): Without the Waste Charges in Disposable Income**

Income Group	Disposable Income											Tax and Other Obligatory Charges								Total
	Food and Drinks	Housing	Transport and Communication	Leisure	Education	Medical Care	Personal Goods	House Equipments	Vehicles	Other Family Expenditure	Subtotal	Waste Charges	Electricity	Water Charges	Sewer Charge	Other Charges	Tax	Social Insurance	Subtotal	
Slum Area	30.6	26.5	27.4	0.9	-	3.1	4.2	1.0	-	0.4	94.0	0.3	-	3.2	-	0.1	-	2.4	6.0	100.0
Low income	36.8	29.9	13.0	0.8	1.7	1.2	1.6	0.0	-	0.2	85.2	0.4	2.8	6.4	-	0.6	0.9	3.7	14.8	100.0
Low Middle Income	29.0	27.8	11.3	0.2	10.9	2.3	2.9	4.2	0.7	0.3	89.6	0.5	0.5	4.5	0.1	0.1	0.4	4.4	10.4	100.0
Middle Income	14.3	20.3	11.2	6.3	19.4	1.7	2.5	4.0	1.3	0.3	81.3	1.1	0.6	5.3	0.9	0.2	1.2	9.3	18.7	100.0
High Income	11.3	26.5	8.1	3.2	18.5	0.8	1.3	2.8	1.1	3.6	77.2	1.8	3.4	11.1	1.8	0.1	0.2	4.5	22.8	100.0

**Table 4.47: Average Household Expenditures by Item (2): With the Waste Charges in Disposable Income**

Income Group	Disposable Income											Tax and Other Obligatory Charges								Total
	Food and Drinks	Housing	Transport and Communication	Leisure	Education	Medical Care	Personal Goods	House Equipments	Vehicles	Other Family Expenditure	Waste Charges	Subtotal	Electricity	Water Charges	Sewer Charge	Other Charges	Tax	Social Insurance	Subtotal	
Slum Area	1,454	1,260	1,302	42	-	148	198	46	-	18	15	4,483	-	152	-	4	-	112	269	4,752
Low income	3,290	2,672	1,160	70	154	104	140	4	-	15	36	7,645	249	576	-	52	80	334	1,290	8,935
Low Middle Income	5,286	5,072	2,056	40	1,990	424	527	766	122	50	99	16,432	99	820	10	10	70	796	1,805	18,237
Middle Income	6,663	9,487	5,223	2,919	9,037	779	1,183	1,875	615	151	508	38,439	288	2,494	437	81	577	4,354	8,230	46,669
High Income	7,250	17,083	5,188	2,083	11,938	531	809	1,833	719	2,292	1,146	50,871	2,194	7,133	1,137	42	146	2,894	13,546	64,417

**Table 4.48: Composite Ratio of Average Household Expenditures by Item (2): With the Waste Charges in Disposable Income**

Income Group	Disposable Income											Tax and Other Obligatory Charges								Total
	Food and Drinks	Housing	Transport and Communication	Leisure	Education	Medical Care	Personal Goods	House Equipments	Vehicles	Other Family Expenditure	Waste Charges	Subtotal	Electricity	Water Charges	Sewer Charge	Other Charges	Tax	Social Insurance	Subtotal	
Slum Area	30.6	26.5	27.4	0.9	-	3.1	4.2	1.0	-	0.4	0.3	94.3	-	3.2	-	0.1	-	2.4	5.7	100.0
Low income	36.8	29.9	13.0	0.8	1.7	1.2	1.6	0.0	-	0.2	0.4	85.6	2.8	6.4	-	0.6	0.9	3.7	14.4	100.0
Low Middle Income	29.0	27.8	11.3	0.2	10.9	2.3	2.9	4.2	0.7	0.3	0.5	90.1	0.5	4.5	0.1	0.1	0.4	4.4	9.9	100.0
Middle Income	14.3	20.3	11.2	6.3	19.4	1.7	2.5	4.0	1.3	0.3	1.1	82.4	0.6	5.3	0.9	0.2	1.2	9.3	17.6	100.0
High Income	11.3	26.5	8.1	3.2	18.5	0.8	1.3	2.8	1.1	3.6	1.8	79.0	3.4	11.1	1.8	0.1	0.2	4.5	21.0	100.0

**Table 4.49: Affordability to pay for waste collection services**

Amount Per Month (Kshs/Month)	Income Area				
	High income	Middle income	Lower middle income	Low income	Slum area
Less than 50	3	5	5	19	27
51-100	10	18	7	5	15
101-200	2	9	18	5	5
201-300	7	6	7	3	3
301-500	12	6	5	3	0
501-700	3	3	2	0	0
701-900	9	1	6	0	0
900-1200	1	1	0	14	0
3001-4000	1	1	0	1	0
more than 5000	2	0	0	0	0

**Table 4.50: Women's Participation in community and household activities**

Area Classification							
		Upper income	Middle income	Low middle income	Low income	Slum area	Total
Would you allow your wife to take part in social activities to improve sanitary conditions	Yes	30	23	33	35	13	134
	No	20	27	17	13	21	98
	I don't know	0	0	0	2	16	18
Total		50	50	50	50	50	250

**Table 4.51: Housewives' roles in house cleaning**

Area Classification							
		Upper income	Middle income	Low middle income	Low income	Slum area	Total
Number of hours per day spent in house work by housewife	more than 6 hours	23	24	12	10	24	93
	4-6 hours	14	16	24	16	15	85
	2-4 hours	0	2	3	4	1	10
	0-2 hours	0	1	1	1	1	4
	I don't know	13	7	10	9	9	48
Total		50	50	50	50	50	250



**Table 4.52: Husbands' roles in house cleaning**

		Area Classification					
		Upper income	Middle income	Lower middle income	Low income	Slum area	Total
Number of hours per day spent by husband in housework	more than 1 hour	7	8	17	5	17	54
	0.5- 1 hours	5	3	5	0	3	16
	less than 0.5 hours	1	1	1	1	1	5
Total		13	12	23	6	21	75

**Table 4.53: Respondent's participation in public education on solid waste management**

Ever participated in public education on solid waste management			
	Yes	No	Total
Upper income	17	33	50
Middle income	10	40	50
Low middle income	18	32	50
Low income	14	36	50
Slum area	19	31	50
Total	78	172	250

**Table 4.54: Level of awareness on the breeding of insects in domestic waste**

		Area Classification					
		Upper income	Middle income	Low middle income	Low income	Slum area	Total
Are there any insects breeding in the domestic solid waste	yes	28	18	21	26	36	129
	no	22	32	29	24	14	121
Total		50	50	50	50	50	250

**Table 4.55: Knowledge of whether newspapers, bottles and others are recycled**

	Upper Income	Middle Income	Low Middle Income	Low Income	Slum Area	Total
Yes	43	45	42	39	32	201
No	7	5	8	11	18	49
Total	50	50	50	50	50	250

**Table 4.56: Knowledge of scavenging of wastes at Dandora Dumpsite**

	Aware	Unaware
Upper income	27	23
Middle income	35	15
Lower middle income	33	17
Low income	39	11
Slum area	15	35
<b>Total</b>	149	101

**Table 4.57: Collection of recyclable materials**

Someone who comes around to collect or buy your recyclable material?		
	Yes	No
Upper income	14	36
Middle income	18	32
Lower middle income	15	35
Low income	8	42
Slum area	5	45
<b>Total</b>	60	190

**Table 4.58: How often recyclables are collected**

How often does the collector come around your place?						
	Once a week	Once a month	Once every other week	Once every other month	Once every 6months	Once a year
Upper income	0	8	1	1	3	1
Middle income	0	6	8	1	2	1
Lower middle income	0	4	5	2	4	0
Low income	0	2	3	1	2	0
Slum area	0	1	2	2	0	0
<b>Total</b>	0	21	19	7	11	2

**Table 4.59: Mode of transport used by the collector**

	Tri-cycle	Bicycle	Motorcycle	Pickup truck	Small lorry	Hand Cart
Upper income	2	9	2	0	0	1
Middle income	1	15	1	0	0	1
Lower middle income	0	11	1	0	0	3
Low income	0	4	3	0	0	1
Slum area	0	3	1	0	0	1
<b>Total</b>	3	42	8	0	0	7

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**B. COMMERCIAL ESTABLISHMENTS & INSTITUTIONS SURVEY**

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**Table 4.60: Total Number of facilities surveyed**

Sampled Facilities	Number of Samples Surveyed
Commercial Establishments	57
Medical Institutions	10
<b>Total Number Sampled</b>	<b>67</b>

**Table 4.61: Positions of the persons interviewed**

Position of persons interviewed	Percent (%)	Number
Owners	14.04	8
Secretary	5.26	3
Public Relations Officers	19.30	11
Staff in charge of waste disposal	7.02	4
Others (finance managers, administrators)	54.39	31
<b>Total</b>	<b>100</b>	<b>57</b>

**Table 4.62: Surveyed Commercial Establishments & Institutions**

Business Category	No. of Samples Surveyed
Large Scale Offices	8
Restaurants	8
Shops	15
Hotels	5
Factory	10
Public Facilities (Universities, Public Offices, Schools)	6
Markets	5
<b>Total</b>	<b>57</b>

**Table 4.63: Area Classification of Commercial Establishments**

Area Classification	Large Scale Offices	Restaurants	Shops	Hotels	Factory	Public Facilities	Markets	Total
Commercial Area (CBD) <sup>1</sup>	6	4	15	3	0	1	2	31
Other Urban Area <sup>2</sup>	0	0	0	0	10	0	0	10
Suburban Area <sup>3</sup>	0	0	0	0	0	3	0	3
Commercial & Residential (CBD) <sup>4</sup>	2	2	0	1	0	1	2	8
Commercial & Residential (Other Urban Area) <sup>5</sup>	0	1	0	0	0	0	1	2
Commercial & Residential (Other Suburban Area) <sup>6</sup>	0	1	0	1	0	1	0	3
<b>Total</b>	<b>8</b>	<b>8</b>	<b>15</b>	<b>5</b>	<b>10</b>	<b>6</b>	<b>5</b>	<b>57</b>

**Table 4.64: Distance from the establishment to the road**

Distance from establishment to the road	Large Scale Offices	Restaurants	Shops	Hotels	Factory	Public Facilities	Markets	Total
In front of the premises	3	4	15	0	0	1	2	25
Less than 10m	1	3	0	1	10	0	2	17
10-29m	2	1	0	3	0	2	1	9
30-49m	0	0	0	1	0	2	0	3
50m or more	2	0	0	0	0	1	0	3
<b>Total</b>	<b>8</b>	<b>8</b>	<b>15</b>	<b>5</b>	<b>10</b>	<b>6</b>	<b>5</b>	<b>57</b>

**Table 4.65: Number of Employees**

Number of Employees	Large Scale Offices	Restaurants	Shops	Hotels	Factory	Public Facilities	Markets	Total
3-10	0	4	15	0	0	1	0	20
11-20	0	3	0	0	0	0	5	8
20-30	0	0	0	0	0	2	0	2
31-40	0	1	0	0	0	0	0	1
41-50	0	0	0	0	0	0	0	0
More than 50	8	0	0	5	10	3	0	26
<b>Total</b>	8	8	15	5	10	6	5	57

**Table 4.66: Duration of conducting business at the current location**

Duration of conducting business at the current location	Large Scale Offices	Restaurants	Shops	Hotels	Factory	Public Facilities	Markets
Less than 10 years	2	1	6	0	3	0	0
10 -19 years	1	4	4	0	2	0	0
20 years or more	5	3	5	5	5	6	5
I don't Know	0	0	0	0	0	0	0
<b>Total</b>	8	8	15	5	10	6	5

**Table 4.67: Size of Main Containers**

		Frequency	Percent (%)
Capacity of Waste Collection Containers	>10kg	16	28.1
	10-19kg	16	28.1
	20-29kg	13	22.8
	30kg or more	10	17.5
	I don't know	2	3.5
	<b>Total</b>	57	100

**Table 4.68: Where Main Containers are placed**

Location	Frequency	Percent (%)
In front of the premises	14	24.6
Less than 10m	27	47.4
10-29m	5	8.8
30-49m	4	7.0
50m or more	6	10.5
None	1	1.8
<b>Total</b>	57	100.0

**Table 4.69: Amount of Waste Generated in Establishments**

<b>Commercial Establishment</b>	<b>Average Waste Per Establishment (Kgs)</b>
Restaurants	38.06
Hotels	360.78
Shops	0.46
Schools	76.68
Public Office	137.02
Markets	2045.03

Source: Waste Amount and Composition Survey, JICA Study, 2010

**Table 4.70: Discharge Frequency**

		<b>Frequency</b>	<b>Percent (%)</b>
<b>Frequency of discharging waste</b>	<b>Twice every day</b>	13	22.8
	<b>Once every day</b>	25	43.9
	<b>Once every two days</b>	5	8.8
	<b>Once every three days</b>	4	7.0
	<b>Once every week</b>	5	8.8
	<b>Irregularly</b>	5	8.8
	<b>Total</b>	57	100

**Table 4.71: Usual Time for Discharging Wastes**

		<b>Frequency</b>	<b>Percent (%)</b>
<b>Usual time for waste discharge</b>	<b>6:00am to 8:00 am</b>	13	22.8
	<b>9:00 am to 10:00 am</b>	25	43.8
	<b>4:00 pm to 6:00 pm</b>	14	24.6
	<b>Irregularly</b>	5	8.8
	<b>Total</b>	57	100

**Table 4.72: Waste Disposal Practices**

	<b>Frequency</b>	<b>Percent (%)</b>
<b>Into containers to be collected by worker</b>	15	26.32
<b>Around my premises without containers</b>	2	3.51
<b>Communal containers</b>	9	15.79
<b>Discharge point.</b>	9	15.79
<b>Garbage compartment fixed in the company</b>	13	22.81
<b>Others (please specify)</b>	6	10.52
<b>designated areas by CCN</b>	2	3.51
<b>Garbage collection point</b>	1	1.75
<b>Total</b>	57	100

**Table 4.73: Knowledge of Authority Responsible for cleaning collection point**

		Frequency	Percent (%)
<b>Knowledge of Authority Responsible for Waste Disposal</b>	State	1	1.8
	City Council	41	71.9
	Private contractor	14	24.6
	Don't know	1	1.8
	<b>Total</b>	57	100

**Table 4.74: Contract with an entity for waste collection**

Entity	Frequency	Percent (%)
Nairobi city council	28	49.1
Private company	29	50.9
<b>Total</b>	57	100

**Table 4.75: Knowledge on the Collection Frequency**

	Frequency	Percent (%)
Yes	46	80.7
No	4	7.0
I don't Know	7	12.3
<b>Total</b>	57	100

**Table 4.76: Payment of collection service**

	Frequency	Percent (%)
Yes	46	80.7
No	11	19.3
<b>Total</b>	57	100

**Table 4.77: Amount Paid for Waste Collection Services**

Amount Paid (Kshs. per month)	Number of Commercial Establishments
More than 51,000	11
30,001 to 50,000	7
18,001 to 30,000	5
9,001 to 18,000	10
5,001 to 9,000	18
1,701 to 5000	3
701 to 1,700	1
200 to 700	2
<b>Total</b>	57

**Table 4.78: Feeling about the Garbage Collection Charge**

Amount Paid (Kshs. per month)	Number of Commercial Establishments
Expensive	9
Average	43
Low	5
<b>Total</b>	<b>57</b>

**Table 4.79: Knowledge of Responsible Authority for Waste Disposal**

Responsible authority acknowledged	Number of Respondents	Percent (%)
State	1	1.8
City Council	41	71.9
Private contractor	14	24.6
Don't know	1	1.8
<b>Total</b>	<b>57</b>	<b>100</b>

**Table 4.80: Respondents who Received Guidance on Proper Waste Discharge**

		Frequency	Percent (%)
Received Guidance on proper waste discharge	Yes	8	14
	No	49	86
	<b>Total</b>	<b>57</b>	<b>100</b>

**Table 4.81: Respondents who are Satisfied with the Collection Service**

	Frequency	Percent (%)
Very satisfactory	16	28.0
Relative satisfactory	17	29.8
Average	14	24.6
Relative unsatisfactory	5	8.8
Very unsatisfactory	5	8.8
I don't know	0	0
<b>Total</b>	<b>57</b>	<b>100</b>

**Table 4.82: Reasons for Respondents' Dissatisfaction with the Collection Service**

	Frequency	Percent (%)
Frequency of collection service is low	3	30
Collection time is irregular	1	10
Collection time is very early or late.	1	10
Behavior of the worker is very bad	2	20
Collection work is very crude	1	10
Collection fee is very expensive.	2	20
<b>Total</b>	<b>10</b>	<b>100</b>



**Table 4.83: Willingness to Cooperate in Cleaning Campaign**

		Frequency	Percent (%)
<b>Willingness to participate in cleaning campaign</b>	<b>Yes</b>	13	22.8
	<b>No</b>	42	73.7
	<b>Don't know</b>	2	3.5
	<b>Total</b>	57	100

**Table 4.84: Willingness to Pay**

<b>Kshs./Month</b>	<b>Frequency</b>	<b>Percent (%)</b>
<b>0</b>	1	2
<b>less than 250</b>	17	30
<b>250-500</b>	17	30
<b>500-750</b>	1	2
<b>750-1000</b>	5	9
<b>1000-1250</b>	5	9
<b>1250-1500</b>	2	4
<b>1500 or more</b>	8	14
<b>2000</b>	1	2
<b>Total</b>	57	100

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## C. MEDICAL FACILITIES SURVEY

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**Table 4.85: Medical Facilities Interviewed**

Categories				
No.	Hospital	Primary	Secondary	Health Centre
1	The Nairobi Hospital	x		
2	The Aga Khan Hospital	x		
3	The Pumwani Maternity Hospital	x		
4	GK Remand Hospital			x
5	Langata women prison health centre			x
6	Avenue Group Health care		x	
7	Melchizedek Hospital		x	
8	Nairobi west hospital		x	
9	MP Shah Social Services League	x		
10	Mater Hospital	x		

**Table 4.86: Number of Persons Employed**

No.	Hospital	Number of Employees
1	The Nairobi Hospital	1100
2	The Aga Khan Hospital	1200
3	The Pumwani Maternity Hospital	83
4	GK Remand Hospital	26
5	Langata women prison health centre	42
6	Avenue Group Health care	700
7	Melchizedek Hospital	125
8	Nairobi west hospital	200
9	MP Shah Social Service League	920
10	Mater Hospital	370

**Table 4.87: Number of Beds**

No.	Hospital	Number of Beds
1	The Nairobi Hospital	302
2	The Aga Khan Hospital	596
3	The Pumwani Maternity Hospital	420
4	GK Remand Hospital	150
5	Langata women prison health centre	57
6	Avenue Group Health care	80
7	Melchizedek Hospital	70
8	Nairobi west hospital	110
9	MP Shah Social Service League	120
10	Mater Hospital	144

**Table 4.88: Ownership of Medical Facility**

No.	Hospital	Ownership of Facility
1	The Nairobi Hospital	Private sector - Association
2	The Aga Khan Hospital	Private sector
3	The Pumwani Maternity Hospital	Government – Nairobi City Council
4	GK Remand Hospital	Government – Ministry of Public Health
5	Langata women prison health centre	Government – Ministry of Public Health
6	Avenue Group Health care	Private sector
7	Melchizedek Hospital	Private sector - Individual
8	Nairobi west hospital	Private sector
9	MP Shah Social Service League	Private sector - Social Club
10	Mater Hospital	Private sector

**Table 4.89: Medical Services Provided**

Hospital	Services Offered					
	Consultancy	Diagnostics	Pharmacy	Teaching	Theater	Others*
<b>The Nairobi Hospital</b>	X	X	X		X	X
<b>The Aga Khan Hospital</b>	X	X	X	X	X	X
<b>The Pumwani Maternity Hospital</b>		X	X		X	X
<b>GK Remand Hospital</b>		X	X			
<b>Langata women prison health centre</b>		X	X			
<b>Avenue Group Health care</b>		X	X		X	X
<b>Melchizedek Hospital</b>	X	X	X			X
<b>Nairobi west hospital</b>	X	X	X		X	X
<b>MP Shah Social Service League</b>	X	X	X		X	X
<b>Mater Hospital</b>	X	X	X		X	X

Notes:

\* Others refer to maternity services, prenatal and postnatal care, and casualty services.

**Table 4.90: Positions of the Persons Interviewed**

<b>Title</b>	<b>Hospital</b>
Executive assistant	The Nairobi Hospital
Head Of Housekeeping	The Aga Khan Hospital
Administrator	The Pumwani Maternity Hospital
Administrator	GK Remand Hospital
Nursing Officer	Langata women prison health Centre
Public relations officer	Avenue Group Health care
Public relations	Melchizedek Hospital
Administrator	Nairobi west hospital
communication officer	MP Shah Social Service League
Public relations officer	Mater Hospital

**Table 4.91: Specific Department Responsible for Solid Waste Administration**

<b>No.</b>	<b>Hospital</b>	<b>Presence of responsible department</b>
1	The Nairobi Hospital	Yes
2	The Aga Khan Hospital	Yes
3	The Pumwani Maternity Hospital	Yes
4	GK Remand Hospital	Yes
5	Langata women prison health centre	Yes
6	Avenue Group Health care	Yes
7	Melchizedek Hospital	Yes
8	Nairobi west hospital	Yes
9	MP Shah Social Service League	Yes
10	Mater Hospital	Yes

**Table 4.92: Waste management methods**

	Methods for Waste Management					
The Nairobi Hospital	Cleaning	segregation	collection	Treatment	Hold and dispatch	Disposal on Site
The Aga Khan Hospital	x	x	x	Incineration	x	Carried Away *
The Pumwani Maternity Hospital	x	x	x	Incineration	x	
GK Remand Hospital	x	x	x	Burning	x	x
Langata women prison health centre	x	x	x	Burning	x	x
Avenue Group Health care	x	x	x	Incineration	x	Carried Away *
Melchizedek Hospital	x	x	x	Incineration	x	Carried Away *
Nairobi west hospital	x	x	x	Incineration	x	Carried Away *
MP Shah Social Service League	x	x	x	Incineration	x	Carried Away *
Mater Hospital	x	x	x	Incineration	x	Carried Away *

**Table 4.93: Services that are contracted out**

Hospital	Contract out Services on SWM	Type of waste
The Nairobi Hospital	Yes	General* & Medical**
The Aga Khan Hospital	Yes	General
The Pumwani Maternity Hospital	Yes	General & Medical
GK Remand Hospital	Yes	General
Langata women prison health centre	No	-
Avenue Group Health care	Yes	General & Medical
Melchizedek Hospital	Yes	General & Medical
Nairobi west hospital	Yes	General & Medical
MP Shah Social Service League	Yes	General & Medical
Mater Hospital	Yes	General & Medical

**Table 4.94: Hospital Definition of Waste Classification**

<b>Hospital</b>	<b>Existence of Definition of Hospital Waste</b>
The Nairobi Hospital	Yes
The Aga Khan Hospital	Yes
The Pumwani Maternity House	Yes
GK Remand Hospital	Yes
Langata women prison health centre	Yes
Avenue Group Health care	Yes
Melchizedek Hospital	Yes
Nairobi west hospital	Yes
MP Shah Social Service League	Yes
Mater Hospital	Yes

**Table 4.95: Classification of Waste Generated**

<b>Hospital</b>	<b>Waste Classification</b>
<b>The Nairobi Hospital</b>	General waste -dry General waste – wet Infectious Sharps Pathological: organs
<b>Nairobi west hospital</b>	General waste – wet Infectious Sharps Pathological: organs Non-infectious – wet
<b>The Aga Khan Hospital</b>	Non-infectious dry Infectious Sharps Glass Non-infectious –Dry
<b>The Pumwani Maternity House</b>	Non-infectious – Wet Infectious – wet & dry Sharps Non-infectious – wet
<b>GK Remand Hospital</b>	Non-infectious dry Infectious & Sharps Non-infectious – wet
<b>Langata women prison health centre</b>	Non-infectious dry Infectious & Sharps Non-infectious – wet
<b>Avenue Group Health care</b>	Non-infectious dry Infectious & Sharps Non-infectious – wet

Hospital	Waste Classification
<b>Melchizedek Hospital</b>	Non-infectious dry Infectious & Sharps Non-infectious – wet
<b>MP Shah Social Service League</b>	Non-infectious dry Infectious & Sharps Non-infectious – wet
<b>Mater Hospital</b>	Non-infectious dry Infectious & Sharps General waste -dry

**Table 4.96: Waste Amount Generated Daily**

Hospital	Waste Generated per Day	
<b>The Nairobi Hospital</b>	Medical waste 650 kg/day	General waste 200kg/day
<b>The Aga Khan Hospital<sup>1</sup></b>	Medical waste 600kg/day	General waste 739.3kg/day
<b>The Pumwani Maternity Hospital</b>	Medical waste 400Kg/day	General waste 80Kg/day
<b>GK Remand Hospital</b>	Medical waste 50KG/day	General waste 50Kg/day
<b>Langata women prison health centre</b>	Medical waste 50Kg/day	General waste 80Kg/day
<b>Avenue Group Health care</b>	Medical waste 200kg/day	General waste 300Kg/day
<b>Melchizedek Hospital</b>	Medical waste 150 kg/day	General waste 100kg/day
<b>Nairobi west hospital</b>	Medical waste 450Kg/day	General waste 220Kg/day
<b>MP Shah Social Service League</b>	Medical waste 500kg/day	General waste 200Kg/day
<b>Mater Hospital</b>	Medical waste 500Kg/day	General waste 300kg/day

**Table 4.97: How Pathological Wastes Are Treated**

Hospital	Kinds of Treatment
The Nairobi Hospital	Incineration & Chemical treatment
The Aga Khan Hospital	Incineration & Chemical treatment
The Pumwani Maternity Hospital	Incineration
GK Remand Hospital	Burning in premises
Langata women prison health centre	Burning in premises
Avenue Group Health care	Incineration
Melchizedek Hospital	Incineration
Nairobi west hospital	Incineration
MP Shah Social Service League	Incineration
Mater Hospital	Incineration & Chemical treatment

**Table 4.98: Standards in Separating Wastes Description of Materials Separated**

Hospital	Are Segregated Wastes Respectively Treated
The Nairobi Hospital	Yes
The Aga Khan Hospital	Yes
The Pumwani Maternity Hospital	Yes
GK Remand Hospital	Yes
Langata women prison health centre	Yes
Avenue Group Health care	Yes
Melchizedek Hospital	Yes
Nairobi west hospital	Yes
MP Shah Social Service League	Yes
Mater Hospital	Yes

**Table 4.99: Frequency of Collection of medical waste**

	Frequency	Percent (%)
Collected every day	7	70
Collected every two days	3	30
Total	10	100

**Table 4.100: Description of Waste Sterilized.**

Hospital	Waste Description
<b>The Nairobi Hospital</b>	Infectious Sharps: needles, vials, Pathological: organs
<b>Nairobi west hospital</b>	Infectious Sharps
<b>The Aga Khan Hospital</b>	Infectious – wet & dry Sharps
<b>The Pumwani Maternity Hospital</b>	Infectious Sharps
<b>GK Remand Hospital</b>	Infectious Sharps
<b>Langata women prison health centre</b>	Infectious Sharps
<b>Avenue Group Health care</b>	Infectious Sharps
<b>Melchizedek Hospital</b>	Infectious Sharps
<b>MP Shah Social Service League</b>	Infectious Sharps
<b>Mater Hospital</b>	Sharps



**Table 4.101: In-house SWM Education Program**

<b>Hospital</b>	<b>Is There an In-house Program on SWM of Medical Waste?</b>	<b>Program Designed By</b>
<b>The Nairobi Hospital</b>	Yes	by the hospital
<b>The Aga Khan Hospital</b>	Yes	by the hospital
<b>The Pumwani Maternity Hospital</b>	Yes	by the ministry of health
<b>GK Remand Hospital</b>	Yes	by the ministry of health
<b>Langata women prison health centre</b>	Yes	by the ministry of health
<b>Avenue Group Health care</b>	Yes	by the hospital
<b>Melchizedek Hospital</b>	Yes	by the hospital
<b>Nairobi west hospital</b>	Yes	by the hospital
<b>MP Shah Social Service League</b>	Yes	by the hospital
<b>Mater Hospital</b>	Yes	by the hospital

**Table 4.102: Awareness of Government Regulations**

<b>Hospital</b>	<b>Awareness on Government Regulation</b>
The Nairobi Hospital	Yes
The Aga Khan Hospital	Yes
The Pumwani Maternity House	Yes
GK Remand Hospital	Yes
Langata women prison health centre	Yes
Avenue Group Health care	Yes
Melchizedek Hospital	Yes
Nairobi west hospital	Yes
MP Shah Social Service League	Yes
Mater Hospital	Yes

## 5. Results of Workshop on Basic Analysis of CBOs Intervention on SWM in Nairobi City

### Problem Analysis Framework for Group 1

Area	Main Problems	Main Causes	Possible Solutions
Collection of garbage	<ul style="list-style-type: none"> <li>- Low collection rates</li> <li>- Not access is provided for transportation of collected waste</li> <li>- Insufficient handcarts for collection</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of enough manpower and equipment</li> <li>- Lack of national policies on SWM</li> <li>- Lack of information to CBOs</li> <li>- Lack of financial resources</li> </ul>	<ul style="list-style-type: none"> <li>- Provision of more bicycle and handcart for collection</li> <li>- Provision of funds to CBOs to assist them on SWM</li> <li>- Identification of CBOs boundaries to improve efficiency</li> <li>- Provision of fund and support from CCN</li> </ul>
Reduction, Reuse , Recycling, Recovery	<ul style="list-style-type: none"> <li>- Lack of land for material storage</li> <li>- No training of CBOs on recycling</li> <li>- Lack of information to CBOs</li> <li>- Abundant plastic bags at the market leading to mismanagement</li> <li>- Lack of skill on recycling</li> <li>- Lack of space for recycling</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of sharing research finding with the CBOs makes it difficult to start a recycling project</li> <li>- Inadequate awareness</li> </ul>	<ul style="list-style-type: none"> <li>- Provision of transfer center to facilitate sorting</li> <li>- Share research finding to improve performances</li> <li>- Allocation of government land for garbage management</li> <li>- Provision of training and materials for sorting and creation of awareness</li> </ul>
Transportation of garbage	<ul style="list-style-type: none"> <li>- Lack of trucks for transportation from collection point to the disposal site</li> <li>- Hire of trucks is expensive</li> <li>- CCN harassing CBOs</li> <li>- Poor infrastructure of roads resulting to high maintenance cost of vehicles</li> <li>- Some areas are not accessible for garbage trucks</li> <li>- Transportation lorries are not consistent. Transportation is necessary on daily basis</li> <li>- Old vehicles and not suitable for transport of waste</li> <li>- Corruption in CCN transport system</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of finance to purchase vehicles</li> <li>- Financial difficulties</li> <li>- Contractor are not paid by CCN</li> </ul>	<ul style="list-style-type: none"> <li>- Provision of more trucks and improve efficiency</li> <li>- Provision of garbage trucks to CBOs</li> <li>- Provision of financial resource for transport</li> </ul>
Disposal	<ul style="list-style-type: none"> <li>- Lack of disposal site</li> <li>- Lack of support from the government</li> <li>- Dandora is full and danger to the environment</li> <li>- Poor management of disposal site</li> <li>- Corrupt city officers</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of training on waste management for disposal</li> <li>- Lack of awareness on the importance of a safe disposal</li> </ul>	<ul style="list-style-type: none"> <li>- Find out a good place to locate the dump</li> <li>- The government should intervene to provide a disposal site</li> <li>- Reform in the CCN</li> <li>- Plastic bag should be burned to create space</li> <li>- CCN needs to create another dump to solve the problem</li> <li>- Training on waste disposal methods which are less costly</li> </ul>
Financial difficulties	<ul style="list-style-type: none"> <li>- Discrimination of CBOs by private financiers</li> <li>- Lack of proper management of funds</li> <li>- Lack of proper training on financial management</li> <li>- Lack of assistance from NGOs, CCN, donors</li> <li>- Residents not willing to contribute for expenses</li> <li>- Lack of financial assistance</li> <li>- CCN deny CBOs payment voucher as the staff members have started business of collecting garbage from households</li> </ul>	<ul style="list-style-type: none"> <li>- Poor payment for the services</li> <li>- Low level income of the CBOs</li> <li>- Accountability problems in CBOs</li> <li>- Lack of financial management knowledge by CBOs</li> </ul>	<ul style="list-style-type: none"> <li>- Training on finance management</li> <li>- Provision of funds to support the activities</li> <li>- More NGOs should take part in helping the CBOs with the facilities</li> </ul>

Area	Main Problems	Main Causes	Possible Solutions
Public awareness	<ul style="list-style-type: none"> <li>- Inadequate awareness</li> <li>- Public lack knowledge on SWM</li> <li>- Mainstreaming information to the grass root</li> <li>- Lack of training of CBOs</li> <li>- Lack of public awareness of the value of clean environment</li> </ul>	<ul style="list-style-type: none"> <li>- No focus on grassroots impact</li> <li>- Lack of awareness program to the community</li> </ul>	<ul style="list-style-type: none"> <li>- Create awareness to the community on 4R</li> <li>- To organize seminars in order to educate the entire community</li> <li>- To educate CBOs on the importance of contributing towards a proper SWM</li> <li>- Public should be educated on managing their solid waste</li> <li>- CBOs to be used to organize seminar &amp; workshops at the grassroots level</li> <li>- Organized workshop by CBOs conjointly with the Local District Chief and using local advertisement</li> </ul>
Collaboration with the private sector	<ul style="list-style-type: none"> <li>- Discrimination of CBOs by the private partners</li> <li>- Lack of cooperation from stakeholders like landlords support</li> </ul>	<ul style="list-style-type: none"> <li>- Fear of trust on CBOs</li> <li>- People thinks only on individual benefits</li> </ul>	<ul style="list-style-type: none"> <li>- Network to be formed to build trust</li> <li>- Promotion of involvement of more NGOs with the CBOs</li> </ul>
Institutional/ Legal Issues	<ul style="list-style-type: none"> <li>- Lack of legal consultancy</li> <li>- Corruption in institutions</li> <li>- Not access to loan of bank</li> <li>- Lack of knowledge on legal issues, management of funds, waste disposal, etc.</li> </ul>	<ul style="list-style-type: none"> <li>- To access a loan bank it is required to present a official document of the plot where CBOs are operating</li> <li>- Lack of training of CBOs in various issues</li> <li>- Political interference</li> </ul>	<ul style="list-style-type: none"> <li>- CBOs should be trained on legal issues, management of funds, waste disposal, etc</li> <li>- Establishment of institutional and legal center for training CBOs</li> <li>- Form anti-corruption team at ward level consisting of network of CBOs</li> <li>- Strengthening the working system that improve accountability</li> </ul>

## Problem Analysis Framework for Group 2

Area	Main Problems	Main Causes	Possible Solutions
Collection of garbage	<ul style="list-style-type: none"> <li>- Land for CBO activities are being grabbed</li> <li>- Lack of transfer station</li> <li>- Costumers are not cooperative</li> <li>- Not suitable equipment for collection</li> <li>- Lack of health knowledge</li> <li>- Security of waste handless</li> <li>- Negative perception given by the costumers on CBOs members</li> <li>- Unhealthy working condition</li> <li>- Lack of tools and equipment</li> <li>- Few waste collection points</li> <li>- Lack of collection points in large operation areas</li> <li>- Lack of disposal points, containers for proper pilling to avoid scattering of paper bags</li> <li>- The costumers do not cooperate</li> <li>- Lack of collection of garbage from the collection point</li> <li>- Not site for Collection point</li> <li>- Lack of CCN facilities in some slums</li> <li>- Improper use of collection bags by residents and clients</li> <li>- Health problems, Hygiene</li> <li>- No hand gears</li> <li>- Lack of tools</li> <li>- Lack of protection devises (gloves, tools)</li> <li>- Lack of plastic bags</li> <li>- Lack of materials</li> <li>- Lack of collection equipment</li> <li>- The cost of polythene bags during collection</li> <li>- Defaulters, collection bags are expensive</li> <li>- Unwilling of the customers to sell the garbage</li> <li>- Dangerous waste not easy to be managed such as broken glasses, metal, needles, nails</li> <li>- Not place for storage collected waste</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of knowledge</li> <li>- Poor Relationship between CCN and garbage collectors</li> <li>- Lack of re-usable bins</li> <li>- Clients refuse to pay on time</li> <li>- Communities not willing to donate collection points</li> <li>- Not funds to construct collection points and storage for recyclable</li> <li>- Not accessibility of trucks to come to collect the garbage</li> </ul>	<ul style="list-style-type: none"> <li>- Better condition trucks</li> <li>- Collection on time and regularly</li> <li>- Identify a budget</li> <li>- Needs of uniform and nose mask in order to be protected</li> <li>- Collectors needs to be trained on SWM</li> <li>- Collection of garbage should be done in time from collection point to avoid more pollution</li> <li>- Development of garbage handlings kits like bins, durable collecting bags for easy handling</li> <li>- Proper bins</li> <li>- Education of CBOs on the importance of garbage collection</li> <li>- CCN should provide a land with the document that permits CBOs operates without being molested by land grabbers</li> <li>- To deter land grabber CCN should give CBO a lease to operate the land</li> <li>- Collection schedule to be adhere on time</li> <li>- High capacity CBOs already established should be facilitated by CCN to give training new groups doing collection</li> <li>- Direct funding to CBOs</li> <li>- Availability of transfer station during collection</li> <li>- Cheap garbage bins</li> <li>- CCN should monitor the activities of CBOs and get off the inactive ones</li> <li>- Hold communities meeting frequently to keep the community awareness on the issue</li> <li>- Right proposal for funds to construct facilities</li> <li>- Capacity building awareness</li> </ul>

Area	Main Problems	Main Causes	Possible Solutions
Reduction, Reuse , Recycling , Recovery	<ul style="list-style-type: none"> <li>- Mixed waste</li> <li>- Lack of Land availability for recycling</li> <li>- Lack of awareness</li> <li>- Not place for storage of collected recyclable materials</li> <li>- Not proper recovery of recyclable materials since they are burnt or dumped far away</li> <li>- Lack of knowledge</li> <li>- Not space for sorting</li> <li>- Low public awareness on SWM</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of cooperation from households</li> <li>- Not recycling machines readily available and cheap</li> <li>- Lack of sorting bins before collection</li> <li>- Land grabbing in the city</li> <li>- Lack of network of CBOs</li> <li>- Lack of training to CBOs</li> <li>- Lack of information</li> <li>- Inadequate/Ineffective efforts in sensitizing public on SWM</li> <li>- Lack of knowledge</li> <li>- Not awareness on profitability from sorting waste</li> </ul>	<ul style="list-style-type: none"> <li>- Links with different parties on garbage collected for recycling.</li> <li>- Train CBOs on the techniques.</li> <li>- Provision of required equipment.</li> <li>- Put up appropriate structures.</li> <li>- The Government to protect land.</li> <li>- Civic education to CBOs on recycling.</li> <li>- Training on separation at source.</li> </ul>
Transportation of garbage	<ul style="list-style-type: none"> <li>- CCN is very costly</li> <li>- Poor transportation can causes diseases to villagers.</li> <li>- Not good arrangement by CCN, lack of lorries</li> <li>- Not organized transportation system</li> <li>- Lack of handcarts assigned for garbage collection</li> <li>- Lack of transportation of garbage from collection point to dump site</li> <li>- CBOs needs also transportation of garbage storage at illegal dumping sites</li> <li>- Not proper means of transport</li> <li>- Bad infrastructure with the slum</li> <li>- Lack of trucks/hiring funds</li> <li>- Delay in transportation of garbage</li> <li>- Old transportation vehicles</li> <li>- Expensive transportation cost hinders progress in garbage collection</li> <li>- Hiring of private companies to transport the waste is very expensive</li> <li>- Transport is high cost and not affordable</li> <li>- Collection schedule is not adhered to by the CCN</li> <li>- Not suitable trucks</li> </ul>	<ul style="list-style-type: none"> <li>- Not suitable trucks</li> <li>- Very expensive to buy lorries</li> <li>- CCN trucks being old, easily broken down and often delayed</li> <li>- Corruption</li> <li>- Politics</li> </ul>	<ul style="list-style-type: none"> <li>- To be assisted in buying suitable trucks</li> <li>- CCN to fund CBOs to buy transportation lorries</li> <li>- CCN to provide budget for buying trucks</li> <li>- Cheap transportation fee would make garbage collection easy and continuous</li> <li>- CCN should avail more trucks on every division</li> <li>- Empowering CBOs through loan &amp; grants</li> <li>- Transport should be organized at the ward level and not from Division</li> <li>- Reduce corruption</li> </ul>
Disposal	<ul style="list-style-type: none"> <li>- Congested dumping site</li> <li>- Lack of dumping site</li> <li>- Lack of land</li> <li>- No good maintenance of disposal area</li> <li>- Lack of space in the community</li> <li>- Unorganized dumping site</li> <li>- Dumping site in poor condition, therefore trucks often get stuck</li> <li>- Health hazard waste</li> <li>- Uncollected waste become as a temporary disposal making trouble to the community</li> <li>- Lack of disposal sites in terms of distance</li> </ul>	<ul style="list-style-type: none"> <li>- Weather (rain) leaves site in bad condition</li> <li>- Lack of proper public and private sector support</li> <li>- Cartels at dumping site</li> </ul>	<ul style="list-style-type: none"> <li>- Can't stop rain but roads into dump site can be better maintained</li> <li>- To create a disposal centre in the community</li> <li>- Stem illegal dumping thro harsh by laws and penalties</li> </ul>

Area	Main Problems	Main Causes	Possible Solutions
Financial difficulties	<ul style="list-style-type: none"> <li>- Most households are not willing to pay the collection fee in time</li> <li>- Lack of initial capital to start solid waste management activities.</li> <li>- Unable to pay wages.</li> <li>- License fee is too high.</li> <li>- CCN expect collection tax payment even when they fail to collect.</li> <li>- Customers fail to pay.</li> <li>- Lack of sponsors.</li> <li>- No source of income.</li> <li>- Lack of funding from institutions.</li> <li>- High fee charged by the CCN.</li> <li>- Lack of funds from the poor who cannot pay.</li> </ul>	<ul style="list-style-type: none"> <li>- Collection polythene bags are expensive.</li> <li>- Default in payment by clients.</li> <li>- Corruption.</li> </ul>	<ul style="list-style-type: none"> <li>- Grants to small businesses dealing with recycling and processing to encourage local development.</li> <li>- Ensure fully functioning and well staffed council offices within the communities to monitor financial matters.</li> <li>- Investment in high capacity CBOs to develop strong business.</li> <li>- Financial and material empowerment of CBOs at the grass roots.</li> <li>- Funding by the government.</li> <li>- Recognition of CBOs as a partner by the CCN.</li> </ul>
Public awareness	<ul style="list-style-type: none"> <li>- Few organizations educate on by-laws</li> <li>- Technical Know How in garbage handling lacks in many CBOs</li> <li>- Few people know the existing laws</li> <li>- Lack of up to date info regarding the effects of their actions i.e. burning of waste=air pollution</li> <li>- Lack of information</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of awareness on the by-laws by CBOs</li> <li>- Lack of information from CCN</li> </ul>	<ul style="list-style-type: none"> <li>- Every CBO should be given the existing laws and so that we can know and power to arrest those who dump illegal</li> <li>- Including environmental education as examinable subject in primary school with emphasis on practical knowledge</li> <li>- Policies awareness and proper framework of operation</li> <li>- Educating the community on environmental clean up.</li> <li>- Carry out training on laws and environmental awareness.</li> <li>- Conduct regular civic education on by laws.</li> <li>- Organize workshops on existing laws</li> <li>- CCN and the media should inform and educate people from school level.</li> </ul>
Collaboration with the private sector	<ul style="list-style-type: none"> <li>- Private sector demand is very high thus they have no time for CBO</li> <li>- The cost of doing business with private sector and accessibility</li> <li>- No assistance from CCN</li> <li>- Lack of cooperation between the CBO and CCN</li> <li>- Collaboration not fully enhanced to facilities waste management</li> <li>- Racist Indian cartel refusing to do business with blacks or slum dwellers in buying processed recycled materials</li> </ul>	<ul style="list-style-type: none"> <li>- Private sector tends to work exclusively with wealthier clientele</li> </ul>	<ul style="list-style-type: none"> <li>- Involvement of various stakeholders for enhance collection</li> <li>- Private sector needs to consider all members of the community</li> <li>- Lower cost</li> <li>- Empower CBOs with equipment and loans to work as if in the private sector</li> <li>- Enhance proper collaboration to facilitate proper waste management</li> </ul>

Area	Main Problems	Main Causes	Possible Solutions
Institutional/ Legal Issues	<ul style="list-style-type: none"> <li>- Lack of coordination between NEMA and the CCN.</li> <li>- High license fee cost to do business with NEMA.</li> <li>- Arbitrary laws imposed on CBOs.</li> </ul>	<ul style="list-style-type: none"> <li>- Discrimination.</li> <li>- Corruption</li> </ul>	<ul style="list-style-type: none"> <li>- Frequent CBO meetings to discuss problems and set goals that could ease challenges.</li> <li>- Formulation of proper policies to protect CBOs.</li> <li>- Involvement of CBOs in decision and law making</li> <li>- Transparency</li> </ul>

### Problem Analysis Framework for Group 3

Area	Main Problems	Main Causes	Possible Solutions
Collection of garbage	<ul style="list-style-type: none"> <li>- Lack of safety equipment and tools.</li> <li>- Inadequate collection points.</li> <li>- Inadequate transfer stations</li> </ul>	<ul style="list-style-type: none"> <li>- Garbage to the disposal site.</li> <li>- Uncooperative customers who dump</li> <li>- Delay in transportation of Garbage into the river.</li> <li>- Disease causing contamination.</li> </ul>	<ul style="list-style-type: none"> <li>- Provision of adequate personal protective equipment.</li> <li>- Establish permanent and accessible collection points in every estate</li> </ul>
Reduction, Reuse , Recycling, Recovery	<ul style="list-style-type: none"> <li>- Lack of recycling machines.</li> <li>- Lack of recycling skills and techniques.</li> <li>- Absence of good market for recycled material.</li> <li>- No separation at source</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of awareness on sorting at source at community level.</li> </ul>	<ul style="list-style-type: none"> <li>- Facilitation of recycling</li> <li>- Marketing of recycled and reused products such as plastic poles and organic manure.</li> <li>- Support recycling at source.</li> <li>- Replication of best practices from the developed world.</li> <li>- Finance CBOs .</li> <li>- Establish recycling centres.</li> <li>- Separation at source by providing bins.</li> <li>- Provision of storage facilities for the recyclables.</li> </ul>
Transportation of garbage	<ul style="list-style-type: none"> <li>- High fee charged by the private sector to transport a small quantity of garbage.</li> <li>- No roads.</li> <li>- No trucks.</li> <li>- Rare appearance of trucks.</li> <li>- Inadequate provision of transport facilities by the CCN.</li> <li>- Poor coordination between the CCN and private stakeholders.</li> <li>- Low level of transportation by the CCN.</li> </ul>	<ul style="list-style-type: none"> <li>- Corruption by CCN truck drivers.</li> <li>- Delay in transportation by the CCN.</li> <li>- Inadequate trucks.</li> <li>- Traffic at the dump site especially during the rainy season.</li> <li>- Conjestion in the slums.</li> </ul>	<ul style="list-style-type: none"> <li>- Repair and maintenance of access roads.</li> <li>- Provision of more trucks.</li> <li>- Financial booster.</li> </ul>
Disposal	<ul style="list-style-type: none"> <li>- Inadequate legal disposal sites.</li> <li>- Mushrooming of illegal disposal sites.</li> <li>- Presence of cartels who charge a fee.</li> </ul>	<ul style="list-style-type: none"> <li>- Distant location of disposal site.</li> <li>- Laxity of the government to rid cartels such as 'Mungiki' in Dandora.</li> <li>- Insecurity at the disposal site.</li> </ul>	<ul style="list-style-type: none"> <li>- Involve the private sector in garbage disposal.</li> <li>- Establishment of environmental friendly disposal sites.</li> <li>- Establishment of transfer stations.</li> <li>- Establish more disposal sites.</li> </ul>
Financial difficulties	<ul style="list-style-type: none"> <li>- Lack of finance.</li> <li>- Cartels like 'Mungiki' charge inappropriate levies.</li> <li>- Delay in payments by clients.</li> <li>- High registration fee at the CCN.</li> </ul>	<ul style="list-style-type: none"> <li>- The households cannot afford to pay weekly.</li> <li>- Sometimes, households are not willing to pay the collection fee.</li> <li>- Lack of capacity to manage the funds.</li> <li>- Inaccessibility to funds.</li> </ul>	<ul style="list-style-type: none"> <li>- Putting together local resources attracting support from stakeholders e.g CDF,CCN.</li> <li>- Training on business management, financial management.</li> <li>- Donors to fund CBOs directly, neither through CCN nor the government.</li> <li>- The government and partners should fund active groups.</li> <li>- Provision of funds, materials and equipment.</li> </ul>
Public awareness	<ul style="list-style-type: none"> <li>- Lack of awareness on existing laws on SWM and pollution by the CBOs.</li> <li>- Lack of understanding between households and CBOs.</li> <li>- Lack of clear data on relevant sectors and objectives.</li> <li>- Ignorance of the public about waste disposal incorporating conservation of the environment.</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of public awareness and support from stakeholders.</li> </ul>	<ul style="list-style-type: none"> <li>- Incorporation of Environmental Education from the primary level to the tertiary level.</li> <li>- Preach the importance of a clean environment.</li> <li>- CBOs should engage in community awareness.</li> </ul>



Area	Main Problems	Main Causes	Possible Solutions
Collaboration with the private sector	<ul style="list-style-type: none"> <li>- Some private organizations are too rigid on their project management thus CBOs find it difficult to collaborate with them.</li> <li>- Absence of public awareness on the significance of collaboration and accompanying laws.</li> <li>- Lack of networking among the CBOs.</li> </ul>	<ul style="list-style-type: none"> <li>- Poor linkage.</li> <li>- Lack of capacity</li> <li>- Suspicion between the parties.</li> </ul>	<ul style="list-style-type: none"> <li>- Formation of consistent stakeholders forum</li> <li>- Strengthening of PPPP.</li> <li>- More stakeholders should be incorporated in SWM to provide technical support and transportation facilities where the CCN has failed (Incorporation of other organizations apart from the CCN in providing technical support as well as transportation).</li> <li>- Create awareness about existing private organizations of interest.</li> </ul>
Institutional/ Legal Issues	<ul style="list-style-type: none"> <li>- Exploitation by CCN on Nairobi Officers</li> <li>- Lack of networking with CCN</li> <li>- Relevant institutions no cooperative with CBOs i.e. CCN, private partners</li> <li>- Lack of coordination (parliament/Ministries/NEMA/CCN/NGOs/CBOs)</li> <li>- Conflicting laws by different major stakeholders e.g. CCN and NEMA on appropriate waste management strategies</li> <li>- Political interference from civic leaders due to rivalry</li> <li>- Complicity by CCN/NEMA officials hence corruption</li> <li>- Corruption- Tenders given to friends to enrich themselves e.g trucks hiring</li> <li>- Tough stringent laws by CCN, there is lack of cooperation</li> <li>- Lack of goodwill among key players</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of legal awareness and interpretation of the laws governing SWM</li> <li>- Law of goodwill and follow up</li> </ul>	<ul style="list-style-type: none"> <li>- CCN to network closely with CBOs on the ground</li> <li>- Capacity building for skill enhancement</li> <li>- Provide adequate capacity building skills to the CBOs</li> <li>- Harmonization of SWM policies</li> <li>- Privatization of Department of Environment by CCN for healthy &amp; efficient waste management</li> <li>- Law enforcement (institutions to monitor on the ground to make sure proper handling of waste)</li> <li>- Relevant policy formulation</li> <li>- All stakeholders should formulate laws that do not conflict with each other (one legal framework for SWM by all stakeholders)</li> </ul>

### Problem Analysis Framework for Group 4

Area	Main Problems	Main Causes	Possible Solutions
Collection of garbage	<ul style="list-style-type: none"> <li>- Delaying in issuing authority letter leading to harassments from CCN</li> <li>- Competition between CBOs</li> <li>- Collection should be 24 hours operation to reduce more pollution</li> <li>- No access to interior garbage collection points</li> <li>- Lack of plastic bags</li> <li>- Households are not willing to pay the collection fee</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of transfer stations</li> <li>- Mismanagement by CCN in relation to issuing of licenses</li> <li>- Lack of access roads</li> <li>- Plastic bags are expensive</li> </ul>	<ul style="list-style-type: none"> <li>- CCN should allocate sites for collection</li> <li>- Change of the Law to allow CBOs to work 24 hours</li> <li>- Educate residents on the importance of cost sharing</li> <li>- Provide enough collecting points which are near to the CBOs</li> </ul>
Reduction, Reuse, Recycling, Recovery	<ul style="list-style-type: none"> <li>- CBOs do not get direct benefits from recycled materials</li> <li>- Not market for recycled materials</li> <li>- Lack of knowledge on recycling</li> <li>- Limited finances</li> <li>- Culture inform people not have anything to do with waste (culture leads people to disregard on solid waste issues)</li> </ul>	<ul style="list-style-type: none"> <li>- Existence of brokers</li> <li>- Not knowledge on separation of waste</li> </ul>	<ul style="list-style-type: none"> <li>- Government to provide efficient transport of waste products</li> <li>- Provision of proper way for recycling</li> <li>- Educate the community on 4 Rs</li> <li>- Create awareness campaign importance on 4Rs</li> <li>- Training on recycling</li> <li>- Government to help for recycling</li> </ul>
Transportation of garbage	<ul style="list-style-type: none"> <li>- Lack of means of transportation</li> <li>- CCN lorries charge a lot of money for transportation</li> <li>- Poor management of transportation</li> <li>- Transportation very expensive</li> <li>- Lack of sufficient vehicles and good working relation among all stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>- Corruption</li> </ul>	<ul style="list-style-type: none"> <li>- Government to provide efficient transport of waste</li> <li>- More trucks to transport all the collected waste to the disposal site</li> <li>- Buy more vehicle and get organized</li> </ul>
Disposal	<ul style="list-style-type: none"> <li>- Existence of illegal dumping sites (rivers sides, private areas, etc.)</li> <li>- Lack of disposal sites</li> <li>- Congestion at existing dumping site</li> <li>- Lack of cooperation from CCN for avoiding illegal dumping</li> <li>- CBOs lacks cooperation from CCN to clear dumping sites</li> </ul>	<ul style="list-style-type: none"> <li>- Poor management of the dumping site</li> <li>- Poor access to Dandora disposal site</li> <li>- Not disposal site is allocate</li> </ul>	<ul style="list-style-type: none"> <li>- Ward managers should inform people on not dumping everywhere</li> <li>- Identify a proper land for disposal site, it should be away from human settlement</li> </ul>
Financial difficulties	<ul style="list-style-type: none"> <li>- Lack of finance to buy proper materials</li> <li>- Some houses cannot afford to pay for the collection</li> </ul>	<ul style="list-style-type: none"> <li>- Customer do not cooperate</li> <li>- Poverty</li> <li>- Not job or lack of proper job</li> </ul>	<ul style="list-style-type: none"> <li>- Provision of funds directly to the CBOs in the community</li> </ul>
Public awareness	<ul style="list-style-type: none"> <li>- Lack of knowledge of some members of the community on SWM</li> <li>- Laws are not clear on waste management</li> <li>- Community members are not cooperative and not aware of the benefits of a good SWM</li> </ul>	<ul style="list-style-type: none"> <li>- Not awareness program is conducted</li> <li>- Responsible authorities fails to educate the communities in order to create the awareness on proper handling of waste</li> </ul>	<ul style="list-style-type: none"> <li>- Sensitize people on environmental laws</li> <li>- Sensitize people on how to handle their refuse</li> </ul>

Area	Main Problems	Main Causes	Possible Solutions
Collaboration with the private sector	<ul style="list-style-type: none"> <li>- Private sector do not trust people from slums</li> <li>- There are severe competition among CBOs</li> <li>- CCN recognizes only big companies and ignore small CBOs</li> </ul>	<ul style="list-style-type: none"> <li>- Fear to work with the community</li> <li>- All CBOs are making the same works</li> <li>- Most of the CBOs do not meet the requirements for tendering process</li> </ul>	<ul style="list-style-type: none"> <li>- Institutions should force a cooperation with the people and come up with mutual way for a solution</li> <li>- Promotion of collaboration among the CBOs and the private sector</li> <li>- Give priority to CBOs without going through a long tendering process</li> <li>- Demarcation on waste management whereby some CBOs do the collection and the other do the recycling</li> <li>- Community to change attitude on private sector and be welcoming and cooperative</li> </ul>
Institutional/ Legal Issues	<ul style="list-style-type: none"> <li>- CBOs harassed by institutions</li> <li>- CBOs requires lot of licenses</li> <li>- CBOs are not contacted on the ground</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of policies</li> <li>- Lots of Departments involved</li> <li>- No good relationship or communication between institutions and the CBOs</li> <li>- Not clear guide on the activities of CBOs</li> <li>- Lack of information on licenses</li> </ul>	<ul style="list-style-type: none"> <li>- CBOs should be well funded to work properly and cooperate among them</li> <li>- CCN should educate CBOs on legal issues</li> <li>- Establishment of policies that clearly address SWM with the intervention of CBOs</li> <li>- Reduce the number of licenses in 1 or 2</li> <li>- Enforcement of the law</li> </ul>

### Problem Analysis Framework for Group 5

Area	Main Problems	Main Causes	Possible Solutions
Collection of garbage	<ul style="list-style-type: none"> <li>- Expose to communicable diseases</li> <li>- Lack of suitable collection methods</li> <li>- Collection not made compulsory through existing by-laws</li> <li>- Lack of plastic bags for garbage</li> <li>- Lack of designated collection points</li> <li>- Lack of dustbin</li> <li>- Lack of tools for collection such as gloves, gumboots, etc.</li> </ul>	<ul style="list-style-type: none"> <li>- Special container for garbage not being offered in market</li> <li>- Mapping of collection by the Department of Environment</li> <li>- Lack of Division that deals with CBOs by the Department of Environment</li> <li>- Corruption among CCN supervisors</li> <li>- Lack of common collection points</li> <li>- Too many CBOs are registered and competing for collection hence promoting dumping</li> <li>- CCN not enough assigning places for collection</li> <li>- Harassment by CCN</li> </ul>	<ul style="list-style-type: none"> <li>- Citizens come together to clear garbage</li> <li>- To harmonize and reset deals with more actors in anticipation to sustainability</li> <li>- Supply different bins/bags to households for collecting garbage</li> <li>- CCN should provide the CBOs with handcarts for collection from households to designated points</li> </ul>
Reduction, Reuse, Recycling, Recovery	<ul style="list-style-type: none"> <li>- Lack of recycling machine</li> <li>- Households container not specifically make to suit the 4 R</li> </ul>	<ul style="list-style-type: none"> <li>- Poor income generated</li> <li>- Lack of technology for recycling</li> </ul>	<ul style="list-style-type: none"> <li>- Provision of recycling machine</li> <li>- Organizing a capacity building workshop on 4 R</li> <li>- CCN to procure 40% of its supply from recyclers, i.e. manure for tree/flower planting</li> <li>- To create job for the youth by the CCN to recycle garbage in large scale locally</li> </ul>
Transportation of garbage	<ul style="list-style-type: none"> <li>- Poor transportation method on the part of CCN</li> <li>- Poor road network</li> <li>- Not adequate number of trucks</li> <li>- Poor coordination of the trucks</li> </ul>	<ul style="list-style-type: none"> <li>- Too expensive to hire a private truck</li> <li>- Poor planning</li> </ul>	<ul style="list-style-type: none"> <li>- Regulated transport cost by the CCN</li> <li>- CCN/local government to introduce more trucks for transportation</li> <li>- Give each ward a truck for transport</li> <li>- Allocate trucks from sub-location level at specific day of the week or month</li> <li>- CCN trucks to assist the CBOs</li> </ul>
Disposal	<ul style="list-style-type: none"> <li>- Careless dumping in the streets especially in the slums</li> <li>- Poor dumping site</li> <li>- Lack of landfill/Distance from the collection point</li> <li>- Poor mentality of looking at garbage as waste which cost money to dispose</li> <li>- Lack of financial support</li> </ul>	<ul style="list-style-type: none"> <li>- Poor planning by the government</li> <li>- Grabbing of disposal areas by councilors</li> </ul>	<ul style="list-style-type: none"> <li>- The landfill site should be located near</li> <li>- Stiff penalties for illegal disposal</li> <li>- To look for proper areas suitable for disposal of the garbage</li> <li>- Government to provide disposal site</li> <li>- CCN</li> </ul>
Financial difficulties	<ul style="list-style-type: none"> <li>- Lack of financial transparency in CBOs</li> <li>- Customers default payment</li> <li>- Customers are reluctant to payment</li> </ul>	<ul style="list-style-type: none"> <li>- High charges from the private collectors</li> <li>- Poor financial management skills in CBOs</li> </ul>	<ul style="list-style-type: none"> <li>- Need for outer financial support</li> <li>- Change our attitude towards garbage as resource to generate income</li> <li>- Proper marketing</li> <li>- Proper financial education</li> <li>- Financing to be done by Donors &amp; Government</li> <li>- Create job for the CBOs</li> <li>- CCN to provide bins, protective gear, free transport</li> </ul>

Area	Main Problems	Main Causes	Possible Solutions
Public awareness	<ul style="list-style-type: none"> <li>- Lack of awareness creation among waste collectors</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of opportunities for awareness creation</li> </ul>	<ul style="list-style-type: none"> <li>- Organizing awareness campaign on the legal affairs of the institution</li> <li>- Organize community sensitization program to the dwellers</li> <li>- Creating awareness to CBOs</li> <li>- There is need for environmental education on waste collection and management</li> </ul>
Collaboration with the private sector	<ul style="list-style-type: none"> <li>- Poor or negative collaboration with the private sector</li> <li>- Lack of cooperation among the residents</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of awareness about opportunities in private sector</li> </ul>	<ul style="list-style-type: none"> <li>- Government to involve private sector and the CBOs</li> </ul>
Institutional/ Legal Issues	<ul style="list-style-type: none"> <li>- Harassment from CCN</li> <li>- Lack of policies/awareness</li> <li>- Poor communication from CCN</li> <li>- Lack of legal awareness to the community</li> </ul>	<ul style="list-style-type: none"> <li>- Laxity to enforce laws</li> <li>- Lack of understanding of the existing laws by the officers and the public</li> <li>- Weak enforcement of waste by-laws by CCN</li> </ul>	<ul style="list-style-type: none"> <li>- Delink councilors from doing waste collection business</li> <li>- To sack the corrupted person from CCN</li> <li>- Investigate and prosecute those corrupt</li> <li>- Transfer those officers (supervisors) who have been in one area for long</li> <li>- Transparency from CCN</li> <li>- Employ more CBO representatives to the Department of Environment</li> <li>- Issue licenses to participating CBOs</li> <li>- Networking with CCN always</li> <li>- Strict enforcement of waste By-Laws by CCN</li> </ul>

**6. Photographs from the Workshop on “Basic Analysis of CBOs Intervention on SWM in Nairobi City”**



Reception



Brief Explanation of JICA Survey



Explanation of Environmental Overview



Activities and existing policies of DoE



Orientation for the Problem Analysis Session (1)



Orientation for the Problem Analysis Session (2)



Group Problem Analysis (1)



Group Problem Analysis (2)





Group Problem Analysis (3)



Group Problem Analysis (4)



Group Problem Analysis (5)



Group Problem Analysis (6)



Group Problem Analysis (7)



Group Problem Analysis (8)



Group Problem Analysis (9)



Presentation of Outputs (One group as a representative)

## 7. Details on Calculation for Capacity Development of New PEC Unit

S-7-1	Contract with Local Consultant to Support for PEC Unit
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Salary		
	Monthly	Yearly
Engineer	266000	3,192,000
Assistant	133000	1,596,000
Assistant	133000	1,596,000
<b>Total</b>		<b>6,384,000</b>

S-7-2	Procurement of Equipment & Materials for PEC Unit
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<b>Car Cost Estimation (double cab 4x4)</b>				
<b>Unit price</b>	<b>Registration</b>	<b>Net total</b>	<b>VAT</b>	<b>Total</b>
2,812,931	12,400	2,825,331	450068.96	<b>3,275,400</b>
<b>Motorcycle Cost Estimation</b>				
<b>Unit price</b>	<b>VAT (16%)</b>	<b>Total Ksh</b>	<b>Quantity</b>	<b>Total Ksh</b>
319,000	51040	370,040	5	<b>1,850,200</b>

S-7-3	Procurement of Office Furniture
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<b>Furniture Cost Estimation</b>				
Item	Description	Quantity	Unit cost	Cost
Desk Rwosp	48×30SPcompact	1	13495	13495
Desk Rwosp	48 × 30 × 3 SP	6	7999	47994
Chair Executive	H 204	1	18999	18999
Chair	H/B fabric	6	5499	32994
Book shelf SIN	5 level half glass	1	16999	16999
Book shelf open	Tall RWTBS	1	11999	11999
<b>Total</b>				<b>142480</b>
<b>Additional</b>				
Chair for visitors	H/B fabric	5	5499	27495
<b>Total furniture</b>				<b>169,975</b>

S-7-4	Procurement of Computers and annexes
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<b>Computer Desktop (hardware and software)</b>				
Item	Description	Quantity	Unit cost	Cost
Desktop computer	Optiplex 760 Intel Core 2 Duo 2.0GHZ/320GB/2GB/WIN 7 PRO/17"/DVD Writer/KBD/Mouse	7	59995	419965
Ms Windows 7 Professional	Single licence	7	13995	97965
Ms Office 2007 Professional	Word/Excel/PowerPoint/Publisher/Access	7	23995	167965
Antivirus	Internet Security,3 user	2	3595	7190
Antivirus	Internet Security,1 user	1	2295	2295
<b>Total computer hardware + software</b>				<b>695,380</b>

<b>Printers</b>				
Item	Description	Quantity	Unit Cost	Cost
HP laserjet printer	Multifunction model CM 1312 NF Print, Scan, Copy and Fax	1	50000	50000
HP laserjet printer	Model CP 515 N color printer	1	28000	28000
<b>Total</b>				<b>78,000</b>



**Notebook computer**

Item	Description	Quantity	Unit Cost	Cost
Notebook computer		1		60000
Ms Windows 7 professional	Single licence	1	13995	13,995
Ms Office 2007 Professional	Word/Excel/Powerpoint/ Publisher/Access	1	23995	23,995
Antivirus	Internet Security, 1 user	1	2295	2295
<b>Total</b>				<b>100,285</b>

**Office stationery budget for a year**

Item	Unit	Quantity	Unit cost	Cost
Paper punch	Each	1	350	350
Stapler	Each	1	250	250
Box Files	Each	150	110	16500
Paper pins	Packet	125	20	2500
Staple pins	Packet	100	75	7500
Envelopes A4	Box	10	189	1890
Envelopes A5	Box	10	175	4375
Envelopes A3	Box	10	210	10500
Envelopes 9 × 4	Box	10	279	2790
Envelopes 6 × 3	Box	10	150	1500
Biro pens	Packet	100	450	45000
Flash Disk	Each	25	1300	32500
Ruled Paper	Ream	100	249	24900
Manila paper	Ream	75	3500	262500
Cello tape	Roll	50	25	1250
Glue	Bottle	50	30	1500
Carbon paper	Packet	50	800	40000
Rulers	Each	8	40	320
Pencil HB	Packet	25	240	6000
Rubber bands	Packet	25	80	2000
Stick on's	Each	125	45	5625
Fasteners	Packet	75	80	6000
White out	Bottle	125	80	10000
Printing paper	Ream	60	450	27000
Toner	Each	24	8000	192000
<b>Total</b>				<b>704,750</b>

**Projector & Audio System**

QTY	Description	Cost
1	<b>Projector</b> EIKI LCD PROJECTORS MODEL <b>LC-XB43</b> <b>4500 ANSI LUMENS XGA RESOLUTION</b> AND A 1000: 1 CONTRAST RATIO, INCLUSIVE SOFT CARRYING BAG	250,000
1	84" x 84" TRIPOD SCREEN	39,000
	Sub-total	289,000
	VAT	46,240.00
	<b>Total</b>	<b>335,240</b>
2	<b>Audio system</b> FBT JOLLY POWERED SPEAKERS 60 WATT MODEL ( JOLLY 5b-a) (49,000 each)	98,000
1	FBT KEMPTON MIXER MODEL ME8-2	46,000
2	WIRED MICROPHONES MODEL MD-S1100(12000 each)	24,000
	LOT OF CONNECTING CABLES	10,000
	Sub-total	178,000
	VAT	28,480
	<b>Total</b>	<b>206,480</b>

S-7-5	Procurement of Fuel and mobilization supplies		
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**Fuel & maintenance of vehicles**

<b>A. Motorcycle</b>							
Item	Km/year	Units	Total km	Consumption	Total litres	Unit cost (ksh/lt)	Cost
Fuel	7200	5	36,000	2lts/100 km	720	85	61,200
Maint.	3,190	5					15,950
					Subtotal		77,150
<b>B. Car</b>							
Fuel	12,000	1	12,000	12lts/100 km	1440	85	122,400
Maint.	32,754	1					32,754
					Subtotal		155,154
					<b>Total</b>		<b>232,304</b>
<b>Grand total equipment &amp; material (ksh)</b>							<b>7,648,014</b>

S-7-6	Implementation of CBOs' Waste Collection Plan (I)
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S-7-6-1	Elaboration of guidelines, manuals and standards for CBOs			
	A. Hire of consultant			
	Engineer	Salary		
		Monthly	M/M	Cost
		266,000	8.5	2,261,000
	B. Printing of material			
	N° of CBOs	N° of sets	Ksh/set	Cost
	8	160	850	136000
	Total			2,397,000

S-7-6-2	Elaboration of education materials for residents for public awareness creation			
	<b>Description</b>	<b>Unit cost</b>	<b>Quantity</b>	<b>Cost</b>
	Production of Video for adults (1 master and 5,000 copies)		5,000	2,418,000
	Production of (10,000) pamphlets	13.2	10,000	132,000
	<b>Total</b>			<b>2,550,000</b>

S-7-6-3	Strengthening of coordination between CCN, CBOs and residents			
	<b>Yearly cost</b>			
	Hire one technician from NGO			<b>1,534,000</b>

S-7-6-5	Training of CBOs				
	<b>N° of CBOs/y</b>	<b>persons</b>	<b>4 times/y</b>	<b>Unit cost</b>	<b>Cost</b>
	2	40	160	300	<b>48,000</b>

S-7-6-6	Environmental education for residents to get their participation				
	<b>N° of resid/CBO</b>	<b>Total resid/y</b>	<b>6 times/year</b>	<b>Unit cost</b>	<b>Total cost</b>
	100	200	1200	300	<b>360,000</b>

S-7-6-7	Provision of basic tools to CBOs			
	<b>Tools/Equipment</b>	<b>Quantity</b>	<b>Unit cost</b>	<b>Total</b>
	Hand cart	3	18,000	54000
	wheelbarrow	5	3,400	17000
	Hand gloves	20	290	5800
	Gum boots	20	880	17600
	Brooms	10	395	3950
	Overall	20	850	17000
	Dust coat	20	650	13000
	Rakes	5	275	1375
	Shovel	5	680	3400
	Safety helmet	10	255	2550
	Dust mask	50	30	1500
	Polythene bags	20	280	5600
	Ropes	6	245	1470
	First Aid kit	2	3450	6900
	Container (50 litres)	12	800	9600
	Grand Total by each CBO			160745
	<b>Total CBOs</b>			<b>8</b>
	<b>Total amount</b>			<b>1,285,960</b>

S-7-7	Implementation of Environmental Education Plan (I)			
S-7-7-1	Development of educative materials			
	<b>Components</b>	<b>Unit cost</b>	<b>Quantity</b>	<b>Cost</b>
	Development of Textbook for teachers	424.6	2,000	849,200
	Development of Video on SWM for children		2,000	2,107,720
	<b>Total</b>			<b>2,956,920</b>

S-7-7-2	Training on recycling for schools teachers					
	<b>N° Schools</b>	<b>N° of Teachers</b>	<b>workshop/year</b>	<b>Total teachers</b>	<b>Unit cost</b>	<b>Total</b>
	18	18	4	72	625	<b>45000</b>

S-7-7-3	Provision of bins for recycling in the schools						
	<b>Item no.</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit cost</b>	<b>Total cost</b>	<b>Remarks</b>
	1	Facilitator/Coordinator (NGO)	M/M	6	39,000	234,000	First 6 months
	2	Teacher/Instructor	person	18	Salary		2schools x 9 Div.
	3	CCN Staff in charge	person	18	Salary		2schools x 9 Div.
	4	Junk Shop in the Division	person	18	Volunteer		2schools x 9 Div.
	5	Plastic Container with Cover, 50Lit.	pc	72	800	57,600	4 x 18 containers
	6	Text/Leaflet	set	18,000	25	450,000	for 18 schools
	<b>Total-Recovery of Recyclable Materials at Schools (Annual Cost)</b>					<b>741,600</b>	

S-7-7-4	Environmental education for residents for promotion waste reduction			
	<b>Description</b>	<b>Unit cost</b>	<b>Quantity</b>	<b>Cost</b>
	Production of pamphlets	13.2	10,000	<b>132,000</b>

S-7-7-5	Environmental education for residents for promotion recovery at source			
	<b>Description</b>	<b>Unit cost</b>	<b>Quantity</b>	<b>Cost</b>
	Production of pamphlets	13.2	10,000	<b>132,000</b>

S-7-7-6	Environmental education for residents for promotion reuse and recycling			
	<b>Description</b>	<b>Unit cost</b>	<b>Quantity</b>	<b>Cost</b>
	Production of pamphlets	13.2	10,000	<b>132,000</b>

S-7-8	Mass campaign for public awareness raising
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Yearly production	Unit cost	Quantity	Total
Poster	18.60	10,000	186,000
Stickers	9.57	20,000	191,400
<b>Total</b>			<b>377,400</b>

Advertising on Radio & TV			
	Radio	TV	Total
Production spot	85,000	508,000	
VAT	13,600	81,280	
<b>Total production</b>	<b>98,600</b>	<b>589,280</b>	<b>687,880</b>

	Radio	TV	
Airing	73,000	198,000	
VAT	11,680	31,680	
Total airing	84,680	229,680	
5 times/week	423,400	1,148,400	
cost /month	1,693,600	4,593,600	
2 monthly	3,387,200	9,187,200	
Admit fee 20%	677,440.0	1,837,440.0	
<b>Total airing</b>	<b>4,064,640</b>	<b>11,024,640</b>	<b>15,089,280</b>

Newspaper (daily nation)		
1/4 page colour	122,000	each time
5 times/week	610,000	each time
Cost/month	2,440,000	each time
2 monthly	4,880,000	each time

Banners/division	Division/y	Quantity	Unit cost	Yearly cost
20	2	40	25,000	<b>1,000,000</b>

Cleaning-up campaign	Division/y	Total per year
825,000	2	1,650,000

Summary		
Poster & stickers	377,400	
Radio	4,064,640	
TV	11,024,640	
Newspaper	4,880,000	
Banners	1,000,000	
Cleaning-up campaign	1,650,000	
<b>Total yearly</b>	<b>22,996,680</b>	
<b>Production cost</b>	<b>687,880</b>	one time

S-7-9	Implementation of Community Based Solid Waste Management (I)				
S-7-9-1	Training of CBOs				
	N° of CBOs/y	persons	4 times/y	Unit cost	Cost
	2	40	160	300	<b>48,000</b>