

6.2

ADDITIONAL STUDIES

**6.2.1 Environmental Justification Study to
Close Down Dandora Disposal Site**

6.2.1

**TERMS OF REFERENCE FOR THE ENVIRONMENTAL
JUSTIFICATION STUDY TO CLOSE DOWN DANDORA
DISPOSAL SITE**

TECHNICAL SPECIFICATIONS

(1) Survey to be made by the consultant

The consultant shall survey the current impacts of Dandora Disposal Site on the surrounding environment. Those impacts that shall be surveyed are described herein:

(a) Impacts on Water Quality

The table below shows the components and parameter that shall be analyzed:

Components	Parameter	Number of Samples
Surface Water (Nairobi River)	DO, BOD, COD	2 sample/river x 1 river x 1 time = 2 sample. Samples shall be taken from Nairobi River down and up stream of Dandora disposal site.
Groundwater (Existing wells)	Permanganate, Nitrate, Nitrite, NH ₃ , TN, Pb, Cr, Cu, Fe, Mn, Zn, Hg, As	1 sample/well x 2 wells x 1 time = 2

(b) Fauna and Flora

The contractor shall identify the existing species, endangered or not, habitat, etc. in the site.

(c) Landscape

Topography, geology, land use, etc.

(d) Soil Pollution

Components	Parameter	Number of Samples
Soil	Pb, Cr ⁺⁶ , Cu, Fe, Mn, Zn, Hg, and pathogenic microorganism	1 sample/point x 1 point = 1 sample. Sample shall be taken from a depth of 1 m.

(e) Impacts on air quality

- Offensive odour

H₂S

1 spot x 2 times = 2 samples

(range of measurement: 0.02-0.2 ppm)

NH₃

1 spot x 2 times = 2 samples

(range of measurement: 1-5 ppm)

One sampling should be conducted on a dry day while the other sampling after a rainy day.

- Dust

1 spot x 1 sample/spot/day x 3 days=3 samples. Locations of spot shall be selected in the surrounding area

- CH₄

Generation and its possible migration to the surrounding environment

- Smoke

Generation and frequency

(f) Hygiene and Sanitation

Presence of noxious insects in and around of the site and its effects on the public health of the neighborhood.

(g) Social Environmental Aspects

Analysis of Affected Population by Dandora disposal site

- Manner of subsistence
- Income level, education level
- Population and how it is composed
- Housing

- Health condition & Sanitation

Number of patients due to water-borne and respiratory diseases, and due to other communicable diseases.

Water supply coverage.

Sewage disposal methods.

Garbage disposal methods.

- Custom, religion, ect.

(h) Public Awareness

This survey shall be conducted by interviews to the people who is affected by Dandora disposal site.

- Necessity of new disposal sites
- Environmental degradation of Nairobi City due to waste
- Importance of sanitary improvement
- Willingness to participate in the SWM improvement for Nairobi City

(2) Methodology for Assessment

The consultant using primary and secondary data shall assess the existing environmental condition of the disposal site and the effects of those significant impacts on the surrounding living conditions. For the assessment Kenyan and international standards shall be used. The Justification Report shall propose the applicable technology and methodology for the closure and post-closure stage of the dumping site which shall be reflected in the environmental managing plan and environmental monitoring plan.

(3) Reporting

Two (2) copies of the Justification Report shall be submitted to the JICA Study Team by December 5, 1997.



6.2.2 Social and Public Awareness Survey Data



Table 1
Dump Sites
Percentage distribution of respondents by demographic, socio economic and other characteristics.

Age Group	Dandora	Karlobangi	Korongoch	Lucky Summer	Total %	Row%	Row N
<20 Yrs	100.0	0.0	0.0	0.0	100.0	1.8	1
20-29	55.6	16.7	5.6	22.1	100.0	32.1	18
30-39	45.0	15.0	20.0	20.0	100.0	35.7	20
40-49	41.7	25.0	25.0	8.3	100.0	21.4	12
50-59	50.0	0.0	50.0	0.0	100.0	7.1	4
60+ Yrs	0.0	0.0	100.0	0.0	100.0	1.8	1
Total N							56
Age Group							
<20 Yrs	3.7	0.0	0.0	0.0			
20-29	37.0	33.3	9.1	44.4			
30-39	33.3	33.3	36.4	44.4			
40-49	18.5	33.4	27.3	11.2			
50-59	7.5	0.0	18.2	0.0			
60+ Yrs	0.0	0.0	9.0	0.0			
Total %	100.0	100.0	100.0	100.0			
N=56	27	9	11	9			
SEX							
Male	50	23.5	11.8	14.7	100.0	60.7	34
Female	45.5	4.5	31.8	18.2	100.0	39.3	22
						100.0	56
SEX							
Male	63.0	88.9	36.4	55.6			
Female	37.0	11.1	63.6	44.4			
Total	100.0	100.0	100.0	100.0			
N=56	27	9	11	9			
Marital Status							
Married	47.4	10.5	23.7	18.4	100.0	67.9	38
Single	46.7	26.7	13.3	13.3	100.0	26.7	15
Widowed	0.0	0.0	0.0	0.0	0.0	0	0
Divorced	66.7	33.3	0.0	0.0	100.0	5.4	3
						100.0	
Marital Status							
Married	66.7	44.4	81.8	77.8			
Single	25.9	44.4	18.2	22.2			
Widowed	0.0	0.0	0.0	0.0			
Divorced	7.4	11.1	0.0	0.0			
Total	100.0	99.9	100.0	100.0			
N=56	27	9	11	9			

Table 2	Dandora	Kariobangi	Korongoch	Lucky Summer	Total	Row	N
Religion							
Christian	49.0	17.6	15.7	17.7	100.0	91.1	51
Islam	0.0	0.0	100.0	0.0	100.0	1.8	1
Other	50.0	0.0	50.0	0.0	100.0	7.1	4
						100.0	
Religion							
Christian	92.6	100.0	72.7	100.0			
Islam	0.0	0.0	9.1	0.0			
Other	7.4	0.0	18.2	0.0			
Total	100.0	100.0	100.0	100.0			
N=56	27	9	11	9			
Ethnicity						Row%	N
Kikuyu	73.9	4.3	13.0	8.8	100.0	41.1	23
Luhya	37.5	25.0	37.5	0.0	100.0	14.3	8
Kamba	60.0	0.0	40.0	0.0	100.0	8.9	5
Luo	18.8	37.5	12.5	31.2	100.0	28.5	16
Kisii	0.0	0.0	0.0	100.0	100.0	1.8	1
Masai	100.0	0.0	0.0	0.0	100.0	1.8	1
Miji Kenda	0.0	0.0	0.0	100.0	100.0	1.8	1
Others	0.0	0.0	100.0	0.0	100.0	1.8	1
						100.0	56
Ethnicity							
Kikuyu	63.0	11.1	27.3	22.2			
Luhya	11.1	22.2	27.3	0.0			
Kamba	11.0	0.0	18.2	0.0			
Luo	11.1	66.7	18.2	55.6			
Kisii	0.0	0.0	0.0	11.1			
Masai	3.8	0.0	0.0	0.0			
Miji Kenda	0.0	0.0	0.0	11.1			
Others	0.0	0.0	9.0	0.0			
Total %	100.0	100.0	100.0	100.0			
N=	27	9	11	9			
Education of Respondent						Row%	N
None	100.0	0.0	0.0	0.0	100.0	8.9	5
Primary	58.8	0.0	35.3	5.9	100.0	30.4	17
Secondary	38.5	34.6	11.5	15.4	100.0	46.4	26
Post Sec	25.0	0.0	25.0	50.0	100.0	14.3	8
N						100.0	56
Education of Respondent							
None	18.5	0.0	0.0	0.0			
Primary	37.0	0.0	54.5	11.2			
Secondary	37.0	100.0	27.3	44.4			
Post Sec	7.5	0.0	18.2	44.4			
Total %	100.0	100.0	100.0	100.0			
N	27	9	11	9			
Is respondent self employed						Row%	N
Yes	51.6	9.7	25.8	12.9	100.0	55.4	31
No	44.0	24.0	12.0	20.0	100.0	44.6	25
						100.0	56

Table 3	Dandora	Kariobangi	Korongocho Lucky Summer				
Is respondent self employed							
Yes	59.3	33.3	72.7	44.4			
No	40.7	66.7	27.3	55.6			
Total	100.0	100.0	100.0	100.0			
N=54	27	9	11	9			
If self employed							
Type of business						Row%	N
Consultant	0.0	0.0	0.0	100.0	100.0	3.2	1
Artist	0.0	100.0	0.0	0.0	100.0	3.2	1
Computer Engineer	0.0	0.0	0.0	100.0	100.0	6.5	2
Shopkeeper	61.5	7.7	26.9	3.8	99.9	83.9	26
Real Estate	0.0	0.0	100.0	0.0	100.0	3.2	1
						100.0	31
If self employed							
Type of business							
Consultant	0.0	0.0	0.0	25.0			
Artist	0.0	33.3	0.0	0.0			
Computer Engineer	0.0	0.0	0.0	50.0			
Shopkeeper	100.0	66.7	87.5	25.0			
Real Estate	0.0	0.0	12.5	0.0			
Total	100.0	100.0	100.0	100.0			
N=31	16	3	8	4			
If not self employed							
who is employer						Row%	N
Not stated	50.0	0.0	50.0	0.0	100.0	8.0	2
Public Service	20.0	60.0	0.0	20.0	100.0	20.0	5
Company	0.0	0.0	0.0	100.0	100.0	4.0	1
Private Firm	75.0	8.3	8.3	8.3	99.9	48.0	12
Unemployed	0.0	50.0	0.0	50.0	100.0	16.0	4
Others	0.0	0.0	100.0	0.0	100.0	4.0	1
						100.0	25
If not self employed							
who is employer							
Not stated	9.1	0.0	33.3	0.0			
Public Service	9.1	50.0	0.0	20.0			
Company	0.0	0.0	0.0	20.0			
Private Firm	81.8	16.7	33.3	20.0			
Unemployed	0.0	33.3	0.0	40.0			
Others	0.0	0.0	33.3	0.0			
Total	100.0	100.0	99.9	100.0			
N=25	11	6	3	5			
Nature of							
Employment						Row%	N
Not stated	16.7	33.3	16.7	33.3	100.0	24.0	6
Administrator	0.0	100.0	0.0	0.0	100.0	4.0	1
Teacher	0.0	50.0	0.0	50.0	100.0	8.0	2
Clerk	75.0	25.0	0.0	0.0	100.0	16.0	4
Other	58.3	8.3	16.7	16.7	100.0	48.0	12
						100.0	25

Table 4

	Dandora	Kariobangi	Korongocho	Lucky Summer			
Nature of Employment							
Not stated	9.1	33.2	33.3	40.0			
Administrator	0.0	16.7	0.0	0.0			
Teacher	0.0	16.7	0.0	20.0			
Clerk	27.3	16.7	0.0	0.0			
Other	63.6	16.7	66.7	40.0			
Total	100.0	100.0	100.0	100.0			
N=25	11	6	3	5			
Main source of Income							
Employment	47.6	19.0	9.6	23.8	100.0	Row%	N
Business	42.9	10.7	32.1	14.3	100.0	37.5	21
Other Sources	71.4	28.6	0.0	0.0	100.0	50	28
						12.5	7
						100	56
Source of Income							
Employment	37.0	44.4	18.2	55.6			
Business	44.5	33.3	81.8	44.4			
Other Sources	18.5	22.3	0.0	0.0			
Total	100.0	100.0	100.0	100.0			
N=56	27	9	11	9			
Monthly Income							
Not stated	33.3	66.6	0.0	0.0	99.9	Row%	N
< Ks 5,000	68.8	9.4	18.8	3.0	100.0	5.4	3
Ks 5000-10000	18.8	25.0	25.0	31.2	100.0	57.1	32
Ks10001-20000	20.0	0.0	20.0	60.0	100.0	28.6	16
						8.9	5
						100.0	56
Monthly Income							
Not stated	3.7	22.2	0.0	0.0			
< Ks 5,000	81.5	33.3	54.5	11.1			
Ks 5000-10000	11.1	44.5	36.4	55.6			
Ks10001-20000	3.7	0.0	9.1	33.3			
Total %	100.0	100.0	100.0	100.0			
N	27	9	11	9			
Monthly Expenditure on Food							
<Ks2000	33.3	8.3	41.7	16.7	100.0	Row%	N
Ks2000-5000	51.5	18.2	15.2	15.1	100.0	21.4	12
Over Ks 5000	54.5	18.2	9.1	18.2	100.0	58.9	33
						19.6	11
						100.0	56

Table 5

Monthly Expenditure on Food

	Dandora	Kariobangi	Korongocho Lucky Summer Total	
<Ks2000	0.0	11.1	0.0	0.0
Ks2000-5000	14.8	0.0	45.5	22.2
Over Ks 5000	63.0	66.7	45.5	55.6
Not stated	22.2	22.2	9.1	22.2
Total	100.0	100.0	100.1	100.0
N	27	9	11	9

Expenditure on Rent

	Dandora	Kariobangi	Korongocho Lucky Summer Total		Row%	N
Not applicable	62.5	12.5	12.5	12.5	100.0	14.3
<Ks2000	60.7	10.7	21.4	7.1	99.9	50
Ks 2000-5000	23.5	29.4	23.5	23.5	99.9	30.4
Over Ks 5000	33.3	0.0	0.0	66.7	100.0	5.3
						100.0
						56

Expenditure on Rent

	Dandora	Kariobangi	Korongocho Lucky Summer Total	
Not Applicable	18.5	11.1	9.1	11.2
<Ks2000	63.0	33.3	54.5	22.2
Ks 2000-5000	14.8	55.6	36.4	44.4
Over Ks 5000	3.7	0.0	0.0	22.2
Total	100.0	100.0	100.0	100.0
N	27	9	11	9

Monthly Expenditure on Fees

	Dandora	Kariobangi	Korongocho Lucky Summer Total		Row%	N
Not Applicable	68.0	16.0	4.0	12.0	100.0	44.6
<Ks2000	28.6	28.6	28.6	14.2	100.0	12.5
Ks 2000-5000	38.5	15.3	23.1	23.1	100.0	23.2
Over Ks 5000	27.3	9.1	45.5	18.1	100.0	19.7
						100.0
						56

Monthly Expenditure on Fees

	Dandora	Kariobangi	Korongocho Lucky Summer Total	
Not Applicable	63.0	44.4	9.1	33.3
<Ks2000	7.4	22.2	18.2	11.1
Ks 2000-5000	18.5	22.2	27.3	33.3
Over Ks 5000	11.1	11.2	45.4	22.3
Total	100.0	100.0	100.0	100.0
N	27	9	11	9

Housing and Household Assets
Ownership of House

	Dandora	Kariobangi	Korongocho Lucky Summer Total		Row%	N
Yes	71.4	0.0	28.6	0.0	100.0	12.5
No	44.9	18.4	18.4	18.4	100.1	87.5
						100.0
						56

Table 6	Dandora	Kariobangi	Korongoch	Lucky Summer	Total	Row	N
Ownership of House							
Yes	18.5	0.0	18.2	0.0			
No	81.5	100.0	81.8	100.0			
Total	100.0	100.0	100.0	100.0			
N	27	9	11	9			
Type of House						Row%	N
Temporary	37.4	18.8	43.8	0.0	100.0	28.6	16
Permanent	52.5	15.0	10.0	22.5	100.0	71.4	40
						100.0	56
Type of House							
Temporary	22.2	33.3	63.6	0.0			
Permanent	77.8	66.7	36.4	100.0			
Total	100.0	100.0	100.0	100.0			
N	27	9	11	9			
House Materials						Row%	N
Paper	100.0	0.0	0.0	0.0	100.0	3.6	2
Timber	37.5	25.0	37.5	0.0	100.0	14.3	8
Poles and Mud	22.3	33.3	44.4	0.0	100.0	16.1	9
Stones	54.1	10.8	10.8	24.3	100.0	66.1	37
N							56
House Materials							
Paper	7.4	0.0	0.0	0.0			
Timber	11.1	22.3	27.2	0.0			
Poles and Mud	7.4	33.3	36.4	0.0			
Stones	74.1	44.4	36.4	100.0			
Total	100.0	100.0	100.0	100.0			
N	27	9	11	9			
Type of Roof						Row%	N
Corrugated Iron	51.0	17.6	21.6	9.8	100.0	91.1	51
Bricks	0.0	0.0	0.0	100.0	100.0	7.1	4
Other	100.0	0.0	0.0	0.0	100.0	1.8	1
						100.0	56
Type of Roof							
Corrugated Iron	96.3	100.0	100.0	55.6			
Bricks	0.0	0.0	0.0	44.4			
Other	3.7	0.0	0.0	0.0			
Total	100.0	100.0	100.0	100.0			
N	27	9	11	9			
Shower						Row%	N
Yes	50	4.4	9.2	36.4	100	39.3	22
No	47.1	23.5	26.5	2.9	100.0	60.7	34
						100.0	56
Shower							
Yes	40.7	11.1	18.2	88.9			
No	59.3	88.9	81.8	11.1			
Total	100.0	100.0	100.0	100.0			
N	27	9	11	9			

Table 7	Dandora	Kariobangi	Korongocho	Lucky Summer	Total	Row	
Bath						Row%	N
Yes	50.0	21.4	10.7	17.9	100.0	50.0	28
No	46.4	10.7	28.6	14.3	100.0	50.0	28
							56
Bath							
Yes	51.9	66.7	27.3	55.6			
No	48.1	33.3	72.7	44.4			
Total	100.0	100.0	100.0	100.0			
N	27	9	11	9			
Toilet						Row%	N
Yes	46.2	15.4	21.1	17.3	100.0	92.9	52
No	75.0	25.0	0.0	0.0	100.0	7.1	4
						100.0	56
Toilet							
Yes	88.9	88.9	100.0	100.0			
No	11.1	11.1	0.0	0.0			
Total	100.0	100.0	100.0	100.0			
N	27	9	11	9			
Washbasin						Row%	N
Yes	55.6	11.1	11.1	22.2	100.0	16.1	9
No	46.8	17	21.3	14.9	100.0	83.9	47
							56
Washbasin							
Yes	18.5	11.1	9.1	22.2			
No	81.5	88.9	90.9	77.8			
Total	100.0	100.0	100.0	100.0			
N	27	9	11	9			
Household Assets							
Radio						Row%	N
Yes	50.0	15.2	17.4	17.4	100.0	82.1	46
No	40.0	20.0	30.0	10.0	100.0	17.9	10
						100.0	56
Radio							
Yes	85.2	77.8	72.7	88.9			
No	14.8	22.2	27.3	11.1			
Total	100.0	100.0	100.0	100.0			
N	27	9	11	9			
Telephone						Row%	N
Yes	0.0	50.0	0.0	50.0	100.0	3.6	2
No	50.0	14.8	20.4	14.8	100.0	96.4	54
						100.0	56
Telephone							
Yes	37.0	33.3	36.4	66.7			
No	63.0	66.7	63.6	33.3			
Total	100.0	100.0	100.0	100.0			
N	27	9	11	9			

Table 8	Dandora	Kariobangi	Korongochō	Lucky Summei	Total	Row	Row%	N
Bicycle								
Yes	14.3	14.3	57.1	14.3	100.0	12.5	7	
No	53.1	16.3	14.3	16.3	100.0	87.5	49	
						100.0	56	
Car								
Yes	0.0	0.0	0.0	0.0	0.0	0.0	0	
No	100.0	100.0	100.0	100.0	100.0	100.0	56	
	27	9	11	9				
Television								
Yes	43.5	13.0	17.4	26.1	100.0	41.1	23	
No	51.5	18.2	21.2	9.1	100.0	58.9	33	
						100.0	56	
Health status								
Health Facility Visits								
By Respondent						Row%	N=56	
None	87.5	0.0	12.5	0.0	100.0	14.3	8	
Once	41.7	25.0	8.3	25.0	100.0	21.4	12	
Twice	85.7	14.3	0.0	0.0	100.0	12.5	7	
More than twice	31.0	17.2	31.0	20.7	99.9	51.8	29	
						100.0	56	
Health Facility Visits								
By Respondent								
None	25.9	0	9.1	0				
Once	18.5	33.3	9.1	33.3				
Twice	22.3	11.1	0	0				
More than twice	33.3	55.6	81.8	66.7				
Total	100.0	100.0	100.0	100.0				
N	27	9	11	9				
Diagnosed Illness								
of Respondent						Row%	N	
Not applicable	100.0	0.0	0.0	0.0	100.0	10.7	6	
Malaria/Fever	51.9	18.5	18.5	11.1	100.0	48.2	27	
ARI/Cold/cough	0.0	0.0	100.0	0.0	100.0	5.4	3	
Typhoid	22.2	22.2	11.1	44.5	100.0	16.1	9	
Others	45.4	18.2	18.2	18.2	100.0	19.6	11	
						100.0	56	
Diagnosed Illness								
of Respondent								
Not applicable	22.2	0.0	0.0	0.0				
Malaria/Fever	51.9	55.6	45.5	33.3				
ARI/Cold/cough	0.0	0.0	27.3	0.0				
Typhoid	7.4	22.2	9.1	44.4				
Others	18.5	22.2	18.1	22.3				
Total	100.0	100.0	100.0	100.0				
N	27	9	11	9				
Health visits by								
children						Row%	N	
None	66.7	16.7	5.5	11.1	100.0	32.1	18	
Once	33.3	33.3	33.3	0.0	99.9	5.4	3	
Twice	40.0	40.0	0.0	20.0	100.0	8.9	5	
More than twice	40.0	10.0	30.0	20.0	100.0	53.6	30	
						100.0	56	

Table 9	Dandora	Kariobangi	Korongocho	Lucky Summer	Total	Row	
Health visits by children							
None	44.4	33.3	9.1	22.2			
Once	3.8	11.2	9.1	0.0			
Twice	7.4	22.2	0.0	11.1			
More than twice	44.4	33.3	81.8	66.7			
total	100.0	100.0	100.0	100.0			
N	27	9	11	9			
Diagnosed illness of Children						Row%	N
Not applicable	70.6	17.6	5.9	5.9	100.0	30.4	17
Malaria/Fever	32.2	14.3	32.1	21.4	100.0	50.0	28
ARI/Cold/cough	40.0	40.0	20.0	0.0	100.0	8.9	5
Typhoid	100.0	0.0	0.0	0.0	100.0	1.8	1
Others	60.0	0.0	0.0	40.0	100.0	8.9	5
						100.0	56
Diagnosed illness of Children							
Not applicable	44.4	33.3	9.1	11.1			
Malaria/Fever	33.3	44.4	81.9	66.7			
ARI/Cold/cough	7.4	22.3	9.0	0.0			
Typhoid	3.7	0.0	0.0	0.0			
Others	11.2	0.0	0.0	22.2			
Total	100.0	100.0	100.0	100.0			
N	27.0	9.0	11.0	9.0			
Health Facility Visits By Others						Row%	N
None	43.2	15.9	25.0	15.9	100.0	78.6	44
Once	50.0	0.0	0.0	50.0	100.0	3.6	2
Twice	100.0	0.0	0.0	0.0	100.0	3.6	2
More than twice	62.5	25.0	0.0	12.5	100.0	14.2	8
Health Facility Visits By Others							
None	70.4	77.8	100.0	77.8			
Once	3.7	0.0	0.0	11.1			
Twice	7.4	0.0	0.0	0.0			
More than twice	18.5	22.2	0.0	11.1			
Total	100.0	100.0	100.0	100.0			
N	27	9	11	9			
Diagnosed illness of Others						Row%	N
Not applicable	38.1	19.0	26.2	16.7	100.0	84.0	42
Malaria/Fever	57.1	14.3	0.0	28.6	100.0	14.0	7
Typhoid	100.0	0.0	0.0	0.0	100.0	2.0	1
						100.0	50

Table 10	Dandora	Kariobangi	Korongocho	Lucky Summer	Total	Row		
Diagnosed Illness of Others								
Not applicable	76.2	88.9	100.0	77.8				
Malaria/Fever	19.0	11.1	0.0	22.2				
Typhoid	4.8	0.0	0.0	0.0				
Total	100.0	100.0	100.0	100.0				
N	21	9	11	9				
Water Source						Row%	N	
Household Tap	52.8	16.7	8.3	22.2	100.0	64.3	36	
Public tap	31.3	18.8	43.8	6.3	100.2	28.6	16	
River	100.0	0.0	0.0	0.0	100.0	1.8	1	
Dam/Lake	0.0	0.0	100.0	0.0	100.0	1.8	1	
Others	100.0	0.0	0.0	0.0	100.0	3.5	2	
Water Source								
Household Tap	70.4	66.7	27.3	88.9				
Public tap	18.5	33.3	63.6	11.1				
River	3.7	0.0	0.0	0.0				
Dam/Lake	0.0	0.0	9.1	0.0				
Others	7.4	0.0	0.0	0.0				
Total	100.0	100.0	100.0	100.0				
N	27	9	11	9				
Sewage Disposal Methods						Row%	N	
NCC sewer	52.8	19.4	5.6	22.2	100.0	64.3	36	
Septic Tank	25.0	0.0	75.0	0.0	100.0	7.0	4	
Pit latrine	38.5	15.4	46.1	0.0	100.0	23.2	13	
Open ground	66.7	0.0	0.0	33.3	100.0	5.5	3	
						100.0	56	
Sewage Disposal Methods								
NCC sewer	70.4	77.8	18.2	88.8				
Septic Tank	3.7	0.0	27.3	0.0				
Pit latrine	18.5	22.2	54.5	0.0				
Open ground	7.4	0.0	0.0	11.2				
Total	100.0	100.0	100.0	100.0				
N								
Main Type of Pollution						Row%	N	
Air	51.1	8.9	22.2	17.8	100.0	80.4	45	
Water	0.0	100.0	0.0	0.0	100.0	3.6	2	
Noise	57.1	42.9	0.0	0.0	100.0	12.5	7	
Other	0.0	0.0	50.0	50.0	100.0	3.5	2	
						100.0	56	
Main Type of Pollution								
Air	85.2	44.4	90.9	88.9				
Water	0.0	22.2	0.0	0.0				
Noise	14.8	33.4	0.0	0.0				
Other	0.0	0.0	9.1	11.1				
Total	100.0	100.0	100.0	100.0				
N	27.0	9.0	11.0	9.0				

Table 11	Dandora	Karlobangi	Korongocholucky	Summer	Total	Row	Row%	N
Garbage disposal Methods								
NCC collection	40.0	40.0	0.0	20.0	100.0	8.9	5	5
Burning	60.0	0.0	40.0	0.0	100.0	8.9	5	5
Recycling	0.0	0.0	100.0	0.0	100.0	1.8	1	1
Compositing	0.0	0.0	50.0	50.0	100.0	10.7	6	6
Dumping open Groun	55.3	18.3	13.2	13.2	100.0	67.9	38	38
Private collector	100.0	0.0	0.0	0.0	100.0	1.8	1	1
								56
Garbage disposal Methods								
NCC collection	7.4	22.2	0.0	11.1				
Burning	11.1	0.0	18.2	0.0				
Recycling	0.0	0.0	9.1	0.0				
Compositing	0.0	0.0	27.3	33.3				
Dumping open Groun	77.8	77.8	45.4	55.6				
Private collector	3.7	0.0	0.0	0.0				
Total	100.0	100.0	100.0	100.0				
N	27	9	11	9				
Knowledge of Garbage Sites								
Yes	48.2	16.1	19.6	16.1	100.0	100.0	56	56
No	0.0	0.0	0.0	0.0	0.0	0.0	0	0
Sites Known in Nairobi								
Dandora	49.1	14.5	20.0	16.4	100.0	98.2	55.0	55.0
Others	0.0	100.0	0.0	0.0	100.0	1.8	1.0	1.0
Sites Known in Nairobi								
Dandora	100.0	88.9	100.0	100.0				
Others	0.0	11.1	0.0	0.0				
Total	100.0	100.0	100.0	100.0				
N	27	9	11	9				
Necessity of garbage disposal Site								
Not important	64.3	0.0	21.4	14.3	100.0	50.0	28	28
Important	25.0	25.0	25.0	25.0	100.0	14.3	8	8
Very important	35.0	35.0	15.0	15.0	100.0	35.7	20	20
Necessity of garbage disposal Site								
Not important	66.7	0.0	54.5	44.4				
Important	7.4	22.2	18.2	22.3				
Very important	25.9	77.8	27.3	33.3				
Total	100.0	100.0	100.0	100.0				
N	27	9	11	9				

Table 12	Dandora	Kariobangi	Korongoch	Lucky	Summer	Total	Row%	N
Should a new site be delineated for garbage disposal ?								
Yes	50.0	18.0	14.0	18.0	100.0	100.0	89.3	50
No	33.3	0.0	66.7	0.0	100.0	100.0	10.7	6
								56
Should a new site be delineated for garbage disposal ?								
Yes	92.6	100.0	63.6	100.0	100.0	100.0		
No	7.4	0.0	36.4	0.0	100.0	100.0		
Total	100.0	100.0	100.0	100.0	100.0	100.0		
N	27	9	11	9				
Cost of Garbage Disposal per year							Row% N	
Nothing	53.8	12.8	23.1	10.3	100.0	100.0	69.6	39
Less than Ks 500	16.7	33.3	16.7	33.3	100.0	100.0	10.7	6
Ks 500- 1000	60.0	0.0	0.0	40.0	100.0	100.0	8.9	5
Over Ks 1000	33.3	33.3	16.7	16.7	100.0	100.0	10.8	6
							100.0	56
Cost of Garbage Disposal per year								
Nothing	77.8	55.6	81.8	44.4	100.0	100.0		
Less than Ks 500	3.7	22.2	9.1	22.2	100.0	100.0		
Ks 500- 1000	11.1	0.0	0.0	22.2	100.0	100.0		
Over Ks 1000	7.4	22.2	9.1	11.2	100.0	100.0		
Total	100.0	100.0	100.0	100.0	100.0	100.0		
N	27	9	11	9				
Extent of environment degradation in NBI							Row% N	
Very much	48.0	18	22	12	100.0	100.0	89.2	50
Much	100.0	0.0	0.0	0.0	100.0	100.0	5.4	3
Very little	0.0	0.0	0.0	100.0	100.0	100.0	1.8	1
None	0.0	0.0	0.0	100.0	100.0	100.0	3.6	2
							100.0	56
Extent of environment degradation in NBI								
Very much	88.9	100.0	100.0	66.7	100.0	100.0		
Much	11.1	0.0	0.0	0.0	100.0	100.0		
Very little	0.0	0.0	0.0	11.1	100.0	100.0		
None	0.0	0.0	0.0	22.2	100.0	100.0		
Total	100.0	100.0	100.0	100.0	100.0	100.0		
N	27	9	11	9				
Status of sanitation in Nairobi							Row% N	
Good	25.0	50.0	0.0	25.0	100.0	100.0	7.2	4
Fair	63.6	18.2	18.2	0.0	100.0	100.0	19.6	11
Poor	46.3	12.2	22.0	19.5	100.0	100.0	73.2	41
							100.0	56

Table 13 Dandora Kariobangi Korongocho Lucky Summer Total Row
Status of sanitation in Nairobi

Good	3.7	22.2	0.0	11.1
Fair	25.9	22.2	18.2	0.0
Poor	70.4	55.6	81.8	88.9
Total	100.0	100.0	100.0	100.0
N	27	9	11	9

Sanitation status in Estate

					Row% N		
Good	33.3	66.7	0.0	0.0	100.0	5.4	3
Fair	50.0	7.1	21.4	21.5	100.0	25.0	14
Poor	48.7	15.4	20.5	15.4	100.0	69.6	39
							56

Sanitation status in Estate

Good	3.7	22.2	0.0	0.0
Fair	25.9	11.1	27.3	33.3
Poor	70.4	66.7	72.7	66.7
Total	100.0	100.0	100.0	100.0
N	27	9	11	9

Proposals to Improve sanitation in Estate

					Row% N		
Drainage Maintenance	61.5	23.1	7.7	7.7	100.0	46.4	26
Private collection	60.0	20.0	20.0	0.0	100.0	8.9	5
Awareness on Sanit	14.3	14.3	28.6	42.8	100.0	12.5	7
Recycle garbage	60.0	20.0	0.0	20.0	100.0	8.9	5
NCC Bin Provision	0.0	0.0	50.0	50.0	100.0	10.7	6
Not stated	100.0	0.0	0.0	0.0	100.0	1.8	1
Rubbish Pit	0.0	0.0	100.0	0.0	100.0	5.4	3
No Proposal	100.0	0.0	0.0	0.0	100.0	3.6	2
Construct latrine	100.0	0.0	0.0	0.0	100.0	1.8	1
						100.0	56

Proposals to Improve sanitation in Estate

Drainage Maintenance	59.3	66.7	18.2	22.3
Private collection	11.1	11.1	9.0	0.0
Awareness on Sanit	3.7	11.1	18.2	33.3
Recycle garbage	11.1	11.1	0.0	11.1
NCC Bin Provision	0.0	0.0	27.3	33.3
Not stated	3.7	0.0	0.0	0.0
Rubbish Pit	0.0	0.0	27.3	0.0
No Proposal	7.4	0.0	0.0	0.0
Construct latrine	3.7	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0
N	27	9.0	11.0	9.0

Table 14	Dandora	Karlobangi	Korongoch	Lucky Summer	Total	Row	Row% N	
Aware of solid waste Management in NBI								
Yes	53.8	12.8	20.5	12.9	100.0	69.6	39	
No	35.3	23.5	17.7	23.5	100.0	30.4	17	
Aware of solid waste Management in NBI								
Yes	77.8	55.6	72.7	55.6				
No	22.2	44.4	27.3	44.4				
Total	100.0	100.0	100.0	100.0				
N	27	9	11	9				
Willingness to pay If NCC improves servc								
Yes	48.7	17.1	17.1	17.1	100.0	73.2	41	
No	46.7	13.3	26.7	13.3	100.0	26.8	15	
Willingness to pay If NCC improves servc								
Yes	74.1	77.8	63.6	77.8				
No	25.9	22.2	36.4	22.2				
Total	100.0	100.0	100.0	100.0				
N	27	9	11	9				
If yes how much ?								
Zero	53.3	13	27	7	100.0	26.8	15	
Ks 1-49	36.4	0	36.4	27.3	100.1	19.6	11	
Ks 50-99	60.0	0	40	0	100.0	8.9	5	
Ks 100-299	57.1	23.8	4.8	14.3	100.0	37.5	21	
Ks 300-499	0.0	0.0	0.0	0.0	0.0	0.0	0	
Ks 500 +	0.0	50.0	0.0	50.0	100.0	7.1	4	
If yes how much ?								
Zero	29.7	22.2	36.4	11.1				
Ks 1-49	14.8	0	36.4	33.3				
Ks 50-99	11.1	0	18.2	0				
Ks 100-299	44.4	55.6	9.0	33.3				
Ks 300-499	0.0	0.0	0.0	0.0				
Ks 500 +	0.0	22.2	0.0	22.3				
Total	100.0	100.0	100.0	100.0				
N	27	9	11	9				
IF No Reasons								
Not stated	0.0	0.0	100.0	0.0	100.0	5.5	3	
Paying service charg	40.0	40.0	20.0	0.0	100.0	9.1	5	
NCC mismanagt	40.0	0.0	40.0	20.0	100.0	9.1	5	
No income	54.8	16.7	11.8	16.7	100.0	76.4	41	
							54	
IF No Reasons								
Not stated	0.0	0.0	27.3	0.0				
Paying service charg	7.4	22.2	9.1	0.0				
NCC mismanagt	7.4	0.0	18.2	12.5				
No income	85.2	77.8	45.4	87.5				
Total	100.0	100.0	100.0	100.0				
N	27	9	11	8				

Table 15	Dandora	Kariobangi	Korongocho	Lucky	Summei	Total	Row	
Ever advised on methods of domestic waste disposal?							Row%	N
Yes	15.0	15.0	55.0	15.0	100.0	35.7		20
No	66.6	16.7	0.0	16.7	100.0	64.3		36
								56
Ever advised on methods of domestic waste disposal?								
Yes	11.1	33.3	100.0	33.3				
No	88.9	66.7	0.0	66.7				
Total	100.0	100.0	100.0	100.0				
N	27	9	11	9				
If yes who advises							Row%	N
Not stated	70.6	18	0	12	100.0	61.8		34
Collection REP	0.0	0.0	100.0	0.0	100.0	3.6		2
Others	17.6	17.6	35.4	29.4	100.0	30.9		17
Health Officers	0.0	0.0	100.0	0.0	100.0	1.8		1
Teacher	0.0	0.0	100.0	0.0	100.0	1.8		1
						100.0		55
If yes who advises								
Not stated	88.9	66.7	0.0	44.4				
Collection REP	0.0	0.0	20.0	0.0				
Others	11.1	33.3	60.0	55.6				
Health Officers	0.0	0.0	10.0	0.0				
Teacher	0.0	0.0	10.0	0.0				
Total	100.0	100.0	100.0	100.0				
N	27	9	10	9				
Aware of health health hazards due to poor disposal							Row%	N
Yes	48.1	17.3	21.2	13.4	100.0	92.9		52
No	50.0	0.0	0.0	50.0	100.0	7.1		4
						100.0		56
Aware of health health hazards due to poor disposal								
Yes	92.6	100	100	77.8				
No	7.4	0	0	22.2				
Total	100.0	100.0	100.0	100.0				
N	27	9	11	9				
Knowledge of Health hazards							Row%	N
Typhoid	75.0	25.0	0.0	0.0	100.0	7.1		4
Cholera	58.3	25.1	8.3	8.3	100.0	21.4		12
Malaria	30.8	7.7	46.2	15.3	100.0	23.2		13
Dysentery	0.0	33.4	33.3	33.3	100.0	5.4		3
Respiratory Infection	100.0	0.0	0.0	0.0	100.0	1.8		1
Not stated	50.0	0.0	50.0	0.0	100.0	3.6		2
Others	52.4	14.3	9.5	23.8	100.0	37.5		21
						100.0		56

Table 16	Dandora	Karlobangi	Korongoch	Lucky Summer	Total	Row	
Health hazards							
Known							
Typhoid	11.1	11.1	0.0	0.0			
Cholera	25.9	33.3	9.1	11.1			
Malaria	14.8	11.1	54.5	22.2			
Dysentery	0.0	11.1	9.1	11.1			
Respiratory Infection	3.7	0.0	0.0	0.0			
Not stated	3.7	0.0	9.1	0.0			
Others	40.8	33.3	18.2	55.6			
Total	100.0	99.9	100.0	100.0			
N	27	9	11	9			
Suggested Actions to keep surrounding Clean							
						Row% N=56	
Not stated	0.0	0.0	50.0	50.0	100.0	3.6	2
Regular Clean ups	53.3	20.1	13.3	13.3	100.0	26.8	15
Form Associations	66.7	16.7	8.3	8.3	100.0	21.4	12
Safe disposal metho.	31.6	21.1	26.3	21.0	100.0	33.9	19
Creating awareness	50.0	0.0	50.0	0.0	100.0	3.6	2
Recycling	60.0	0.0	20.0	20.0	100.0	8.9	5
Personal Cleanliness	100.0	0.0	0.0	0.0	100.0	1.8	1
						100.0	56
Suggested Actions to keep surrounding Clean							
Not stated	0.0	0.0	9.1	11.1			
Regular Clean ups	29.6	33.3	18.2	22.3			
Form Associations	29.6	22.2	9.1	11.1			
Safe disposal metho.	22.2	44.5	45.4	44.4			
Creating awareness	3.7	0.0	9.1	0.0			
Recycling	11.1	0.0	9.1	11.1			
Personal Cleanliness	3.8	0.0	0.0	0.0			
Total	100.0	100.0	100.0	100.0			
N	27	9	11	9			
Are clean up days held in your area?							
						Row% N	
Yes	30.0	5.0	45.0	20.0	100.0	35.7	20
No	56.3	25.0	3.1	15.6	100.0	57.1	32
Don't Know	75.0	0.0	25.0	0.0	100.0	7.2	4
						100.0	56
Are clean up days held in your area?							
Yes	22.2	11.1	81.8	44.4			
No	66.7	88.9	9.1	55.6			
Don't Know	11.1	0.0	9.1	0.0			
Total	100.0	100.0	100.0	100.0			
N	27	9.0	11.0	9.0			
If yes do you participate ?							
						Row% N	
Yes	11.8	5.9	52.9	29.4	100.0	30.4	17
No	64.1	20.5	5.1	10.3	100.0	69.6	39
						100.0	56

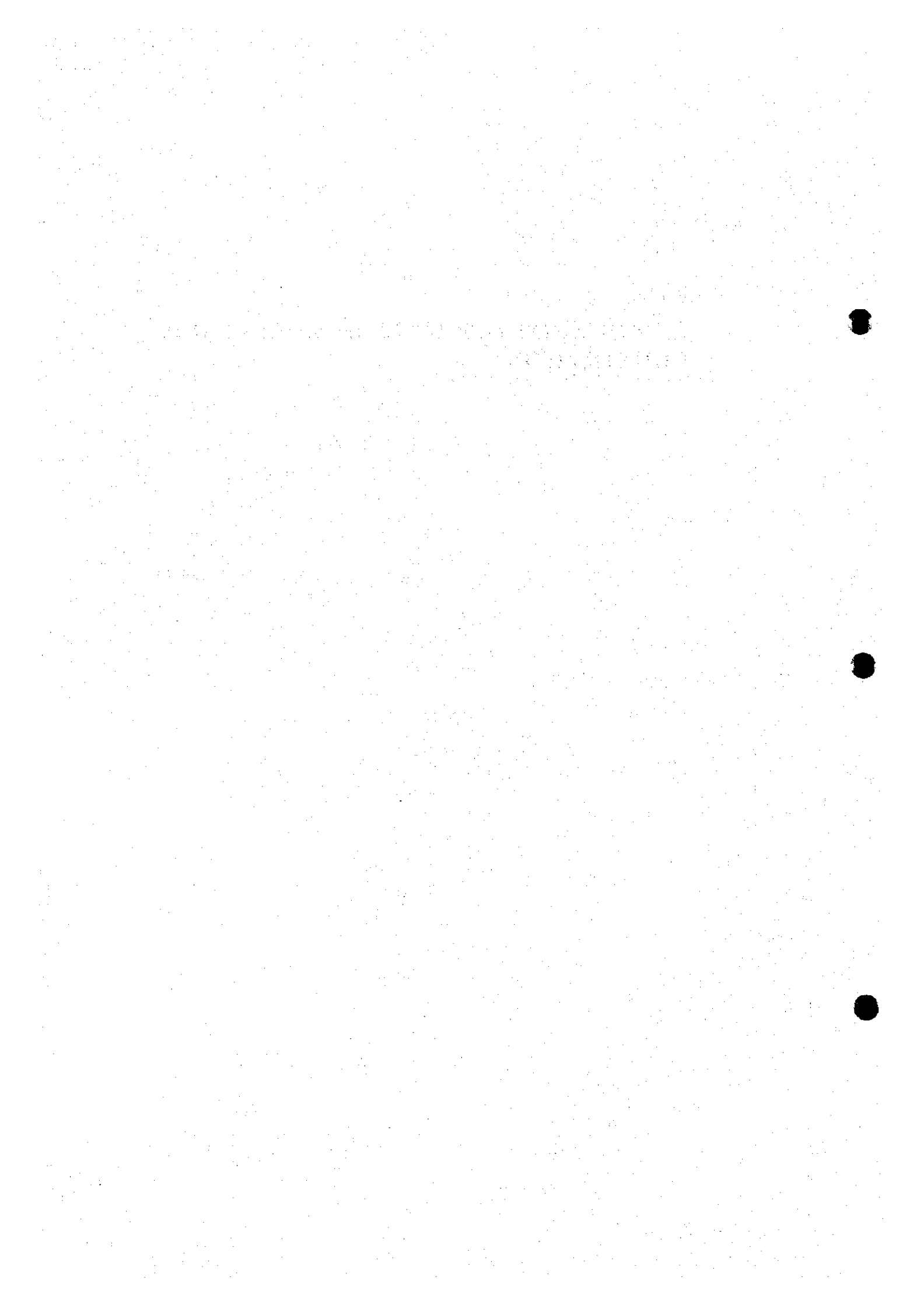
Table 17	Dandora	Kariobangi	Korongoch	Lucky Summer	Total	Row%		Row
If yes do you participate								
Yes	7.4	11.1	81.8	55.6				
No	92.6	88.9	18.2	44.4				
Total	100.0	100.0	100.0	100.0				
N	27	9.0	11.0	9.0				
Who organises clean up days								
Not stated	64.7	23.5	0.0	11.8	100.0	60.7	34	
Housing Department	0.0	0.0	100.0	0.0	100.0	3.6	2	
Estate Management	33.3	16.7	0.0	50.0	100.0	10.7	6	
Others	100.0	0.0	0.0	0.0	100.0	1.8	1	
Don't Know	15.4	0.0	69.2	15.4	100.0	23.2	13	
						100.0	56	
Who organises clean up days								
Not stated	81.5	88.9	0.0	44.4				
Housing Department	0.0	0.0	18.2	0.0				
Estate Management	7.4	11.1	0.0	33.4				
Others	3.7	0.0	0.0	0.0				
Don't Know	7.4	0.0	81.8	22.2				
Total	100.0	100.0	100.0	100.0				
N	27	9.0	11.0	9.0				
Reasons for not Participating in clean up days								
Not applicable	44.2	17.3	21.2	17.3	100.0	94.5	52	
Not informed	100.0	0.0	0.0	0.0	100.0	1.9	1	
Not interested	100.0	0.0	0.0	0.0	100.0	3.6	2	
						100	55	
Reasons for not Participating in clean up days								
Not applicable	88.5	100.0	100.0	100.0				
Not informed	3.8	0.0	0.0	0.0				
Not interested	7.7	0.0	0.0	0.0				
Total	100.0	100.0	100.0	100.0				
N	26	9	11	9				

DATA BOOK 7

**WASTE REDUCTION, RECYCLING AND
INTERMEDIATE TREATMENT**

7.1

**LIST OF NGO'S OPERATED IN NAIROBI AND
COUNTRYWIDE**



7.1 List of NGO's Operated in Nairobi and Countrywide

No.	Name of NGO	Postal Address	Telephone No.	Sector of Operation	Area of Operation
1	Action Aid Kenya	442200	440440/449	Education, Water, Religion	Countrywide
2	Action Nord Sud	76375	440445	Health, Water, Relief, Informal Sector	Regional office
3	Adventist Development and Relief Agency, South Sudan	14756	443936	Health, Relief, Environment, Education, Water	Lokichogio, Kakamega, Kwale, Nairobi
4	Africa Alliance of YMCAs	60856	722974/ 724804	Voluntary Social Service Agency	Countrywide
5	African Alliance For The Less Privileged	10312	211413/ 211536	Welfare, Health, Informal Sector, Water, Education	Nairobi, Riftvalley, Western Province
6	African Association for Literacy and Adult Education	50768	331512/ 222391	Environment, Education	Countrywide
7	African Centre for communication and Development	26190	218043	Education, Population, Water	Nairobi, Riftvalley, Western Province
8	African Centre for Environmental Studies	32067	441242	Environment	Countrywide
9	African Centre for Technology Studies	45917	741651/ 744047	Policy studies	Nairobi, Bunyore, Turkana, Samburu, Busia
10	African Community Development Centre	50258	230711	Welfare, Health, Informal Sector, Environment, Education, Water	Countrywide
11	African Council for Communication Education	47495	227043/ 216135/ 215270	Communication Research	Nairobi & 25 other countries
12	African Development for Aids Association	12836		Health, Relief, Agriculture, Environment, Education	Nairobi
13	African Development Initiatives Network (ADIN)	67391	213446/ 554272	Regional	Nairobi
14	African Education Fund (AEF)	76310	566896	Health, Relief, Education, Environment	Nairobi, Garissa, Mandera
15	African Film and Arts Network (AFAN)	29899	714231	Arts	Countrywide
16	African Forum for Health Sciences	54840	110186	Health	Countrywide
17	African foundation Programme	14395	223368	Welfare	Nairobi
18	African Network for the Pervention and Protection Against Child Abuse and Neglet (AFRICAN CHAPTER)	71420	717549	Child rights	Countrywide
19	African Network for the Prevention and Protection Against Child Abuse and Neglet (KENYA CHAPTER)	46516	225820	Advocacy on Child rights	Nairobi
20	African Refugee Training and Employment Service	30853	217509/ 220624	Charitable Trust	Nairobi
21	African Regional Centre for Computing	54911	214912	Education	Nairobi
22	African Rehabilitation and Education Programme -AREP	67391	542694/ 554272	Education	Nairobi
23	African Research Utilisation Network Kenya	43864	224628/ 667 674	Welfare, Health, Relief, Informal Sector, Environment, Education, Population, Water	Countrywide
24	African Upkeep Services	67898		Relief, Environment, Population	Countrywide
25	African Vineyard	76589	552506	Agriculture, Economic development	countrywide
26	African Water Network	10538	556943	Water	Countrywide
27	African Wildlife Foundation	48177	710367	Environment	Countrywide
28	African Women Development and Communication Networks (FEMNET)	54562	440299	Health, Relief, Education, Environment	Nairobi
29	Afriserve	59163	718978	Multi-sectoral	Countrywide
30	Aid Orphans Support Organisation of Kenya	76618	786951	Welfare, Relief, Education	Countrywide
31	Alcohol and drug Abuse Prevention and Therapeutic Services (ADAPT)	68015	340726	Welfare, Education	Countrywide
32	Al-Haraman-Islamic foundation	26478	559226	Welfare, Health, Relief, Education and water	Countrywide
33	Al-Muntada Al-Islam Trust	13241	760981	Relief, Education, (Religious), Welfare	Countrywide
34	Alliance for communication and Development	52920	447741	Development, Communication, Informal Sector, Education Training	countrywide
35	Amari Counseling Society	41738	442294	Health, Education	Nairobi
36	Amda International Kenya	50572	568850	Health	Countrywide
37	American Refugee committee	39694	448477	Health	Nairobi, somalia
38	Ananda Marga Universal Relief Team (AMURT)	70302	631311	Welfare, Relief, Health, Environment, Education	Nairobi, Mombasa, Nakuru
39	Appropriate Technologies for Enterprise Creation (APPTOEC)	10973	787330/ 787381	Relief, Informal Sector, Education	Countrywide
40	Association for African Women For Research and Development	49170	719526	Welfare, Health, Education, Research	Countrywide

Data Book 7

No.	Name of NGO	Postal Address	Telephone No.	Sector of Operation	Area of Operation
41	Association for Better Land Husbandry	39042		Agriculture, Environment	Countrywide
42	Association for Education and Development	46973	503050	Welfare, Relief, Education, Environment	Countrywide
43	Association of Christian Resource Organisations Serving Sudan	21033	723580	Welfare, Health, Relief	Nairobi
44	Association For voluntary Surgical Contraception (AVSC)	57964	44022/ 445373	Population	countrywide
45	Barnabas Kenya Project	56634	505054	Welfare	Nairobi
46	Bellerive Technology	42194	720074/ 716192	Environment, Education	Countrywide
47	Better Life for Children and Youth	34813	712226	Environment, Education	Nairobi
48	Bread for children - Kenya	23576		Welfare, Education	Nairobi, Kajiado, Isiolo
49	British Institute In Eastern Africa	30710	443303/ 440170	Archaeology, Historical Research	Countrywide
50	Centre For Advancement of women And Children	43950	224973	Population, Water, Informal Sector	Countrywide
51	Centre For Aquatic Bio System And Resource Utilisation (CABRU)	22393	216494	Water, Environment	Countrywide
52	Centre for Education, Population, Environment and Development	67227	803695	Environment, Education, Population	Countrywide
53	Centre for Entrepreneurship Development and Gender Issues	26920		Education, Population, Informal Sector	Countrywide
54	Centre for Humanitarian Assistance And Social Teaching	26592		Multi-sectoral	Countrywide
55	Centre of Indigenous Knowledge Systems and By-Products	66344	335380/ 330788	Research, Training	Nairobi, Western Province, Coast Province
56	Centre For Law and Research International (CLARION)	46991	47088/ 571614	Education	Countrywide
57	Cheshire Homes	42358	724107	Health, Welfare	Nairobi, Kiambu
58	Children's Mercy fund	48493	741428	Welfare, Health, Relief, Education and water	Nairobi
59	children's Relief fund	30611	227720/ 330427	Welfare, Health, Relief, Education and water	Countrywide
60	African Broadcasting Network	69310	230876	Education, Communication	Countrywide
61	Christian Hostels Fellowship	72636		Welfare, Christian Religion	Countrywide
62	Christian Reformed World Relief committee - Kenya	14205	442658/ 445828/ 29	Relief	Countrywide
63	Church world Service and Witness	14176	442204	Relief	Countrywide
64	Christ Unlimited Mission	34041	445874/ 6	Welfare, Education	Nairobi, Central Province, Coast Province
65	Clean Water Alliance	28041	603373/ 602961	Water, Environment	Countrywide
66	Climate Network Africa (CNA)	75406	729447	Environment	Countrywide
67	Cognitive Education	68308	788971	Education	Countrywide
68	Cohort For Research On Environment, Urban Management And Human Settlement (CREUHMS)	48974	714467/ 718293	Welfare, Relief, Health, Water, Education, Environment	Countrywide
69	Collaborative Centre for Gender and Development	28411	714595	Education	Countrywide
70	Community Essential Drugs Initiative Support For Africa	74528	226455	Multi-sectoral	Countrywide
71	Consumer Network of Kenya	47546	567697	Consumer's Movement	Countrywide
72	Crescent Medical Aid Kenya	33041	220811/ 332618	Health, Welfare, Relief	Nairobi, Mombasa
73	Cultural Youth International	53542	332383/ 332766	Multi-sectoral	Countrywide
74	Development Alternative Network	47598	506628	Environment	Countrywide
75	Development Horizons Trust	58933	543745/ 502941	Research	Countrywide
76	Direct Aid International	31422 or 4648 Thika	31614, Thika	Education, Population, Water, Welfare, Relief, Informal Sector, Environment	Nairobi, Kajiado, Kiambu, Kibifi, Mandera, Marsabit, Lamu, Wajir, Kisumu
77	Disabled Child Monitor	45466	530601	Welfare	Nairobi, Kiambu, Kirinyaga, Murang'a, Nyeri
78	Eastern African Development Services	76046	726258/ 714246	Health, Relief, Water	Nairobi
79	East African Heart Centre	20723	891593	Health	Nairobi
80	Eastern African Rural Reconstitution Association	14205	448148	Environment	Countrywide

No.	Name of NGO	Postal Address	Telephone No.	Sector of Operation	Area of Operation
81	East African Wildlife Society	20110	748170/1-3	Environment	Countrywide
82	Education Centre for Women in Democracy	62714	562304	Education	Countrywide
83	Entrepreneurship Development Centre	59527	219127	Informal Centre, Education	Nairobi, Rift Valley
84	Energy and Environment Management Research Institute	17993	564985	Multi-sector	Nairobi
85	Environmental Concern	44532	212704/226344	Health, Environment	Countrywide
86	Episcopal Refugee Services	45250	715949	Welfare, Health, Relief, Education and water	Nairobi, Bomet, Nakuru, Kericho, Baringo
87	Equipe D'urgence De la Biodiversite	59151	729709	Welfare, Health, Relief, Informal, Environment, Education	Nairobi
88	Family Care International	45763	717980	Health	Nairobi, Turkana, Thika, Garissa
89	Family Life Counselling Association of Kenya	18077	555977	Welfare, Health, Education, Population, Environment	Nairobi, Kiambu, Maranga, Kirinyaga, Nakuru, Kericho, Embu, Kitui, Turkana, Tharaka-Nithi
90	Family Life Promotion and Services	19608	339087	Health, Informal sector, Education, Population, Environment	Nairobi, Kisumu, Kilifi, Mombasa
91	Family Health Action Network	9063		Health, Environment, Population	Nairobi
92	Family Health Foundation of Kenya	43609	718710/ 716829	Welfare, Health, Population	Nairobi
93	Family Health International	38835, Nakuru	566832/ 444922/ 445373	Population	Nairobi, Eldoret, Nyeri
94	Family Planning Association of Kenya	30581	215676/ 7/ 8/ 9	Population	Countrywide
95	Family Planning International Assistance	53538	336678/336315/336328	Health, Population	Countrywide
96	Food for the Hungry International	14978	441789/ 441790	Welfare, Health, Relief, Informal Sector, Environment, Education, Population, Water	Nairobi, Marsabit, Garissa
97	Forum for African Women Educationalist	53168	330352	Education	Countrywide
98	Foundation for Research in Children's Diseases	43950	224973	Health	Nairobi, Kisii, Busia
99	Foundation for Sustainable Development in Africa	14349		Environment, Agriculture	Countrywide
100	Foundation for Woodstove Dissemination	30979	566632	Environmental	Nairobi
101	Friends Charitable Organisation	79569	340880/7/230102	Welfare	Nairobi
102	Friends in the West International	9164	569458	Welfare, Relief, Education, Population, Water	Nairobi, Machakos
103	Friends of the Earth Awareness (Kenya)	327, Ol Kalou		Environment	Countrywide
104	Friends Society for Kenya Children in Japan	60364	227694/ 335444	Relief	Countrywide
105	Full Gospel Churches of Kenya Development Projects	5, Koru	0341 - 51258	Education, Population, Water	Nairobi, Marsabit, Garissa
106	Gender and Development Centre	1588, Kisumu	22291 (035)	Health, Informal Sector, Education, Environment	Countrywide
107	Gender, Environment and Sustainable Development	28115	443303/ 440170	Informal Sector, Welfare, Health, Environment, Education, Population, Water	Countrywide
108	German Agro Action	30762	441812/3	Relief, Environment	Nairobi, Rift Valley, Laikipia
109	Global Village Kenya Organisation	557, Webuye or 70852		Multi-Sectoral	Nairobi, Kakamega, Vihiga, Uasin-Gishu, Turkana
110	Good Hope Rwanda	45250	210237/ 721252	Health, Relief, Education	Nairobi
111	Goal Ireland	39991	567668	Health, Relief	Nairobi
112	Grace Bursary Services Kenya	172, Ol Kalou		Education, Health	Countrywide
113	Green Belt Movement	67545	504264	Environment, Development	Countrywide
114	Guru Nanak Kirtan Mission	48471	223625	Health, Relief	Countrywide
115	Health Management Agency (HELMA)	20841	241458	Health	Nairobi
116	Help Child Mother Organisation	61547		Welfare, Relief, Education, Population	Nairobi, Nakuru, Kisumu
117	Help Self Help Centre	8594	441359	Education, Environment, Participatory Training	Nairobi, Nyeri, Education, Population
118	Hisan W E P A	39276	444466	Education	Nairobi
119	Homeless Children International (Kenya)	45364	726513/5	Welfare	Countrywide
120	Horn of Africa Relief and Development Organisation, Inc	40037	722754	Welfare, Health, Education, Water, Relief, Environment, Population, Informal Sector	Nationwide

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No.	Name of NGO	Postal Address	Telephone No.	Sector of Operation	Area of Operation
121	Helpage Kenya	34339		Welfare, Health, Relief, Water, Education	Countrywide
122	Ibrahim Bin Abdul Aziz Al Ibrahim Foundation	396870	740220/ 742499	Relief	Nairobi, Kakamega, Lamu, Nakuru, Mombasa, Meru, Kisumu
123	Improve your Business Kenya	40304	220283/ 220284	Informal Sector, Welfare, Health, Environment, Education, Population, Water	Countrywide
124	Informal Research and Communication Centre (IRACC)	52183	221552/ 340799	Social Research	Countrywide
125	Innovative Communications Systems	30165	445615	Health, Education, Population	Countrywide
126	Inter-College Environmental Development and coordination Network	34115	338231 Ext 215	Environment	Countrywide
127	Intermediate Technology Development Group	39493	446243/ 412108/ 444000	Agriculture, Transport, Funding, Advise, Training, Housing, Energy	Countrywide
128	Institute for Reproductive Health Training and Research	21024	565073	Informal Sector, Health, Education, Population	Countrywide
129	Integrating Programme for Health and Development	12707		Health, Relief, Water, Education, Population, Environment	Countrywide
130	Integrating Rural and Urban Community Rebuilders	24294	560160	Multi Sectoral	Nairobi
131	International Federation of Women Lawyers	46324	717169	Education, Legal Aid	Nairobi
132	International Centre for Environment social and Policy Studies	79246	246586/ 782655	Environment	Countrywide
133	International Bible Society E.A	60595	722335/ 722916	Religious	Countrywide
134	International Foundation for Education and Self Help	49076	339510	Education	Countrywide
135	International Institute of Rural Reconstruction	14205	443143	Health, Education, Environment	Countrywide
136	International Islamic Relief	52871	714744	Relief, Health, Welfare	Nairobi, Mombasa, Isiolo, Nandi, Wajir, Moyale
137	International Medical Corps	74381	562939	Health, Emergency, Medical, Relief, Training	Nairobi, Somalia
138	International Relief and Rehabilitation Education Services	19420	565738/ 567485	Relief, Education, Religious, Welfare	Countrywide
139	International Rescue Committee Inc	62727	567511/ 569013/ 564557	Relief	Countrywide
140	International Service Volunteers Association	53772	810959		Nairobi
141	Intra-Anglophone Regional Office	55699	211820/ 1, 229670	Health, Population	Meru, Nairobi, Nakuru
142	Islamic African Relief Agency	19524	214882	Welfare, Health, Relief, Education, Water, Informal Sector, Environment	Countrywide
143	IVREA Group Kenya	14560	802240	Health, Water, Education	Countrywide
144	Joint Relief and Rehabilitation Services	39006	221655	Health, Relief, Informal Sector, Water, Education	Countrywide
145	Juhudi Credit Scheme	39312	722972	Informal Sector	Nairobi, Nyeri, Uasin Gishu
146	Kariobangi Development Agency of Kenya	61933	793838	Welfare, Health, Informal Sector, Environment, Education, Population, Water	Nairobi, Kakamega
147	Katoto maternal and Child Welfare Organisation	25107	334244 ext 28364	Welfare, Education, Health, Informal Sector, Environment, Population, Water	Nairobi, Kisumu, Kilifi, Mombasa
148	Kenya Adult Education Association	56708	712003/ 4	Education	Countrywide
149	Kenya Adult Learners Association	19343	718894	Religious	Countrywide
150	Kenya Aids Primary Prevention Society	57602	780583	Health	Nairobi
151	Kenya Africa Anti-drugs and Narcotics Organisation (KAANDO)	70750	221853/ 216243	Welfare, Health	Countrywide
152	Kenya Anti-rape Organisation	52484	561589	Welfare, Women's rights	Countrywide
153	Kenya Association for the Intellectually Handicapped	43751	254-2-693212	Welfare	Countrywide
154	Kenya Association of Professional Counsellors	55472	562616	Welfare	Nairobi
155	Kenya Association of Youth Organisation	60626	217510	Welfare, Environment, Education, Informal Sector	Countrywide
156	Kenya Book foundation	75610	220268	Education	Countrywide
157	Kenya Children's Fund Trust	21100	785207	Welfare, Relief, Education	Countrywide
158	Kenya Christian Industrial Training Institute (KCITI)	71083	766805	Health, Education	Nairobi, Machakos, Kisumu
159	Kenya Consumers Organisation	21136	226028	Welfare, Education, Water, Nation Consumers Affairs	Countrywide
160	Kenya Ear Foundation	43774	226253/ 229832	Health, Environment	Countrywide

No.	Name of NGO	Postal Address	Telephone No.	Sector of Operation	Area of Operation
161	Kenya Family Development Association	77872	217427	Welfare, Environment, Education, Health, Informal Sector, Population	Nairobi
162	Kenya Gatsby Charitable Trust	47089	212088	Informal Sector	Countrywide
163	Kenya Handicrafts Improvement Organisation	589, Karatina		Informal Sector	Countrywide
164	Kenya Human Rights Commission	55235	346592	Human Rights Promotion	Nairobi
165	Kenya Management Assistant Programme (K-MAP)	594100	220590	Management Training, Counselling	Nairobi
166	Kenya Medical Women's Association	49877	560813	Welfare, Health, Education	Countrywide
167	Kenya Mission of World Presbyterian Missions Inc	43489	521255	Health, Relief, Education, Population, Water	Nairobi, Kitui
168	Kenya Muslim Charitable Trust	8531	766965	Welfare	Countrywide
169	Kenya One World Linking Forum	220270	221451	Community Development	Countrywide
170	Kenya Organised Women Association	679, Mombasa	224189	Welfare, Relief, Education, Population, Water, Informal Sector	Countrywide
171	Kenya Peace Association Ministry	79115		Multi-sectoral	Countrywide
172	Kenya Rural Enterprise Programme	39312	718301/2	Informal Sector, Research, Training	Trans Nzoia, Countrywide
173	Kenya Society for the Protection and care of Animals	24203	882565	Welfare, Animals	Countrywide
174	Kenya Street Children's Organisation	8061	225163/334506	Education, Health, Welfare, Relief	Countrywide
175	Kenya Tenri Society (Tenrikyo Mission)	1742, Meru	0164 - 39930	Welfare, Health, Culture	Nairobi
176	Kenya Tourism Concern	73968	793495	Welfare	Nairobi
177	Kenya Tourism Foundation	59882	221302	Tourism	Countrywide
178	Kenya National Council on Traditional Practices	61501	503781	Welfare	Countrywide
179	Kenya Volunteer Development Services	2280, Kakamega		Health, Water, Informal Sector, Environment, Population, Health	Countrywide
180	Kenya Women Finance Trust	55919	712823	Informal Sector	Nairobi, Kwale, Kilifi
181	Kenya Young Men's Christian Association	30330	724116/7	Welfare, Health, Water, Informal Sector, Education	Countrywide
182	Kenya Youth and Habitat Organisation	54161		Welfare, Health, Relief, Environment, Education, Water, Informal Sector	Countrywide
183	Ken-Africa Charitable Organisation	42004	724244	Welfare, Relief	Nairobi, Trans Nzoia
184	Kibera Community Self-Help Programmes Kenya	49531	560007/749144	Health, Relief, Education	Nairobi
185	Kibera Human Development Projects (CPK)	21202	59290	Welfare, Health, Relief, Population, Education, Environment	Nairobi
186	Kireti Women Organisation (KWO)	75670		Welfare, Education, Water, Environment, Informal Sector	Nairobi, Lamu, Kilifi, Mombasa, Taita-Taveta
187	Koo Rural Development Agency	302, Chavakali	0333 - 20271	Multi-Sectoral	Countrywide
188	Kommunalaktion Organisation for Development Assistance	48974	714467	Welfare	Narok, Countrywide
189	Language Recordings International Kenya	21244	560023	Education, Informal Sector	Countrywide
190	Legal Advice Centre	7483	751865/751633	Legal Aid, Education	Countrywide
191	Life Boat Foundation	73673	891030	Welfare	Countrywide
192	Life-Flite (Kenya)	46406	743310	Health, Relief	Nairobi
193	Limuru girls Centre	720, Kiambu	805916	Education	Nairobi
194	Linda Kenya	59004	215089	Multi-sectoral	Nairobi, Machakos
195	Literacy and Evangelical Fellowship	25151	722570/724317	Education, Development of Bible content and Adult Literacy Primers	Nationwide
196	Love International Kenya	55578	860073	Welfare, Education	Countrywide
197	Lutheran World Relief	14205	447611/441643	Welfare, Health, Relief, Water, Informal Sector, Environment, Population, Education	Nationwide
198	Maendeleo ya Wanawake Organisation	44412	222055/223302/221136	Welfare, Health, Education, Environment	Nairobi, Kwale, Embu, Mkwani
199	Majaso Human Development	73548		Welfare, Health, Environment, Population	Nairobi, Kisumu, Kakamega, Busia, Bungoma
200	Management Development Assistance for Health and Population	68073	245156/245160	Health, Population	Nairobi

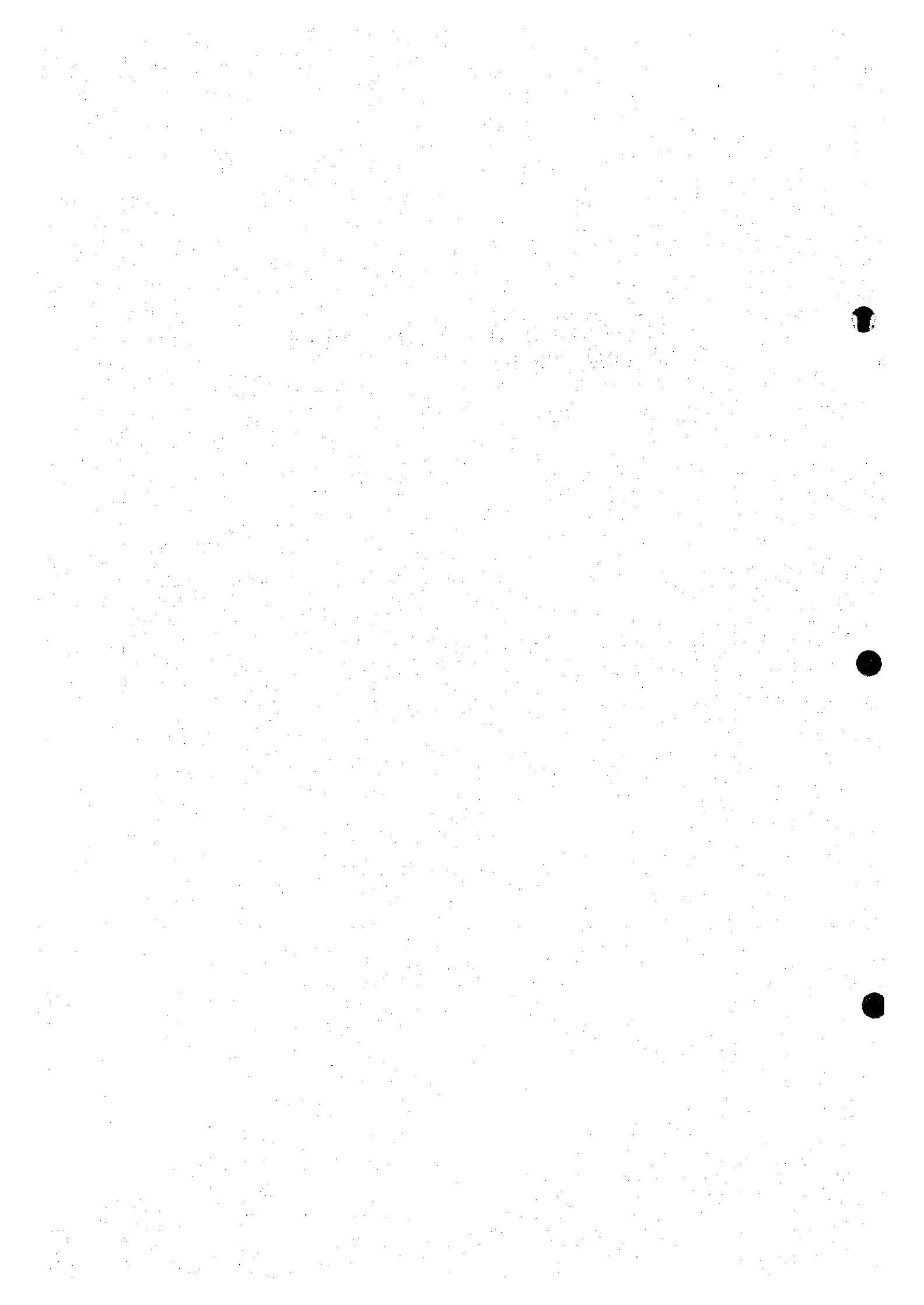
No.	Name of NGO	Postal Address	Telephone No.	Sector of Operation	Area of Operation
201	Management of Arid Zones Initiatives and Development Options International	67685	440386	Health, Population, Water, Environment, Informal Sector	Countrywide
202	Map International	21663	569513/ 4/ 727586/ 728599	Health	Countrywide
203	Mazingira Institute	14550	443226/ 443229/ 443219	Education, Environment	Countrywide
204	Medair East Africa	76575	567346	Health, Relief, Water	Countrywide
205	Medical Care Development Inputs	41617	632331	Health	Nairobi, Kiambu, Kisumu, Kakamega, Homa Bay
206	Memisa Kenya	30125	602185	Welfare, Health, Relief, Water, Education	Countrywide
207	Mennonite Board in Eastern Africa	14894	740484	Welfare, Health, Relief, Education, Water, Informal Sector, Environment, Agriculture	Countrywide
208	Mercy International Relief Agency Limited	44445	556037 556025	Welfare	Countrywide
209	Minnesota International Health Volunteers	43678	566122	Health, Welfare	Nairobi
210	Munadhamat al Dawa al Islamiya Kenya	77563	500499	Welfare, Education	Nairobi
211	Muslim Education and Welfare Association	89427	493157	Welfare, Education	Nairobi, Mombasa, Kilifi
212	Muslim Women Association	58171	565602/ 765799	Welfare, Health, Relief, Education, Water	Nairobi
213	Mutithia Children fund	34291	213847	Welfare	Countrywide
214	Nairobi Hospice	74818	722212/ 712361/ 719383	Health	Nairobi
215	National Commission on the Status of Women	30197	790540	Education	Nationwide
216	Nature Conservation Society of Africa	47778	227311	Environment, Education	Nairobi
217	National School Feeding Council of Kenya	492	226847	Welfare, Relief, Education	Nationwide
218	Ndere Youth Organisation	66643	444767	Multi-sectoral	Nairobi
219	Network of Aids Researchers of East and Southern Africa	11771		Health	Nairobi
220	Network for Water and Sanitation International	30125	504163/ 501301	Water, Education, Environment	Nationwide
221	Norwegian Church Aid	52802	501689/ 500546	Welfare, Relief, Environment, Population	Nationwide
222	Norwegian Kenya People's Aid	30207	582498/ 732434	Welfare, Health, Environment, Education	Nationwide
223	OFADAT	6108	225094	Welfare, Health	Nairobi, Kakamega, Kisumu, Kisii, Nakuru, Kakamega
224	Ongata Rongai Organisation for the Needy (ORWAN)	74821	6303 - 24019		Nairobi, Kajiado
225	Palm Development Organisation	30804	520582	Welfare, Education, Informal Sector	Nairobi
226	Parents Resources Institute on Drug Education	70471	219420	Health, Education	Countrywide
227	Partners in Development	60875	722314	Welfare, Health, Relief, Education	Nairobi, Coast, Wajir, Nandi, Marsabit
228	Participatory Learning Network	15614	890555 6 7 8	Environment, Education, Water	Nairobi, Kisumu, Mombasa
229	Pat and Jude (Exchange)	60675	763337	Welfare, Health, Water, Education	Countrywide
230	Pear Counselling and Women Support Services	79652	742811/ 742105	Welfare, Health, Education, Environment	Countrywide
231	Population Services International	22591	440125/ 440126/ 440127	Population	Countrywide
232	Provide International	62961	793629 7 80282	Relief	Nairobi
233	Public Law Institute	52011	330098	Legal	Nairobi, Kwale
234	Rafiki Rehabilitation Programme	6329	562939	Education, Welfare, Health, Relief	Nairobi, Mombasa, Nakuru, Eldoret
235	Rainbow Department of Relief and Development International	57320	713183 85	Health, Relief, Education, Water	Countrywide
236	Regional Centre for Socio-Economic Studies and Development	55324	719276	Multi-sectoral	Nationwide
237	Rehabilitation Centre for Victims of Violence	61342	891037	Health	Nairobi
238	Relief Transport Services	74535	600875	Relief	Nairobi
239	Renewable Energy Technology Assistance Programme	28291	554414/ 557945	Environment	Countrywide
240	Reproductive Health Services	20332	762879	Health	Nairobi, Mombasa, Kisumu, Nakuru

No.	Name of NGO	Postal Address	Telephone No.	Sector of Operation	Area of Operation
241	Road Accident Free Foundation	38826	743380	Welfare, Health	Nairobi
242	Road Safety Network	72939	227989/ 210494	Health, Population	Nationwide
243	Rural Development Agency	1211, Marageli		Multi-sectoral	Countrywide
244	Rural Health Services	28893		Welfare, Health, Education, Population, Environment	Nationwide
245	Rural and Urban Community Initiative Support Organisation	908, Embu		Welfare, Health, Relief, Informal Sector, Environment, Population, Water	Countrywide
246	Salvation Army (East Africa Territory)	40575	227541/2/9	Welfare, Health, Relief, Education, Population, Water, Environment	Nairobi
247	Samaritan Development Programmes	19065	797495	Welfare, Informal sector, Education	Nairobi
248	Samaritan's Purse	76143		Health	Nairobi
249	Saudi Commission for Relief	762781	Relief, Health	Multi-sectoral	Nairobi, North Eastern
250	Save the Children Fund (UK)	39664	582484 580626	Multi-sectoral	Countrywide
251	Save the Children Centre	67395	721170	Welfare, Relief, Education	Nairobi, Kajiado
252	Shelter 2000	54039	721619/ 722208	Welfare, Health, Environment, Education, Population	Nairobi and other urban areas
253	Shelter Forum	39493	442108/ 44187 446243	Welfare, Environment, Water	Countrywide
254	Sight Savers International (Royal Common Wealth Society for the Blind)	34690	502750/ 503835/ 503771	Health, Education	Countrywide
255	Sinaga Limited	60498	600490	Water, Environment, Education, Informal sector, Welfare	Countrywide
256	Small Business Enterprises Development Agebey	63067	211764	Health, Relief, Environment, Education, Population, Water	Nairobi, Siaya, Kisumu, Migori, Homa-Bay, Kisii, Kakamega, Busia, Bungoma, Nakuru, Kiambu, Mombasa, Machakos, Kitui
257	Society for Women and Aids in Kenya	19676	718895	Health	Nairobi
258	Somali Care Association	69794		Relief, Development	Countrywide
259	SOS Children's Village Kenya	40653	444049	Welfare, Education	Nairobi, Mombasa, Uasin Gishu
260	SOS Kinderdorf International	76192	566005	Education, Welfare, Health, Relief	Countrywide
261	Southern Networks for Environment and Development	14205	445893	Welfare, Environment, Education, Informal Sector	Countrywide
262	Sports Women and Administrators International	46553		Welfare, Health	Countrywide
263	St. John Everlasting Gospel Church Development Arm	55987		Welfare, Health, Relief, Informal Sector, Education, Population	Nairobi, Migori, Kisumu, Homa-bay
264	Step Ahead for Rural Women	67817	227682	Welfare, Health, Environment, Education, Population	Countrywide
265	Sudan Relief and Rehabilitation Association	39892	440156	Relief	Nairobi, South Sudan
266	Sudan Service International Kenya (SSI)	43887	710066	Relief, Water	Countrywide
267	Summer Institute of Linguistics	44456	714942/3/4	Missionary Organisation Dealing in Bible Translation and Literacy	Countrywide
268	Sustainable Agriculture Community Development Services	41752	0151 - 36541, thika	Sustainable Agriculture for Food & Agro Income Security	Nairobi, Machakos, Kwambu, Muranga, Kajindo, Kakamega, Thakara-Nithi, Taita Taveta
269	Take Heart Association Project (THAP)	14130	224973	Welfare, Health	Nairobi and Suburbs
270	Technoserve	14821	443577/ 578/ 579	Agriculture, Water	Nationwide
271	The African Academy of Sciences	14789	884401 - 5	Education	Nairobi
272	The African Centre for Climate Change and Environmental Studies and Strategies (ACCESS)	1230, Machakos	0145 - 21726, Machakos	Environment	Countrywide
273	The Arms of Jesus children Missions, Inc	21244		Welfare, Education, Relief	Countrywide
274	The Association of people with Aids in Kenya	30583	603420/2	Aids Support Education, Organisation	Countrywide
275	The eye Opener Kenya	53072	211582	Education	Countrywide
276	The Good Samaritan Committee on Rehabilitation of Street Children	Private Bag, Thika	0151 - 21873, thika	Welfare, Agriculture, Education	Nairobi, Mombasa, Kisumu, Embu
277	The Christian Organisations Research and Advisory Trust of Africa		42493 899165/6/7	Management Training and Consultancy	Nationwide
278	The Health Professionals Social League	29873		Health	Countrywide
279	The Institute of Cultural Affairs in Kenya	21679	724314/ 729375	Health, Education, Population, Water,	Nairobi, Kwale, Kilifi, Kitui, Kirinyaga, Machakos, Muranga, Kakamega
280	The Islamic Foundation	30611	227720/ 330427	Informal Sector	Countrywide

No.	Name of NGO	Postal Address	Telephone No.	Sector of Operation	Area of Operation
281	The Kenya Aids Society	76618	766677	Welfare, Relief, Education	Nairobi, Mombasa, Kisumu, Embu
282	The Kenya Association for the Welfare of the Epileptics	42325	763474 5'6/7	Education, Water, Religion	Nationwide
283	The Kenya National committee for the Prevention of Alcoholism and Drug Dependency	42276	722718	Health, Education, Environment, Legislative and Informal Sector	Nationwide
284	The Media Institute	62651	330480	Education	Nairobi
285	The National Health Research and Development Centre	54840	722541	Health	Countrywide
286	The New Sudan Council of Churches (NSCC)	52802	469665/ 418141	Health, Relief, Education	Nairobi, Lokichogio
287	The Population and Health Services	59328	564682/ 567144	Population, Health	Nationwide
288	The Population Council	17643	442475/ 447871	Population	Countrywide
289	The Wandle Charitable Trust	24422	569644/ 568653	Education	Nationwide
290	The 19th Vision	50872	785357	Environment, Informal Sector, Health, Water	Nairobi, Mombasa, Nakuru, Uasin gishu
291	Traditional Medicine Development Agency (Trameda)	66514	213172	Health, Environment, Education	Countrywide
292	Transworld Radio (Kenya)	21514	560552	Welfare, Education, Informal Sector	Nationwide
293	Undugu Society of Kenya	43417	552211	Welfare, Informal Sector, Environment	Nairobi, Machakos
294	United Bible Society	42726	226117 220567/ 222782	Translation, Production, Distribution of Scriptures	Countrywide
295	Urban Innovative Solutions Programme (UISP)	19417		Multi-sectoral	Nairobi, Mombasa, Kisumu, Nakuru
296	Victory Vision International	11299	782655	Welfare, Health, Relief, Education	Nairobi, Machakos
297	Voluntary Community Services Group	57781	336773/ 226255	Health, Education, Population, Informal Sector	Nationwide
298	Volunteers in Technical assistance inc	54356	718155	Private Enterprise Promotion	Nairobi, Kiambu, Mombasa, Nandi, Muranga
299	VSP-DZG Belgium	46310	719115	Health, Education	Nairobi, Lokichogio
300	Waste Management Centre (WMC)	77893	339253/ 215449/ 215443	Welfare, Health, Environment, Education	Nairobi, Mombasa, Kisumu, Nakuru
301	Wezesha watoto Wa Kenya Ltd	25915	541871	Welfare, Education	Nairobi
302	Widows and Orphans Welfare Society of Kenya	53935		Welfare, Education	Countrywide
303	William Holden Wildlife Foundation	288, Nanyuki	0176 - 32754	Education	Countrywide
304	Wings of Hope	6612, Kisumu		Multi-sectoral	Countrywide
305	Women Education Services	61257		Education, Population	Nairobi, Embu
306	Womens Federation for World Peace - Kenya Chapter	46973	337018	Welfare, Health, Relief, Education, Environment	Countrywide
307	Women Fighting Aids in Kenya	4068, Thika	810150	Health	Countrywide
308	Women for Sustainable Development	40636	449345	Environment	Nairobi
309	World Concern International	70541	228375	Relief, Health, Welfare, Education	Countrywide
310	World Family Manage, Divorce and Reconciliation	19579	761155 6	Welfare	Nairobi
311	World Home Bible League	67992	720329	Scripture Distribution and Literacy	Countrywide
312	World Opportunities International	52261		Welfare	Countrywide
313	Young Women Christian Association (YWCA)	47719	724789/ 724699	Welfare, Health, Agriculture, Education, Informal Sector, Environment	Countrywide
314	Young Muslim Association	4899	229896	Welfare, Health Relief, Education	Countrywide

7.2

LIST OF CHURCH AND RELEVANT ORGANIZATIONS



7.2 List of Church and Relevant Organizations

No.	Name of Church	Telephone No.
1	ABSEF Harvest Church	787572
2	AIPCA Nairobi	557808/716833
3	Adoration Convent	531447
4	African Gospel Church	890439/ 722064/ 782453
5	African Inland church - Kibera	566920
6	African Inland Church - Ziwani	762517
7	African Inland Mission International	718621 / 570943 / 718323
8	African Ministry Resources	520882 / 520888 / 726861 / 726896
9	African Brotherhood Church	790532 / 766294
10	African Christian Church & Schools	792030
11	African Evangelistic Enterprise	560160 / 567438 / 716764
12	African Inland Church	605580
13	Ahmadiyya Muslim Mission	764226
14	AIM - International Services	602300
15	AACC Gospel Church	441338 / 441339 / 441483
16	All Nations gospel Church	766036 / 760622
17	All Saints Cathedral	72300 / 723126 / 722640
18	Ananda Marga Mission	631311 / 631349
19	Ananda Marga Universal Relief Team	630590 / 630597
20	Anjuman-E-Saifec (Nairobi)Ltd	339763 / 332443
21	Anjuman-E-Saifec (Nairobi)Ltd	339765
22	Apostles of Jesus Generalate	884468
23	Apostolic Nunciature	442975 / 442976 / 442977 / 447176
24	Archdiocese of Nairobi	447027
25	Assembles of Christ Evangelical in Africa	714977 / 720220 / 722769
26	Assembles of Christ Evangelical Holiness Church	762461
27	Association of Member Episcopal	337018
28	Association of Sisterhood of Kenya	567910 / 443324 / 446778
29	Assumption Sisters of Eldoret	542267
30	Assumption sisters Good News Centre	732706
31	Baba Dogo Moyo Mfakatifu wa Yesu Catholic Church	862743
32	Bahati Pentecostal Assembles of God	554903
33	Baptist Area Office	580963
34	Baptist Bible Mission of EA	793049
35	Baptist Church Mission	793049 / 512281
36	Baptist Churches of Kenya	558880
37	Baptist Mission Hampton House	444669 / 446330 / 446245 / 446257
38	Baptist mission of Kenya	581330
39	Benedictine Fathers Nairobi	802696 / 802697
40	Bethel Baptist Church	782753

No.	Name of Church	Telephone No.
41	Bible Society of Kenya, The Bible House	225587
42	Bible Translation \$ Literacy (EA)	724767 / 723793 / 724776
43	Brothers CMM-Umoja Assumption of Mary Catholic Church	798301
44	Brothers of Christian Instruction	569157
45	Brothers of the christian School	89090 / 890912 / 890911
46	Brothers of Our Lady of Mercy	4484 96 / 448402
47	Brothers of CSt Charles Lwanga	724900
48	Buru Buru Baptist Church	792418 / 785383
49	Buru Buru Catholic Church	794940
50	Buru Buru Community Centre	792299
51	Buru Buru Trinity Church	783796
52	CAPA Bishops RD	712155
53	CPK Diocese of Mt Kenya South	560758 / 732636 / 562635 / 580240
54	CPK Emmanuel Church	582662 / 564391
55	CPK Kangemi Parish	631266
56	CPK Kihara Parish	521981 / 520027
57	CPK Parish of Uthiru	592250
58	CPK St Christopher's Parish & Community Centre	761735
59	CPK Joseph's Ngara Parish	760829
60	CPK St Mark's Church Kinoo Parish	630155
61	CPK St Mary's Diocese of Marsabit	566747
62	CPK St Veronica Church	532811
63	Camillian Sisters	891376 / 890987
64	Campus Crusade for Christ-Eastern Africa	722369 / 720345 / 712455
65	Canadian Baptist International	568050
66	Canadian Baptist Overseas Mission	717199 / 720764
67	Canossian Daughters of Charity	567224
68	Capuchin F Fathers	442584
69	Carmelite Fathers	890489 / 890487
70	Catholic Centre, Buru Buru Ph III	794330 / 795195
71	Catholic Church Ngong	564060
72	Catholic Church South B	559853
73	Catholic Diocese of Ngong	568285
74	Catholic Diocese of Nyeri	447085 / 447144
75	Catholic Diocese of Murang'a	512386
76	Catholic Diocese of Torit	743855 / 741798
77	Catholic Higher Institute of Eastern Africa	891606
78	Catholic Lay Missionaries	444023 / 442294
79	Charles New Methodist Church	791552
80	Child Evangelism Fellowship of Kenya	798363

No.	Name of Church	Telephone No.
81	Chrisco Workers	230074 / 245796
82	Christ for All Nations - Kenya	711797 / 711798 / 711796
83	Christ Co-Workers Fellowship	221989 / 340247
84	Christ Revelation Church	790956
85	Christ Unlimited Mission	446858
86	Christian churches Educational Association	222312
87	Christian Community Centre	799306
88	Christian Community Fellowship of Africa	572357
89	Christian Health Association of Kenya	446964
90	Christian Learning Materials Centre	882667 / 882048
91	Christian Mission Aid	723930
92	Christian Missionary Fellowship	569942 / 567699 / 560376
93	Christian Senat	822763
94	Christs Co - Workers Fellowship KC	556714
95	Church Army in Africa	558253
96	Church Army in Africa	554970
97	Church Army Training College	558596
98	Church Commissioners for Kenya	717106 / 717101 / 717105
99	Church of God	794512
100	Church of Good Shepherd Dam Area	500060
101	Church Kindergarten	562979
102	Church Missionary Society	711191 / 720011 / 714420
103	Church of Nazarene	566558 / 566518 / 724655
104	Church of Nazarene Africa East Field	720301 / 720302 / 720303
105	Church Nazarene Edu	569461
106	Church of God World Mission	522198
107	Church of the Province of Kenya (Anglican Church)	714750 / 714753
108	Church of the Province of Kenya (C P K)	714752
109	Church World Services Inc Ltd	570491 / 521773 / 561093 / 441922
110	Claraaulalias Missionary Group	564135 / 562987
111	Comboni Brothers Centre	569172
112	Comboni Missionaries Theologate	890383 / 890384
113	Community Presbyterian Church	503807
114	Continental Board of Counsellors	720968 / 714711
115	Coptic Orthodox Church	726961 / 720831 / 725771 / 724737
116	Corat Africa	890165 / 890166 / 890167
117	Coun Assembles of God	512648
118	Cross Currents Indigenous	724618
119	Cross Roads New Testament	796358
120	Crusade work Station	799305

No.	Name of Church	Telephone No.
121	Dandora Community Centre (P C E A)	787405
122	Daughters of Saint Anne	505844 / 603946
123	Daughters of the Sacred Heart	891256 / 890742
124	Daughters of St Anne	442989
125	Daughters of St Paul	442105 / 442319
126	Deliverance church Langata	600816
127	Delmira Assumption	748850
128	Dimesse Sisters	882341 / 884320 / 884186
129	Diocesan Synod of Nairobi	722421 / 720435 / 763718 / 716396
130	Diocese of Meru	890265
131	Diocese of Rumbek	562247 / 569130
132	Disciples of Christ in Africa	630148
133	Divine Word Missionaries	520040 / 890667 / 890668 / 890669
134	Divine Word Parish	780225 / 785623
135	Divine Word Missionaries	890667 / 522469
136	Dominican Nuns Corpus	890627 / 890150
137	Don Bosco Salesians of Upper Hill Road	724495 / 724635 / 724493
138	Doonholm Catholic Church	797148
139	E A Christian Alliance	766046
140	E A G Comm Training	558745
141	Edelvale Trust (Home)	794584
142	Emmaus Bible School	799738 / 799743 / 788388
143	Ethiopian Orthodox Church	564399
144	Evangelical Lutheran Church in Kenya	792564 / 720994
145	Faith Evangelistic Ministry	714568
146	Fellowship of Believers	794784
147	Fellowship of Christian Union (FOCUS)	862022
148	First Borns Christian	520669 / 520679
149	Fishers of Men World Missionary Outreach	795990
150	Foccam	725932 / 718264
151	Focolare Movement	630814 / 442544 / 443551
152	Focus Fellowship of Christian Unions	862037 / 862022
153	Foursquare Gospel church in Kenya	783572
154	Franciscan Missionary Sisters Mangu	782854 / 566326
155	Franciscan Missionary of Mary	566393 / 560133
156	Franciscan Elizabeth	862661
157	Franciscan Friars (Conventual)	884208 / 884484
158	Franciscan Sisters of the Heart of Jesus	562892 / 561199
159	Free Methodist Church of Kenya	862691
160	Free Pentecostal Fellowship in Kenya	569530 / 570125

No.	Name of Church	Telephone No.
161	Full Gospel Businessmen Fellowship International	217080
162	Full Gospel churches of Kenya	791360 / 785273 / 566904 / 811156
163	German Speaking Evangelical	44202
164	Glad Tidings crusade	781805
165	Good Shepherd Tidings	445350
166	Gospel Assemblies of Kenya	214564
167	Gospel Assembly Church	860480 / 710552 / 862633 / 862632
168	Gospel Broadcasting Service	890398 / 890520 / 890397
169	Gospel Evangelistic Church	788473 / 789735 / 789733
170	Gospel Furthering Fellowship	761046 / 762606 / 764987
171	Gospel of God Church	724306
172	Gospel Outreach Ministry	748716
173	Gospel Revival Centre	786790 / 786789
174	Gospel Tabernacle Christian Centre	533313
175	Grace College (E A) Ltd	890550 / 890549
176	Greek Orthodox Church Valley Rd	560750
177	Guadalupe Fathers	567161
178	Guadalupe Fathers (Missioner)	562282
179	H H Prince Aga Khan Religious	747902
180	Holy archbishopric of Irinoupolis	564995
181	Holy Church of Christ	785435
182	Holy Cross Catholic Church	784648
183	Holy Cross Fathers	791157
184	Holy Family Cathedral Parliament Rd	220971
185	Holy Ghost Fathers	823506 / 444165
186	Holy Ghost Fathers-Spiritan House	891998
187	Holy Rosary sisters	744404
188	Holy Spirit Church of Zayun	884083
189	Holy Trinity Church Kibera	568434
190	Incarnate Word sisters	891345
191	Inter Christian Ltd	500544
192	International Bible Society East Africa	722681 / 722682 / 720788 / 711042
193	International Bible Society East Africa	722919 / 568032 / 711365
194	International Bible Students	567245 / 5565404 / 564570
195	IBSA Bldg Woodlanes Rd	721148 / 712161 / 729626
196	International Christian Aid	567191 / 500928
197	International Christian Centre - KAG	711642
198	International Christian Humanitarian	445048 / 447129
199	International Christian Missions Inc	506012
200	International Pentecostal Holiness Church	568381

No.	Name of Church	Telephone No.
201	International Young Christian Workers	604005 / 602556
202	Jain Temple Limuru	747689
203	Jericho Catholic Church	791529
204	Jesuit Refugee Service - Eastern Africa	569472 / 567763 / 49223 / 567065
205	Jesuits of Eastern Africa	565371 / 569494 / 569536
206	Jesus is Alive Ministries	445342
207	K Y C Students	334490
208	Kabecu Ltd	41783
209	Kahawa Parish	810048
210	Kariobangi Baptist Church	798778
211	Kariobangi Baptist Youth Centre	786235
212	Kariokor Methodist Church	761636 / 767990
213	Kawangware Lutheran Church	564321
214	Kenya Assemblies of God	512472 / 799833 / 781850
215	Kenya Assemblies of God	797517 / 792606
216	Kenya Believers Faith Church	796666
217	Kenya Brahma Sabha	742851 / 743756
218	Kenya Catholic Secretariat	443133 / 443134 / 443135 / 441112
219	Kenya Church of Christ	766805
220	Kenya Ecumenical Church Loan Fund	719113
221	Kenya Episcopal Conference	443133
222	Kenya Local Believers	557650
223	Kenya Students Christians Fellowship	448312 / 448313 / 448314
224	Kindernothilfe E V	520746 / 521164
225	Kivulini Residence	447030
226	Kolping Organisation of Kenya	891609 / 891956
227	Ladies Homecare Spiritual Fellowship (L H S F)	724847
228	Langata Church Meeting of Friends	603065
229	Lavington Church	562908
230	Lavington United church	571530 / 571433
231	Life Ministry	723065 / 723153
232	Literacy & Evangelism Fellowship	722570
233	Little Daughters of St Joseph	745934 / 741508
234	Little Sisters of Jesus	558241
235	Little Sisers of St Francis	803009 / 861042 / 568748
236	LittleSisters of St Joseph Proviciate	568628
237	Little Sisters of of St Therese of The Child Jesus	882336
238	Living work Africa Gospel Church	780799
239	Living World Church	761183
240	Loreto convent Msongari	440886

No.	Name of Church	Telephone No.
241	Loreto Eastleigh	764324
242	Loreto Kangemi	593243
243	Lutheran Church	729223
244	Maranatha Mission of Kenya	784511 / 761793 / 566824
245	Mariakani Christian Centre	558753 / 553528
246	Marianists	566644 / 559625
247	Mary Immaculate Sisters	717315
248	Maryknoll Fathers	445447 / 442875 / 442864
249	Maryknoll Sisters	558409 / 569575
250	Mathare 4A Dev Programme/Catholic Arcdiocese of Nairobi	
251	Mennonite Board in Eastern Africa	441134
252	Methodist Church in Kenya	724897 / 720583 / 722960
253	Mill hill Missionaries	567411 / 564290 / 570336
254	Mission Aviation Fellowship	501665 / 606020 / 501694 / 501267
255	Mission Hope	792492
256	Mission Kenya Church of Christ	448031
257	Missionaries of Africa - ANB	725988
258	Missionary Benedictine Sisters	802143 / 802156 / 882460 / 882476
259	Missionary Board of the of God	555142 / 567012
260	Missionary Community of St Paul	571303
261	Missionary Council of the Assemblies of God	861005
262	Missionary Residence Trust	890201 / 890477
263	Missionary Sisters of Our Lady of Africa	711402 / 722030 / 722568 / 556182
264	Missionary Sisters of the Precious Blood	891119
265	Missionary Sisters of the Precious Blood	445557 / 441572
266	Monfort Missionaries	568419
267	Morris Cernillo world Evangelism of Global Satelite Network -Kenya	227289
268	Mt Camel Convent	442874
269	Munadhamat Al Dawa Al Islamia Kenya	2272789
270	Muongoiya C P K Parish	732696
271	Mwimuto Baptist Church	581141
272	Nairobi Baptist Area Office	580757
273	Nairobi Baptist Church	728400 / 728401 / 726855
274	Nairobi Chapel	725179 / 712682
275	Nairobi Christian Centre	600660 / 791547 / 792476
276	Nairobi Christian Church	607262
277	Nairobi Covery Temple	795622
278	Nairobi Hebrew Congregation	222770 / 219703
279	Nairobi Korean Church	861108
280	Nairobi Lighthouse Church	445874 / 445875 / 445876 / 795381

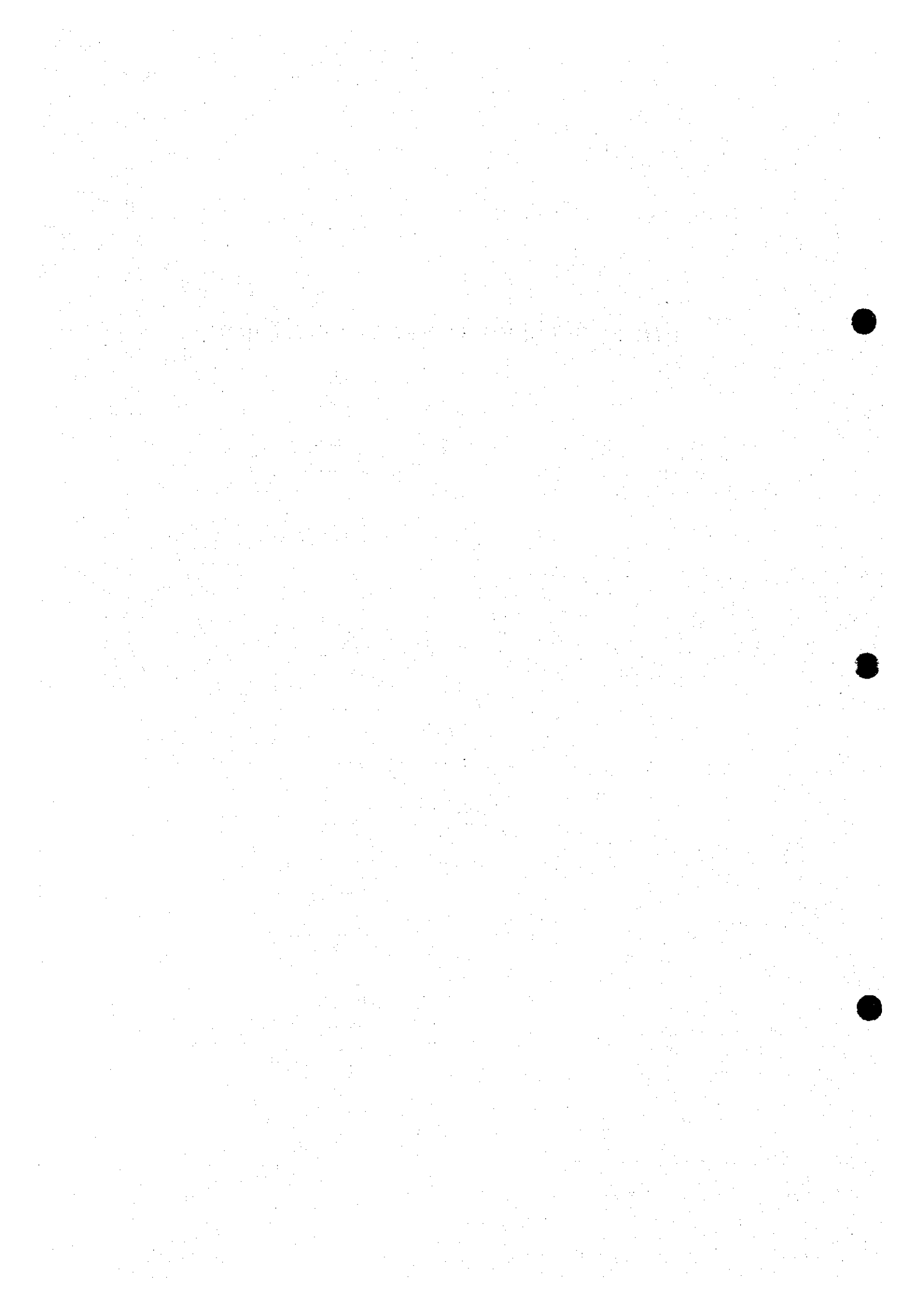
No.	Name of Church	Telephone No.
281	Nairobi Mennonite Church	766683
282	Nairobi Lutheran Parish	795381
283	Nairobi Monthly Meeting of Friends	790927
284	Nairobi Pentecostal Church	722092 / 727608 / 725626 / 723208
285	Nairobi South S D A Church	600916
286	Nairobi Yearly Meeting of Friends	569332
287	National Catholic Youth Centre	803150
288	National Christian Council of Kenya	229717
289	National Council of Churches of (K)	245280
290	National Spiritual Assembly	725447 / 711364
291	Navigators-Africa	722606 / 588063
292	NCKK Christian Outreach & Rural Development Services	212230
293	New Apostolic Church of God	562524 / 567498 / 568360
294	Ngemu gospel sound	332282
295	Opus Dei Vicar	444807
296	Organisation of African Instituted Churches	566628
297	Orthodox Archbishop of Kenya Trinoupolis	573586 / 573052
298	Orthodox Cathedral St Ayargiroi	720621
299	Our Lady of Visitation Catholic Church	558752
300	P A G Church Nairobi	557878
301	PCEA Community Centre	764724
302	PCEA Emmanuel Centre	561379
303	PCEA Girls Training Centre	761034
304	PCEA Lang'ata Parish	502717 / 502956
305	PCEA -Kahawa Outreach	812285
306	PRM International	562186 / 567594
307	Parklands Baptist Church	449530 / 741872
308	Passionist Fathers	8991343
309	Patrician Brothers	571896 / 571897
310	Paulines Publications Africa	442097
311	Pentecostal Assemblies of Canada	567793 / 5653390 / 561209 / 560969
312	Pentecostal Assemblies of God	568686 / 721690 / 726977
313	Pentecostal Evangelistic Fellowship of Africa	783816
314	Premese Diocese of Machakos	820082
315	Prebyterian Central Mission of Africa (PMCA)	760751
316	Queen of Apostles	802303
317	Rainbow Church of Christ	604724
318	Redeemed Gospel Church	766262 / 764993 / 559793
319	Regional Superior Sisters of Mercy	543835
320	Rev For world Crusade	795006

No.	Name of Church	Telephone No.
321	Revelation Church of Christ & Bible Study	786723
322	Revelation for World Crusade Church	605357
323	Ridgeways Baptist church	512528
324	Riruta Baptist Church	567218
325	Riruta Catholic Mission Naivasha	569584
326	Rosminian Fathers	890092 / 891914
327	Ruku Catholic Parish	732238
328	Sacramentine Sisters of Belgamo	442856
329	St Andrew's Church	728456 / 728457 / 716254
330	St Austins Catholic Church	444724
331	St Andrew's Church - Kasarani	861298
332	St Barnabas Church Otiende	503045
333	St Catherine's convent	891188 / 890880
334	St Francis Church Karen	882454
335	St James Church Buru Buru	793081
336	St John's Community Centre	761655
337	St Joseph's the Workers Church	593253
338	St Joseph's Catholic Church	630543
339	St Joseph's Church Kanyiri	631424
340	St Joseph's Novitiate	882291 / 884185
341	St Luke Church, Mbagathi	722278
342	St Marks Church	447283 / 446390 / 447287 / 583107
343	St Mary's Church Kabete	632017
345	St Mathew's Church Lang'ata	891843
346	St Michael's Catholic Church	506770 / 506771
347	St Monica's Church Dandora	790946
348	St Patrick's Missionary Society	562907
349	St Paul's church Nairobi South	724067
350	St Peter's Clavers Catholic Mission	240382
351	St Peter's Methodist church - Lang'ata	503475 / 500650
352	St Philips Church Jericho	792580
353	St Stephen's Church	557409 / 555619
354	St Polycap (CPK)	766913
355	St Stephen's Church Githiga	732309
356	St Theresa's Church	760005
357	Salvation Army	227541 / 227542 / 227549
358	School Sisters	565806
359	Scripture Union Africa Regional Office	727409 / 721675 / 715494
360	Scripture Union of Kenya	331025 / 229841

No.	Name of Church	Telephone No.
361	Seventh Day Adventist Church East Africa	567311
362	Seventh Day Adventist Church East African Union	722373
363	Seventh Day Adventist Church East African Union	570915 / 561666 / 566022 / 558400
364	Sim - Society for International	721642 / 725747
365	Sister of St Joseph Tarbes	571824
366	Sisters of Africa	556182
367	Sisters of the Blessed	891008
368	Sisters of the Good Shepherd	556970
369	Sisters of Mercy -Mukuru Promotion Centre	556765
370	Sisters of Notre Dame de Namur	766152 / 766624 / 787692 / 765785
371	Sisters of Our Lady of Charity	448566
372	Sisters of Our Lady of the Missions	566754 / 569679 / 802752
373	Soul Winning Evangelistic Church	802639 / 545343
374	Trinity Baptist Church	791367
375	Trinity Fellowship Society	802118 / 802425 / 803473 / 802364
376	ULIM church	224625
377	Umoja Catholic Church	794785
378	Unification Church of Kenya	244360 / 503050
379	Unity of church of Christ	251366
380	Universal Church of the Kingdom of God	338654 / 240716
381	Verona Fathers Procure	567436 / 567257
382	Word of Life Kenya	632042 / 631783
383	Word of Truth Ministries	725765
384	World Assembly of Muslim Youth	767329 / 762358
385	World Gospel Mission	564283
386	World Home Bible League	720329 / 725395
387	World Mission	573317
388	World Outreach	562975
389	World Presbyterian Mission	564283
390	World Student Christian Federation	227334
391	Worldwide Chrch of God	336747
392	Yarimal Missionaries	561047 / 545782
393	Youth for Christ International	448675
394	Youth Vocations	718075

7.3

PROCESSES USED BY RECYCLING GROUPS



7.3 Processes Used by Groups for Recycling

Community based waste management projects consume a reasonable amount of waste especially those generated within the particular estate/market where the project is located. However some projects could manage between 2-3 estates if an appropriate means of transport was available.

The process starts at house hold level where the groups distribute garbage bags to facilitate source separation. The separated wastes are collected by wheel barrows twice or thrice a week as most groups don't do recycling daily since they (members) have to also attend to their daily chores.

Once all wastes are brought to the project site, the recycling process begins. The recyclable inorganic wastes are sent back to respective recycling factories while organic fractions are put through the composting process in wind row systems.

Composting

This is a controlled process of breaking down larger organic fractions of wastes into smaller stable substances whose chief use is a soil conditioner. This process normally occurs due to activity of soil micro organisms that live in the soil and are responsible for the natural maintenance and return of nutrients back to the soil once an organism dies.

To effectively and successfully recycle organic wastes into compost, the following tools are required:

- wheelbarrows/handcarts
- spades
- forks/hay fork/pitch fork
- Jembes
- pangas
- watering cans/hose pipe
- rakes
- hand gloves
- gumboots
- sieves
- weighing scales
- garbage/packaging bags

reasonable amount of waste in two different forms:

Green (wet) wastes

- food remains, fruit peels, vegetables
- freshly cut grass, tree leaves etc.

These are rich in Nitrogen

Dry wastes

- dry grass, tree leaves
- saw dust from timber workshops

straw, maize stalks etc.

These are rich in Carbon. Also wood ash (for potash) may be used. Note that the ash must be from wood and not charcoal or coal.

Top forest soil/animal manure is also necessary as it adds the microroganism population in the pile.

The process

A flat shady piece of land is ideal for composting. On a bare loosened and moistened land with a basic measurement of 5ft by 10ft, dry straws and branches are evenly spread upto a thickness of 1ft, then moistened. This is followed by a layer of the same thickness of green wastes. Precaution must be taken when balancing these two important layers, as these are the layers that determine the decomposition rate of a compost pile (C/N ratio). A thin layer (about 1 inch) of either soil or animal manure is then evenly spread to cover the top. Moisten and start the process anew. Repeat this process of layering until the pile is about 5 ft high. Insert a stick right through the centre and leave the process to start. Within the first 72 hours the pile should attain the thermophilic temperature (35-45°C). This is indicated by steams seen flowing from the pile, and hotness of the part of that stick that was driven into the pile on completion of layering.

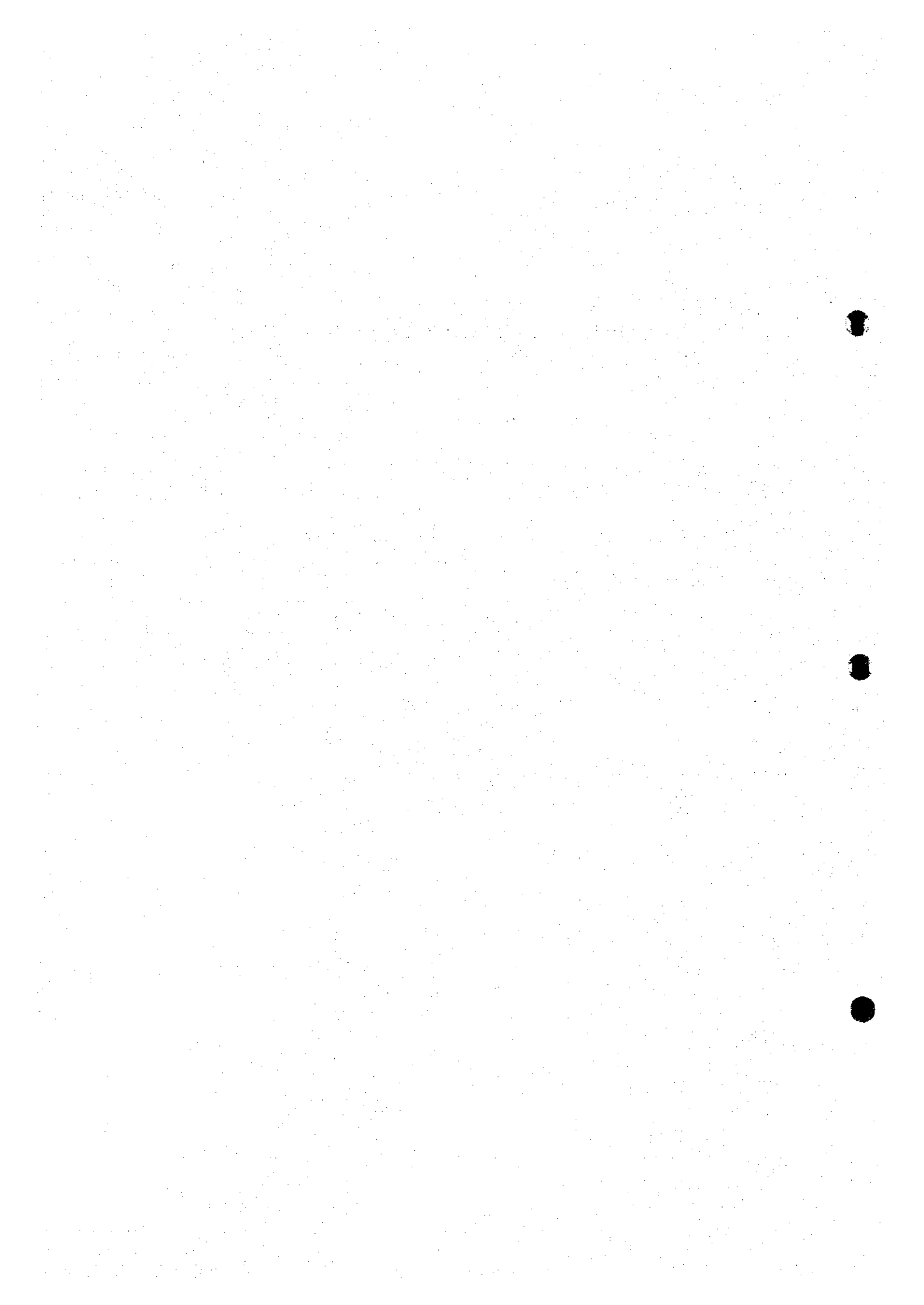
Turning

Within one week, the pile shall have sunk down by almost a quarter. This would block all the air spaces in the pile and most moisture shall have escaped due to high temperatures. If the pile is not turned to improve these two conditions the process would change into an anaerobic process, which is slow, time consuming, and unhygienic. Turning would also promote uniform decomposition of all the wastes.

On a loosened bare land of the same measurement and conditions above, all the outer layer of the pile is scooped to the centre and moistened. The rest of the pile is scooped and evenly spread over these with limited moistening till the whole pile is done and the stick (thermometer) is returned. The pile should gain some temperature over 45 C within 72 hours. Repeated process of this is necessary on a weekly basis till between 6-8 weeks when the pile would cool off, an indication that all the organic fraction has decomposed. A little drying may be necessary before the compost is sieved, weighed and packed for sale.

7.4

RECORD OF CONSULTATIONS



7.4 Record of Consultations

City Park Environmental Group	Samwel Maina Grace Mukite	c/o Market Chairman, City Park Hawkers' Market
UNCHS (HABIATAT)	Dr. Graham Alabaster	UN Complex Gigiri P.O. Box 30030, Nairobi Tel 621234
Karen Langata District Association	Mike Mills	c/o Staff Check P.O. Box 24434, Nairobi Tel 884387-9 Fax 884016
Kawangware Afya Bora	Peter Kongo	c/o Market Chairman, Kawangware Market
Mathare Youth Sports Association	Peter Karengo George Ndiritu Salim Mohamed	P.O. Box 69038, Nairobi Tel. 763614
Nairobi City Council	Col. Nthiga Mrs. Maina Mrs. Leah Oyake Mr. Kamau	c/o City Hall
Undugu Society of Kenya	Peter Njenga	c/o Undugu Pumwani Office Tel. 762271
Urban Slums Development Project of the NCC	Mrs. J. Kinaro	Lady Northey Home, State House Avenue. Tel. 713233/713205
Uvumbuzi Club	Anastasia Muli	c/o National Museums of Kenya Tel. 751607/743615

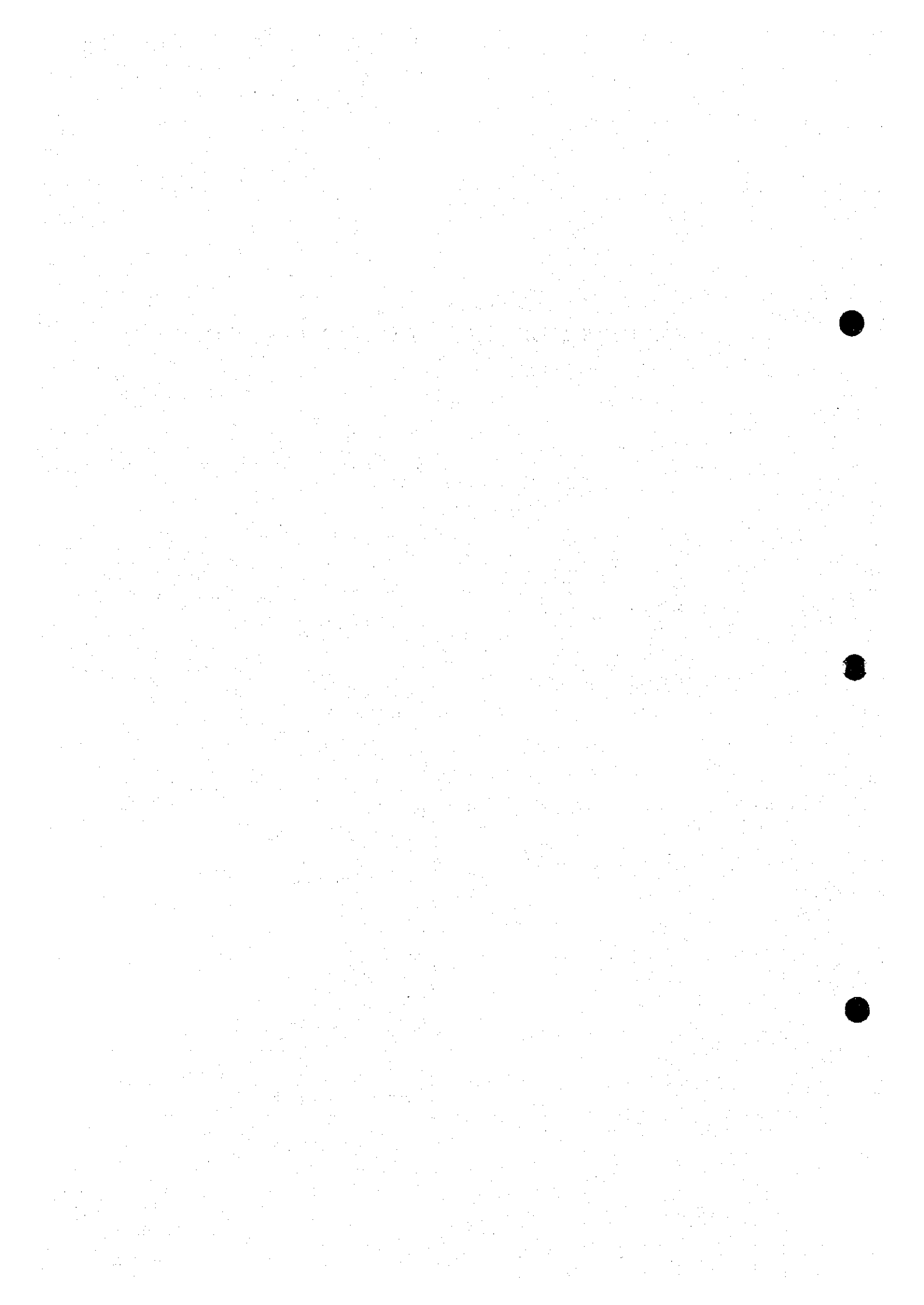
1

2

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7.5

MAJOR NGOS RELATING TO THE PROJECT



7.5 Major NGOs Relating to the Project

7.5.1 Uvumbuzi Club of Kenya

Uvumbuzi Club is a Kenyan environmental conservation lobbying society which was established over ten years ago. The club's activities fall in four programme areas:

- (1) Environmental conservation and lobbying activities
- (2) Bicycle promotion as a non-motorised mode of transport
- (3) Trips to areas of environmental interest
- (4) Membership services which include a quarterly newsletter, video and book libraries.

Recycling and composting has been an Uvumbuzi activity since 1992.

7.5.2 The Foundation for Sustainable Development in Africa (FSDA)

The Foundation for Sustainable Development in Africa (FSDA) is a non-governmental organisation. Objectives include:

- (1) To assist rural farming communities especially small scale farmers, women and youth groups to realise and utilise resources within their locality through training to gain skills in sustainable agricultural practices.
- (2) To promote development activities that are sensitive to environmental factors especially those that protect land, health, water, the atmosphere and ecosystem.
- (3) To liaise and network with other organisations for the purpose of generating, gathering documentation, and dissemination of information.
- (4) To engage in collaboration on on-farm research activities and trials.
- (5) To improve social and economic stability of the community by assisting them to engage in income generating self-sustaining development projects.

FSDA has developed expertise in composting for organic farming.

7.5.3 The Undugu Society of Kenya

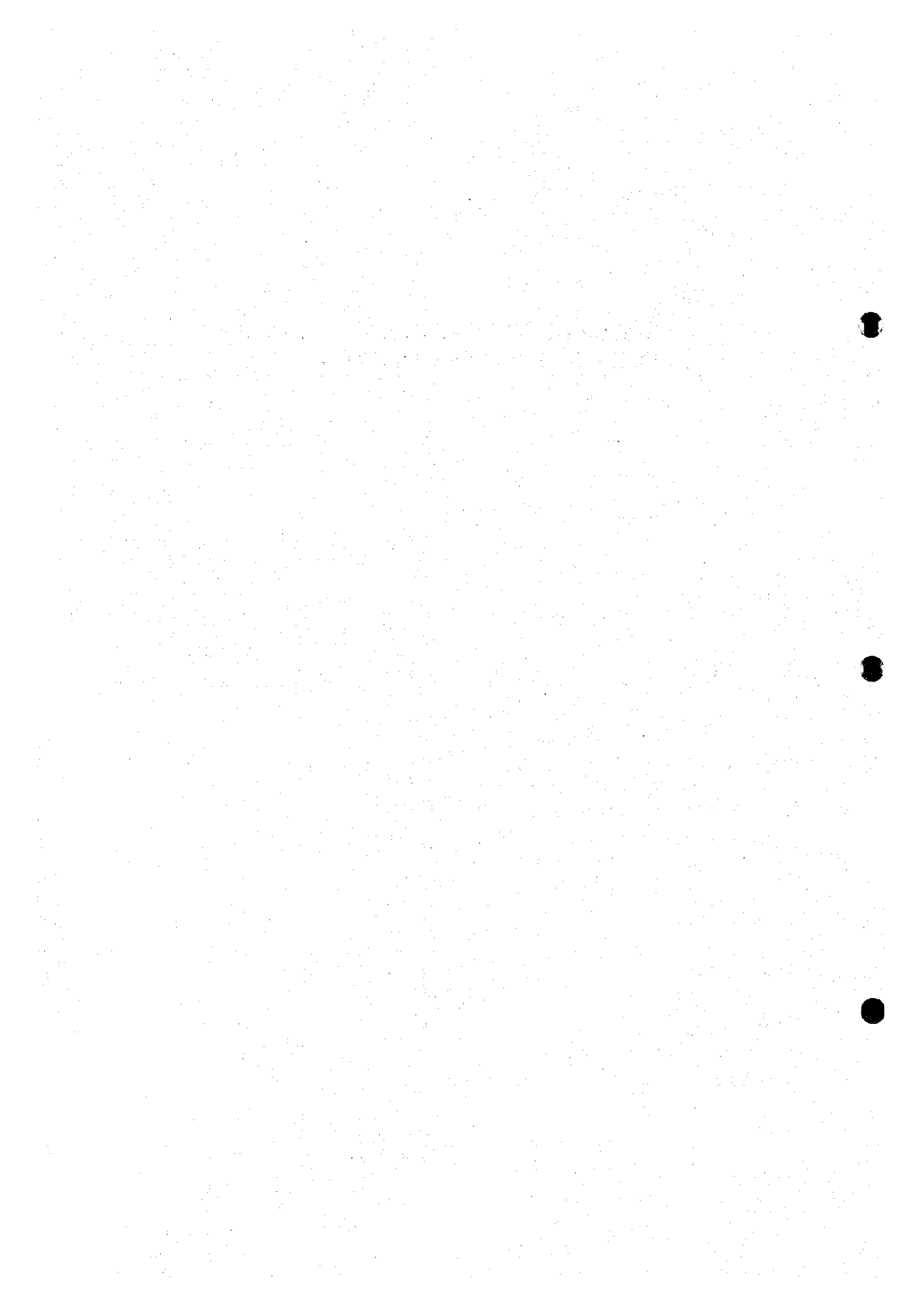
The Undugu Society of Kenya is the community service arm of the Catholic Church in Kenya. Activities are concentrated in low income areas, and include:

- (1) Rehabilitation of street children
- (2) Improvement of standards in low income areas (e.g. drainage, low cost housing)

- (3) Assisting communities to establish income generating activities (such as urban agriculture, small scale enterprise)

7.6

**MANUAL FOR STARTING AND MANAGING
A COMMUNITY BASE COMPOSTING**



**THE STUDY ON
SOLID WASTE MANAGEMENT IN NAIROBI CITY
IN THE REPUBLIC OF KENYA**

MANUAL

FOR

**STARTING AND MANAGING
A COMMUNITY BASE COMPOSTING**

JANUARY 1998

PREPARED BY

THE JICA STUDY TEAM

**JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)**

**STARTING AND MANAGING A COMPOSTING PRODUCTION
ENTERPRISE:
A MANUAL FOR COMMUNITIES**

**THE STUDY ON
SOLID WASTE MANAGEMENT IN NAIROBI CITY
IN THE REPUBLIC OF KENYA**

JANUARY 1998

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1. WHAT IS COMPOSTING?

Composting is a controlled process of breaking down larger organic fractions of wastes into smaller stable substances whose chief use is a soil conditioner. This process normally occurs due to activity of soil micro organisms that live in the soil and are responsible for the natural maintenance and return of nutrients back to the soil once an organism dies.

Composting is one of the most effective processes for recycling organic wastes intended for use in agriculture. It is a natural process which turns the waste material into a valuable natural fertiliser.

If done properly, composting can be a valuable income generating activity that can also help to keep the environment clean!

This manual will assist you to start your own compost production by telling you what you will need in order to start, how to make compost, how to market it, and how to keep records of your enterprise. Composting is hard work, but it can be rewarding.

This manual is mainly targeted at community groups, but most of the principles apply if you are an individual wishing to start your own private enterprise.

2. HOW TO ORGANISE YOUR GROUP

If you are an existing community group (that has already been registered) that wishes to expand its activities or are looking for an income generating scheme, composting is an ideal choice. This manual will give you a good idea on how to go about starting and managing a composting enterprise, but the best way to convince your group about the activity is to visit an existing project, and ask the community group running that project to show you how they did it! There are some names and addresses at the back of this manual of institutions that are carrying out composting, and institutions that are trying to promote composting.

We suggest the following as the best approach for your group to get started:

1. Read this manual!
2. Make arrangements for your group to go and visit an existing project
3. From the section on "What you will need to start" in this manual, identify what you have, and what you will need to obtain, and make a simple budget
4. If you do not have a source of funds, the budget and your group registration certificate will be needed for you to apply for a soft loan or some seed money funding from an interested institution. You can also fund raise amongst your group members. This is a good way of ensuring everybody's commitment to the project.
5. Contact the institutions named at the back of this manual, and make a written request for a resource person to come and advise and train you, and help you start up your compost area
6. Once you have started the activity, it is a good idea to keep the Social Development Officer of the area informed - you may even invite him/her to come and see what you are doing

Although the above seems very simple, it is not. The process of starting up a composting enterprise can be very involving. You will face certain constraints, and you will require persistence in order to overcome them. For example, land may be a constraint. Also, surprisingly, your neighbours can be quite resistant to your project - but this is usually due to a lack of understanding about what is involved. There was once a case of a group which faced opposition in trying to do the activities, until the neighbours realised that the group had solved the problem of dumping in the area, and they came back to thank the group involved! Some of the constraints that you might face, and ways in which you could try and overcome them are also discussed in this manual, under the section on "Things To Be Aware Of".

Note that if you are forming a group, or your group has not been registered with the Social Development Officer's office, we recommend that this is done before starting any activity. This is to help the group solve immediate issues such as land acquisition and also to make the group recognised by all institutions. Not all groups will be starting the composting activity with a source of funds. It is necessary for the group to be recognised officially, in case they wish to approach an organisation for a soft loan.

Your group, once formed, will be required to elect leaders: Chairman, Secretary, and Treasurer. You would also be required to come up with your guiding constitutions or by-laws. Then you must apply for registration at the Department of Social Services. There is an application fee (Kshs 300 currently). The Social Development Officer and the Area Chief approves the group application. Once the fee has been paid, a group must wait for 2 weeks or more for the registration certificate. The group may operate once approval has been achieved, although receiving the certificate may take some time.

Once the group receives the registration certificate, you are required to open a bank account and deposit the bank book with the department of social services for the purposes of accountability in running the bank account. Whenever the group wants to withdraw or bank any amount of money in the account, you are required to hold a meeting where the transaction will be approved and submit the minutes from that meeting to the Director of Social Services' office. Then the department will decide on whether to allow the group to go ahead depending on the strength of the outcome of the meeting.

3. WHAT YOU WILL NEED TO START

3.1 Land

The most important requirement for composting is the space on which to do it. A flat shady piece of land is ideal for composting. A minimum size of approximately 34m by 18m is recommended to start with, in order to ensure you have a consistent production of compost. The space must also include an area for sorting out waste, and a secure area for storage of your tools and equipment and storage of the ready compost. A small office would also be ideal, where records may be stored and any administrative work carried out. Figure 1 below shows a typical layout for a compost yard.

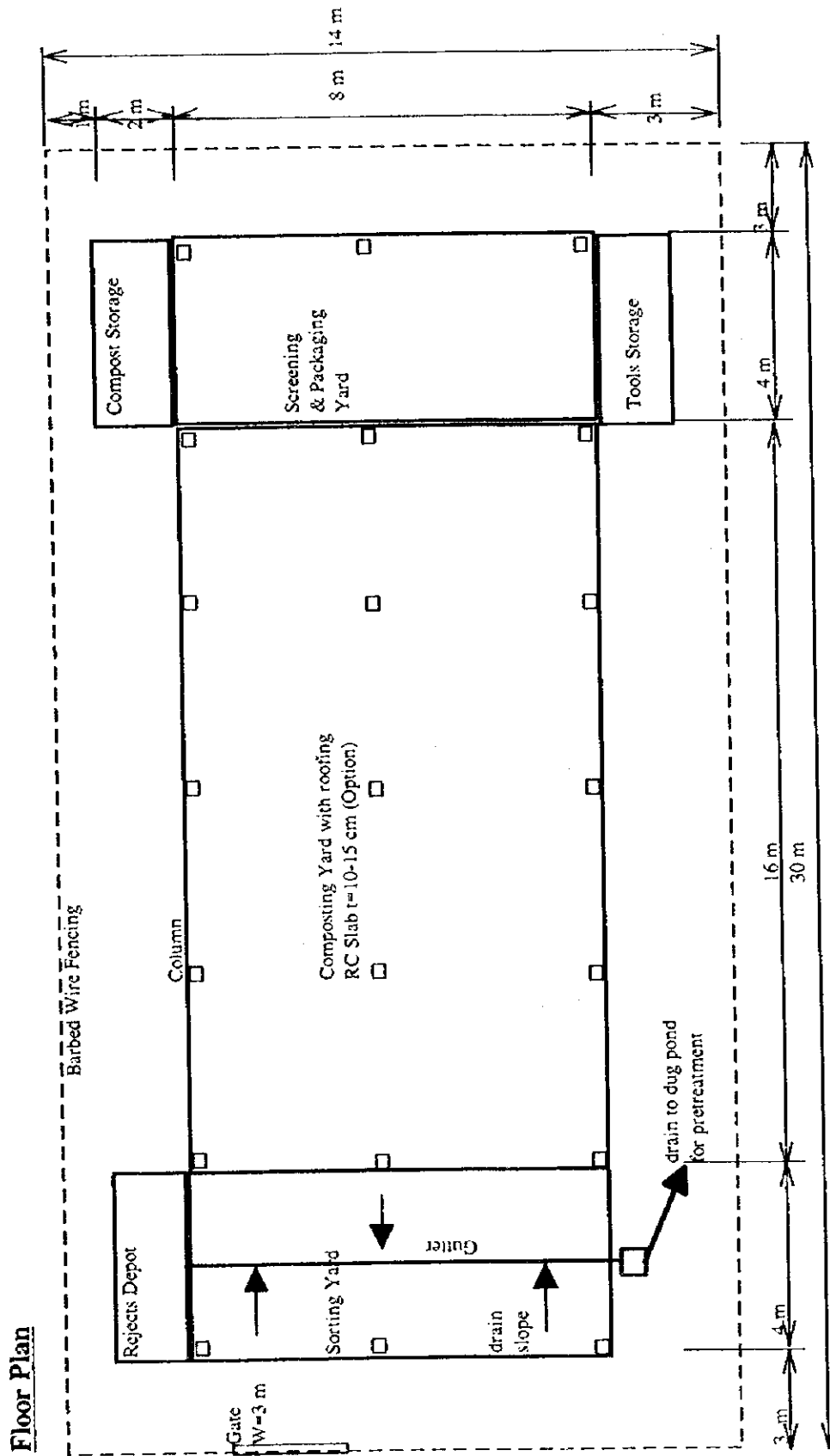


Figure 1 Schematic: Typical Layout for a Composting Operation

If you are a group, and you do not have any land, there is a way that you can try to get some space. All land belongs to the Provincial Administration. Once a group is registered and recognised, they can approach the area chief for acquiring land. The land is given under a temporary occupation. This is the official procedure, although it is not easy and may be a lengthy process.

3.2 Infrastructure Requirements

You will require a certain amount of basic infrastructure for your composting enterprise. The compost yard should be covered by a shade (but left open at the sides) so that the compost is protected from drying out by too much sun, and from becoming too moist from too much rain. The sides of the compost yard should be left open to allow fresh air to blow through. You could use chainlink fencing or timber off cuts to prevent animals getting into the yard. A simple structure will be required for storage and as a small office. This structure ought to be lockable. Also recommended is a water tank and a rain water harvesting system, as it is important to add just the right amount of water during the composting process, especially during the dry season. You may also have to dig trenches in case of water accumulation (especially during the rainy season) to direct excess water and any overflow from the rainwater collection tank into the nearest drain.

3.3 Tools and Equipment Required

The following are the requirements for tools and equipment that you will need. The tools will make the work easier, as composting is very labour intensive. In addition, protective items such as gumboots, gloves and masks are very important, particularly when sorting out waste. This is because waste could cause some health problems if not handled with care. Also note that the quantities of the tool requirements will depend on the size of your group/the number of people who are going to work on the composting project.

List of tools requirements:

- Wheelbarrows/handcarts
- Spades
- Forks (hay fork, pitch fork)
- Jembes
- Pangas
- Watering Cans
- Hosepipe
- Sieves
- Weighing Scales
- Gumboots
- Gloves
- Scarves
- Rakes
- Packaging Bags

3.4 Labour

You will need labour in order to construct your composting yard, and you will need labour in order to carry out the compost production.

Provided that you already have the space designated, and that you are able to readily purchase materials required, it should only take approximately 5 days labour to construct the yard. Labour requirements at a minimum would be a supervisor experienced in construction, 2 labour assistants. You may also require the services of a specialist e.g. in installing the rain water harvesting system. This may take a further 5 days labour.

Labour will be required for a minimum of 2 days a week in order to start and maintain composting piles (you may find that you need more days in the week in which to do the work). Tasks that will need to be done are outlined under "Starting the Compost Production" below. It is recommended that you have about 5 people available to work on a part time basis. You would need this many people (possibly even more!) especially if you are also going to be responsible for collecting organic wastes from households and institutions, or even dumps.

3.5 Cost Projections/Feasibility of Project

Once you have identified both your willingness and requirements to start a composting enterprise, time spent in financial planning (or "budgeting") is time well spent. This will help you estimate what your start up and running costs will be. From these estimates, you will have to work out if the project is viable, and also how you will go about raising the money to start. People will be more willing to listen to you if you have done this planning. It shows that you have commitment, and that you have thought about the finances involved.

Table 1 is quite a comprehensive list of the items that you will need to put in your budget. Try and think of everything, ranging from the purchase of nails through to any repayments that you might have to make on loans. It also helps to put in an item for repairs and maintenance, and an item for "other" types of payment which you could not predict. Table 2 gives a practical example of start up costs and an estimate of running costs for a real group. Note that the group already had some tools (e.g. wheelbarrows) and infrastructure (e.g. lockable store) in place. Start up costs were financed by a donor. Running costs will have to be financed by the group and from sales of compost.

Table 1 Comprehensive list of items to be put in a budget for starting up a composting operation

START UP COSTS

Infrastructure	Quantity	Unit Cost	Total Cost
Roofing sheets			
Gutters			
Rainwater tanks			
Storage structures			
Nails			
Wooden planks			
Cement			
Sand			
Gravel			
Tank			
Support posts			
Fence posts			
Fencing			
Gate			
Padlocks			

Tools

Wheelbarrows
Spades
Forks
Jembes
Pangas
Watering cans
Hosepipe
Sieves
Weighing scales
Gumboots
Gloves
Scarves
Rakes

Labour

Construction supervisor
Labourers
Specialist technicians

Other

Transportation costs
Group registration fees
Training honorarium

OPERATING COSTS

Administration	Quantity	Cost/Unit	Total Cost
Record books			
Stationery			

Production

Packaging bags

Labour

Compost testing and analysis

Water

Marketing

Brochures

Posters

Postage

Communications

Repairs and maintenance

Replacement of tools

Repairs

Other

Transportation

Interest payments

Loan repayments

*Table 2 Practical example of a budget, and estimate of running costs for a real group***START UP COST****Infrastructure**

Cedar support poles	3640
Wooden planks	2354
Iron roofing sheets, cement, nails	10400
Sand, ballast	1200
Rainwater collection tank and guttering	4935
Rainwater collection system: cement, nails, glue, wire mesh enclosure	4065
Transport of materials to site	3410

Replacement of tools

Gumboots and hosepipe	11118
Gloves and face masks	10710
Weighing scale	1800
Fabrication of heavy duty sieve	10540
Transport of materials	2800

Labour cost

Technicians and labourers	8000
---------------------------	------

Total start up cost	74972
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OPERATING/RUNNING COSTS

	Quantity	Total Cost
Administration		
Record books		500
Stationery		1000
Production		
Packaging bags	250	4500
Labour (volunteer)		0
Compost testing and analysis	4	6720
Water		5000
Marketing		
Brochures (photocopy)	500	2000
Posters (photocopy)	500	2000
Postage		3000
Communications		6000
Repairs and maintenance		
Replacement of tools		
Repairs		
Other		
Transportation (bus fares, hire)		5000
Interest payments		
Loan repayments		
Contingency		1280
Total running costs		<u><u>37000</u></u>

4. STARTING THE COMPOSTING PRODUCTION

4.1 Ingredients for Composting

The following “ingredients” are needed in order to produce compost:

1. A reasonable amount of waste in two different forms:

(i) *Green (wet) wastes*

- food remains including egg shells, bones (without meat or fat)
- fruit and vegetable peelings
- freshly cut grass, tree leaves, weeds etc.
- tea leaves, coffee residues
- stinging nettle, comfrey

These are rich in Nitrogen and contain trace elements

(ii) *Dry wastes*

- dry grass, tree leaves
- saw dust from timber workshops
- straw, maize stalks etc.

These are rich in Carbon. Also wood ash (for potash) may be used. Note that the ash must be from wood and not charcoal or coal.

2. Top forest soil/fertile soil

Note:

Other excellent materials that can be used to make compost include: animal manure such as chicken manure, dried blood, bone and fish meal.

Soil is good as it adds the micro-organism population in the pile, gives the compost a good texture, keeps moisture and nitrogen from escaping, reduces odour and keeps flies away.

The following materials may NOT be composted:

- charcoal ashes - high carbon dioxide content robs a compost pile of oxygen, slowing down the composting process
- dog and cat manure - contain harmful pathogens
- any organic matter contaminated by pests or disease - pests and bacteria might not be killed during the composting process, and could be transferred to new crops.
- eucalyptus and cassia tree leaves - poisonous to some of the microbes important for composting
- meat and animal fat - attracts pests such as flies and rodents, take a long time to decompose, and cause odour

4.2 Collecting the Wastes

The process starts at household level, where the wastes are generated. The easiest way to conduct your operation is to convince householders in your area to set aside their vegetable wastes for you to collect regularly. This is preferable to sorting out suitable wastes from a dumping area - the wastes may be contaminated, and it is a health hazard. One incentive that you could use for obtaining householders co-operation is to distribute garbage bags to them, to facilitate source separation of the wastes.

The separated wastes can then be collected by wheel barrows twice or thrice a week (most groups don't do this daily since the members have to also attend to their daily chores).

Once all wastes are brought to the project site, the recycling process begins. The recyclable inorganic wastes are sent back to respective recycling factories while organic fractions are put through the composting process in "wind row" systems.

4.3 Setting Up the Composting Production

The windrow system of compost production

The method of composting described is known as the "windrow" system. This is the most suitable system for a compost production enterprise, because:

- it is low cost
- easy to understand and operate
- uses local equipment
- can be carried out in the open in most climates
- adapts easily to changing material types and throughput rates
- can be used for small community schemes and even larger installations

The main disadvantage of the windrow system is that control of the process is not as good as some of the other systems, which means an extended process time is required. Typical production time for compost is 6 to 8 weeks.

Step 1: Preparing the land

In the windrow system, a pile of compost is made and then "turned". The turned pile is put in an adjacent space, whilst a new pile is started in the original area. This is a continuous process: every time a pile is turned, it is turned into a new space. **Figure 2** shows how to arrange the land for the windrow system, and how the system works. Each pile should take a space of about 5 ft by 5 ft.

The land will need to be cleared of all vegetation. The soil should be dug and loosened up to a depth of about a foot. This will allow any excess water to drain away.

Step 2: Starting the pile

Make a space of 5 ft by 5 ft at one edge of the cleared and loosened land. Evenly spread a layer of larger dry wastes (small tree branches, straw, banana leaves etc.) up to a thickness of up to half a foot. Add a layer of smaller dry vegetation (chop/shred if necessary) on top of this, to make up the layer to about 1 foot. Moisten. The dry layer is important as it will allow air to pass freely through the pile.

The dry layer is then followed by a layer of the same thickness of green wastes.

If possible, the green waste layer should then be covered with 1 inch of soil or animal manure.

Precaution must be taken when balancing these two important layers, as these are the layers that determine the decomposition rate of a compost pile (C/N ratio).

Moisten the pile, and then repeat this process of layering until the pile is about 5 ft high. Remember to water each layer.

Once the pile has been built, insert a long sharpened stick diagonally right through to the centre of the pile and leave the process to start. The stick acts like a thermometer. Within the first 72 hours the pile should attain the thermophilic temperature (35-45°C). This is indicated by steam seen flowing from the pile, and hotness of the part of that stick that was driven into the pile on completion of layering (take the stick out of the pile every week, and feel it!). If the stick is hot, the process is going well. If the stick is not hot, the pile may need more or less water, and more air. If the stick shows signs of a white substance on it, the pile will need more water added to it. To increase the amount of air, the pile should be "turned" more frequently (see below).

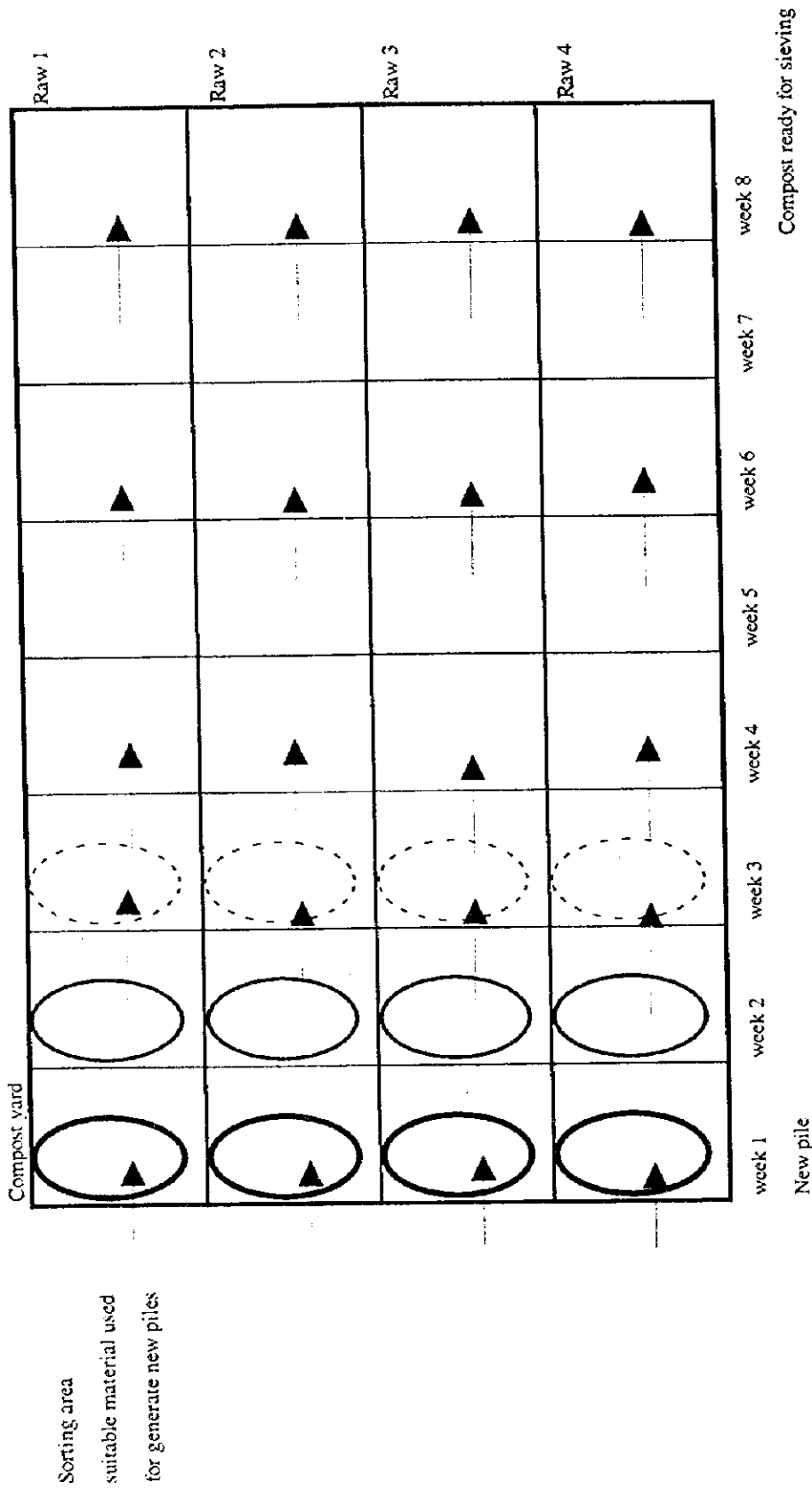


Figure 2 How to Arrange the Land for the Windrow System and How the System Works

Step 3: Turning

Within one week, the pile shall have sunk down by almost a quarter. This would block all the air spaces in the pile and most moisture shall have escaped due to high temperatures. If the pile is not turned to improve these two conditions the process would change into an anaerobic process, which is slow, time consuming, and unhygienic. Turning also promotes uniform decomposition of all the wastes.

On a loosened bare land of the same measurement and conditions above, all the outer layer of the pile is scooped to the centre and moistened. The rest of the pile is scooped and evenly spread over these with limited moistening till the whole pile is done and the stick (thermometer) is returned. The pile should end up being turned from the inside out, so that the outer layer of the old pile becomes the middle of the new pile, and the middle of the old pile becomes the outer layer of the new pile. The pile should gain some temperature over 45°C within 72 hours.

The turning process is necessary on a weekly basis till between 6-8 weeks when the pile will cool off, an indication that all the organic fraction has decomposed.

Step 4: Once the compost is ready

A little drying may be necessary before the compost is sieved, weighed and packed for sale. The final product should be both easily handled, and visually acceptable (e.g. should not have contaminants such as pieces of glass etc.).

Typical screening sizes are:

Fine compost (first grade): less than 15 mm

Mulch standard compost (second grade): 15 to 40 mm

Return to the process: greater than 40 mm

Controlling the process to maintain compost quality

The following need to be considered for achieving a good standard of compost quality.

Porosity: The dry waste layers permit the free flow of air and expose larger surface areas to the active organisms

Moisture content: Moisture is needed in order to have high microbial activity. The optimum moisture level depends on the type of material - the thermometer stick will give you a good indication. Bear in mind that the moisture content value reduces during the process due to evaporation, so more moisture should be added. If the thermometer stick, or visual inspection reveals that the moisture content is too high, it may be reduced by adding a "bulking agent".

Nutrient content: Nutrient balance is very important to suit the wide range of organisms involved in the composting process. Usually the Carbon/Nitrogen ratio is used as an indication. The C/N ratio of typical refuse is about optimum.

Aeration: Sufficient air is required to meet the microbial needs in order to maintain aerobic conditions, and to promote evaporative cooling of the pile (to prevent temperatures getting too hot).

Temperature control: Maintaining an elevated temperature is very important as it greatly increases the rate of biodegradation, and exposure to high temperatures for a controlled time kills harmful pathogens. The temperature must not get too hot, however, as this will kill the micro organisms carrying out the composting.

The method of composting by turning has been widely used by existing groups involved with this kind of activity, but conditions are not controlled very well. This affects both the quality and the quantity of compost produced. Composting is a natural process, and it can flourish if certain procedures are followed in order to control conditions.

1. The pile should be covered with mature compost at each turning until flies and odour are no longer a problem (generally after the second turning).
2. Turning should be carried out every 3 days for the first three weeks (approximately). The quicker you need compost, the more often it needs to be turned.
3. The water content should be kept in the range of 45-55% and adjusted if necessary during turning. If measuring stick shows prominence of white "fire. fang" fungus, this means that the water content is less.
4. The operating temperature should be kept in the range of 45-65°C by making the appropriate changes in pile cross-section during the turning process, if necessary.
5. The composting must be carried out in two phases, the end of the first phase being achieved when the temperature does not rise above 40°C.
6. The material should only be considered as compost (for general purpose use) after a two-phase system of composting as described, in order to ensure that the compost has fully decomposed, and there are no pathogens in the end product.

Summary of tasks required

The following is a summary of tasks that will need to be done during compost production:

- Collecting the wastes
- Sorting the wastes
- Shredding the wastes
- Carrying the wastes to the composting yard
- Making the compost piles
- Covering the piles with soil or finished compost
- Turning the compost piles

- Adding water to the compost piles
- Checking the compost piles' temperatures
- Clearing any leachates and maintaining drainage channels in the composting yard
- Drying the compost (if necessary)
- Sieving the compost
- Blending the compost
- Weighing and packaging the compost

4.4 Certifying Compost Quality

It would be helpful to test the quality of the compost once in a while, to ensure that you are managing the process correctly, and also to have a clear idea of the quality of compost you are producing. This would also be useful information when you are trying to market the compost. Table 3 below shows some actual results from a compost test done on compost produced by a community group. The important parameters are listed in Table 3.

Testing can be quite expensive, but it is important to carry it out, in order to give your customers some confidence in your product.

There are several laboratories in Nairobi which can test the quality of the compost. Most of the laboratories, however, are over-stretched in their services, and may take a long time to produce your results. We recommend that you try the soil laboratory of the Department of Soil Science, University of Nairobi, who have experience in testing compost quality, and who are also conducting research on organic fertilisers in general.

Table 3 Compost test results and important parameters to be tested

<u>Parameter</u>	<u>Test Results</u>			
	<i>Sample 1</i>	<i>Sample 2</i>	<i>Sample 3</i>	<i>Sample 4</i>
pH (in H ₂ O)	9.30	8.77	7.80	9.3
% Carbon	2.41	6.23	1.87	2.22
% Nitrogen	1.06	6.23	0.95	1.04
Phosphorous (ppm)	410.00	21.55	200.00	500
Potassium (mg/100g soil)	60.00	49.2	24.50	55
Calcium (mg/100g soil)	5.50	1.95	10.00	7
Magnesium (mg/100g soil)	5.40	2.25	6.70	4.6
Sodium (mg/100g soil)	7.50	6.60	5.00	7
Copper (ppm)	1.00	0.63	0.25	1
Iron (ppm)	5.00	21.10	15.00	5
Zinc (ppm)	11.00	1300.00	170.00	6
Manganese (ppm)	366.00	1110.00	110.00	390

The analytical data indicate that:

The compost can be incorporated in soils of strong acidity (high pH and phosphorous). In acidic soils (low pH) phosphorous is fixed and hence not available to crops. Addition of the compost in such soils would be an advantage since phosphorous will be availed and there is a possibility of improving the pH levels with time.

The application of the compost should be in freely draining soils and restricted to areas of high rainfall where pH values are less than 5.0.

5. SETTING UP A VEGETABLE TRIAL GARDEN

To effectively test and market your product, your group may be required to set aside a piece of land within their project site to be used as a demonstration/trial garden. An area of at least 20 ft by 20 ft would be ideal, because it would be able to provide at least 5 beds of 3 ft wide and 20 ft long and a 1 ft pathway in between the beds.

The demonstration/trial garden is important because it will offer a practical example of compost utilisation and how crops flourish in a garden dressed by compost. It will

also give your group first hand knowledge about rates of application of compost, and possibly even how to use it in conjunction with other fertilisers for best effect.

To effectively make use of the small piece of land the group, it is recommended that the group adopts a biointensive gardening system, which although labour intensive in the initial stages, has an impressive long term result.

Step by step preparation:

1. Clear the land of any vegetation and measure out the area.
2. Sub-divide land into beds of a width of 3 feet, leaving a space of 1 foot in between the beds to serve as a pathway.
3. Spread compost along every bed up to about 1 - 3 inches thick.
4. Use the technique of "double digging" (See Appendix 2) to loosen the soil in the beds. This process loosens soil up to 2 feet deep to avoid competition of plant roots once planted in the bed. Compacted soil forces plant roots to spread sideways rather than going down, hence creating competition between plant roots, hence stunted growth and poor yield.
5. Level the bed and water well using a fine nozzle, and prepare to sow the seedlings.
6. Since the idea is to loosen the soil, it is advisable that no one steps in the bed during planting, weeding or harvesting. The person must use the pathway in order to do the work.
7. The benefits of double digging (intensive gardening), although labour intensive in the initial stages, include:
 - the group will enjoy 5 years of working on the garden without having to redig it again;
 - since there is less competition in plant roots, the yield is expected to be very high and the farmer may plant as many different crops as closely as possible;
 - the moisture loss will be very limited, hence the farmer is able to have his garden the whole year round. (in dry season, mulching will be necessary).

6. THINGS TO BE AWARE OF

6.1 Health and Safety

There is a need for protective clothing, especially when picking and sorting wastes and sieving the compost. Gumboots, gloves and scarves/masks for the face are essential items in order to prevent coming into contact with hazardous matter, and accidents such as cuts and grazes.

You may find that there are excess flies during the production of the compost. It is very important to control this through the simple method of covering each compost pile with a layer of ready compost or soil, as stated earlier in this manual. This will prevent flies from breeding. It is also important to control the composting process as much as possible, ensuring that enough air and moisture is present, and the piles are turned frequently. This will ensure thorough decomposition, and effective removal of harmful pathogens. There will be no bad odour from the compost, and the final product will be of a high quality.

6.2 Seasonality of Production

From the experience of existing composting groups, compost production is high during the months from April to September (harvesting seasons).

Production is especially low during dry seasons due to a lack of green wastes, and the scarcity of water.

During your planning, you must take these factors into account, and try to find an adequate source of water. You might try approaching the Nairobi City Council (Community Development Section) for gathering green wastes from markets during dry seasons.

6.3 Trends in Demand and Supply

Demand is very high at the on set of the long rains (for planting), and is low during the dry season.

During your planning, take into account the fact that currently supply cannot meet demand, which is very high when the rainy season starts. See if it may be worthwhile for you to continue production at a high level during the dry season, in order for you to be able to meet the demand sufficiently when required. This will mean you will need adequate storage space for all the compost you produce.

6.4 Resistance to Your Operation

You may encounter resistance from neighbours because of:

- Lack of understanding about composting
- leading to a fear of dumping/creating a new dumpsite/nuisance

- Fear of land grabbing, especially where land is given under temporary ownership by the provincial administration
- Selfishness - people reluctant to give you their waste if they know you are making money from it

How to counter the resistance:

- Creating awareness by distributing posters, public barazas jointly with provincial administration and the Nairobi City Council;
- Distributing collection bags to every household, and regularly collecting their organic wastes.

Please note that the most important and effective tool is to spread public awareness and information about what you are trying to do. If you have managed to solve the problem of a dump site, as one group has managed to do, the results speak for themselves, and the community around your area will appreciate your efforts!

7. HOW TO MARKET THE COMPOST

In running any kind of enterprise every activity is equally important. Producing lots of compost in itself is not enough. You are producing it in order to sell. You may find currently in your group that you are either storing large piles of compost, or that sometimes there is more demand for your compost than you can supply. In the first case, you need to consider a better effort in selling the compost, and in the second case, you need to consider a better way of producing and storing the compost - for example, you may find that no one wants to buy compost during the dry season - so why not still continue producing the compost and storing it in readiness for the large demand that will come during the rainy season? In any case all these things need to be considered in the way that you market the compost.

The first step in marketing your product is to understand the product, and to understand the people to whom you are trying to sell - you need to do a market survey. Try and answer the following questions:

(1) Who are my customers currently?

(2) Who will be my customers and what are their needs?

How will I handle their needs:

Price of the product

Quality of the product

Place where you are selling the product

Delivery of the product

Communications

How will I market my product to the customers I have identified?

(3) Do I know enough about my product to be able to explain its advantages, and how it may be used, to my customers?

(4) Who are my competitors?

(5) At what price can I sell my compost?

In the sections below, we have tried to summarise some information that you will find valuable in explaining to your customers the value of compost. It is important that you are able to answer questions that they may have: remember, compost is a fairly new product to people who have been used to using chemical fertilisers alone, and you will need to be able to advise them fully.

We have also tried to give you some ideas about marketing techniques for selling the compost, whilst recognising that most groups have limited resources and facilities. The most important thing to remember is that without marketing, you will not achieve good sales.

7.1 Product Information

Please note, that we have included a sample of an information sheet that you can copy and provide to your customers when they purchase compost from you. This includes information about the benefits of compost, and how to use it. The sample information sheet is in **Appendix 3**.

7.1.1 Advantages of Compost

Compost is a very good product for the following reasons:

- It has been produced by using a natural process
- It doesn't cost much to produce compost
- It is cheap to buy
- adds soil fertility - compost contains trace elements such as iron, zinc, and magnesium that are not found in ordinary chemical fertilisers. Although they occur in very small quantities, these trace elements are as important to plants as nitrogen, phosphorous and potassium.
- Improves soil structure over time which means that good compost can hold up to six times its own weight in water. The water is held in reserve so that plant roots can use it during the dry season. This is especially important in arid areas. The rich light texture of compost loosens clay soils and makes sandy soils less porous. This allows air and micro-organisms to pass more freely and lets roots grow easily into the soil.
- Provides plant nutrients
- Provides ideal conditions for micro organisms and worms in the soil
- It has been produced from vegetable waste that would have just been dumped, adding to Nairobi's waste problem

7.1.2 Can Compost Compete with Chemical Fertilisers?

It is important to know the advantages and disadvantages of chemical fertilisers in order for you to be able to convince your customers that they should be using compost. However, until more research has been done about compost production here in Kenya, and until there is an institution that can fully certify the compost, it is recommended that farmers use the compost in conjunction with chemical fertilisers. This is because at the moment compost production is not a controlled process, and not enough tests have been done to test the compost quality.

7.1.3 Advantages of Chemical Fertilisers

- Provide a guaranteed amount of nutrients to the soil
- Have a high degree of farmer awareness
- Are well distributed in shops

7.1.4 Disadvantages of Chemical Fertilisers

- Chemicals leach quickly out of the soil when it rains, taking their nutrients with them
- Chemicals can kill worms and micro-organisms that improve soil quality and help crops grow
- Chemical fertiliser can make the soil more susceptible to erosion
- Chemical fertiliser is known to increase soil salinity hence rendering it unfit for plants.

7.1.5 What Can Compost be Used for?

This information is very important. A potential client such as a farmer will certainly ask such a question, and will also ask about rates of application. Can you answer?

One of the best ways of testing the capabilities of the compost you are producing is to apply it on your own vegetable/flower trial gardens, as explained previously in this manual. This is a very practical way to determine what your compost works best on, and also to be able to answer an enquiry.

Use of compost in gardens and shambas

Compost is excellent for growing quickly maturing crops like vegetables and flowers, and when combined with the technique of double digging, can increase production by as much as 3 to 5 times.

Rates of application depend upon the quality of your soil, and the size of the shamba.

Compost can and should be regularly dug into any soil - in the garden, in pots, vegetable beds, etc. to add nutrients and keep plants growing healthily. It can be sifted through 0.5 cm mesh and used for planting seeds in boxes.

Top dress the area with an inch or two of compost and cultivate it into the upper layers of the soils. Do this every time you plant. The results will be evident within a few seasons.

Planting trees

When trees or seedlings are planted, compost should be mixed generously and added below where the roots will sit, and watered well. Compost can also be added around the seedling hole. This will encourage the roots to grow downward rather than up to the surface, and will make the plant stronger and more resilient in wind or rain. The trees will need less water, and will also be more resistant to attacks from pests and disease.

Using compost on larger areas of land

For planting crops like maize on larger areas, a mixture of compost and soil can be placed in holes directly with the seeds. You will need to experiment with different amounts most suitable for your area.

Using compost in conjunction with chemical fertilisers

The main function of compost is as a soil conditioner. Compost also contains nutrients in the form of Nitrogen, Phosphorous, and Potassium and trace elements such as iron, zinc, and magnesium, which are also very important to plant growth.

Compost may be used in conjunction with commercial fertilisers, and in fact both phosphorous and nitrogen are made more available (through the combination of organic compounds found in the compost and the activity of the bacteria with the fertiliser) to the plants than if the commercial fertilisers are used alone. The effect also lessens leaching of soluble inorganic nitrogen.

7.2 How Do I Market My Compost?

7.2.1 Your Customers

If you are an existing group, how are you relying on achieving sales currently? Do you have a list of your current customers? Do you have a way of keeping in touch with them in case they want more compost? If you are a new group, have you identified who you think could be your potential customers? It would help you to know this information by visiting some of the shops which supply seeds and farm inputs, seeing what kind of fertilisers they sell, and who they sell to. Initially your main markets will be:

- Small farmers
- Households which have gardens

7.2.2 Communicating with Your Customers

Marketing means two things. First that you make people aware of your product. Second, that people wish to buy your product because it is unique in some way. In what way is your product unique?

A means of communication is very important for marketing purposes. You must be able to communicate with your customer, and a potential customer must know how to contact you. Do you have a suitable means of communication available?

Once you have a suitable means of communication, and sufficient product knowledge in order to be able to answer questions about your product, there must be an effective way for you to make people aware about your product.

There are many different ways of making people aware of your product. The difficult thing is to choose the best means of doing so - some things such as advertising can be too expensive. Here are some ideas for you to explore:

- (1) Visiting some shops that supply products to small farmers, and convincing them to sell your compost
- (2) Visiting nurseries to convince them to sell your compost to their customers
- (3) Contacting the people who are already your clients and asking them if they would like to purchase more compost from you, and also if they can recommend other customers
- (4) Putting up posters in environmental institutions where well wishers may wish to support what you are trying to achieve
- (5) Participating in "environmental" days organised by environmental institutions in order to exhibit and promote your product
- (6) Visit associations of farmers, gardeners, small farmers, etc. To make them aware of your product, and ask if you can be included in their newsletters
- (7) Volunteer to appear on radio shows and tv programmes etc.

Included in this manual in Appendix 4 is a sample brochure that you could copy and use to market your product.

7.2.3 Supply and Demand

There is a danger!!

What happens if there is too much demand for your product? What happens if there is no demand for your product?

This can be quite a problem! You must try to keep your marketing at a scale where you know that you will be able to cope with the response. This may be difficult at first! There is an option available to you in case you urgently need to get some compost. Do you remember the Composting Board? Why not contact the other members and see if any of them have some extra compost for sale, that they can supply to you? You may be required to take orders for compost - you must therefore have a system to remind you who asked for the compost, and to be able to call them when it is ready.

If there is no demand for the compost, you are probably in the dry season, when no planting occurs. If you have the space, you should continue producing compost and storing it, ready for the large demand that will be faced when planting begins at the start of the rainy season.

7.2.4 At What Price Can I Sell My Compost?

This is a very important question. At what price are people currently selling compost, and how long has it been at this price? How have you arrived at this price. Why? Have you done any research to see what prices fertilisers and even compost sell at elsewhere? Have you incorporated items such as transportation costs and the costs of

packaging into your costing? At what price should you sell to other members in the composting board?

You must be able to include certain costs in your pricing, such as the cost of transportation and packaging. Also, you should have a pricing structure. You may have a certain price that you will sell compost to other members of the composting board, if they require your surplus. You may have another price for people who are willing to sell your compost for you in their shops or nurseries. You may even have a third price for directly selling compost to a client! If you do not price your product carefully, you may find that you are not making any profit - it is that important! This is how you can go about determining the price of your product in a simple way.

- (1) Do some research to find out average prices of fertilisers and compost already existing
- (2) Add up what you estimate to be all your running costs for a year
- (3) Determine how much compost you think you can produce
- (4) Divide (2) by (3) to get an indication of the true cost per kg of compost
- (5) Try and come up with a level of cost that will compete with (1) and will cover your costs, and generate an income for you

Worked example

Assume group can produce 2 tons a month, which is 24 tons a year.

Assume running costs for a year are Kshs 37,000

Cost of production of the compost is $\text{Kshs } 37,000 \div 24 = 1542$ per ton, which is $1542 \div 1000 = 1.54$ per kilo.

The current selling price of compost is Kshs 5 per kilo. This would cover the cost of production of Kshs 1.54 per kilo and give some profit, however in order to determine a more realistic price, one should take into account the comparative costs of fertilisers and soil conditioners available in the market. In addition, it would be ideal once the enterprise is up and running, to pay for labour, and this too would need to be taken into account. In the initial stages, however, the enterprise may have to rely on voluntary labour by committed group members.

8. KEEPING RECORDS

It is very important to keep good records. This will help you to track your money properly, and it will also tell you about how much your compost production is. In fact, keeping records can help you to see:

- if your venture is profitable or not;

- if you are producing less, enough, or too much compost;
- when your customers are most likely to buy (i.e. when demand is high);
- if your pricing needs modifying.

Records can also help you plan any future expenses for items that you may need such as replacement tools and equipment (i.e. it helps to manage your finances).

If you are in a group, then records are important in order to show each member how much income they are getting from the group, in other words, how they are benefiting from the hard work they are putting in - members need to know what money is available and how it has been spent. Accounting in this way also maintains friendship amongst the group, as it is transparent.

There are two types of records that should be kept:

- (1) Information about compost production and utilisation; and
- (2) Information about the income and expenses involved with the compost production

8.1 Information about Compost Production and Utilisation

This should be recorded in an exercise book. Please see Tables 4 and 5, which show a sample of how you should organise the exercise book.

Table 4 Recording Compost Production

File No.	Date Started	Date Finished	Weight Of Ready Compost

Table 5 Recording compost utilisation

Date	Compost Sold	Customer	Compost in Storage

Example:

Month of January

Pile No.	Date Started	Date Finished	Weight Of Ready Compost
1	1/1/98	31/1/98	150kg
2	2/1/98	2/2/98	100kg

Date	Compost Sold	Customer	Compost in Storage
1/1/98	200 kg	Mr. Mwangi Farmer P.O. Box 1234 Nairobi	2300 kg
5/1/98	10kg	SH Women's Group (for covering compost pile)	2290 kg

8.2 Financial Records

8.2.1 Recording Your Cash Income and Expenses

The most important rule is to make sure that everything is written down, and that every piece of paper (especially receipts) is kept.

You must record both your income and your expenses. An exercise book is best for this purpose. We call this a "cash book". Table 6 shows how you can organise the exercise book and gives an example of what a cash book for your composting group may look like. What is important is that at the end of each month there will be a balance in your cash book. This must equal the amount of cash actually held by the treasurer of your group. If it is not, there may be a mistake in the records - this should be checked, or maybe you forgot to enter something in the cash book (always insist on receipts!). In an extreme case, it may be that the money was used for a personal reason or even stolen - at least the records will alert you to this!

1. Keep all documents relating to the accounts
2. Use a cash book to record money coming in (e.g. from sales of compost) and money going out (e.g. purchase of bags).
3. Record all details as you go along
4. Have numbered receipts available to be signed by people to whom you give money, and also for you to sign when you receive money
5. File the receipts for the income and the payments separately, along with any other relevant paperwork.
6. Include the receipt numbers in your cash book as a reference
7. Count the cash regularly, and agree the total with the figure in your cash book

Controlling cash can be a tricky job. Here are a few hints that can help you to control your cash in a better way.

1. Always keep your cash secure, preferably in a lockable tin, which is kept in a safe or a locked cupboard.
2. Make sure that only one person is responsible for the cash. Whenever this person changes, let the outgoing person and the incoming person count the cash and agree the amount together. This should be written down and signed by both.
3. Ideally, the person responsible for the cash should be a different person from the ones keeping the accounts.
4. Someone in a senior position within the group (for example the group leader) should count the cash regularly, and agree the figure with the cash book. This helps the person looking after the cash, as she or he will be seen to be honest.
5. A senior person should also authorise any large or unusual payments. You may like to set a limit beyond which the person handling the money should obtain (written) approval for the expenditure.
6. Always issue receipts for any cash issued or paid, and make an entry in the cash book.
7. You should always try and know in advance how much cash you are likely to need. Don't wait until the time you need to pay someone before realising that you have no money left!

Table 6 Layout for a Cashbook

Date	Item	Receipt No.	Income	Payments	Balance

Example:

Month of January

Date	Item	Receipt No.	Income	Payments	Balance
1/1/98	Sale of Compost	1	1000		1000
2/1/98	Purchase of packaging bags	2		200	800
3/1/98	Bus fare to potential customer	3		40	760
4/1/98	Sale of compost	4	500		1260

8.2.2 Starting Up and Controlling a Bank Account

After some very hard work, we hope that you will be getting a good income. This should be shared out equitably amongst the group members. However, it is also recommended that a little money is set aside for the group's future. You could, for example, be setting the money aside for replacing tools or making some repairs to your buildings, or even to help expand the group's activities. This money that is set aside could be put in a bank account.

In general, there are two different types of account that you can consider.

(1) A current account is the most common type of account. You pay money in, and can write cheques to make payments from the account. Some banks offer interest on current accounts, but this is usually small. Bank charges are when banks make a charge for operating your account.

(2) A deposit account is an account in which you can hold some savings. The bank will pay you a better rate of interest, but you must inform the bank in advance when you wish to withdraw some money. A bank may also offer a savings account, which might have different conditions to the deposit account, or might be the same.

If the group decides to open a bank account, then records will also have to be kept, just as records are kept for controlling cash. These records should be kept in a bank book, you can use an exercise book for this purpose. Table 7 shows an example of how it should be laid out.

Bank statements are a way for the bank to let you know how much money you have in your account. Whenever you receive your bank statement, check it according to your bank book. The figures may not agree exactly: the bank may pay interest into your account, or you may have had to pay certain bank charges from the account. Apart from these, the amount of money in the bank statement should agree with the amount in your bank book.

Here are some hints for helping you to control your group's bank account:

1. The bank account should always be registered under the name of the group, and never under the name of an individual in the group
2. Arrange with the bank that there are two signatories from the group for any cheques written
3. Never sign a blank cheque: it is very easy for someone to steal money in this way
4. Remember that if you draw cash from the bank account, then you will need to record and account for this in your cash book

Table 7 Layout for a bank book

Date	Details	Paying in reference		Amount
Date	Details	Receipt no.	Cheque no.	Amount

Example

Month of January

Date	Details	Paying in reference		Amount
2/1/98	Sale of compost	756		1000
4/1/98	Sale of compost	757		500
Date	Details	Receipt no.	Cheque no.	Amount
5/1/98	Payment of rent	5	1250	600
8/1/98	Draw cash		1251	1000

APPENDICES

1. RESOURCE LIST OF INSTITUTIONS CARRYING OUT AND PROMOTING COMPOSTING

Friends of Nairobi Arboretum, Nairobi Arboretum, State House Road

Foundation for Sustainable Development in Africa, P.O. Box 22415, Nairobi
Tel. 223567

The Institute of Cultural Affairs, P.O. Box 21679, Nairobi,
Rose Avenue off Ngong Road
Tel. 724314, 712601
Fax. 729375

Kenya Agricultural Research Institute, Kaptagat Road, Kabete
P.O. Box 57811, Nairobi
Tel. 583301

Kenya Institute of Organic Farming, Off Lower Kabete Road
Tel. 583194, 583383

Ministry of Agriculture, Kilimo House, Cathedral Road
P.O. Box 30028, Nairobi
Tel. 718870

Nairobi City Council, City Hall
P.O. Box 30075
Tel. 224281, 226510, 722896, 632067


United Nations Centre for Human Settlements (Habitat),
United Nations Complex, Gigiri
P.O. Box 30030, Nairobi
Tel. 621234, 625001
Fax. 624267


University of Nairobi, Department of Soil Science
College of Agriculture and Veterinary Sciences
Kabete Campus
P.O. Box 30197, Nairobi
Tel. 592211


Uvumbuzi Club
P.O. Box 10788, Nairobi
Tel. 751607, 743615


2. THE DOUBLE DIGGING


The Double Digging Technique: 1. The Initial Double Dig


- 1 


1 After soil is lightly moistened, preloosen and weed entire area to be dug 12 inches deep with spading fork.
- 2 


2 Spread a 1-inch to 3-inch layer of compost over entire area to be dug (after mixing in a 1-inch layer of sand-optional-12 inches deep).
- 3 


3 Thoroughly mix in compost 12 inches deep.
- 4 


4 Remove soil from upper part of first trench and place a far end of bed.
- 5 

5 Loosen soil an additional 12 inches.
- 6 

6 Dig out upper part of second trench and throw forward into upper, open part of first trench.
- 7 

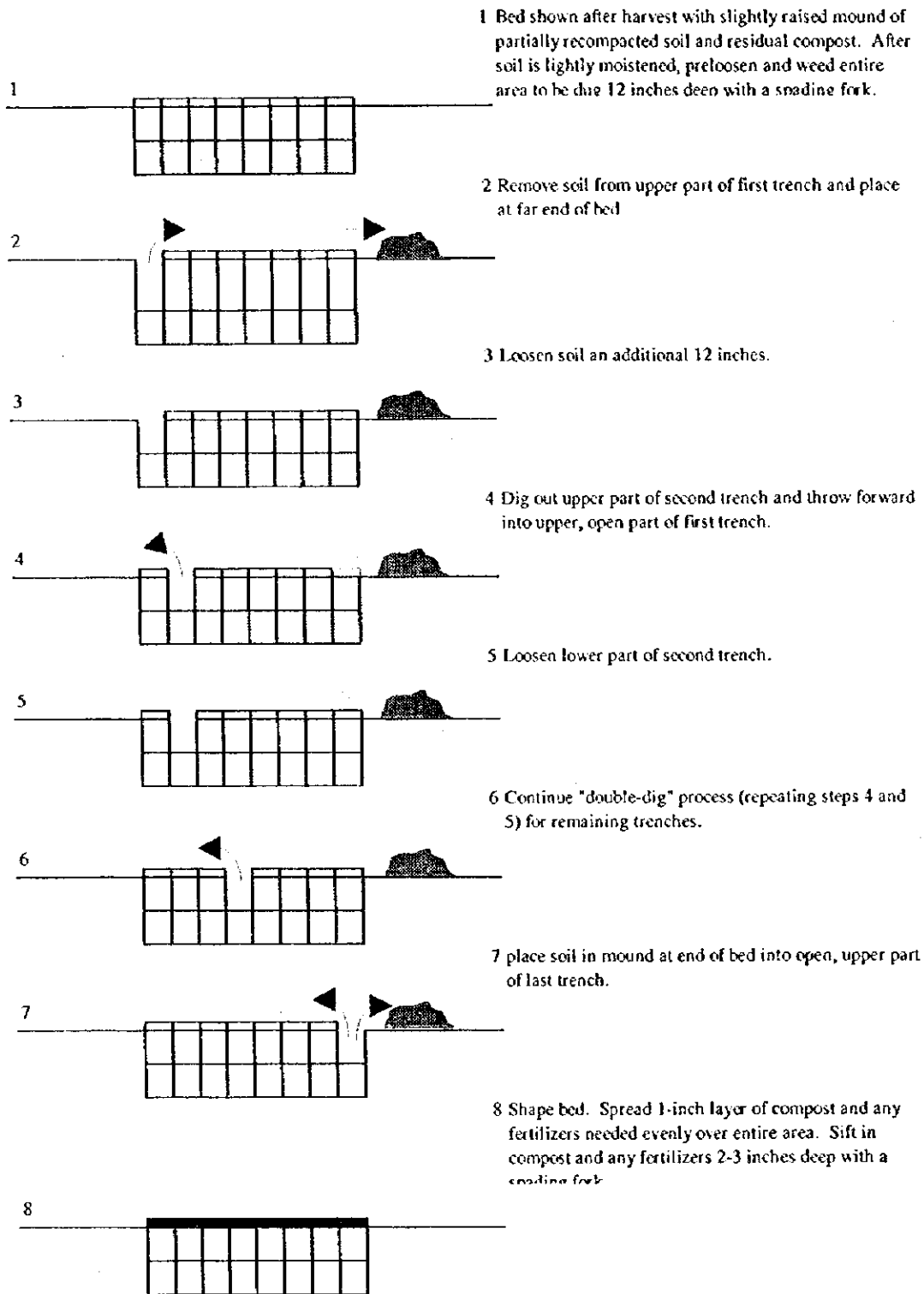
7 Loosen lower part of second trench.
- 8 

8 Continue "double-digging" process (repeating steps 4-5) for remaining trenches.
- 9 

9 Place soil in pile at end of bed into open, upper part of last trench.
- 10 

10 Shape bed. Then spread any fertilizers needed evenly over entire area and sift in 2-3 inches deep with a spad fork: the completed "double-dug" bed.

The Double Digging Technique: 2. On-going Double Dig



3. COMPOST: INSTRUCTIONS FOR USE

Functions of compost in soil

Compost adds balanced nutrients to the soil in an easily assimilated form, and helps improve soil structure by lightening heavy clays and improving water retention properties in porous sands. Compost also absorbs large amounts of water from the air: twice as much as garden soil; nearly four times as much as clay; and eight times more than sand. The nutrients, the nitrogen, phosphorous and potassium that are found in chemical fertilisers and even trace elements that are not, are used by the roots of growing plants.

Use of compost in gardens and shambas

Compost is excellent for growing quickly maturing crops like vegetables and flowers, and when combined with the technique of double digging, can increase production by as much as 3 to 5 times.

Rates of application depend upon the quality of your soil, and the size of the shamba.

Compost can and should be regularly dug into any soil - in the garden, in pots, vegetable beds, etc. to add nutrients and keep plants growing healthily. It can be sifted through 0.5 cm mesh and used for planting seeds in boxes.

Top dress the area with an inch or two of compost and cultivate it into the upper layers of the soils. Do this every time you plant. The results will be evident within a few seasons.

Planting trees

When trees or seedlings are planted, compost should be mixed generously and added below where the roots will sit, and watered well. Compost can also be added around the seedling hole. This will encourage the roots to grow downward rather than up to the surface, and will make the plant stronger and more resilient in wind or rain. The trees will need less water, and will also be more resistant to attacks from pests and disease.

Using compost on larger areas of land

For planting crops like maize on larger areas, a mixture of compost and soil can be placed in holes directly with the seeds. You will need to experiment with different amounts most suitable for your area.

Using compost in conjunction with chemical fertilisers

The main function of compost is as a soil conditioner. Compost also contains nutrients in the form of Nitrogen, Phosphorous, and Potassium and trace elements such as iron, zinc, and magnesium, which are also very important to plant growth.

Compost may be used in conjunction with commercial fertilisers, and in fact both phosphorous and nitrogen are made more available (through the combination of organic compounds found in the compost and the activity of the bacteria with the fertiliser) to the plants than if the commercial fertilisers are used alone. The effect also lessens leaching of soluble inorganic nitrogen.

The compost we produce is regularly tested in order to ensure its suitability for use in your garden or on your farm. Typical test results indicate the following content of nutrients in the compost:

<u>Parameter</u>	<u>Test Results</u>			
	Sample 1	Sample 2	Sample 3	Sample 4
pH (in H ₂ O)	9.30	8.77	7.80	9.3
% Carbon	2.41	6.23	1.87	2.22
% Nitrogen	1.06	6.23	0.95	1.04
Phosphorous (ppm)	410.00	21.55	200.00	500
Potassium (mg/100g soil)	60.00	49.2	24.50	55
Calcium (mg/100g soil)	5.50	1.95	10.00	7
Magnesium (mg/100g soil)	5.40	2.25	6.70	4.6
Sodium (mg/100g soil)	7.50	6.60	5.00	7
Copper (ppm)	1.00	0.63	0.25	1
Iron (ppm)	5.00	21.10	15.00	5
Zinc (ppm)	11.00	1300.00	170.00	6
Manganese (ppm)	366.00	1110.00	110.00	390

4. SAMPLE BROCHURE FOR MARKETING COMPOST

Brochure of Compost Produced by Community Base Composting Groups

PAGE 1

LOGO AND GRAPHIC

"I LOVE NAIROBI Keep it free of Garbage"

ORGANICALLY PRODUCED COMPOST

Made by self-help community groups from 100% organic matter

- What is compost?
- Advantages of compost
- Using compost
- About us
- How to order your compost

PAGE 2

WHAT IS COMPOST

Compost is produced by a completely natural process which turns organic waste material into a valuable organic fertiliser and soil conditioner.

ADVANTAGES OF COMPOST

Compost adds balanced nutrients to soil in an easily assimilated form, and helps improve soil structure by lightening heavy clays and improving water retention properties in porous sands. This allows air and micro-organisms to pass more freely and lets roots grow easily into the soil. Compost also absorbs large amounts of water from the air: twice as much as garden soil; nearly four times as much as clay; and eight times more than sand. The water is held in reserve so that plant roots can use it during the dry season. Compost contains the nutrients nitrogen, phosphorous and potassium that are found in chemical fertilisers and even trace elements (such as iron, zinc, and magnesium) that are not, and which are essential for the healthy growth of plants.

Advantages of compost are:

- It has been produced by using a natural process
- It is cheap to buy
- adds soil fertility
- Improves soil structure over time
- Provides plant nutrients
- Provides ideal conditions for micro organisms and worms in the soil

- It has been produced from vegetable waste that would have just been dumped, adding to Nairobi's waste problem

PAGE 3 and half of PAGE 4

USE CHEMICAL FERTILISERS WITH CAUTION

Chemical fertilisers provide a guaranteed amount of nutrients to the soil, and have widespread availability throughout the country. However, if chemical fertilisers are not used with caution, they can bring problems to your shamba or garden because:

- Chemicals fertilisers leach quickly out of the soil when it rains, taking their nutrients with them
- Chemicals contained in the fertilisers can kill worms and micro-organisms that improve soil quality and help crops grow
- Chemical fertilisers can make the soil more susceptible to erosion
- Chemical fertilisers are known to increase soil salinity in the long term, hence rendering it unfit for plant growth.

USING COMPOST

We strongly advocate the use of compost, and where necessary, such as in farms, the use of compost in conjunction with commercially available chemical fertilisers. Full instructions on the use of compost should be provided with every bag of compost that you buy.

Compost is excellent for growing quickly maturing crops like vegetables and flowers. Compost can and should be regularly dug into any soil, and in a sifted form, it can be used for planting seeds in boxes.

When planting trees, compost can also be added around the seedling hole. This will encourage the roots to grow downward rather than up to the surface, and will make the plant stronger and more resilient in wind or rain. The trees will need less water, and will also be more resistant to attacks from pests and disease.

For planting crops like maize on larger areas, a mixture of compost and soil can be placed in holes directly with the seeds.

Bottom half of PAGE 4

Compost Charges:

Delivery Charges:

Top half of PAGE 5

HOW TO ORDER YOUR COMPOST

Please fill in the application form below and put it in the order box provided at the same location where you found this brochure. One of our representatives checks the box weekly, and will process your order. You may also leave messages for us in the order box.

Bottom half of PAGE 5

Name:

Address:

Telephone Number:

Amount of compost required:

When would you like the compost?

Where would you like us to deliver the compost (delivery will cost extra)?

PAGE 6

ABOUT US

_____ is one of a number of Community Groups in Nairobi that are involved in recycling activities.

The compost we produce is made mainly using green wastes, including vegetable peelings that would have otherwise been dumped in one of the many dumpsites in our streets. The green wastes and vegetable peelings are collected either from markets, or from householders who separate their vegetable wastes at source and store them using bags or containers distributed by our group. This ensures that there is no hazardous matter in the compost. Group members then volunteer their time one or two days in a week to collect and sort the vegetable peelings, and to make and maintain the compost piles.

Our compost has been tested to ensure its suitability for use in your garden or on your farm. Typical test results are included on the instruction sheet that should be provided to you when you purchase the compost.

Name and address of institution

JICA logo

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7.7

PHOTOGRAPHS

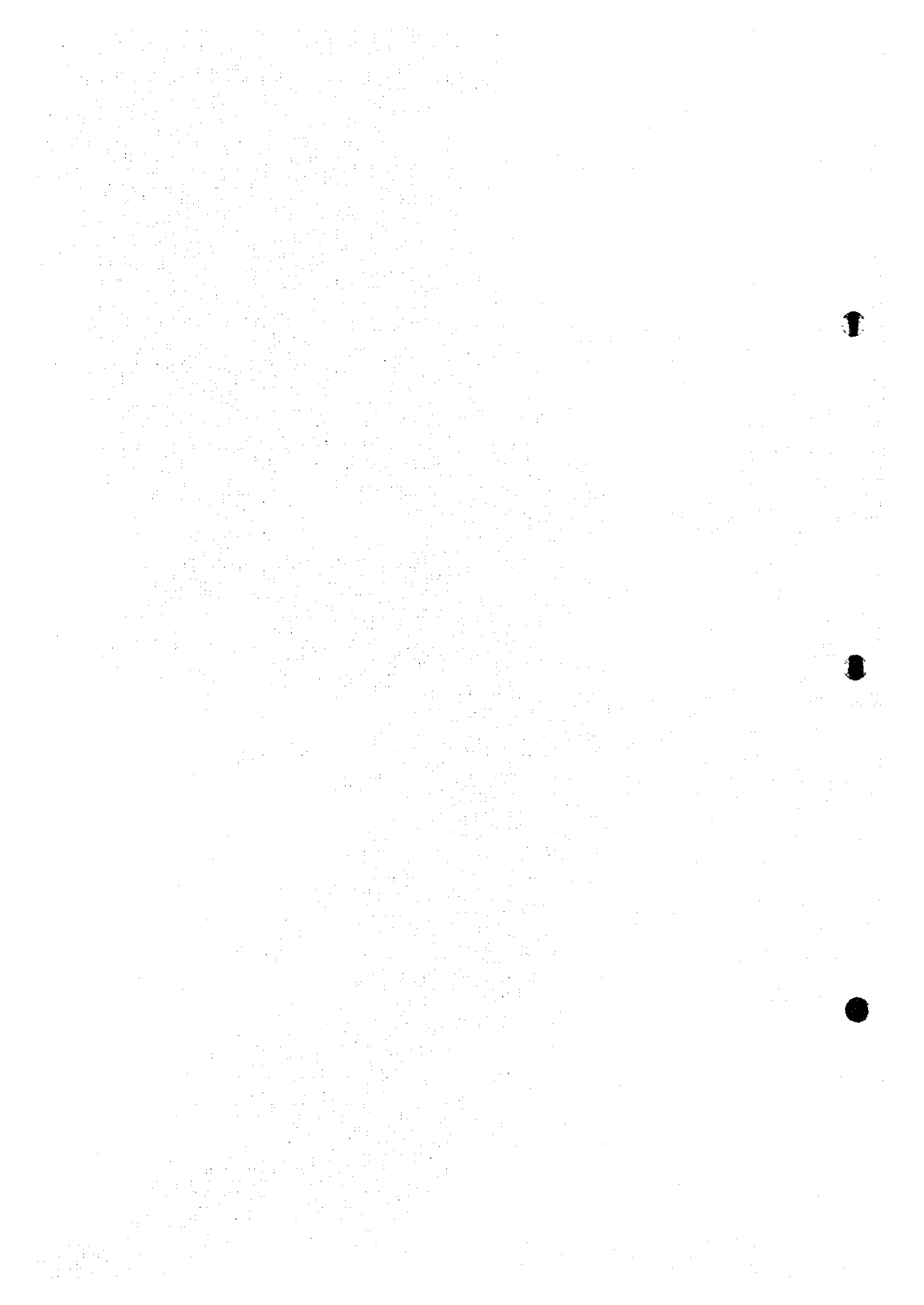


Plate -1 Garbage cubicles initiated by the Kawangware Afya Bora Self Help Group



Plate -2 Transporting green wastes to the composting site. Kawangware Afya Bora



Plate -3 *The original dumpsite, Kawangware Market*



Plate -4 *The Afya Bora Compost site, where the original dumpsite used to be*



Plate -5 The original state of the City Park Hawkers' Market dumping site



Plate -6 Organic wastes transformed into compost. City Park Hawkers' Market



Plate -7 Area for sorting wastes. City Park Hawkers' Market



Plate -8 Secure storage area for tools and ready compost. City Park Hawkers' Market



Plate -9 The Kitui Pumwani Village



Plate -10 Composting has resumed at the site which was "grabbed" by a private developer. All infrastructure had been torn down. Kitui Pumwani Integrated Project



Plate -11 Dumping across the road from the village

