

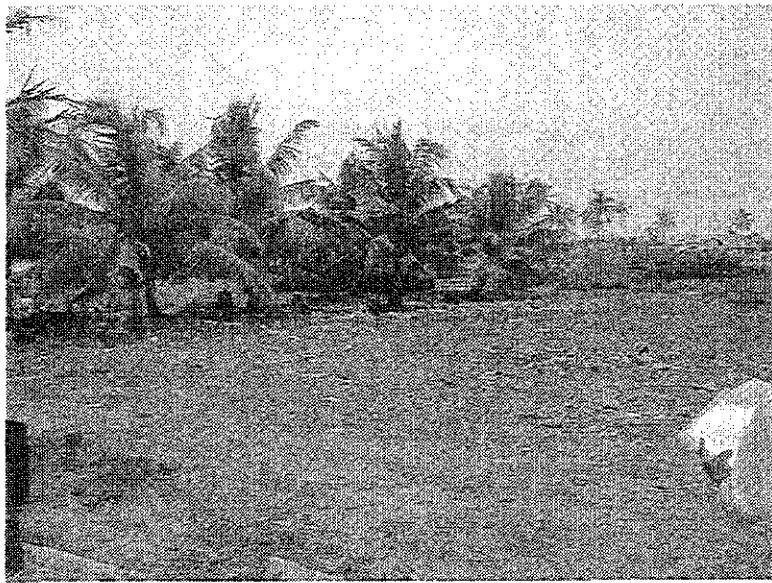





Disposal Site A	
Item	Description
1. Location	On the seashore, near cemetery, in northern part of CUA; approximately 2km from Chilaw town centre.
2. Start of use	January 2002
3. Ownership	Chilaw Urban Council
4. Description	Disposal site is situated on a narrow strip of land between the sea and lagoon, approximately 20m from the sea and less than 50m from the lagoon. During the rainy season and at high tide, water enters the disposal site, resulting in waste flowing into the sea or lagoon.
5. Surrounding land use	Sea, Lagoon, cemetery and residential area
6. Area	Approximately 0.2 ha
7. Disposal method	Open dumping
8. Waste discharge	UCC deposits MSW at this site; daily average = approx. 4.5T/d (135T/month).
9. Environmental impacts	<p>Odour, flies and crows seriously affect the surrounding villages throughout the year, due to the deposited waste not being covered with soil. In order to mitigate these impacts, nearby residents burn the waste, causing an additional smoke nuisance.</p> <p>As the deposited amount of waste is relatively small, leachate may not be generated during the dry season. However, leachate will be generated during the rainy season and will flow into the lagoon.</p>
10. Facilities	None
11. Operation & maintenance	None (no staff and no equipment)
12. Surrounding villages - Kurusopaduwa village	Households near the village northern boundary are mainly affected (population = 1,069, made up of 206 households and 305 families).
13. Photo	

Disposal Site B	
Item	Description
1. Location	Wattakkaliya, northern part of CUA, about 1km from Chilaw town centre.
2. Start of use	January 2002
3. Ownership	Private land owner
4. Description	Disposal site is an abandoned prawn pond, located near coconut plantation and houses on flat ground. Owner requested UCC to dump waste here.
5. Surrounding land use	Coconut plantation and residential area
6. Area	Approximately 0.2 ha
7. Disposal method	Open dumping
8. Waste discharge	UCC deposits MSW at this site; daily average = approx. 10 T/d (300T/month)
9. Environmental impacts	Odour, flies and crows seriously affect the surrounding households. The land owner has requested UCC to apply cover soil to mitigate these effects, but this has never been done. As the deposited amount of waste is relatively small, leachate may not be generated during the dry season. However, leachate will be generated during the rainy season.
10. Facilities	none
11. Operation & maintenance	None (no staff and no equipment)
12. Surrounding villages - Wattakkaliya village	Mainly households near the village boundary are affected (population = 3,493, made up of 722 households and 774 families).
13. Photo	

Disposal Site C	
Item	Description
1. Location	Wattakkaliya, northern part of CUA, about 1km from Chilaw town centre.
2. Start of use	1999
3. Ownership	Private land owner
4. Description	Abandoned coconut factory pond, located near lagoon and houses on flat ground. Owner requested UCC to dump waste here.
5. Surrounding land use	Lagoon and residential area
6. Area	Approximately 0.4 ha
7. Disposal method	Open dumping
8. Waste discharge	UCC deposits MSW collected by handcart at this site; daily average = approx. 1T/d (30T/month).
9. Environmental impacts	Odour, flies and crows seriously affect the surrounding households. The land owner himself sometimes applies cover soil to mitigate these effects. As the deposited amount of waste is relatively small, leachate may not be generated during the dry season. However, leachate will be generated during the rainy season and will flow into the lagoon.
10. Facilities	None
11. Operation & maintenance	None (no staff and no equipment)
12. Surrounding villages - Aluthwatta village	Households near village boundary are mainly affected (population = 2,000, made up of 450 households and 460 families).
13. Photo	

Disposal Site D	
Item	Description
1. Location	Irrigation canal, near railway at Wattakkaliya, approximately 1km from Chilaw town centre.
2. Start of use	1999
3. Ownership	Irrigation department
4. Description	Waste is being dumped into the irrigation canal by UCC, by order of a politician (many low income families live along the irrigation canal and they requested the politician to fill in the canal so they can obtain land to live on.
5. Surrounding land use	Irrigation canal and residential area
6. Area	Canal width = 10m; length = 50m (approximately).
7. Disposal method	Open dumping
8. Waste discharge	UCC deposits MSW collected by handcart at this site; daily average = approx. 0.4 T/d (12T/month).
9. Environmental impacts	Odour, flies and crows seriously affect the surrounding households, due to lack of covering soil. The deposited waste causes blockage and flooding of the irrigation canal. A lot of leachate will be generated.
10. Facilities	None
11. Operation & maintenance	None (no staff and no equipment)
12. Surrounding villages - Wattakkaliya	Households near village boundary are mainly affected (population = 220, made up of 32 households and 45 families).
13. Photo	

Disposal Site E	
Item	Description
1. Location	Watawana, CUA, less than 1km from Chilaw town centre.
2. Start of use	May 2002
3. Ownership	Private land owner
4. Description	The disposal site is a building lot, in a low lying areas that suffers from floods in the rainy season. Owner has requested UCC to dump garbage here.
5. Surrounding land use	Residential area
6. Area	Approximately 0.15 ha
7. Disposal method	Open dumping
8. Waste discharge	UCC deposits MSW at this site; daily average = approx. 0.5 T/d (15T/month).
9. Environmental impacts	Odour, flies and crows seriously affect the surrounding households. The land owner himself applies cover soil to mitigate these effects. Leachate generation is expected to be small.
10. Facilities	None
11. Operation & maintenance	None (no staff and no equipment)
12. Surrounding villages - Watawana	Mainly households near village boundary are affected (population = 120, made up of 20 households and 24 families).
13. Photo	

Disposal Site F	
Item	Description
1. Location	Coconut plantation at Akkarankotua, outside CUA, about 1km away from Chilaw town centre.
2. Start of use	July 2002
3. Ownership	Private land owner
4. Description	Disposal site is located on low lying land in a coconut plantation between a residential area and railway. This area suffers from floods in rainy season and the land owner has asked UCC to dump waste here to mitigate against flooding and fertilise the plantation.
5. Surrounding land use	Railway and residential area
6. Area	Approximately 1.0 ha
7. Disposal method	Open dumping
8. Waste discharge	UCC deposits MSW at this site; daily average = approx. 6.0 T/d (180T/month). The land owner is paying 2,500Rs per 60trips for dumping waste here.
9. Environmental impacts	Odour, flies and crows seriously affect the surrounding households, due to lack of cover soil. As the deposited amount of waste is relatively small, leachate may not be generated during the dry season. However, leachate will be generated during the rainy season.
10. Facilities	None
11. Operation & maintenance	None (no staff and no equipment)
12. Surrounding villages - Akkarankotua	Households near village boundary are mainly affected (population = 390, made up of 80 households and 110 families.
13. Photo	

## 2.4.2 Chilaw Disposal Site Issues

### 2.4.2.1 Remaining Lifetime

Many different sites are being used for landfilling by UCC (e.g. abandoned prawn pond, coconut factory pond, coconut plantation, etc.), generally following a request from the land owner to do so. As each landfill site is less than 1.0ha in area, their expected lifetimes range from six months to three years. Hence, UCC has to continuously look for new landfill sites.

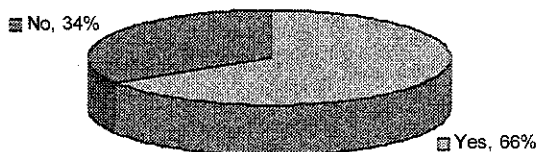
As there are currently many other abandoned prawn ponds and low lying areas in the town, it is generally not difficult for UCC to find new landfill sites. However, when a land owner orders then to stop dumping waste at a particular site due to the environmental and nuisance effects, UCC has to immediately shift to a new site. This often disturbs and confuses UCC's disposal operations.

Concerning dumping waste into the irrigation canal, this causes odour, pests (including mosquitoes) and flooding. Hence, UCC should stop depositing waste here immediately.

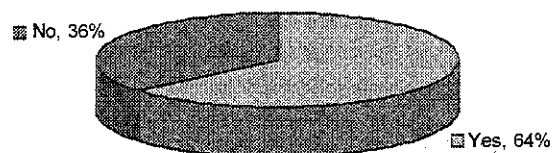
### 2.4.2.2 Odour, Pests, Crows and Animals

The results of an interview survey of 50 households surrounding the various landfill sites undertaken in July-August 2002 are shown below.

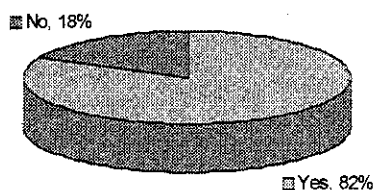
Has the landfill caused problems due to birds ?



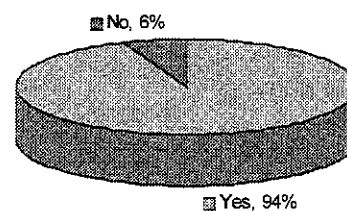
Has the landfill caused problem due to other animals (dogs, cats, etc.) ?



Has the landfill caused problem due to mosquitoes ?



Has the landfill caused problem due to flies ?



This survey found that odour, pests, crows and animals are having serious negative impacts on nearby residents, mainly due to the deposited waste not being covered with soil regularly. Hence, UCC should apply soil cover regularly at all landfill sites to minimise these negative impacts on nearby residents.

### 2.4.2.3 Leachate

Due to no soil cover being applied at UCC's disposal sites (other than that sometimes applied by land owners), rainwater readily penetrates the deposited waste and generates leachate, which may result in a serious environmental impact on the surrounding area.

### 2.4.2.4 Gully Sucker Waste

Gully sucker waste (when the gully sucker is working) is discharged to shallow cavities at the coconut plantation. It is very useful as a fertiliser, according to the coconut plantation owner.

### 2.4.2.5 Operation and Maintenance (O&M)

No UCC staff are assigned for disposal sites O&M works. Hence, UCC is currently doing no such O&M, not even applying cover soil. Thus, UCC are currently spending no money on waste disposal.

## 2.4.3 Candidate Sites for New Landfill

### 2.4.3.1 Necessity for New Landfill Site

As of July-August 2002, about 11.9T/d of waste was being collected by UCC, with 11.1T/d of this being disposed of at various landfill sites, while 0.8T/d was composted. The waste collection amount is expected to increase in the future due to population growth, expansion of the collection system and possible expansion of the CUA limits. Landfilling increased quantities of waste at any of the existing sites will be difficult due to their small capacity, close proximity to residential areas and a lack of heavy equipment and manpower. It is likely to cause serious environmental and social problems, including flies, pests, crows, odour, smoke and leachate. Hence, a sanitary landfill site should be developed so as to properly dispose of Chilaw's MSW that is not composted, and mitigate against these negative social and environmental impacts.

Furthermore, any new landfill site should be of sufficient capacity to last 10-20 years, due to the high development, construction and O&M costs involved with sanitary landfilling.

### 2.4.3.2 Site Selection and Acquisition Procedure

The main tasks required for selection and acquisition of a new landfill site are:

- Selection of candidate landfill sites.
- Basic surveys (topography, geology, climate, etc.).
- Evaluation of the candidate sites, leading to the selection of a preferred site.
- Basic design of the landfill site.
- Environmental Impact Assessment (EIA)
- Consultation with residents in the area and other stakeholders to obtain their approval
- Acquisition of the land for the landfill site.
- Detailed design of the landfill site.



- Construction of the landfill site.

This process can take between 3-10 years depending on the proposed scale of landfill and local conditions. In particular, it takes a long time to get approval from all stakeholders. However, this is vital, as it is quite impossible to implement the project without getting the approval of these people.

#### 2.4.3.3 Evaluation of Candidate Landfill Sites

UCC showed three possible candidate sites for a new landfill to the Study Team for evaluation in July-August 2002.

The results of this evaluation are summarised below. The most favourable site is at Deduruoya, where there are a number of cavities that were excavated by tile factories in the area. This site is about 5km from Chilaw town.

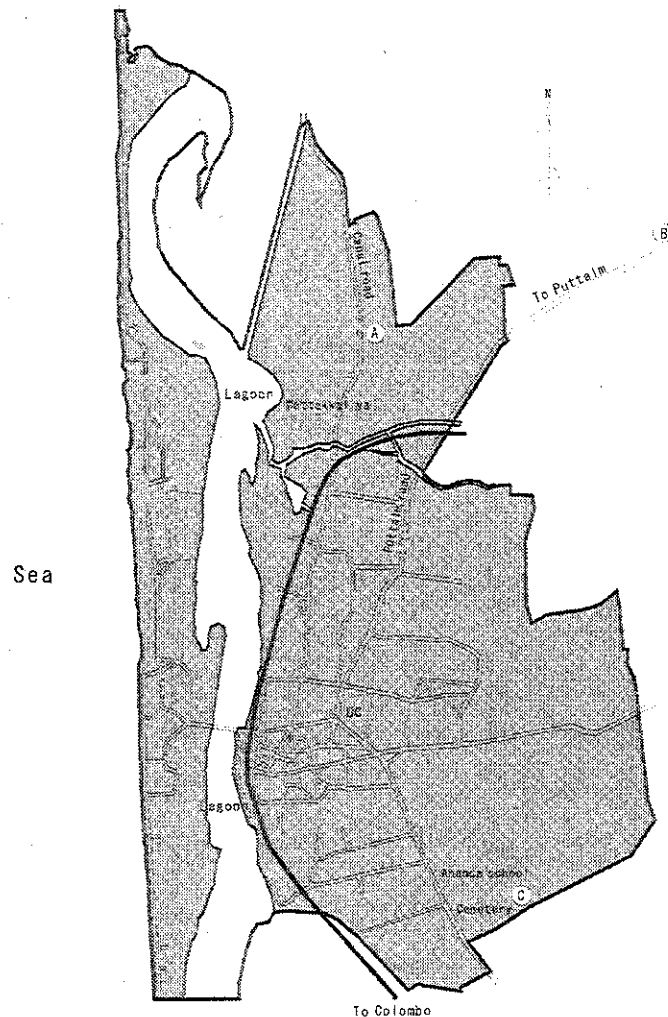



Figure 2-2: Locations of Candidate Landfill Sites in Chilaw

Candidate Site A	
Item	Description
1) Location	Wattakkaliya, northern part of CUA, approx. 1km away from Chilaw town centre.
2) Ownership	Chilaw Urban Council
3) Description	Low lying marshy land
4) Surrounding land use	Low lying marshy land and residential area (approx. 20m from candidate site to nearest household).
5) Area	Approximately 1.0 ha
6) Should be more than a 1km distance from the property boundary of any ancient monuments as defined under the Ancient Monuments, Relics, Antiques and National Museum Act.	None
7) Should be more than a 5km distance from the property boundary of any licensed and operating airport runway.	None
8) Should be more than 700 meters from any existing potable water well or existing community water treatment plant.	None
9) Should be more than 300 meters from any natural or man-made body of water, including wetlands, except bodies of water contained completely within the property boundary of the disposal site.	None
10) Should not be in an area where geological formations or other subsurface features will not provide support for the solid waste.	Not investigated.
11) Should be in on high land. Should not be in an area subject to frequent and periodic flooding unless flood protection measures are in place.	As the site is low lying and marshy, it must be subject to frequent and periodic flooding. Hence, flood protection measures would be required.
12) Should be in an area where the normal water table is sufficiently low. Should not be in a high water table area unless a special design is provided.	N/A
13) Should be a sufficiently large area of land, which can be landfilled for at least 20 years.	Expected lifetime <1yr.

Candidate Site B	
Item	Description
1) Location	Near Deduruoya, outside CUA, about 5km from Chilaw town centre.
2) Ownership	Private land
3) Description	The site comprises a number of cavities where clay has been excavated for use in making tiles.
4) Surrounding land use	Road, plantation and residential area
5) Area	Approximately 5.0 ha
6) Should be more than a 1km distance from the property boundary of any ancient monuments as defined under the Ancient Monuments, Relics, Antiques and National Museum Act.	None
7) Should be more than a 5km distance from the property boundary of any licensed and operating airport runway.	None
8) Should be more than 700 meters from any existing potable water well or existing community water treatment plant.	Not confirmed.
9) Should be more than 300 meters from any natural or man-made body of water, including wetlands, except bodies of water contained completely within the property boundary of the disposal site.	Not confirmed.
10) Should not be in an area where geological formations or other subsurface features will not provide support for the solid waste.	Not investigated.
11) Should be on high land. Should not be in an area subject to frequent and periodic flooding unless flood protection measures are in place.	Flood protection measures will be required.
12) Should be in an area where the normal water table is sufficiently low. Should not be in a high water table area unless a special design is provided.	Study is ongoing.
13) Should be a sufficiently large area of land, which can be landfilled for at least 20 years.	Expected lifetime > 10 years.
14) Photo	

Candidate site C	
Item	Description
1) Location	Behind general cemetery and Ananda school, approx. 400m from Chilaw town centre.
2) Ownership	Chilaw Urban Council
3) Description	Low lying marshy land
4) Surrounding land use	Cemetery, school and road
5) Area	Approximately 2.0 ha
6) Should be more than a 1km distance from the property boundary of any ancient monuments as defined under the Ancient Monuments, Relics, Antiques and National Museum Act.	None
7) Should be more than a 5km distance from the property boundary of any licensed and operating airport runway.	None
8) Should be more than 700 meters from any existing potable water well or existing community water treatment plant.	Not confirmed.
9) Should be more than 300 meters from any natural or man-made body of water, including wetlands, except bodies of water contained completely within the property boundary of the disposal site.	Not confirmed.
10) Should not be in an area where geological formations or other subsurface features will not provide support for the solid waste.	Not investigated.
11) Should be on high land. Should not be in an area subject to frequent and periodic flooding unless flood protection measures are in place.	Flood protection measures will be required.
12) Should be in an area where the normal water table is sufficiently low. Should not be in a high water table area unless a special design is provided.	Not confirmed.
13) Should be a sufficiently large area of land, which can be landfilled for at least 20 years.	Expected lifetime of around 5years.

## Chapter 3

### Chilaw Field Surveys

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## Chapter 3 Field survey

### 3.1 Public Opinion Survey for Household in Chilaw

#### Findings from Public Opinion Survey for Household in Chilaw

A questionnaire survey was conducted among 120 households in Chilaw Urban Council Areas, to gather;

- Basic socio-economic profiles of inhabitants of Chilaw.
- An appreciation of public attitude to the provision of solid waste collection services.
- An appreciation of desired improvement in solid waste management services.
- An indication of willingness to pay for improved solid waste collection services.

Period of survey: Third and fourth weeks of July, 2002

Sample size: 120 ( 40 each from high, middle and low income areas)

Sampling areas: \*High income areas are Korayawatta, Bridge Street and Kuruduwa  
\*Middle income areas are

Aluthwatta and Sedawatta

\*Low income areas are Sedawatta

and Kurusapaduwa

#### 1. General Questions

##### Q1-1 Ethnicity

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Sinhala	34	85%	36	90%	31	78%	101	84%
2 Muslim	0	0%	0	0%	6	15%	6	5%
3 Tamil	6	15%	4	10%	3	8%	13	11%
4 Other	0	0%	0	0%	0	0%	0	0%
Total	40	100%	40	100%	40	100%	120	100%

##### Q1-2 Religion

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Buddhist	1	3%	10	25%	8	20%	19	16%
2 Islam	0	0%	0	0%	6	15%	6	5%
3 Hindu	5	13%	4	10%	3	8%	12	10%
4 Christian	34	85%	26	65%	23	58%	83	69%
5 Other	0	0%	0	0%	0	0%	0	0%
Total	40	100%	40	100%	40	100%	120	100%

##### Q1-3 Household information

( person)	Low	Middle	High	Total
Avg. number of household members	5.0	4.9	4.2	4.7

(Rs.)	Low	Middle	High	Total
Avg. household income	4,436	13,113	22,940	13,496

(Rs.)	Low	Middle	High	Total
Income per person	593	2,662	5,430	2,871

Q1-4 How much is the total expenditure of your household per month on average?

(Rs.)	Low	Middle	High	Total
Avg. household expenditure	4,538	10,150	16,588	10,425

(Rs.)	Low	Middle	High	Total
Expenditure per person	917	2,061	3,926	2,218

Q1-5 Please specify the priority for your daily life regarding the improvement of the following aspects ? (Fill all three priorities)

	Low	Middle	High	Total
1 First	Storm water drainage	Storm water drainage	Waste water collection	Waste water collection
2 Second	Waste water collection	Waste water collection	Garbage collection	Storm water drainage
3 Third	Garbage collection	Garbage collection	Storm water drainage	Garbage collection

## 2. Questions on Garbage Collection Services in Your Area

Q2-1 Are there garbage collection services in your area?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	Yes	34	85%	40	100%	40	100%	114	95%
2	No	6	15%	0	0%	0	0%	6	5%
Total		40	100%	40	100%	40	100%	120	100%

Q2-2 Do you use these services?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	Yes	17	43%	28	70%	36	90%	81	68%
2	No	17	43%	12	30%	4	10%	33	28%
99	Irrelevant	6	15%	0	0%	0	0%	6	5%
Total		40	100%	40	100%	40	100%	120	100%

Q2-3(a) How is your garbage collected?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	Placing garbage outside the property for collection	4	10%	19	48%	27	68%	50	42%
2	Carrying garbage to a specified collection point	13	33%	6	15%	6	15%	25	21%
3	Carrying garbage to a collection truck directly	0	0%	3	8%	3	8%	6	5%
4	Others	0	0%	0	0%	0	0%	0	0%
99	Irrelevant	23	58%	12	30%	4	10%	39	33%
Total		40	100%	40	100%	40	100%	120	100%



Q2-3(b) (Only for those who choose 2 or 3 in question Q2-3) How far do you have to walk to reach this point?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	1 - 25m	11	28%	7	18%	9	23%	27	23%
2	26 - 50m	2	5%	1	3%	0	0%	3	3%
3	51 - 100m	0	0%	0	0%	0	0%	0	0%
4	100 - 250m	0	0%	1	3%	0	0%	1	1%
5	Over 250m	0	0%	0	0%	0	0%	0	0%
99	Irrelevant	27	68%	31	78%	31	78%	89	74%
Total		40	100%	40	100%	40	100%	120	100%

Q2-4 How often is your garbage collected?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	Daily	4	10%	8	20%	13	33%	25	21%
2	More than four times per week	6	15%	10	25%	7	18%	23	19%
3	Two to three times per week	6	15%	5	13%	16	40%	27	23%
4	Once a week	1	3%	3	8%	0	0%	4	3%
5	Less than once per week	0	0%	0	0%	0	0%	0	0%
6	Irregular	0	0%	2	5%	0	0%	2	2%
98	Don't know	0	0%	0	0%	0	0%	0	0%
99	Irrelevant	23	58%	12	30%	4	10%	39	33%
Total		40	100%	40	100%	40	100%	120	100%

Q2-5 Is the garbage collection service done at a fixed time on the collection day?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	Yes	2	5%	11	28%	14	35%	27	23%
2	No	15	38%	17	43%	22	55%	54	45%
98	Don't know	0	0%	0	0%	0	0%	0	0%
99	Irrelevant	23	58%	12	30%	4	10%	39	33%
Total		40	100%	40	100%	40	100%	120	100%

Q2-6 Have you ever given small allowance such as new year's allowance and other seasonal allowance, including the reward to the extra work for you, to garbage collectors?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	Yes	0	0%	14	35%	15	38%	29	24%
2	No	17	43%	14	35%	21	53%	52	43%
99	Irrelevant	23	58%	12	30%	4	10%	39	33%
Total		40	100%	40	100%	40	100%	120	100%

Q2-7 How much is the total amount of (1) small allowance and (2) the reward you gave over the last one year?

(1) Small allowance

(Rs.)	Low	Middle	High	Total
Average annual small allowance	-	49	142	85

Note: No. of effective answers on this question is 18.

(2) Reward

(Rs.)	Low	Middle	High	Total
Average annual reward	-	43	90	73

Note: No. of effective answers on this question is 8.

Q2-8 Are you satisfied with the collection service?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Very satisfied	3	8%	10	25%	7	18%	20	17%
2 Somewhat satisfied	14	35%	10	25%	21	53%	45	38%
3 Less than satisfied	0	0%	3	8%	2	5%	5	4%
4 Not satisfied at all	0	0%	5	13%	6	15%	11	9%
99 Irrelevant	23	58%	12	30%	4	10%	39	33%
Total	40	100%	40	100%	40	100%	120	100%

Q2-9 If you chose either 2, 3 or 4, what are the reasons? (Choose one or more)

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Garbage collection / sweeping is not properly done	8	15%	13	18%	25	32%	46	23%
2 Garbage collection / sweeping frequency is too low	10	19%	14	20%	24	30%	48	24%
3 Garbage collection / sweeping is irregular	4	8%	9	13%	7	9%	20	10%
4 Garbage collection time is too early or too late or irregular	3	6%	7	10%	7	9%	17	8%
5 Behavior of garbage collection workers is bad	0	0%	0	0%	1	1%	1	0%
6 Garbage collection workers demand small allowance	0	0%	0	0%	0	0%	0	0%
7 Garbage collection small allowance is expensive	0	0%	0	0%	0	0%	0	0%
8 Collection service is not fair	0	0%	0	0%	0	0%	0	0%
9 Garbage collection point is too far	0	0%	5	7%	3	4%	8	4%
10 Other	1	2%	1	1%	1	1%	3	1%
99 Irrelevant	26	50%	22	31%	11	14%	59	29%
Total	52	100%	71	100%	79	100%	202	100%

Q2-10 Have you ever complained about the garbage collection service to the authorities in the last three years?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	2	5%	5	13%	13	33%	20	17%
2 No	15	38%	23	58%	23	58%	61	51%
99 Irrelevant	23	58%	12	30%	4	10%	39	33%
Total	40	100%	40	100%	40	100%	120	100%

Q2-11 **(Only for persons who chose "NO" in question Q2-1)** Do you want to receive a garbage collection service?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	6	15%	0	0%	0	0%	6	5%
2 No	0	0%	0	0%	0	0%	0	0%
99 Irrelevant	34	85%	40	100%	40	100%	114	95%
Total	40	100%	40	100%	40	100%	120	100%

### 3. Questions on Waste Discharge from Your Premises

Q3-1 How do you dispose of garbage generated in your premises?

	Low		Middle		High		Total	
	Main	Other	Main	Other	Main	Other	Main	Other
1 Discharge it outside of the house for the house to house collection	3	1	18	2	24	5	45	8
2 Discharge it at the specified place for the collection service	13	0	6	0	6	1	25	1
3 Open dumping outside of the house	22	2	6	0	2	0	30	2
4 Ask the relevant authority to send garbage collectors	0	0	0	0	0	0	0	0
5 Self-dispose	2	4	10	12	4	8	16	24
6 Composting (producing fertilizer from waste)	0	0	0	0	0	0	0	0
7 Give for recycling	0	0	0	0	0	0	0	0
8 Other	0	0	0	0	4	0	4	0
Total	40	7	40	14	40	14	120	35

	Low		Middle		High		Total	
	Main	Other	Main	Other	Main	Other	Main	Other
1 Discharge it outside of the house for the house to house collection	8%	14%	45%	14%	60%	36%	38%	23%
2 Discharge it at the specified place for the collection service	33%	0%	15%	0%	15%	7%	21%	3%
3 Open dumping outside of the house	55%	29%	15%	0%	5%	0%	25%	6%
4 Ask the relevant authority to send garbage collectors	0%	0%	0%	0%	0%	0%	0%	0%
5 Self-dispose	5%	57%	25%	86%	10%	57%	13%	69%
6 Composting (producing fertilizer from waste)	0%	0%	0%	0%	0%	0%	0%	0%
7 Give for recycling	0%	0%	0%	0%	0%	0%	0%	0%
8 Other	0%	0%	0%	0%	10%	0%	3%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%

Note: Other means "place them directly to either collection truck or hand cart."

Q3-2 How often do you dispose of garbage generated in your premises?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 As soon as waste arises	3	8%	1	3%	0	0%	4	3%
2 Once daily	29	73%	27	68%	23	68%	79	66%
3 Once every 2 or 3 days	7	18%	11	28%	11	32%	29	24%
4 Less frequently	1	3%	1	3%	6	0%	8	7%
Total	40	100%	40	100%	40	100%	120	100%

Q3-3 Who mainly handles wastes at home?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 An adult male member	2	5%	0	0%	0	0%	2	2%
2 An adult female member	38	95%	32	80%	34	85%	104	87%
3 Servant	0	0%	8	20%	6	15%	14	12%
4 Others	0	0%	0	0%	0	0%	0	0%
Total	40	100%	40	100%	40	100%	120	100%

Q3-4 (Only for persons who chose 2 in question Q3-1) Who mainly brings the wastes to a specific collection point?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 An adult male member	1	3%	0	0%	0	0%	3	3%
2 An adult female member	12	30%	2	5%	6	15%	21	18%
3 Child	0	0%	3	8%	0	0%	1	1%
4 Servant	0	0%	1	3%	1	3%	1	1%
5 Others	0	0%	0	0%	0	0%	0	0%
99 Irrelevant	27	68%	34	85%	33	83%	94	78%
Total	40	100%	40	100%	40	100%	120	100%

Q3-5 What type of container do you use for carrying garbage to a collection point or for placing the garbage outside of your house? (Choose one or more)

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Plastic bag	22	38%	27	50%	23	43%	72	44%
2 Paper bag	1	2%	0	0%	0	0%	1	1%
3 Metal/plastic/wood garbage bin	17	29%	18	33%	28	53%	63	38%
4 Box	1	2%	0	0%	0	0%	1	1%
5 Basket	10	17%	5	9%	1	2%	16	10%
6 None-place directly	7	12%	4	7%	1	2%	12	7%
7 Others	0	0%	0	0%	0	0%	0	0%
Total	58	100%	54	100%	53	100%	165	100%

Q3-6 Why do you use it? (Choose one or more)

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 It is clean after collection work	9	16%	12	16%	16	28%	37	20%
2 It prevents foul odors	2	4%	8	11%	2	4%	12	6%
3 It is easy handling	33	58%	32	43%	39	68%	104	55%
4 It keeps away pests such as flies	2	4%	5	7%	0	0%	7	4%
5 It is cheap or easy to get	11	19%	16	22%	0	0%	27	14%
6 Other	0	0%	1	1%	0	0%	1	1%
Total	57	100%	74	100%	57	100%	188	100%

Q3-7 **(Only for those who did not choose 2 in Q3-1)** If you are requested to carry your garbage to a specified garbage collection point, would you cooperate to do so?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes, if it is located within 25m distance (30 sec to walk)	20	48%	20	50%	22	55%	62	52%
2 Yes, if it is located within 50m distance (1 min to walk)	3	8%	0	0%	0	0%	3	3%
3 No, I do not prefer the collection system mentioned above anyway	4	10%	14	35%	11	28%	29	24%
4 Others	0	3%	0	0%	0	0%	0	0%
98 Don't know	0	0%	0	0%	0	0%	0	0%
99 Irrelevant	13	33%	6	15%	7	18%	26	22%
Total	40	100%	40	100%	40	100%	120	100%

Q3-8 Do you have garden wastes (fallen leafs and branches or grass and weeds)?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	6	15%	34	85%	24	60%	64	53%
2 No	34	85%	6	15%	16	40%	56	47%
Total	40	100%	40	100%	40	100%	120	100%

Q3-9 How do you discharge your garden wastes generally?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Discharge it at the collection point with the other wastes for collection	1	3%	2	5%	0	0%	3	3%
2 Discharge it outside of my premises with the other wastes for collection	3	8%	12	30%	6	15%	21	18%
3 Ask the relevant authorities to send garbage collectors	0	0%	0	0%	0	0%	0	0%
4 Self-dispose	2	5%	20	50%	17	43%	39	33%
5 Composting (producing fertilizer from waste)	0	0%	0	0%	0	0%	0	0%
6 Give for composting	0	0%	0	0%	0	0%	0	0%
7 Others	0	0%	0	0%	1	3%	1	1%
99 Irrelevant	34	85%	6	15%	16	40%	56	47%
Total	40	100%	40	100%	40	100%	120	100%

Note: Other means "dump to lagoon" and "open space."

Q3-10 **(Only for those who chose 3 in Q3-1)** Where do you dispose of your garbage by open dumping?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 On banks of or in stream / river	2	5%	0	0%	0	0%	2	2%
2 On vacant land	0	0%	5	13%	2	5%	7	6%
3 In a gully	0	0%	0	0%	0	0%	0	0%
4 In the sea	22	55%	0	0%	0	0%	22	18%
5 Others	0	0%	1	3%	0	0%	1	1%
99 Irrelevant	16	40%	34	85%	38	95%	88	73%
Total	40	100%	40	100%	40	100%	120	100%

Note: Other means "dump on the roads"

#### 4. Questions on Recycling and Waste Reduction

Q4-1 Recycling of waste is most effective if the waste can be sorted into different categories by the household. If the relevant authorities such as municipal councils and urban councils introduce a separate garbage collection system, you will be requested to separate your wastes into a number of categories, for example, such as i.) compostable waste such as food waste, paper and garden waste ii.) recyclable waste such as metals, glass, plastics, paper and iii.) other wastes. Are you willing to cooperate with this type of system?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Very much willing to cooperate	25	63%	30	75%	30	75%	85	71%
2 Somewhat willing to cooperate	6	15%	5	13%	5	13%	16	13%
3 Less willing to cooperate /somewhat unwilling to cooperate	4	10%	1	3%	5	13%	10	8%
4 Not willing to cooperate at all	5	13%	4	10%	0	0%	9	8%
5 Am doing already	0	0%	0	0%	0	0%	0	0%
Total	40	100%	40	100%	40	100%	120	100%

Q4-2 If you answered either 1 or 2 and 5, why do you think recycling is important? (Choose one or more)

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Recycling would reduce the amount of waste going to landfill	6	10%	12	19%	8	0%	26	15%
2 Recycling would help to protect environment	23	40%	33	52%	34	18%	90	53%
3 Recycling would allow you to earn some money	20	34%	14	22%	2	77%	36	21%
4 Others	0	0%	0	0%	0	5%	0	0%
99 Irrelevant	9	16%	5	8%	5	0%	19	11%
Total	58	100%	64	100%	49	100%	171	100%

Q4-3 If you answered either 1 or 2 and 5, how many categories would you be willing to separate your wastes into?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Two	16	40%	20	50%	28	70%	64	53%
2 Three	14	35%	12	30%	3	8%	29	24%
3 More than that	1	3%	3	8%	4	10%	8	7%
99 Irrelevant	9	23%	5	13%	5	13%	19	16%
Total	40	100%	40	100%	40	100%	120	100%

Q4-4 If you choose 2, 3, or 4 in Q4-1, what are the reasons? (Choose one or more)

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 It is inconvenient and difficult	13	23%	7	15%	10	24%	30	21%
2 It may increase financial burden regarding to the discharging cost	1	2%	0	0%	1	2%	2	1%
3 It will take much time	3	5%	4	8%	0	0%	7	5%
4 Needs for the recycling system is not clear	5	9%	0	0%	0	0%	5	3%
5 Benefits of the recycling system is not clear	4	7%	2	4%	0	0%	6	4%
6 There may be poor contribution from household members	5	9%	5	10%	0	0%	10	7%
7 Others	0	0%	0	0%	0	0%	0	0%
98 Don't know	0	0%	0	0%	0	0%	0	0%
99 Irrelevant	25	45%	30	63%	30	73%	85	59%
Total	56	100%	48	100%	41	100%	145	100%

Q4-5 Is there someone who comes around to collect or buy your reusable or recyclable materials?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	Yes	28	70%	33	83%	26	65%	87	73%
2	No	12	30%	7	18%	14	35%	33	28%
Total		40	100%	40	100%	40	100%	120	100%

Q4-6 Which materials do they collect or buy from you?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	Glass	14	29%	15	26%	18	0%	47	31%
2	Cardboard	0	0%	1	2%	2	56%	3	2%
3	Paper	2	4%	13	22%	3	6%	18	12%
4	Metal can	4	8%	7	12%	0	9%	11	7%
5	Other metal	3	6%	0	0%	2	0%	5	3%
6	Kitchen waste	0	0%	0	0%	0	6%	0	0%
7	Garden waste	0	0%	0	0%	0	0%	0	0%
8	Plastics	0	0%	0	0%	0	0%	0	0%
9	Textiles (e.g. clothes)	0	0%	0	0%	0	0%	0	0%
10	Leather, rubber	0	0%	0	0%	0	0%	0	0%
11	Wood / Timber	0	0%	0	0%	0	0%	0	0%
12	Tyres	0	0%	0	0%	0	0%	0	0%
13	Others	0	0%	0	0%	0	0%	0	0%
98	Not selling	13	27%	15	26%	7	0%	35	23%
99	Irrelevant	12	25%	7	12%	14	22%	33	22%
Total		48	100%	58	100%	46	100%	152	100%

Q4-7 Do you take for recyclable materials to shops for refund or sale?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	Yes	10	25%	14	35%	4	10%	28	23%
2	No	30	75%	26	65%	36	90%	92	77%
Total		40	100%	40	100%	40	100%	120	100%

Q4-8(a) Which materials do you return or sell to shops?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	Glass	8	20%	12	30%	3	8%	23	19%
2	Cardboard	0	0%	0	0%	0	0%	0	0%
3	Paper	2	5%	2	5%	1	3%	5	4%
4	Metal can	0	0%	0	0%	0	0%	0	0%
5	Other metal	0	0%	0	0%	0	0%	0	0%
6	Kitchen waste	0	0%	0	0%	0	0%	0	0%
7	Garden waste	0	0%	0	0%	0	0%	0	0%
8	Plastics	0	0%	0	0%	0	0%	0	0%
9	Textiles (e.g. clothes)	0	0%	0	0%	0	0%	0	0%
10	Leather, rubber	0	0%	0	0%	0	0%	0	0%
11	Wood / Timber	0	0%	0	0%	0	0%	0	0%
12	Tyres	0	0%	0	0%	0	0%	0	0%
13	Others	0	0%	0	0%	0	0%	0	0%
99	Irrelevant	30	75%	26	65%	36	90%	92	77%
	Total	40	100%	40	100%	40	100%	120	100%

Q4-8(b) (Only for those choosing Yes in either Q4-5 or Q4-7) What are the major materials collected from you or returned / sold to shops, and how much do you sell these for per month?

		Low	Middle	High	Total
1	First	Bottle (10)	Bottle (16)	Bottle (20)	Bottle (51)
2	Second	Paper (3)	Paper (15)	Paper (6)	Paper (25)
3	Third	Metal (2)	Iron (5)	Iron (2)	Iron (12)

Note: Bracketed figures show the number of households that sell these materials.

(Rs.)	Low	Middle	High	Total
Avg. monthly income from recycling	96	107	34	82

Note: Number of effective answers are 37.

Q4-9(a) Are you using kitchen and/or garden waste for compost?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	Yes	0	0%	0	0%	0	0%	0	0%
2	No	40	100%	40	100%	40	100%	120	100%
	Total	40	100%	40	100%	40	100%	120	100%



Q4-10 Hazardous waste refers to items like dead batteries, used spray cans, old medicines, old household chemicals, solvents, paints, etc. Considering all the solid waste produced by your household, how many hazardous waste items would you dispose of per month?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	None	21	54%	6	15%	28	70%	55	46%
2	One to two	12	31%	25	63%	12	30%	49	41%
3	Three to five	2	5%	6	15%	0	0%	8	7%
4	Six to ten	4	10%	3	8%	0	0%	7	6%
5	More than ten	1	3%	0	0%	0	0%	1	1%
Total		39	100%	40	100%	40	100%	120	100%

Q4-11 Suppose that you are satisfied with the service of Municipal solid waste management, either as is or as a result of improvement. Think for a moment about the largest amount of money that your household would be willing to pay each month as a garbage collection fee. (Important: If the garbage collection fee is more than this amount, your household will not be able to afford to pay and will not be able to use the garbage collection service.)

(Rs.)	Low	Middle	High	Total
Avg. amount of WTP (willingness to pay)	28	113	130	90

## 5. Public cooperation / Community participation

Q5-1 Now, we would like to ask about the community you live. In your community, do you have any community-based organizations to solve not only the waste problems but also other community problems?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	Yes	25	63%	16	40%	25	63%	66	55%
2	No	12	30%	21	53%	11	28%	44	37%
98	Don't know	3	8%	3	8%	4	10%	10	8%
Total		40	100%	40	100%	40	100%	120	100%

Q5-2 If yes, when did the community-based organization start functioning?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	Within five years	7	18%	5	13%	4	10%	16	13%
2	Between six to ten years	3	8%	0	0%	4	10%	7	6%
3	More than eleven years ago	4	10%	3	8%	3	8%	10	8%
98	Don't know	11	28%	8	20%	14	35%	33	28%
99	Irrelevant	15	38%	24	60%	15	38%	54	45%
Total		40	100%	40	100%	40	100%	120	100%

Q5-3 How is the leader of this community chosen?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	Democratically elected	12	30%	10	25%	17	43%	39	33%
2	Appointed by elders	0	0%	0	0%	1	3%	1	1%
3	Appointed by administration	0	0%	0	0%	0	0%	0	0%
4	Inherited	1	3%	0	0%	0	0%	1	1%
5	Others	0	0%	0	0%	0	0%	0	0%
98	Don't know	12	30%	6	15%	7	18%	25	21%
99	Irrelevant	15	38%	24	60%	15	38%	54	45%
Total		40	100%	40	100%	40	100%	120	100%

Q5-4 How often do you have the meetings?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	More often than once a month	11	28%	5	13%	12	30%	28	23%
2	Once in two months to five months	1	3%	2	5%	5	13%	8	7%
3	Once in six months	0	0%	0	0%	2	5%	2	2%
4	Once in seven to eleven months	0	0%	0	0%	0	0%	0	0%
5	Less often than once in a year	0	0%	1	3%	0	0%	1	1%
6	No meeting	0	0%	0	0%	0	0%	0	0%
98	Don't know	13	33%	8	20%	6	15%	27	23%
99	Irrelevant	15	38%	24	60%	15	38%	54	45%
Total		40	100%	40	100%	40	100%	120	100%

Q5-5 Have you ever discussed the methods of proper garbage handling and discharge at the meetings?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	Yes	1	3%	1	3%	14	35%	16	13%
2	No	11	28%	8	20%	3	8%	22	18%
98	Don't know	13	33%	7	18%	8	20%	28	23%
99	Irrelevant	15	38%	24	60%	15	38%	54	45%
Total		40	100%	40	100%	40	100%	120	100%

Q5-6 Have you ever been taught methods of proper garbage handling and discharge?

		Low		Middle		High		Total	
		Number	%	Number	%	Number	%	Number	%
1	Yes	9	23%	17	43%	11	28%	37	31%
2	No	31	78%	23	58%	29	73%	83	69%
Total		40	100%	40	100%	40	100%	120	100%

Q5-7 If "Yes" to the previous question, who taught these to you? (Choose one or more)

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Parents	1	2%	0	0%	0	0%	1	1%
2 Community leaders	5	11%	5	10%	0	0%	10	7%
3 School teachers	3	7%	4	8%	4	10%	11	8%
4 Local government	5	11%	14	29%	5	13%	24	18%
5 Central government	1	2%	2	4%	1	3%	4	3%
6 NGOs	0	0%	0	0%	0	0%	0	0%
7 Others	0	0%	0	0%	1	3%	1	1%
99 Irrelevant	31	67%	23	48%	29	73%	83	62%
Total	46	100%	48	100%	40	100%	134	100%

Note: Other means "mass media".

Q5-8 Does anyone in your family or your servant clean the side of the road or adjacent public area in front of your premises?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes, almost everyday	20	50%	9	23%	24	60%	53	44%
2 Yes, sometimes	10	25%	11	28%	8	20%	29	24%
3 No	10	25%	20	50%	8	20%	38	32%
Total	40	100%	40	100%	40	100%	120	100%

Q5-9 Here please tell me about the behavior of your community population, and not yours. What are the most common methods to dispose of the garbage in this community?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Picked up by garbage collection service	16	38%	27	66%	33	70%	76	29%
2 Burnt	0	0%	4	10%	5	11%	9	3%
3 Thrown in the open space or rivers	26	62%	10	24%	9	19%	45	17%
4 Just dumped on the yard / in the garden	0	0%	0	0%	0	0%	0	0%
5 Buried on the yard / in the garden	0	0%	0	0%	0	0%	0	0%
6 Others	0	0%	0	0%	0	0%	0	0%
98 Don't know	0	0%	0	0%	0	0%	0	50%
Total	42	100%	41	100%	47	100%	130	100%

Q5-10 Has anyone in this household, including children, received any health and environmental education or information relating to solid waste?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	27	68%	40	100%	39	98%	106	88%
2 No	13	33%	0	0%	1	3%	14	12%
Total	40	100%	40	100%	40	100%	120	100%

Q5-11 If yes, where did this information come from? (Choose one or more)

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Parents	1	1%	1	1%	6	6%	8	3%
2 School	18	23%	31	25%	35	35%	84	28%
3 Medical worker /center / hospital	5	6%	8	6%	0	0%	13	4%
4 Community organization/ NGOs	2	3%	2	2%	1	1%	5	2%
5 Newspaper	1	1%	23	18%	17	17%	41	13%
6 Radio program	12	15%	15	12%	5	5%	32	11%
7 TV program	16	20%	28	22%	34	34%	78	26%
8 Local government	10	13%	17	13%	0	0%	27	9%
9 Central government	0	0%	0	0%	0	0%	0	0%
10 Others	1	1%	1	1%	0	0%	2	1%
99 Irrelevant	13	16%	0	0%	1	1%	14	5%
Total	79	100%	126	100%	99	100%	304	100%

Note: Other means "from working place" and "from church".

Q5-12 Do you think a campaign to raise awareness of people for maintaining the cleaner city and environment is necessary?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Very necessary	28	70%	27	68%	32	80%	87	73%
2 Somewhat necessary	10	25%	11	28%	3	8%	24	20%
3 Not very necessary	2	5%	2	5%	5	13%	9	8%
4 Not necessary at all	0	0%	0	0%	0	0%	0	0%
Total	40	100%	40	100%	40	100%	120	100%

## **3.2 Commercial/Industrial and Institutional Waste Generator**

### **Survey Results**

Commercial/industrial and institutional interview survey results for 39 samples from July-August 2002 within CUA are summarized in this section.

#### **3.2.1 Garbage Discharge and Collection**

The following table sets out the main interview survey results relating to garbage discharge and collection. Some key points are summarized below:

- (a) 32 (82%) enterprises are provided with a garbage collection service by CUC, with 30 (77%) of these using this service. Six of the seven enterprises not provided with a collection service would like one.
- (b) 6 (15%) enterprises pay garbage collection workers informally, the average payment being 720Rs/yr (range = 100 to 2,000Rs/yr).
- (c) 21 (70%) of the 30 enterprises using the garbage collection service are not satisfied with it. The main reasons for dissatisfaction are:
  - Poor garbage discharge system (18).
  - Garbage collection/sweeping frequency is too low (17).
  - Garbage collection/sweeping is not done properly (12).
  - Garbage collection/sweeping is irregular (9).
  - The collection point is too far away (9).

The Base Hospital is also concerned about the handling and disposal of hazardous healthcare wastes.

- (d) Eight (21%) enterprises have complained to CUC about the garbage collection service at least once in the last 3 years.

Table 3-1: Survey Results - Garbage Discharge and Collection

Item	Small Waste Gen'rs	Large Waste Generators			Total
		Comm./ industrial	Other Inst'ns	Hospitals	
No of respondents	14	14	8	3	39
<b>Q1.5 - Garbage storage within premises (main method) - No of responses<sup>23</sup></b>					
a. Plastic bag	3	2	0	0	5
b. Open container	9	6	5	1	21
c. Container with lid	2	3	2	2	9
d. Place on ground/floor	0	3	1	0	4
e. Direct disposal	0	0	0	0	0
<b>Q1.6 - Main method of garbage disposal - No of responses<sup>3</sup></b>					
a. Place outside for collection	3	3	0	1	7
b. Carry to collection vehicle	2	3	1	0	6
c. Take to collection point	4	2	1	0	7
d. Labourers collect from premises	2	1	1	2	6
e. Bury on site	1	0	0	0	1
f. Burn on site	2	3	4	0	9
g. Recycle	0	0	0	0	0
h. Compost	0	0	0	0	0
i. Open dumping	0	1	1	0	2
j. Other	0	1	0	0	1
<b>Q1.8 - Walking distance to garbage collection point - No of responses (only if chose Q1.6c)</b>					
a. 0-25m	5	2	1	0	8
b. 25-50m	1	0	0	0	1
c. 50-100m	0	0	0	0	0
d. 100-250m	0	0	0	0	0
<b>Q1.12 to 1.13 - Provision and use of garbage collection service - No of responses</b>					
Provided	14	10	5	3	32
Not provided	0	4	3	0	7
Use	14	9	4	3	30
Want service	N/a	3	3	N/a	6
<b>Q1.14 - Garbage discharge and collection frequency - No of responses</b>					
Discharge at least once daily	12	9	3	3	27
Collection at least daily	13	8	2	3	26
<b>Q1.15 to 1.17 - Garbage collection worker payment<sup>3</sup></b>					
No giving payments	1	3	0	2	6
Average payment (Rs/yr)	Food	433	0	1,150	720
Range (Rs/yr)	N/a	100-600	0	300-2,000	100-2,000
Total (Rs/yr)	N/a	1,300	0	2,300	3,600
<b>Q1.18 - Satisfaction with existing garbage collection service</b>					
Satisfied (no)	6	1	2	0	9
Dissatisfied (no)	8	8	2	3	21
Reasons for dissatisfaction:					
a. Poor discharge system	8	8	2	0	18
b. Collection point too far away	6	2	0	1	9
c. Coll'n/sweep. not done properly	3	6	2	1	12
d. Collection/sweeping is irregular	4	3	1	1	9
e. Coll'n/sweep. frequency too low	5	8	2	2	17
f. Collection time is too early/late	1	2	0	0	3
g. Garbage workers behave badly	1	0	0	0	1
h. labourers demand payment	0	0	0	0	0
i. LA garbage fee is too high	1	1	0	0	2
j. Lack of recycling	1	1	1	1	4
k. Other	1	4	0	0	5
<b>Q1.19 - Complaints to CUC in last 3 years - No of responses</b>					
None	12	7	1	1	21
Once only	0	0	0	0	0
Several times	1	1	1	2	5
More than 5 times	1	1	1	0	3
No response	0	0	1	0	1

Notes: Hospital garbage storage and disposal results apply to normal garbage; N/a = not applicable.

### 3.2.2 Improvements to Garbage Collection and Disposal

The following table sets out the main interview survey results relating to garbage discharge and collection. Some key points are summarized below:

- (a) The four most desired improvements to garbage collection and disposal in descending order are:
  - Improved discharge system (Weighted average rank, WAR = 36.5).
  - Public education (WAR = 27.5).
  - Shorter distance to collection point (WAR = 21.0).
  - Improved garbage collection frequency (WAR = 15.0).
- (b) Most enterprises thought that CUC (32, 82%) or the Central government (6, 15%) should pay for improved garbage collection and disposal. However, seven (18%) supported the introduction of an individual garbage collection fee.
- (c) 23 (59%) enterprises indicated a willingness to pay (WTP) a garbage collection fee, while 10 enterprises are not willing to pay anything. The average WTP<sup>1</sup> is 596Rs/mth (range = 20 to 3,000Rs/mth). Six enterprises did not respond to this question, mainly because the survey respondent felt unable to make such a decision without referring it to enterprise owner/manager, or in the case of institutions, to provincial/central government.

Table 3-2: Survey Results – Improvements to Garbage Collection and Disposal

Item	Small Waste Gen'rs	Large Waste Generators			Total
		Comm./ industrial	Other Inst'ns	Hospitals	
No of respondents	14	14	8	3	39
<b>Q2.1 - Desired improvements to garbage collection/disposal – weighted average rank</b>					
a. Improved discharge system	10.5	12.5	8.0	5.5	36.5
b. Closer collection point	8.5	7.0	3.5	2.0	21.0
c. More reliable service	0.5	3.5	1.5	1.5	7.0
d. Improved collection frequency	5.0	3.5	3.5	3.0	15.0
e. Greater recycling/composting	1.5	1.5	0.5	4.0	7.5
f. Improve landfill operation	2.5	0.0	0.0	0.0	2.5
g. Public education	11.5	10.5	2.5	3.0	27.5
h. Other	3.0	3.0	2.0	0.0	8.0
i. Improved collection/disposal of hospital hazardous waste	0.0	0.0	0.0	2.0	2.0
<b>Q2.2 – Who should pay for improved garbage collection/disposal – No of responses</b>					
a. Central government	3	1	2	0	6
b. Provincial Council	0	0	0	1	1
c. Local authority	12	13	5	2	32
d. Individual garbage fee	1	2	4	0	7
e. Other	0	1	1	0	2
<b>Q2.3 - Willingness to pay for improved garbage collection/disposal</b>					
Willing to pay (no)	4	11	6	2	23
Not willing to pay (no)	9	0	1	0	10
No response (no)	1	3	1	1	6
Willingness to pay (Rs/mth)	148	900	686	1,600	596

Notes: N/a = not applicable

<sup>1</sup> The WTP is based on all enterprises/institutions indicating they were willing to pay a non-zero amount and all those indicating they were not willing to pay anything.

### 3.2.3 Recycling and Possible Source Separation Collection System

The following table sets out the main interview survey results relating to recycling and a possible source separation collection system. Some key points are summarized below:

- (a) 38 (97%) enterprises believed recycling is necessary, with 35 (90%) enterprises being very willing to cooperate in separating their garbage at source. The main reasons given by those willing to cooperate are that recycling protects the environment (34), followed by it reduces the amount of waste to disposal (13). 24 of these respondents are willing to sort their wastes into three (16) or more (8) categories, with the preferred source separation system being either permanent containers, followed by coloured plastic bags collected from outside their premises.
- (b) 18 enterprises indicated an average WTP for permanent containers of 110Rs, including 12 not willing to pay anything. There were 18 non-responses for the reasons described above.

Table 3-3: Survey Results – Recycling and Possible Source Separation System

Item	Small Waste Gen'rs	Large Waste Generators			Total
		Comm./ industrial	Other Inst'ns	Hospitals	
No of respondents	14	14	8	3	39
<b>Q2.4 – Recycling – No of responses</b>					
Necessary	14	13	8	3	38
<b>Q2.5 - Willingness to cooperate in separating wastes at source – No of responses</b>					
a. Very willing	13	12	8	2	35
b. Somewhat willing	0	0	0	0	0
c. Less/somewhat unwilling	1	1	0	0	2
d. Not willing at all	0	0	0	0	0
e. Already sort	0	1	0	0	1
f. No response	0	0	0	1	1
<b>Q2.6 – Reasons for not being willing to cooperate – No of responses (only if chose Q2.5c or d)</b>					
a. Increased financial burden	0	0	0	0	0
b. Inconvenient/difficult	1	0	0	0	1
c. Takes too much time	0	1	0	0	1
d. Needs/benefits not clear	0	0	0	0	0
e. Other	0	0	0	0	0
<b>Q2.7 – Reasons for being willing to cooperate – No of responses (only if chose Q2.5a, b or e)</b>					
a. Reduces waste to landfill	2	6	3	2	13
b. Protects environment	13	12	8	1	34
c. Earn some extra money	0	0	2	0	2
d. Other	0	1	2	0	3
<b>Q2.8 – No of categories willing to separate waste into – No of responses (only for Q2.5a,b or e)</b>					
a. Two	8	2	0	0	10
b. Three	4	7	5	0	16
c. More than three	1	3	2	2	8
d. No response	13	1	1	0	15
<b>Q2.9 – Preferred separate collection system – Weighted average rank (only for Q2.5a,b or e)</b>					
a. Coloured plastic bags collected from outside premises	9.0	6.0	1.0	2.5	18.5
b. Permanent coloured containers collected from outside premises	7.5	3.0	10.5	2.5	23.5
c. Own bags/containers collected from outside premises	3.0	9.0	1.5	0	13.5
<b>Q2.10 – Willingness to pay for permanent containers for source separation system – (only for Q2.5a,b or e)</b>					
Willing to pay (no)	2	2	1	1	6
Not willing to pay (no)	5	1	6	0	12
No response (no)	7	9	1	1	18
Willing to pay all	0	1	0	0	1
Willingness to pay (Rs)	32	166	214	250	110



### 3.2.4 On-site Composting

The following table sets out the main interview survey results relating to on-site composting. Some key points are summarized below:

- (a) Four (10%) enterprises are willing to undertake on-site composting, while two are doing so already. However, the majority (33, 85%) of enterprises are not in favour, mainly due to a lack of space on site (16) and it taking too much time (7). Only one enterprise responded to the WTP question, indicating they were not willing to pay anything.
- (b) 20 (51%) enterprises are willing to store their organic wastes for up to one day, if they are to be collected for composting at a centralized facility.

Table 3-4: Survey Results – Composting

Item	Small Waste Gen'rs	Large Waste Generators			Total
		Comm./ industrial	Other Inst'ns	Hospitals	
No of respondents	14	14	8	3	39
<b>Q2.11 – Willing to compost – No of responses</b>					
a. Already compost	1	0	1	0	2
b. Willing	1	2	0	1	4
c. Not willing	12	12	7	2	33
<b>Q2.12 – Willingness to pay for compost system – (only if chose Q2.11b)</b>					
Willing to pay (no)	Not asked	0	0	Not asked	0
Not willing to pay (no)		1	0		1
No response (no)		13	8		21
Willingness to pay (Rs)		0	0		0
<b>Q2.13 – Reasons for not being willing to compost – No of responses (only if chose Q2.11c)</b>					
a. Not enough space on site	Not asked	9	7	Not asked	16
b. Takes too much time		5	2		7
c. LA/contractor should do		0	0		0
d. No equipment		0	0		0
e. Lack of knowledge		0	1		1
f. Concern about smell/pests		1	1		2
g. Not interested		1	0		1
h. Other		3	1		4
<b>Q2.14 – Factors that would encourage on-site composting (only if chose Q2.11b or c)</b>					
a. Free compost container	Not asked	0	0	Not asked	0
b. Availability of cheap, easy to use, nuisance free system		0	0		0
c. Reduction in LA taxes		6	0		6
d. Education/training		0	0		0
e. Earning extra money		3	4		7
f. No response		11	3		14
<b>Q2.15 – Willingness to store organic wastes between collection – No of days</b>					
a. Half a day	0	1	0	0	1
b. One day	9	5	4	1	19
c. Two days	1	1	3	1	6
d. Three days	1	1	0	1	3
e. More than 3 days	3	4	1	0	8
f. No response	0	2	0	0	2

### 3.2.5 Environmental Education and General Cleanliness

The following table sets out the main interview survey results relating to environmental education and cleanliness. Some key points are summarized below:

- (a) 14 (36%) enterprises indicated they have received some health/environmental education related to SWM. Most people had received this training as part of their work, including vocational training (e.g. hospitals), on the job training (e.g. hotels) and seminars.
- (b) 39 (100%) enterprises consider a campaign to raise peoples' awareness for maintaining a cleaner city and environment is either very necessary (38) or somewhat necessary (1).

Table 3-5: Survey Results – Environmental Education and General Cleanliness

Item	Small Waste Gen'rs	Large Waste Generators			Total
		Comm./ industrial	Other Inst'ns	Hospitals	
No of respondents	14	14	8	3	39
<b>Q3.1 to 3.2 – Receipt of Health/environmental education/knowledge about SWM</b>					
No of responses	2	2	7	3	14
Source:					
a. School	0	0	0	0	0
b. Leaflets/posters, etc.	0	0	1	1	2
c. Health worker/centre	0	0	1	1	2
d. Community organization/NGO	1	0	0	0	1
e. Newspaper	0	0	0	1	1
f. Radio programme	0	0	1	1	2
g. TV programmes	0	0	1	1	2
h. Local authority	1	0	1	0	2
i. Local authority contractor	0	0	0	2	2
j. Central government/MOH	1	0	6	1	8
k. Other	1	2	3	0	6
<b>Q3.2 – Necessity for campaign to raise peoples' awareness of need for cleaner city/environment</b>					
a. Very necessary	13	14	8	3	38
b. Somewhat necessary	1	0	0	0	1
c. Not very necessary	0	0	0	0	0
d. Not necessary at all	0	0	0	0	0

Note: MOH = Ministry of Health

### 3.2.6 Other Comments

Other comments covered a broad range of issues and are summarized below. The most common comments relate to:

- Widespread support for recycling (12).
- A need for public education/awareness raising (6).
- Reduce polythene use (3).
- Improve the present SWM system (3).
- Install new or easily accessible bins (3).

Table 3-6: Survey Results – Other Comments

Comments	Small Waste Genr's	Large Waste Generators			Total
		Comm./ Indust.	Other Inst'ns	Hosp- itals	
<b>Five or more comments</b>					
Supports recycling	4	3	4	1	12
Public awareness/education	2	3	1	0	6
<b>Three or four comments</b>					
Reduce polythene use	0	2	1	0	3
Improve present SWM system	3	0	0	0	3
New or easily accessible bins	3	0	0	0	3
<b>Two comments</b>					
Ban polythene	1	1	0	0	2
Implement JICA proposals	1	1	0	0	2
Increase collection frequency	2	0	0	0	2
Collection at scheduled time	2	0	0	0	2
Start recycling programme in UC	0	2	0	0	2
Introduce polythene disposal system	0	1	1	0	2
<b>One comment</b>					
Incinerator needed for Base Hospital	0	0	0	1	1
Base Hospital needs financial assistance to set up colour coded waste discharge system and supply labourers with appropriate equipment (e.g. gloves, etc.)	0	0	0	1	1
Control MC labourer holidays better	0	0	0	1	1
Bury organic waste in land under coconut cultivation and recycle non-organic waste	0	0	0	1	1
Improve fish market	0	0	1	0	1
Take legal action against polluters	0	0	1	0	1
Daily collection	0	1	0	0	1
Collection service for by-roads	0	1	0	0	1
<b>Other comments</b>	0	1	0	0	1
Proper drainage system and toilet facilities	2	2	1	0	5
Build toilets in fish market	0	1	0	0	1
Drain cleaning	0	0	1	0	1

### 3.3 Cleansing Workers Survey in Chilaw

#### Findings from Cleansing Workers Survey in Chilaw

A questionnaire survey was conducted among 30 municipal cleansing workers, in order to gather;

- Basic socio-economic profiles of cleansing workers.
- An appreciation of working condition of municipal cleansing workers.

Period of survey: First week of August, 2002

Sample size: 30

#### 1. General Questions

##### Q1-1 Gender

		Chilaw	
		Number	%
1	Male	22	73%
2	Female	8	27%
Total		30	100%

##### Q1-2 Ethnicity

		Chilaw	
		Number	%
1	Sinhala	5	17%
2	Muslim	1	3%
3	Tamil	24	80%
4	Other	0	0%
Total		30	100%

##### Q1-3 Religion

		Chilaw	
		Number	%
1	Buddhist	0	0%
2	Islam	1	3%
3	Hindu	23	77%
4	Christian	6	20%
5	Other	0	0%
Total		30	100%

##### Q1-4 Household information

( person)	Chilaw
Avg. number of family members	5.3
(Rs.)	Chilaw
Avg. household income	8,699
(Rs.)	Chilaw
Income per person	1,641

Q1-5 How much is the total expenditure of your household per month on average?

(Rs.)	Chilaw
Avg. household expenditure	6,620

(Rs.)	Chilaw
Expenditure per person	1,249

Q1-6 Please specify the priority for your daily life regarding the improvement of the following aspects ?

	Chilaw	point
1 First Others (Toilet / housing problems / mosquitoes)		61
2 Second Water supply		46
3 Third Storm water drainage		20
4 Fourth Wastewater collection		14
5 Fifth Access road to my house		5
6 Sixth Electricity supply		4
7 Seventh Garbage collection		0

## 2. Questions about Your Work

### Part A : Status and Wage

Q2-1 Are you a permanent worker or a casual worker?

	Chilaw	
	Number	%
1 Permanent	22	73%
2 Casual	8	27%
Total	30	100%

Q2-2 How long have you been doing this job?

(years)	Chilaw
Average working years	14.1

Q2-3 How many days do you usually work per week?

(days)	Chilaw
Average working days per week	5.7

Q2-4 How many hours do you usually work per day?

(hours)	Chilaw
Average working hours per day	7.1

Q2-5 Had either your father or mother done this same job?

		Chilaw	
		Number	%
1	Yes	20	67%
2	No	10	33%
Total		30	100%

Q2-6 How much is your monthly wage on average (including official allowance such as holiday pay, overtime and so on)?

(Rs)	Chilaw
Average monthly income	5,279

Q2-7 Do you have any secondary jobs after working hours?

		Chilaw	
		Number	%
1	Yes	13	43%
2	No	17	57%
Total		30	100%

Q2-8 How often and what type of work do you do as a secondary job?

- (1) How often: Frequency varies from every day to a few times per month. Most of them work a few times per week.
- (2) Type of work: Labor work such as cleaning houses, cleaning toilets, shoe repairing and so on.

Q2-9 How much is your monthly wage on average from this secondary resource?

(Rs)	Chilaw
Average monthly income from secondary job	1,123

Note: Number of effective answers are 13.

Q2-10 Are there some waste generators which give you small allowance, including the reward to your extra cleaning work?

		Chilaw	
		Number	%
1	Yes	11	37%
2	No	19	63%
Total		30	100%

Q2-11 How much is your income from small allowance per month on average?

(Rs)	Chilaw
Average monthly allowance from waste generators	144

Note: Number of effective answers are 11.

Q2-12 Do you know other solid waste laborers who sometimes receive a small allowance?

		Chilaw	
		Number	%
1	Yes	10	33%
2	No	4	13%
98	Don't know	16	53%
Total		30	100%

Q2-13 Do you collect recyclable materials from waste for sale?

		Chilaw	
		Number	%
1	Yes	5	17%
2	No	25	83%
Total		30	100%

Q2-14 If yes to Q2-13, what materials do you collect, how much do you collect per month and who do you sell them to?

		Chilaw	
		Number	%
1	Bottle	4	13%
2	Iron	2	6%
3	Aluminum	1	3%
4	Tin	0	0%
5	Metal	0	0%
6	Copper	0	0%
7	Paper	0	0%
8	Irrelevant	25	78%
Total		32	100%

(Rs.)	Chilaw
Average monthly income from recycling	59

Note: Number of effective answers are 5.

## **Part B : Working Conditions and Technical Problems**

Q2-15 These are the possible difficulties you may face. Please prioritize your difficulties?

	(points)	Chilaw
1 Heavier workload and unhealthier conditions due to the improper discharge as waste by people		48
2 Unsanitary waste such as human waste / excrement is mixed with other waste		29
3 Heavier workload for you due to absenteeism among your colleagues		13.5
4 Heavier workload for you due to alcoholism among your colleagues		16.5
5 Insufficient wage		46
6 Health problems		23.5
7 The working schedule such as allocation of vehicles and routes are so changeable		16
8 Lack of protecting clothing (boots, gloves, apron and so on)		28
9 Vehicle often breakdown		12
10 Not enough tools for collection work		34.5
11 Vehicle parked on the street makes your work more difficult		23
12 Others		7.5
Total		298

Note: Others are "cattle problems", "difficult to fetch water for cleaning" and " people scold us."

Q2-16 Are there any particular areas of the city where you feel difficult to collect garbage?

	Chilaw	
	Number	%
1 Yes	22	73%
2 No	8	27%
Total	30	100%

Q2-17 If yes to the previous question, what are the reasons of difficulties?

	Chilaw	
	Number	%
1 Improper discharge of waste by people	6	20%
2 Physically difficult work	4	13%
3 Large amount of garbage	6	20%
4 Traffic and many people	0	0%
5 Road conditions	1	3%
6 Other	5	17%
98 Don't know	0	0%
99 Irrelevant	8	27%
Total	30	100%

Note: Other means "difficult to clean drainages" and "no dumping place nearby".



Q2-18 When difficulties relating to your work arise, whom you talk to first? (**Choose only one.**)

		Chilaw	
		Number	%
1	Officer in charge such as PHI and MOH	3	5%
2	Supervisor	42	66%
3	Minor supervisor	15	23%
4	Colleagues	4	6%
5	Others	0	0%
Total		64	100%

Q2-19 How do you think MC / UC can improve the garbage collection system? Please give your honest opinion.

		Chilaw	
		Number	%
1	Household / citizens contribution	0	0%
2	Need salary increase	9	17%
3	Need more workers	7	13%
4	Need awareness program	7	13%
5	Need more equipments / vehicles	16	30%
6	Health protection incl. introducing protecting clothing	6	11%
7	Others	8	15%
Total		53	200%

Note: Other means "facility for workers such as housing and toilets should be provided." "schedule of every day work should be fixed", "workers should work disciplinally."

## 3.4 Middlemen survey

### 3.4.1 Survey sheet

#### Middlemen and Micro-industries Recycling Survey

Interviewer:		Date:	
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#### General Information:

Name of Interviewee:	
Position of Interviewee:	
Name of Business:	
Address/location:	
No of Years of Operation:	

#### Nature of Business:

- a) What are the main activities of your business?

#### Recycling Activities Collection Details

- 3.1 What materials do you recycle and in what condition? *(please circle the materials recycled and their condition in the table below)*

Materials	Condition					
<b>Plastics</b>	Mixed, unwashed	Sorted, unwashed		Sorted, clean		Other
<b>Polythene</b>	Mixed, unwashed	Sorted, unwashed		Sorted, clean		Other
<b>Bags</b>	Polysacks	Flour bags	Poultry feed bags	Sugar bags	Other	
<b>Paper</b>	Old newspapers	Old exercise books	White paper	Cardboard/boxes	Other	
<b>Glass</b>	Whole Arrack bottles	Whole beer bottles	Other whole bottles/jars	Broken bottles	Other	
<b>Metals</b>	Aluminium	Beer cans	Copper/brass	Ferrous	Other	
<b>Tyres</b>	Small			Large		
<b>Other</b>	Old battery cases (washed, cleaned)		Wood		Other	

Please describe what "other" means below:

.....

- 3.2 Who collects these recyclable materials for you? (tick one or more and describe the type of wastes to which they apply)
- |  | Tick | Waste Types |
|--|------|-------------|
| (a) Individuals  | [ ]  | .....       |
| (b) You and/or some of your workers                    | [ ]  | .....       |
| (c) LA/private contractor garbage collection labourers | [ ]  | .....       |
| (d) Community groups/non-governmental organizations    | [ ]  | .....       |
| (e) Middlemen  | [ ]  | .....       |
| (f) Other – describe: .....                            | [ ]  | .....       |

- 3.3 What are the main sources these recyclable materials come from? (fill in the table with the materials you recycle, the main sources and the approximate percentages from these sources if you know them)

Materials	Main sources			
	First	Second	Third	Others
e.g. Cardboard	C (75%)	M (15%)	Ht (5%)	S, GO (5%)

Use the following codes:

H	Households	Ht	Hotels	Hp	Hospitals
C	Commercial enterprises (e.g. shops, banks, etc.)	GO	Government offices	I	Industries
M	Markets	S	Schools	O	Other

Please describe what “other” means below: .....

- 3.4 Where do these recyclable materials come from and what is the approximate percentage of materials collected from each area?
- |   | Tick | %   |
|---|------|-----|
| (a) Within Urban/Municipal Council Area | [ ]  | [ ] |
| (b) Within District                     | [ ]  | [ ] |
| (c) Within Province                     | [ ]  | [ ] |
| (d) Other Areas – describe: .....       | [ ]  | [ ] |

3.5 Fill in the table below with the following information:

- (a) On average, how many units (kg, items, etc.) of these recyclable materials do you collect per month?
- (b) How much do you pay for such materials per unit (Rs/kg, Rs/item, etc.)?
- (c) Is your demand for these materials stable?
- (d) Is the supply greater than or less than your demand?

Please add any relevant comments on demand/supply issues for these materials below the table.

Material	Quantity	Price paid	Total payment (Rs/mth)	Demand stable	Supply demand vs.
<i>e.g. Clean, sorted plastics</i>	<i>80kg/mth</i>	<i>5Rs/kg</i>	<i>400 Rs</i>	<i>Yes</i>	<i>Greater</i>
<b>Total payment</b>					

**Comments:**.....

#### Worker Details

In the table below, indicate the number of full-time and part-time workers, including yourself, and in each case, the average number of hours worked per week and days worked per month **on the recycling activities** carried out by your business.

**Table 2 : WorkerDetails**

Workers	No	Hrs worked per wk on recycling activities	Days worked per month on recycling activities
Manager/owner			
Full-time worker			
Part-time worker			

#### Recycling Activities Processing/Sales Details (fill in Table 3 with answers)

5.1 What do you do with these materials? (*tick one or more and describe the types of waste to which they apply*)

- |  | Tick | Waste Types |
|--|------|-------------|
| (a) Transport directly to factories                                  | [ ]  | .....       |
| (b) Pre-process (e.g. sort, wash, dry) and transport to factories    | [ ]  | .....       |
| (c) Process (e.g. grind, pelletise, etc.) and transport to factories | [ ]  | .....       |
| (d) Use as raw materials for making other products                   | [ ]  | .....       |
| (e) Other – describe: .....  | [ ]  | .....       |

5.2 If you ticked (d) in Q5.1, what products do you make from these materials?

.....

5.3 Who do you sell these materials and/or the products you make from them to? Where relevant (e.g. commercial, industrial), specify the name, location and how far away are these places are located.

Customers	Materials sold	Name	Location	Distance (km)
Individuals				
Commercial enterprises (e.g. shops, markets)				
Tourists				
Factories for further processing				
Other				

Please describe what "other" means: .....

.....

Fill in the table below with the following information:

- (a) How many units (kg, items) of these materials and/or products do you sell per month?
- (b) How much do you sell these materials and/or the products you make from them for?
- (c) Is the demand for any products you make from these materials small, medium or large?

Material	Quantity	Sales Price	Income (Rs/mth)	Demand
<i>e.g. Plastic pellets</i>	<i>50kg/mth</i>	<i>40Rs/kg</i>	<i>2,000</i>	<i>Medium</i>
<b>Total income:</b>				

**Comments:** .....

.....

What is your average expenditure and income per month from these recycling activities:

Average operating expenses	=	Rs/mth
Average income	=	Rs/mth
Net income	=	Rs/mth

What are the main costs incurred by your business in these recycling activities?; and what is the approximate percentage total costs in each category? *(tick all that apply and estimate the approximate percentages of the five main types. If you do not know this, just rank the five main types, 1 = highest, 2 = 2<sup>nd</sup> highest, etc.)* Tick % or rank

- |   |     |     |
|---|-----|-----|
| (a) Buying the recyclable materials                 | [ ] | [ ] |
| (b) Storage prior to transportation                 | [ ] | [ ] |
| (c) Transportation                                  | [ ] | [ ] |
| (d) Labour  | [ ] | [ ] |
| (e) Other raw materials (e.g. chemicals, additives) | [ ] | [ ] |
| (f) Utilities (electricity, water, telephone, etc.) | [ ] | [ ] |
| (g) Land/building rental                            | [ ] | [ ] |
| (h) Machinery maintenance                           | [ ] | [ ] |
| (i) Other – describe: .....                         | [ ] | [ ] |

### Other Information

How much waste do you produce from your recycling activities per month?

Answer: ..... kg/mth

What do you do with the waste from your recycling activities? *(tick one or more)*

- |   |     |
|---|-----|
| (a) All waste is recycled               | [ ] |
| (b) Collection by LA/private contractor | [ ] |
| (c) Bury/burn on property               | [ ] |
| (d) Other - describe: .....             | [ ] |

What are the main issues/problems facing your recycling activities? *(tick all that apply and rank up to the five most serious problems, 1 = worst, 2 = 2<sup>nd</sup> worst, etc.)*

- |  | Tick | Rank |
|--|------|------|
| (a) Shortage of recyclable materials                           | [ ]  | [ ]  |
| (b) Contamination/poor quality of recyclable materials         | [ ]  | [ ]  |
| (c) High land/building rental costs                            | [ ]  | [ ]  |
| (d) Excessive transportation costs                             | [ ]  | [ ]  |
| (e) Unstable demand for recyclable materials and/or products   | [ ]  | [ ]  |
| (f) Utilities problems (e.g. electricity cuts, no water, etc.) | [ ]  | [ ]  |
| (g) Loss of market (e.g. collapse of tourism)                  | [ ]  | [ ]  |
| (h) Difficulties in obtaining credit                           | [ ]  | [ ]  |
| (i) Other - describe: .....                                    | [ ]  | [ ]  |

Comment on what could be done to help solve these problems/issues?

.....  
.....

Any other comments/useful information?

.....  
.....

**Notes for interviewer:**

1. Check that quantities collected for recycling tally with quantities sold on to others, where relevant.
2. Check that costs and income tally with quantities and indicated sales prices.