Chapter 6 Assessment of Pilot Projects

6.1 Bell Collection Interview Survey

6.1.1 Description

A bell collection interview survey was undertaken of households, collection vehicle drivers and labourers and handcart street sweepers in all seven study towns from 1-17 September 2003 to evaluate the success of the bell collection system, as set out below.

Table 6-1 : Bell Collection Interview Survey Details

Study Town	Start of bell collection (2003)	Households (No)			Collection Vehicle Drivers (No)	Collection Vehicle Labourers (No)	Handcart Street Sweepers (No)
		S	DK	EH			
Negombo	7 March	49	2	47	5	12	9
Gampaha	Early March	37	12	25	3	9	7
Chilaw	1 April	45	11	34	3	9	9
Kandy	10 July	51	11	40	3	13	13
Badulla	29 July	56	3	53	3	10	9
Nuwara Eliya	18 Aug	15	15	0	2	5	7
Matale	28 Aug	18	0	18	1	4	1
Total		271	54	217	20	62	55

Note: S = surveyed; DK = surveyed households who didn't know about the bell collection system. EH = number of households surveyed in each town who know about the bell collection system and lived in areas with a LA garbage collection service (= S – DK).

The bell collection system started in each study town at different times. Hence, the survey results capture a variety of conditions ranging from recent introduction (i.e. less than one month: Matale, Nuwara Eliya), 1-2 months old (Kandy, Badulla) to 5-6 months old (Negombo, Chilaw and Gampaha).

6.1.2 Results

6.1.2.1 Households

54 (20%) of surveyed households did not know about the bell collection system. Hence, the effective number of survey responses is 217 (80% of surveyed households), representing households who live in areas provided with a LA garbage collection service and who know about the bell collection system.

Surveyed households learned about the bell collection system through a variety of media, as illustrated below. The most common means were Council leaflet (79 households, 36% of 217 households), "no publicity – just heard music" (68, 31%), Council worker (supervisor, labourer, etc.) (57, 26%), loudspeaker announcement (35, 16%) and Council noticeboard (16, 7.3%). This shows that although most people learned about the bell collection system via formal publicity, informal publicity by simply

playing the music was also a very useful means of publicising the new system, relying on peoples' curiosity to find out what the new music is for.

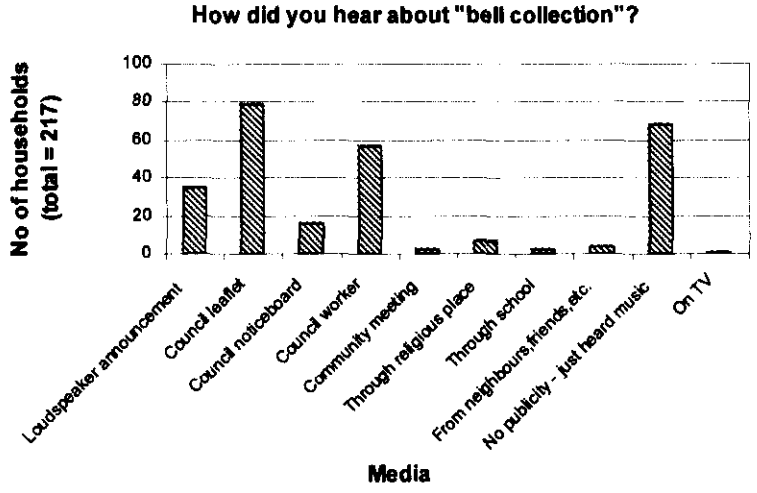


Figure 6-1: Means of Hearing about the Bell Collection System

The next figure shows how household garbage discharge behaviour[1] has changed dramatically, since starting the bell collection system. The number of households discharging their garbage outside their property at any time has dropped from 67 to six, while similar decreases have occurred in the number of households discharging their garbage at collection points at any time (37 → 9), or giving it to LA handcarts (49 → 1). Conversely, the number of households discharging their garbage to a LA collection vehicle has risen dramatically from 34 to 124 (57%), as has the number of people discharging their garbage in a container at the kerbside for collection (1 → 103, 47%), primarily due to playing of the bell collection music.

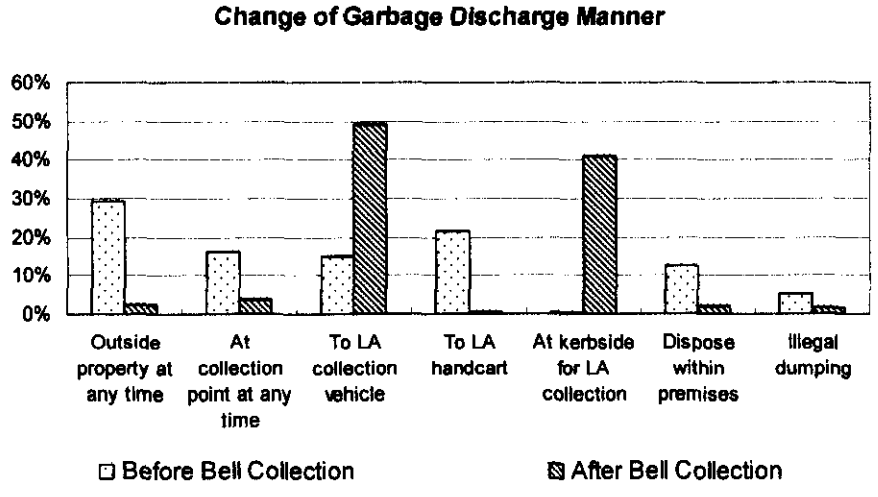


Figure 6-2: Effect of Bell Collection (BC) System on Garbage Discharge Methods

The number of households practising on-site disposal has decreased (29 → 5), as has those illegally dumping their garbage (12 → 4), suggesting that the amount of waste collected by the LA is likely to have increased. Labourers' and street sweepers' comments generally support this (see later).

Since the start of the bell collection system, 56 (26%) households have discharged their waste by their former methods at some time, generally at the roadside (11), to a public bin (11), within their premises (10), open dumping outside their property (9), or to a LA handcart or other collection vehicle (8).

If the collection vehicle does not come on the scheduled collection day, 150 (69%) households store garbage within their premises until the vehicle does come, while 41 (19%) households discharge their garbage to a public bin or at the roadside, 16 (7%) dispose of it within their premises and 13(6%) illegally dump it outside their properties (see below). Surprisingly, no surveyed households complain to the LA when this happens.

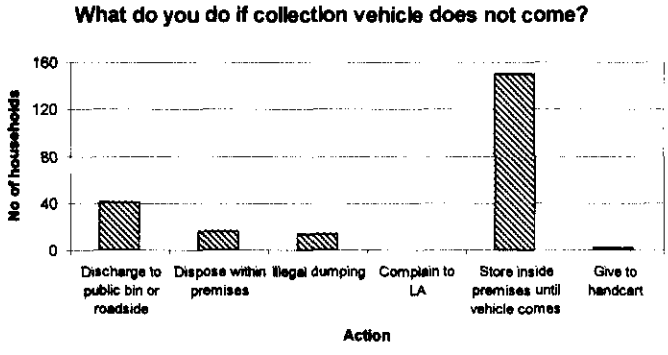


Figure 6-3: Actions Taken by People When the Collection Vehicle does not Come

The LA's garbage collection frequency has also changed, with slightly more households being provided with a daily collection service (70 → 76), while a lot more households receive a more than four times weekly service (33 → 50) or 2-3 times/week service (63 → 86). Fewer households are being provided with less frequent collection. This may be more a reflection of the LA collection schedule becoming more regular, which 181 (83%) households believe is true, rather than any actual increase in frequency.

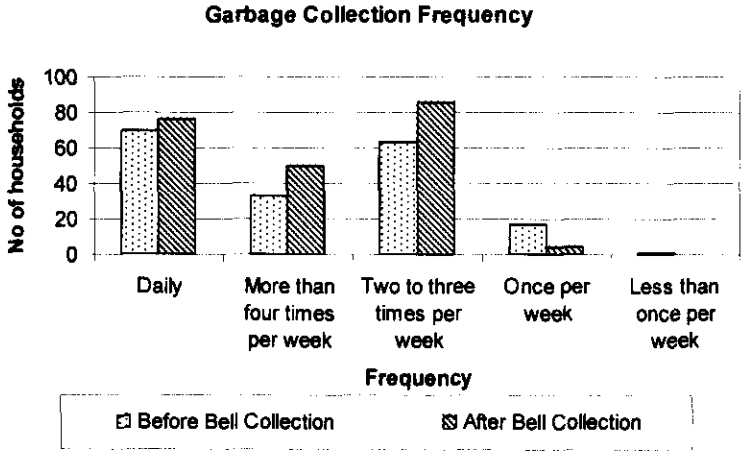
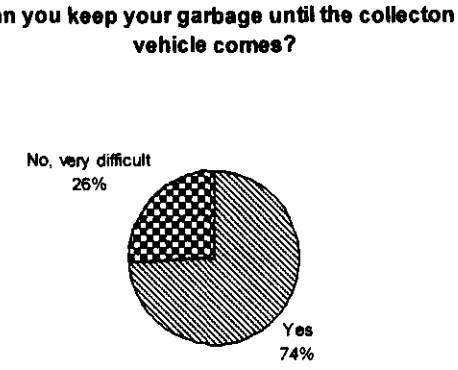


Figure 6-4: Changes in the Garbage Collection Frequency

[1] Multiple responses allowed to this question.

161 (74%) households state they can keep their garbage within their premises until the collection vehicle comes, but 56 (26%) said this is very difficult, primarily due to bad smell (31), limited space (22), animals (9) or mosquitoes (5).



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igure 6-5: Peoples' Willingness to Store Garbage within their Premises until Collection

Most households (171, 79%) think waste scattering has decreased either a little (145) or very much (26), while only 46 (21%) think there has been no change.

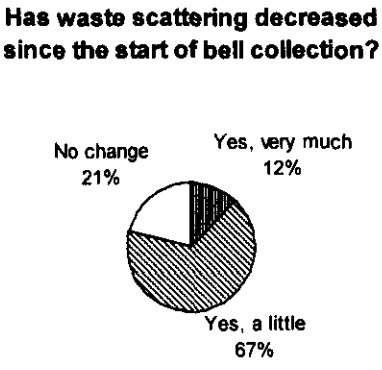


Figure 6-6: Effect of Bell Collection on Waste Scattering

All 217 (100%) households want the bell collection system to be continued. 215 of the 217 households like the bell collection music, while 204 think the volume is proper, 11 think it is too soft and only two too loud. Only nine (4%) households have some problems with the bell collection system, relating to the LA only collecting on one side of the road (1), it being dangerous with children discharging waste directly to compactors (1), sometimes the bell is broken (1) or there are insufficient bell collection vehicles (1)[2].

All 217 households are more willing to cooperate in discharging their garbage in a proper manner than previously. This question was also asked to the 54 households who did not know about the bell collection system, after explaining to them how this system worked. 51 (94%) of these households indicated they also would be more willing to cooperate if such a system was operating in their area (one "no", two "no answers").

[2] Five households did not specify the nature of their problem.

Apart from the bell collection system, 47 (22%) households consider the LA has been trying to improve SWM in their area over the last year, while 153 (71%) consider there has been no change and 17 (8%) consider the LA's performance is now worse.

6.1.3 Collection Vehicle Drivers

Twenty collection vehicle drivers were interviewed during this survey, comprising five compactor and 15 tractor drivers. Eight drivers have been doing bell collection for more than three months, nine for 2-3 months and three for less than one month.

19 (95%) drivers like the bell collection system, primarily due to good public cooperation (7), people handing their garbage directly to the vehicle (7), saving time (4) and easier work (4). One driver from Nuwara Eliya doesn't like the system due to a lack of public cooperation in his area (town centre).

Turning on and off the amplifier switch is not a problem for 18 (90%) drivers, while 17 (85%) said the music is not too noisy. Six (30%) drivers have had trouble with the speaker/amplifier system on 1-3 occasions, while 14 (70%) have had no trouble at all.

6.1.4 Collection Vehicle Labourers

62 collection vehicle labourers were interviewed during this survey. 55 (88%) labourers said that public cooperation with the bell collection system was either fair (55) or very good (4), while only seven (12%) said people were not cooperative or had not changed their garbage discharge behaviour.

34 (55%) labourers stated that the garbage collection amount had increased by a little (28) or lot (6). 26 (42%) believed there was no change, while two (3%) thought the collection amount had decreased.

The impact of the bell collection system on the collection time is reasonably balanced, with 31 (50%) labourers indicating it has not changed, 15 (24%) that it has increased and 16 (26%) that it has decreased.

The majority of labourers (44, 71%) think their work has become a little (43) or a lot (1) easier, mainly due to garbage being deposited at the kerbside for collection (24, 39%), increased public cooperation (11, 18%) and direct discharge to vehicles (6, 10%). 15 (24%) consider it has not changed, while three (5%) believe it has become harder, mainly due to having to stop many times to collect garbage (2, 3%), waiting for people to bring their garbage to the vehicle (1, 2%) and collection taking longer due to more garbage being discharged (1, 2%).

The vast majority of labourers (55, 89%) want the bell collection system to continue, while seven (11%) are opposed, mainly for the reasons given above.

6.1.5 Handcart Street Sweepers

55 handcart street sweepers working in bell collection areas were interviewed during this survey.

31 (56%) street sweepers said that waste scattering had decreased either a little (26) or a lot (5) since introduction of the bell collection system, mainly due to people using bags or containers for discharge of their waste (16), or directly discharging it to the collection vehicle (10) rather than at the roadside. The remaining 24 (44%) street sweepers said there was no change.

21 (38%) believe the amount of garbage collected by them has decreased either a little (20) or a lot (1), for the same reasons as above, while 28 (51%) consider it has not changed. Six (11%) think it has increased, primarily due to more people discharging waste than previously (5).

13 (18%) consider their street sweeping works are now a little (12) or much easier (1), mainly due to there being less waste scattering (8), and people using bags (3) or directly discharging their waste to the collection vehicle (3). The remaining 42 street sweepers consider there has been no change.

50 (91%) want the bell collection system to continue, while only five are opposed, primarily due to poor public cooperation in their work areas.

6.2 Bell Collection Field Survey

6.2.1 Description

Bell collection field surveys were also undertaken in three study towns (Negombo, Chilaw and Gampaha) from March-October 2003. These involved following different collection vehicles over part of their collection routes (generally 1-2km) and recording various information related to peoples' garbage discharge behaviour and field conditions (e.g. number of people discharging waste according to their old habits, number of people bringing their garbage out when they hear the music, number of bags of garbage placed at the kerbside for collection, number of piles of scattered waste, etc.). Generally, 2-3 vehicles were followed in each town for each survey. Route data was then combined for each town and divided by the total distance travelled to get a "count per kilometre"[3]. Survey details are given below.

[3] This was considered the simplest way of analysing this data, rather than analysing data it area by area, especially as it was often not possible to survey the same area each time due to logistical and practical problems (e.g. collection schedule changes, bells or vehicle not working.

Table 6-2 : Bell Collection Field Survey Details

Item	Negombo	Chilaw	Gampaha
Number of surveys	6	5	5
Survey dates and areas	Mar 12: Bolawalana Mar 24: Bazaar I May 9: Kadolkale, Kudapaduwa Jun 12: Bolawalana, Bazaar I, Kadolkale, Kudapaduwa Jul 8: Bazzar I, Kadolkale, Kudapaduwa, Periyamulla II Sep 29: Bazaar I, Kadolkale, Kudapaduwa	Mar 25 (before bell collection), May 22, Jun 13, Jul 10, Oct 1 Zones 2, 4 and 5	Mar 26: Gampaha (Mary Biso, Court), Yakkala (commercial) May 8: Yakkala (commercial, Ambagahalanda, Dimuthu) Jun 11: Gampaha (Court), Yakkala (commercial, Ambagahalanda and 3 other residential areas) 30 Sep: Gampaha (Mary Biso, Court), Yakkala (2 residential areas)

6.2.2 Results

6.2.2.1 Negombo

The bell collection system started well in Negombo, with public cooperation around 60% and many people bringing out their garbage to the collection vehicle when they heard the music, or placing it at the kerbside in bags or containers for collection (refer following figure). Interestingly, from June onwards, more people have been placing their garbage at the kerbside per km rather than bringing it out when they hear the music. This may partly be due to the bell music not being played consistently in many areas for some periods during June-August, leading to the bell collection system virtually stopping by August 2003. These problems seem to have been resolved and the bell collection system is now working again, with public cooperation at around 40-95% in different areas.

People discharging their waste by old methods (i.e. at roadside, to collection point) and the number of scattered waste piles were both very low during March-July. They have increased since then (see September survey result), which may partly be due to people reverting to their old habits due to near collapse of the bell system, as described above. It may also be due to the survey being extended to Kudapaduwa since May and Periyamulla II (July only), both of which are problematic areas for garbage collection.

The amount of waste discharged for collection seems to have increased, while the collection time may have decreased slightly, particularly in areas with high public cooperation.

6.2.2.2 Chilaw

The bell collection system started slowly in Chilaw with little change in peoples' discharge behaviour and field conditions from April 1 (start date) until late May. Since then, there has been a significant change, with more people bringing out their garbage to the collection vehicle when they hear the music, or placing it at the kerbside in bags or containers for collection (refer following figure), the latter being the most common method. Public cooperation now stands at around 30-90% in different areas.

Recent survey data suggests that the number of people discharging their waste by old methods (i.e. at roadside, to collection point) and the number of scattered waste piles may have started to decrease relative to June-July, although these numbers are still similar to or slightly higher than pre-bell collection. This may be due to more people discharging their garbage for collection than previously and some recent problems in Chilaw (e.g. no PHI, some broken amplifiers). Garbage collection times may also have decreased slightly.

6.2.2.3 Gampaha

Results for Gampaha have been split into two, those related to the former Gampaha UC area and those for Yakkala (newly added area).

The bell collection system has not been very successful in Gampaha, with the number of people bringing out their garbage to the collection vehicle when they hear the music, or placing it at the kerbside in bags or containers for collection (refer following figure) remaining relatively low during March-September, although more garbage is being collected directly from peoples' premises. Public cooperation is relatively poor (10-40%), while Gampaha has not managed introduction of the bell collection well, with vehicles often being broken down or the speaker/amplifier system not working when the Study team has come to do this survey.

This is reflected in big increases in the number of people discharging their waste by old methods (i.e. at roadside, to collection point) and the number of scattered waste piles since June, which suggests that more people are discharging their waste for collection than previously, but not in accordance with the new waste discharge rules, and that GMC may not be keeping to the collection schedule. Hence, urgent efforts are needed to improve public cooperation and GMC's garbage collection service in this area.

In contrast, introduction of the bell collection system has been more successful in Yakkala with public cooperation at around 40-70%, except in the commercial area, where cooperation remains relatively poor. The number of people bringing out their garbage to the collection vehicle when they hear the music, or placing it at the kerbside in bags or containers for collection (refer following figure) has gradually increased, especially since June, while direct collection from individual premises has also increased. The number of people discharging their waste by old methods (i.e. at roadside, to collection point) and the number of scattered waste piles has also increased, which suggests that more garbage is being discharged than previously and that GMC may not always be keeping to the collection schedule.

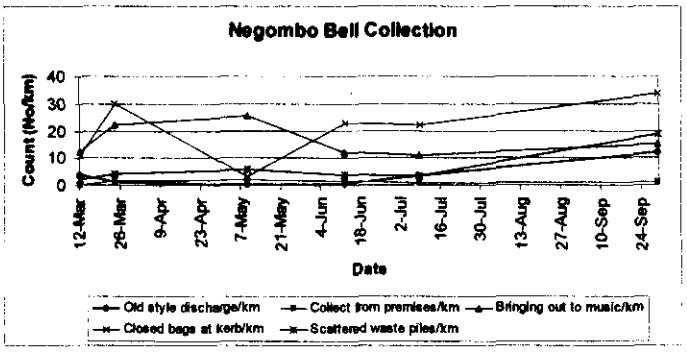


Figure 6-7: Negombo Bell Collection Field Survey Results

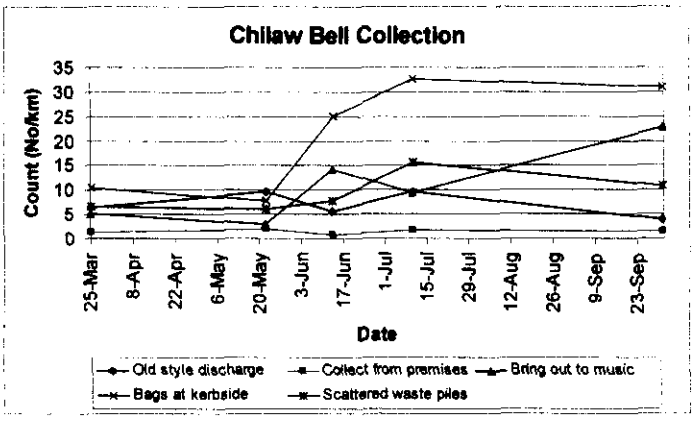


Figure 6-8: Chilaw Bell Collection Field Survey Results

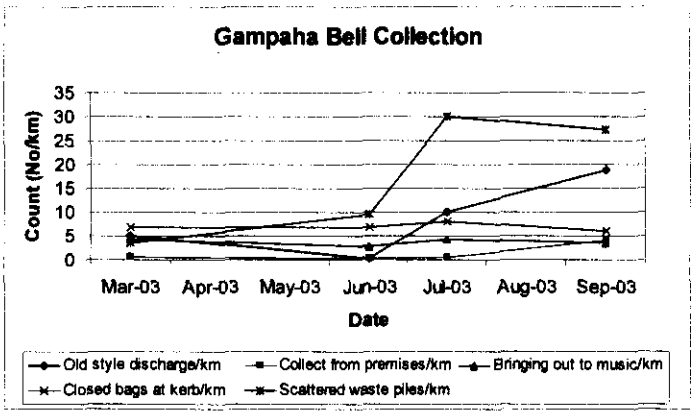


Figure 6-9: Gampaha Bell Collection Field Survey Results

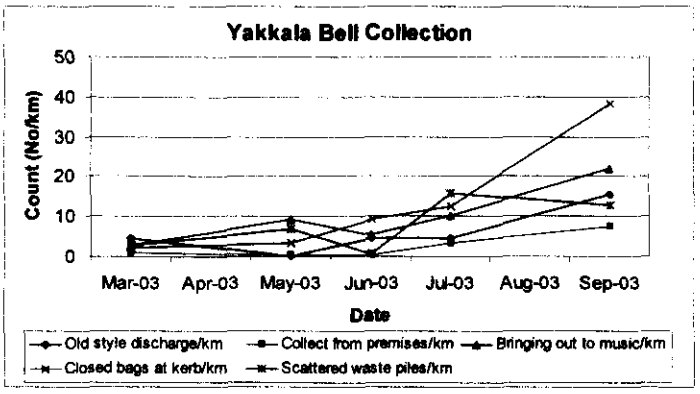


Figure 6-10: Yakkala Bell Collection Field Survey Results

6.3 Improvement of Gohagoda Landfill Site

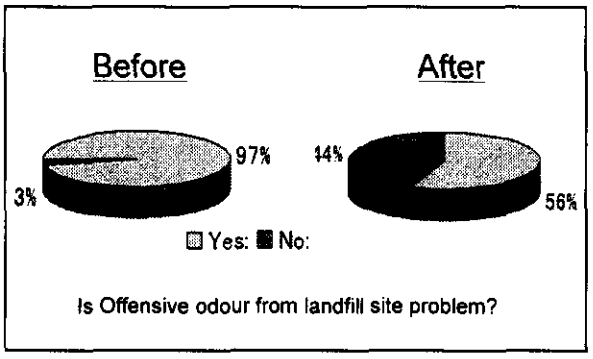
a. Improvement of Gohagoda landfill site in Kandy

The study team organized the interview survey on the surrounding households at Thekkawatte village and Powatte village before and after improvement of the landfill site. The first interview was conducted in June 2002 and the other was conducted in October 2003. The number of samples for each interview is fifty. The results of the interview surveys are as follows:

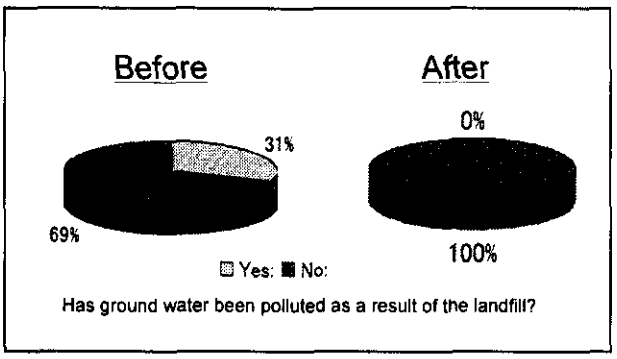
The interview surveys of residents in the area surrounding the Gohagoda landfill was conducted before and after improvement of the landfill. The results of the interview surveys are as follows:

	Question	Percentage of YES replying		Improve Rate
		Before	After	
1)	Is offensive odour from the landfill site a problem?	97%	56%	31%
2)	Has ground water been polluted as a result of the landfill?	31%	0%	31%
3)	Has the landfill caused problems due to birds?	85%	53%	32%
4)	Has the landfill caused problems due to rats?	80%	29%	51%
5)	Has the landfill caused problem due to dogs?	75%	56%	19%
6)	Is the dust caused by the landfill a problem?	72%	24%	48%
7)	Do waste collection trucks cause any problems?	64%	32%	32%
8)	Is waste scattered from the landfill site a problem?	88%	21%	67%
9)	Is smoke and fire from the landfill site a problem?	95%	0%	95%
10)	Do your washed clothes get dirty because of dust from the landfill site?	57%	18%	39%
11)	Are you satisfied with how the operation of the landfill site?	7%	97%	90%

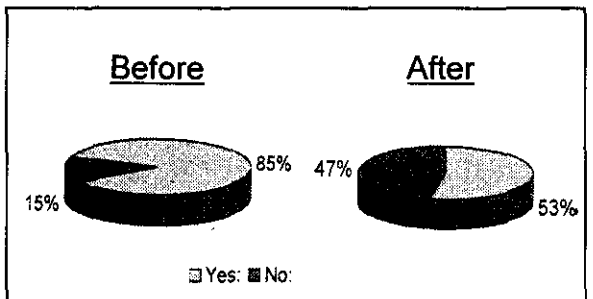
The results of the interview surveys show that the improvement of Gohagoda landfill and its operation has had a favourable impression on the neighbouring residents. One hundred percent of respondents answered that the smoke problem was eliminated and the ratio of people who are happy with the landfill condition increased from only 7% to 97%. The main improvement works of Gohagoda landfill consisted of the relocation of existing waste, covering soil, turfing and the installation of fence to prevent waste from scattering. Most of the improvement works used only cheap and locally available materials and simple technologies. This proves that simple methods for improvement of the landfill site with cheap, domestic material can satisfy the local residents.



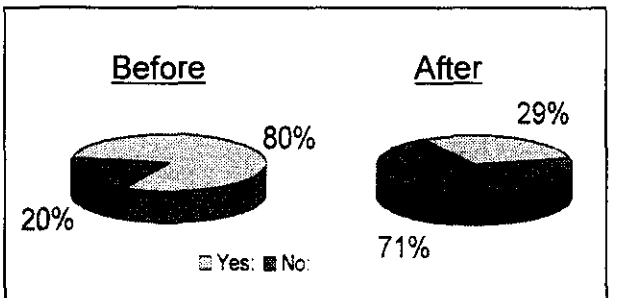
Is Offensive odour from landfill site problem?



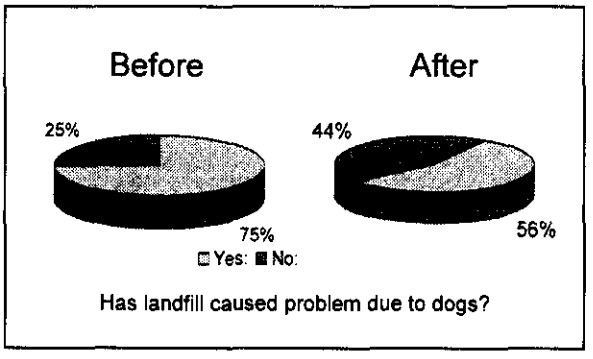
Has ground water been polluted as a result of the landfill?



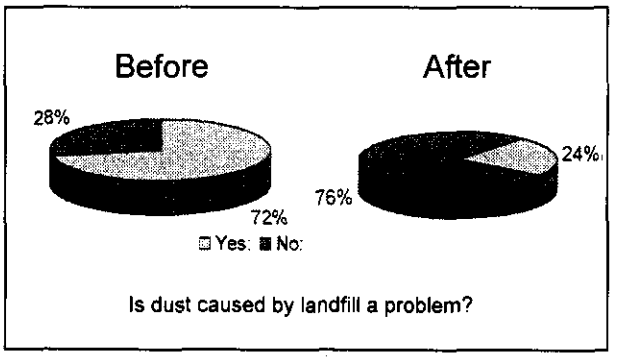
Has landfill caused problems due to birds?



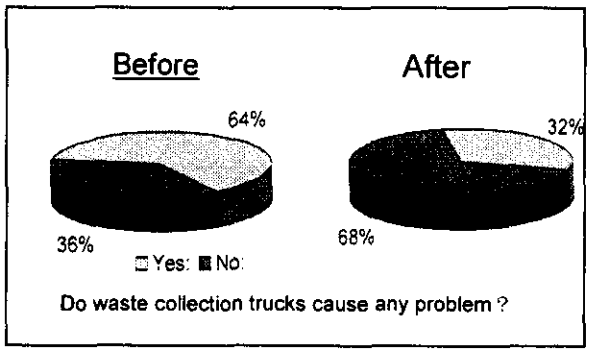
Has landfill caused problems due to rats?



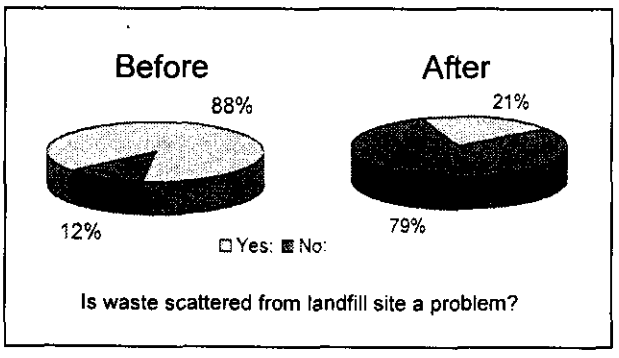
Has landfill caused problem due to dogs?



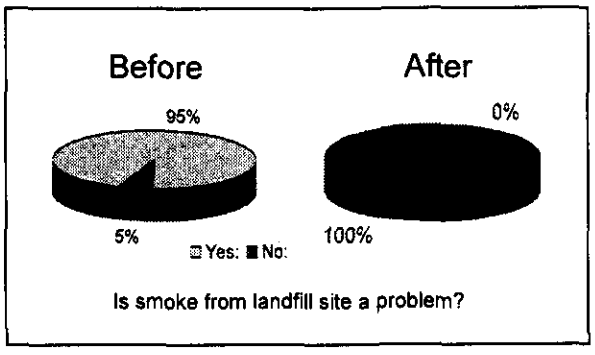
Is dust caused by landfill a problem?

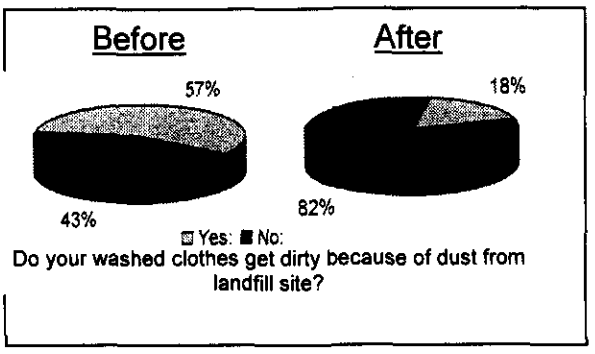


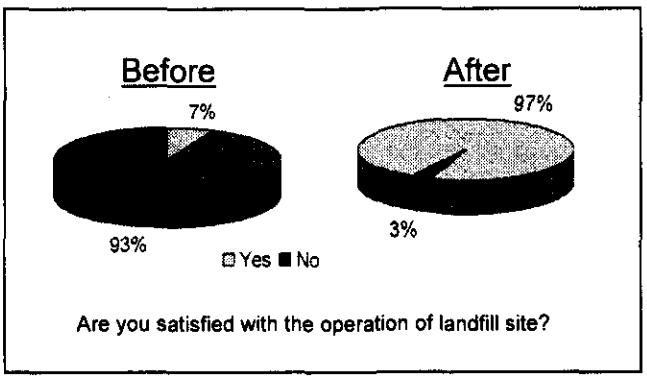
Do waste collection trucks cause any problem ?



Is waste scattered from landfill site a problem?







6.4 Capacity Building of Each Model Town

The objectives of the implementation of pilot projects were not only the visual improvement such as a reduction in waste scattering and upgrading of the poor landfill condition but also to encourage the counterparts to be more enthusiastic and act more independently with regard to developing their capacity. This section reports the progress of their capacities from that point of view.

6.4.1 Chilaw UC (UCC)

Interim PDM for Chilaw

Period: Implementation: from Jan. 2003 to Mar. 2003
Following up: from May 2003 to Sep. 2003

Target group: Urban Council employees and all citizens Date: Sep, 2003

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal The environmental sanitary condition in Chilaw is improved.	Complain from citizens to Urban Council hasn't decreased.	Complain record	The central government won't change the policy of public health and environmental protection.
Project Purpose a) Waste scattering decreases b) Waste collection cost decreases	By August 2003, • The number of problem areas hasn't decreased • The number of complains hasn't decreased	Monthly SWM performance report	The number of population, shops, waste generation amount will not increase greatly.
Outputs a) Modified by-law enacts.	a) Urban Council has approved the new by-laws.	Gazzet	The number of vehicles will not increase greatly.
b) Modified by-law is strictly enforced.	b) By-law hasn't been yet approved.	Record of violence	
c) The management work is conducted in accordance with the SWM manual.	c) There are no PHI filling SWM control note.	Record	
d) The SWM monthly report is prepared and submitted to the environmental committee.	d) There are no PHI to prepare the monthly report.	Monthly SWM performance report	
e) SWM control board is utilized.	e) PHI has started to use it.	SWM control board	
f) Waste collection efficiency is improved.	f) The daily trip number is constant.	Trip record	
g) Municipal Council staff produce education materials and conduct education activities by themselves.	g) No more requesting technical support to the Team.	Support request record	
h) The education materials using the actual cases in Chilaw are produced.	h) UCC produce the education material by themselves concessionary.	List of education material	
i) An environmental education center targeting citizens is established and operated.	i) Number of visitors is about 20 to 40 per month. It should be improved.	Visitor record	
j) The environmental centre will also hold educational activities at sites such as communities and schools using the equipment and materials used at the centre.	j) On-site education is conducted about 2 to 4 times per month.	Site education record	
k) NGO's compost production is assisted by Urban Council	k) UCC promote compost products in the environmental education centre.	Accounting book	
l) Action plan is prepared.	l) UCC has prepared the action plan and explained it to citizens on Sep. 20th		
Activities	**Inputs**		
2.1 Strengthening the Organisational Capacity a) Urban council was preparing the by-law for SWM based on the model by-law. b) Training on supervision works, SWM, public promotion, etc. was given to PHIs and supervisors. c) Necessary transportation means for supervision and public promotion activities were provided. d) SWM control board was produced and fixed. **2.2 Waste Collection Improvement** a) The bell collection and kerb side collection method was introduced. b) The stationary collection with trailers for markets, bus stations, etc. where many people gather were introduced. c) Waste transfer facilities were improved. d) Half barrel fixed type bins were installed in parks, etc. e) Half barrel movable bins were placed at events, festivals, Sunday bazaar, etc. f) Municipal Council provided some of shops with public litter bins to be taken care by them. **2.3 Hygiene Education** a) The promotion and education materials were produced. b) The Study Team transferred the education material production know-how to staff. c) An environmental education centre was established. d) NGO of ORDE for the composting operation was assisted. e) The environmental centre executed the education at sites such as communities, schools by using the equipment and materials used at the center f) Beautification of Chilaw town was promoted by the public participation.	**JICA Study Team** **Manpower** • The Study Team member 5p **Technical assistance** • Training for UCC staff 6 lessons • Public education • On-the-job-training **Equipment and Material** **1) For supervision and education works** • SWM control board 1 no • Motorbike 2 nos • Helmets 2 nos **2) For waste collection improvement** • Speaker units for bell collection7 units • Modified handcart 5 units • 100l fixed type litter bins 20 nos • 100l movable type litter bins 20 nos • 30-40 litres litter bins 50 nos • Fabrication of waste transfer platform • Closed type trailer for stationary waste transportation 3 nos **3) For environmental education** • Laptop computer 1 no • Projector 1 no • Screen 1 no • Digital camera 1 no • Colour printer 1 no • Education banner 10 nos • Leaflets 6,000 nos • Public notice board 50 plates • Refurbishing the office to the environmental education centre 1 set • Megahorn 1 no	**Urban Council Chilaw** **Manpower** • PHI • Supervisor • Environmental Officer • Computer operator **Facilities** • To make the 2nd floor of town hall building for the environmental education centre	Trained staff will continue to work for the same tasks. **Pre-conditions** Municipal council doesn't oppose the pilot project.

The Chilaw Mayor who is devoted to local governance and the richly experienced PHI managed the city well despite a lack of human resources and equipment being the smallest council of the seven model towns. However, when the Study started, they knew that the SWM works were too much for them to manage without public cooperation. Therefore, they strongly requested the Study team to give assistance in raising public awareness at the initial stage of the Study. The Study team held educational activities for citizens at the community meeting which UCC arranged.

Waste collection improvement and environmental education were therefore selected as the main pilot projects. In general, the DEO produced the educational materials and conducted the environmental education successfully after being trained by the Study team, with full cooperation from the Mayor and PHI.

However, when the PHI retired and was replaced in February 2003, the situation changed completely. The new PHI carried out SWM reform independently without understanding the purpose of the pilot project and did not take any interest in the environmental education programme. The DEO therefore continued the environmental education alone. The DEO explained the responsibilities of the council and citizens regarding waste collection and asked people to cooperate in discharging garbage according to the garbage discharge rules for bell collection. However, as UCC did not comply with the rules, many citizens complained UCC. Despite the many complaints, the PHI did not take any remedial actions. Eventually, the PHI realized this was the result of the environmental education conducted by the DEO, and he requested the DEO to stop the programme.

In response, the Mayor removed the new PHI from his position and took charge of the SWM works by himself. The DEO was doing the environmental education as of September 2003. By overcoming this struggle, UCC was empowered and its capacity was enhanced to function as a participatory organization that responds to the needs of its citizens. Although the bell collection and the waste collection improvement projects did not go well due to UCC's weak organisational capability, the environmental education has been stabilizing. It is highly expected that environmental education will be a key factor in improving the conventional SWM system in Chilaw.

6.4.2 Negombo MC (NMC)

Interim PDM for Negombo

Pilot Project Name: **Improvement of SWM for Negombo**

Period: Implementation: from Jan. 2003 to Mar. 2003
Following up: from May 2003 to Sep. 2003

Target group: Municipal Council employees and all citizens Date: Sep, 2003

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal The environmental sanitary condition in Negombo is improved.	Complain from citizens to Municipal Council decrease by50% by 2006.	Complain record	The central government won't change the policy of public health and environmental protection.
Project Purpose a) Waste scattering decreases b) Waste collection cost decreases	• The number of problem areas decreases. • The number of complains decrease.	Qualitatively	The number of population, shops, waste generation amount will not increase greatly.
Outputs a) Modified by-law enacts.	a) Municipal Council will discuss it soon.	Gazzet	The number of vehicles will not increase greatly.
b) Modified by-law is strictly enforced.	b) By-law has not been approved yet.	Record of violence	
c) The management work is conducted in accordance with the SWM manual.	c) SWM manual has been referred by staff following the trainings.	Record	
d) The SWM monthly report is prepared and submitted to the environmental committee.	d) The monthly report hasn't been prepared.	Monthly SWM performance report	
e) SWM control board is utilized.	e) It has been used since Sep. 2003.	SWM control board	
f) Waste collection efficiency is improved.	f) The daily trip number is constant.	Trip record	
g) SWM action plan is prepared	g) SWM action plan has been prepared and explained at the seminar on Sep 25th with the attendance of 85 people.		
h) The waste collection system is improved.	h) 2/3 of garbage concrete bins have been removed. Handcart collection work has been reduced.		
Activities **2.1 Strengthening the Organisational Capacity** a) Environmental committee was established and works. b) Municipal council was preparing the by-law for SWM based on the model by-law. c) PHIs and supervisors were trained on supervision works, SWM, public promotion, etc. 7 lessons. d) Necessary transportation means for supervision and public promotion activities were provided. e) SWM control board was produced and fixed. **2.2 Waste Collection Improvement** a) The bell collection and kerb side collection method were introduced. b) The stationary collection by using trailers in markets, bus stations, etc. where many people gather were introduced. c) Waste transfer facilities were improved. d) Half barrel fixed type bins were installed in parks, etc. e) Half barrel movable bins were placed at events, festivals, Sunday bazaar, etc. **2.3 Environmental Education** a) Leaflets showing waste discharge rule, etc. were produced and distributed.	**Inputs** **JICA Study Team** **Manpower** • The Study Team member 5p **Technical assistance** • Training for staff 7 lessons • Public education • On-the-job-training **Equipment, material and facilities** **1) For supervision and education works** • SWM control board 1 no • Motorbike 6 nos • Helmets 6 nos **2) For waste collection improvement** • Speaker units for bell collection16 u • Modified handcart 6 units • Fabrication of waste transfer platform 1 unit • Closed type trailer for stationary waste transportation 3 nos • 100l fixed type litter bins 20 nos • 100l movable type litter bins20 nos **3) For environmental education** • Leaflets 30,000 nos • Public notice board for waste discharge 50 plates • Education banners 10 nos • Megahorn 1 no	**Negombo Municipal Council** **Manpower** • PHI 3 p • Supervisor 17 p • Environmental Officer 1 p • Computer operator 1 p **Facilities** • Provision of the proper office space for the Study Team	Trained staff will continue to work for the same tasks. **Pre-conditions** Municipal council doesn't oppose the pilot project.

The existence of many garbage heaps on main roads discomforted citizens and visitors to Negombo, although it is a famous tourist resort town. This was mainly due to an insufficient SWM budget. However, it was impossible to expect a drastic increase in the budget as the total council budget was

very small. Therefore, the pilot project targeted a reduction in waste scattering without spending much money.

Although NMC was not interested in the Study during Phase 1, NMC became very active in the implementation of the pilot project after it started. NMC decided to introduce bell collection and established a street committee to ensure public cooperation for it. The street committee was expected to strengthen the link between NMC and the citizens. The street committee members selected were in charge of the promotion and supervision of good waste discharge practices and the monitoring of NMC's regular collection work performance. In addition, they were obliged to participate in the meeting concerning the formulation of the action plan as representatives of citizens.

On the first day of bell collection, the Mayor and the council members in the health committee followed the tractor to see bell collection work in action and people's reaction to it. As a result, they realized its effectiveness and people's appreciation of it. However, after a few months, drivers started to forget to play the music, and NMC failed to comply with the garbage collection schedule due to the breakdown of tractors and of speakers for music; NMC's performance of bell collection greatly declined. Finally, it almost collapsed due to the negative attitude of many municipal employees who were very conservative and against the change. At that time, however, many street committee members and citizens made lots of complaints to the Mayor by phone and telegram and strongly requested that NMC resume the bell collection. This moved the Mayor to order its resumption and the bell collection came to be operated much more steadily and widely than before. The street committee system, which was introduced by NMC to promote public participation, prevented the bell collection from collapsing by watching NMC's performance. The effects were as follows:

- Many of the waste heaps and waste scattered on roads disappeared.
- NMC has removed 45 out of 60 concrete communal garbage bins because they are no longer necessary since the introduction of bell collection. In addition, NMC has reduced the frequency of handcart collection, which has lead to an actual cost reduction.
- NMC ordered five trailers after realizing the effectiveness of stationary trailers through the implementation of the pilot project.
- A link among all stakeholders such as NMC staff, citizens, the staff of relevant authorities, etc. has been formed and strengthened through the implementation of bell collection and the formulation of Action Plan. Finally, 85 people participated in the 2nd SWM seminar which was very well organised by NMC itself.

Through the introduction of bell collection and preparation of an action plan with the participation of many stakeholders such as politicians, NMC staff, citizens, etc., NMC was able to widen its viewpoint and develop a better understanding of the public's needs. This is a result worthy of special mention, which only Negombo of the seven model towns achieved this time.

Negombo Case Study

1. Description

Investigations of the present SWM situation in Negombo during July-August 2002 found that the Council's institutional and managerial arrangements were relatively weak in general, particularly in relation to SWM, being characterised by some individuals with considerable power, poor coordination between different departments within Negombo Municipal Council (NMC), poor labourer management and a relatively inefficient garbage collection service. Public opinion surveys found that many people were dissatisfied with current SWM service provision, a large majority of whom were willing to cooperate in improving this situation.

During January-October 2003, a wide range of pilot projects were implemented in Negombo by NMC, with assistance from the Study team, two of which were particularly important in addressing these issues:

- *The introduction of a waste discharge rule and bell collection system to 45 streets within Negombo. Under this system, people are required to discharge their garbage in containers (polysacks, dustbins, etc.) in accordance with certain rules and a specified collection schedule, bringing their garbage directly out to the collection vehicle when they hear special music being played or, if they are not going to be at home, placing it at the kerbside in a closed container before the specified collection time.*
- *Preparation of a 10 year SWM action plan for Negombo, through consultation with a wide range of stakeholders. The process began with a draft SWM Action Plan prepared by the Study team in English and Sinhala, which was extensively revised through a series of meetings between the Study team, NMC staff and Council members, and two workshops for stakeholders attended by about 50-60 and 84 people.*

Initial feedback from introduction of the bell collection system was very encouraging, with the vast majority of the public and collection workers approving of and supporting the new system. However, by August 2003, the bell collection system had almost collapsed, with NMC failing to keep to the collection schedule, while the music was being played in very few if any areas, either due to most of the amplifiers being broken or the drivers "forgetting" to play the music. This resulted in many public complaints, including telegrams to the mayor , leading to NMC holding some urgent meetings on how to get the bell collection system going again and how to improve their ability to keep to the collection schedule and to play the music. Some brass bells were purchased as interim/emergency cover, while the amplifiers were repaired. Now (September 2003), the system is working again and some short-long term improvement measures have been included in the Action plan to improve NMC's ability to provide a reliable collection service in the future. NMC is also keen to expand the bell collection service on a wider scale in the future.

2. Assessment

The initial study investigation phase (Jul-Aug 2002) involved interaction with relatively few NMC staff and members of the public, generally over a short time period, the main purpose being to collect sufficient information to understand the present SWM situation.

On commencement of the pilot projects, the study team's role changed from that of consultant to facilitator, dealing with a much wider range of NMC staff and Council members over a much longer time period (eight months), particularly for implementation of the bell collection system and formulation of the Action plan. At around the same time, one PHI returned to work within NMC

following completion of a JICA SWM study course in Japan. He was very keen to put into practice what he had learned, but was also unsure about doing so on his own. His enthusiasm and willingness to work, combined with the CPHI's experience and understanding of the "big picture" were valuable assets on which to build. Interest in the pilot projects gradually grew amongst NMC officers and Council members – several even commented to the Study team that initially they hadn't really understand what this study was about, but now they did, they were keen to cooperate. For example, the Health Committee chairman (a Council member) changed from being a passive observer to an active participant, organising numerous community meetings and visiting churches and temples with the Study team to publicise the bell collection system. Not only were more people now involved, but their awareness was also greatly increased of the particular SWM problems facing Negombo and on their abilities and limitations in providing good SWM services. It also helped them to see the considerable benefits the pilot projects were offering Negombo in terms of a cleaner city and happier citizens and voters.

Externally, considerable efforts were made to publicise the bell collection system, involving loudspeaker announcements, leaflet distribution, public noticeboard installation, Church/temple announcements/presentations and community meetings. A novel approach involved the formation of a street committee system, with nominated representatives to facilitate improved LA/public communication. These media, especially public meetings, have been effective and seem to have raised peoples' expectations considerably, resulting in a more demanding and vocal public. Participation in the Action plan workshops also gave a wide range of stakeholders an opportunity to take part in the SWM planning process. In particular, established community groups and street committee representatives who attended the Action plan workshops made the most of these opportunities to voice their praise, criticism and concerns.

Other external factors added momentum to this process, particularly:

- *NMC being taken to Court over its failure to implement a proper SWM system*
- *The willingness of the Sustainable Cities Programme to work with the Study team in finalising the Action plan, involving as many stakeholders as possible.*
- *The impending visit of a JICA Evaluation Team from Japan in September to check Negombo's progress for themselves.*

Together, these external and internal factors seem to have successfully overcome, at least for now, the negative forces opposing the bell collection system. The final seminar provided good evidence for this, being organised, run and led by NMC, with minimal input from the Study team and featuring active involvement from the Commissioner, MOH, CPHI, PHI, DEO, CDO and other NMC staff, while a large number of Council members were in attendance, together with many members of the public. Discussion was active, direct and relevant, while the draft final Action plan produced as a result of all these efforts reflects the integration of the diverse views of many stakeholders, as much as practicable. However, the real test will be to see if this improvement can be sustained in the short, medium and long term future, particularly through political changes, and to what extent the Action plan is implemented.

6.4.3 Gampaha MC (GMC)

Interim PDM for Gampaha

Pilot Project Name: **Improvement of SWM for Gampaha**

Period: Implementation: from Jan. 2003 to Mar. 2003
Following up: from May 2003 to Sep. 2003

Target group: Municipal Council employees and all citizens Date: Sep, 2003

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal The environmental sanitary condition in Gampaha is improved.	Complain from citizens to Municipal Council decrease by 50% by 2006.	Complain record	The central government won't change the policy of public health and environmental protection.
Project Purpose a) Waste scattering decreases. b) Waste collection cost decreases.	By August 2003, The number of problem areas have decreased.	Qualitatively	The number of population, shops, waste generation amount will not increase greatly.
Outputs a) The waste transfer work efficiency is improved.	a) Number of worker for waste transfer	Working record	
b) The waste transfer yard is cleaned.	b) The waste transfer station has been utilized since July 2003 and the yard has been clean.	Visual check	
c) More recyclable materials are recovered.	c) All of 6 model schools has been executing the school recycling programme since March 2003. All schools have sold recyclables collected.	Sales amount of recyclables	
d) Compost is produced by using food leftover.	d) Half of 6 model schools have been executing it successfully.	Visual check	
e) SWM action plan is prepared..	e) SWM action plan has been prepared and explained at the seminar on Nov. 3rd.	Visual check	
Activities 2.1 Waste Collection Improvement a) The bell collection and kerb side collection method was introduced. b) A waste transfer yard was improved. **2.2 School Recycling** a) 6 stores for in-organic recyclables were constructed. b) Compost barrels were provided at schools. **2.3 Environmental Education** a) Environmental education banners were produced. b) Leaflets showing waste discharge rule, etc. were produced and distributed.	**Inputs** **JICA Study Team** **Manpower** • The Study Team member 5p **Technical assistance** • Public education **Equipment and Material** **1) For waste collection improvement** • Speaker units for bell collection 16 units • Fabrication of waste transfer platform1 uni • Closed type trailer for stationary waste transportation 2 nos **2) For school recycling** • Store for in-organic recyclables 6 nos • Compost barrel 12 nos • Brick for flower bed 9,600 nos **3) For environmental education** • Leaflets 6,000 nos • Education banner 10 nos • Megahorn	**Gampaha Municipal Council** **Manpower** • PHI 2 p • Supervisor 6 p • Environmental Officer 1 p • Computer operator 1 p **Facilities** • Provision of the proper office space for the Study Team • Provision of the proper yard for the waste transfer facility • Coordination with target schools	Trained staff will continue to work for the same tasks. **Pre-conditions** Municipal council doesn't oppose the pilot project. Schools don't oppose the pilot project.

As Gampaha MC was formed by merging Gampaha UC and Yakkala PS just before the Study in April 2002, GMC's administrative system was very weak and there was a shortage of human resources and equipment. In addition, the Mayor who was a fresh politician was not familiar with local administration although he was very keen for it. Therefore, there was neither proper staff to be in charge of the pilot project nor enough staff to be trained.

For that reason, the pilot project was set up to require minimum participation by GMC staff, which was one of the main reasons the school recycling was selected. Although the Study team was greatly involved in the preparation of the project, the DEO participated in the environmental education for school children and teachers prior to its full implementation, and the Mayor explained the importance of

cooperation in SWM works to them at the inauguration speech. The Mayor explained to students and teachers at six schools in his own words what he had learnt at the SWM seminar conducted by the Study team. This led him to deeply understand what SWM works are and its importance.

As a result, under the Mayor's strong leadership, GMC actively worked for the bell collection and the operation of a waste transfer station. Through these practices, the Mayor developed a strong interest in and deep understanding of SWM works and his capability was greatly enhanced.

The following improvements were made in GMC:

- GMC purchased four tractors and four trailers for waste collection work.
- Bell collection is well performed and, as a result, most of the waste heaps and waste scattered on roads has disappeared.
- The new waste transfer station has been well used and has improved the waste transferring work efficiency greatly. In addition, the surroundings of the waste transfer yard have become very clean.
- The mayor's involvement in bell collection and school recycling has changed his attitude not only to SWM works but also to local administration.

At the end of the Study, the final national seminar for exchanging the experiences of the pilot projects was held in Colombo with the participation of LAs from the whole country. Although the Study team gave the presentation without active participation by attendants at the first national seminar, at the final national seminar all representatives from the model towns actively gave presentations and answered questions from participants. Among them, the Mayor of GMC led others in terms of SWM concepts and theories and fully disseminated the various knowledge obtained from the Study. The fact that the SWM seminar can now be held by the people themselves in LAs without any technical assistance is a worthy achievement. It is expected that people like the Mayor in Gampaha will disseminate what they learned in the Study to many Sri Lankan people in future.

6.4.4 Matale MC (MMC)

Interim PDM for Matale

Pilot Project Name: **Improvement of SWM for Matale**

Period: Implementation: from May 2003 to Sep. 2003
Following up: in Oct 2003

Target group: Municipal Council employees and all citizens Date: Oct., 2003

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal The environmental sanitary condition in Matale is improved.	Complain from citizens to Municipal Council has not decreased yet.	Complain record	The central government won't change the policy of public health and environmental protection.
Project Purpose a) Waste scattering decreases b) Waste collection cost decreases	By August 2003, • The number of problem areas decreased. • The number of complain to waste collection decreased.	Monthly SWM performance report	The number of population, shops, waste generation amount will not increase greatly.
Outputs			The number of vehicles will not increase greatly.
a) Modified by-law enacts.	a) Municipal Council will discuss the bay-law for approval soon.	Gazzet	
b) Modified by-law is strictly enforced.	b) By-law has not been approved yet.	Record of violence	
c) The management work is conducted in accordance with the SWM manual.	c) SWM manual has been used since Oct. 2003	Record	
d) The SWM monthly report is prepared and submitted to the environmental committee.	d) The monthly SWM report has not been prepared yet.	Monthly SWM performance report	
e) SWM control board is utilized.	e) SWM control board has been used since Oct. 2003.	SWM control board	
f) Waste collection efficiency is improved.	f) The daily trip number is same.	Trip record	
g) Municipal Council staff produces education materials and conduct education activities by themselves.	g) They produce the education materials by themselves without the Study team's technical support. They could prepare the presentation material for the seminar on Oct. by themselves.	Support request record	
h) The education materials showing the actual cases in Matale are produced.	h) No technical assistance is required.	List of education material	
i) An environmental education centre targeting citizens is established and operated.	i) In Sep. about 150 were educated at the centre.	Visitor record	
j) The environmental centre will execute educational activities at sites such as communities and schools using the equipment and materials used at the centre.	j) The education centre has been used occasionally.	Site education record	
k) The SWM action plan is prepared.	j) The SWM action plan was prepared and explained at the seminar on Oct. 23.	Site education record	
Activities **1. Strengthening the Organisational Capacity** a) Municipal council was preparing the by-law for SWM based on the model by-law. b) Training on supervision works, SWM, public promotion, etc. was given to PHIs and supervisors. 5b lessons c) Necessary transportation means for supervision and public promotion activities were provided. d) SWM control board was produced and fixed. **2. Waste Minimisation** a) Home composting was promoted. b) Private recyclers and middlemen were assisted. c) Minimisation of polyethylene shopping bags was promoted. **3. Waste Collection Improvement** a) The bell collection and kerb side collection method was introduced. b) The stationary collection with trailers for markets was introduced. c) A waste transfer facility was improved. d) Half barrel fixed type bins were installed in parks, etc. e) Half barrel movable bins were timely placed at events, festivals, Sunday bazaar, etc. **4. Acquisition of Landfill Site** a) Acquisition of new land for landfill development was investigated. **5. Environmental Education** a) The promotion and education materials were produced. b) The Study Team transferred the education material production know-how to municipal staff. c) An environmental education center was established.	**Inputs** **JICA Study Team** **Manpower** • The Study Team member 5 p **Technical assistance** • Training for staff 5 lessons given • Public education • On-the-job-training **Equipment, material and facilities** **1) For supervision and education works** • SWM control board 1 no • Motorbike 4 nos • Helmets 4 nos **2) For waste collection improvement** • Speaker units for bell collection 6 units • Modified handcart 6 units • 100l fixed type litter bins 20 nos • 100l movable type litter bins 20 nos • Fabrication of waste transfer platform 1 unit • Closed type trailer for stationary waste transportation 2 nos **3) For environmental education** • Laptop computer 1 no • Projector 1 no • Screen 1 no • Digital camera 1 no • Colour printer 1 no • Education banner 10 nos • Leaflets 7,000 nos • Public notice board for waste discharge 100 plates • Building an environmental education center 1 set • Magahorn 1 no. **Matale Municipal Council** **Manpower** • PHI 2 p • Supervisor 3 p • Community Development Officer 2 p • Environmental Officer 1 p • Computer operator 1 p **Facilities** • To make the 2nd floor of town hall building for the environmental education centre	Trained staff will continue to work for the same tasks. **Pre-conditions** Municipal council doesn't oppose the pilot project.

MMC, which is relatively rich in human resources and has a well organised administrative system, was very interested in the Study and actively participated in it. Therefore, quite high level pilot projects including strengthening the traditional recycling system were formulated. The achievements are listed below.

- As MMC was strongly opposed for its final disposal site by neighbouring residents, MMC improved it with the introduction of the trench sanitary landfill method.
- MMC actively prepared an action plan and started its implementation in response to the executive order by the court.
- MMC appropriated a budget for environmental education to be spent on O&M of the environmental education centre in the new fiscal year budget, which has never been done before.

Capacity building had little effect in regard to non-technical improvement, although it had some in technical improvement. Overall, the pilot projects were not fully absorbed by MMC and the reasons are as follows:

- As MMC conducted the project under the Sustainable City Programme of HABITAT and the JICA pilot project at the same time, the counterparts were too busy.
- There was a change of commissioner twice during the Study.
- MMC shifted the final disposal site three times during the study period due to opposition by neighbouring residents.
- The competent staff and stable administration system restrained the rapid change.

One significant result of capacity building was that MMC independently conducted public meetings for residents in the area surrounding the landfill after MMC staff realized the importance of social consideration measures through the serious landfill issue. This will be an epoch-making work if it becomes rooted as no LA has ever done that before. Regarding the landfill candidate site located in the next PS, MMC once gave up the idea of its utilisation as a landfill due to strong opposition by that PS council. However, after MMC withdrew all services provided for the town, the PS council reconsidered and asked MMC for further negotiation for landfill development. As they begin to understand the *importance of reciprocal help, inter-municipal cooperation will be developed.*

6.4.5 Kandy MC (KMC)

Interim PDM for Kandy

Pilot Project Name: **Improvement of SWM for Kandy**

Period: Implementation: from May 2003 to Sep. 2003

Following up: in Oct 2003

Target group: Municipal Council employees and all citizens Date: Sep, 2003

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal The environmental sanitary condition in Kandy is improved.	Complain from citizens to Municipal Council has not decreased.	Complain record	The central government won't change the policy of public health and environmental protection.
Project Purpose a) The sanitary level of the landfill site and the environmental impacts by it decrease. b) Waste collection cost decreases.	By August 2003, • The number of problem areas decreased slightly. • The number of complain decreased slightly.	Monthly SWM performance report	The number of population, shops, waste generation amount will not increase geatly.
Outputs a) New SWM by-laws is approved.	a) New SWM by-laws has been approved by the council.		
b) New SWM by-laws is enforced.	b) It has not been fully enforced yet.		
a) The waste collection efficiency is improved.	a) The waste collection efficiency was improved at the three collection zones where the bell collection started.	Daily trip record	
b) Healthcare waste is separately collected.	b) Part of healthcare waste is separately collected.	Waste incoming record	
c) The disposal pit for healthcare waste is separately constructed and healthcare waste is disposed of there.	c) Healthcare waste is separately disposed of at the medical waste disposal yard which was separately constructed at Gohagoda.	Monitoring check list	
d) Periodical monitoring is implemented.	d) Monitoring committee for landfill operation was executed twice.	Monitoring check list	
e) The landfill site is sanitarily operated.	e) The soil cover has been done since Oct.	Monitoring check list	
f) SWM action plan is prepared.	f) SWM action plan has been prepared and explained at the seminar on Oct. 21st..		
g) Negative impacts to the environment by landfilling is reduced.	g) Negative impacts have been minimized within the acceptable levels of neighbourhoods. This achievement was highly evaluated by the on-going court case.	Public opinion survey	
Activities **2.1 Waste collection improvement** a) The bell collection and kerb side collection method was introduced to 3 collection zones. **2.2 Improvement of the sanitary level of the landfill site** a) The existing landfill site was improved. b) The appropriate landfill operation method was transferred. c) The landfill monitoring committee was established.	**Inputs** **JICA Study Team** **Manpower** • The Study Team member 5p **Technical assistance** • Training of staff 5 lesson given • On-the-job training **Equipment, material and facilities** **1) For waste collection improvement** • Speaker units for bell collection 19 units **2) For landfill improvement** • Improvement works of the existing landfill site 1 set	**Kandy Municipal Council** **Manpower** • PHI 2 p • Supervisor 1 p **Facilities** • Provision of the proper office space for the Study Team	Trained staff will continue to work for the same tasks. **Pre-conditions** Municipal council doesn't oppose the pilot project.

The situation of SWM in KMC is the most serious among the seven model towns. This is not only due to the huge amount of waste generated but also the insufficiency of the administrative capacity. The department in charge of SWM works, in particular, changes from the health department, to the works department, to the mechanical section, and back to the health department almost every year, mainly because nobody takes responsibility of it. This fact is enough to tell that the executing organization is very weak. It is very obvious that there is an urgent need for institutional reform. However, the Study team hardly meet with the Mayor, who is the key to institutional reform, due to his demanding schedule. Furthermore, as Kandy is an old historical town, which is listed as a world heritage site, the council is very conservative. There was often strong opposition to changing the conventional system, and it was projected that the implementation of pilot projects would be very difficult. Therefore, only the following two projects were selected for pilot projects.

- Introduction of bell collection
- Improvement of the Gohagoda landfill

Bell collection started in three collection areas in July 2003 and was functioning in September. Although public cooperation had been obtained in each collection area, actual improvement such as the reduction of cleansing workers and the reduction of waste collection frequency had not achieved. This was because there was not an urgent need to improve work efficiency due to the existence of many workers in KMC. In addition, there was no expansion of the bell collection during the study period although its performance was quite good. Therefore, it was determined that the bell collection had neither taken rooted nor led to a change in KMC staff's attitude to be more active and take more initiative.

The improvement of the Gohagoda landfill is described in Section 4.2. The improvement work was successfully conducted according to schedule, although there were doubts as to whether the works within KMC's scope such as relocation work of electricity cables would be executed. However, KMC was much less interested in the landfill improvement than that Nuwara Eliya MC, despite the fact that a lawsuit had been filed against KMC for its poor landfill condition. KMC has to deal with the operation of the Gohagoa landfill more seriously as its operation is more difficult than that of the Moon Plains landfill.

Although there were more than 300 employees working for SWM works, the only people in KMC who were seriously participating in the SWM works were the MOH and the mechanical engineer who received SWM training in Japan along with a little assistance from politicians. It can be concluded that any improvement projects will have little effect and will not be sustainable without institutional capacity building.

6.4.6 Nuwara Eliya MC (NEMC)

Interim PDM for Nuwara Eliya

Period: Implementation: from May 2003 to Sep. 2003
Following up: in Oct 2003

Target group: Municipal Council employees and all citizens Date: Nov., 2003

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal The environmental sanitary condition in Nuwara Eliya is improved.	Complain from citizens to Municipal Council decreased.	Complain record	The central government won't change the policy of public health and environmental protection.
Project Purpose a) Waste scattering decreases b) Waste collection cost decreases	• The number of problem areas have decreased • The number of complain have decreased	Monthly SWM performance report	The number of population, shops, waste generation amount will not increase greatly.
Outputs a) Modified by-law enacts.	a) Municipal Council will discuss by-law for approval soon	Gazzet	The number of vehicles will not increase greatly.
b) Modified by-law is strictly enforced.	b) Although by-laws has not been approved, the environmental committee has actively working	Record of violence	
c) The management work is conducted in accordance with the SWM manual.	c) SWM manual has been referred since Sep 2003.	Record	
d) The SWM monthly report is prepared and submitted to the environmental committee.	d) SWM monthly report has not been prepared yet.	Monthly SWM performance report	
e) SWM control board is utilized.	e) SWM control board has been used since Oct. 2003.	SWM control board	
f) Waste collection efficiency is improved.	f) The daily trip number is same.	Trip record	
g) Healthcare waste is separately collected.	g) It has not started yet.	Waste incoming record	
h) Healthcare waste is disposed of at the separate disposal pit for healthcare waste.	h) It has not started yet.	Monitoring check list	
i) Monitoring of the landfilling is periodically conducted.	i) The monitoring committee was established in June.	Monitoring check list	
j) Landfilling is sanitarily operated.	j) Sanitary landfill has been operated properly.	Monitoring check list	
k) Municipal Council staff produce education materials and conduct education activities by themselves.	k) They produce the presentation for education without any technical support	Support request record	
l) The education materials showing the actual cases in Nuwara Eliya are produced.	l) They produce the presentation for education whenever needed.	List of education material	
m)An environmental education centre targeting citizens is established and operated.	m) About 150 are educated monthly.	Visitor record	
n) The environmental centre will execute educational activities at sites such as communities and schools using the equipment and materials used at the centre.	n) Number of site education : more than twice/month	Site education record	
Activities **1. Strengthening the Organisational Capacity** a) Municipal council is preparing the by-law for SWM based on the model by-law. b) Training on supervision works, SWM, public promotion, etc. were given to PHIs and supervisors. 9 lessons. c) Necessary transportation means for supervision and public promotion activities were provided. d) SWM control board was produced and fixed. **2. Waste Minimisation** a) Home composting was promoted. b) Private recyclers and middlemen will be assisted. The storage will be provided for middlemen. c) Minimization of food leftover was promoted. d) Minimisation of polyethylene shopping bags was promoted. **3. Waste Collection Improvement** a) The bell collection and kerb side collection method was introduced. b) Healthcare waste was separately collected. **4. Landfill Improvement** a) The existing landfill site has been improved. b) The sanitary landfill operation method was transferred. c) The monitoring committee for landfill operation has been established. **5. Environmental Education** a) The promotion and education materials were produced. b) The Study Team transferred the education material production know-how to municipal staff. c) An environmental education centre was established. d) Beautification town was promoted with the public participation.	**Inputs** **JICA Study Team** **Manpower** • The Study Team member 5 p **Technical assistance** • Training for staff 9 lessons given • Public education • On-the-job-training **Equipment, material and facilities** **1) For supervision and education works** • SWM control board 1 no • Motorbike 5 nos • Helmets 5 nos **2) For waste collection improvement** • Speaker units for bell collection 6 units • Three wheeler 1 unit **3) For environmental education** • Laptop computer 1 no • Projector 1 no • Screen 1 no • Digital camera 1 no • Colour printer 1 no • Education banner 10 nos • Leaflets 6,000 nos • Public notice board for waste discharge 100 plates • Building an environmental education centre 1 set • Megahorn 1 nos	**Nuwara Eliya Municipal Council** **Manpower** • PHI 5 p • Supervisor 3 p • Community Development Officer 1 p • Computer operator 1 p **Facilities** • To provide the proper office space for the environmental education centre	Trained staff will continue to work for the same tasks. **Pre-conditions** Municipal council doesn't oppose the pilot project.

Nuwara Eliya MC had a shortage of human resources, e.g. spot working of MOH, only one CDO, and no DEO. However, almost all of the present employees such as the Mayor, Council members, PHI, and CDO were excellent and very keen for the implementation of the pilot projects. The financial condition was also slightly better than the other LAs. Therefore, the establishment of the new sanitary landfill project, which is one of the most difficult but important issues in Sri Lanka, was selected as a pilot project. As such a project had never been done in Sri Lanka before, we encountered many problems during its implementation.

The Study team did not think it was necessity to obtain approval for the new landfill as the site had already been approved and used as a landfill. However, a new approval became necessary because the CEA was especially careful in dealing with this site as it was located near an environmentally important place. NMC had no experience with this procedure. In addition, the CEA which is in charge of issuing the approval was not so familiar with it either as this was only the second time in 5 years.

In the Initial Environmental Evaluation (IEE) procedure, NMC staff submitted and explained the technical proposal prepared by the Study team to the CEA, and then the CEA asked questions or requested changes to NMC. NMC, with support from the Study team, responded and proposed an alternative to the CEA. The CEA's requests were often too difficult to be executed in Sri Lanka, although they were theoretically correct. The Study team, therefore, repeatedly explained their difficulty in O&M and the importance of technical sustainability to the CEA, which eventually agreed to adopt the technology appropriate for Sri Lanka. The organisations responsible for the supervision of regulations such as the CEA do not easily compromise and, therefore, tend to select the safer technologies even though they are too difficult for the executing agency to implement. However, this trend is the same all over the world. The fact that the CEA developed a better understanding of the importance of more realistic and sustainable technologies through the discussions and IEE procedure is a significant achievement worthy of mention.

The IEE was finally issued in July 2003, although NMC started the approval procedure with the Study team's assistance in November 2002. During that period, NMC with the Study team met and asked many officers in relevant authorities and even the Environmental Minister for the approval. This tough experience has enabled NMC staff not only to have a deep understanding of the sanitary landfill system to be adopted and its importance but also to develop a great enthusiasm for the project. NMC staff was strongly committed to the success of the sanitary landfill project. They conducted a public meeting for residents in the neighbouring area and established the public participatory monitoring committee to ensure the good sanitary operation proposed by the Study team. Moreover, NMC also planted trees and painted handrails for further improvement even after the Study team left. Since the commencement of operation, many visitors have been visiting the Moon Plains Landfill, which is equipped with an educational facility for sanitary landfill for learning about the sanitary landfill system. As a result, it is highly expected to contribute to dissemination of the sanitary landfill system in Sri Lanka.

6.4.7 Badulla (MCB)

Interim PDM for Badulla

Pilot Project Name: **Improvement of SWM for Badulla**

Period: Implementation: from May 2003 to Sep. 2003

Following up: in Oct 2003

Target group: Municipal Council employees and all citizens Date: Nov, 2003

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal The environmental sanitary condition in Badulla is improved.	Complain from citizens to Municipal Council has decreased	Complain record	The central government won't change the policy of public health and environmental protection.
Project Purpose a) Waste scattering decreases b) Waste collection cost decreases	• The number of problem areas have decreased. • The number of complain have decreased.	Monthly SWM performance report will be used.	The number of population, shops, waste generation amount will not increase greatly.
Outputs a) Modified by-law is under the preparation.	a) By-laws will be discussed by the Council for approval soon.	Gazzet	The number of vehicles will not increase greatly.
b) Modified by-law is not yet enforced.	b) By-law has not been approved yet.	Record of violence	
c) The management work is conducted in accordance with the SWM manual.	C) It has not started yet.	Record	
d) The SWM monthly report is prepared and submitted to the environmental committee.	d) The monthly report has not been prepared yet.	Monthly SWM performance report	
e) SWM control board is utilized.	e) The usage of SWM control board started in Oct. 2003.	SWM control board	
f) Waste collection efficiency is improved.	f) The daily trip number is same.	Trip record	
g) Municipal Council staff produces education materials and conduct education activities by themselves.	g) They can execute the environmental education activities without any more technical support.	Support request record	
h) The education materials showing the actual cases in Matale are produced.	h) They produce various education materials by themselves whenever needed.	List of education material	
i) An environmental education centre targeting citizens is established and operated.	i) Number of visitors is about 100 per month. This should be improved.	Visitor record	
j) The environmental centre will execute educational activities at sites such as communities and schools using the equipment and materials used at the centre.	j) They execute the on-site education concessionary.	Site education record	
Activities **1. Strengthening the Organisational Capacity** a) Municipal council is preparing the by-law for SWM based on the model by-law. b) Training on supervision works, SWM, public promotion, etc. was given to PHIs and supervisors. 8 lessons. c) Necessary transportation means for supervision and public promotion activities were provided. d) SWM control board was produced and fixed. **2. Waste Minimisation** a) Home composting was promoted. b) Minimization of food leftover was promoted. c) Minimisation of polyethylene shopping bags was promoted. **3. Waste Collection Improvement** a) The bell collection and kerb side collection method was introduced to the whole collection area. b) The stationary collection with trailers for markets was introduced. c) Half barrel fixed type bins were installed in parks, etc. e) Half barrel movable bins were timely placed at events, festivals, Sunday bazaar, etc. f) Public litter bins were provided by Municipal Council to some public institutions. g) About 2/3 of garbage concrete bins were removed. **4. Acquisition of Landfill Site** a) Acquisition of new land for landfill development was investigated. It found that the site is not suitable for the landfill. **5. Environmental Education** a) The promotion and education materials were produced. b) The Study Team transferred the education material production know-how to municipal staff. c) An environmental education centre was established and started on Aug. 21. d) MCB has executing the environmental education activities, both centre education and on-site education, since July.	**Inputs** **JICA Study Team** **Manpower** • The Study Team member 5 p **Technical assistance** • Training for staff 8 lessons • Public education • On-the-job-training **Equipment, material and facilities** **1) For supervision and education works** • SWM control board 1 no • Motorbike 4 nos • Helmets 4 nos **2) For waste collection improvement** • Speaker units for bell collection 6 units • Modified handcart 10 units • 100l fixed type litter bins 20 nos • 100l movable type litter bins 20 nos • 30-40 litres litter bins 50 nos • Fabrication of waste transfer platform 1 unit • Closed type trailer for stationary waste transportation 2 nos **3) For environmental education** • Laptop computer 1 no • Projector 1 no • Screen 1 no • Digital camera 1 no • Colour printer 1 no • Education banner 20 nos • Leaflets 7,000 nos • Public notice board for waste discharge 100 plates • Building an environmental education center 1 set • Megahorn 1 no.	**Badulla Municipal Council** **Manpower** • PHI 2 p • Supervisor 3 p • Community Development Officer 12 p • Environmental Officer 1 p • Computer operator 1 p **Facilities** • To make the 2nd floor of library building for the environmental education centre	Trained staff will continue to work for the same tasks. **Pre-conditions** Municipal council doesn't oppose the pilot project.

Badulla was the dirtiest among the seven model towns when the Study started in 2002. Despite that fact, MCB had not even organised the environmental committee as it was supposed to and MCB staff did not work hard. Furthermore, MCB staff did not seem to have a good understanding of the presentation on SWM by the Study team and did not respond well, which led the Study team to believe that MCB was not so interested in the improvement of SWM conditions. After the Study team asked the Commissioner of Local Government and Uva Provincial Health Department to encourage MCB, however, MCB started to change. Observing MCB's improvement efforts for three months, pilot projects were formulated. In addition, the Badulla Commissioner has become very active in the improvement of SWM conditions in Badulla, after more deeply understanding SWM through the JICA SWM group training course in Japan. As a result, MCB procured two new tractors for the bell collection before implementation.

The Study team expected the implementation of the pilot projects in Badulla to be difficult due to the low capacity of MCB. They, therefore, arranged a Japanese supporting staff member, who speaks Shihala and has worked in a local authority in Sri Lanka as a JOCV, to work as a facilitator and dispatched her to MCB twice a week. In addition, the Study team gave MCB staff a visual explanation of what they were to do by showing them a video of bell collection and actual leaflets produced by other LAs. This gave them a clear picture of the pilot projects and motivated them to work very actively in implementing them.

MCB started the bell collection work in the first collection area on July 29, 2003 after educating residents on the garbage discharge rules by various means with the Study team's assistance. The Mayor and the Municipal commissioner followed the collection tractor on the first day and they also asked residents for their cooperation. As the Mayor fully understood the effectiveness of bell collection, he quickly instructed the staff to expand it to all collection areas. MCB mobilized all PHIs and CDOs for the expansion of bell collection and, after gradual expansion, finally achieved coverage of all collection areas on November 1, 2003 without the Study team's assistance.

As for environmental education, MCB prepared the annual education programme for several target groups and steadily carried out the programme with the budget allocated in the new fiscal year. MCB used the doors of small kiosks located along streets where residents often come to shop as noticeboards. Also, MCB assisted NGOs in Badulla which are promoting the traditional home composting system for garbage, known as "Jeew Kotu" in Shinhala.

In the SWM seminar held in Badulla for all LAs in Uva province, the Badulla Commissioner offered to provide technical assistance to other LAs after explaining the experience of the pilot projects. The Mayor also raised SWM issues on various other occasions and learned how to explain it to the citizens correctly.

After implementation of the pilot projects, Badulla town became much cleaner than before with a great decrease in waste scattered on roads. A more valuable result than that was that NMC staff changed their attitude. They look for problems, consider the causes and countermeasures, and take actions by themselves now. They are working hard with enthusiasm.

The impact achieved in MCB was the largest among the seven model towns in terms actual effects, process improvement, and human resource development. This achievement was not expected in view of the lack of response at the initial stage of the Study. This was probably attributed to miscommunication because their initial capacity was much lower than the Study team had thought even though they had potential for and an interest in the improvement. There are probably many other LAs in a similar situation and, therefore, close communication with such LAs will be necessary.

Although the achievement of the capacity development of MCB was large, only some of the SWM problems were improved and the final disposal problem has yet to be solved. The improvement of final disposal is difficult at this moment because it requires not only technical but also social and financial assistance. However, the experience which MCB gained through the implementation of the pilot projects such as public education can greatly contribute to progress towards final disposal improvement.

6.5 Lessons Learned

The following lessons were learned through the implementation of pilot projects.

a) Citizens actively cooperate in bell collection in three of the seven model towns and reasonably cooperate in the remaining four towns. This fact implies that Sri Lankan people would like public spaces to be clean and are willing to cooperate in keeping them clean.

b) Some of the MCs have been expanding bell collection by themselves. In addition, Ratnapura MC, which is not included in the model towns for the Study, has started bell collection. This fact implies that bell collection is technically, financially and socially appropriate for the condition of secondary towns in general.

c) The introduction of bell collection has the following impacts other than an improvement in collection efficiency.

- A series of processes required for the implementation of projects such as the establishment of rules, publicity, education, supervision, feedback, etc. is carried out.
- Bell collection can motivate municipal staff to promote environmental education because the effect of education can be quickly realized.

d) LAs generally have sufficient human resources, such as PHIs and CDOs, in terms of quantity; however, there is much room for their capacity to be developed for public awareness and supervision works.

e) LAs' staff tend to oppose any change of the present situation. In order to improve the efficiency of the SWM works, a continuous effort towards raising LAs' awareness and some incentive for them to make improvements is required.

f) The waste collection cost can be reduced through an improvement in waste collection.

g) School education on waste is very effective but it requires the training of trainers first.

h) Through obtaining permission for the construction of the Moon Plain landfill site, the following was determined:

- It is complicated and time consuming work.
- LAs do not have the capabilities to do such kind of work.
- There are few consultants which do such work for LAs.

i) Whilst leaflet distribution and community meetings have been useful, playing the music and arousing curiosity as to what the "new music" is for, has also been an important, informal method of informing the public. "Playing the music" is clearly the cheapest form of publicity and seems to work.

j) A possibly better approach to noticeboards, may be to display a simple notice at the many "kade" (small shops) present on almost every street. These are an important form of "social capital", visited by many people in the area each day and hence a useful means of communicating with the community. This approach would also be cheaper and more flexible, as the notices can be updated relatively easily.

k) Public enthusiasm for both the community animator and street committee system in Chilaw and Negombo respectively has been high, resulting in increased public awareness and expectations and increasing LAs' accountability. However, lack of follow-ups and poor or no response to public complaints have discouraged and frustrated many animators and street committee representatives. These issues need to be addressed if these new communication systems are to survive. Alternatively, existing community groups (e.g. Funeral Assistant Societies) could be utilised for this purpose.

Chapter 7 SWM Improvement Plan

7.1 Current Issues/Problems and Improvement Measures

A National Level SWM Improvement Plan does not target on the improvement of specific SWM system in a LA. The plan is formulated focusing on mainly actions to be taken by the central government, especially those on the institutional improvement, in order to solve common issues and problems of SWM in LAs in the country.

In view of the above the current issues/problems and proposed improvement measures on institutional system, focusing on the central government roles are summarised in the table below.

Table 7-1: Current Issues/Problems of Institutional System on SWM and Improvement Measures

Current Issues/Problems	Proposed Improvement Measures
1. General Administration • Large number of ministries and unclear demarcation and/or duplication of their subjects and functions • Frequent changes in the government administrative organizations; i.e. change of ministerial organizations and their subjects and functions • Insufficient decentralization and high dependence of LAs (Local Authorities) and PCs (Provincial Councils) on the Central Government (the Government) • Very weak financial basis of LAs and PCs • Extremely difficult to site urban sanitation facilities like landfills due to very limited juridical area of each LA in urbanised are in particular.	**1. General Administration** • Execution of further decentralization programme especially financial aspects • Enhancement of tax collection capability of PCs and LAs • Establishment of a principle to dispose of municipal SW within the juridical area of each LA. • Requirement that the location and plan of urban sanitation facilities be included in the urban development plan of each LA. • Establishing the siting of urban sanitation facilities as a condition of up-grading UC to MC or PS to UC
2. SWM in General • Structural and institutional weakness of SWM system in LAs (lower states, etc.) • Lack of SWM planning • Negligence or lack of interest shown by national and local authorities to SWM problems • Lack of inter-sectoral, inter-institutional and inter-municipal coordination • Insufficient enforcement • Insufficient or improperly trained human resources in terms of technical and managerial aspects • Weak financial basis of responsible authorities, especially LAs. • Negligence or lack of cost management, especially O&M (operation and maintenance)	**2. SWM in General** • Establishment of transparent and public involved policy making • Establishment of an independently responsible department on SWM in LAs having more than 100,000 people and a responsible section in LAs having more than 50,000 people. • Establishment of a body in a PC for supporting SWM in LAs. • Establishment of a National Supporting Centre for the improvement SWM • Establishment of a qualification system for SWM officers. • Establishment of independent accounting code system for SWM works in LAs. • Introduction of SWM fees, i.e. tipping fee for landfills and treatment plants, collection fee

	for large dischargers
3. Municipal SWM • Negligence and lack of awareness of people to MSW problems • Insufficient public education and limited public participation • There are no regulations, standards or guidelines on MSWM • Lack of awareness of needs of a landfill and over expectation of treatment/recycling facilities like composting and biogas plant • Extremely weak financial basis of LAs	**3. Municipal SWM** • Establishment of rules for proper MSWM to change the cultural attitude of the people • Implementation of public education and campaign for proper MSWM • Establishment of regulations, standards and guidelines on MSWM • Strengthening local loan system for facilitating SWM projects of LAs
4. Hazardous Waste Management (HWM) • Although regulations, standards and guidelines on HWM are established, they have not been implemented due to lack of a HWM facility	**4. Hazardous Waste Management (HWM)** • Elimination of HW disposal at municipal solid waste landfills • Acceleration of construction of a HWM facility • Enforcement of the regulation • Establishment of PPP (polluter pay principal)
5. Health-care Waste Management (HCWM) • Although regulations, standards and guidelines on HCWM are being established, they have not been implemented well due to insufficient hazardous and highly hazardous HCW disposal facility • Lack of enforcement power of MOH	**5. Health-care Waste Management (HCWM)** • Elimination of hazardous and highly hazardous HCW disposal at municipal solid waste landfills • Acceleration of construction or installation of hazardous and highly hazardous HCW disposal facility • Enforcement of the regulation • Establishment of PPP (polluter pay principal)

7.2 General Improvement Plan for LAs

7.2.1 Resource Allocation Policy

a. Short Term Policy

The quality of SWM work will be improved by changing the allocation of the SWM budget within the present budget amount.

1) Reduction of the waste collection cost by promotion of public cooperation and improvement of the waste collection system. (Establishment of garbage discharging rules, education of people on the discharge rules, the execution of bell collection)

2) The budget saved by the above means will be spent for the final disposal of waste, waste treatment, environmental education, etc. to improve the SWM quality.

b. Long Term Policy

The fundamental improvement of SWM problems by an increase of the SWM budget, which will be obtained by an increase in revenue.

1) The assessment rate and trade license rate, which are regarded as the financial sources for the SWM budget, will be increased.

2) As for the waste collection costs, which are regarded as not included in the above financial sources, a special charging system will first be introduced to the waste type which can be most easily charged and then to the less easily chargeable waste type. (Large amount discharger fee, business waste, garden waste, tipping fee, etc.)

3) The increased revenue will mainly be spent for the capital investment projects of waste treatment and final disposal.

7.2.2 Strategy For SWM Improvement

1) Full utilisation of the existing internal resources (human, equipment, technology).

   - Utilisation of CDOs for promotion of public cooperation and for supervising dischargers on proper waste discharge
   - Establishment of proper garbage discharge rules (e.g. the combination system of bell collection and kerb-side collection)
   - Placing litter bins, the introduction of the stationary trailer system, etc.

2) Full utilisation of external resources (citizens, business entities, private waste companies, NGOs, donors)

   - Citizens and business entities: Cooperation on waste minimisation and proper waste

discharge

- Private waste companies: Utilisation of private sector's financial capability, technologies, management skills, flexibility, etc.
- NGO: Grass root level cooperation
- Donor agencies: Technical cooperation, financial cooperation, etc.

3) Full utilisation of social capitals

Promotion of recyclers (bothal paththara), mentality to save (aparade), public cooperation activities (sramadana), and home composting (Jeewa kotu)

7.2.3 Strengthening the Institutional Capacity

a) Establishment of an independent SWM department in LAs which have more than 100,000 inhabitants.

b) Establishment of an independent accounting code system for SWM works

c) Formulation of a SWM action plan targeting 5 to 10 years and its approval by the council

d) Formulation of by-laws for SWM in line with the model SWM by-laws

e) Promotion of environmental education and education on waste issues

f) Promotion of good governance as SWM administration. Involvement of citizens in the decision process to ensure transparency and accountability.

g) Promotion of the introduction of the street committee system and community animator system

h) Promotion of the introduction of the public participation monitoring system for final disposal

i) Establishment of garbage discharging rules

j) Increase in revenue

7.2.4 Education on Waste

The important topics to be dealt with in the education on waste are as follows.

1) Understanding the present condition of SWM works

The current situation of SWM works, problems, its necessity and the necessity of public cooperation are taught.

2) Cultivation of the mentality to love public facilities and spaces such as home town, parks, roads. → Prevention of waste scattering

Caring for public facilities and spaces restrains people from throwing garbage on the ground.

3) Cultivation of the mentality to save (Aparade). → 3Rs

Economic development encourages people to buy more things and dispose of more after using or consuming. Then people lose the mentality to save "Aparade".

4) Correct understanding and evaluation of social capital

- To remove people's bias against cleansing workers and recyclers and to correctly evaluate their contributions to the society, e.g. promotion to call bothal paththara "recycler".
- To make people realize that "aparade" is a virtue not something shameful.

7.3 Improvement Plan for the Central Government

7.3.1 Identification of Necessary Improvement Measures

SWM of LAs is weak in every aspect, which has resulted in the following:

- The scattering of waste in populated areas has deteriorated not only the view of the living environment but also public health conditions and the SWM efficiency;
- The improper disposal of waste has severely damaged the surrounding environment; and
- Although SWM of LAs is improper, the expenditure for it shares the highest portion of the budget of LAs. The current financial capacity of LAs for the improvement of SWM is extremely limited.

The study team found that most of the current problems are caused by institutional issues for which improvement requires strong leadership of the Central Government. The actions to be taken by the Central Government, PCs and LAs are presented in the table below, focusing on the following seven issues in order to improve the current SWM of LAs and establish stable SWM in LAs.

1) Strengthening of the administrative capability of LAs;
2) Establishment of a principle to dispose of municipal SW within the juridical areas of MCs and UCs;
3) Strengthening of the organisation responsible for MSWM;
4) Development of a proper technical system for MSWM;
5) Strengthening of the financial capability of LAs on MSWM;
6) Development of HWM (Hazardous Waste Management); and
7) Development of HCWM (Health-care Waste Management).

Though it is not mentioned above, the first action to be taken by the Central Government is to recognise the current problems and make all stakeholders (the government, PCs, LAs, related authorities, NGOs, general public, etc.) aware of the problems.

Table 7-2: Actions to be taken by the Central Government, PCs and LAs for the establishment of stable SWM in LAs

Improvement Issues	Central Government	PCs	LAs
1. Strengthening of the administrative capability of LAs	1.1. Execution of programme for further decentralization especially financial aspects 1.2. Strengthening of SLILG (Sri Lankan Institute of Local Governance) to enhance the administrative capability of LAs	1.1. Strengthening of tax collection capability 1.2. Support in the enhancement of the administrative capability of LAs	1.1. Strengthening of tax collection capability 1.2. Enhancement of administrative capability
2. Establishment of a principle to dispose of municipal SW within the juridical areas of MCs and UCs	2.1. Requiring that the location and plan of urban sanitation facilities be included in the urban development plans of MCs and UCs 2.2. Establishing the siting of urban sanitation facilities as a condition of up-grading UC to MC or PS to UC	2.1. Promotion and support in the establishment of inter-municipal treatment/disposal of MSW	2.1. Formulation of an urban development plan including the location and plan of urban sanitation facilities 2.2. Establishment of inter-municipal treatment/disposal of MSW in cooperation with PC and other LAs if siting of a SWM facility in the juridical area of a LA is difficult
3. Strengthening of the organisation responsible for MSWM	3.1. Establishment of a National Support Centre for the improvement SWM in LAs 3.2. Establishment of a qualification system for SWM experts 3.3. Provision of seminars, training programs and education tools on MSWM 3.4. Promotion of accounting code to establish a department responsible	3.1. Establishment of a body for supporting SWM in LAs such as WMA (waste management authority) or WMC (waste management committee) 3.2. Participation in seminars and training programs on MSWM	3.1. Establishment of a department independently responsible for SWM in LAs having more than 100,000 people and a responsible section in LAs having more than 50,000 people 3.2. Allocation of an appropriate number of officers responsible for SWM 3.3. Participation in seminars and

Improvement Issues	Central Government	PCs	LAs
	for SWM in MCs		training programs on MSWM
4. Development of a proper technical system for MSWM	4.1. Provision of regulations, standards and guidelines on proper MSW disposal (storage, discharge, collection, treatment, recycling and final disposal) 4.2. Promotion of sanitary landfill (SLF) 4.3. Strengthening enforcement of regulations on final disposal 4.4. Defining of responsibility and obligation of each stakeholder on MSWM 4.5. Support in the establishment of transparent and public involved policy making for MSWM plan 4.6. Strengthening local loan system for facilitating SWM projects of LAs	4.1. Support in the provision of regulations, standards and guidelines on proper MSW disposal 4.2. Support in SLF construction and operation by LA 4.3. Support for the promotion of MSW recycling that contributes to reducing the final disposal amount by SLF 4.4. Support in the establishment of transparent and public involved policy making for MSWM plan	4.1. Establishment of by-laws on proper MSW disposal 4.2. Establishment of rules for proper MSWM to change the cultural attitude of the people 4.3. Implementation of public education and campaign for proper MSWM 4.4. Execution of SLF 4.5. Promotion of MSW recycling that contributes to reducing the final disposal amount by SLF 4.6. Establishment of transparent and public involved policy making for MSWM plan
5. Strengthening of the financial capability of LAs on MSWM	5.1. Provision of a manual for MSWM cost management 5.2. Dissemination of the manual to LAs	5.1. Support for the dissemination of a manual for MSWM cost management to LAs	5.1. Development of clear, separate accounting system for MSWM 5.2. Strict management of MSWM cost 5.3. Introduction of SWM fees, i.e. tipping fee for landfill and treatment plants, collection fee for large dischargers
6. Development of HWM	6.1. Enforcement of HW disposal at municipal SW landfills	6.1. Instruction to LAs to eliminate HW disposal at municipal SW	6.1. Elimination of HW disposal at municipal landfill

Improvement Issues	Central Government	PCs	LAs
	6.2. Promotion of construction of a HWM facility 6.3. Enforcement of the regulation 6.4. Establishment of PPP (polluter pay principal)	landfills 6.2. Support for acceleration of construction of a HWM facility 6.3. Strengthening enforcement of the regulation 6.4. Strengthening enforcement of PPP principle	6.2. Implementation of prevention measure of illegal dumping
7. Development of HCWM	7.1. Enforcement of hazardous and highly hazardous HCW disposal at municipal SW landfills 7.2. Promotion of construction of a hazardous HCWM facility 7.3. Enforcement of the regulation 7.4. Establishment of PPP (polluter pay principal)	7.1. Instruction to LAs to eliminate highly hazardous HCW disposal at municipal SW landfills 7.2. Support for acceleration of construction or installation of a hazardous HCWM facility 7.3. Strengthening enforcement of the regulation 7.4. Strengthening enforcement of PPP principle	7.1. Elimination of hazardous HCW disposal at municipal landfill 7.2. Implementation of prevention measure of illegal dumping

7.3.2 Selection of First Priority Improvement Plan

Assistance from the central government to local authorities for waste problems is essential because SWM works have become too large for a local authority to manage by itself. This improvement plan therefore does not target the improvement of a certain local authority nor a certain technical system. It targets improvement measures which should be taken by the central government to tackle existing common problems in local authorities.

In order to solve common issues and problems of SWM in LAs, the Study team presented and discussed with the relevant organisations the actions to be taken by the Central Government for the establishment of stable SWM in LAs. As a result, the Study team and the counterpart identified the following improvement measures to be promptly implemented by the Central Government.

a) Establishment of a national organisation to continuously support the improvement of SWM in LAs
b) Strengthening of the local loan system for facilitating SWM projects of LAs
c) Strengthening of the Sri Lankan Institute of Local Governance (SLILG) for educating administrative officers on the importance of SWM works
d) Strengthening of PCs' SWM administrative capability
e) Establishment of a training course for SWM in the National Institute of Public Health and Science (NIPHS) to educate SWM officers
f) Establishment of a qualification system for SWM officers
g) Strengthening of CEA's support and enforcement capabilities for the establishment of appropriate municipal SWM in LAs
h) Formulation of standards for SWM facilities

As for the implementation of the above improvement measures, taking into consideration the limited available resources of the Central Government, the counterpart and Team agreed on the following procedures:

- The first priority should be given to the establishment of a national organisation to continuously support the improvement of SWM in LAs in order to secure coordination of each improvement measure.
- The established national organisation shall be a centre for facilitating the implementation of the other improvement measures.
- However, since financial support is indispensable to improving SWM in LAs, strengthening the local loan system for facilitating SWM projects of LAs shall be

conducted at the same time.

Based on the above, the following two improvement plans were established as the first priority projects for the national level SWM improvement plan:

a) Project for the Establishment of a National Support Centre for the Improvement of SWM in LAs

b) Project for Strengthening the Local Loan System for Facilitating SWM Projects of LAs

7.4 Project for the Establishment of a National SWM Support Centre (NSWMSC)

7.4.1 Background and Objectives

The National Policy for Solid Waste Management (NPSWM) and the National Strategy for Solid Waste Management (NSSWM) were adopted by the Government of Sri Lanka in May 2000 in order to improve SWM in the country. The main strategies are as follows:

- Generation of waste is avoided and reduced at each generation source as much as possible.
- Waste generated after the attempt of waste reduction is reused or recycled as much as possible.
- Only after the effort of waste reduction, reuse or recycling, waste is properly collected, treated, and finally disposed of in an environmentally sound manner.

The NSSWM, among other things, envisages establishing a coordinating mechanism at National, Provincial and Local Authority Level in order to implement the Strategy. Accordingly a National Coordinating Committee which is co-chaired by the Secretaries of the Ministry of Home Affairs, Provincial Councils and Local Government (MOHAPCLG) and the Ministry of Environment and Natural Resources (MOENR) was established in 2001. The mandate of the Coordinating Committee is the coordination of the implementation of the NSSWM at National Level and provision of policy guidelines to facilitate the execution of the Strategy island-wide. However, the Committee is not functioning well mainly due to lack of permanent staff and office facilities.

On the other hand, since almost all the LAs are suffering from improper SWM practices and could not find proper solutions by themselves, the need for the central government assistance to the LAs is increasing day by day. Especially, securing a final disposal site and construction of a sanitary landfill are far beyond the current capability of LAs. Therefore, it is obvious that the establishment of a national body with appropriate permanent staff and office facilities is necessary to support LAs to improve their SWM.

Taking all these into consideration it is proposed that a National SWM Support Centre (NSWMSC) for the improvement of SWM in LAs shall be established in order:

- To consult with LAs about their problems on SWM and advise them on possible solutions; and
- To facilitate improvement of SWM in LAs in accordance with the NSSWM.

Further, it is proposed that this Centre be established under the Ministry of Home Affairs, Provincial Councils and Local Government (MOHAPCLG), which is the national level Ministry that coordinates and provides support services to decentralised administration in the country including PCs and LAs.

7.4.2 Proposed Plan

7.4.2.1 Tasks of the NSWMSC

The NSWMSC shall conduct the following tasks:

Task 1. Prepare the policy guidelines for implementation in line with NSSWM and recommend them to the National Coordinating Committee through the secretary of MOHAPCLG

Task 2. Provide technical assistance such as dissemination of proper technologies, SWM facility planning, IEE/EIA procedures, construction and operation of sanitary landfills, etc. in order to promote the 3Rs and proper disposal of SW to LAs

Task 3. Collect and study information on the current SWM practices and their usefulness in LAs as well as those in foreign countries to prepare policy making tools for the National Coordinating Committee, and provide practical improvement methods/measures to LAs

Task 4. Function as a focal point for international cooperation in SWM and a coordinating body for effective cooperation

Task 5. Strengthen the SWM administrative capability of PCs and LAs

7.4.2.2 Organizational Structure

The proposed structure is presented as shown in Figure 7-1. The Centre will be under the MOHAPCLG. The Secretary of the MOHAPCLG will make decisions and give instructions regarding policy issues of the Centre. Since the Secretary is also the chairman of the National Coordinating Committee for the implementation of NSSWM, the decisions and instructions regarding the policy of the Committee will be directly reflected in the policy of the Centre.

The Centre will be headed by a Director and under him there will be three units and a number of foreign advisors, who will provide necessary technical support for the Centre.

Although this Centre will be established under the MOHAPCLG, it presently does not have the technical or manpower capacity to operate such a centre effectively. Therefore, the necessary

assistance should be obtained at the initial stage under a technical cooperation program of foreign funding agencies.

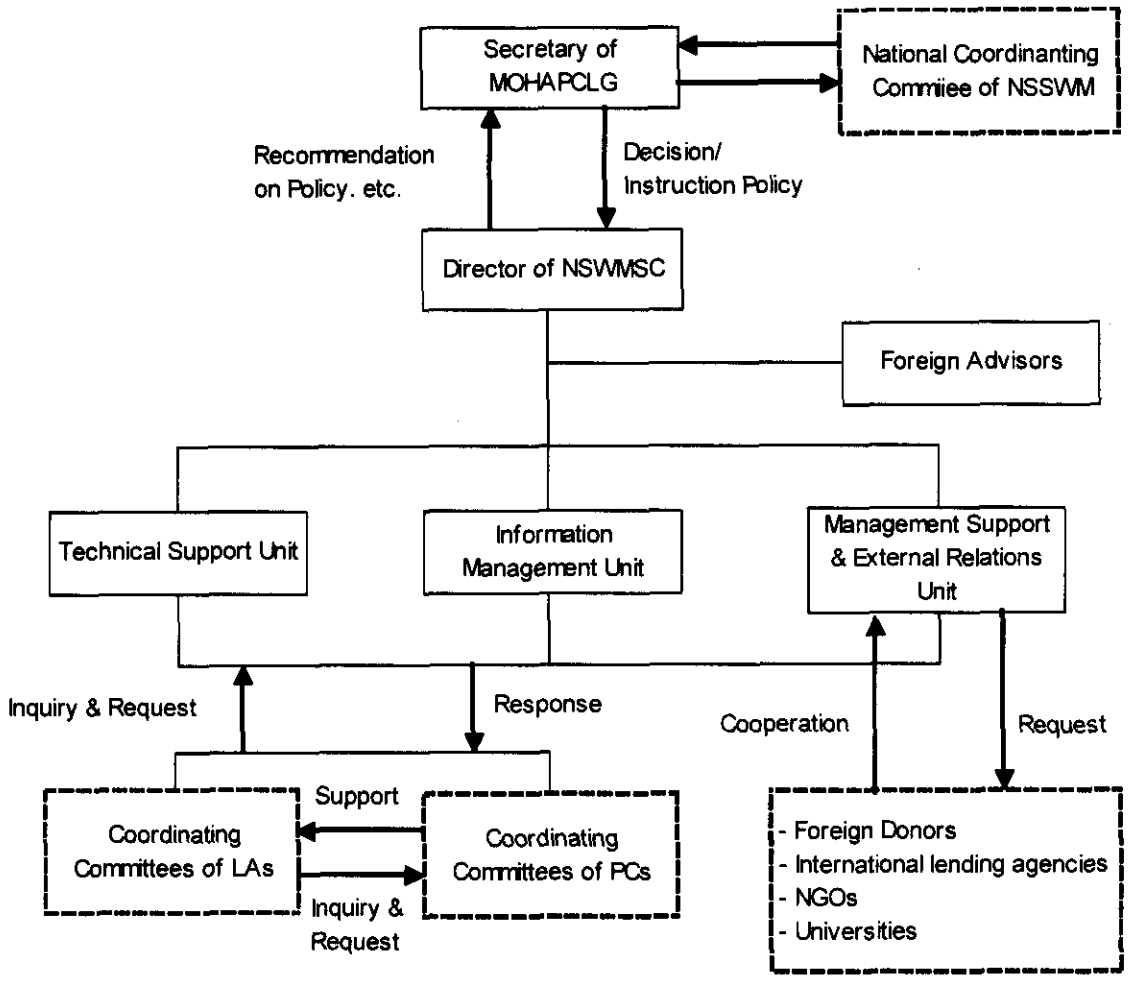


Figure 7-1: Proposed Organisation of NSWMTC

7.4.2.3 Roles and Functions of Each Unit

a. Director of NSWMSC

The Director of NSWMSC is the Executive Head of the Centre. His main responsibilities are as follows:

i. Preparation of the implementation plan in line with NSSWM in collaboration with all staff members in the Centre and recommend it to the National Coordinating Committee through the Secretary of MOHAPCLG

ii. Overall management of the Centre

b. Management Support and External Relations Unit

The Administrative Support Unit is represented by a Deputy Director. His main responsibilities are as follows:

i. Strengthening administrative capability on SWM of PCs and LAs

ii. Consultation with LAs about their administrative problems on SWM and advising them on possible solutions

iii. Facilitation of the establishment of by-laws in each LA by using the Model By-laws prepared in this study, the Study on Improvement of Solid Waste Management in Secondary Cities in Sri Lanka

iv. Receive requests from LAs for foreign aid on SWM, and prepare documents necessary to obtain such assistance and liaise with funding agencies

v. Coordination and cooperation with locally available external resources such as universities, NGOs, consultants, etc.

vi. Support Sri Lankan Institute of Local Governance (SLILG) for educating LA's members and relevant public officers in SWM and its importance for environment protection

vii. Support the National Institute of Public Health and Science (NIPHS) to establish a training course to educate SWM officers

viii. Establish a qualification system for SWM officers

c. Technical Support Unit

The Technical Support Unit is represented by a Deputy Director. His main responsibilities are as follows:

i. Strengthening technical capability on SWM of PCs and LAs

ii. Consultation with LAs about their problems on SWM and advise them on possible solutions

iii. Dissemination of the SWM Guidelines prepared by the Study on Improvement of Solid Waste Management in Secondary Cities in Sri Lanka

iv. Promotion and assistance in formulation of SWM Master Plan and Action Plan in each LA

v. Establishment and dissemination of siting and planning procedure and method of SWM facilities, especially landfills

vi. Establishment of compost quality certification system to promote SW compost sales

vii. Assisting and supporting the Local Loan System for Facilitating SWM Projects of LAs regarding technical evaluation of the proposed projects

viii. Supporting formulation of standards for SWM facilities

ix. Strengthening enforcement capability of the Central Environmental Authority (CEA) on SWM facilities, especially for landfills

x. Supporting formulation of the recycling law

xi. Promotion and support to local consultants for SWM works

d. Information Management Unit

The Information Management Unit is represented by a Deputy Director. His main responsibilities are as follows:

i. Establishment of a SWM database for the country and supporting the establishment of it in each PC as well as LA

ii. Establishment of a waste exchange database that will provide information of demand/supply regarding recycling products and mainly target the promotion of MSW compost sales

iii. Collection and study on the current SWM (such as waste generation and recycling rate, waste composition, unit costs, etc.) and its useful experiences in LAs

iv. Collection and study on the current SWM and various technologies applied in foreign countries

v. Preparation of the policy making tools to the National Coordinating Committee by processing and analysing the collected data

vi. Provision of useful information on practical methods/measures for the improvement on SWM in LAs

vii. Provision of information on useful SWM technologies in Sri Lanka

viii. Publication of books that introduces the activities of the Centre, the collected data, useful information on SWM, etc.

e. Foreign Advisors

The team of foreign advisors will be assigned to assist the activities of the Centre. The foreign advisors will consist of the experts in the field shown in the table below.

Table 7-3: Foreign Experts needed for the Activities of the Centre

Experts	Covering Field
Team Leader	i. Overall support for the activities of the Centre ii. Support for the preparation of the implementation policy in line with NSSWM iii. Support for the coordination of the requests for foreign aids iv. Support for the formulation of SWM Master Plan and Action Plan in each LA v. Technical support for a Local Loan System for LAs vi. Support for the promotion of local consulting services in the SWM field
Institutional Expert	i. Support for strengthening the SLILG for educating the members of LAs and public officers in SWM ii. Support for the establishment of a training course for the SWM in NIPHS to educate SWM officers iii. Support for the establishment of qualification system of SWM officers iv. Support for formulation of the recycling law
SWM Facility Planner	i. Preparation of siting and planning procedure and method of SWM facilities, especially landfills ii. Support for the establishment of compost quality certification system to promote SW compost sales iii. Support for the formulation of standards for SWM facilities iv. Support for the strengthening of enforcement capability of CEA on SWM facilities
Data Management Expert	i. Establishment of a SWM database in the Centre ii. Establishment of a waste exchange database in the Centre iii. Support for the establishment of a SWM database in PCs and LAs iv. Training for SWM officers on database management

7.4.3 Cooperation with Other Organisations

In order to effectively execute tasks in accordance with the National Strategy for SWM, the NSWMSC (the Centre) needs to cooperate with other organisations concerned in SWM. For the time being the Centre will plan to conduct the cooperation activities with the following organisations:

7.4.3.1 National Coordinating Committee for the Implementation of NSSWM (NCC)

The NCC will decide policy guidelines for the improvement of SWM in LAs and direct such guidelines to the Centre through the Secretary of MOHAPCLG. The Centre will recommend implementation strategies in line with NSSWM to the NCC through the Secretary of MOHAPCLG.

7.4.3.2 MOHAPCLG

Since the Centre will be established under the MOHAPCLG, the activities of it shall be subject to the control and supervision of the Ministry. In addition to the recurrent expenditure of the Centre, part of investment will also be covered by the budget of the Ministry, especially at the initial stage. The Centre will conduct the following work for the Ministry:

- Preparation of the policy guidelines for implementation in line with NSSWM
- Technical support necessary to improve SWM in the country
- Receive requests from LAs for foreign aid on SWM, and prepare documents necessary to obtain such assistance and liaise with funding agencies
- Establishment of a qualification system for SWM officers

7.4.3.3 MOENR/CEA

As the NCC is co-chaired by the Secretary of Ministry of Environment and Natural Resources (MOENR) and Central Environmental Authority (CEA) is a government agency, which implements the National Environment Act (NEA) within the MOENR, the Centre will collaborate with them in the policy guidelines making tasks. The Centre will also provide the following technical support to them:

- Supporting formulation of standards for SWM facilities
- Strengthening enforcement capability of CEA on SWM facilities, especially for landfills
- Supporting formulation of the recycling law

7.4.3.4 MOHNW

Since the Ministry of Health, Nutrition and Welfare (MOHNW) has a responsibility on monitoring and inspection on sanitary aspects in the country and preparation of a legal system including guidelines, especially on Healthcare Waste Management, the Centre will collaborate with the Ministry in the policy guidelines making tasks. The Centre will also provide the following technical support to them:

- Advice for proper management of hazardous and highly hazardous HCW
- Support the National Institute of Public Health and Science (NIPHS) to establish a training course to educate Public Health Inspectors (PHIs) on SWM

7.4.3.5 Ministry of Agriculture and Livestock (MOAL)

Since the MOAL will be the responsible ministry for issuing certificates of compost made from municipal wastes for fertilizer and soil-conditioner for agricultural land, the Centre will provide the MOAL necessary technical support to establish a compost quality certification system to promote SW compost sales.

7.4.3.6 Urban Development Authority (UDA)

The Centre will provide UDA necessary technical support to identify the locations of SWM facilities when it will make a city plan in an UDA area.

7.4.3.7 PCs

The PC shall establish a Provincial Coordinating Committee for the implementation of the NSSWM. The Centre will provide the following technical support to them:

- Technical support to strengthening administrative capability on SWM in a PC
- Technical support for the establishment of an inter-municipal SWM facilities, especially landfills
- Provision of SWM seminars to PC's members and relevant public officers in SWM by the SLILG
- Provision of a training course on SWM by the NIPHS to the officers concerned in it

7.4.3.8 LAs

Since the Centre shall be established to improve SWM in all LAs in Sri Lanka, LA shall ask it any assistance on SWM. The Centre will provide the following supports to them:

- Research and study of SWM in LAs and support for them to formulate their SWM M/Ps and action plans
- Support for the establishment of by-laws in each LA

- Dissemination of the SWM Guideline
- Technical support for acquiring loans for procurement of SWM equipment and facilities, especially a landfill
- Provision of SWM seminars to politicians and high class administrative officers by the SLILG
- Provision of the training course on SWM by the NIPHS to the officers concerned in it

7.4.3.9 SLILG

As the SLILG will provide SWM seminars to politicians and high class administrative officers, the Centre will provide technical and some financial supports.

7.4.3.10 NIPHS

The NIPHS will provide the training course on SWM to the officers concerned in it. The Centre will provide technical and some financial supports.

7.4.3.11 Universities

The universities are very important external resources for the improvement of SWM in LAs, especially on the research and analytical works. The Centre will cooperate with them on the following fields:

- Research and development of locally appropriate technologies
- Reference laboratory for certification of compost quality

7.4.3.12 Consultants

In order to facilitate the improvement of SWM in LAs, the use of capable consultants by LAs is promoted, especially for the location, planning and design of SWM facilities, i.e. landfills, etc. For the promotion of use of consultants, the Centre will provide consultants the following assistances;

- Consultation of inquiries and provision of useful information on SWM
- Provision of some training opportunities such as contracting out some research works

7.4.3.13 NGOs

For establishment of a sound SWM system in a LA it is indispensable to obtain public cooperation through participation in development of the SWM system and acceptance of it. For this purpose the involvement and cooperation of NGOs is necessary. The Centre will maintain good cooperation with NGOs through the following activities:

- Provision of information on SWM in LAs
- Request to participate monitoring activities for SWM facilities in LAs

7.4.3.14 Foreign and international Aid Agencies

Since the Centre will be a focal point of international cooperation for SWM and a coordinating body for the effective cooperation, it will provide the international aid agencies information related to the need of cooperation for the improvement of SWM in LAs.

7.4.4 Estimated Project Cost for NSWMSC

7.4.4.1 Descriptions of the Components

a. Institutional Building of NSWMSC

Background:	A permanent national organisation to provide local authorities with technical assistance is necessary in order for LAs to execute SWM works in line with the national strategy for SWM.
Objectives:	Establishment and Operation of the NSWMSC in MOHAPCLG.
Executing Agency:	Ministry of Home Affairs, Provincial Councils and Local Government
Duration:	5 years
Budget:	Salary: Sri Lankan staff: 13 people, 780 p/m Expatriate staff: 4 experts, 5 years, 180 p/m, SWM expert, institutional expert, SWM facility expert, SWM information expert Equipment and furniture: desks, chairs, cabinets, vehicles, computers, projectors, printers, photocopiers, printers, etc. O&M cost: Rental of office space (170 m^2), electricity, telephone, etc. Cost: Local currency: 30,020,000 Rs, Foreign: 4,600,000 USD

b. SWM Training for Officers in NSWMSC

Background:	The assignment of proper experts in NSWMSC will be too difficult as there are few people who are familiar with SWM in Sri Lanka.
Objectives:	To give SWM training including the SWM theory and the SWM experiences in foreign countries to SWM officers assigned in NSWMSC. Training duration: 2 months Trainees: 3 people for the first two years, and then one person every year for the next 3 years, 9 trainees in total
Executing Agency:	NSWMSC
Duration:	5 years
Budget:	Foreign: 180,000 USD for 9 trainees

c. Establishment of Training Course for SWM Officer

Background:	NIPHS is operating the 18 months PHI training course. However, the course deals very little with the subject of SWM. In addition, there is no qualification system for a SWM officer despite the existence of PHI qualifications. To improve the SWM, it is necessary to establish a SWM course and a SWM officer qualification system.
Objectives:	Preparation of materials for SWM lectures Training of lecturers for SWM lectures Training duration: 2 months Trainees: 3 people for the first 2 years, one person for the next 3 years.
Executing Agency:	NIPHS (National Institute of Public Health and Science), Ministry of Health
Duration:	5 years
Budget:	Local currency: 2,080,000Rs

d. Seminar on SWM Administration

Background:	One of the main reasons why SWM has not been improved is that the people responsible for local governance do not understand the importance of SWM as local governance.
Objectives:	A seminar for people responsible for decision making in local government to learn the importance of SWM will be held in every province once a year. Participants: 50 people per seminar, once per province per year, 8 seminars per year, 40 times in 5 years in total
Executing Agency:	SLILG
Duration:	5 years
Budget:	Local currency: 7,600,000Rs

e. Seminar for SWM practitioners working in LAs

Background:	PHIs who studied in the PHI training course in NIPHS are generally in charge of SWM. Most of them have never had SWM lectures.
Objectives:	PHI or any other officers who deal with SWM works in local authorities will be given the intensive SWM practitioners training. Duration of training session: 1 month Number of trainees: 25 trainees per training session. 20 training sessions in total. 500 trainees in total will be trained.
Executing Agency:	Ministry of Health
Duration:	2nd and 3rd year
Budget:	Local currency: 30,000,000 Rs (1,500,000 Rs per course, excluding salary for trainees)

f. Seminar for NGOs and Private Companies

Background:	SWM projects initiated by NGOs and private consultants often fail due to lack of understanding of SWM although their roles in SWM are very important.
Objectives:	NSWMSC will provide them with basic knowledge of SWM and the information of the present SWM condition in Sri Lanka by holding a seminar. Duration: 1 day Participants: 50 people per seminar Frequency: once a year
Executing Agency:	NSWMSC
Duration:	5 years
Budget:	1,000,000 Rs for 5 times

g. Technical Assistance to LAs for the Formulation of SWM Project

Background:	Quite a number of SWM facilities such as compost plants and biogas plants were constructed; however most of them stopped operation within a few years. The main cause is ignorance of the O&M plan at the planning stage. As for sanitary landfills, no sanitary landfill except Moon Plains in Nuwara Eliya has been materialized mainly due to strong opposition by local residents. This is mainly due to LA's lack of social consideration and poor transaction for approval. This is because neither LAs nor private consultants have proper understanding of SWM. Therefore, it is too difficult for any project to succeed without having proper understanding of SWM. In order to utilize the funds effectively for improvement, the provision of technical assistance to LAs for the project is essential.
Objectives:	Consultants employed will assist LAs to do the following works: ● Formulation of a SWM action plan ● Formulation of an appropriate SWM project ● Arrangement to satisfy the pre-conditions for financing NSWMSC will be in charge of selection of a consultant, contract, supervision, technical guidance, etc. This programme aims to effectively utilise the funds.
Executing Agency:	NSWMSC
Duration:	5 years. 10 towns per year for 5 years. 50 towns in 5 years.
Budget:	Foreign currency: 100,000,000 Rs (2,000,000 Rs per town)

g.1 Acquisition and Dissemination of Basic Data of SWM

Background:	The current confusion of SWM in Sri Lanka can be attributed to the lack of existing basic SWM data. The provision of basic data will help LAs to perform better SWM indirectly.
Objectives:	● Compost market survey, once every two years, 1st, 3rd and 5th year ● Recycle condition survey, once every two years, 1st, 3rd and 5th year ● Waste physical composition survey, once every two years, 1st, 3rd and 5th year ● Publication of SWM journal, every season for 5 years
Executing Agency:	NSWMSC
Duration:	5 years
Budget:	Local currency: 13,000,000 Rs

g.2 Establishment of Quality Check System for Compost

Background:	The composting of waste is a very important technology for Sri Lanka as the quality of waste is suitable. However, the problem with composting is the limited market for compost. The establishment of a compost quality certification system will increase the compost demand by removing customers' anxiety.
Objectives:	Procurement of necessary equipment for compost analysis Technical assistance to establish the compost quality certification system
Executing Agency:	Ministry of Agriculture
Duration:	2nd year
Budget:	Foreign currency: 150,000 USD

7.4.4.2 Inputs by Sri Lankan Side

At the initial stage the MOHAPCLG will provide the inputs presented in the table below. The Centre, however, will make best efforts to gradually raise its own funds through the charging the following activities:

- Technical support services such as preparation of documents necessary for acquiring the proposed local loan agency, conduct of EIA for SWM facilities, establishment of SWM database, etc.
- Provision of useful data such as compost users, recyclers, etc.
- Issue of qualifications to SWM officers

Table 7-4: Proposed Inputs to NSWMSC by MOHAPCLG

Items	Descriptions
1. Provision of Office for NSWMSC	
1.1 Provision of Office Space	Approximately 170m^2
1.2 Provision of Office Equipment	Furniture, equipment, etc.
1.3 Provision of Utilities for the Office	Telephone, electricity, etc.
2. Assignment of Personnel	13 persons in total
2.1 Director of the Centre	One person
2.2 Deputy Director in charge of Management Support and External Relations Unit	One person
2.3 Deputy Director in charge of Technical Support Unit	One person
2.4 Deputy Director in charge of Information Management Unit	One person
2.5 Administrative Assistant	One person
2.6 Office Secretaries/Data Entry Operators	Four persons
2.7 Minor Employees	Two persons
2.8 Drivers	Two persons

7.4.4.3 Proposed Inputs by Foreign Aids

In order to establish the Centre it is obvious that a foreign technical assistance with some equipment and financial support is necessary, especially at the stage of establishment and taking off period to an autonomous body in accordance with the policy of the Government.

The scope of works in the project to be requested foreign donors for the provision of their assistance should be considered and discussed carefully in the consultation with stakeholders.

7.4.4.4 Project Cost

Table 7-5 summarises the NSWMSC project cost. The required total cost for 5 years is as follows.

- Local currency: 183,700,000 Rs
- Foreign currency: 4,930,000 Rs

Table 7-5:Project Cost Breakdown of NSWMSC

		Description	Unit	Q'ty	Local Currency		Foreign Currency	
					Unit rate	Amount	Unit rate	Amount
					Rs	Rs	US$	US$
1		**Establishment of NSWMSC**				**30,020,000**		**4,600,000**
	A	Rental fee of office space (170m^2)	Months	60	100,000	6,000,000		
	B	Furniture (desks, chairs, cabinet, bookshelf, etc.)	LS	1	500,000	500,000		
	C	Equipment for training	LS	1			10,000	10,000
	D	Equipment for office	LS	1			10,000	10,000
	E	Vehicles	Nos	4			20,000	80,000
	F	Salary for drivers (4p/m×60months)	PP	240	8,000	1,920,000		
	G	Salary for 13 Sri Lankan staff	Pm	780	20,000	15,600,000		
	H	Salary for 4 expatriate	Pm	180			25,000	4,500,000
		O&M expense	Months	60	100,000	6,000,000		
2		**SWM training for officers in NSWMSC**						**180,000**
	A	Long term SWM training in foreign country		9			20,000	180,000
3		**Establishment of training course for SWM officer**				**2,080,000**		
	A	Training of lecturers	人	9	120,000	1,080,000		
	B	Production of lecture materials	LS	1		1,000,000		
4		**Seminar on SWM administration**				**7,600,000**		
	A	One day seminar	Times	40	150,000	6,000,000		
	B	Fee for resource person, transportation, per diam, etc.	Times	40	40,000	1,600,000		
5		**Seminar for SWM practitioners working in LAs**				**30,000,000**		
	A	One month intensive SWM training course	Times	20	1,500,000	30,000,000		
6		**Seminar to NGOs and private companies**				**1,000,000**		
	A	One day seminar	Times	5	200,000	1,000,000		
7		**Technical assistance to LAs for the formulation of SWM project**				**100,000,000**		
	A	SWM Study for LAs	Town	50	2,000,000	100,000,000		
8		**Acquisition and dissemination of basic SWM data**				**13,000,000**		
	A	Compost market survey	LS	3	1,000,000	3,000,000		
	B	Recycle condition survey	LS	3	1,000,000	3,000,000		
	C	Waste composition survey	LS	5	1,000,000	5,000,000		
	D	Publishing SWM journal	Times	10	200,000	2,000,000		
9		**Establishment of quality check system for compost**						
	A	Equipment of analysis	LS	1			150,000	150,000
		Total				**183,700,000**		**4,930,000**

7.4.5 Justifications

There are 311 LAs in total in Sri Lanka. In most of LAs, especially in urban LAs, the problems related to health, sanitation and environment caused by improper SWM are getting more and more serious due to rapid urbanization and change of life style. Most of LAs, however, are very weak in terms of technical, institutional and financial aspects to develop and implement appropriate SWM by themselves in accordance with the National Strategy for Solid Waste Management (NSSWM) adopted by the Government recently.

On the other hand a National Coordinating Committee was established in 2001 to facilitate the execution of the NSSWM island-wide. However, the Committee is not functioning well mainly due to lack of permanent staff and office facilities. Therefore, it is absolutely necessary to establish the National Supporting Centre for the Improvement of SWM in LAs with appropriate permanent staff and office facilities to support LAs to improve their SWM.

The implementation of the project will give the benefits as follows:

- Improvement of health, sanitation and environment in the country
- Sound development of LAs
- Promotion of tourism to the country
- Motivation of foreign investment whereby promote the economic development of the country

It is, therefore, the implementation of the project necessary.