Master Composter Programme in Sri Lanka

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CORDAID Tsunami Reconstruction 3

Project Report

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LIST OF ACRONYMS

CBO	Community Based Organisation
CEA	Central Environmental Authority
CO	Carbon Monoxide
EHED	Eastern Human & Economic Development
INGO	International Non Governmental Organisation
NGO	Non Governmental Organisation
NOX	Nitrogen Oxides
UN	United Nations
VNG	Vereniging van Nederlandse Gemeenten (Association of Netherlands Municipalities)

FOREWORD

The project started as a response to the disaster that struck Sri Lanka on the 26th of December 2004. Based on request on the Central Environment Authority (CEA) an assessment was made of the solid waste situation caused by the Tsunami in the coastal zones of Sri Lanka. The first assessment – partially supported by CORDAID – resulted amongst others in debris management guidelines issued by the Central Environment Authority end of January 2005.

In the course of 2005 it became clear that many organisations at that time quite rightly focused on immediate relief efforts, but gave much less attention to longer term reconstruction efforts. Waste management systems - not very well functioning before the Tsunami - had collapsed. In relief efforts, waste management was seen as important to prevent outbreak of diseases, but few recognised its importance in reconstruction. And yet, at the same time there was a widely voiced demand for show-how projects as there was very little practical experience as to how things could be improved.

This is the background to the current project. As much as possible show-how projects and initiatives are undertaken that target local needs, yet are also essential building blocks in reconstruction. As needs were high, a relatively large number of projects were identified by local counterparts. Our aim is thus to assist counterparts with technically correct guidance that makes their interventions sustainable.

Waste management knowledge and expertise is conspicuously lacking in the country. Thus efforts are undertaken to share knowledge and disseminate whatever projects are implemented to a much wider audience. This is the background to this series of project reports.

The following areas are tackled and similar reports are available on each of these subjects: hospital waste water management; health care waste management; solid waste management; faecal sludge management; debris management and composting.

By no means these are the last words that can be said about any of these subjects. In the case of health care waste management, final disposal remains a critical issue, in case of hospital waste water management, we believe we have made an appropriate design for a waste water treatment plant after a very elaborate consultative process with the client, but this still has to be built (for which we requested CORDAID's assistance). In the case of debris management, the delay between project conception and the final approval proved too long, by then most of the debris in Kalmunai had disappeared and in Hambantota it was only those partially damaged buildings that were still standing that constituted debris, so it has become much more of a theoretical exercise than what we would have liked. Yet we do believe it is important to document what can be done with debris in case a next disaster strikes.

Solid waste management is very diverse, from plastic recycling (two projects) to landfill improvement, advocacy in solid waste management policy and strategy formulation, setting up an exchange mechanism (national platform), feasibility studies for gasification of waste (in these particular conditions it turned out to be not viable and thus it was not implemented) etc. Solutions for faecal sludge management are still a priority for organisations working with internally displaced persons in the Northern and Eastern Provinces of Sri Lanka (though from an environmental point of view we would suggest that it should be the entire country), we believe we have managed to significantly improve an existing design for a faecal sludge treatment system. Yet till today, the UN agency that wishes to implement this together with the municipal council of Kalmunai are still struggling to actually implement it. In case of Hambantota - as there is an existing site and additional VNG funds - the implementation of a different design starts just beyond the current project period.

All in all we are quite pleased that nearly all reconstruction efforts have become part of the main development agenda in Sri Lanka.

Valentin Post, December 2007

ACKNOWLEDGEMENTS

WASTE would like to acknowledge Energy Forum for facilitating the logistics of the Master Composter Programme and for preparing the Workshop Proceedings. Gratitude also goes to Mrs. Anne Scheinberg of WASTE, for preparing the contents of Master Composter Programme. Of course a special word of thanks is for CORDAID as the principle supporter of the Tsunami reconstruction project out of which the master Composting is but one part. Other activities under this project relate to hospital waste management, solid waste management, faecal sludge management and waste water management. The documentation written in the process of preparation and evaluation (proceedings, Mission Proposal, Terms of Reference, Mission Report), formed the basis of this document.

Immediately after the Tsunami hit the island of Sri Lanka, the affected communities were first in need for safe shelter, medical care, food provisions, and all other basic needs necessary for survival. After the immediate needs where (partially) fulfilled, the reconstruction activities began, in the form of repair or rebuilding infrastructure such as roads, housing, and supporting communities with livelihoods. Rebuilding waste management and sanitation infrastructure were frequently overlooked in the rebuilding process, despite the common understanding that safe management of both are very important for human health, and for the environment in general.

Safe management of waste also means controlling, to an acceptable degree, the quality of waste disposal sites. Needless to say, the disposal sites in the intervention areas were far from being acceptably safe after the Tsunami, partially because organic wastes attract all sorts of rodents, insects, and can provide an excellent breading pool for diseases. Municipalities indicated many difficulties with finding a suitable disposal site, making segregation at source even more important.

A second goal of supporting composting initiatives is that is fits well in the aim of rebuilding livelihoods for the affected population, either in using composting for small-scale home growing of fruits, vegetables and ornamental plants, or for larger scale composting for markets. Segregation of waste at the source also contributes to higher value of other non-organic discarded materials, possibly creating better markets for recyclable materials.

A third aim, less tied directly to the Tsunami, is that composting, and using the compost to grow foods, could possibly strengthen the confidence of the affected communities, in the form of therapy. For instance one of the newly trained Master Composters who was badly affected by the Tsunami said that: "*I like being a master composter as it gives me self-confidence and I am getting very popular in the neighbourhood*."

What WASTE and Energy Forum suspected, and what was later strongly confirmed during the training: the Tsunami completely removed the topsoil in specific areas, making the need for revitalizing soil conditions even more urgent.

Valentin Post, December 2007

CHAPTER 1 INTRODUCTION TO CORDAID SRI LANKA PROJECT AND THIS DOCUMENT

1.1 Background of the Project

After the Tsunami struck Sri Lanka in December 2004, waste management systems virtually collapsed and waste was disposed indiscriminately. The local authorities were faced with a post-tsunami situation which was beyond their resources. This lead to unplanned coastal zone dumping practices, poor urban environment planning, substandard water management and sanitation practices and a general waste of resources.

The project "Rapid implementation of community based short and middle term measures to improve the functioning of solid waste management in Tsunami affected areas of Ampara and Hambantota districts" was approved by CORDAID on March 1st 2006.

As of such, the project team arranged interventions in the following thematic areas:

- Health care solid waste management (Report series 1);
- Faecal sludge management (Report series 2);
- Master Composting (Report series 3);
- Solid waste management: Policy and Strategy (Report series 4);
- Health care liquid waste management (Report series 5);
- Plastic recycling (Report series 6), and
- Debris management (Report series 7).

1.2 Objective of this document & intended audience

The project team felt a strong need to express and share the lessons learned from the project interventions. So the purpose of this document is provide thematic and practical knowledge on improving solid waste management and sanitation systems in reconstruction efforts. However, we also see that this document has value in 'ordinary' development initiatives that aim to improve these environmental management aspects.

WASTE has prepared a similar document for each of the project interventions described in the first paragraph of this Chapter. The documents can be obtained electronically from the website www.waste.nl.

This document does not go into details in the basics of composting technology, or the process of composting. There are several other publications that cover the technical part of composting, for example: organic waste – options for small scale resource recovery, WASTE / TOOL (available digitally), though there are many others too.

1.3 Structure of this document

The document follows the following outline: Chapter 2 will discuss the process of the Master Composter Training, and will provide some questions that should be taken into consideration when one plans to implement a Master Composter Training.

Chapter 3 describes the project as implemented in Sri Lanka, in the areas of Hambantota and Kalmunai, in the period of February 2007. It offers information on how municipality and community are dealing with the waste management situation, before and after the Tsunami

struck in December 2004. Subsequently, this chapter will bring forward the sequence and contents of the Training session.

Chapter 4 gives a set of conclusions drawn from the experiences from the trainers of the Master Composter (both from WASTE and from Energy Forum), and gives advice on how to proceed in each of the areas of the Master Composting Training.

CHAPTER 2 MASTER COMPOSTER PROGRAMME

2.1 What is a master composter programme?

A master composter Programme is a stakeholder-focused approach to sustainable change in waste management. In the first instance, this is because the household as stakeholder is both user and provider of the organic waste. As of such, the master composter programme approach is especially suitable when implemented as a gradual strategy (as opposed to a rapid strategy).

In short, the approach of the master composter programme is to train people on the subject of composting, who can in turn teach households in her or his district, town or neighbourhood to practice home composting. This process is also referred to as 'training of the trainers'. After successful finalizing the master composting training, the trainee becomes a master composter. Those who receive the 'title' of master composter keep each other informed and updated on worst and best practices in the (home) composting process.

The history of the master composter programme can be found in Northern America and Europe, where it was developed from the 1980s onwards. Contrasting this, countries in the South have much less experience with the approach of master composting.[1]

2.2 Why composting in post-Tsunami reconstruction?

Post-Tsunami assistance focused primarily on housing, relocation and on restoration of livelihood opportunities. As such environmental management aspects have not been in the forefront of the planning. Even more, as the project described in this document also suggests, composting initiatives can be designed to create synergies with other post-Tsunami strategies. For instance, households and entrepreneurs can use or sell the compost as soil amendment for home growing of food plants, ornamental plants, etc – saving money that otherwise would have been used for buying vegetables, fruits, etc. Moreover, when more households practice waste segregation and home composting, less waste ends up being disposed where it potentially contributes to environmental risks.

The master composting training is an instrument to exchange knowledge and skills between experts in composting, and the trainees, who will become experts in training the composting process themselves after the training. This way, the master composting training reaches a relative large group of people, while at the same time also building in an element of sustainability – the knowledge is locally available, and the people who are practicing home composting have complete control and ownership of the process. Possibly the households could even start using compost for livelihood opportunities, through small enterprises.[2]

A master composting training usually has the following objectives:

- To provide basic training to master composter co-ordinators (the students);
- To understand the socio-cultural dimensions of household composting;
- To publicise the function and value of composting;

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1 Our Master Composting experiences to date have been with household waste. However, one could apply the method to certain businesses generating considerable amounts of organic waste too.

2 Chapter 3 will also go into this more specifically for the Tsunami.

- To increase awareness among waste generators on the whole process of generating and managing waste.

2.3 Structure of the master composter programme

The structure of the programme is to set up permanent relationships between individuals in the community, the 'master composters', and a fixed number or their neighbours and relatives, the 'composting households'. The type of approach in the master composter Programme is related to the 'each one reach one' neighbour to neighbour initiative, but also it has the characteristics of the 'pyramid' sales schemes.

The master composters, once they have gone through the training together, form a cohort, and also support each other in learning, themselves, how to compost their own materials – something that is absolutely essential if they are to be able to help others. The master composters receive a training for which they do not have to pay, but they do need to sign an agreement or contract for what they will do afterwards, that commits them to participate for a period of time, but also entitles them to status, further training, and the like.

Each master composter then becomes a 'compost expert' for 15 – 25 households in his or her immediate neighbourhood. In order to do this, the master composter both as a group and individually, should be prepared to participate in the following stages of serving as a master composter.

The master composter Programme usually follows a process. The next table describes this process:

Table 1 Stages of master composter programme

Stage 1. Make a commitment to being a master composter - Agree to participate for a minimum of 2 – 3 years, to really get the programme going; - Attend the training and apply the lessons learned to building their own home composting system.
Stage 2. Extend the reach and importance of home composting - Communicate about the programme to potential households, to the press and media, to schools and religious groups, to government officials, and the like. - Recruit and subscribe 15 – 25 households per cycle.
Stage 3. Build capacities for composting at household level - Design and conduct training for each of these households, which results in the selection of a household-specific home composting "package" including a (standard or modified) bin, regular visits, support in using or "marketing" finished compost; - As each household joins, be prepared to spend one to two hours per household, giving an orientation, identifying the main person in charge of the compost, siting the composting bin, where relevant choosing the type of bin, modifying the existing bin, etc.; - Visit the household when contacted and requested by the household members; - Support the household in using the compost at their house or at another location, such as a separate garden or beach house, or the houses of relatives;

Stage 4. Organise collective solutions for things households cannot solve themselves

- Support the household in safe management/marketing of excess compost
- Organise removal of partially or completely finished compost if the household cannot use it or market it themselves
- Organise purchase of supplies, materials, tools for groups of households, as needed
- Facilitate lab testing, agronomic advice, specialised trouble-shooting, etc.
- Be alert to problems, trends or situations that need attention, write down the observations, and communicate these to the programme co-ordinators on a regular basis.

Stage 5. Monitor the effectiveness and contribute to continued programmatic development

- Set up each household with self-monitoring forms and teach them how to use them;
- Visit the household on a regular "route" about once per month to collect the self-monitoring forms and check how things are going;
- Participate in a quarterly needs analysis and fine-tuning exercise, to develop new programme components such as a "compost bank" or "trouble-shooting tools".
- Report on each cycle and begin a new cycle at least once, and preferably twice per year.
- Co-operate with municipal or NGO programme co-ordinators and support overall research, monitoring, and evaluation

2.4 Key Points in master composter training & composting in general

2.4.1 Composting needs 'good guys'

The financial structure of waste management is different from energy, as households are not transparently paying for a service nor are they prepared to do so, this is seen as pure government responsibility. The main valued service is removal; people do not care where it goes or what happens, unless there is some crisis of groundwater or pollution.

Specifically, also as long as the waste disposal and household collection are not priced, the financial advantages of composting (at whatever level, household, community or centralised) will not be very apparent and cannot be counted on to provide an incentive to the households. Home composting can better be seen as a form of "self-provisioning" that allows households to take this activity into their own control in a safe way. It is useful to look at the government strategy of reducing the waste stream through home composting in terms of how people respond, and the idea of 'early adopters' It can be expected that of a normal group of households, 20% will be "good guys" or early adopters, these people are eager to do what they can, and very active, and they will probably be already involved in home composting. 20% are resisters, they will never or always be the last to take on a new, environmentally motivated activity. The 60% "average or normal families" in the middle will perhaps start, when bins are given out, but they will stop at the first obstacles, or when other things compete. So the structure of a master composter programme is to draw master composters from the 20% early adopters, and to set up a support and encouragement system for the 60% "normal" people in the middle, so that they receive social motivation to continue until the new behaviour, in this case composting, becomes habitual practice.

2.4.2 Assessing the home composting situation

For implementing a master composting programme, there are several questions that need consideration. This section covers some of those questions.

Who in the household is responsible for the activities where organic materials are generated?

This question is about who is in charge of the kitchen – usually a woman, but which woman in the house? Who plans the meals, who shops or purchases foodstuffs, who actually does the cooking, who cleans up preparations, who cleans up after the meal? Are all these things done by the same person, or are there more involved? Is there one person who is responsible, and is this woman head of the household, or the mother of the male head of the household, the eldest daughter, the unmarried aunt? Are there servants? Do children have a role in any of this? Does the same person choose the menus, do the shopping?

In order for household composting to be successful, all those who select and prepare food need to understand what it means to compost household organics. Even shopping is important, because here is where choices are made about packaging and whether food is pre-processed or not.

Who manages waste generated in the kitchen? What happens to that waste now?

A closely related question is who is in charge of the waste in the kitchen. For example, in certain Islamic cultures, there are religious restrictions about who can handle 'dirty' things - and sometimes this is different per season. So it will be important to understand very well the process of something becoming waste, and the proposed way of managing must work for the persons who manage both the food and the food and kitchen waste.

The place to start with this is to investigate what happens to kitchen waste now: who can and who is willing to touch it, where does the responsibility lie, what is the 'normal' path and what happens to it now. For example, does the household have chickens, rabbits, dogs, cows, or other animals that eat some of the waste? Which parts go to the chickens and at what point is it separated? What kinds of waste are left over? The goal of home composting is to reduce the waste that is collected and taken to the dump, and not to interfere with systems that are already working. So it is not a good idea to try to convince a family to put their waste in the compost bin instead of feeding it to the chickens.

Who manages waste once it has left the kitchen or the main part of the house? What kind of interests and influences are involved?

In many countries, while it is women who manage the kitchen or the house, it is men who are responsible for taking care of waste materials. Or perhaps this is a task for children or servants? Whoever is managing this waste, they are a critical part of the household when it comes to home composting.

Who manages other kinds of organic waste, for example flower or garden waste? Are septic materials like excreta or diapers considered to be organic waste?

Then there is the question of who manages other organic wastes, in the general categories of household waste, excreta, garden and yard wastes. Again, it is often women or servants who change baby's diapers. Where does the excreta go now? Are there flush toilets, pit latrines, traditional latrines? Who cleans them? Is there already some kind of separation of urine and faeces? How difficult would it be – culturally and logistically – to introduce collection of

urine for enriching the home compost, and speeding up the composting activity? Could this be done by the men of the house?

Although it is likely women do most of the waste management in the house, some may also be done by men, children, or servants. And when it comes down to cleaning drains, or clipping grass or keeping bushes trimmed, that is usually a job for men – either men of the household, or paid gardeners. Who is in charge of the garden?

Again, this is not a simple question, because there are at least two different activities in the garden which are relevant to making composting work. The most obvious is the parallel to the kitchen – who makes the waste, and manages it? Who pulls weeds, who trims the flower beds, who removes the pests? Less obvious but more important is the person who chooses what to grow, who knows about nutrients, fertilizer and water, and who actually cultivates the plants in the garden. One of these two persons is probably the one who will be the 'official composter' in the household, but it is more important to have the other people involved as well.

And if the 'official composter' is a man, will there be a problem to communicate with the women who manage and work in the kitchen? How can the 'official composter' gain the skills – and the tact – to communicate and work closely with the main managers of waste in the household? Is it even allowed for the men to come into the kitchen? How can the master composter learn – and teach others – that the women in the kitchen are clients and that they have to be satisfied with a new system before they will use it?

CHAPTER 3 CASE STUDY MASTER COMPOSTER TRAINING IN HAMBANTOTA AND KALMUNAI, SRI LANKA

3.1 A need for master composting in post-Tsunami reconstruction

First, there is the question of why to prepare an intervention that aims at composting, in reconstruction. Second, there is the question why the master composting method is the most effective way of intervention. Both questions will be discussed below.

3.1.1 Why Composting in Post-Tsunami Reconstruction?

Immediately after the Tsunami hit the island of Sri Lanka, the affected communities were first in need for safe shelter, medical care, food provisions, and all other basic needs necessary for survival. After the immediate needs were (partially) fulfilled, the reconstruction activities began, in the form of repair or rebuilding infrastructure such as roads, housing, and supporting communities with livelihoods. Rebuilding waste management and sanitation infrastructure were frequently overlooked in the rebuilding process, despite the common understanding that safe management of both are very important for human health, and for environment in general. Safe management of waste also means controlling, to an acceptable degree, the quality of waste disposal sites. Needless to say, the disposal sites in the intervention areas were far from acceptably safe after the Tsunami, partially because organic wastes attract all sorts of rodents, insects, and can provide an excellent breading pool for diseases. Municipalities indicated many difficulties with finding a suitable disposal site, making segregation at source even more important.

A second goal of supporting composting initiatives is that is fits well in the aim of rebuilding livelihoods for the affected population, either in using composting for small-scale home growing of fruits, vegetables and ornamental plants, or for larger scale composting for markets. Segregation of waste at the source also contributes to higher value of other non-organic discarded materials, possibly creating better markets for recyclable materials.

A third aim, less tied directly to the Tsunami, is that composting, and using the compost to grow foods, could possibly strengthen the confidence of the affected communities, in the form of therapy. For instance one of the newly trained master composters who was badly affected by the Tsunami said that: "*I like being a master composter as it gives me self-confidence and I am getting very popular in the neighbourhood*."[3]

What WASTE and Energy Forum suspected, and what was strongly confirmed later during the training: the Tsunami completely removed the topsoil in specific areas, making the need for revitalizing soil conditions even more urgent.

3.1.2 Why a master composter programme?

The project team identified a master composter programme as an effective strategy to reach improved waste management for the targeted households and population.[4] Although such

[3] Interview 30 June 2007

[4] Initially the Women Development Federation was the main local counterpart in Hambantota to identify volunteers from within their approximate 32,000 members. Post-Tsunami they became overwhelmed with request for collaboration by many (I)NGOs and became less interested in master composting, so we looked for other organisations with lower membership but firmly rooted in the local communities such as Green

training has not been tested before in Sri Lanka, the project team identified that training targeted groups would be essential for improving waste management in general in the areas, but also to reinforce existing programmes where international and national NGOs distributed composting bins to Tsunami affected groups.[5] It was believed however that these groups did not receive proper consultation on how to use the bins effectively and efficiently. As a consequence, many households have found alternative uses for the bin – laundry baskets being most popular. It is also the aim of the master composter training to make better use of the elements that are available.

As mentioned in the introduction of this document, the master composter programme is part of a programmatic intervention designed to set in motion a 'virtual cycle' of practical, self-help solid waste activities in the two districts in Sri Lanka.

3.1.3 SMART objectives and results

The Logical Framework of this project formulates the following objectives for composting:

Table 2 Logical Framework for Composting

Objective	Activities	Results
4.2 Waste segregation at household level benefiting over 30,000 members WDF, about 3,250 families	**4.2.1** Waste segregation awareness training (FCE, Sevenate, Green Movement, WDF, HfH) **4.2.2** Waste reuse demonstration particularly household composting (approx. 4,000 systems) **4.2.3** Training organic waste collection with HDCC and ADCC **4.2.4** Key sheets	Expected Result: Home composting practiced in Hambantota and Kalmunai district by November 2006. Waste segregation at household level. Results from the Master Composting Training, as observed by Trainer Master Composter in the field: ♦ About 60 persons were trained, including representatives of one national and one regional NGO, several urban councillors, representatives of the CEA and the Department of Agriculture, a representative of Italy Overseas, teachers, housewives, and farmers; ♦ About 30 people in Hambantota expressed their interest in continuing as Master Composters. About 15 people in Kalmunai expressed their interest in composting for subsistence or income, and three were interested to become master composters; ♦ The NGO Janaruna made a commitment to get 1,000 families composting within one year; ♦ The Department of Agriculture in Ampara requested training in composting for their 40 field agents.

3.2 Starting points of the intervention

It is essential that the project builds on, and uses, systems that are already in place, instead of setting up a new system. This section briefly describes the waste management system before,

Movement and Sevenathe. Membership of these organisations is much less widespread than that of WDF. As a consequence the original target of 40,000 identified in Hamabanota as the main target area could not be reached.

5 In Hambantota Pradeshiya Sabha area, Practical Action and World Vision have distributed home composting units, 700 and 300 subsequently (However without a proper community mobilization program).

and after the Tsunami struck, in both intervention areas, and the role of composting in this system.

3.2.1 Hambantota District

Project Area

Within the Hambantota District, the main project site is Hambantota Urban Council and to a lesser extent Hambantota Pradesha Sabha and Ambalantota Pradesha Sabha as well as Tissamaharama Pradesha Sabha.

After the Tsunami hit in December 2004, there were about 10,000 people living in Hambantota (before the Tsunami: 12,500, with an additional estimated 500 that were unregistered). Around 60% of the population in Hambantota Urban Council area is Muslim. The total population in Hambantota District is estimated around 540,000 with the vast majority being Sinhalese Buddhist (97%).[6]

Table 3 Background information Hambantota

	Hambantota Urban Council
Type of municipality	Small city, coastal, damaged by Tsunami
Climate	Tropical monsoon, East Coast
Housing , gardens, purpose of gardening	Very small houses, some in "tsunami village" reconstructions; large gardens; fruit vegetable, livestock, mostly for subsistence and own use
Demographics	Total population Hambantota UC area: around 12,500 Young and middle-aged families, mostly two, sometimes three generations, family members lost in Tsunami
Ethnography	60% Muslim, close to 40% Buddhist
Composting experience	Good experiences with cold composting in a "live fence" traditional compost, bad experiences (smells, maggots, no decomposition) with post-Tsunami distribution of cement home composters distributed by NGOs
Local knowledge resources	Very active local NGO supporting subsistence gardening

Waste Management before and after Tsunami

Before the Tsunami struck, the municipally collected solid waste and transported it to the Siribopura disposal site. Following the Tsunami, the disposal facility operated by the Hambantota municipality faced many problems and it was in need of support (loss of personnel, recycling system collapsed, shortage of transport equipment, more pressing requirements etc.). Large amounts of solid waste had been taken to the disposal site by various organisations after the Tsunami affected the organised pattern of work. Demolition debris had been taken to another nearby location.

Now, the municipality is disposing the waste near the Siribopura area. Some households who lost their housing when the Tsunami struck, were relocated near this site and now the local authority is more sensitive to waste disposal. Moreover, the Siribopura disposal site is close to a natural forest, which belongs to Department of Wild Life in Sri Lanka, and the dumped organic waste attracts wild elephants from the park. There is one elephant that is quite aggressive, and he has received a collar to indicate this. The mayor's office is attempting to find a solution by relocating the elephants to a different area.

[6] Derived from number and percentage of population by district and ethnic group Census of Population and Housing 2001

Photo 1 Elephants going through the waste at Siribopura disposal site

The main local government partner for the project is the Urban Council of Hambantota. Other partners include District Secretariat, DPDHS, Medical Officers and several other officials. Mr. Maulana and Mr. Umar are key private sector partners.

3.2.2 Ampara District

Project Area

In Ampara District the main area of focus is Kalmunai Municipal Council and to a lesser extent surrounding local authority areas. Kulmunai town is sandwiched in between the sea on the one side and wetlands and disused paddy fields on the other. In the north lies the town of Sammanthurai, and the Southern side of Kalmunai is bordered by Karativu. All three cities have been severely hit by the Tsunami waves that struck Sri Lanka on 26 December 2004. Both on a national and international level assistance was offered on a generous scale.

Several of the worst affected areas in Sri Lanka are in the Ampara district on a small strip of land (width about 800 - 900 meters), situated between the sea and a lagoon. The lagoon is at certain places part of a wetland system whereas at other places, it has been formed by inundation of unused paddy lands. On the other side of the lagoon there are long stretches of paddy fields. The district is a premier paddy growing area for the country.

Table 4 Background information Kalmunai

	Kalmunai
Type of municipality	Small city, coastal peninsula, tsunami damage
Climate	Tropical monsoon, West Coast
Housing , gardens, purpose of gardening	Small houses, large yards on sandy soil stripped of topsoil by the tsunami, livestock, fruit & vegetable, mostly for market
Demographics	Total population: 135,000 Young families with children, some older with children moved away, members lost in Tsunami

The strip of land is densely populated by various communities, predominantly Tamil and Muslim groups.

After the Tsunami struck the Government has ordained that no building activities will be allowed in a strip of 200 meter from the shoreline. This has increased the pressure on the land. Needless to say this 200 meter strip is the worst affected area, with near absolute destruction and many casualties.

Waste Management before and after the Tsunami

Before the Tsunami, Kalmunai Municipality arranged waste collection, using tractors with load carts. The waste collection labourers used two waste disposal sites, both situated at the centre of the Kalmunai and Sainthamaruthu towns. Besides using this official channel, citizens burn their waste in the open air or dump the waste in the vicinity, including in rivers and water discharge systems. On different places solid waste was used to fill low-laying marsh fields, to create new land. This lead to contamination of soil, ground water and surface water, seriously affecting the quality of drinking water wells. The municipality expressed the need to take action, but this did not lead to concrete activities.

Shortly after the Tsunami, the problems of solid waste management became much more severe, because of huge new and urgent problems, such as:

- Problems with finding a suitable disposal site for collected debris and other wastes. In the first weeks after the Tsunami new waste sites arose, caused by disruption of regular collection as workers and material were used for Tsunami-related work.
- Problems with finding suitable sites for shelter camps. In reality, many shelter camps were built on unofficial dumpsites that were only covered by a layer of sand. Living on such places poses direct health risks.
- Problems with environmental risks from (mixed) debris and waste disposal
- Waste in the shelter camps was piling up fast, although some NGO's were helping with collection.

After the Tsunami, the Non-Governmental Organisations (NGO) Eastern Human & Economic Development (EHED), CARE International and GOAL hired contractors to cover the two sites with soil and gravel, to turn them into sporting grounds [work was completed by the end of 2005] The work was done by the hired contractors of the church based organization EHED and the INGO's CARE and GOAL.

The municipality has now shifted its disposal site to a new location. The area is privately owned, and it had earlier been used for excavating gravel. Many houses surround the area; some are located not more than 10 m from the site. During missions, it was observed that municipal workers are burning the waste (see Photo 2 below). The burning of waste may lead to emissions of POPs, CO, Dioxins, NOX and many other highly hazardous gases. The site also pollutes groundwater and in all likelihood will spread diseases (through rodents, insects etc.).

Photo 2 Disposal site Kalmunai

Composting in Kalmunai

Related to composting specifically, there were some attempts to use animal manure for composting, but these failed. Households experienced some success with live fence design, although temperatures of the composting pile were found to be to low to neutralize insects and weed seeds. There are some agricultural extension workers and teachers at local agricultural high schools who can provide knowledge on local context.

Other composting initiatives in Hambantota & Kalmunai

The CORDAID project is not the only intervention that aims at improving composting processes in the Ampara and Hambantota District. Green Movement of Sri Lanka is carrying out a survey to identify suitable families for home composting units.

Many NGOs, both local and international, have been handing over composting bins, designed by Practical Action (see Photo 3 and Photo 4).

Photo 3 Distribution of home composting bins to newly built Tsunami houses

Photo 4 Newly built Tsunami house with composting bin

3.3 Master Composter Training in Hambantota and Kalmunai

This section explains how WASTE (the Netherlands), Energy Forum (Sri Lanka) and other local experts, implemented the Master Composter Programme, in February 2007, in Hambantota and Kalmunai.

The master composter training given in the two areas in Sri Lanka follows the structure as outlined in Chapter 2 of this document. This section will briefly present the mission process.

3.3.1 Training Hambantota (3 days)

Day 1:
♦ The participants, 27 in total, (mostly women) came mostly from the community, there was someone from a commercial composting site, 3 persons from a local Community Based Organisation (CBO) "Jana Aruna", 1 person from the Sri Lanka NGO "SEVANATHA,"4 people from the Central Environmental Authority (CEA) and some others from the Hambantota Urban Council and the Environmental Ministry.
♦ WASTE gave an introduction presentation on the objectives of the Master Composter Training, and on the structure of the 3-day training. Mr. Chinthaka Jayaratne from Energy Forum translated the presentation into Singhalese. It included especially the basic principles of composting and its validity in the context of sustainable development, the technical and biological process, which components to use (for more detailed information on the contents of this session, please see the proceedings as drawn up by Energy Forum, which can be requested from WASTE)
♦ SEVANATHA provided a short presentation on how to use the compost bin adequately.
♦ The group continued the session in the field and paid visits to four households who are all active in composting. The households showed different qualities of compost: moisture content often appeared a problem, as well as the mixing of organic waste and plastics. Two households, both living in a post-Tsunami constructed village received three ring bins for composting from the NGO World Vision. These bins appeared to be ineffective because of the high weight (resulting in difficult moving), the height of the drum, and it also negated local composting methodologies such as the life fence (Photo 5).

Day 2:
♦ This day commenced with a presentation from the Agronomist Mr. Piyal, Senior Monitoring Officer, Department of Agriculture, District Office, Hambantota. He explained that, as the local soil only has a 2% organic matter, it needs compost for enrichment.
♦ In the afternoon, the facilitators asked the participants to divide into three groups and to discuss how they should approach to engage about 1,000 new families under the master composter programme. The groups received 30 minutes for dissemination and for writing down the important considerations. This created further discussion on the methodology.
♦ The last session focused on the different roles of men and women in the household – and it was concluded that in most cases the women would be the more suitable as master composter, at least for Hambantota.

Day 3:
♦ The third day of the training was focused on master composting on programme level, and on the monitoring of such a programme specifically. Mr. Chinthaka Jayaratne of Energy Forum gave a presentation on Monitoring Tools: a baseline study, indicators that measure variables of change, registration tools (for instance for keeping a record on households involved, etc.)
♦ Then the trainers introduced a group exercise to prepare an action plan for involving 1,000 households under the master composter programme. Along with that, a stakeholder analysis was carried out by a separate group of participants who constitute only the government and local authority officials.

Photo 5 Life fence

3.3.2 Training Kalmunai (2 days)

Day 1:
♦ This session raised interest from men from one specific village nearby, where the Tsunami wiped away much of the topsoil. These farmers were expecting that through composting, the topsoil could be partially restored to pre-Tsunami conditions. Most of the participants were already cultivating for the market, or were planning to. Several participants are holding cows and chickens and are interested in using the manure in composting, if they were not practicing this already.
♦ The difference between Kalmunai and Hambantota is apparent here, as the interest of the participants mainly focuses on agricultural use of compost for commercial purposes, as opposed to Hambantota where the composting has drawn more interest from households that would like to use the compost for own use.
♦ The visits to households showed some different practices of home composting – ranging in quality. A locally designed system, using pieces of palm leaves and metal wire to keep the heap together, appeared to work quite well, even though the heap contained relatively high quantities of sand from yard and house sweepings. In a second house, the compost heap appeared to be very dry, the trainer from WASTE advices to add dishwater to the heap to keep the moist level in the heap up. A third household showed a composting heap that did not seem to be working – it did however create discussion on how to remove caterpillars from the compost. By spreading the compost on the ground to cure, the caterpillars would disappear, after which the compost becomes useful.
♦ A discussion followed on whether or not closing the bottom of the compost heap would be effective or not. WASTE advices here not to close the bottom, as it would inhibit organisms that are necessary for composting to enter the pile. The group took up the exercises that followed quite well.

Day 2:
♦ The second day session attracted fewer participants, although those who came were more motivated as well.
♦ Guest speakers informed the group on how to compost and grow food in absence of a garden, with compost and cement bags - the so-called space-confined agriculture.
♦ The Assistant Director of Agriculture gave a long and informative presentation on the subject and answered many questions from participants. He showed his interest in the training, and requested to translate the training to Tamil for 40 agricultural agents. Energy Forum will follow up on this request.

Table 5 Summarizing master composter training

	Hambantota, Southern Province S.L.	**Kalmunai, Eastern Province, S.L.**
Date Training	February 2007	February 2007
People trained	30	15
Gender balance	90% women	80% men
Civil society/ government	Home gardening and environmental NGO, representatives of Urban Council, local government, Environmental Ministry	Environmental NGO, Agricultural school, Agriculture and Environmental Ministry, no local government
Attrition (= early departure)	100% attended all days	50% attrition after day 1
Atmosphere in training	Very enthusiastic and highly motivated	Mixed, some positive, but main interest in selling compost
Evaluation	Very positive	Mixed
Households composting July 2007	400, number hot composts not measured	possibly 3
Tonne diverted per period	1 tonne per day	no information in July 2007
Total tonne diverted	about 150 tonne	no information in July 2007
Prospects for future	Several groups formed, actively recruiting new households	Sevanathe is pursuing composting actively but numbers are not yet available
Local host organisation	Local gardening NGO is host and is actively promoting	Sevenathe Ampara
Results 2007	30 people trained as master composted who in turn train 15-150 households per master composter	Following training of their staff in Master Composting, the Sevenathe home composting and waste segregation project trained 1,000 families
Expected results 2008	60 – 300 households per master composter and 20 – 40 extra Master Composters	As per information of Sevenathe 1500 extra families are trained in home composting
Expected results 2009	150 – 600 households per master composter and 20 – 40 extra Master Composters	As per information of Sevenate 500 extra families are trained in home composting

3.4 Success and failures of the master composting training

During the training in February 2007, the trainer of the master composters, and the team from Energy Forum made the following observations:

3.4.1 Master composting in Hambantota

- The structure and approach of master composter fits extremely well with the culture and local organisational resources of Energy Forum and Jana Aruna in Hambantota, and has potential for continuation and expansion.
- There is a void left by the exit of World Vision and other aid organisations that put a big emphasis on compost bins in the post-tsunami period, but without the educational component. There is a need to supplement the remnants of these initiatives, specifically in the Tsunami village areas of Hambantota.
- The participants of the master composter training in Hambantota showed a high level both of enthusiasm and social capital, and are well positioned to really fulfil the master composter role.
- The missing link at the moment is with the policy- and decision making at the municipal level.

- In Hambantota, women are clearly the key to a successful household master composting training.

3.4.2 Master composting in Kalmunai

- The attendees were men and current or aspiring commercial farmers from about four villages.
- While about 60% were from one single village that "had their topsoil taken away by the Tsunami", their way of participating and the questions and comments they contributed did not give the trainer the impression that they possess adequate social capital or community cohesion to support master composter approaches there.
- The most interesting local participation was of the Agriculture department, the Environment Ministry (provided the translator), and one local agriculture high school (?) where Teacher Bawani has a programme on composting and subsistence vegetable production.
- The request of Mr. Kalees for a Master Composter Training to the project for his 40 field agents is very interesting and we should assign a high priority to meeting this request in the CORDAID project.
- The connection made to Italian Co-operation has some potential for co-financing and co-operation on agricultural composting.

CHAPTER 4 CONCLUSIONS AND RECOMMENDANTIONS FOR OTHER MASTER COMPOSTER PROGRAMMES

4.1 Conclusions & lessons learnt

- The success of the master composter training is very dependant on local use of compost (commercial versus household use), and also on soil conditions.
- Coherence with other composting initiatives is very important
- Composting could possibly play an even more important role in post-Tsunami reconstruction as initially suspected, through topsoil revitalization in some Tsunami affected areas. Further research is needed to examine how much composting can contribute, and what methods are likely to be most effective.
- The geography and culture and the post-Tsunami built environment presents a strong demand for this work to continue, and to become structurally included in the approach to solid waste in the region.
- It was found that gender aspects play an important role in waste segregation and household composting, at least in Hambantota.

4.2 Recommendations to follow-up for master composter programme in Hambantota and Kalmunai

4.2.1 Hambantota

- The link between municipality, community, and private sector should be strengthened, by supporting municipality on policy and decision taking. WASTE and Energy Forum advice that ultimately, Hambantota municipal council and other municipal councils should be financing this and other similar composting programmes, while Jana Aruna and local NGOs and residents associations should own and manage the programmes.
- There may be some potential to integrate excreta – especially urine – into home composting, once there is an increased level of general knowledge and institutionalisation. How institutions will receive this possibility from a cultural point-of-view is however yet to be determined.
- Gender, and especially the importance of women, represents a potential to document and monitor the way gender issues can solve a solid waste problem.
- The participation of national NGO Sevanatha in future Master Composter initiatives is highly desirable.

4.2.2 Kalmunai

- The character and attendance at the master composter training in Kalmunai had a completely different character than in Hambantota. WASTE believes that the area of intervention is much less suitable for continuation of the master composter programme. Instead WASTE envisages more potential in revamping and re-orienting it as an agricultural support programme with integration connections.

CHAPTER 5 CHECKLIST

Objective	40,000 people in two areas have improved waste management
Target group	♦ 10 – 20 meso-level organisations ♦ actual number of trained master composters
Target area	♦ Kalmunai, Ampara District ♦ Hambantota, Hambantota District
Timeline	3 years
Outputs	<u>Hambantota</u> ♦ First year (2007): 10 – 20 persons were trained in the Master Composting programme, who in turn train 15 – 150 households in the first year (wide variation is caused by enthusiasm and time availability of trained master composters) ♦ Second year (2008) 60 – 300 households per master composter and 20 – 40 extra Master Composters ♦ Third year (2009) 150 – 600 households per master composter and 20 – 40 extra Master Composters ♦ Total after three years: 2,250 – 21,000 families in Hambantota district <u>Kalmunai</u> ♦ following training of their staff in Master Composting, in Kalmunai itself the Sevenatha home composting and waste segregation project targets 1000 families in 2007; 1500 in 2008 and 500 families in 2009

ANNEX 1 LOGICAL FRAMEWORK RELATED TO COMPOSTING

Intervention logic				**Risks & Assumptions**	
Objective 4	In target areas safe and appropriate management of Tsunami related environment projects.	At present many environmental related projects have been identified by local district partners, these have been prioritised in consultation with stakeholders. It is expected that participatory implementation of these demonstration projects will not only transfer skills and build local capacities, but it will result in replications in neighbouring areas too.		Budget to implement this objective: The political situation does not deteriorate further, primarily hampering implementation of activities at Kalmunai For replication, VNG & Canadian counterparts (LOGO South Southern Province) continues its activities in Galle and Matare districts reinforcing Hambantota experiences. District Tsunami coordination committees Ampara remain active. Listed NGOs and CBOs remain active. Euro :	
Result	4.1 Production of pellets in Hambantota from plastic waste generating sustainable local income (collection and conversion employing 20 people) whilst reducing the amount of indiscriminately disposed plastic waste by 50% preventing clogging of drainage channels and thus spread of waterborne diseases such as dengue.	**4.2** Waste segregation at household level benefiting over 30,000 members WDF, about 10,000 members PP	**4.3** Training of stakeholders (Scout Association of Sri Lanka, CARE, Solidarity etc.) in waste management, thereby benefiting reconstruction as previously unusable material will become available, and / or processed locally.	**4.4** Training MSMEs waste collection and recycling with HDCC and ADCC, providing sustainable employment for 30 people	**4.5** Demonstration of landfill improvement in Kalmunai with main stakeholders, local authorities and CBOs, infrastructure development through NGO GOAL. Landfill is overstretched putting about 2000 people at risk due to accumulation of Tsunami waste.
Objectively verifiable Indicators	Plastic pellet production unit is constructed and operational by end 2006.	Home composting practiced in Hambantota district by June 2007. Waste segregation at household level.	Posters translated and distributed. Reports on campaigns by organisations	Waste reuse by 3 MSMEs.	Photos before and after landfill improvement.

Means of Verification	Photos / reports Amount of plastic collected and recycled.	Photos / reports Assessment of reduction in amount of organic waste at landfill sites	Photos / reports Actual amount of waste recycled in tonne/day	Photos Actual amount of waste recycled in tonne/day Reports	Photos Actual amount of waste deposited tonne/day Reports
Activities	4.1.1 Feasibility report for plastic conversion unit (capacity, siting etc.) 4.1.2 Construction of plastic conversion unit 4.1.3 Training of collectors (segregation) and operators	4.2.1 Waste segregation awareness training 4.2.2 Waste reuse demonstration particularly household composting 4.2.3 Training SSEs waste collection and recycling with HDCC and ADCC	4.3.1 Training of key local people with assistance of Solidarity (NGO) in waste management in IDP, Ampara. 4.3.2 Training of key local people with assistance of CARE (NGO) in waste management in IDP, Hambantota. 4.3.3 Awareness raising of population through training of selected staff of Sri Lanka Scout Association	4.4.1. Feasibility (technical, socio-economical, operational) of different options 4.4.2.Training and operational assistance to 3 MSMEs	4.5.1 Feasibility of suggested option 4.5.2 Training of LA and others in operation and maintenance landfill 4.5.3. Construction of improvement by NGO