

Asian Institute of Technology

**Collaborative Study on Solid Waste Com-
positions at Kampuan Sub-district,
Ranong Province**

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1 Summary

This report describes the collaborative study on solid waste compositions at Kampuan district, Ranong province whereby a group of local villagers have jointly undertaken during 3 – 4 February 2006. The objective of this study is to determine the compositions of domestic solid wastes which could be appropriately managed and disposed of.

Prior to this field study, some local people from village No. 4 have conducted the waste separation and composition analysis at their households for couple days. The results from householders were re-evaluated used for comparisons with those obtained from the field investigation. In analyses of municipal waste compositions, the samples were taken from waste dumping site of Kampuan Sub-district as well as the fresh municipal waste from a collection truck. The municipal wastes were randomly taken and separated before weighting each composition, having the total weight of about 300 kg. Based on the results obtained from the dumping site, a community meeting was arranged at Village No. 4 to discuss on the possible waste management activities which should be implemented in the village. It was preliminary agreed that they would like to develop a demonstration project of waste reuse/recycling within their village at which technical supports are expected. This demonstration will help raise the community awareness on waste management.

In addition to the efforts by local community, it is foreseen that a site visit of TAO officials should be arranged in order to support the local activities as well as the management/improvement of a dumping site. According to the information given by Mayor, there are a couple of small fountain in the middle of waste dumping site which are seriously threatening to the groundwater contamination. Immediate measures should be undertaken by which a study on the upgrade alternatives of waste dumping site shall be conducted.

1.1 Introduction

As part of the sustainable livelihood, the “sound” waste management practices are to be appropriately developed for the Tsunami-affected villages either in the newly-built housing estates or the existing households. Following the study visit of local villagers during 28 – 29 November 2005 to Songkla province, the collaborative study of municipal waste compositions were undertaken in order to determine the potential of waste reuse/recycling activities as well as to raise community awareness on the possible impacts of inappropriate waste management and disposal. A field study was not only conducted by a technical team from AIT, but also determined the results that local villagers have separated and weighed their household wastes.

1.2 Objective

The objective of this field study is to determine the potential of waste reuse/recycling activities as well as to appraise the potential impacts of inappropriate waste management/disposal.

2 Solid Waste Compositions

2.1 Methodology

The study was divided into 2 areas: (i) field investigation at a dumping site and (ii) reevaluation of household waste compositions at village no. 4.

2.1.1 Field investigation at dumping site

A simplified method for analyses of waste compositions was undertaken by a technical team from EEM/AIT, consisting of Ms. Salaya Phunsiri, and. The study was conducted at a municipal dumping site where all wastes from every communities in Kampuan sub-district were disposed of by a small collection truck as shown in Fig. 1.

Samples of municipal wastes of about 250 kg were randomly withdrawn from the dumping site (Fig. 2) as well as fresh municipal wastes from a collection truck (Fig. 3). Waste samples were brought together into 6 piles and undertaking manual separations (Fig. 4 and 5). Wastes were then categorized into 2 main groups: combustible (organic or kitchen waste, plastic, paper, gardening, etc) and non-combustible (glass, metal, etc). Each waste composition was weighed by a scale. The results are discussed in section 3.

2.1.2 Reevaluation of waste tracking at village no. 4

Some of villagers who has joined the site visit to Songkla province has practiced the waste separation at their households. Each composition was measured and collected in plastic bags, which were provided by USAID project office. After having a community meeting, the plastic bags were brought to a community center to reevaluate its composition and weighing accordingly (Fig. 6 and 7).

2.2 Work schedule

Time	Description	Site
3 February 2006		
09.00	Arrival of AIT team	
09.30 – 10.00	Discussion with Mayor and Secretary General of TAO	TAO office
10.00 – 12.30	Waste sampling and analyses	Dumping site
12.30 – 14.00	Lunch	
14.00 – 16.30	Debriefing of waste composition study at village no. 4 (Fig. 8)	Community learning center
4 February 2006		
10.00 – 11.30	Reevaluation of waste tracking practices of village no. 4	Community learning center
11.30 – 12.00	Discussion on the community plan for waste separation/reuse/recycling	Community learning center



Figure 1. Waste collection truck at dumping site



Figure 2. Piles of waste samples at dumping site

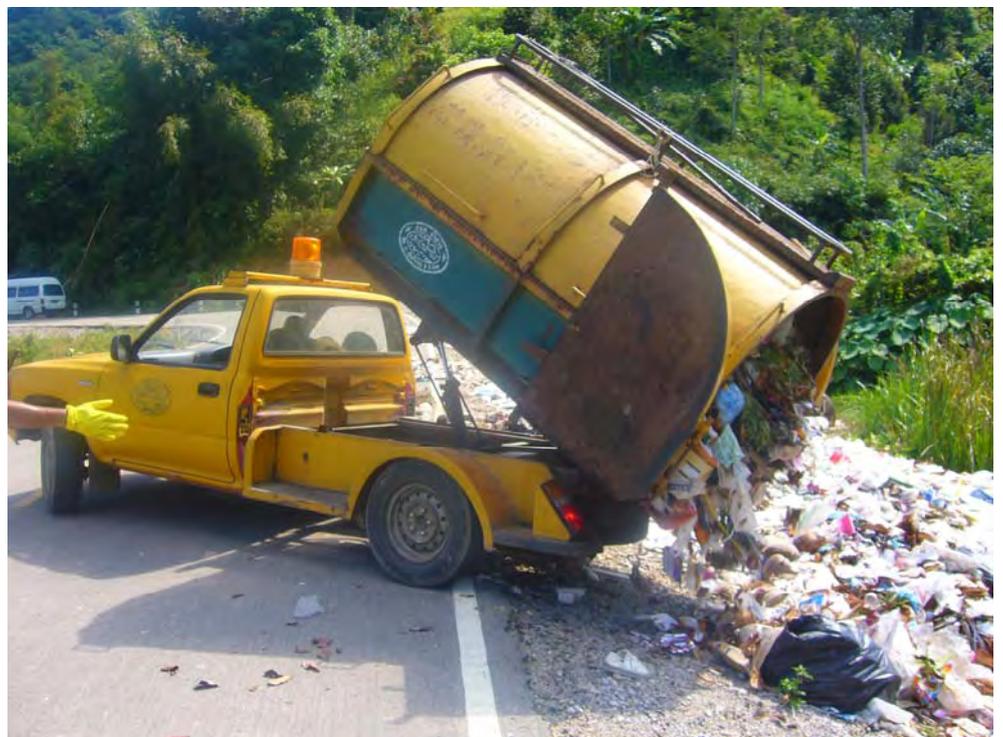


Figure 3. Fresh municipal wastes from a collection truck



Figure 4. Manual segregation of waste compositions



Figure 5. Manual segregation of waste compositions



Figure 6. Reevaluation of waste tracking at village No. 4



Figure 7. Reevaluation of waste tracking at village No. 4



Figure 8. Community meeting at village No. 4

2.3 Results and Discussion

2.3.1 Waste compositions at dumping site

The results in Table 1 reveal that the largest waste composition at the dumping site is garbage (28.2%) from kitchen and food stuffs, much lower than the typical compositions of municipal wastes. This is likely due to natural biodegradation of organic wastes that were dumped for quite a long time in the dumping site.

Plastic waste is accounted for 23.3%, about the same percentage of grass, wood & straw portion. The other compositions are below 10%. However, if considering the dry-weight analysis and bulking density, the plastic portion could have higher percentage.

Table 1. Waste compositions at dumping site

Composition		Weight* (kg)	%
1.	Paper	23.9	8.0
2.	Garbage* (including meat but excluding bones and shells)	84.7	28.2
3.	Textile	13.6	4.6
4.	Grass, wood & straw	69.9	23.3
5.	Plastics	69.3	23.1
6.	Rubber	2.8	0.9
7.	Metals	4.1	1.4
8.	Glass	26.2	8.7
9.	Stone & ceramic (including bones and shells)	5.5	1.8
Total		300.0	100.0

* Based on wet weight basis

** Garbage = wastes from kitchen or food stuffs

2.3.2 Reevaluation of waste tracking at village no. 4

It is apparent from the field observations that local people from village no. 4 could properly undertake waste separation practices at their households into 5 main categories as shown in Table 2. Similarly, the largest waste composition is garbage, corresponding to 56% of the total collected wastes.

Table 2. Waste compositions at village no. 4

Composition		Weight (kg)	%
1.	Paper	5.9	12.2
2.	Garbage	27.1	56.0
3.	Plastics	4.7	9.7
4.	Glass	10.5	21.7
5.	Others*	0.2	0.4
Total		48.4	100.0

* Others = a combination of metal, rubber, glass, stone, ceramic or woods

It could be derived from these preliminary results that the municipal and household wastes have high potential to reuse and recycle either through composting of the garbage or direct vending of recyclable materials.

2.3.3 Suggestions

According to the results obtained during the field investigations, some suggestions to continue the field activities on appropriate waste management at Kampuan sub-district are as follows:

1. Development of community-based operation unit for waste minimization/reuse by which some trainings on “Garbage Bank” setup/operation and composting techniques for organic wastes should be conducted
2. Arrangement of study visit for TAO officials
3. Determination of methods for upgrading waste dumping site and possible groundwater contamination
4. Community awareness raising programs on waste reuse and recycling in other villages

It is strongly suggested that a similar study visit shall be arrange for the officers of Tambon Administration Office who are also important stakeholders in waste management in the villages. This study visit is to allow the officers having the same information and knowledge similar to those villagers have learnt.

In addition to solid waste management, it is crucial to note that the collection and disposal of septage (an emptying sludge from septic tank or cesspool) should be taken into consideration. Inappropriate disposal of the septage which contains high pollutants and pathogens, could cause severe disease transmissions/outbreaks in the communities.

Similarly, to avoid the potential threats on public health due to the groundwater contamination at the dumping site, a detailed and intensive study of the mitigating approaches should be undertaken.