

# **Solid Waste Management in Cambodia**

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## **ABSTRACT**

Cambodia is a less developed country with a rapidly growing population, estimated at 14 million people. The population is becoming increasingly urbanized, resulting more waste generation, concentrated in urban areas. This study aims to identify and understand the existing solid waste management situation in Cambodia. The study employs a combination of exploring existing documentation, qualitative data analyses and reconnaissance studies.

The key findings are presented in the following: (1) the amount of waste generated in Cambodia is approximately 6,818,000 tons/year of waste, based on a figure of 0.487 kg per capita per day. The percentage of the organic waste ranges between 60 to 80 % while plastic waste is about 15 %. (2) The waste collection and transportation is contracted to private companies, under the supervision of local authorities and technical line agencies, leading to a focus on profits rather environmental and public health concerns. Waste collected and transported to dump sites in urban areas were approximately 317,550 tons in 2004, increasing to 518,053 tons in 2008 and 630,679 tons in 2011. Service of waste collection is very limited. It serves only at urban areas, markets, commercial and governmental administrative centers. As for rural areas, no waste collection service is provided thus waste management practices of local and sub-urban people are different ways such as burning (66 %), burying near or behind houses (11%), disposal into rice field, public road and free land (9%), disposal into water body (5%) and others (9%). (3) There are approximately 60 open existing dumpsites in countries which are very poor quality with limited technical design, leading to environmental and social problems. (4) In Phnom Penh the collected recyclables are estimated to reach 39.7 tons/day, or 4.3% of the total waste generated in the city. (5) Lack of law enforcement, cooperation and public participation is commonplace. Although waste management legislation is in force, there is room for improvement in its enforcement and raising awareness of its existence.

## **KEYWORDS**

Dump site, Phnom Penh, Recycling, Solid waste.

# Solid Waste Management in Cambodia

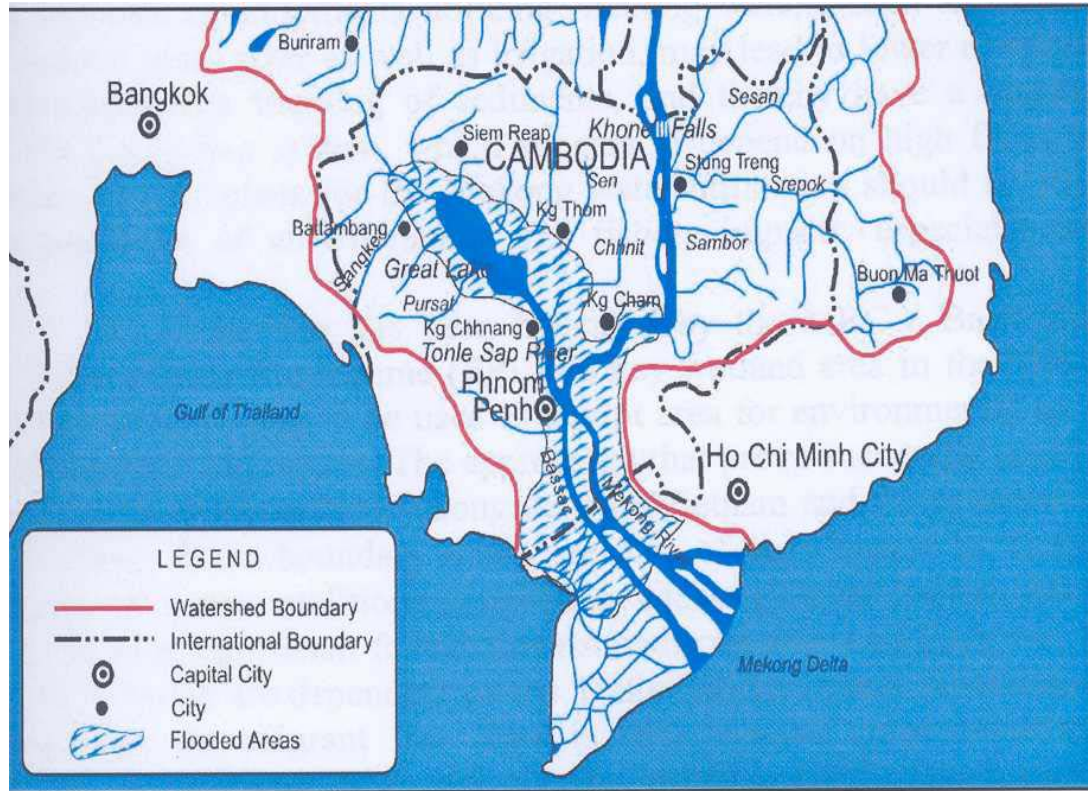


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Okayama, 2 February, 2013

# I. Introduction



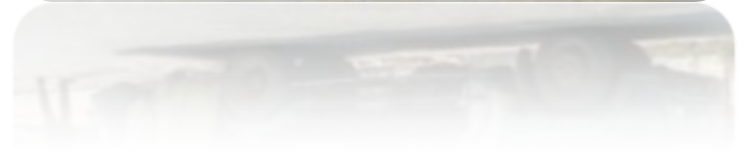
- Total population is approximately 14 millions with 23 provinces and a capital city
- Country land is 181,035 km<sup>2</sup>

- The SWM in Cambodia have been privatized to private company, under supervision from local authorities and technical line agencies.

## II. Regulation

- The sub-decree on Solid Waste Management was enacted in April 1999,
- The main purpose of this sub-decree is to regulate the solid waste management in a proper technical manner and safe way in order to ensure the protection of human health and the conservation of biodiversity.

- This sub-decree applies to all activities related to **disposal, storage, collection, transportation, recycling, dumping** of garbage and hazardous waste.



# Reduce, Reuse & Recycle – 3R

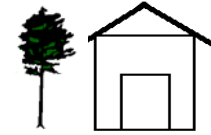
- In order to improve the SWM, MoE has developed a new **3R's national strategy** (2009) but implementation of the strategy is still very limited,
- Waste recycling has been done only by private recyclers (informally) and some NGOs but on a limited scale.



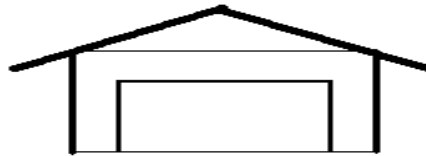
# Material Flow in Cambodia

Waste Pickers, generators,  
buyers & Dump pickers

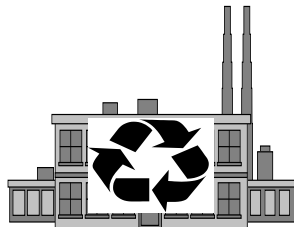
- collect recovered materials



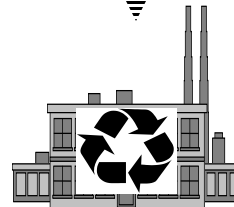
Small Depots



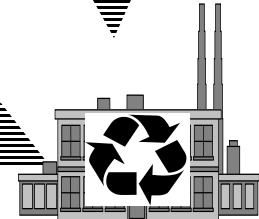
Large Depot



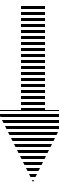
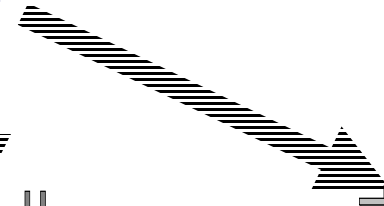
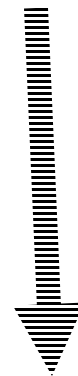
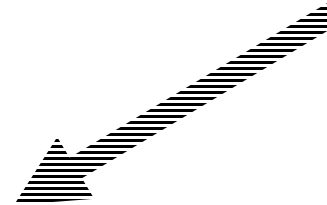
Vietnam Recycling  
Industry



Thai Recycling  
Industry



Cambodian  
Recycling Industry



# III. Source, type and generation of SW

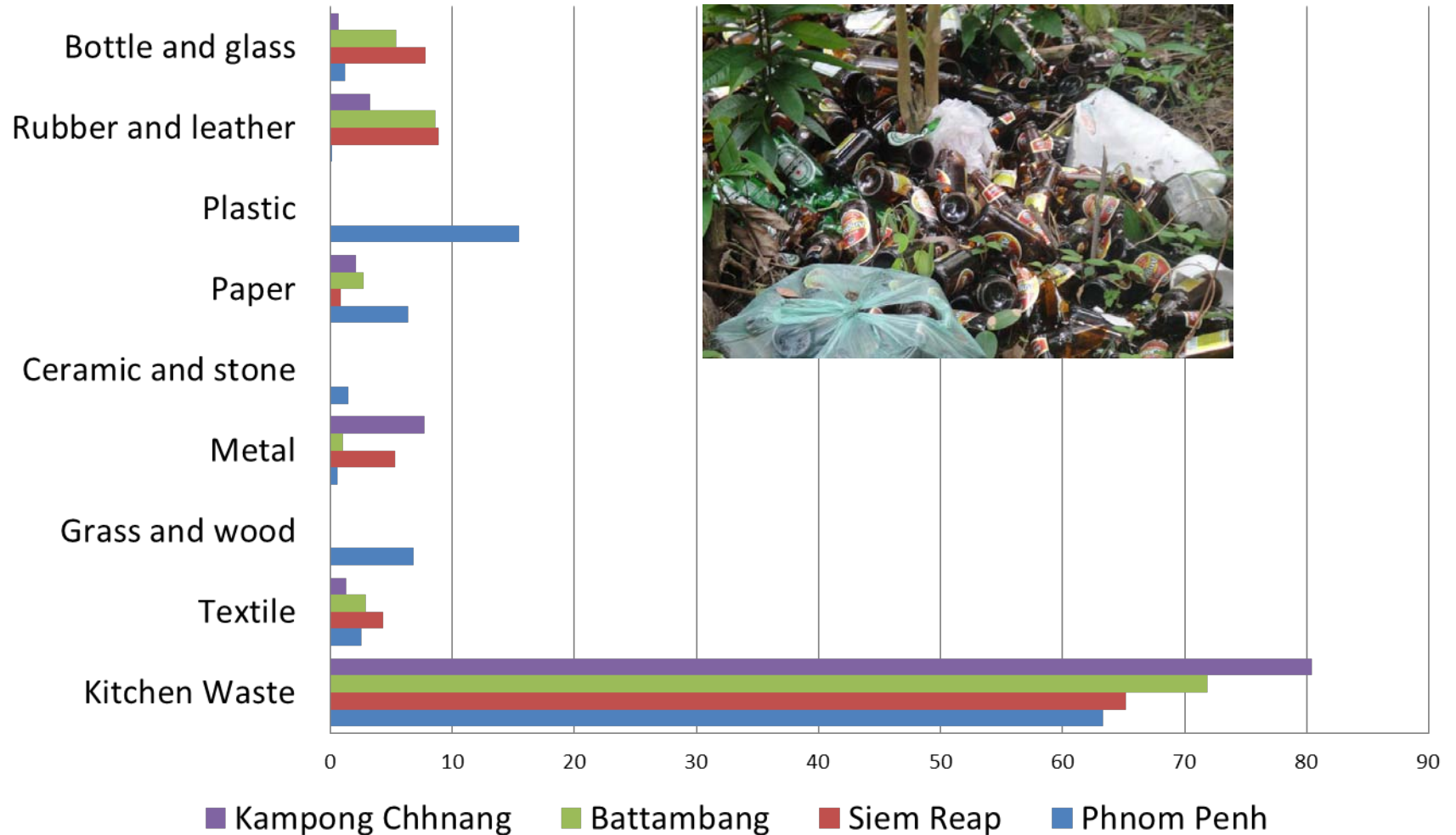
- The main sources of solid waste in Cambodia:
  - Domestic (household),
  - Market, commercial/business & institution.
  - Industry, hospital and agriculture ...





# Waste composition

## Waste composition



# Waste generation

- 0,487 kg/capita/day (Phnom Penh)-JICA 2004
- 0,35 kg/capita/day (Battambang)-CDIA, 2010
- Approximately 6,818,000 tons/year of waste, which works out from 0.487 kg per capita per day



# Situation of SWM in municipality and rural areas

- Waste collection serves only at urban and municipal areas including domestic, markets, commercial & governmental administrative centers..



- As for rural areas, no waste collection service is provided



# IV. Waste collection & transportation

Cambodia has the combinational collection systems as the following:

- Curbside collection,
- Container collection-stationary,
- Container collection-Leased,



- Primary/secondary collection, with or without recycling center,



- Street sweeping.



# Waste bin in Phnom Penh City

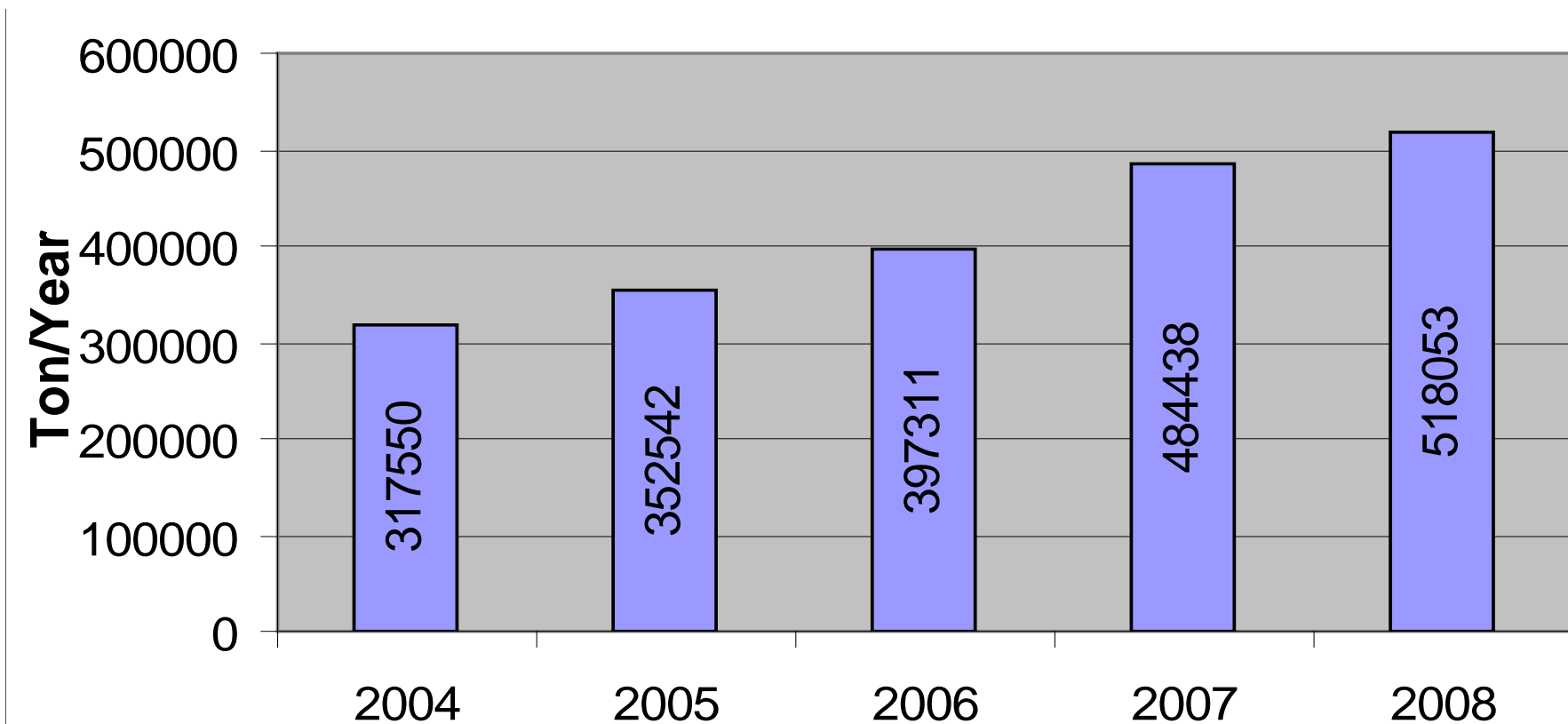


**Public waste container... using as transfer station**

**....Waste bin at the gardens in the Phnom Penh City**

**...Public waste bins**

# Waste collected and transported to dump sites & landfill in Cambodia



Source: Department of Pollution Control (2008)



# Waste collected

- The amount of wastes collected and transported to landfill in Phnom Penh capital city was:
  - 328,019 tons in 2008,
  - 368,453 tons in 2009, and
  - 396,210 tons in 2010.

# Solid waste burning in Phnom Penh

<b>Description</b>	<b>Central areas</b>	<b>Outskirts</b>
Population	677,331	615,637
Generation Rate (Kg/person. day)*	0.487	0.487
SW Generation(Kg/Day)	329,860	299,815
<b>% illegal dumping</b>	<b>2.5%</b>	<b>15%</b>
Amount of Illegal waste (Kg/Day)	8,247	45,272
<b>% of SWB</b>	<b>15%</b>	<b>50%</b>
Amount of SWB (Kg/Day)	1,237	22,636

Source: \* JICA, 2004 and JICA, 2005

# V. Waste disposal

- 60 Dump sites and a landfill in countries,
- The waste disposal in Phnom Penh city:
  - ➡ Only about 70 % of waste generation is disposed into the landfill,
  - ➡ 15 % is self disposal,
  - ➡ 9 % is recycled and
  - ➡ 8 % is illegal dumping



Source: CINTRI Strategic Plan (2005-2020)

# Waste Management Practice at Rural Areas

- No waste collection service at rural areas,
- Waste disposal: Burning (66 %), burying near or behind houses (11%), disposal into rice field, public road and free land (9%), disposal into water body (5%) & others (9%).



## VI. Conclusion & recommendation

- Waste generation in country is approximately 6,818,000 tons/year,
- Between 60 - 80 % of waste composition is organic waste thus composting activity is recommended,
- 60 open dump sites & one landfill in country,
- Lack of law enforcement, cooperation and public participation is commonplace.

- Based on lesson learn of the waste management system in Cambodia, the **implementation of ISWM** is more successful in country.
  - All sectors are encouraged to involve in the SWM,
  - Solid waste collection and transportation has been privatized to private sectors,
  - Involvement of waste generators through fee payment,
  - Waste management by communities in some areas.

# Thank You Very Much

