

Thesis Title Potential of Energy Savings from the Recycling of
Selected Hotel Waste Materials : A Case Study of
First Group Hotels in Bangkok

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Abstract

Bangkok is facing the problem of solid waste management. A way applied to deal with the mentioned problem is separating materials from solid wastes for recycling, especially sorting out solid wastes from their originating sources, which is regarded as being a very important step toward efficient classification of solid wastes.

Hotels are among the large originating sources of solid wastes of Bangkok where there is not yet available a clear and exact solid waste separating system. This study is with the objective of determining the quantity and some characteristics of solid wastes from the first group of hotels in the area of Bangkok in the current situation and reckoning the quantity and physical composition in the period of 10 years ahead (1992-2002) so as to use them in assessing the potential of energy savings from the recycling of solid wastes

of the paper, plastic, glass, steel & iron and aluminum categories. The findings of this study would serve as data applicable to efforts to consider and choose suitable methods of collecting, transporting, disposing and recycling solid wastes and as factors contributing to the rise of cooperation in material separation from solid wastes for the purpose of recycling.

The research was conducted by collecting solid waste samples from 5 of the first group of hotels with a size of 400-500 rooms for 7 days from August 8-14, 1992. These were classified and analyzed by the standard method established by the Office of the National Environment Board (NEB). The quantity and physical composition of solid wastes were reckoned by method from JICA (1982). Energy saving was calculated from the recovery of the mentioned materials as secondary raw materials, using secondary data

As the result of a study in the form of dry weight, it was found that the first group hotels had a general average rate of solid waste generation of 2.0 kg./room/day; the total quantity of generation was 16.7 tons/day, consisting of compostable materials 77.3 %, non - compostable materials 19.1 %, and others 3.6 %, with factors classed as paper 41.2 %, plastic 11.9 %, glass 10.9 %, steel & iron 2.7 % and aluminum 2.9 %; bulk density 110 kg./cu.m. (fresh weight); water content 43.2 %.

During the period of 10 years ahead, if the average economic growth rate of Bangkok is 9.3 % per year, the rate of solid waste generation is expected to rise to 2.33 kg./room/day in 1997 and 2.71 kg./room/day in 2002, the total quantity of generation was 26.1 tons/day in 1997 and 40.9 tons/day in 2002, with factors classed as paper dropping by an average of 0.26 %/year, plastic rising by an average of 0.32 %/year, glass rising by an average of 0.18 %/year, steel and iron rising by an average of 0.07 %/year and aluminum

rising by an average of 0.03 %/year.

If it is possible to recycle the materials of all the four categories to the full 100 %, a quantity of 449,326.7 - 786,042.4 MJ./day of production energy is expected to be saved in 1997 and 727,206.6 - 1,249,011.0 MJ./day in 2002; but if it is possible to recycle them at only 75 %, a quantity of 336,995.0 - 589,531.8 MJ./day of production energy is expected to be saved in 1997 and 545,405.0 - 936,758.3 MJ./day in 2002.

With this quantity of energy saved, when equated with electric power, it was found that the country would be able to save as much as 17.1-39.8 million baht/year in 1997 and 27.6-63.3 million baht/year in 2002 in the operating expenses of hydroelectric power plants (the rate of 1985) or equivalent to 20,111.5-46,902.5 barrels of crude oil in 1997 and 32,558.0-74,533.0 barrels in 2002.

Therefore, in order to reduce dependence upon imported energy sources, the hotels should improve their system of solid waste separation to be better than what they are doing presently so as to increase efficiency in recycling solid wastes.