

## An Integrated Approach to Solid Waste Management of Karachi, Pakistan (Waste-to-Energy Options)

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**Abstract :** Solid Waste Management (SWM) is perhaps one of the most important elements constituting the environmental health and sanitation of the urban developing sector. The management system has several components that are integrated as well as interdependent; thus, the efficiency and effectiveness of the entire system are affected when any of its functional components fails or does not perform up to the level mark of operation. Sindh Solid Waste Management Board (SSWMB) is responsible for the management of solid waste in the entire city. There is a need to adopt the engineered approach in the redesigning of the existing system. In most towns, street sweeping operations have been mechanized and done by machinery operated by vehicles. Construction of Garbage Transfer Stations (GTS) at a number of locations within the city will cut the cost of transportation of waste to disposal sites. Material processing, recovery of recyclables, compaction, volume reduction, and increase in density will enable transportation of waste to disposal sites/landfills via long vehicles (bulk transport), minimizing transport/traffic and environmental pollution-related issues. Development of disposal sites into proper sanitary landfill sites is mandatory. The transportation mechanism is through garbage vehicles using either hauled or fixed container systems employing crew for mechanical or manual loading. The number of garbage vehicles is inadequate, and due to comparatively long haulage to disposal sites, there are certain problems of frequent vehicular maintenance and high fuel costs. Foreign investors have shown interest in enterprising improvement schemes and proposed operating a solid waste management system in Karachi. The waste to Energy option is being considered to provide a practical answer to be adopted to generate power and reduce waste load – a two-pronged solution for the increasing environmental problem. The paper presents results and analysis of a recent study into waste generation and characterization probing into waste-to-energy options for Karachi City.

**Keywords :** waste to energy option, integrated approach, solid waste management, physical and chemical composition of waste in Karachi

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