

# REVIEW OF THE INFLUENCING FACTORS OF INTEGRATED WASTE MANAGEMENT

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**ABSTRACT:** Solid waste management (SWM) in various cities around the world is still a serious and complex problem. Currently, SWM causes problems not only in an environmental context but also in social and economic contexts. Therefore, integrated waste management (IWM) is an option that needs to be explored in municipal SWM. In this regard, it is necessary to develop models of an IWM system to integrate the formal system (government) with non-formal systems (informal sector/IS and community-based activity). To integrate all three groups' roles in an integrated system, as theoretically there are 59 factors that influence IWM. However, not all factors are relevant to the implementation in Bandung municipality because every city and country has different situations and priority problems. For the case in Bandung municipality, based on studies, there are only 17 factors that influence IWM, i.e. waste generation, infrastructure, handled waste, reduction of waste, residual handling, final processing site, population/source of waste, mind-set and lifestyle, socialisation, recognition of IS, organisation of IS, clarity for the role of all stakeholders, accessibility of waste, quantity and quality of recyclable waste, price of recyclable material, waste picker income, and incentives or financial loans.

*Keywords: Recycling, Informal enterprise sectors, Community-based, Waste bank*

## 1. INTRODUCTION

Waste is one of the problems encountered in relation to environmental management. Waste is a logical consequence of the progressive increase in the of the population, especially in urban areas due to urbanization, as well as the problems of industrialization and people's lifestyles that contribute to the generation rate of waste [1]–[4]. Some of the problems faced in developing countries in particular, in relation to the problem of waste include: the level of service is low, financing is still low, poor environmental controls, and inadequate institutional understanding of an increasingly complex system [5]. Rivers and other water resources also suffer as a result of waste disposal from existing activities on their banks [6]. Domestic and non-domestic activities generate waste which is discharged into urban rivers [7].

The problem of waste today is no longer a single issue that considers waste as a waste material, but also deals with other issues such as public health, aesthetics, land use, natural resource management, and even economic activities [8]–[10]. Therefore, it creates the idea of certain economic types of waste management, where the waste is not only an environmental issue but also a source of money [11]. The phenomenon of waste pickers, collectors, and agents taking certain types of waste to be sold to the recycling industry is an indicator of waste as a

resource [12]. In Indonesia, there are groups of people who collect recycled materials for the waste savings system, cooperation unions, and health insurance, which are called waste banks.

Due to the more complex conditions of waste management, the integrated management system is required. Therefore, the concept of integrated waste management (IWM), integrating the ecological, economical, and social concepts, have become the choice that is often used for waste management in various countries [13]–[15]. Based on the actors, essentially the IWM is integrated with formal system activity (government), IS enterprise activity, and community-based activity of solid waste management. These three groups of actors are influenced by various factors. This paper examines the factors that influence integrations of formal systems (government), IS enterprises, and community-based activities in the IWM.

## 2. CONCEPTUAL OF IWM

The IWM concept is theoretically very diverse, but nevertheless, the general characteristics are as follows:

- The combination of waste management from the waste sources to final treatment [13], [14], [16].
- The combination of the ecological and economic concepts [17].