

Chapter 11

Waste Management and Circular Economy


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ABSTRACT

The prompt urbanization and expansion in Kozhikode Corporation, Kerala, have led to a surge in solid waste creation, posing environmental and public health challenges. This chapter aims to recognize an environmentally and developmentally appropriate spot for solid waste dumping using GIS and remote sensing technologies. By employing supervised classification, reclassification, and Euclidean distance analysis, key parameters such as land use, elevation, geology, water resources, and

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proximity to infrastructure were analyzed. Weighted overlay analysis was applied to classify the suitability of sites into five categories: very high, high, moderate, low, and very low. Results indicate that the eastern wards, including Kovoov, Mayanad, and Chelavoor, are most suitable for waste disposal due to their sparse buildup and availability of barren lands, with approximately 2.52 hectares identified as very highly suitable. This research underscores the importance of sustainable waste management practices and provides actionable insights for reducing environmental and health risks in urban areas.

INTRODUCTION:

Waste is a material that has effects on the world and is generated from manufacturing processes, industries, and other human activities (Kan 2009). The waste creation amount depends on elements such as population mass, financial status, level of commercial action, culture, and region. Due to rapid development and excessive economic growth, the urban inhabitants are growing, producing additional garbage (Rajput et al. 2009; Öncel et al. 2017). The existence of waste is a warning of overconsumption, ineffective utilization of items, and inadequate waste-discarding processes.

Waste is created by several manufacturing, commercial, farming, and even local supplies. The risks of wastes can vary conditional on their categories and environmental settings and numerous short-term and long-term impacts ranging from acute to chronic are assumed. Earth waste creation is estimated to be ~ 27 billion tonnes annually by 2050, one-third of which will derived from Asia, with foremost supplies from China and India (Modak et al. 2010). The waste formed in urban zones of India is ~ 170,000 tonnes per day, equal to about 62 million tonnes annually, and this is predicted to upsurge by 5% annually owing to rises in residents and altering routines (Planning Commission, Government of India, 2014).

1.1. Types of Wastes: Municipal solid waste (MSW), agriculture waste, industrial waste, e-waste, biomedical waste, construction, and radioactive waste are the different types of waste.

- **Municipal Solid Waste (MSW):** MSW is described as a waste of robust things, nondurable things, pots and packaging, food scrapings, yard trimmings, and various inorganic garbage from residential, commercial, and industrial resources (Gupta et al. 2024). It may also include dangerous trash such as paints, pesticides, batteries, and depleted medicine (Ishchenko et al. 2018; Elbeshbishy and Okoye 2019). Compostable organics involve vegetables, food waste, and fruits. The amount of MSW created is influenced

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