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## Journal of Cleaner Production

Volume 50, 1 July 2013, Pages 123-132

# The zero waste index: a performance measurement tool for waste management systems in a 'zero waste city'<sup>TM</sup>

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<https://doi.org/10.1016/j.jclepro.2012.11.041>

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### Abstract

Waste is the symbol of inefficiency of any modern society and a representation of misallocated resources. Significant progress has been achieved in reducing waste but it varies from city to city. Currently, cities use their waste diversion rate as a tool to measure the performance of their waste management systems. However, diversion of waste from landfill does not give a holistic picture of zero waste performance. This paper conceptualises the concept of the 'zero waste city'<sup>TM</sup> and proposes a new tool to measure the performance of waste management systems called the 'zero waste index'<sup>TM</sup>. The zero waste index forecasts the amount of virgin materials, energy, water and greenhouse gas emissions substituted by the resources that are recovered from waste streams. Three high consuming cities (Adelaide, San Francisco and Stockholm) were analysed using the zero waste index. The zero waste indexes in Adelaide, San

Francisco and Stockholm were found to be 0.23, 0.51 and 0.17 respectively (i.e. around 23%, 51% and 17% of resources were recovered and potentially substituted for virgin materials). In addition, the zero waste index estimated the potential energy, greenhouse gas (GHG) and water savings due to resource recovery from municipal solid waste in each of the three cities. It is evident that the zero waste index is an innovative tool to assess waste management performance and materials substitution by waste management systems in different cities.



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## Keywords

Municipal solid waste; Performance indicator; Diversion rate; Material substitution; Zero waste city; Zero waste index

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