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## **LCA of MSW Management. The Environmental Impacts of Wrong Choices**

RIPA, M. <sup>a\*</sup>, FIORENTINO, G. <sup>a</sup>, VACCA, V. <sup>a</sup>, ULGIATI, S. <sup>a,b</sup>

<sup>a</sup> *Parthenope University of Naples, Naples*

<sup>b</sup> *School of Environment - Beijing Normal University - China*

*\*Corresponding author, maddalena.ripa@uniparthenope.it*

### **Abstract**

The management of municipal solid waste (MSW) is currently one of the most serious and controversial issues faced by the local and regional authorities of a country. The member countries of the European Union (EU) are required to propose waste management systems that comply with the hierarchy of options, based on the following order of priority: prevention (in waste generation), preparing for reuse, recycling, other types of recovery (including energy) and, finally, the disposal of waste. To demonstrate the performance of management alternatives in the decision-making process, authorities, communities, industry and waste management companies should consider environmental aspects in addition to the evaluation of technical and economic aspects. Life Cycle Assessment (LCA) has been demonstrated to be a suitable tool for evaluating waste management systems, although its performance strictly depends on the detailed knowledge of the state of the art and on the “localness” of data used. This paper summarizes the main results of the application of LCA methodology to the MSW management system currently adopted in Naples (Italy), affected in the past years by a waste disposal emergency, not yet completely solved. The main streams of MSW generated in Naples are assessed in terms of their environmental impacts and a general picture of the management system is drawn through a detailed collection of local data concerning all waste streams’ routes and destinations. In such a way, LCA allows the identification of criticalities and bottlenecks of the complex issue of waste management, thus highlighting the effects that wrong choices can generate as a starting point for future improvements.

**Keywords:** *Waste Management, Life Cycle Assessment, Municipal Solid Waste*