





ANALYSIS OF METHODOLOGIES TO EVALUATE THE ENVIRONMENTAL IMPACTS OF SOLID WASTE MANAGEMENT IN THE CITY OF BOGOTA

Ana Paola Becerra Quiroz,* Johanna Karina Solano Meza,* María Elena Rodrigo-Clavero**, Javier Rodrigo-Ilarri.**

*Universidad Santo Tomás, Bogotá, Colombia

** Instituto de Ingeniería del Agua y Medio Ambiente (IIAMA).

Universitat Politècnica de València (UPV),

Valencia, Spain







Population growth associated with population migration to urban areas and industrial development have led to a critical concern is the lack of control and the inadequate management of the solid waste generated in urban centers (Vitorino de Souza Melaré et al., 2017).

One of the main environmental issues to address in the Capital City of Bogotá (Colombia) is the increasing production of solid waste. Despite significant efforts have been made to implement an integral solid waste system management, the current management methods do not provide a permanent alternative to minimize waste production (Solano et al., 2017).









Current solid waste management in megacities is being transformed from a linear treatment scheme, towards waste management which incorporates the guidelines of the circular economy model, in particular: waste reduction, reuse and recycling.







Comprehensive waste management must consider the environmental impacts generated throughout the life cycle of waste and integrate ways to address these impacts in comprehensive waste management plans.



Health and environmental impacts that will result from new forms of waste use or mismanagement must be considered, in particular; mitigating climate change by diverting waste that would potentially go to landfills.









The methodologies used to evaluate the environmental impacts generated by solid waste have generally been qualitative.

These methodologies have been selected based on the availability of information, ease of calculation, and the physical and technical infrastructure available.

The most prominent methodologies being checklists, double-entry matrices, establishing indicators, and problem trees.



5





METHODOLOGY TO EVALUATE THE ENVIRONMENTAL IMPACTS OF SOLID WASTE MANAGEMENT

- 1 Identify the solid wastes management steps for this methodology.
 - Identify the best technologies available (BAT) for the uses and disposal of solid waste in the city of Bogotá.
 - Prepare material and energy balance for the selected processes, including the stages in the management of solid waste identified.
 - Evaluate the environmental impacts. Life Cycle Analysis methodology, SIMAPRO.
 - Select the best alternative for solid waste management for the city of Bogotá according to environmental impacts.







Evaluate environmental impacts more precisely

Evaluate differents

Municipal solid

waste

management

strategies

Reducing uncertainties in the evaluation

Integrate of all steps of urban solid waste management in the analysis

More precise methods

Effective decisionmaking tools







References

Vitorino de Souza Melaré, A., Montenegro González, S., Faceli, K., & Casadei, V. (2017). Technologies and decision support systems to aid solid-waste management: a systematic review. Waste management (New York, N.Y.), 59, 567–584. https://doi.org/10.1016/j.wasman.2016.10.045

Solano Meza, J. K., Rodrigo-Ilarri, J., Romero Hernández, C. P., & Rodrigo-Clavero, M. (2020). Analytical methodology for the identification of critical zones on the generation of solid waste in large urban areas. *International Journal of Environmental Research and Public Health*, 17(4), 1196





Thank you

