

Costing of the Solid Waste Collection Service of Ibarra City

Estiwar Guachamín, Israel Herrera, Andrés Coral, Wiliam Lechón, and Winston Oviedo

Facultad de Ingeniería en Ciencias Aplicadas
Universidad Técnica del Norte, Ecuador

Corresponding author's Email: eaguachaminp@utn.edu.ec, idherrera@utn.edu.ec, agcoraly@utn.edu.ec,
welechon@utn.edu.ec, wgoviedo@utn.edu.ec

Abstract: The population of the city of Ibarra has experienced significant growth, and in turn, its rate of generation of urban solid waste, whose collection service is provided by the Autonomous Decentralized Government of Ibarra. However, initially said institution did not have a detail of the cost of collection, for that reason it was necessary to apply a method for calculating the waste collection service in which all the items involved are considered. The purpose of this research is to characterize the collection operations carried out in the city of Ibarra to determine the costs of collecting solid urban waste considering labor, employer obligations, maintenance costs, fuel, personal protective equipment, use of the vehicle, insurance, and others. The same ones that were assigned according to the route assigned to the truck, as well as the generation rate in each route. Using the traditional costing model, the tariffs for each item belonging to the collection operations for both the loaded and unloaded vehicle from each route to the sanitary landfill were determined. Finally, the costs were obtained in the mentioned operations, classifying them for each route and arriving to determine an average cost per ton collected daily, which is used as a metric on waste management in the Ibarra city.

Keywords: Generation rate, collection, urban solid waste, costing model, vehicle fleet.