

# Landfill Site Suitability Assessment Based on Public and Affected Community Views

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## SUMMARY

Open uncontrolled dumping is the dominant municipal waste disposal method in many communities of Ghana and other developing countries. A safer and generally accepted form of doing this is engineered landfilling. However, the development and operation of engineered landfilling in Ghana is facing formidable challenges, one of which is public and community opposition, a phenomenon generally referred to as "NIMBY" (Not in My Back Yard). One way of reducing or overcoming such opposition is to involve the public and/or affected communities in the waste disposal site selection decision making process. This paper thus discusses and demonstrate how this may be achieved in mining communities, using a case study approach with the Tarkwa-Prestea mining areas of Ghana as the study location. The methods used include compilation of relevant criteria and associated data using literature review and documentary analysis; field survey and mapping using Google earth, GPS and GIS; sampling of views of the public, affected communities and waste management officials, through questionnaire, interviews and discussions; spatial database creation; and multi-criteria decision analysis using GIS and AHP. First, through a sieve mapping process, the criteria and their associated data were applied to generate permissible sites that meet the regulatory requirements. Then through a weighted map overlay and map algebra, the permissible sites were then reduce to few suitable ones which were further rated in terms of their relative suitabilities based on the views and preferences of the public, the affected communities and the municipal waste management officials. The results and major steps are presented in maps, tables and graphs and are available for observations and scrutinizing by all the interested parties. The scientific and objective manner in which the GIS and AHP are applied to process and present the results to reflect the regulatory requirements and the views of the public, affected communities and the municipal waste management officials, have a high potential to boost the confidence and acceptance of these stakeholders and thus reduce the chances and intensity of NIMBY opposition. The approach is thus recommended for use in the study area and other similar places where landfilling is still a common practice.

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