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## Using GIS to develop vulnerability index map for Bassetlaw District Council

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**F**ly-tipping is one of the most devastating global hazards which offer significant threat to human health and environment. Hence, creating a readily read and accessible map for devising mitigation strategies at the local level is important. The study examined the integration of GIS to develop vulnerability map for aiding efficient surveillance of illegal dumping in Bassetlaw District, United Kingdom. The methodology involved three processes: (i) the integration of principal component analysis (PCA) and ordinary least square regression (OLS) to identify key geographical factors driving illegal dumping; (ii) developing criteria for ranking each factor and; (iii) building of geostatistical model into geographical information system to delineate the attractiveness of illegal dumping across the landscape. Using multiplicative index model, a composite vulnerability map was created from five key drivers for dumping in the district including population density, proximity to road, income, health and crime. The result revealed local disparities of illegal dumping due to varying geographical conditions. It also indicated that about 80% of incidences occurred within seven meters of road and that majority of waste type illegally dumped in the district was household waste (53%). Evaluation of the model was employed to examine and validate the effectiveness of the model output. By comparing the result with field incidence data, the map was successful in identifying districts with high-risk to illegal dumping. The result provides essential information for environmental managers to better understand and analyze illegal dumping and formulate remedial strategies.

## Biography

Andrews Kwasi Afforo Odoom is a GIS specialist with over six years of working experience. He is an MSc GIS and Environmental Management Graduate from the University of Brighton, UK. His working experiences includes GIS Teaching Assistant (University of Ghana), Mapping Engineer (Newmont Ghana Gold Limited) and GIS Technician (Ambiental Technical Solutions). He is currently the GIS Business Manager at Losamills Consult Limited, a leading mapping and engineering company in Ghana

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