Assessment of waterlogging Risk in Reclaimed Lands using Topographic, Rainfall and Tide Data in Eti-Osa, Lekki, Lagos.

Samuel Ojo and Tata Herbert (Nigeria)

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SUMMARY

Waterlogging is a persistent challenge in reclaimed coastal lands where rainfall, tides, and surface elevation interact to influence drainage behaviour. In Eti-Osa, Lekki, Lagos, the combined effects of intense rainfall and tidal fluctuations increase the vulnerability of reclaimed land to flooding and instability. This study assesses the risk of waterlogging by integrating topographic, rainfall, and tide data to understand their individual and combined impacts. Topographic data are important because they define the elevation and slope of the reclaimed surface, which determines how water flows and where it collects. Rainfall data provides information on the amount and duration of precipitation that can generate surface runoff and saturate the soil. Tide data is equally important because the rise and fall of sea level can delay or block drainage outflow, especially during high tides (Feng et al., 2022). By linking these datasets, the study evaluates how tide variation and rainfall interact with elevation to cause or worsen waterlogging. The aim is to identify the safe topographic elevation needed for reclaimed land in Eti-Osa to remain stable under changing rainfall and tidal conditions. The outcome will help guide reclamation design and flood control strategies, contributing to more resilient coastal development in Eti-Osa, Lekki, and similar environments (Adelekan, 2016).
