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Urban expansion and its impact on sustainable food production: A case study of Dodowa, Ghana

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Abstract

Urban expansion is causing competition between built infrastructure and sustainable food production in Dodowa, where farmland is being lost to urban development. This expansion is occurring because of the growth of Accra, the capital city, which is causing cities to expand beyond their intended limits and encroach on once-agricultural communities. To better understand the impact of urban expansion and infrastructure on agriculture and food production, this study was conducted. The study used a quantitative approach which involved administering questionnaires to 100 households within Dodowa, a township in Ghana. Additionally, GIS and remote sensing techniques were used to analyse Landsat images of 2002, 2015 and 2024, while SPSS and Excel were used to analyse the quantitative data. The study also utilised change detection analysis of satellite images to identify land use and cover changes over a period of 22 years. The study revealed an increase in built up infrastructure and a sharp decline in vegetation suggesting urban sprawl. It was recorded that within the 22 years span data evaluated, there was a 40% increase in built up infrastructure while there was a 28% and 11% decrease in sparse and dense vegetation, respectively. The study concludes that, the loss of agricultural lands due to urban expansion is causing a decline in food production and livelihoods. To address this issue, the study recommends a collaborative effort between traditional land tenure systems and government planning agencies. This would promote sustainable land management practices and ensure proper zoning for land use areas, preserving the environment's biodiversity.

Keywords: Agriculture, built infrastructure, livelihoods, sustainable food production, urban expansion