

# **Spatio-Temporal Change Detection of Urban Green Space As a Result of Real Estate and Residential Development (Greater Accra)**

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## **SUMMARY**

Urban green space comprising parks, gardens, forests and wetlands, street trees and grasses etc. is a fundamental component of the urban ecosystem. This green space constitutes an integral part of the urban environment considering the immense benefits ranging from managing and protecting biodiversity, to improving quality air, aesthetics and recreation. Unfortunately, Greater Accra over the years has lost a significant amount of its urban vegetation due to the numerous anthropogenic activities carried out in the capital to uplift the region's physical development, especially with the influx of lucrative real estate and residential developments. The study therefore sought to project the spatiotemporal change in green space as well as the impact residential developments have had on the urban green space over the last 14 years (2007-2021), predict the impact in the next 5 years and lastly suggest effective measures to integrate green space into residential development as an attempt to safeguard the urban green space. This study adopted the mixed method approach where qualitative and quantitative data were collected to facilitate different avenues for exploring data. 85 respondents comprising individual house owners, private residential developers and stakeholders in institutions for managing green space and physical development participated in the survey. Field observation was carried out to directly have access to information on the grounds. Descriptive statistics were used to summarize the quantitative data and presented in tables, maps and graphs. Google Earth and QGIS software were used to capture satellite data which were processed into the various land use/landcover classes. The study's questionnaires discovered several issues such as ineffective policy implementation, a lack of enforcement of existing regulations by stakeholders and a lack of monitoring mechanisms (GIS & other mapping software) to assess and evaluate green space alongside residential development. The study also revealed a yearly decrease of 1.4% in urban green space and a 20% decline in Greater Accra's vegetation cover within the last 14 years (2007 - 2021). The study discovered some farmlands and wetland vegetation within notable communities in Greater Accra have been converted into sand wining and residential development

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sites. The study suggests an integration of green space management plans as part of all residential development activities to be able to safeguard and improve green spaces. A well-structured institution among key stakeholders was proposed to ensure effective collaboration towards the formulation, implementation and enforcement of policies, programs and plans about green space and residential development. The study also recommends intensive public education to create awareness of the benefits and need to safeguard the green space. Also, residential development and urban green space sustainability models like the i-Tree eco model and Green roof model were recommended to help towards achieving SDG 11. Addressing these challenges of green space in connection with real estate and residential development requires joint and committed efforts by national governments, city authorities and the local people. Green spaces should be treated as among the top priorities of cities, and the core institutions managing these green spaces should be well-resourced to enable them to go about their activities as expected.

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