POLICY BRIEF

Urban Growth in Sekondi-Takoradi: A Call for Sustainable Land Use Planning

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Key Messages

1. Rapid urban expansion has led to a significant loss of vegetation and water bodies with built-up areas increasing by over 32% from 1991 to 2023.
2. Future projection indicates a further 29% increase in built-up areas by 2030, highlighting the urgency for sustainable urban planning.
3. The transformation of natural land cover threatens the ecological balance and undermines achieving Sustainable Development Goal 11.
4. Policymakers must prioritize land use planning, urban greening, and effective monitoring systems to mitigate adverse effects.

Introduction

Sekondi-Takoradi, the most urbanized metropolis in the western region of Ghana has experienced rapid urban expansion over the past three decades. This has significantly altered its natural landscape with vegetation and water bodies giving way to built-up areas (Biney et al., 2024). These changes, driven by population growth and economic activities pose challenges to sustainable development and climate resilience. This brief presents findings on the city's land use and land cover (LULC) dynamics from 1991 to 2023 and a projection for 2030, providing actionable insights for urban planners and policymakers.

Methodology

This study employed Landsat satellite imagery from 1991, 2009, 2016, and 2023 to analyze LULC changes. The Random Forest Classification algorithm categorized land cover into three classes: water, vegetation, and built-up areas. A post-classification change detection method was used to quantify shifts, and future projections for 2030 were generated using the Cellular Automata–Markov (CA–M) model.

Key Findings

A significant amount of vegetation and water were converted into built-up (Figure 1). The state of these water bodies and channels compared to the 1990s signifies a high rate of encroachment and conversion into built-up which will deprive the metropolis of enjoying the benefits associated with water conservation (Biney et al., 2024).

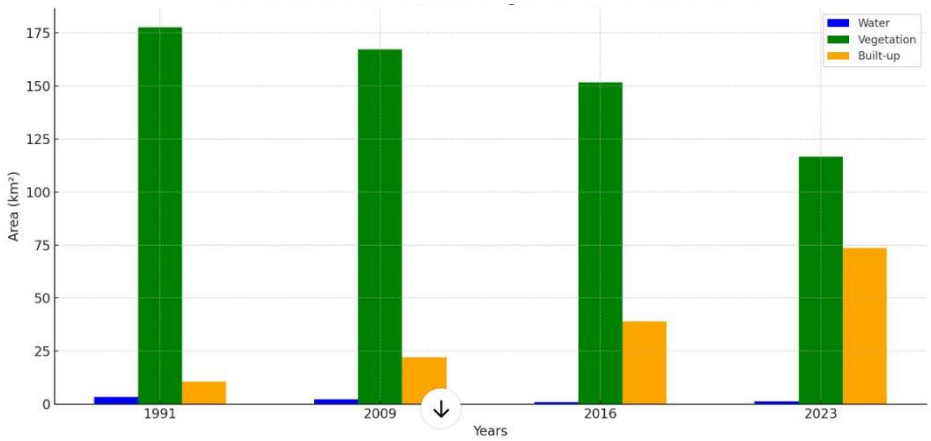

***Figure 1**: LULC Changes from 1991 to 2023*

Mostly, the conversion of other classes to built-up took place in the Western and South-Western parts of the metropolis (Figure 2). The western part of the metropolis borders the Ahanta West district and the operational sites of most oil companies in the Ahanta West district are also closer to the Western and South-western parts of the metropolis(Abdul-kareem et al., 2021). Therefore, these operational sites of oil companies serve as a pull factor for settlement and infrastructural development which is a reason for the higher conversion of other classes into built-up at the Western and the South-western parts of the metropolis. Moreover, the Takoradi airport, market circle, the Takoradi harbour, companies, and the central business district are in the South-western part of the metropolis. These infrastructural developments and places strongly drive population growth, resulting in an increased demand for land for residential, industrial, and commercial purposes. This substantial demand for housing has incentivized landowners, predominantly chiefs and family members, to sell off green spaces to capitalize on the lucrative housing market (Mensah et al., 2019).

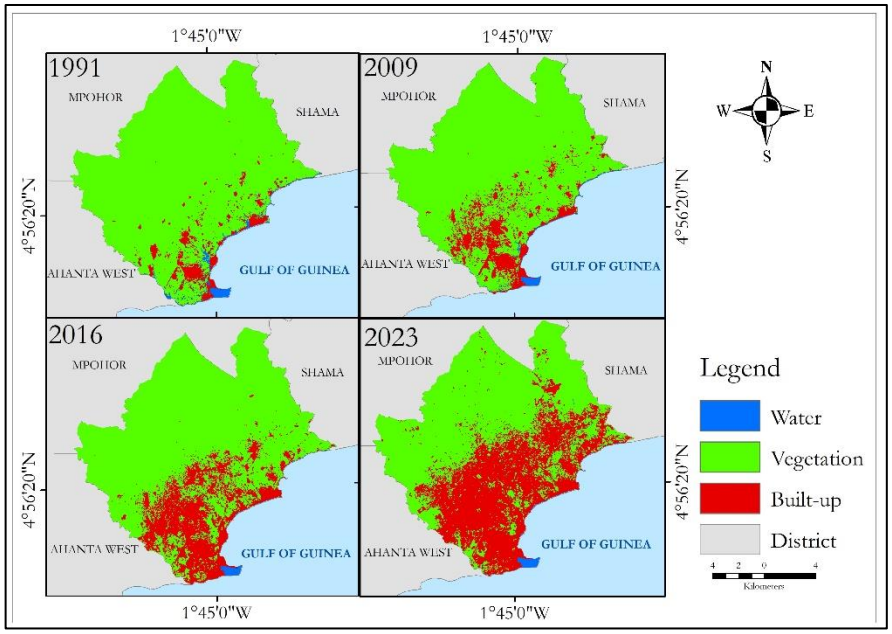

***Figure 2**: LULC maps from 1991 to 2023*

Further, the projected 2030 LULC revealed a continued increase in built-up at the decreasing expense of other land covers. This indicates the metropolis will become more urbanized and will be highly susceptible to environmental challenges like flooding and heat islands, especially in the case of increasing unplanned urbanization (Biney et al., 2024).

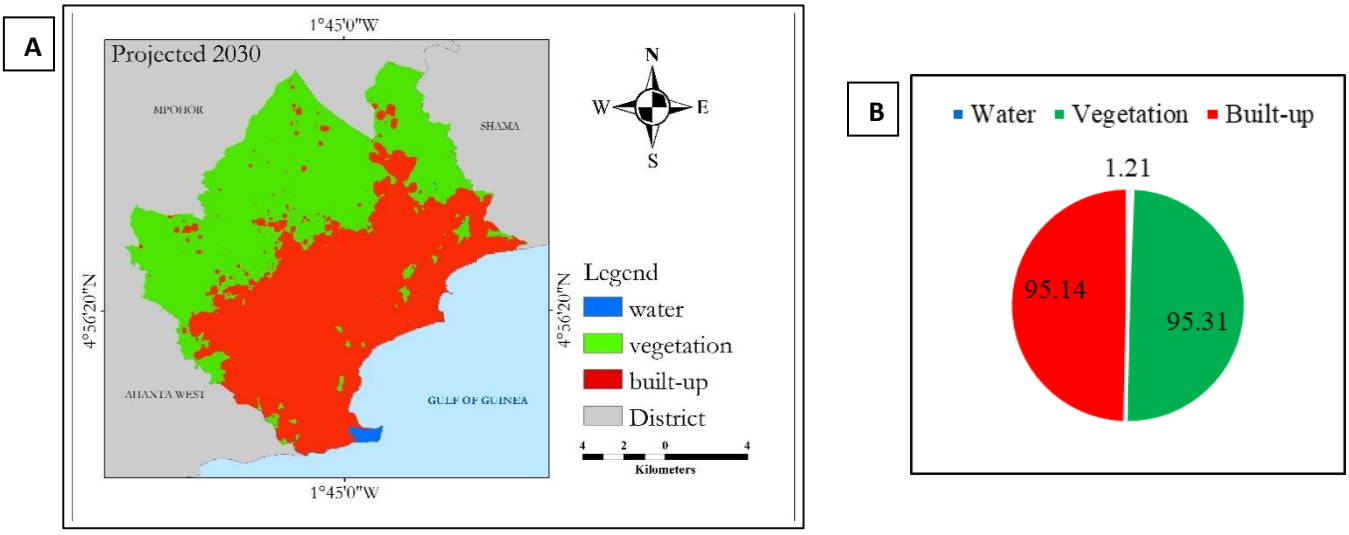

Figure 2: (A): *Projected LULC Map for 2030 and (B): Projected 2030 area statistics in square kilometers.*

Conclusion

Sekondi-Takoradi's rapid urbanization may present opportunities for economic growth but poses significant risks to its ecological balance and urban sustainability. Immediate action is required to manage land use effectively, mitigate environmental degradation, and promote resilient urban development. Policymakers and urban planners must act decisively to align the city's growth with sustainable development goal 11. This would ensure environmentally friendly urban development and enhance the city's resilience to natural disasters and climate change impacts.

Recommendations

1. The city authorities should implement urban containment policies such as urban growth boundaries to regulate uncontrolled expansion.
2. Development proposals in the northern part of the city should be subjected to a thorough evaluation including cost and benefit analysis by the statutory planning team before decisions are made.
3. The planning unit of the metropolis should implement state-of-the-art geospatial equipment and techniques to monitor land cover changes in real time and guide sustainable urban development.
4. The physical planning unit of the metropolis should regularly sensitize and educate the general public on the local and structured plans of the metropolis.
5. The Department of Parks and Gardens should promote the establishment of urban parks, tree planting, and preservation of green spaces to enhance ecological balance.

References

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