

## Sustainable Urban Growth of Neighborhoods: A Case Study of Alryad-Khartoum

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**Abstract :** Alryad neighborhood is located in Khartoum town- the administrative center of the Capital of Sudan. The neighborhood is one of the high-income residential areas with villa type development of low-density. It was planned and developed in 1972 with large plots (600-875m<sup>2</sup>), wide crossing roads and balanced environment. Recently the area transformed into more compact urban form of high density, mixed-use integrated development with more intensive use of land; multi-storied apartments. The most important socio-economic process in the neighborhood has been the commercialization and deinitialization of the area in connect with the displacement of the residential function. This transformation affected the quality of the neighborhood and the inter-related features of the built environment. A case study approach was chosen to gather the necessary qualitative and quantitative data. A detailed survey on existing development pattern was carried out over the whole area of Alryad. Data on the built and social environment of the neighborhoods were collected through observations, interviews and secondary data sources. The paper reflected a theoretical and empirical interest in the particular characteristics of compact neighborhood with high density, and mixed land uses and their effect on social wellbeing of the residents all in the context of the sustainable development. The research problem is focused on the challenges of transformation that associated with compact neighborhood that created multiple urban problems, e.g., stress of essential services (water supply, electricity, and drainage), congestion of streets and demand for parking. The main objective of the study is to analyze the transformation of this area from residential use to commercial and administrative use. The study analyzed the current situation of the neighborhood compared to the five principles of sustainable neighborhood prepared by UN Habitat. The study found that the neighborhood is experienced changes that occur to inner-city residential areas and the process of change of the neighborhood was originated by external forces due to the declining economic situation of the whole country. It is evident that non-residential uses have taken place uncontrolled, unregulated and haphazardly that led to damage the residential environment and deficiency in infrastructure. The quality of urban life and in particular on levels of privacy was reduced, the neighborhood changed gradually to be a central business district that provides services to the whole Khartoum town. The change of house type may be attributed to a demand-led housing market and absence of policy. The results showed that Alryad is not fully sustainable and self-contained, street network characteristics and mixed land-uses development are compatible with the principles of sustainability. The area of streets represents 27.4% of the total area of the neighborhood. Residential density is 4,620 people/ km<sup>2</sup>, that is lower than the recommendations, and the limited block land-use specialization is higher than 10% of the blocks. Most inhabitants have a high income so that there is no social mix in the neighborhood. The study recommended revision of the current zoning regulations in order to control and regulate undesirable development in the neighborhood and provide new solutions which allow promoting the neighborhood sustainable development.

**Keywords :** compact neighborhood, land uses, mixed use, residential area, transformation

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