

Planning the Unplanned: Modeling Informal Settlements by Means of  
Geographic Information Systems and Cellular automata

By

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**ABSTRACT:**

For decades, European urban planning theories, models, practice and style have been imported to, and implemented in Less Developed Countries (LDCs) of Latin America, Asia and Africa with little success. As a result, unplanned areas are dominating the LDCs urban landscape, and planning developments are declining. One of the significant issues is, however, that urban planning models in LDCs ignore the role and potential of informal settlements. This is problematic given they are a significant feature of the urban landscape in LDCs and there are many issues that arise from their presence.

This paper discusses why formal planning is declining and informal development is becoming predominant in LDCs' cities. The paper also reviews the urban planning policies and strategies towards informal settlements, and then concludes that current urban planning models in LDCs are largely inefficient. The paper then discusses how the integration of Geographic Information Systems and Cellular Automata can help address current gaps in informal settlement planning. Specifically, the paper discusses the findings of my PhD and the *Informal Settlement Model* (ISM) developed. The paper also examines the parameters use in the ISM: cultural and ethnic composition, topography, road network, market and worship places, and existing informal settlement patterns.

The results of the application of ISM on Yaoundé, Cameroon, provide useful indications on how informal settlements emerge and expand. The outcome of the research contributes to the body of knowledge and theories of informal settlements, and also demonstrates the importance of prediction and animation in informal settlements management. Urban planners and governments can now use the ISM as new tool to improve the management and planning of informal settlements. The paper suggests that ISM has the potential to be applied to other LDCs' cities, where informal settlements are prevalent.

**Keywords:** Urban planning, model, Less Developed Countries, informal settlements