

Managing Informal Settlements : A Study Using Geo-Information in Dar es Salaam, Tanzania

Abstract:

Urbanization in Sub-Saharan Africa (SSA) is often associated with the urbanization of poverty, and with the extensive development of informal settlements. This thesis examines how Geographic Information Technology (GIT) could be used to improve the ability of local governments in SSA manage such settlements. Three themes are at the core of this research: the evolution of thinking in the field of urban planning and management and the role of GIT as a planning support tool are discussed together with some problems of the land and housing supply in SSA countries. A review of these themes reveals strong linkages between conceptual and procedural developments in developed countries and those of SSA, often without adequate regard for the specific cultural and societal conditions in the recipient countries thereby contributing substantially to the likelihood of policy failure. The research framework incorporates elements of spatial data modelling relevant to analysing informal urban development and decision making for intervening in informal settlements. It also considers the context within which planning takes place, particularly the characteristics of key actors involved in planning processes at strategic and local levels.

The empirical work is based on case studies at two spatial levels in the city of Dar es Salaam, Tanzania's largest city. The city-wide level is directed at strategic information and decision making related to informal development using a digital topographic database, aerial photography and SPOT satellite imagery to produce generalised data related to land use, topography, settlement expansion and densification processes. The analysis shows that the rate of expansion of informal settlements is increasing and that densification processes are also ongoing in all settlements, including those with the highest densities, but that the knowledge of such processes under local professionals is limited to the more centrally located settlements. Using the improved data, the value of using a GIS based multi-criteria evaluation procedure to select informal settlements for policy interventions aimed at altering their further development is demonstrated.

The second spatial level concerns individual settlements or communities in which spatial information for settlement upgrading and some aspects of daily management are examined. GIT methods are applied to create large scale image mosaics that could be used in a variety of ways at settlement level, some of which have been explored both through a combination of quantitative and qualitative research methods. The use of such tools is examined in 3 settlements Keko Mwanga, Hanna Nassif and Tabata. The analysis reveals considerable potential for utilising GIS based products at the community level in planning and administration.

The implications of these findings for the development of a prototype methodology for managing informal settlements in Dar es Salaam are considered. Concepts for spatial information support at both spatial levels are developed. These involve a variety of GIT users in Dar es Salaam, but are primarily directed at the needs of the local government and settlement level actors. Several suggestions are made concerning further work

required at both levels. These include improvements to the MCE approach, the development of urban growth models that could aid in the understanding and prediction of new growth areas, the development of effective land management instruments at settlement level and investigations that would lead to the creation of a sustainable local spatial data infrastructure to support decentralised urban planning and management.