

A SHORT MEMO FOR UGEC-NASA WORKSHOP

Concerns and Prospects for Urban Forecasting and Modeling in Developing Countries: The Case of Lagos

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The growth and spatial distribution of big cities depict a number of small settlements juxtaposed with large urban centers which contributes to and impacts the life and function of these mega cities. Lagos growth and urbanization present a picture of a rapidly urbanizing city-state. The historical antecedents of the growth, development and low-lying coastal location of the city-state make her vulnerable to the likely disasters resulting from climate change. As this growth persists, so does the number of settlements which are located at the core of urban centers and their fringes but largely excluded from the formal sector of the city life. The sizes of these settlements range from small to medium. It is unfortunate that most government policies and actions do not fully incorporate these small urban areas. A possible reason for this could be due to their historical antecedents and hostile environments. In Africa for instance, the areas that received early and prompt attentions were those that were considered relevant and habitable by the colonial masters. Such areas were thus designated and designed to reflect their uniqueness. All other areas even where they are contiguously located to the European Areas were given little or no attention. Sometimes, the hostile nature of these small areas inhibited the genuine intentions/actions of these European and subsequent African governments. And because their origin, development and activities are largely informal, they are referred to as informal settlements. These informal settlements yet contribute enormously to the functioning and survival of the cities. A cursory observation reveals that these informal settlements possess enormous resources for the transformation of the city-state. What is more, these informal settlements are generally located in low-lying coastal areas where the physical conditions limit formal planning and government actions. To this end, they generally lack basic services and infrastructure which affect the quality of the environment and the dwellers. This calls for the assessment and patterns of vulnerability to climate change especially as it affects the marginal peoples and environments in Lagos in terms of demographic structure and dynamics, urban environmental and infrastructural services, likely impacts and damages, response mechanisms and sustainable development, and governance and institutional radicalization. This will help to review and forecast the likely magnitude of social, environmental and economic damages expected under a possible range of climate and development scenarios, and their consequences for achieving local and national economic growth targets. Sometimes climate change and its attendant issues are viewed only in a parochial way. Climate change has both its challenges and prospects. Climate change has brought to the fore issues relating to environmental stewardship in terms of understanding and committing to proper utilization of natural resources sustainably. The changes in the social and ecological systems in Lagos and other African cities and the trade offs are intrinsically linked with the dynamic nature of human settlements, demography and institutions.

Most African cities are beginning to show a new wave of resource consciousness and environmental accountability characterized by radical socio-ecological transformations and policy thrust. For instance, there are emerging studies on biodiversity, wetlands and social systems which are providing new dimensions of reviewing the earth resources and peoples with the view of promoting prudence, sustainability and good governance.

In Lagos as in most cities of developing countries data availability in terms of quality, scale and relevance is a big challenge. There are a number of studies and reports without coordination. Sometimes the studies are even undertaken in the crudest form with obsolete technology/methodology without benefitting from modern techniques and tools associated with such studies as is the case with other societies. This limits proper planning and focused policy issues. There is the increasing need to assemble data on climate change which seeks to provide answers to issues such as what magnitude of sea level rise and ocean surge will happen in the next 10 to 50 or 100 years, who will be affected, how much will be lost, what are the attendant effects, etc? All these require expert tools, techniques and model software which involve some level of accuracy, objectivity and applicability. There is the need to build capacity to analyze and interpret data in these areas.

Presently, African cities lack current maps and there is need for up-to-date data and information to respond to the challenges to update maps, make planning decisions, and monitor changes in urban land use, climate, environment, etc relative to natural resources assessment and management, natural disasters and responses, etc. We need sophisticated image classification techniques, detailed Digital Terrain Models for contour generation, orthophoto rectification and flood plain mapping as well as Digital Elevation Models for specialized applications such as 3D modeling, volumetric calculations, and power line as built surveys. Specifically, it will be desirable to access high-resolution satellite images that could be used to map ground water zones and potential areas for extraction, absolute positioning of urban activities using image-based ground control points, planning urban infrastructure, transport corridor planning, assessing urban safety, health and security by showing the proximity of certain projects and the possibility of damage, exploration of energy/natural resources, disaster assessment and relief operations, real estate development and project monitoring, cluster planning of landlines, forecasting and evaluation of network usage and estimating network expansion over large areas, etc. In addition, there is need to access and build capacity in terms of modeling software to monitor and forecast urban land use systems, hydrological/hydraulic and socio-economic systems.

As it is, it will almost be impracticable to fully model urban land use change, climate change and risk analyses involving an assessment of historical climate variability, depict future climate scenarios, predict indicators and targets for climate-sensitive development outcomes, climate impacts and risk of concern, etc. However, there is the need to review the suitability and critical assumptions to be made when applying available modeling tools to African region. Efforts should be made to detail the demographic, social and physical development parameters unique for African region and explore the main drivers of their economic growth, and the development targets that need to be obtained to support local and national economic goals. No efforts and assistance will be too much to secure the appropriate data and modeling tool to help the African region to employ the best practices for planning and policy decision-making.