



## Conference Proceedings.

**Theme:** Engineering and Technology for Economic Transformation

[Table of Content \(/toc/index.html\)](#)

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**Ochepo, J., Salahudeen, A. B. and Iliyasu, I.**  
Strength Evaluation of Laterite Soil Mixed With Reclaimed Asphalt Pavement and Bagasse Ash for Sub-Base Construction (view.php?s=3&doc=57)  
Table of Content (index.html) / Section 3 (section-3.html)

**M.A.Olutoye**  
Transesterification of Crude Jatropha Oil Using Bi-ZnO Heterogeneous Catalyst (view.php?s=3&doc=58)

**Osim, A. R., Ijimdiya, S. T., Eberemu, A. O. and Osinubi, K. J.**  
Compaction and Acceptable Zone Characteristics of Cement Kiln Dust Treated Black Cotton Soil (view.php?s=3&doc=59)

**Otuoze, H. S., Shuaibu, A. A., Ahmed, H. A., Garba A., and Yusuf O. K.**  
Binding Properties of Poly-Vinyl Chloride Thermoplastic Waste Modified Bitumen for Flexible Pavement Mix (view.php?s=3&doc=60)

**Silas B.T., Aderemi B.O., Ameh A.O., Momoh O.R. and Nwokem N.C**  
The Direct Use of Alginates as Desulfurizers in Biogas Produced from Anaerobic Co-Digestion of Tannery Fleshing and Cow Dung (view.php?s=3&doc=61)

**Umar D.A., Aliyu U., Abdulbasit S.A**  
Hybrid Concrete Construction (HCC) For Sustainable Infrastructure Development in Nigeria (view.php?s=3&doc=62)

**Yohanna, P., Eberemu, A. O. and Osinubi, K. J.**  
Effect of Cement – Iron Ore Tailing Blend on the Gradation and Compaction Characteristics of Black Cotton Soil (view.php?s=3&doc=63)

**Suleyman, Zubayr Alhaji-Taihid, Zitta Nanpon, Adamu Mohammed Gbedu, Idris Mohammed Kontagora** ✓  
Developing an Urban Growth Control System as a Transformation Strategy Using GIS and Remote Sensing Techniques on Barikin-Sale, Minna-Niger State, Nigeria (view.php?s=3&doc=64)

**Developing an Urban Growth Control System as a Transformation Strategy Using GIS and Remote Sensing Techniques on Barikin-Sale, Minna-Niger State, Nigeria**

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**Abstract**

*In developing nations such as Nigeria, urban settlements dynamic abound, thus an informal form of transformation. In this paper, serious challenges affecting urban settlements are in focus. The study has applied combined Geographic Information System GIS and Remote Sensing System RSS techniques on the trend of growth of Barikin Sale, an urban settlement in Minna, Nigeria, between years 1990 and 2010 as an example of developing formal transformation. Methodologically, integration of satellite image data sourced from Google earth image, population figures, ground surveying, and GIS tools were used. From monitoring the urban growth, the results revealed that population increase was found to be the major factor responsible for informal spatial growth in the study area. In addition, the google image of Minna confirmed spatial change of over 79% built-up land use which signified serious land use as a result of expansion amidst wet vegetated land and water body's reduction. The research, therefore recommends some transformation strategies which include: high level institutional and human capacity prioritization and application of geospatial technology to solve urbanization problems applicable in other rural areas in the country as means to contribute to Urban Growth control System in transformation.*

**Keywords:** Transformation, Urban Control System, Geospatial Information, Google Earth, and Geographic Information System (GIS)

**1.0 Introduction**

Urban settlements all over the world are in a state of flux, a phenomenon characterized by constant growth and changes. Nigeria has one of the world's highest urban growth rates, which stood at 5.8 percent in year 2004 (Federal Republic of Nigeria, 2004).

The trend of urban development in Nigeria has shown tremendous growth of major cities like Lagos, Ibadan, Ilorin, Port Harcourt, Kaduna and Kano with Lagos attaining the status of a mega-city followed by new places like Abuja and Minna.

It is also unfortunate that successive government in Nigeria's responses to the multiplicity of urban problems through the enactment of physical planning laws, formulation of urban development policies and execution of urban development projects from time to