



SCHOOL OF ENVIRONMENTAL TECHNOLOGY,

FEDERAL UNIVERSITY OF TECHNOLOGY

MINNA, NIGER STATE, NIGERIA

EDITORS IN CHIEF

R. E. Olagunju

B. J. Olawuyi

E. B. Ogunbode

SETIC 2020 INTERNATIONAL CONFERENCE

BOOK OF PROCEEDINGS

MAIN THEME:

Sustainable Housing And Land Management



3RD -5TH MAY, 2020



SCHOOL OF ENVIRONMENTAL TECHNOLOGY COMPLEX, FUT, MINNA, NIGER STATE, NIGERIA

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Dean, School of Environmental Technology Federal University of Technology Mises, Nigeria

School of Environmental Technology International Conference (SETIC 2020)

3RD - 5TH MAY, 2021

Federal University of Technology Minna, Niger State, Nigeria

CONFERENCE PROCEEDINGS

EDITORS IN CHIEF

R. E. Olagunju B. J. Olawuyi E. B. Ogunbode

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"Sustainable Housing and Land Management"

B-ii

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ETIC 2020 International Conference:	

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School of Environmental Technology, Federal University of Technology, Minna $3^{\text{rd}}-5^{\text{th}},\,\text{May 2021}.$

PREFACE

The School of Environmental Technology International Conference (SETIC 2020) is organised by School of Environmental Technology, Federal University of Technology Minna, Nigeria. In collaboration with Massey University New Zealand, Department of Civil Engineering Faculty of Civil Engineering and Built Environment Universiti Tun Hussein Onn Malaysia, Malaysia Centre For Professional Development and Industrial Project Development School of Professional and Continuing Education (SPACE) UTM-KL Malaysia, Global Academia, Department of Architecture, Faculty of Engineering and Architecture, Istanbul Gelisim University Istanbul Turkey, Sustainable Environmental and Technology (SET) Research Group, Department of Architecture, Universiti Sains Islam. The main theme for this year conference is "SUSTAINABLE HOUSING AND LAND MANAGEMENT". This promotes and encourage innovative and novelty for policy issues for inclusive and sustainable housing, access to finance for housing and land development, sustainable building materials, building cost management, sustainable and resilient cities, geoinformatics for land management, rapid urbanization, sustainable land use and spatial planning, gender issues in access to land.

The responses from participants for this conference are overwhelming, well attended, and successful. The operation mode was Virtual for all participants who choose the oral presentation mode. While, Physical for all poster medium presenters. Our participants are from various Universities and other sector across the globe, from countries like United State for America (USA), Turkey, Malaysia, China, Saudi Arabia, Kenya, New Zealand just to mention a few. Hence, this conference provides a good platform for professionals, academicians and researchers to widen their knowledge and approach on latest advances in research and innovation. Papers presented in this conference cover a wide spectrum of science, engineering and social sciences.

Finally, a note of thanks must go to SETIC 2020 Local Organizing Committee (LOC) for their remarkable dedication in making this conference a success. We hope the event will prove to be an inspiring experience to all committee members and participants.

SETIC 2020 International Conference:

"Sustainable Housing and Land Management"

B-v

ACKNOWLEDGEMENTS

The effort put together in achieving the success of SETIC 2020 is predicated on the feat of the first and second edition of School of Environmental Technology International Conference held in 2016 and 2018, respectively. The support and goodwill from Vice-Chancellor of Federal University of Technology, Dean School of Environmental Technology, Dr Dodo Y. A., Dr Moveh S. and many other highly motivated people are highly appreciated.

It is also my privilege and honour to welcome you all, on behalf of the Local Organizing Committee (LOC) to the 3rd edition of the Biennial School of Environmental International Conference (SETIC 2020). This Conference which was earlier schedule for 7th to 11 April, 2020 is holding now (3rd to 5th May, 2021) due to the challenges of COVID-19 Pandemic and the ASUU-FGN crisis which made our public Universities in Nigeria to be closed for about one year. We thank God for keeping us alive to witness the great SETIC2020 event, in an improved form exploiting the new-normal situation posed by the Pandemic for a hybrid (i.e. both physical and virtual) form of Conference participation.

The conference provides an international forum for researchers and professionals in the built environment and allied professions to address fundamental problems, challenges and prospects Sustainable Housing and Land Management. The conference is a platform where recognized best practices, theories and concepts are shared and discussed amongst academics, practitioners and researchers. This 2020 edition of SETIC has listed in the program a Round Table Talk on Housing Affordability beyond COVID-19 with selected Speakers from across the globe available to do justice on the topic of discussion.

Distinguished Conference participants, permit me to warmly welcome our Keynote and Guest Speakers:

- Prof. Ts. Dr. Mohd Hamdan Bin Ahmad, Deputy Vice Chancellor (Development) Universiti Technology Malaysia (UTM);
- Assoc. Prof. Dr. James O.B. Rotimi, Academic Dean Construction, School of Built Environment, College of Sciences, Massey University of New Zealand;
- Assoc. Prof. Sr. Dr. Sarajul Fikri Mohammed, General Manager, Centre for Professional Development and Industrial Project Development School of Professional and Continuing Education (SPACE), UTM-KL.
- Prof. Ts. Dr. Zanail Abidin Akasah, Visiting Professor on Sustainable Solar Integrated Design Building Design, International Micro Emission University (IMEU)/HIMIN Ltd. China & Senior Research Fellow, The Architects Resourcery, Jos, Nigeria;
- Ar. Dr. Elina Mohd Husini, Department of Architecture, Faculty of Engineering & Built Environment, Universiti Sains Islam;
- Asst. Prof. Dr. Yakubu Aminu Dodo, Department of Architecture, Faculty of Engineering and Architecture Istanbul Gelisim University, Istanbul Turkey

and the five Speakers for our Round Table Talk on Housing Affordability Beyond COVID-19

SETIC 2020 International Conference:

"Sustainable Housing and Land Management"

B-vi

- Dr. Muhammad Mustapha Gambo, Manager, Policy, Research and Partnerships, Shelter Afrique, Nairobi, Kenya;
- Prof. Dr. Soumia Mounir, Department of Architecture Ecole Nationale d'Architecture d'Agadir [The National School of Architecture of Agadir], Morocco
- Dr. Said Alkali Kori, General Manager, Projects and Portfolio management, Family Homes Fund, Federal Ministry of Finance, Abuja;
- Ts. Dr. Sasitharan Nagapan, Department of Civil Engineering, Faculty of Engineering and Built Environment, Universiti Turn Hussein Onn Malaysia, Malaysia;
- Dr. Mercy Nguavese Shenge, AIA Assoc. Historic District Commissioner, City of Rockville, MD, USA.

for accepting to share from their knowledge, wealth of experience and be available to interact with participants on varied issues on "Sustaining Housing and Land Management".

As reflected on the Conference program, the Conference activities will be Virtual for power point presenters to run in four parallel sessions on the Zoon platform while the participants for Poster presentations (mostly Postgraduate students) are expected to have their Posters displayed in the Environmental Complex Building of the Federal University of Technology, Minna. With a total of One Hundred and One (101) articles captured in the Conference Proceedings covering the seven subthemes of the Conference, I have no doubt that we are all in for an impactful experience at SETIC2020 as we brainstorm, exchange ideas, share knowledge and participate in evolving more approach to sustainable housing and land management drives.

I implore us all to enjoy every moment of the deliberations and ensure we maximize the great opportunity offered by the Conference to network for better research and career development as we also make new friends.

I also on behalf of myself and the LOC express our appreciation to the Dean, School of Environmental Technology and the entire Staff of the School for giving us the opportunity to steer the ship for SETIC2020. To the Reviewers and various Committees that served with us, I say thank you for helping us through despite the pressure of work.

Thanks, and God bless you all.

Olawuyi, B.J. (PhD) Chairman, LOC SETIC2020

SETIC 2020 International Conference:

"Sustainable Housing and Land Management"

B-vii

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SETIC 2020 International Conference:

"Sustainable Housing and Land Management"

B-viii

DECLARATION

PEER REVIEW AND SCIENTIFIC PUBLISHING POLICY STATEMENT

3rd MAY 2021

TO WHOM IT APRIL CONCERN

I wish to state that all the papers published in SETIC 2018 Conference Proceedings have passed through the peer review process which involved an initial review of abstracts, blind review of full papers by minimum of two referees, forwarding of reviewers' comments to authors, submission of revised papers by authors and subsequent evaluation of submitted papers by the Scientific Committee to determine content quality.

It is the policy of the School of Environmental Technology International Conference (SETIC) that for papers to be accepted for inclusion in the conference proceedings it must have undergone the blind review process and passed the academic integrity test. All papers are only published based on the recommendation of the reviewers and the Scientific Committee of SETIC

Babatunde James OLAWUYI Chairman SETIC 2020 Federal University of Technology, Minna, Nigeria

Papers in the SETIC 2020 Conference Proceedings are published on www.futminna.edu.ng, AND ALSO SELECTED PAPERS WILL BE PUBLISHED IN REPUTABLE JOURNALS

SETIC 2020 International Conference:

"Sustainable Housing and Land Management"

B-ix















 $3^{rd} - 5^{th}$, May 2021.

"Sustainable Housing and Land Management" School of Environmental Technology, Federal University of Technology, Minna

B-x

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SETIC 2020 International Conference:

B-xi

[&]quot;Sustainable Housing and Land Management"

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"Sustainable Housing and Land Management"

B-xii

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SETIC 2020 International Conference:

"Sustainable Housing and Land Management"

B-xiii

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"Sustainable Housing and Land Management"

B-xiv

PROFILE OF KEYNOTE SPEAKERS AND GUEST **SPEAKERS**

SETIC 2020 organisers wishes to thank our keynote speakers, and Guest speakers for accepting to create time to share from their rich wealth of knowledge and interact with delegates and participants on varied issues being examined at this year's conference. A brief profile of each keynote speaker is provided here, this would allow for future interaction and networking with them.



SETIC 2020 International Conference:

"Sustainable Housing and Land Management"

School of Environmental Technology, Federal University of Technology, Minna

B-xv

ROUND TABLE PANEL SPEAKERS



SETIC 2020 International Conference:

"Sustainable Housing and Land Management"

B-xvi

Contents

Sub-theme 1: Policy Issues for Inclusive and Sustainable Housing
Methodological Approaches to the Socio-Cultural Studies in Residential Estates2
A Critique of the Trusteeship Position of the Governor in the Land Use Act12
E-Procurement Implementation in the Public Construction Sector in Nigeria: A Review.23
Assessement of The Prospects and Challenges of E-Procurement Practices on Construction Project Delivery in Abuja, Nigeria
An Assessment of Users' Satisfaction with the Adequacy of Security Measures in Mixed-use Buildings in Abuja
Allocation of Emerging Risks of E-Communication in Public Private Partnership Projects in Nigeria
Mechanism for Building Standards: Towards an Effective Building Control Practice in the Federal Capital Territory (FCT), Abuja
Assessment of Facility Management Practices in Selected Public Health Care Facilities in Niger State
Evaluation of the Roles of Niger State Housing Corporation under Public-Private Partnership as Strategy for Public Housing Delivery in Niger State70
Strategies for Disputes Reduction in the Nigerian Construction Process
Assessment of Energy Conservation Measures in the Design of Postgraduate Student Hostels in Northern Nigerian Universities
A Review of Housing Potentials in Curbing Pandemic: A Post Covid-19 Analysis93
Risk Assessment of Safety for Building Construction Projects in Abuja, Nigeria104
Influence of Workforce Diversity on Employee Performance In Construction Firms In Abuja, Nigeria
Sub-theme 2: Access to Finance for Housing and Land Development
Energy Pricing and Poverty in Sokoto City, North West Nigeria: A Lesion in Green House Gas Reduction
Assessment of the Determinants of Risk Management Capabilities and Commitments in Public Private Partnerships Projects
Conceptual Framework for an Effective Management of Public-Private Partnership Infrastructure Project Stakeholders to Minimise Project Failure in North Central, Nigeria 22
Assessment of Factors Influencing the Various Procurement Methods in the Delivery of Commercial Building Projects in Abuja, Nigeria
Assessment of Procurement Risks in FIRS Building Construction Projects in Nigeria40

SETIC 2020 International Conference:

"Sustainable Housing and Land Management"

School of Environmental Technology, Federal University of Technology, Minna $3^{\text{rd}}-5^{\text{th}},\,\text{May 2021}.$

B-xvii

Construction Industry
Land Use Changing Pattern and Urban Growth Felele Area, Lokoja Nigeria62
Sub-theme 3: Sustainable Building Materials
Sustainable Building Material for Green Building Construction and Conservation
Comparative Compressive Strengths of Concrete Using Wood Ash and Cow Bone Ash as Partial Replacement for Cement
Assessing Some Mechanical Properties of Reinforcement Bars Made from Recycled Metals as a Panacea to Sustainable Use of Reinforcement as Building Material10
Optimizing the Compressive Strength of Binary Mixtures of Laterite-Sand Cement Mortar
Assessment of Lean Techniques for Building Materials Waste Minimisation in Abuja, Nigeria
Evaluation of the Significance of Timber as a Source of Sustainable Building Material in Owerri, Nigeria
Evaluation of the Compressive Strength of Concrete Using Bush Gravel as Coarse Aggregates Partially Replaced with Broken Bricks
Influence of Magnesium Sulphate on the Compressive Strength of Internal Cured (IC) Ricci Husk Ash based High Performance Concrete
Influence of Material Waste Management on Construction Project Delivery in Abuja, Nigeria
Effective Implementation of Health and Safety Practices on Construction Site: Barriers and Movers
Utilization of Quarry Dust as Partial Replacement of Sand in Sandcrete Blocks70
Assessment of Shredded Waste Poly-Ethylene Terephthalate (PET) Bottles Usage as Coarse Aggregate in Lightweight SHA Based Concrete Composite
Characteristics and Properties of Rice Husk Ash Based Fibrous Concrete Manufactured with Waste Metallized Plastic Film Fibre
Evaluation of Shear Bond Strength of Geopolymer Mortar Containing Cassava Peel Ash and Metakaolin
Determination of the Compressive Strength Properties of Alkali-activated Millet Husk Ash - Calcium Carbide Mortar
Compressive Strength Characteristics of Mortar Containing Pulverised Volcanic Ash and Metakaolin as Cement Replacement
Piping Investigation of Kiri Dam Located In Shelleng L.G.A, Adamawa State, Nigeria, Using SEEP/W

"Sustainable Housing and Land Management"

School of Environmental Technology, Federal University of Technology, Minna $3^{\text{rd}}-5^{\text{th}},\,\text{May 2021}.$



in Ibadan, Oyo State, Nigeria136
SUB-THEME 4: BUILDING COST MANAGEMENT1
Influence of Supervision on Labour Productivity of Finishing Works in Ibadan, Oyo State 2
Analysis of Stakeholder Management of Construction Project in Abuja, Nigeria11
Factors Influencing Building Materials Price Fluctuation in Abuja, Nigeria21
Assessment of the Effect of Materials Procurement Risks Factors on Time, Cost and Quality Performance of Building Projects in Abuja, Nigeria31
Participation of Female Quantity Surveyors in the Nigerian Construction Industry .42
Effects of Skill Gap on Labour Productivity on Construction Sites in Abuja50
Evaluation of Cost Management in Building Maintenance by Contractors 57
Effect of Cash Flow on Contractors' Performance in Building Construction Projects in Niger State
Assessment of Cost Control Techniques on Road Construction Project Delivery in FCT Abuja, Nigeria
Cost of Implementing Health and Safety Measures in Construction Projects in Abuja, Nigeria80
Conceptual Framework for an Effective Management of Public-Private Partnership Infrastructure Project Stakeholders to Minimise Project Failure in North Central, Nigeria
An Evaluation of the Challenges of Tendering Procedures on Building Projects in Kaduna, Nigeria95
Sub-theme 5: Sustainable and Resilient Cities
Integration of Passive Energy Efficient Design Elements for Office Complex, Abuja, Nigeria
Liveability of Public Housing in Nigeria: A Study of Residents' Satisfaction in Some Selected Public Housing Estates in Niger State
Assessment of Climate Responsiveness of Public Office Buildings Designs in Selected Tertiary Institutions in Niger State towards Energy Efficient Buildings in Nigeria20
The Characteristics of Kaduna Metropolitan Solid Waste Management Practices28
Assessment of Crime Prevention Through Environmental Design (CPTED) In Shopping Malls In Nigeria: A Case Of Ceddi Plaza Abuja, Nigeria38
Assessment of Eco-Friendly Principles in the Design of a 3 Star Hotel at Life Camp in Abuja, Nigeria.
Climate Change Adaptation And Sustainable Eco-Friendly Urban Mass Transit

"Sustainable Housing and Land Management"

School of Environmental Technology, Federal University of Technology, Minna $3^{\text{rd}}-5^{\text{th}},\,\text{May 2021}.$

B-xix

Water Scarcity Problem and Households' Adaptation Strategies: Evidence from Literature71
Assessment of the Resilience-related Capabilities of Households in Bida Town, Niger State, Nigeria
Appraisal of Households' Resilience to Social Shocks in Bida Town, Niger State, Nigeria90
A Review of Sustainable Energy Conservation for Residential Buildings100
Assessment of An Integrating Design Approach of Passive Cooling Principles in Hotels in Minna, Nigeria
Evaluation of Market Fire Hazard Awareness and Preparedness in Minna Metropolis119
Employing Proxemics Communication Strategies in Evaluating Prototype Design in Educational Buildings
Towards Developing Standards for Earthquake Resilience and Sustainability of Public Buildings in Abuja, Nigeria
Behaviour and Functioning of Children Hospitalized in Nigerian Conventional Hospital Ward Setting148
Indoor Occupancy Detection using Machine Learning Techniques
Assessment of Factors Affecting Performance of Construction Organisations in Abuja, Nigeria166
Project Managers' Performance on Sustainable Construction of Residential Estates in Abuja, Nigeria
Residential Property Use Conversion and Rental Value Trends in Osogbo, Nigeria184
Evaluation of Passive Cooling Design Considerations in Faculty of Basic Medical Science Buildings in Northern Nigeria
Policy Issues and Integration Settlement for Sustainable Development in FCT Abuja 201
Assessment of Design Method on Fire Prevention Strategies for High Rise Buildings in Lagos, Nigeria210
Evaluation of Factors Influencing the Adoption of Building Information Modelling for Facility Management in Abuja, Nigeria
Assessment of Shared Parking in Mixed-Use Buildings in Kano State229
Influence of Urban Recreational Facilities Quality on Domestic Urban Tourists Patronage of Parks in Abuja City, Nigeria
Passive Design Strategies for Sustainable Operation of NYSC Camp Buildings, Minna, Nigeria243
Integration of People's Perception of Landscape in the Design of Recreational Parks, Minna, Nigeria

"Sustainable Housing and Land Management"

School of Environmental Technology, Federal University of Technology, Minna $3^{\text{rd}}-5^{\text{th}},\,\text{May 2021}.$

B-xx

	Impacts of Urban Poultry Farm Activities on Water Quality in Kuje Suburbia, Abuja261
	An Analysis of the Relationship between Neighbourhood Ties and Crime Perception in Minna, Niger State
	User Centred Approach to Interactive Architectural Spaces For Sustainable School of Architecture Buildings in Nigeria
	Integration of Interactive Spaces in the Design of an Autism Centre, in Kaduna State, Nigeria
	Assessment of Green Design Strategies in Tech Innovation Hubs in Abuja, Nigeria291
Sı	ub-theme 6: Geoinformatics for Land Management
	Solid Waste Disposal Site Suitability Analysis within Jalingo Metropolis, Taraba State, Nigeria
	Development of a Geospatial Information Software for Cadastral Survey Data Processing and Management
	Application of Location Based Service for flood Vulnerability Assessment of Part of Minna, Niger State, Nigeria
	Factors Influencing Land Use Changes and Conversion: A Critical Review115
	Valuation of Agricultural Properties: Empirical Evidence From OXFARMS Minna, Nigeria
	Application of Electrical Resistivity Method to Delineate Construction Sites At Gidan Kwano Campus, Fut, Minna, Niger State, Nigeria
	Computational Fluid Dynamics (CFD) Investigation of Pressure Drop across Highly Porous Metallic Structure
	Delineation of Solid Mineral Structures within Upper Part of Nasarawa State from Aeromagnetic Data
	Evaluation of Passenger Perception of Public Transport Hubs in Abuja-Nigeria165
	An Empirical Approach For Determination of Building Stability Using CORS Data174
	Industrial Excavation Pits and its implications on enhancing Sustainable Land Management in Nigerian Cities: A Case Study of Bida Urban Area
Sı	ub-theme 7: Rapid Urbanization, Sustainable Land Use and Spatial Planning1
	Influence of Igala Culture on Spatial Relationships and Space Distributions within Households in Anyigba Kogi state
	Assessment of Fire Safety Compliance (FSC) in Nigerian Markets: Case Study of Selected Markets in Three (3) Geopolitical Zones
	Evaluation of Passive Security Measures for Tourism Development in Nigeria20
	Terrain Analysis for Effective Spatial Coverage of FM 92.3Mhz signal in Minna
	Metropolis

"Sustainable Housing and Land Management"

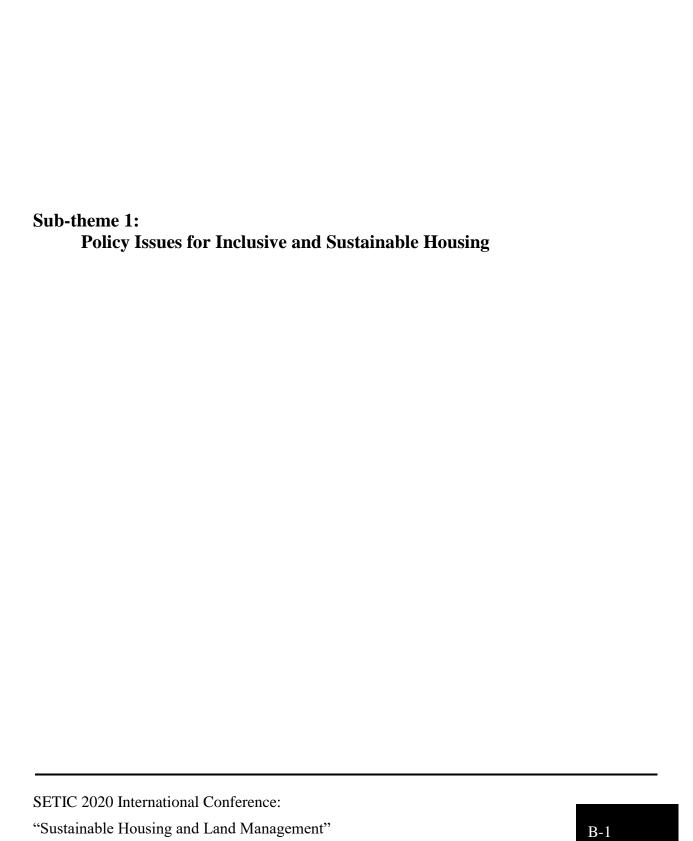
School of Environmental Technology, Federal University of Technology, Minna $3^{\text{rd}}-5^{\text{th}},\,\text{May 2021}.$

B-xxi

Returns: Evidence From Literature
Potentials of Effective Urban Planning as Tool for Disaster Risk Reduction in Nigeria44
Analysis of Urban Densification and Housing Market in Bida, Niger State, Nigeria53
Exploring Community-Based Facilities Management Principle Towards a Sustainable Urban Land Management in Minna
Management Options for Some Selected Peri-Urban Areas of Kaduna Metropolis, Kaduna State, Nigeria
<i>in</i> 71
in
<i>in</i>
<i>in</i>
in
<i>in</i>
in
in77
in
Assessment of Household Knowledge and Practice of Solid Waste Characterization in Kaduna Metropolis
Assessment of Indoor Thermal Performance for Sustainable Senior Housing Facility in Minna, Nigeria
Developers Readiness for Green Affordable Housing delivery in Nasarawa Local Government, Kano State, Nigeria
The Nexus between Social Infrastructure and Residents Wellbeing: A Review110
Impact of the Land Use Act on Sustainable Housing Development in Nigeria From 1978-2018119
SQL-Driven Spatial Database Transactions in Support of Compulsory Land Acquisition for Road Expansion Projects
Africa's Population Growth: Adopting the Smart City Model in Nigeria as a Blueprint For

"Sustainable Housing and Land Management"

B-xxii



School of Environmental Technology, Federal University of Technology, Minna

 $3^{rd} - 5^{th}$, May 2021.



Evaluation of the Roles of Niger State Housing Corporation under Public-Private Partnership as Strategy for Public Housing **Delivery in Niger State**

Jonathan, S.^{1,2} Sule, I. A.¹ & Ogunbode, E. B.³¹Department of Estate Management and Evaluation, Federal University of Technology, Minna. ²Department of Estate Management and Evaluation, Federal Polytechnic, Bida. ³Department of Building Technology, Federal University of Technology, Minna Corresponding author: ezekiel@futminna.edu.ng

Abstract

Public Private Partnership (PPP) as a strategy for public housing delivery in Niger state was introduced by the administration of Ibrahim Babaginda Aliyu in 2007 and it was used for all the seven housing estates embarked upon by the administration from 2007 to 2015 and Niger State Housing Corporation (NSHC) is the only legally recognized public housing development agency, with PPP achieving 0.91% over a period of 8years, this paper examines the role of the agency under the PPP arrangement. Focused interview (FI) was used to obtain data from principal officers of the Corporation such as the General Manager, Directors of Estates, Administration and Planning. Estate officers in charge of the estates and some of the contractors that participated in the execution of contracts were interviewed. Descriptive statistics was used to analyze the data obtained. The study discovered that the law that established the agency is obsolete, inadequate and incapable of accommodating the peculiarities of PPP, it was discovered also that there was no PPP regulatory law, thus, the agency could not function professionally in accordance to international best practices and this contributes to the woeful performance of 0.91% of PPP. The study recommends amongst others for the setting up a body of professionals to put PPP regulatory law in place in accordance to literature and international best practices.

Key words: Public Private Partnership, Niger State Housing Corporation, PPP Regulatory Law, Public Housing Delivery, International Best Practices

INTRODUCTION

Urbanization has been described as one of the most powerful and irreversible forces in the world and that about 93% of future urban population growth will occur in the urban cities of Asia and Africa and lesser percentage growth in Latin America and the Caribbean. It is further estimated that about 90% of recent urbanization has occurred in developing countries with urban areas recording about 70million new residents annually which is expected to double by 2030, a trend that is prevalent in South Asia and Sub-Saharan Africa that are adjudged to be the two poorest regions in the world (UN-HABITAT, 2011). The growth in urban population results in increases in demand for housing and housing facilities, services and infrastructure and this further asserts pressures on public budgetary allocations and results in the inability of governments all over the world in meeting the housing needs of their citizens. This development calls for the need to develop alternative strategies of public housing delivery that will achieve the dual results of greatly increasing the supply of affordable housing and drastically reduce the financial burden of government and this gave birth to the development of public private partnership as a strategy for implementing urban housing and infrastructure which started in the United Kingdom in 1960s known then as Private Finance Initiative (PFI), Sarafadeen and Akuakanwa, 2015. Globally, over 40 nations including United Kingdom, United States of America, Australia, Ireland, Norway, Canada, Spain, France, Japan, Singapore, Finland, Malaysia and South Africa are engaging PPP in implementing urban

SETIC 2020 International Conference:

"Sustainable Housing and Land Management"

B-70

housing and infrastructure and the value of PPP projects rose from \$79B with 241 projects to \$350B in 2015 with a total 0f 1,046 projects (Yahaya, Ibrahim and Hariati,2020)

In Nigeria, the federal government introduced public private partnership as a strategy for public housing delivery towards increasing the housing stock through the National housing policy of 2006 (Aluko,2009) which is a collaboration between government and the organized private sector with detailed responsibilities, obligations and benefits of each party to the agreement and states in the country began to take after the steps of the federal government by engaging PPP as strategy for the provision of urban housing and infrastructure. From 1990 to 2009, over 51 projects were implemented through PPP (Vetiva, 2011) while 66 projects were prepared for implementation between the years 2013-2014 (ICRC, 2012), the values executed PPP projects also rose from \$22M in 1997 to \$3.1B in 2009(Yahaya et al, 2020). To ensure proper implementation, the federal government established the Infrastructure Concession Regulatory Commission in 2005 and approved a comprehensive nationwide PPP policy in 2009 which provides the roles of ICRC, other sectors as well that of Ministries, Departments and Agencies (MDAs) –Wahab, 2000: ICRC, 2012.

In Niger State, PPP as strategy for housing delivery was introduced by the administration of Governor Ibrahim Babangida Aliyu in 2007 which was used for the development of General M.I. Wushishi and Talba housing estates in Minna, Aliyu Makama housing estate, Bida and Bako Kontagora housing estate in Kontagora. Even though, PPP is been considered as a veritable means of housing provision, it has been observed that the extent to which government and its agencies are performing and responding to their changing roles has not been adequately addressed in literature and the paucity of information has obscured understanding on the role of public agencies in PPP and its implications on housing delivery (Eziyi,2010), Niger State Housing Corporation (NSHC) being the legally empowered public housing development agency, this paper shall therefore evaluate the role of the agency under the PPP arrangement.

Research Questions

The study shall answer the following questions as a guide towards achieving the objectives adopted by the study:

- i. What were the roles of NSHC has enshrined in the law that established it?
- ii. What are the housing projects undertaken through the engagement of PPP as housing strategy?
- iii.What were the roles of NSHC under the PPP as a strategy for public housing development?

Aim and Objectives

The aim of the study is to undertake an evaluation of the roles of NSHC under PPP as a strategy for housing delivery in Niger State and to achieve this the following objectives shall be examined:

- i. Identify the roles of NSHC as contained in the law that established the Corporation.
- ii. Identify the housing projects undertaken through PPP from 2007 to 2015.

SETIC 2020 International Conference:

"Sustainable Housing and Land Management"



iii. Evaluate the roles of NSHC in the engagement of PPP for the developments of the housing projects identified above.

The Study Area

Niger state falls in the north central geo-political zone and it stands between longitudes 3⁰ 20'E and 7⁰ 40'E and longitudes 8⁰ 30N, it has a land area of 76, 469. 903 square kilometers which is 10% of the total land area of Nigeria and it is the state with the largest landmass. Niger state has a population of 3, 905, 249 (NPC, 2006) and it is bounded by Kaduna, Kogi, Nassarawa, Kwara, and Kebbi state as well as the federal capital territory (FCT) which creates an increasing demand on housing in Niger state.

From the creation of the state on the 13th day of February, 1976 Niger State Ministry of Works and Housing (NSMW&H) was saddled with public housing development and management until the establishment of Niger State Housing Corporation vide Edict No....of 1979

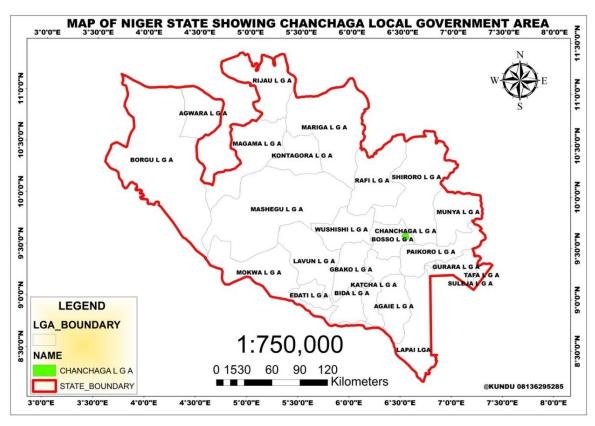


Figure 1: Map of Niger State

Source: Author's field work

LITERATURE REVIEW

This study reviews literatures on the concepts of public-private partnership, its engagement in public housing delivery, the expected roles of public agencies under the strategy and success factors and challenges in the engagement of the strategy for public housing development.

SETIC 2020 International Conference:

"Sustainable Housing and Land Management"

Concept of Public Private Partnership (PPP)

PPP has been defined as the pooling together of resources which includes financial, human, technical, land and intangibles such as information, political support, skills and expertise from public and private sources to achieve a commonly agreed goal (Fizbein and Lowden, 1999),), a set of cooperative activities between the public and private sector (Agbola and Olatubara, 2003), a collaborative efforts among public, private and third sector organizations who has mutually consented to cooperate together based on trust engaging the principle of division of labour, comparative advantage and a sharing of risks and benefits(Brinkerhoff and Brinkerhoff, 2004, UN-HABITAT, 2006b), it has also been defined as a range of relationship between the public and private sector who has agreed to cooperate together for the provision of specified facilities, services, infrastructure or housing (Kumar and Prasad, 2004), a novel concept of executing public projects through a partnership arrangement with the private sector especially in the area of infrastructure (Aluko, 2009), a finance model which is entirely driven by collaboration between the public, private and sometimes non-profit sectors and it is generally represents a more dynamic, long term agreement between various parties in which each party contributes and shares some level of risk (UN-HABITAT,2011), it is also viewed as the partnership between the public and private sector for the purpose of designing, planning, financing, constructing and/or operating projects which are traditionally considered as public responsibilities (Sarafadeen and Akuakanwa, 2015).

This paper, views PPP as the pooling together of heterogeneous investors each with distinct capabilities, comparative advantages, skills and resources for the purpose of addressing socioeconomic and developmental challenges of the society.

Conceptual Framework

As observed from the concept of PPP presented above, it can be generally referred to as a contractual relationship between the parties and its implementation as well as the outcome is numerous factors such as the composition of the parties, aim and objectives of the project, the roles of the partners and the economic, political, socio-cultural, technological as well as other environmental peculiarities within the area of operation of the PPP (UN-HABITAT, 2006b), furthermore, to ensure success of PPP, Yahaya and Ibrahim (2019) provided what they referred to as "critical success factors" and these are: favourable legal framework, commitment/responsibility of public/private sector, project technical feasibility, technology transfer, good governance, competitive procurement process, transparency procurement process, financial capability, available financial market, stable macro-economic conditions, involvement of civil society, an efficient approval process, sound economic policy, stable political environment and strong political support. The author's sequel to the study on the implementation of the strategy made a positive assertion on the capacity of the strategy to deliver adequate and affordable housing if the success factors are followed.

Jonathan et al: Evaluation of the Roles of Niger State Housing Corporation under Public-Private...

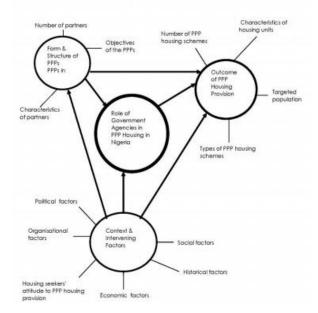


Figure 2: Framework for Assessing the Role of Government Agencies in PPPs (Eziyi, 2010).

For an objective and result-oriented assessments of the role of government agencies in the implementation of PPP, Eziyi, 2011 suggests that the assessor should possess adequate knowledge on the composition and characteristics of the PPP, the context of the situation in which they operate and the outcome of the housing provision scheme and this is in line with UN-HABITAT, 2006b, and went further to developed a conceptual framework (Figure 2) to explain the roles of government agencies in PPP.

The framework consists of three basic components with each component consisting of some variables to be considered for information gathering and analysis. The components are form and structure of the PPP, outcome of the PPP housing provision and context and intervening factors.

METHODOLOGY

Focused interview (FI) was used to obtain data from principal officers of the Corporation such as the General Manager, Directors of Estates, Administration and Planning, Estate officers in charge of the estates and some of the contractors that participated in the PPP housing projects. Descriptive statistics was used to analyze the data obtained.

DISCUSSION AND FINDINGS

The Roles and Responsibilities of NSHC

Table 1 provides a general overview of the functions of NSHC as the public housing development agency. As indicated above, the functions were derived from a law that was enacted in 1979 prior to the recognition and engagement of PPP as public housing development and delivery strategy at both federal and state level in 2007.

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"Sustainable Housing and Land Management"

Table 1: Responsibilities of Niger State Housing Corporation (NSHC).

S/No.	Description of responsibilities	Section of the law
1	Recruitment of staff, staff welfare and discipline, payment of salaries and other sundry issues	Section A (i-xv)
2	Development of housing for the public and management of housing estates	Section B (6-9)
3	Generation of revenues (internally and externally) through borrowing, debenture etc, provision for expenditure, assets and liabilities	Section B (10-17)
4	Powers for acquisitions of land and compensation	Section B (20-21)
5	Operation of mortgage bank and staff housing loan scheme	Section B (m)

Source: Niger State Edict No. 5, 1979.

From the Table above, the functions of the Corporation as indicated under items 1-4, confers on the Corporation the carrying out of the entire development process which is contrary to the principles, operations and implementation of PPP as revealed in the literature review and this study observed that, there was no comprehensive law or document being put in place to address the complexities and peculiarities of PPP as advocated for in the literature review and the existing law is inadequate. Therefore, there was no proper legal and contractual definitions of the roles, functions and responsibilities of the organization in the implementation of PPP for housing delivery and this impaled the Corporation from functioning efficiently and professionally.

Table 2 indicates the housing projects that were embarked upon from 2007 to 2015, a total number of 219,000 was planned for development, 2000 housing units were developed and this gives an overall achievement of 0.91% which is below 1.0%.

Table 2: Housing Projects Embarked Upon through PPP from 2007 to 2015

S/No	Location	No planned	No constructed	% Achievement
1	Minna	10,000	1000	10
2	Suleja	10,000	300	3.0
3	Kontagora	5,000	250	5.0
4	Bida	5,000	250	5.0
5	New Bussa	4,000	100	2,5
6	Baro	5,000	100	2.5
7	20 other local government	180,000	-	-
	Total	219,000	2,000	0.91

Source: Field Survey, 2019

The study reveals that as a result of lack definitions of the roles of NSHC through a PPP regulatory law, there was therefore no requisite structure for proper implementation of the strategy and this did not prepare the agency for the critical roles it was to play towards the success of PPP and gives room for the politicization of the development process operation of

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[&]quot;Sustainable Housing and Land Management"

the PPP as housing development strategy was politicized as the duties, obligations and powers of the NSHC was usurped by politicians thereby reducing the Corporation to a mere supervisory agency. Furthermore, the state government did not prepare the agency for the critical roles it was to play towards the success of PPP housing projects by way of training, seminars and conferences and this does not allow the agency to perform professionally and successfully, this affirms the positions of Yahaya and Ibrahim (2019) and Yahaya, Ibrahim and Hariati (2020).

Evaluation of the Roles of NSHC under PPP Housing Projects

Due to lack of a comprehensive regulatory law for a successful implementation and operation of PPP thereby making the agency not being able to discharge its professional and crucial roles, the roles of the agency were reduced to the following:

- i. Assigning representatives to the project sites for the purpose of supervision
- ii. Making progress reports available to the government
- iii.Receiving and processing of applications for allocation
- iv.Liaising between the appointed mortgage institution and applicants seeking for mortgage loan
- v.Keeping records of the allottees for the purpose loan deductions
- vi. Monitoring of the housing projects to prevent illegal developments
- vii.General management of the housing projects

SUMMARY OF FINDINGS

- i. There was a law which stipulates the roles of and functions of NSHC, however, the law does not conform to the standard contractual requirements of PPP.
- ii. Niger State Housing Corporation (NSHC), the agency saddled with public housing delivery could not perform professionally and efficiently under PPP
- iii. The poor performance of PPP is partly attributable to the inability of NSHC to play its expected professional roles due to lack of PPP regulatory law.
- iv. The actual roles played by the Corporation are secondary functions and mostly clerical in nature.

CONCLUSION

The study has evaluated the role of NSHC under PPP arrangement and lack of PPP regulatory law does not allow the Corporation to play the expected professional and leading role in the implementation of PPP for public housing development and delivery and this contributes immensely to the poor performance of PPP and failure.

RECOMMENDATIONS

Sequel to the analysis herein above presented, the study hereby proffers the following recommendations.

SETIC 2020 International Conference:

"Sustainable Housing and Land Management"

School of Environmental Technology, Federal University of Technology, Minna 3rd – 5th, May 2021.

B-76

- i. The State government should as a matter of urgency set up a committee of professionals comprising of Estate surveyors and valuers, architects, builders and other environmental professionals both in practice and academia and PPP experts from within and outside the state for the production of PPP regulatory law
- ii.The government should reposition NSHC through training, seminars, retreats and conferences for acquisition of adequate knowledge and allow the agency to function professionally according to international best practices in the implementation of PPP as housing strategy in the state.
- iii.Government to set up a commission that will be similar to Infrastructure Concession Regulatory Commission (ICRC) which operates at the federal level.

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"Sustainable Housing and Land Management"

B-77