

**Proceedings of  
SCHOOL OF ENVIRONMENTAL  
TECHNOLOGY  
INTERNATIONAL CONFERENCE 2024  
(SETIC 2024)**

**22<sup>nd</sup> – 24<sup>th</sup> October, 2024**

**Federal University of Technology, Minna,  
Niger State, Nigeria**

**EDITORS IN CHIEF**

**E. B. Ogunbode**

**O. G. Ajayi**

**O. A. Kemiki**

**ISBN 978-978-54580-8-4**

**Proceedings of the 5th School of Environmental Technology International  
Conference (SETIC 2024)**

**Published by**

School of Environmental Technology,  
Federal University of Technology Minna.  
PMB 65, Minna, Niger State Nigeria.

© School of Environmental Technology,  
Federal University of Technology Minna 2024

**ISBN 978-978-54580-8-4**

No responsibility is assumed by the Publisher for any injury and/or any damage to persons or properties as a matter of products liability negligence or otherwise, or from any use or operation of any method, product, instruction, or idea contained in the material herein.

Copyright © 2024 by School of Environmental Technology, Federal University of Technology © Minna, Nigeria  
All rights reserved.

This publication is protected by Copyright and permission should be obtained from the publisher prior to any prohibited reproduction, storage in a retrieval system, or transmission in any form or by any means, electronic, mechanical, photocopying, recording, or likewise.

## PREFACE

The School of Environmental Technology International Conference (SETIC 2024), organized by the School of Environmental Technology, Federal University of Technology Minna, Nigeria, is a prestigious platform that brings together experts from diverse fields to exchange knowledge and drive innovation. This year, the conference is held in collaboration with notable institutions, including the School of Architecture and Design, Lovely Professional University, New Delhi, India; Abubakar Tafawa Balewa University (ATBU), Bauchi State, Nigeria; the Architectural Engineering Department, Najran University, Najran, Saudi Arabia; Perch Inc Development Consultancy Services, Zimbabwe; Faculty of Health Sciences, Graduate Education Institute, Istanbul Gelişim University, Istanbul, Turkey; Robotics & Additive Technologies Innovation Research Cluster, Transport & Communication Institute, Riga, Latvia; Architectural Engineering Department, College of Engineering, University of Hail, Hail, Saudi Arabia; New Gate University, Minna, Nigeria; and the University of Law Business School, Birmingham, United Kingdom, to mention a few.

This year's theme, "Global Economic Revolution and the Resilience of the Built Environment in an Emerging World," seeks to explore the dynamic relationship between global economic shifts and the adaptability of the built environment. The theme emphasizes the necessity for resilience, sustainability, and innovation in the face of unprecedented challenges and evolving economic landscapes. The sub-themes of the conference delve into crucial aspects such as sustainable design, technological integration, disaster management, and the role of policy in shaping future infrastructures.

The response to this year's conference has been both enthusiastic and far-reaching, with participants from a wide range of countries, including Latvia, India, Turkey, United Kingdom, Malaysia, Saudi Arabia, Zimbabwe, South Africa, and beyond. The hybrid nature of the event offering both virtual and physical participation has enabled an even broader exchange of ideas and perspectives. The conference serves as a vibrant platform for professionals, academics, and researchers to engage with cutting-edge developments in the built environment and related fields, fostering collaborations that will shape the future of global practice.

A wide range of papers, spanning science, engineering, and the social sciences, have been presented at this year's event, highlighting the interdisciplinary nature of challenges we face and the solutions to these challenges.

We would like to express our deep gratitude to the SETIC 2024 Conference Organizing Committee (COC) for their unwavering dedication and hard work in making this conference a resounding success. We are confident that this event will inspire all participants and leave a lasting impact on the field

## ACKNOWLEDGEMENT

The success of SETIC 2024 is built upon the foundation laid by the previous editions of the School of Environmental Technology International Conference held in 2016, 2018, 2020, and 2022. We owe a great deal to the unwavering support and commitment of many, particularly the Vice-Chancellor of the Federal University of Technology, Minna, and the Dean of the School of Environmental Technology, alongside Dr Dodo Y. A., Dr Ajayi O. G., Dr Moveh S., Dr Kayode I. Adenuga and other esteemed colleagues whose efforts has been instrumental to this success.

It is my privilege, on behalf of the Conference Organizing Committee (COC), to extend a big thank you to all that attended the 5th Biennial SETIC, held between October 22nd to 24th, 2024. We are grateful for the opportunity to witness this grand event, now enhanced by the hybrid format, accommodating both physical and virtual participation—an innovation born from the challenges of the global pandemic.

This year's conference had serves as an international platform where scholars, professionals, and practitioners in the built environment and allied fields converge to tackle critical issues around the theme "Global Economic Revolution and the Resilience of the Built Environment in an Emerging World." The conference offered an opportunity to share best practices, theories, and concepts, fostering meaningful discussions that can shape future research and industry practices.

### **We were honored to have our distinguished keynote and guest speakers:**

Prof. Kamuzhanje Joseph, Perch Inc. Development Consultancy Services, Zimbabwe.

Prof. Bldr. Sani Usman Kunya, Acting Vice Chancellor, Abubakar Tafawa Balewa University, Bauchi State, Nigeria.

Prof. Arc. Rajendra Kumah, Director of the School of Architecture and Design, Lovely Professional University, New Delhi, India.

Prof. Arc. Erekpitan Olá-Adisa, Department of Architecture, University of Jos, Plateau State, Nigeria.

Prof. Dr William Mosier, Faculty of Health Sciences, Graduate Education Institute, Istanbul Gelişim University, Turkey.

Prof Oluwole O. Morenikeji, Former Deputy Vice Chancellor, Federal University of Technology, Minna, Niger State, Nigeria.

Dr. Yakubu Aminu Dodo, Assistant Professor, College of Engineering, Najran University, Najran, Saudi Arabia.

Asst. Prof. Adham Ahmed Awad Elsayed Elmenshawy, Robotics & Additive Technologies-Innovation Research Cluster, Transport & Communication Institute, Riga, Latvia.

Dr. Ahmed Osman Ibrahim, Associate Prof. Architectural Engineering Dept., College of Engineering, University of Hail, Hail, Saudi Arabia.

Additionally, we extend our appreciation to the esteemed panelists that participated in the Round Table Talk on "Role of the Built Environment in Promoting Security Food Security (The Role of Building Integrated Agriculture [BIA]) in persons of Assoc. Prof. Dr. Habiba Atta (Nigeria), Assoc. Prof. Dr. Samuel Moveh (Latvia), LAr. Ts. Dr. Nurzuliza B. Jamirsah (Malaysia), Arch. Abdulmalik Aminu (Nigeria) and our amiable moderator, Asst Prof. Yakubu Aminu Dodo. The session with them on innovative architectural and urban design solutions for food security was insightful as it addresses pressing needs in the built environment.

With over 150 papers covering the twelve subthemes of the conference, SETIC 2024 was engaging and enriching experience. Through parallel sessions and poster presentations, participants had the chance to delve into key issues surrounding Global Economic Revolution and the Resilience of the Built Environment in an Emerging World. All attendees were believed to have made use of most of the discussions, collaborations, and networking opportunities available to them.

In closing, I would like to express my sincere gratitude to the Dean of the School of Environmental Technology, the Conference Organizing Committee (COC), and the entire School for their trust and support. To our reviewers and committee members, thank you for your dedication and hard work in making this event possible.

Wishing everyone the best and memorable experience as SETIC 2024 lives on in our heart.

Thank you, and God bless you all.

**Assoc. Prof. Ogunbode E. B.**  
**Chairman, Conference Organizing Committee**  
**SETIC 2024**

## **COPYRIGHT STATEMENT**

© Copyright. School of Environmental Technology International Conference (SETIC) 2024. The copyright for all papers published in the SETIC Conference Proceedings remains with the authors. Authors may reproduce and distribute their work as published in the SETIC Conference Proceedings for personal and educational use without written permission, provided proper citation is made to this source. Any reproduction or distribution by persons other than the authors, whether in part or in full, is prohibited without prior written consent from the authors or the SETIC Conference organizers.

While every effort has been made to ensure compliance with copyright regulations, SETIC makes no guarantees that the materials contained within the papers do not infringe on the intellectual property rights of any individual or entity globally. We neither support nor condone copyright violations or intellectual property infringements by authors. If you believe that your copyrights have been violated, please contact the conference secretariat at [setic@futminna.edu.ng](mailto:setic@futminna.edu.ng).

SETIC assumes no liability for any copyright infringements or misuse of materials published in the conference proceedings. The responsibility for adherence to principles of academic integrity and intellectual property compliance rests solely with the authors, who have developed their papers in line with the established principles of academic freedom and ethical research.

For any inquiries regarding copyright matters or requests for permission to use materials from the SETIC Conference Proceedings, please direct correspondence to the SETIC Conference Secretariat via email at [setic@futminna.edu.ng](mailto:setic@futminna.edu.ng).

# **DECLARATION**

## **PEER REVIEW AND SCIENTIFIC PUBLISHING POLICY STATEMENT**

**22nd October 2024**

TO WHOM IT MAY CONCERN,

This is to confirm that all papers included in the SETIC 2024 Conference Proceedings have undergone a rigorous peer review process. This process entailed an initial abstract review, followed by a blind review of the full papers by at least two independent referees. The reviewers' feedback was then communicated to the authors for revisions, after which the revised papers were thoroughly evaluated by the Scientific Committee to ensure they meet the highest standards of scholarly quality.

In accordance with the policy of the School of Environmental Technology International Conference (SETIC), only papers that have successfully passed this comprehensive review process and met the requisite criteria for academic integrity are accepted for publication in the conference proceedings. The final decision for publication is based on the recommendations of both the Reviewers and the Scientific Committee.

Selected papers from the conference proceedings will also be considered for publication in reputable academic journals.

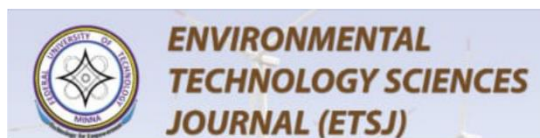
Assoc. Prof. Ogunbode E. B.  
Chairman, Conference Organizing Committee  
SETIC 2024  
Federal University of Technology, Minna, Nigeria

The SETIC 2024 Conference Proceedings are published on [www.futminna.edu.ng](http://www.futminna.edu.ng).

Organizers



Collaborators



Corporate Partners



Perch Inc.  
Development  
Consultancy  
Services





## **CHIEF HOST**

**Prof. Faruk Adamu Kuta**

Vice-Chancellor,  
Federal University of Technology, Minna, Niger State

## **HOST**

**Prof. Olurotimi A. Kemiki**

Dean,  
School of Environmental Technology  
Federal University of Technology, Minna, Niger State

## **CONFERENCE SESSION CHAIRS**

### **Session Chair**

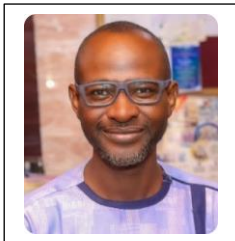
Prof. O. O. Morenikeji  
Prof. Mrs S. N. Zubairu  
Prof. Y. A. Sanusi  
Prof. A. M. Junaid  
Prof. R. E. Olagunju  
Prof. A. Musa  
Prof. I. C. Onuigbo  
Prof. S. A. Ambali  
Prof. M.T.A. Ajayi  
Prof. P. Ayuba  
Dr N. Popoola  
Dr N. B. Udoekanem  
Prof. A. A. Shittu  
Prof. J. O. Tijani  
Prof. L. O. Oyewobi  
Dr A.W. Ola-Awo  
Prof. M. O. Anifowose  
Dr I. O. Owoeye  
Dr Saidu Ibrahim  
Dr A. D. Adamu  
Asst. Prof. Y. A. Dodo  
Dr Y. D. Opaluwa  
Dr A. M. Kawu  
Assoc. Prof. S. Moveh

### **Rapporteur**

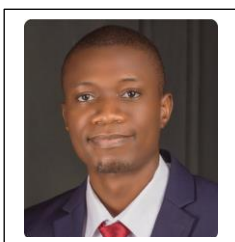
Dr O. Olubajo  
Dr H. D. Musa  
Dr C. B. Ohadugha  
Dr O. K. Akande  
Dr A. Tsado  
Dr U. J. Adama  
Bldr. Ojo Olaniyi  
Dr Z. Nanpon  
Tpl. O. S. Akande  
Dr A. I. Tsado  
Dr Ibrahim I. Onoja  
Dr Y. D. Mohammed  
Dr S. Medayese  
Dr E. A. Adesina  
Dr B. Okosun  
Dr T. O. Alao  
Dr A. B. Ayoola  
Dr A. I. Sule  
Alh. A. M. Mohammed  
Dr D. O. Alonge  
Dr S. Abdulkareem  
Dr V. I. Martins  
Dr O. G. Ajayi  
Dr A. Oke

## EDITORIAL COMMITTEE

### SETIC 2024 EDITORS-IN-CHIEF



**Assoc. Prof. Dr Ogunbode, Ezekiel Babatunde**  
School of Environmental Technology,  
Federal University of Technology, Minna, Niger State.



**Dr Ajayi Oluibukun Gbenga**  
Department of Land and Spatial Sciences,  
Namibia University of Science and Technology, Namibia.



**Prof. Olurotimi A. Kemiki**  
School of Environmental Technology,  
Federal University of Technology, Minna, Niger State.

### EDITORS

Assoc. Prof. Dr Sule Abass Iyanda, Federal University of Tech. Minna Niger State, Nigeria.

Prof. Isah Abubakar D., Federal University of Technology Minna Niger State, Nigeria.

Prof. Anifowose Moroofo Opeyemi, Federal University of Tech. Minna Niger State, Nigeria.

Prof. Ayuba Philip, Federal University of Tech. Minna Niger State, Nigeria.

Dr Kayode Adenuga, University of Law Business School United Kingdom.

Asst. Prof. Dr Yakubu Aminu Dodo, Najran University, Najran, Saudi Arabia.

Assoc. Prof. Musa Haruna D., Federal University of Tech. Minna Niger State, Nigeria.

Assoc. Prof. Samuel Moveh, Transport and Telecommunication Institute (TSI), Riga, Latvia.

Assoc. Prof. Meisam Razavi, Department of Engineering, Faculty of Imam Sadegh, Technical & Vocational University (TVU), Babol Branch, Mazandaran, Iran.

### Advisory Board

Assoc. Prof. Muhammed I. B., HOD, Department of Architecture

Dr Apeh J. A., HOD, Department of Building

Assoc. Prof. Adamu A. D., HOD, Department of Quantity Surveying

Assoc. Prof. Popoola N. I., HOD, Department of Estate Management & Valuation

Dr Eyo E. E., HOD, Department of Surveying and Geoinformatics

Assoc. Prof. Mohammed B. B., HOD, Department of Urban & Regional Planning

### **Scientific Committee**

Assoc. Prof. Dr Sule Abass Iyanda, Department of Estate Management & Valuation,  
Federal University of Technology, Minna, Niger State (Scientific Head).

Dr Opaluwa Yusuf Drisu, Department of Surveying & Geoinformatics, Federal University  
of Technology, Minna, Niger State.

Assistant Professor Dr Yakubu Aminu Dodo, Architectural Engineering Department,  
Najran University, Najran, Saudi Arabia.

TPL Akande Olaide, Department of Urban & Regional Planning, Federal University of  
Technology, Minna, Niger State.

Dr Ibrahim Pius Onoja, Department of Surveying & Geoinformatics, Federal University of  
Technology, Minna, Niger State.

Abdulazeez Umar Raji, Department of Estate Management, Bayero University, Kano,  
Kano State.

Dr Zitta Nanpon, Department of Surveying & Geoinformatics, Federal University of  
Technology, Minna, Niger State.

Dr Adesina E. A., Department of Surveying & Geoinformatics, Federal University of  
Technology, Minna, Niger State.

Meisam Razavi, Department of Engineering, Faculty of Imam Sadegh, Technical &  
Vocational University (TVU), Babol Branch, Mazandaran, Iran.

Dr Ayoola A. Babatunde, Department of Estate Management & Valuation, Federal  
University of Technology, Minna, Niger State.

Dr Medayese Samuel, Department of Urban & Regional Planning, Federal University of  
Technology, Minna, Niger State.

Dr Ezekiel Ogunbode, Department of Building, Federal University of Technology, Minna,  
Niger State.

Dr Blessing Okosun, Department of Quantity Surveying, Federal University of Technology,  
Minna, Niger State.

## **SETIC 2024 CONFERENCE ORGANIZING CHAIRS**

### **SETIC 2024 Chair**

Assoc. Prof. Dr Ogunbode, Ezekiel Babatunde, Department of Building, School of Environmental Technology, Federal University of Technology, Minna, Niger State.

### **SETIC 2024 Co-Chair**

Assoc. Prof. Dr Sule Abass Iyanda, Department of Estate Management & Valuation, Federal University of Technology, Minna, Niger State.

### **SETIC 2024 Conference Secretary**

Dr Zitta Nanpon, Department of Surveying & Geoinformatics, Federal University of Technology, Minna, Niger State.

### **SETIC 2024 Conference Treasurer**

Dr Abdulkareem Sekinat, Department of Estate Management & Valuation, Federal University of Technology, Minna, Niger State.

### **SETIC 2024 Conference Financial Secretary**

Dr Adesina Adedayo Ekundayo, Department of Surveying & Geoinformatics, Federal University of Technology, Minna, Niger State.

### **CONFERENCE ORGANIZING COMMITTEE**

Dr Ezekiel Ogunbode, Department of Building, Federal University of Technology, Minna, Niger State.

Dr Sule Abass Iyanda, Department of Estate Management & Valuation, Federal University of Technology, Minna, Niger State.

Dr Zitta Nanpon, Department of Surveying & Geoinformatics, Federal University of Technology, Minna, Niger State.

Dr Abdulkareem Sekinat, Department of Estate Management & Valuation, Federal University of Technology, Minna, Niger State.

Dr Adesina Ekundayo A., Department of Surveying & Geoinformatics, Federal University of Technology, Minna, Niger State.

Dr Medayese Samuel, Department of Urban & Regional Planning, Federal University of Technology, Minna, Niger State.

Dr Martins Valda Itunu, Department of Urban & Regional Planning, Federal University of Technology, Minna, Niger State.

Dr Yakubu Aminu Dodo, Architectural Engineering Department, Najran University, Najran, Saudi Arabia.

TPL Akande Olaide, Department of Urban & Regional Planning, Federal University of Technology, Minna, Niger State.

Dr Tsado Abel I., Department of Quantity Surveying, Federal University of Technology, Minna, Niger State.

Dr Alonge Deborah Olubunmi, Department of Architecture, Federal University of Technology, Minna, Niger State.

Dr Oluibukun Ajayi, Department of Land and Spatial Science, The Namibia University of Science and Technology, Namibia.

Dr Ohadugha Chukwudi Bernhard, Department of Estate Management & Valuation, Federal University of Technology, Minna, Niger State.

Mr. Dada Musa Titus, Department of Building, Federal University of Technology, Minna, Niger State.

Fadare Israel Olanrewaju, Department of Estate Management & Valuation, Federal University of Technology, Minna, Niger State.

Dr Ibrahim Pius Onoja, Department of Surveying & Geoinformatics, Federal University of Technology, Minna, Niger State.

Alh. Aliyu Maikudi Mohammed, Department of Urban & Regional Planning, Federal University of Technology, Minna, Niger State.

Dr Ayoola Adeyosoye. Babatunde, Department of Estate Management & Valuation, Federal University of Technology, Minna, Niger State.

Arc. Isiaka Ahmadu Sezou, Department of Architecture, Federal University of Technology, Minna, Niger State.

Dr Saidu Ibrahim (Deputy Dean SET), Department of Quantity Surveying, Federal University of Technology, Minna, Niger State.

#### **SECRETARIAT/USHERS**

Nmadu Helen G.  
Ajala Deborah O.  
Omotosho Ayobami  
Kave blessing  
Ali James  
Olorungbo Oluwatobi  
Okechukwu Joy  
Adeleke boluwatife  
Adigun Azeezat  
Nenrot favor  
Airehrour peace  
Sunday Michael  
Bawa Aaron

#### **TECHNICAL COMMITTEE**

Terkula Nicholas  
Alhassan Simeon  
Moses Rehoboth  
Oladipupo Charles  
Ojo Paul  
Ojenugwa Praise  
Aondonater Manasseh  
Emmanuel Odoma  
Kingdavid Nnamani  
Richard Odey  
Otah Sunday  
Fadare Israel O.

## KEYNOTE SPEAKERS



**Prof. Sani Usman Kunya**

Vice Chancellor,  
Abubakar Tafawa Balewa  
University  
Bauchi, Nigeria



**Prof. Joseph Kamuzhanje**

Perch Inc Development  
Consultancy Services  
Zimbabwe



**Prof. Arch. Rajendra Kumah**

Director of School of  
Architecture and Design,  
Lovely Professional University  
New Delhi, India



**Prof. Erekpitan Ola-Adisa**

University of Jos  
Jos, Plateau, Nigeria



**Prof. William Mosier**

Faculty Of Health Sciences,  
Graduate Education Institute,  
İstanbul Gelişim Üniversitesi  
Instabul, Turkey

## GUEST SPEAKERS



**Prof Oluwale O. Morenikeji**

Former Deputy Vice Chancellor,  
Federal University of Technology,  
Minna,  
Niger State, Nigeria



**Dr. Yakubu Aminu Dodo**

Assistant Professor,  
College of Engineering,  
Najran University  
Najran, Saudi Arabia



**Asst. Prof. Adham Ahmed  
Awad Elsayed Elmenshawy**

Robotics & Additive Technologies-  
Innovation Research Cluster,  
Transport & Communication Institute  
Riga, Latvia



**Dr. Ahmed Osman Ibrahim**

Associate Prof. Architectural  
Engineering Dept., College  
of Engineering, University of Hail,  
Hail, Saudi Arabia



**Arc. Amina Ahmed Ibrahim**

Acting MD Kano State Urban  
Beautification Agency  
Kano State, Nigeria

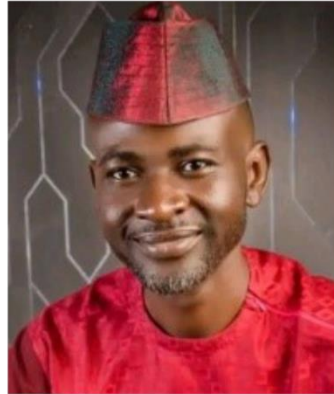


## ROUND TABLE PANELISTS



**Dr. Yakubu Aminu Dodo**

Asst. Prof.  
College of Engineering,  
Narjan University  
Narjan, Saudi Arabi  
Host



**Dr. Ogunbode E.**

Assoc. Prof.  
Dept. of Building, School of  
Environmental Tech, FUTMINNA  
Niger State, Nigeria  
Co-Host



**Dr. Habiba Iliyasu Atta**

Assoc. Prof.  
Department of Microbiology,  
Ahmadu Bello University  
Zaria, Nigeria



**Dr. Samuel Moveh**

Assoc. Prof.  
Transport and Telecommunication  
Institute (TSI),  
Riga, Latvia



**Lar. Ts. Dr.  
Nurzuliza B. Jamirsah**

Dept. of Landscape  
Architecture, UTM  
Malaysia



**Arch. Abdulmalik Aminu**

Engineer II, NBAIS Zaria,  
Kaduna State



# CONTENTS

## SECTION 1: KEYNOTES

Towards a Built Environment that we all Want Prof. Kamuzhanje Joseph	xxvi
Global economic revolution & the resilience of the built environment in an emerging world Prof. Sani Usman Kunya	xxx
Adaptive Architecture: Building Resilience in the Face of Economic Transformation Prof. Dr Erekpitan Olá-Adisa	xxxiii
Tailoring Child Development to Sustainable Built Environment Prof. Dr William Mosier	xxxviii

## SECTION 2: CONFERENCE PAPERS

Ergonomics as a Medium to Enhance Better Performance in a Working Space: From a Medical Perspective Hauwa S. Yusuf, Yakubu A. Dodo	1
Application of Geographic Information System to Commercial Property Investment Decisions in Bida, Nigeria. Mohammed J. K., Saidu U. A., Sheriff I. H.	7
Impact of Residential Mobility on Commercial Real Estate Investment Decisions in Minna, Niger State Nigeria. Samuel, J., Kemiki, O. A., Ajayi, M. T. A., Musa, H.D and Olawale, A. A.	15
Effects of Demographic Features on Household Residential Mobility in Bida. Samuel J., Kemiki O. A., Ajayi M.T.A., Musa H. D., Olawale A. A.	22
Corporate Governance and Financial Performance: Exploration of Listed Insurance Companies in Lagos, Nigeria Olusesi H. Olalekan, Linda U. Ezeugonwa	31
Influencing Factors of Land Dispute in South West Nigeria Dairo O. Elizabeth, Sule A. I., Nuhu M. B., Ogunbajo R. A.	41
Determinants of Sustainable Property Investment in Lagos, Nigeria: A Preliminary Survey James O. Ogunbiyi, Adebola O. Adeyemo	47

Land Allocation Patterns and Gender Inclusiveness for Residential Property Development in North Central Nigeria Jamila U, Mohammed. B. Nuhu, Abass. I. Sule, Sekinat Abdulkareem	56
Factors Influencing Adoption of Green Building Practices in Construction Projects in Abuja, Nigeria. Ibrahim A. Abokoh, Ola-Awo W. Adeniran	60
Investigating the Compressive Strength of Self-Compacting Concrete with Crumbed Rubber as Partial Replacement for Coarse Aggregate Muhammad M. Kambari, Anthony M., Onyebuchi N. Mogbo, Musa U. Kolo	70
Examining IT Adoption Levels in Nigerian Construction Firms: Analysing the Role of Firm Size, Professional Affiliations, and Industry Experience Ezekiel B. Ogunbode, Jiya M., Olanrewaju I. Fadare, Kayode I. Adenuga., Yakubu A. Dodo., Razavi Meisam	79
Sustainable Use of Timber in Selected Turkish Buildings Meryem M. Findikgil	87
Role of Anthropometrics and Ergonomics in Enhancing Productivity in Najran University Office Spaces Mohammed A. Al-Qamadi, Hela A. Gnaba	94
Safety Management on Construction Sites: A Case-study of a Building at Nile University of Nigeria Eme O. N. E., Onyebuchi M., Ifeyinwa I. O.	101
A Critical Review of Sustainable Practice in the Nigerian Construction Industry: Trends and Future Studies Direction Aliyyu A. Abdulraheem, Rasheed B. Isa	108
Energy Security in Cameroon: Linking Renewable Energy and Environmental Protection Kayode I. Adenuga, Yakubu A. Dodo, Abubakar S. Mahmoud, Nurudeen I. Mahmud, Ezekiel B. Ogunbode, Samuel O. Owoeye, Said A. Korig, Nusa J. Danlamih	115
Assessment of Sand-Clay Mixtures as Backfill Material for Earth Retaining Structures Joel Godwin, Taiye E. Adejumo, Agapitus A. Amadi	125
Optimising Production Efficiency and Sustainability through Lean Manufacturing and Industry 4.0 Technologies in the Nigerian Automotive Sector Segbenu J. Zosu, Hassan S. Zohaib, Abiodun A. Yussouff, Elkannah O. Oyetunji	132

Adoption of Building Information Modelling for E-Procurement in Public Building Projects in Abuja, Nigeria Amaduobogha E. Christy, Oke A. Adebayo	142
Examining Communication Methods and Their Impact on the Performance of Road Infrastructure Projects in Minna, Niger State Sulaiman S., Okosun, B. O.	150
Condition Surveys and Assessment of Buildings: A Review of Approaches Adopted Abdulshakur Abass, Oluseun O. Olubajo	158
Model Predicting and Optimization for the Marshall Properties of Cold Mix-Recycled Asphalt Pavement (CRAP) Using Response Surface Method (RSM) Musa M. M., Ijindia T. S., Usman A., Bello I.	163
Energy Access of Small-Scale Cooking Enterprises and Implication on Health in Minna, Nigeria. Folake J. Odegbenro, Yekeen A. Sanusi	177
Understanding Urban Fragility: Definitions, Conceptual Frameworks, Evolution, and Contemporary Issues Edward A. Lohor, Yekeen A. Sanusi, Aliyu. M. Kawu	186
Spatiotemporal Growth Analysis of Selected Informal Settlements in Bwari Area Council, Federal Capital Territory (2004-2024) Agava R. Suleiman, Nimatullah A. Ibrahim, Chukwudi O. Ohadugha, Looqman O. Bello	194
Assessment of Factors Affecting Autonomous Motivation of Safety Officers in Construction Projects in Abuja Ibijoju, S. Eyimofe, Shittu A. Adewale, Adamu I. Inyass	201
Stakeholder's Perception of the Barriers to the Implementation of Circular Economy Strategies in the Nigerian Construction Sector Mohammed N. Mohammed, Abel J. Tsado, Luqman O. Oyewobi, Taofeek T. Okanlawon	208
Assessing Critical Success Factors for Online Learning in Built Environment Programmes Hassan A. Ahmadu, Amina S. Bello, Rukkaya B. Ibrahim, Muhammad L. Ibrahim	216
Impact of Constructability Practices on Road Infrastructure Delivery by Indigenous Firms in Abuja, Nigeria	

Ibrahim Y. Ahmed, Luqman O. Oyewobi	224
Assessment of Drivers for Adoption of Fourth Industrial Revolution Technologies to Enhance Health and Safety Practices in Construction Projects	
Olabanji M. Kadi, Abdullateef A. Shittu., Blessing O. Okosu.	230
Assessment of Building Condition of Students' Hostel at Federal University of Technology Minna, Niger State Gidan Kwano	
Adamu I. Ibrahim, Adamu D. Anita, Saidu Ibrahim	241
Developing a Learning Organisation Model for the Survival of Nigerian Quantity Surveying Firms: An Empirical Review	
Nagya S. Kudu, Maroof O. Anifowose, Wasiu A. Ola-awo, Luqman O. Oyewobi	247
Assessing Cost-Based Factors Inhibiting Adoption of Knowledge Management Cost-Based Models in Nigerian Construction Firms.	
Abdulkadir S. Rasheed, Luqman O. Oyewobi, Wasiu A. Ola-awo	252
The Relationship between Stress Management and Work-Life Balance of Construction Professionals in Public Service in Abuja, Nigeria	
Akpogume M. Eruore, Maroof O. Anifowose	259
Determinants of Small and Medium Construction Firms' Success in Abuja, Nigeria	
Samuel David, Wasiu A. Ola-awo	269
Electromagnetic Distance Measurement Calibration in Minna for Accurate Surveying and Mapping Applications.	
Adamu M. Gbedu, Yusuf D. Opaluwa, Zitta N., Onuigbo I. C.	274
Evaluating different satellite-derived bathymetry models: A case study of Tagwai Dam.	
Tanko R., Ibrahim P. Onoja	279
Detection of Land Deformation Using Differential Interferometric Synthetic Aperture Radar (DInSAR) Technique Over Part of Kaduna State, Nigeria	
Mahmud Baba, Bako M., Yusuf D. Opaluwa, Ridwan O. Adegboyega, Muhammed A. Yaman	287
Prediction of Annual Flood-Prone Areas Using SWAT and HEC-RAS Models	
Ekundayo. A. Adesina, Oluibukun G. Ajayi, Joseph O. Odumosu, Suleiman A. Z.	295
Suitability Analysis of Gadbegie Biosphere Reserve Area for Giraffe Habitation in Maradi State of Niger Republic.	
Abdoul-Nasser O., Zitta N., Musa A. W.	305

Satellite Derived Bathymetry of Kainji Dam, Niger State, Nigeria. Ibrahim P. Onoja, Adesaanu Abd'muheez A., Etim E. Eyo	311
Assessing Wetland Dynamics Using Geospatial Techniques. Muaz I., Zitta N., & Abdullahi H.	318
Geospatial Analysis for Optimal Hotel Site Selection in Minna Metropolis. Ekundayo A. Adesina, Chukwu S., Oluwatobi O. Adetunji	326
Utilisation of Energy Efficiency Strategies in the Design of Office Buildings in Kaduna, Nigeria. Isyaku A. Aliyu, Deborah O. Alonge	333
Integration of Fire Safety Prevention Strategies in the Design of High-Rise Mixed-Use Building (Systematic Review). Ogunsola E. Ayodeji, Mukaila E. Abdulrahman	339
Integration of Sustainable Building Materials in the Design of a Textile Factory: A Review. Oni I. Grace, Remi E. Olagunju	345
Optimising Fenestration for Enhancing Thermal Comfort in Classrooms of the Hot Semi Arid Climatic Zone of Nigeria. Isa Adam Abdullah, Abubakar Sadiq Salisu, AbdulSalam Dalhatu	351
Assessment of indoor and environmental quality of some selected shopping mall in Abuja. Soualiou S., Zubairu S. N.	360
Integration of Biophilic Design Principles in the Design of a 5-Star Hotel in Abuja, Nigeria. Ahmed S. E., Remi E. Olagunju	366
Integrating Sustainability in Community Market Design, Maikunkele, Niger State. Awyetu V. Yusuf, Mukaila E. Abdulrahman	374
Evaluation of Critical Factors Impeding Community Participation in Resettlement Housing for Flood-Prone Communities in North Central Nigeria Yabagi M., Abubakar D. Isah, Isa B. Muhammad	380
Application of Passive Design Strategies for Fire Protection in Office Buildings, Minna, Niger State.	

Salako A., Chukwudum J. Eze	386
Integration of Smart Technologies in the design of Housing Estate in Ibadan, Oyo State, Nigeria.	
Taiwo E. Oladipo, Phillip Ayuba	393
Exploration of Nupe Design Cultural Elements in the Design of Public Buildings.	
Salawu B., Muhammad I. B.	400
Integration of Sustainable Design Strategies in High-Rise Condominium Buildings.	
Usman Z., Muhammad I. Bala	409
Assessment of Passive Security Design Strategies in Multipurpose Event Buildings in Abuja, Nigeria.	
Oluwaseun S. Aruwajoye, Oluwafemi K. Akande	417
Integration of Regenerative Design Principles in Farmer's Market Architecture, Karu, Nasarawa State.	
Daniel D. Unekwu, Muhammad I. Bala	423
Assessment of Interior Day Lighting in the Design of Gallery of Arts, Lokoja, Kogi State, Nigeria.	
Anthony B. Reagan, Phillip Ayuba	432
Design and Application of Energy Efficiency Design Strategies in High-Rise Condominium Buildings in FCT Abuja, Nigeria.	
Olanrewaju D. Shamsudeen, Abdurahman M. El-hussein	438
Exploring the Role of Technological Integration in Promoting Sustainability Practices: Case Studies in Environmental Education	
Ahmed I. Ibrahim, Zulfikar Adamu, Chigozie Okereke, Miriam Chukwuma-Uchegbu, Aisha A. Aliyu, Halima Abdulmalik, Livingston D. Okpakhalu	446
Adoption of Green Architecture in Multi-Family Housing in Abuja, Nigeria.	
Oyedele A. Temitayo, Remi E. Olagunju	453
Evaluation of Passive Security Measures in the Design of Post-Conflict Housing.	
Kolbe J. Jonathan, Ayuba Philip	462
Assessing the Environmental and Social Impacts of Urban Beautification Projects in Kano City	
Amina A. Ibrahim, Ahmed O. Ibrahim	472

Exploring AI-Driven Form Generation in Architectural Design: A Comparative Analysis of MidJourney-AI and Stable Diffusion Juliana Toba	478
Harnessing AI for Critical Thinking: An Empirical Review in Architectural Design Education Yaser K. Al-Sakkaf, Samuel Moveh, Abdulsalam I. Shema, Murtala M. Salihu Muhammad K. Balarabe	486
Influence of Rural-Urban Migration and Urbanization on Housing Delivery in Kano, Nigeria Yahaya B. Fatimaa*, Halima S. Katsinab, Kutama R. Nasiruc, Faizah M. Bashir	494
Daylighting Utilization in Najran University Educational Buildings Classroom Ali M. Al-Fadhil, Hussain D. Al-Zamanan, Nezar A. Al-Makrami, Badr S. Alotaibi, Abdultawa M. Qahtan, Yakubu A. Dodo	502
Enhancing Sustainability and Efficiency: The Integration of Smart Technologies in Built Environment Design Abdulsalam I. Shema, Paul O. Agboola, Aisha A. Aminu, Livingston D. Okpakhalu, Moses I. Ayoosu	507
The Nexus of Regionalism and Contemporary Architectural Style-The Case of Hail City, Saudi Arabia Ahmed O. Ibrahim	520
Environmental Sustainability Practices and SDG Alignment at the University of Hail: A Scoping Review Faizah M. Bashir	526
Criteria for Selecting Phase Change Materials (PCMs) in Building Envelopes to Enhance Energy Efficiency Emmanuel Falude, Sheikh A. Zaki, Ng W. Tucka, Yakubu A. Dodo	532
Exploring the Role of Physical Models in Architectural Education and Concept Development in Studio Practice Yaser K. Al-Sakkaf	539
A Comparative Study of Students' Satisfaction with Hostel Facilities in Minna Opeyemi L. Eyinla, Abbass I. Sule	543
Exploring the Circle of Consumption Around Reused Construction	

Demolition Waste: Evidence from Construction Sites Sokolayam F. Akale, E. I. Daniel, Oluseun O. Olubajo	551
Importers' Perceptions of Fraud by Custom Officers at Apapa Port, Nigeria Shola E. Ojedeke, Babatunde S. Akinbami, O. A. Somuyiwa, Abdulhakeem A. Yusuf	558
Barriers to the implementation of insurance policy for site workers' safety in construction projects in Abuja Abubakar M. Mahmood, Abdullateef A. Shittu, Polycarp O. Alumbugu, Tsado J. Abel	564
The Impact of Slum Environments on The Socio-Economic Characteristics of Residents in Kpakungu Area of Minna, Niger State Abdullahi M. B, Dalil M.	574
Assessing the Impact of Statutory Regulations on Solid Waste Management and Environmental Sustainability in Nigeria - A Case Study of Selected Statutes Ahmed I. Ibrahim, Aisha A. Aminu, Ifeoluwa A. Adeyemi, Edom I. Ellis	581
Mapping of Tomatoes Pest Susceptibility in Zaria, Kaduna, Nigeria Abdulmalik M. Olaniyi, Ekundayo A. Adesina, Gbenga Adeniyi, Albert I. Nwose, Lukman Abdumumeen	591
Assessment of Public Real Estate Investment Performance in North Central Nigeria: A Literature Review Zakari U. Dodo, Mohammed B. Nuhu, Rukayat A. Ogunbajo, Adeyosoye B. Ayoola	598





## **Assessment of Public Real Estate Investment Performance in North Central Nigeria: A Literature Review**

**Zakari U. Dodo<sup>1\*</sup>, Mohammed B. Nuhu<sup>2</sup>, Rukayat A. Ogunbajo<sup>3</sup>, Adeyosoye B. Ayoola<sup>4</sup>**

<sup>1</sup>Department of Estate Management and Valuation, Niger State Polytechnic Zungeru.

<sup>2,3&4</sup>Department of Estate Management and Valuation, Federal University of Technology, Minna  
zakaridodo@gmail.com

### **Abstract**

This paper examines the performance of public real estate investments in North Central Nigeria, focusing on their impact on economic development, infrastructure, and social welfare. A comprehensive literature review was conducted, drawing from recent studies on public real estate investment in developing nations. The methodology is a systematic literature review to assess the performance of public real estate investments in North Central Nigeria. Academic journals, government reports, and conference proceedings from the past decade were reviewed to gather relevant information on the subject. A search was conducted using keywords such as "public real estate investment," "North Central Nigeria," "housing development," "infrastructure," and "economic impact." The findings highlight how public real estate investments contribute to job creation, housing development, and infrastructural improvements. However, significant challenges such as inequitable housing distribution, limited access to amenities, and inefficient planning remain. The paper provides insights into how these investments can be better aligned with community needs for improved social and economic outcomes.

**Keywords:** Estate, Investment, Performance, Public and Real

### **1. Introduction**

Real estate investment is recognized globally as a driver of economic growth, urbanization, and improved social well-being. Public sector real estate projects are especially crucial in developing nations like Nigeria, where private sector investments may be inadequate to meet housing and infrastructure needs. In North Central Nigeria, which includes Abuja, Niger, Benue, Kogi, Nasarawa, Plateau and Kwara states, public real estate investments have been employed as tools for stimulating local economies, reducing housing shortages, and addressing infrastructural gaps. However, the performance of these investments in terms of their socio-economic impact has been subject to debate. This paper seeks to review existing literature on the performance of public real estate investments in North Central Nigeria. Specifically, it will examine how these investments have influenced job creation, housing availability, and infrastructural development. By synthesizing findings from various studies, the paper aims to assess the overall performance of these investments and their contribution to local communities. The real estate sector has immensely contributed to the development and progress of many economies in the world and is often considered as the leading indicator of the economic health of any economy. Real estate refers to any physical property or improvements affixed to the land and other developments on it including land itself. Real estate property development is a multifaceted business, encompassing activities that range from the renovation and release of existing buildings to the purchase of raw land and the sale of improved land or parcels to others for a profit (Ajello, *et al.*, 2015). Botha (2013) and Khan, *et al* (2014) found that property and construction are the most significant contributors to an economy's growth in terms of GDP and employment. Property development and investment performance is high in areas with effective and efficient infrastructural developments and structures. Examples of structures and infrastructural developments that promote Commercial Property Development and Investment (CPDI) are good governance structures, a stable economic climate, political stability and social amenities (Turcu, 2012; Kauskale, 2017). Real estate investment plays a crucial role in providing job opportunities, sheltering households, enhancing income distribution and alleviating poverty (International Monetary Fund, 2016).

### **2. Methodology**

This paper relies on a systematic literature review to assess the performance of public real estate investments in North Central Nigeria. Academic journals, government reports, and conference proceedings from the past decade were reviewed to gather relevant information on the subject. A search was conducted using keywords such as

"public real estate investment," "North Central Nigeria," "housing development," "infrastructure," and "economic impact."

**The criteria for including studies in this review were:**

1. Published between 2011 and 2023.
2. Focused on public real estate projects in Nigeria.
3. Examined the socio-economic impact of these investments, with particular attention to housing, job creation, and infrastructure.

A total of 21 studies were selected for review, with a focus on those that offered empirical data or case studies relevant to North Central Nigeria. Data was synthesized to identify recurring themes, challenges, and best practices related to public real estate investment performance.

### **3. Literature Review**

Public real estate investment refers to government-led projects aimed at developing housing, commercial properties, and associated infrastructure for public use. Research suggests that public investments in real estate can drive economic growth by creating employment opportunities, improving access to housing, and boosting infrastructural development (Akinwale and Adedayo, 2021). In developing economies, these investments are crucial for addressing deficits in housing supply and modernizing urban areas. In the Nigerian context, the government has launched several initiatives to improve housing availability through public-private partnerships (PPPs) and direct state intervention. public real estate projects have generated short-term employment opportunities in construction and ancillary sectors. However, the long-term impact on local economies varies depending on the quality of planning and execution.

Public real estate investment plays a pivotal role in the socio-economic development of countries worldwide. Governments invest in real estate to provide essential infrastructure, stimulate economic growth, and improve the quality of life for their citizens. Globally, public real estate investments encompass a wide range of projects, including affordable housing, commercial properties, and public facilities such as schools and hospitals. These investments are critical for addressing urbanization challenges, reducing housing deficits, and fostering inclusive growth (UN-Habitat, 2020). In developed countries, public real estate investments have significantly contributed to urban renewal and economic revitalization. For instance, in the United States, initiatives like the Low-Income Housing Tax Credit (LIHTC) program have successfully spurred the development of affordable housing, benefiting millions of low-income families (Schwartz, 2021). Similarly, in Europe, public real estate projects have been instrumental in enhancing urban infrastructure and promoting sustainable development (European Commission, 2022).

#### **3.1 Housing Availability and Affordability**

Chapter 2 Nigeria faces a significant housing deficit, estimated at over 20 million units (Adegbile and Ilesanmi, 2022). Public real estate projects, particularly affordable housing schemes, have been designed to alleviate this shortage. However, studies show that the success of these projects is mixed. In North Central Nigeria, many public housing projects are either incomplete or inaccessible to low-income earners due to high costs (Ibrahim and Yusuf, 2021). Public real estate investments often target middle-income households, leaving the poorest segments of society underserved.

The issue of affordability is compounded by the rising cost of construction materials, inefficient project management, and corruption in the allocation of housing units (Ogunbiyi *et al.*, 2019). While there are examples of successful public housing initiatives in the region, such as in Abuja, the general consensus is that public real estate investments have fallen short of addressing the housing needs of the majority.

#### **3.2 Infrastructural Development**

Public real estate investments often include infrastructure development as part of broader urbanization efforts. Roads, utilities, schools, and healthcare facilities are commonly developed alongside housing projects to ensure that new residential areas are adequately serviced (Olajide and Adeleke, 2020). However, the extent to which these infrastructures meet the needs of local populations varies. For instance, Nwaka *et al.* (2023) found that several public real estate projects in Kogi and Benue states suffered from poor integration with existing infrastructure, leading to limited access to services like electricity and water. The literature also highlights that infrastructure development associated with public real estate projects can have both positive and negative effects. While new roads and utilities can improve access to urban centers, they can also strain existing infrastructure if population growth outpaces the development of amenities.

### 3.3 Challenges in Public Real Estate Investment

The literature identifies several challenges in the implementation and performance of public real estate projects in Nigeria. These include bureaucratic inefficiencies, misallocation of funds, corruption, and a lack of transparency in project execution (Adetola and Banjo, 2020). Additionally, political interference often results in projects being abandoned or poorly executed, further reducing their effectiveness (Anifowose and Adeyemi, 2019). These issues undermine the potential of public real estate investments to drive sustainable development.

### 3.4 Theoretical framework

Theoretical framework provides a comprehensive perspective on the assessment of performance in public real estate investment, drawing upon insights from public choice theory, institutional economics, financial economics, and urban economics.

#### **Modern portfolio theory (MPT)**

Markowitz's work was built on the principles of mean -variance analysis, which assumes that investors are risk -averse and seek to maximize their expected returns while minimizing the variance (risk) of their portfolios (Markowitz, 1959).

#### **Real Estate Market Cycle Theory (REMCT)**

This theory explains the cyclical nature of real estate markets, typically comprising four phases: recovery, expansion, hyper-supply, and recession (Mueller, 1999). Understanding these cycles helps in timing public investments to optimize social and economic benefits.

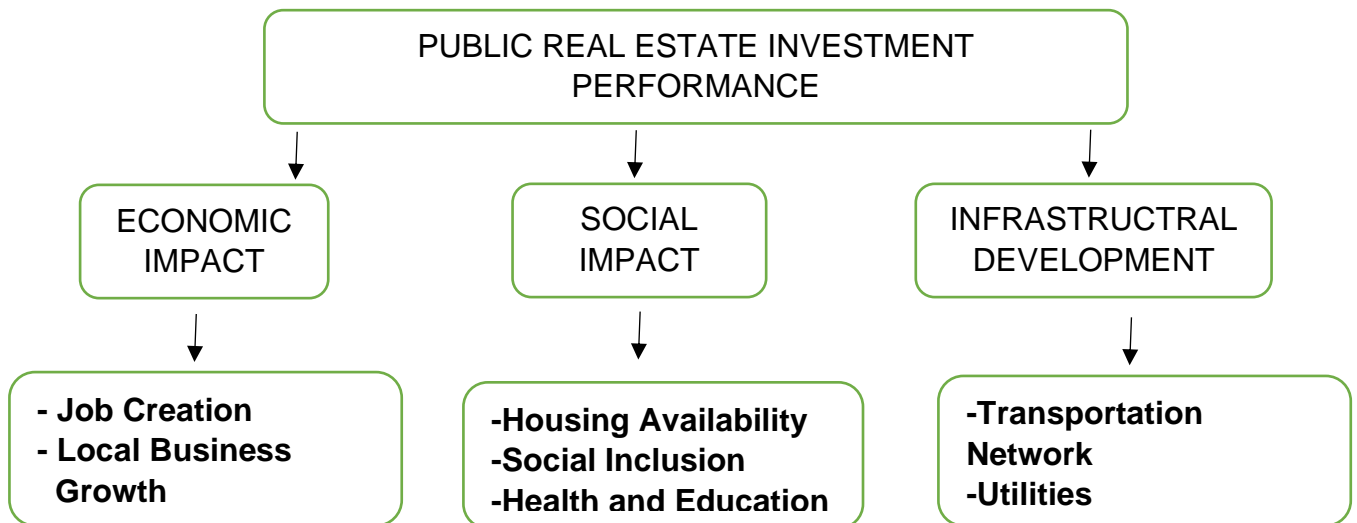
#### **Location Theory (LT)**

Originally developed by Johann von Thünen in 1826 and expanded later (Alonso, 1964), this theory emphasizes the importance of location in determining real estate value and development potential. Location significantly affects access to infrastructure, housing demand, and job creation.

#### **Triple Bottom Line Theory (TBLT)**

Elkington (1997) proposed this theory, which evaluates investments based on their economic, social, and environmental outcomes. TBL is essential for assessing the broader impact of public real estate projects on local communities beyond financial

### 3.5 Conceptual Framework



Source: Authors Design 2024

## 4. Results and Discussion

The literature review reveals that while public real estate investments in North Central Nigeria have contributed to job creation, housing development, and infrastructural improvements, their overall performance remains suboptimal. Several key findings emerged.

### 4.1 Job Creation

Public real estate investments have been effective in generating employment, particularly during the construction phases of projects. Many studies highlight the positive short-term effects on local economies due to the demand for labour, materials, and services (Akinwale and Adedayo, 2021). However, the long-term impact is less clear, as job creation often diminishes once construction is completed.

### 4.2 Housing Availability

While public investments have increased the number of housing units available in urban areas, these developments have not significantly alleviated the housing deficit. The issue of affordability persists, with many housing projects catering to middle- and high-income earners (Adegbile and Ilesanmi, 2022). As a result, low-income households continue to face barriers to accessing public housing.

### 4.3 Infrastructural Development

Public real estate investments have led to the development of critical infrastructure in some areas. However, several projects are marred by poor planning and inadequate integration with existing urban infrastructure. This has resulted in uneven access to services like water, electricity, and transportation, particularly in rural and peri-urban areas (Nwaka *et al.*, 2023).

### 4.4 Challenges

The challenges identified in the literature—such as corruption, political interference, and inefficient project management—continue to hinder the success of public real estate investments in North Central Nigeria. Addressing these issues is essential for improving the social and economic outcomes of future projects.

## 5. Conclusion

The performance of public real estate investments in North Central Nigeria has been mixed. While these investments have contributed to job creation, housing availability, and infrastructure development, their full potential has not been realized due to various challenges. For future public real estate investments to be more effective, it is crucial

to improve transparency, project management, and the alignment of investments with the needs of local communities. Policymakers should prioritize affordable housing initiatives and ensure that infrastructural development is well-planned and sustainable.

## References

- Adegbile, A. & Ilesanmi, T. (2022). Housing affordability in Nigeria: Public sector challenges. *International Journal of Housing Markets*, 9(2), 311-328.
- Adetola, S., & Banjo, R. (2020). Bureaucratic challenges in public real estate investment. *Journal of Public Administration*, 14(1), 95-110.
- Ajello, Andrea, Thomas Laubach, David Lopez-Salido and Taisuke Nakata (2015). "Financial Stability and Optimal Interest-Rate Policy", working (IJSR) ISSN (Online): 2319-7064. *Internal Journal of Finance management and innovation*, 3(1).
- Akinwale, O., & Adedayo, A. (2021). Public real estate investments and economic growth in Nigeria. *Journal of Urban Studies*, 15(3), 223-235.
- Alonso, W. (1964). *Location and Land Use: Toward a General Theory of Land Rent*. Cambridge: Harvard University Press.
- Anifowose, A., & Adeyemi, B. (2019). Political interference and its impact on public infrastructure projects in Nigeria. *Public Policy Review*, 12(4), 67-83.
- Botha, B. 2013. *Property Development: A Business Process Model*. Doctoral Thesis. Faculty of Engineering and Built Environment. Nelson Mandela Metropolitan University. Port Elizabeth, South Africa, pp.215- 320.
- Elkington, J. (1997). *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*. Capstone Publishing.
- European Commission. (2022). *Urban Development and Real Estate Investment*. Retrieved from [europa.eu](https://ec.europa.eu)
- Ibrahim, F., & Yusuf, A. (2021). Affordable housing in North Central Nigeria: A review of public real estate initiatives. *African Journal of Housing Policy*, 7(1), 102-119.
- International Monetary Fund. (2016). *Monetary Policy and Financial Stability*, Policy Papers, August 28, International Monetary Fund, www.imf.org. Investment in Kenya. *Journal of international Economics and Finance*, 7(1), 315-390.
- Kauškalė, L. and Geipele, I., (2017). Integrated approach of real estate market analysis in sustainable development context for decision making. *Procedia Engineering*, 172, pp.505- 512.
- Khan, R.A., Liew, M.S. and Ghazali, Z.B., (2014). Malaysian construction sector and Malaysia vision 2020: developed nation status. *Procedia-social and behavioral sciences*, 109(2014), pp.507-513.
- Markowitz, H. (1952). "Portfolio Selection," *Journal of Finance*, 7(1), pp. 77-91.
- Mueller, G. (1999). "Real Estate Market Cycles: The Theory and Empirical Evidence," *Journal of Real Estate Research*, 18(1), pp. 131-150.
- Nwaka, M., Oladipo, T., & Ekeh, C. (2023). Infrastructural deficits in public real estate projects in Nigeria: A case study of Kogi and Benue states. *Journal of Development Studies*, 18(2), 192-211.
- Ogunbiyi, S., Alabi, O., & Adeola, I. (2019). Corruption and project mismanagement in Nigerian real estate investment. *Journal of Real Estate Finance*, 11(2), 77-91.
- Olajide, K., & Adeleke, A. (2020). Public real estate investment and infrastructural development in Nigeria. *Journal of Urban Planning*, 16(4), 125-138.
- Schwartz, A. F. (2021). *Housing Policy in the United States*. Routledge.
- Turcu, C., 2012. Local experiences of urban sustainability: Researching Housing Market Renewal interventions in three English neighbourhoods. *Progress in planning*, 78(3), pp.101- 150.
- UN-Habitat. (2020). *Global State of Housing and Urban Development Report*. Retrieved from [unhabitat.org](https://unhabitat.org)