

30th NIQS BIENNIAL CONFERENCE

**ASSESSING GREEN BUILDING
KNOWLEDGE, RESOURCE AVAILABILITY
AND UTILIZATION OF GREEN
PROCUREMENT PROJECTS IN NIGERIA'S
FEDERAL CAPITAL TERRITORY**

BY

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➤ PRESENTATION OUTLINE

- Introduction**
- Research Objectives**
- Literature Review**
- Methodology**
- Results and Discussion**
- Conclusion and Recommendation**



INTRODUCTION

- **Nigeria has the largest population in Africa and it is projected that its population of about 201 million people would double by year 2050 (Statista, 2020). Nigeria's population trajectory would expectedly propel need for supportive infrastructure to accommodate the rising population, and this would translate into more emission of Green house gases of which the country is reputed as the biggest emitter in the African continent.**
- **The Nigerian government having realised this position has re-strategized for change by her determination to cut down the emission of GHGs by 20% by year 2030 (Daisy, 2020).**
- **Daisy (2020), reports that the growth of demand for green buildings would help facilitate the change, as traditional building construction are known major emitters of GHGs and degraders of the environment.**



INTRODUCTION (Cont'd)

- **Growth in green buildings would emanate from increased global regulation of construction industry's activities that would compel transition from traditional construction methods to more sustainable construction methods (GlobalData, 2023). Alqadami, Zawawi, Rahmawati, Alaloul, and Alshalif (2020), argues that sustainable construction is no longer an option, but a necessity and imperative for nation's advancement.**
- **Studies by Montalban, Ballesteros-Perez, Sanz, and Pellicer (2017), and others aver that the major obstacles to green procurement globally is the methodology adopted and the materials utilized, often at variance with traditional procurements. This assertion underpins this research.**
- **The researchers therefore proposes to undertake an assessment of green procurement knowledge-base among construction stakeholders, and to evaluate green construction resource availability and utilisation in Nigeria's Federal Capital Territory green projects.**



RESEARCH OBJECTIVES

1

To assess green construction knowledge-base in Nigeria's Federal Capital Territory projects

2

To evaluate the availability of green construction resources in Nigeria's Federal Capital Territory projects

3

To examine the extent of utilisation of green construction resources in Nigeria's Federal Capital Territory projects



LITERATURE REVIEW

- **Traditional construction activities is known to consume approximately 45% of the world's energy (StatisticalData, 2010) and produces 40% of CO₂ emissions, 30% of solid wastes and 20% water pollution globally (Series, 2010; Dixon, 2010; Thakur, Pappu and Thakur, 2018).**
- **Research by Bohari , Skitmore, Xia, Toe and Khali (2020) ; Ali, Akhund, Memon, Memon, Imad, and Kharo, (2019); Yang, Su, Wang, and Hua (2019) variously aver that the adoption of green construction procurement mode would entrench sustainability and checkmate the adversities caused by the traditional construction methods.**
- **Examples of green construction projects across the globe are:-Bullitt Centre, Seattle; Acros Fakuoka, Southern-Japan; Vancouver Convention Centre, Vancouver; One Central Park, New South wales; Park Royal Hotel, Singapore; Bank of American Tower, New York;Shangai Tower, and so on.**



LITERATURE REVIEW

(Cont'd)

- Also, examples of green buildings in Africa abound, namely - Agostinho Neto University, Angola; Sandbag Houses, South- Africa; EcomoHomes, South-Africa, Eastgate Centre, Zimbabwe, Inno-Native Home, Ghana; El-Mandara Eco-Resort, Egypt; Gando Primary School, Burkina Faso; Vissershok School, South- Africa.
- Stanbic IBTC Bank, Idego branch, Victoria island; MISA, Glover Road, Ikoyi, Lagos; Lekki Pearle Estate, Sangotedo, Lagos; Alliance Place, Ikoyi, Lagos; Alphal-Eco Atlantic City, Victoria Island, Lagos; Greenage Student Housing are all examples of green buildings.
- Adequate knowledge of energy conservation such as solar energy, renewable and non-renewable energy, turbine energy production are crucial to green procurement (Babanyara & Saleh 2010; Pardo-Bosch, et al., 2022).
- Findik and Kernal (2015), states that green materials are characterized by high recycled content made from rapidly renewable sources, has very low emissions, and has a minimal to zero environmental pollution.



METHODOLOGY

Population of the Study	Sampling Size	Sampling Technique	Research Instrument	Method of Data Analysis
4,525	400	Random Sampling	Questionnaire	✓ Mean
	Yamane (1973) formula			✓ Standard Deviation
	$n = \frac{N}{1 + N(e^2)}$			
	Response Rate			
	268			



RESULTS AND DISCUSSION

Descriptive statistics for green construction knowledge-base for green construction development by FCT developers

FACTORS	Mean	SD
Speed	4.4776	1.08201
Thermal comfort	4.4428	.69854
Investment	4.2985	.81268
Energy conservation	4.2338	.91654
Lighting efficiency	4.1791	1.34081
Access to electricity	4.1791	1.34081
Architectural flexibility	4.0896	1.22145
Energy affordability	4.0547	1.43596
Environmentally friendly design	4.0249	1.08829

➤ RESULTS AND DISCUSSION (Cont'd)

For the green procurement knowledge-base factors, the study's respondents indicate 'speed (M=4.4776)', 'thermal comfort (M=4.4428)', 'investment (M=4.2985)' and 'energy conservation (M=4.2338)' as their highest level of green procurement project knowledge-base of FCT development stakeholders, and are ranked 1st, 2nd, 3rd and 4th correspondingly (see the previous table). According to the outcome of this study, the respondents indicates that they are well aware that the variable factors of speed, thermal comfort, investment, and energy conservation are necessary requirements in the development of green procurement project in the FCT. This is corroborated by the study of Ntuli & Abu-Mahfouz (2016); Myeong et al. (2018); which stated that 'the importance of these factors to the delivery of green procurement projects cannot be overemphasized' as a result of their inherent crucial nature to such project.

➤ RESULTS AND DISCUSSION (Cont'd)

Descriptive Statistics for the Availability of Green Construction Resources

GREEN MATERIAL FACTORS	Mean	SD	Rank
Composite Roofing Shingles	4.4762	1.07965	1
Reclaimed Wood	4.4339	.70870	2
Bamboo	4.2963	.81020	3
Terrazzo	4.2275	.92027	4
Sheep's Wool	4.1852	1.33791	5
Precast Concrete Slab	4.1852	1.33791	5
Stone	4.1164	1.23219	7
Insulated Concrete Forms	4.0582	1.43356	8

RESULTS AND DISCUSSION (Cont'd)

According to the outcome of the previous table, availability of green construction resources for development projects in the Federal Capital Territory indicates that ‘composite roofing shingles (M=4.8259)’, ‘reclaimed wood (M=4.5423)’, ‘bamboo (M=4.5224)’ and ‘terrazzo (M=4.5224)’ as the topmost -ranking green construction materials available, and are thus ranked 1st, 2nd, 3rd, and 4th correspondingly. Similarly, ‘sheep’s wool (M=4.4876)’, ‘precast concrete slab (M=4.4428)’, ‘stone (M=4.3433)’ and ‘insulated concrete forms (M=4.3284)’, and are ranked 5th, 6th, 7th and 8th respectively. Consequently, ‘solar panels (M=4.2537)’ and ‘rammed earth (M=4.2537)’ are ranked 9th while ‘stone (M=4.2289)’, ‘cork (M=4.0846)’, ‘plant-based polyurethane rigid foam (M=4.0498)’ and ‘straw bales (M=3.8408)’ are ranked 11th, 12th, 13th and 14th respectively.

RESULTS AND DISCUSSION (Cont'd)

Descriptive Statistics for the Utilization of Green Construction Resources

GREEN MATERIAL FACTORS	Mean	SD	Rank
Composite Roofing Shingles	4.4762	1.07965	1
Reclaimed Wood	4.4339	.70870	2
Bamboo	4.2963	.81020	3
Terrazzo	4.2275	.92027	4
Sheep's Wool	4.1852	1.33791	5
Precast Concrete Slab	4.1852	1.33791	5
Stone	4.1164	1.23219	7
Insulated Concrete Forms	4.0582	1.43356	8

➤ RESULTS AND DISCUSSION (Cont'd)

In line with the result depicted the previous table, the descriptive statistics for the utilization of green construction resources indicates that ‘composite roofing shingles (M=4.4762)’, ‘reclaimed wood (M=4.4339)’, ‘bamboo (M=4.2963)’ and ‘terrazzo (M=4.2275)’ ‘sheep’s wool (M=4.1852)’, ‘precast concrete slab (M=4.1852)’, ‘stone (M=4.1164)’ and ‘insulated concrete forms (M=4.0582)’ are the most utilized as justified by their topmost ranking. Consequently, ‘solar panels (M=3.9894)’ and ‘rammed earth (M=3.7778)’, ‘reclaimed or recycled steel (M=3.7407)’, ‘cork (M=3.6402)’, ‘plant-based polyurethane rigid foam (M=3.1640)’ and ‘straw bales (M=3.1534)’, ‘straw bales (M=3.1534)’, ‘recycled plastic (M=3.0370)’, ‘ferrock (M=3.0370)’, and ‘cordwood (M=3.0000)’ are the medium ranked factors. Consequently, ‘natural fiber floor (M=2.9577)’, ‘mycelium (M=2.8095)’, ‘straw bale (M=2.4868)’, ‘timbercrete (M=2.1852)’, ‘Smart Glass Window (M=2.1693)’ and ‘hempcrete (M=2.0370)’ comprise of the least ranked.

➤ CONCLUSION AND POLICY RECOMMENDATION

- The increased call for global regulation of construction industry's environmental degradation tendencies has necessitated the adoption of sustainable construction mode using the green building procurement option. Developing economies like Nigeria are expected to experience much growth in sustainable development considering her population trajectory of about 201 million people which would propel the need for supportive infrastructures especially in her major cities including the Federal Capital Territory, Abuja, in like manner with the leading green construction markets, namely- China, US , India, Mexico, and Indonesia.**

➤ CONCLUSION AND POLICY RECOMMENDATION (Cont'

- The study assessed green procurement stakeholders' knowledge-base, and evaluated the availability and utilisation of green construction resources in Nigeria's Federal Capital Territory projects. Study's results revealed high-level knowledge of green procurement project among FCT development stakeholders. The results also showed that a good number of major and common green construction materials are available and utilized in FCT's green buildin projects . The study recommends need for increased Governments' involvement and strengthening of existing institutional frameworks towards the promotion and growth of green construction procurement mode of sustainable development within the FCT and the Nigeria nation in general, considering its numerous benefits including addressing of environmental challenges of the traditional mode.**

A top-down view of a desk with various office supplies. In the top right, there is a white computer mouse. Below it is a silver and black pen. To the right of the pen is a yellow calculator. In the bottom right corner, a portion of a white keyboard is visible. The background is a light yellow gradient.

Thank you!

For Listening....